

TELEFONICA DIGITAL



ALITHOD Ariane van de Ven → Global Trends Expert ariane@tid.es

Telefónica Digital → PDI - Global UX

Torre Telefónica Diagonal 00 Plaça d'Ernest Lluch i Martín, 5 08019 Barcelona, Spain

RESEARCHERS

Matylda Szmukier, María Alejandra García Corretjer

DESIGN & AD

Martí Pérez Palau → Zaina Collective

ILLUSTRATION

María Aleiandra García Corretier

PRINTING

Pressing Impressió Digital

© Shutterstock. Inc.

All trademarks are owned by their companies

This document has been produced as an internal research document and is not intended for public distribution or use. Every effort has been made to ensure accuracy of copy and to secure approval and accreditation for all images used. © 2013

FSC and PEFC, forest management certified papers have been used for this book. This means the paper's cellulose comes from trees that later will be replanted. Pressing has obtained ISO 9901 and ISO 14001 certified for quality and environment friendly management.



IMAGES

THE REINVENTION ERA

The Project Economy revealed the need for people to take a proactive attitude toward life, building their own projects in order to compete and succeed in the globally connected society. Harnessing the power of digital tools, people increasingly set up their own projects to transform local aspirations into global innovations and successes.

In 2013, we look at how the Project Economy will evolve towards The Reinvention Era. Individuals and groups have the necessary tools to create new projects and, in turn, reinvent the future. They will be motivated by the recognition that existing systems need to be rethought and redreamt to improve the current prospects for the future. The mix of excitement and fear in this new paradigm will inspire people to reinvent every aspect of society and find innovative ways to rethink processes and systems, all with the goal of creating a powerful future for themselves. Impossible will become an empty concept, as everything will be up for reinvention.

Fuelled by a critical mood, people will become enactors of societal change. Bottom-up and participatory innovation

will become the norm thanks to the explosion of available digital tools. Everyone will be able to reinvent products, services, systems, and organisations. People will embrace technology and tweak it so that it better answers their needs; in doing so, they will create new social, economic, and political practices. Technology will enable people to think outside the box, going beyond their mental scripts in order to dream up new possibilities. The radical democratisation of digital tools will empower people to live an intelligent life, to overcome challenges, and to make the choices they want for themselves.

In doing so, people will become:

- @ SPECIALISTS: on a quest to achieve mastery.
- EXPLORERS: engaging in exploration to accumulate. experiences.
- UTOPIANS: driven by kindheartedness to create more just systems.
- SOLVERS: defying the established rules.
- MAKERS: aspiring to bring more tangibility into life.
- O PERCEIVERS: looking for ways to enhance their perception.

The Reinvention Era is extremely exciting for us at Telefónica, as it reveals the magnitude of our power to enable people to lead richer and more intelligent lives. It brings to light new areas of opportunity for products and services that will contribute to our innovation, strength, and growth.

We hope you enjoy discovering the new possibilities that the Reinvention Era brings to us and the trends related to it.

Happy trend reading!

ABOUT THE TRENDS REPORT

Trends help us define the future we create for ourselves. Telefónica's Digital PDI Global Trends Report identifies emerging consumer behaviours and attitudes that are likely to influence the future market. The aim of this report is to provide insights that will help innovate in ways that are meaningful to people and society as a whole. •

We invite you to contact us if you have any questions regarding the trends or if you would like more information about our research:

Ariane van de Ven

Global Trends Expert

Telefónica Digital

Adress: Plaza de Ernest Lluch i Martin, 5

Planta 15- G14 Envision

08019 Barcelona - España

Emαil: ariane@tid.es

Web: www.globaltrends.telefonica.com

50

148, 158, 181, 184

104, 113, 115, 124

4, 20, 27, 193

D DECISION-MAKING SERVICES

DEMOCRATISATION

DEEP WEB

DIASPORA

INDEX

194, 200, 208, 209, 216, 221, 223

O 3D PRINTING

<u>A</u>	AFFECTIVE TECHNOLOGY	235
	ALTERNATIVE EXCHANGE	179
	ALTERNATIVE LEARNING	65,93
	ALTERNATIVE LIVING	131, 132
	ANALOGUE	192, 206, 226
	ANONYMITY	148
	AR (augmented reality)	67, 84, 89, 235, 249, 251
	ATOMS	192, 197, 201, 204, 205
	AUTHORITY	144, 145, 146, 150, 161
	AWARENESS	103, 135, 175, 176, 160, 206, 235, 243
В	BANKS	115, 116, 119, 144, 179, 151
	BIOFEEDBACK	235, 242
	BIOMIMICRY	242
	BOOMERANG GENERATION	71
	BOTS	238
	BOTTOM-UP CHANGES	
<u>c</u>	CAUSE	117, 119, 129, 169, 164, 6
	CITIES	20, 49, 105, 114, 122, 131, , 136, 162
	CITIZEN	105, 106, 113, 114
	CITIZEN JOURNALISM	149, 157, 158, 175
	COMFORT ZONE	75
	COMMUNITIES	92, 92, 92, 1
	CONSUMER DISOBEDIENCE	149, 159, 162
	COLLABORATION	52, 83, 102, 106, 130, , 182, 210, 254
	CREATIVITY	31, 129, 156, 157 ,175, 217, 232
	CROWDSOURCING	180, 194
	CULTURE CYCLE	106, 112
	CURRENCY	116, 149, 179, 244
	CUSTOMISATION	194, 221, 200, 220, 238

	DIASPORA	104, 113, 115, 124
	DIGITAL NATIVES	66, 192, 202, 233
	DISCOVERY	67, 83, 89, 92, 93, 184
	DISOBEDIENCE	144-150, 152, 156, 155, 157, 162
	DIVERGENT THINKING	147, 157
	DIY (do it yourself)	154, 177, 202, 206
E	EDUCATION	34, 39, 42, 72, 82, 86, 126, 166, 177
	EMBODIED INTERACTION	206, 211
	EMERGING ECONOMIES/MARKETS	161, 171, 180, 183
	EMPLOYMENT	25, 38, 45, 166
	ENTREPRENEURSHIP	34, 40, 47, 113, 169, 182, 240
	ENTREPRENEUR	183
	EXCHANGE SYSTEMS	179
	EXPERTISE	22, 24, 25, 32, 40, 51, 52, 128
	EXPLORATION	62-67, 72, 74, 92, 171, 198, 203
	EXPLORATORY CYCLE	64,65
<u>F</u>	FAB LABS	194, 199, 201
	FAIRNESS	102
	FRUGAL INNOVATION	135, 246
<u>G</u>	GAP-YEAR	73, 79
	GAMIFICATION	76
	GENERATION FLEX	71
	GENERATION SCREWED	156
<u>H</u>	HACKING	154, 181, 240
	HAPPINESS	50, 107, 111
	HAPTIC	196, 203
	HOMESCHOOLING	34
	HUMANOID	243, 245, 254
1	IDENTITY	63-66, 73, 90, 158, 192, 193
	INFORMATION	20, 22, 32, 41, 50, 88, 134, 158
ī	JUGAAD INNOVATION	146, 161
<u>K</u>	KINDHEARTEDNESS	75, 102, 108, 112
	KINAESTHESIA	203
	KNOWLEDGE	20, 33, 38
	KNOWLEDGE TRANSFER	106, 129, 182
	KOKORO	76
Ŀ	LEARNING	55
	LIFE-LONG LEARNING	92
	LOCAL	74, 104, 116, 128, 131, 132
<u>M</u>	MATCHMAKING SERVICES	49
	MAKERS	49, 104, 192-199, 202, 217
	MASTERY	20-27, 32
	MATERIAL COMPUTATION SCIENCE	205
	MECHATRONICS	205

GLOBAL TRENDS 2013

TANGIBLE USER INTERFACES

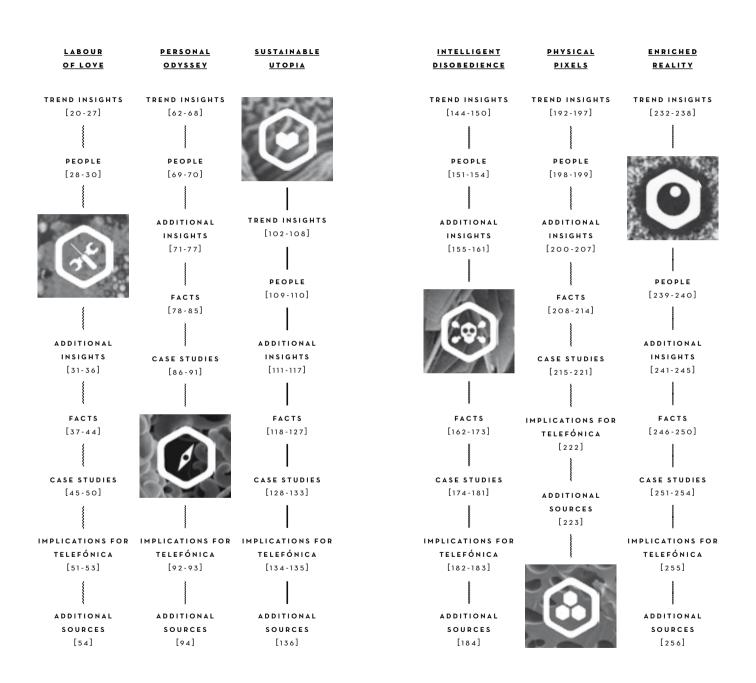
196, 203, 204, 218

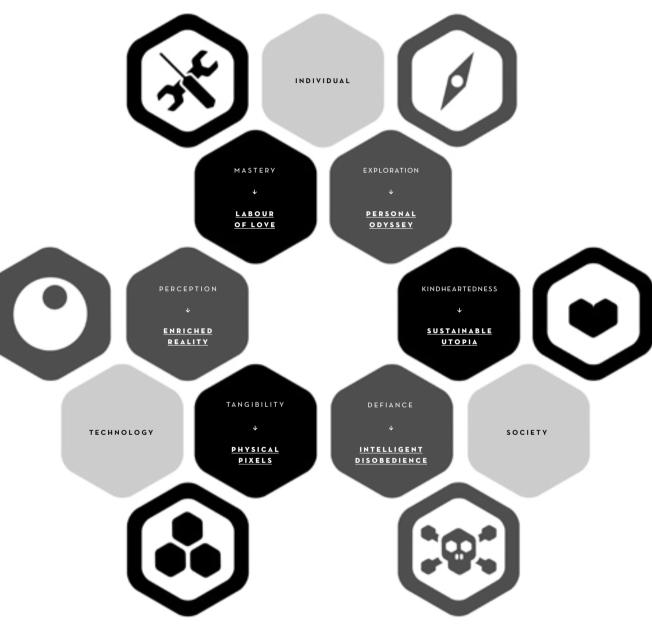
	MILLENNIALS MINIMITE LIFESTYLE	39, 77, 79-85, 119, 156, 161, 164, 170 105
	MONITOR MONITORING	88, 135, 181, 233 251, 253, 255, 247
N	NANOTECHNOLOGY	205, 211
	NEUROFEEDBACK	235, 242
	NFC (near field communication	
	NICHE COMMUNITIES	23, 195
<u>o</u>	OFF THE GRID	123, 150, 159, 181
	OPEN SOURCE	152, 202, 215, 238
	ONLINE COURSES	35, 41, 47, 87
P	PARTICIPATION	106, 107, 113, 157
	PARTICIPATORY DEMOCRACY	113, 131
	PERCEPTION	166,202-206, 232, 238, 251
	PERSONALISATION	192, 193
	PHYSICAL INTERACTION	192, 196
	PIRACY	150, 159, 160, 163, 181
	PIXELS	192, 202, 192
	PRIVACY	55 55
	PROTOTYPES	999
Q	QUICK READ (qr) CODES	55
R	RECOGNITION	20, 31, 51, 93, 239, 251, 254
	REPATS	103, 104
	REPUTATION	22, 35, 36, 51, 192
	RISK	64, 65, 74, 75, 82, 86, 160, 216
	ROBOTS	205, 219, 238, 243-245, 250
	RUMSPRINGA RURBAN	72 105
	KORBAN	103
<u>s</u>	SABBATICALS	64, 69, 75, 92
	SECURITY	31, 34, 75, 178, 181, 237, 238
	SELF-AWARENESS	232
	SELF-CUSTOMISATION	220
	SELF-LEARNING SELF-PRODUCTION	33, 41, 51, 87 192
	SELF-TEACHING	24
	SENSORY DESKTOP	241, 242
	SENSORY TECHNOLOGY	235
	SHARING 2	3, 24, 29, 32, 36, 46, 50, 52, 128, 132
	SHOKUKIN	22, 31
	SKILLS	24, 35, 48, 52, 54, 39, 63, 64, 92
	SOCIAL ENTREPRISE	
	SOCIAL NETWORKS	157, 159, 165
	SPECIALISATION	20, 22, 51
	STOP ONLINE PIRACY ACT (SOPA SUCCESS) 34, 72, 74, 87, 102, 157, 180
	SUSTAINABILITY	87, 103, 114, 134
	SYNESTHESIA	236, 242, 252, 256
T	TANGIBLE INTERACTION	193, 196, 197

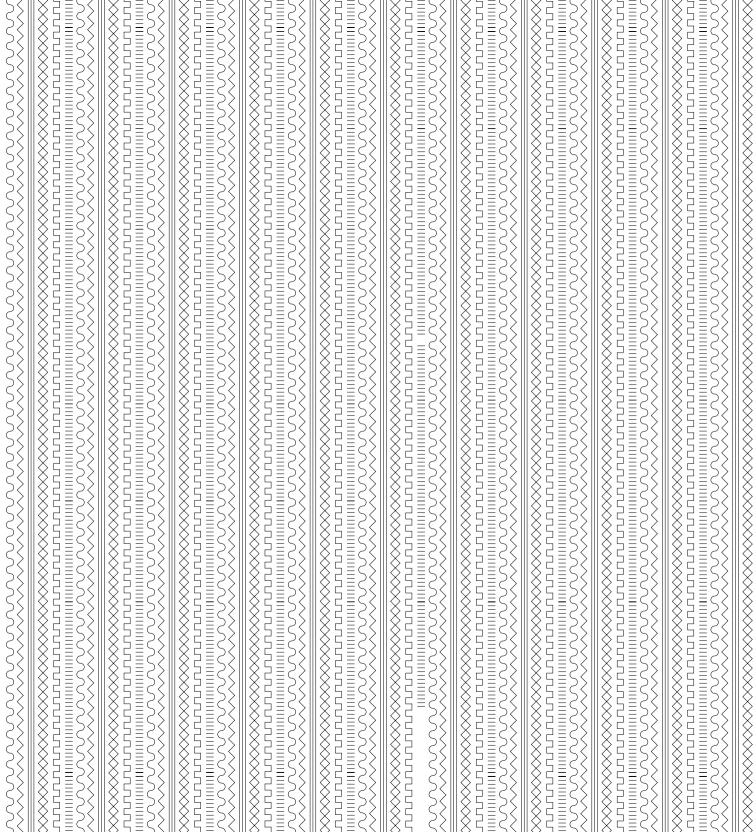
170, 200, 204, 210	TANGIBLE OSER INTERFACES	
32	(TUIS)	
48, 207, 218, 232, 253	TAXONOMY	
103, 127	TRACKING	
146, 177	TIME-BANKING	
235, 244	TINKER	
103, 132, 134, 176	TRANSMEDIA STORYTELLING	
21, 27, 144, 159	TRANSPARENCY	
	TRUST	
	TWEENS	
241		<u>U</u>
243	UMWELT	
174	UNCANNY VALLEY	
102, 103, 106	URBAN DISOBEDIENCE	
102-108	UTOPIA	
	UTOPIANS	
66, 84, 89		<u>v</u>
131, 174, 175, 215, 252, 239	VIRTUAL WORLDS	
	VOICE	
	VOLUNTEERING	
194		W
77	WABI-SABI	
235, 248, 249	WALKABOUT	
27, 52	WEARABLE TECHNOLOGY	
	WORKING SOLUTIONS	

GLOBAL TRENDS 2013

THE REINVENTION ERA









TELEFÓNICA DIGITAL PDI

17



ALWAYS YOU HAVE BEEN TOLD THAT
WORK IS A CURSE AND LABOUR A
MISFORTUNE. BUT I SAY TO YOU THAT
WHEN YOU WORK YOU FULFILL A
PART OF EARTH'S FURTHEST DREAM,
ASSIGNED TO YOU WHEN THAT DREAM
WAS BORN, AND IN KEEPING YOURSELF
WITH LABOUR YOU ARE IN TRUTH
LOVING LIFE

KAHLIL GIBRAN



IVOJ AD SEAL



LASQUR OF LOVE

In the 2012 trend report we established that, in the Project Economy, digital tools are enabling everyone to access information. We discussed the importance of people engaging with information and creating smart curation strategies in order to participate in collective knowledge (see Staccato Culture trend*).

The radical democratisation of information and knowledge creates a lot of user-generated content, a cacophony of points of view. Most people can now form a general opinion about any subject without in-depth study or research. As a result, people will become savvier and pickier with regards to who generates the information

presented to them and will strive to develop new knowledge themselves. In the Re-Invention Era, people will aspire to differentiate themselves by becoming specialists in a particular field. This quest for mastery is already embedded in some cultures, and digital technology will proliferate niche online communities that offer more exposure for specialists.

EXPERTS WILL ENVISION
THEIR PROFESSIONAL LIFE
AS A LABOUR OF LOVE,
WORKING RELENTLESSLY AND
PASSIONATELY TO ACHIEVE
MASTERY IN A SPECIFIC FIELD

There is already evidence that specialist knowledge is growing as a primary source of trusted information. Over the past few years, people's trust has steadily shifted toward experts in a given field and away from corporation and government leaders[1]. People want reliable content based on indepth thought and investigation. There will be increased willingness to pay for specialised content, as already demonstrated by paid content from publications including the New York Times, the Financial Times, and The Economist. The proliferation of expert content will allow people to identify subjects they are truly passionate about and, in turn, differentiate themselves and increase their employment desirability. Digital technology will make it possible for people to develop a "healthy obsession" about a subject, find other like-minded people, share knowledge, self-teach, and uncover new possibilities.





Experts will envision their professional life as a Labour of Love, working relentlessly and passionately to achieve mastery in a specific field. With the increased automation of mundane tasks, companies will rely increasingly on experts to complete specific tasks and projects. In the Reinvention Era, experts will be instrumental to the corporate world. They will raise the quality of work and often complete the job faster than non-specialists. Human capital will become the decisive competitive factor, as specialists will often be the ones reinventing the futures of companies and of their field of expertise. Specialists will be driven by a desire to achieve recognition in their field and will find strategies to build and develop their reputation; this will be the key to monitising their knowledge.

The Reinvention Era will create a favourable context for these specialists, who will contribute to the development of new knowledge, new professions, and new possibilities for companies and society as a whole.

SPECIALISATION WILL BE A LIFE-LONG PROCESS TOWARD ACHIEVING MASTERY

pecialists find their motivation from pushing the boundaries of what is possible in their field. In a world where information is widely available, reinventing knowledge by mastering a field will provide an incredible source of satisfaction and self-worth; it will become a much needed differentiating factor. As exemplified by the **Shokukin** culture in Japan (see Additional Insights),

specialists will relentlessly pursue mastery of their profession or subject. They will invest their time with patient devotion, in contrast with the instant gratification and quick wins that increasingly characterise society. For these specialists, tedious or mundane concepts of work will be replaced by a deeply rooted passion for their profession. They will define themselves through their Labour of Love, which they restlessly strive to master throughout their lives.

As they embark on their quest for mastery, specialists will create new benchmarks for their field by developing a healthy obsession about a given subject. Specialists are hyper-engaged with things that matter to them, sharing their thoughts and ideas with targeted and niche peer networks. Online niche communities – based on collaboration and input from knowledgeable peers – will proliferate due to specialists' ambition to master a specific subject.

Research Gate (see Case Studies) is a current example of these collaborative expert communities. An online social network for scientists from different disciplines, it allows people to share their experiences and learn from other professionals from a variety of fields. These communities are not limited to the elite. They reach the digitally obsessed, regardless of their qualifications, location, or age. Self-taught engineer Jordi Muñoz developed autonomous drones via an online community. Through this specialist community, Jordi built a portfolio demonstrating his abilities and, as a result, received an offer from Chris Anderson (famed Wired Magazine editor) to partner in a new business venture at the tender age of 19. In the Reinvention Economy, specialists will be doers who are driven by self-powered knowledge acquisition. The growing





number of **self-teaching tools** in highly specified subjects (see Case Studies) leaves no excuse for failing to specialise.

Additionally, successful specialists will learn to manage their reputation and identitfy the channels to use for achieving recognition from their peers and potential employers or clients. This will vary depending on the area of expertise, but will be essential for specialists to cut through the noise in the globally connected society. We

IN THE REINVENTION
ERA, SPECIALISTS
WILL HARNESS DIGITAL
TECHNOLOGY TO
FIND, NURTURE, AND
CULTIVATE THEIR
TALENT, CUTTING
THROUGH THE NOISE
AND CREATING A
DEMAND FOR THEIR
SKILLS

are already witnessing the growth of vertical social networks, mostly industry-based such as **Doximity** (health), **Learnist** (education), and **GovLoop** (public sector). It is only a matter of time before more of these specialised social networks appear.

Education will evolve to support the growing demand for specialists, with people from all backgrounds accessing self-teaching tools for rapid knowledge replenishment. According to a recent study^[2], experts believe that the educational system will evolve with a "significant number of learning activities [that] will move to individualised, just-in-time learning approaches [...] Most universities' assessment of learning will take into account more individuallyoriented outcomes and capacities that are relevant to subject mastery. Requirements for graduation will be significantly shifted to customised outcomes^[3]". As a result, students will be able to acquire tools that can help them develop their own knowledge. In the Reinvention Era, specialists will harness digital technology to find, nurture, and cultivate their talent, cutting through the noise and creating a demand for their skills.

SPECHALISTS WILL HELP RESHAPE ORGANISATIONS AND IDENTIFY NEW OPPORTUNITIES

hree important factors will put global competition on the rise: diminishing employment opportunities (unemployment rates for 18 to 29-year-olds are at 50 percent in Spain, 22 percent in the UK, and 8 percent in Germany^[4]), a growing pool of international talent (6.8 million graduates in China this year, and 3.4 million in the USA^[5]), and increasing automation of mundane tasks^[6]. As a result, specialists will be in high demand as organisations struggle to keep up with the increasingly complex and fast-paced digital world, in which competition is tighter based on quality of work, speed, and cost management. Organisations will require the support of specialists, mostly outsourced, to tap into specific opportunities and remain relevant. Human capital will become a top priority for the corporate world. Attracting the best specialised talent will be a key challenge and will require new recruiting strategies.

Companies that focus on supplying experts will thrive. **TopCoder**, for example, provides companies with access to a network of over 300,000 highly specialised developers in more than 200 countries (see Case Studies). These companies enable specialists to retain their autonomy while, in turn, allowing them to work on a variety of challenges and maximise their expertise. Specialists' primary objective is to continue strengthening their knowledge base, which they will achieve by taking on new problems and environments. Assignments will be chosen based on how much they can learn and grow from a project, creating a new challenge for hiring and retaining talented employees. Organisations will need to offer innovative incentives – such as flexible schedules, revenue sharing models, etc. – to attract and maintatin expert employees. Additionally, organisations will have to learn to manage teams of specialists and identify





how to best benefit from their knowledge. It will be necessary for organisations to understand how to cultivate an ecosystem of specialists to have access to the talent required for specific tasks. This will continue transforming the modern office into an open, agile, collaborative, efficient, and result-driven workplace. Traditional hierarchies will be less favorable than lateral, network-style structures.

LABOUR OF LOVE REVEALS
THE DEMOCRATISATION OF
THE ELITE. ORGANISATIONS
AND SOCIETY AS A WHOLE
WILL BENEFIT FROM THESE
SPECIALISTS, WHO WILL
PUSH THE BOUNDARIES OF
KNOWLEDGE AND INNOVATION
IN THEIR FIELDS

In the Reinvention Era, organisations will base their hiring decisions on tangible demonstrations of specialised talent and achievements, not simply on résumés or references. In order to evaluate potential

candidates, organisations will have to stay informed and up to date on the developments across each field of specialisation they require. Additonally, the growing demand for hyperspecialisation will have a positive effect on developing countries due to the emergance of new remote working solutions and hiring platforms. Countries including UAE, Australia, and South Korea are already working to build knowledge-based economies that will eventually lead to a



larger supply of specialised workers^[7]. A great example of the positive power of digital technology is the increasing ability to achieve mastery of a given subject, access new opportunities, and contribute to the knowledge base in a given field regardless of where you come from. Labour of Love reveals the democratisation of the elite. Organisations and society as a whole will benefit from these specialists, who will push the boundaries of knowledge and innovation in their fields.

3

- Edelman, Global Trust Barometer 2012, www.trust.edelman.com; "Global Trust in Institutions and Business Down, but Trust in Peer and Experts Up", by Corporate Excellence-center for Reputation Leadership, 2012.
- Pew Internet study about what higher education will look like by 2020, (HTTP://www.pewinTERNET.ORG/ REPORTS/2012/FUTURE-OF-HIGHER-EDUCATION/OVERVIEW.ASPX)
- Anderson, Boyles, Rainie, "The future impact of the Internet on higher education, Pew Internet, Washington DC. 2012
- Joel Kotkin, "Are the Millennials the Screwed Generation?", The Daily Beast, 2012
- Jacquelyn Smith, What Employers need to know About the Class of 2012, Forbes.
- HTTP://WWW.VOXEU.ORG/ARTICLE/
 JOBLESS-RECOVERIES-ANDDISAPPEARANCE-ROUTINE-OCCUPATIONS
- HTTP://WWW.DUBAICITYGUIDE.COM/SITE/FEATURES/INDEX.ASP?ID=7017
- *
 WWW.GLOBALTRENDS.TELEFONICA.COM





PFOPLE

JIRO ONO was born in 1925, left home at the age of nine, and has been making sushi ever since. Jiro is described as a shokunin - a person who embodies the artisan spirit of the relentless pursuit of perfection through his craft. Before cooking



octopus, Jiro used to massage it for up to thirty minutes. He now massages it for forty minutes to give it an even softer texture and better taste. Before a meal at Sukiyabashi Jiro, guests are handed a hot towel, hand-squeezed by an apprentice. The apprentices, who train under Jiro for at least ten years, are not allowed to cut the fish until they practice handling it. One of the older apprentices says Jiro taught him to "press the sushi as if it were a baby chick." Jiro has his own rice dealer whose rice is famous among food gurus for being expertly cooked, fanned, vinegared, and maintained at the perfect temperature. Though Japan has declared him a national treasure, the 85-year-old man

maintains his single goal: "All I want to do is make better sushi." He gets on the train to work from the same spot every day, always tastes his food while he prepares it, and dislikes holidays.



JOHN NESE's favourite place to visit as a child was the soda bottling plant owned by a friend of his father. When he grew up, his love for soda turned into an obsession. Fortunately, he channeled that obsession into his own business, Galco's Soda

Pop Stop, where he sells every imaginable brand and flavor of soda http://www.sodapopstop.com/home.cfm

ANDY KURTZIG and his mother remember early signs of his entrepreneurial talent. As a boy, he sold leftover balloons from a party to children at a nearby park. His mother talked him into staying in school at Berkeley in spite of his plans to follow in the footsteps of Steve Jobs and Bill Gates. He took advantage of his passion



for sharing knowledge and finding the best professionals by creating eBenefits.com, a human resources website. Kurtzig has since founded Pearl.com, a more complex website that matches professionals with people seeking expert advice. As he continues refining the service, qualifications for experts become more rigorous. According to Kurtzig, "it's harder to qualify as an expert than to get into Harvard. Recently the experts have \rightarrow





started reviewing each others' answers". The site is already operating in four languages in 196 countries, with about 140 full-time employees and 10,000 verified experts. Experts' undergo background checks and an eight-step qualification process before being recommended by Pearl.com. Visitors to the website find advice faster and more cheaply than they could on their own, with answers averaging around \$30 and response times averaging 7.5 minutes. Kurtzig reports that the site continues to become more efficient. http://blogs.wsj.com/venturecapital/2012/06/19/andu-kurtzig-raises-25m-to-take-expert-services-online-with-pearl-com



ADDITIONAL INSIGHTS

SHOKUNIN is a Japanese word to describe a person who relentlessly pursues perfection through their craft. One of the essential characteristics of Shokukins is their determination to make something for the joy of making it. They work carefully and beautifully, always stretching the limits of their abilities. The Shokukin attitude is evident in Japan's incredibly delicate designs, their amazing machinery, and even in the pride and perfectionism of cleaning staff. Whether a student, designer, or technologist, the Shokunin spirit increases the drive for innovation, creativity, and perfection. http://www.wordnik.com/words/shokunin

FREDERICK HERZBERG is renowned for his contributions to management and motivational theory. His philosophy focuses on two principal factors that generate satisfaction or dissatisfaction within a work environment: hygiene and motivation. Motivation is based on recognition, advancement, achievement, and the actual work being performed. These factors create a sense of purpose − key to individual satisfiction − that keeps workers both content and motivated. Hygiene, as defined by Herzberg, includes relationships with coworkers, working conditions, company policy, security, and salary. Caring for hygiene is essential to maintaining motivation, which in turn positively →





impacts both the work and the organisation. When not cared for, these hygiene factors weigh negatively on motivation and create dissatisfaction in workers. As an example, salary was believed to be a key factor in selecting one job over another. However, in spite of its importance, a study has revealed that a large majority of people also value other types

of motivators, including a feeling KNOWLEDGE TAXONOMY of advancement, projects (systems, processes, and that relate to their passions, technology for organising inand a variety of other factors formation) is urgently necesdefined by Herzberg. http:// sary based on the explosive en.wikipedia.org/wiki/Frederick Herzberg volume of data made available

by information technology

and the Internet. A taxonomy is a structured set of names and descriptions for consistently organising information and documents (Lambe, 2007). Taxonomies can provide quick access to specific knowledge embedded in documents or information libraries. They are also useful for mapping and categorising tacit knowledge embedded in staff expertise. They promote collaboration and sharing between parts of an organisation through mapping and coordination. Additionally, they serve to convert knowledge into action by creating a common vocabulary and working methodology for an entire organisation. http://www.odi.org.uk/publications/5753-knowledge-taxonomies-literature-review http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinionfiles/7123.pdf

BLOOM'S TAXONOMY was created primarily for academic education, but it is relevant to all types of learning. Bloom believed that education should focus on "mastery" of subjects and the promotion of higher forms of thinking rather than a simple, utilitarian transfer of facts. He demonstrated decades ago that most teaching methods were focused on the transfer of facts and information recall (the lowest level of education) rather than meaningful personal development. This remains a central challenge for educators and trainers in modern > times. Much corporate training is also limited to cold, non-participative transfer of knowledge (boring powerpoint presentations), which is reason enough to consider the breadth and depth of the approach in Bloom's model.

http://en.wikipedia.org/wiki/Bloom's Taxonomu

SELF-LEARNING has been shown to be more effective than traditional lecturing. According to Michael Karnjanaprakorn, cofounder of the Skillshare (www.skillshare. com) community marketplace for peer-topeer offline classes, "The education paradigm of the future is all about the doers, not the academics or theorists. A paper degree will not stand a chance against actions. Start your own company, build a website, organise an event, get a side project, and you'll make it. The accreditation of today is a powerful hybrid of tangible evidence of hands-on learning and social proof. Those who 'course correct,' so to speak, and let their passion and personal interests drive their self-powered knowledge acquisition, will succeed because of the portfolios of evidence they'll naturally build as they learn by doing. Those who mentor and partner with them will endorse their credibility and provide the final link of trust." http://www.fastcoexist.com/1679315/does-the-online-education-revolution-mean-the-death-of-the-diploma

INFOGRAPHIC

http://www.udemy.com/blog/self-learning-the-new-masters-degree-infographic/ http://www.udemy.com/blog/ self-learning-the-new-masters-degree-infographic/





GLOBAL HOME EDUCATION CONFERENCE

2012: Homeschooling is the fastest-growing form of basic education, and parents have raised the concern that governments around the globe place heavy restrictions on homeschooled children. In fact, only a handful of democratic countries have legalised homeschooling. The GHEC is a new, international organisation of parents who advocate for homeschooling based on scientific evidence that validates the importance

of this alternative form THE RISE OF THE MICRO of education in society. http://www.ghec2012.org/cms.

HOMESCHOOLING

While many parents and teachers argue that ing in important social development, recent data proves this to be false. According to the National Home Education Research Institute, students educated at home are often more socially engaged in family events and community gatherings than their peers. They exhibit "healthy psychological, emotional, and social development. and success in adulthood." www.examiner.com, Ryan Arciero, National Home Education Research Institute.

ENTREPRENEURSHIP

ECONOMY: Throughout the USA, Europe, and Australia, discontented workers are leaving behind the "security" of a corporate homeschooling prevents job in favor of jobs related students from participat- to their passions. The media has deemed this new behaviour "the Rise of the Creative Class", or the "Freelance Economy". The new economy is defined by the empowerment of individuals through technology. Jamie Wong, "The Rise of the Micro Entrepreneurship Economy" http://www.fastcoexist. com/1679903/the-rise-of-the-microentrepreneurship-economu

MASSIVE OPEN ONLINE COURSES FUTURE OF WORK

or "MOOCs", are a new development REPORT (2012): from an increasing number of top Companies are changschools and shrewd entrepreneurs ing their internal aimed at teaching the world for free structure to allow for via digital technology. From edX at the rapid assembly MIT and Harvard to Coursera at of interdisciplinary Stanford, these online courses are teams that are tailorstirring up the educational sector, made to solve specific

http://www.onlinecolleges.net/2012/07/11/ the-world-of-massive-open-online-courses

problems. This style of project-oriented workflow requires a

new type of relationship between employers and employees, including the ability to quickly match workers and projects by skill set. Social tools are emerging that permit workers to paint a more accurate picture of their own professional skills and personal interests. In turn, employers and like-minded collaborators can quickly identify people with the desired skills and form dynamic collaborations. http://www.psfk.com/2013/01/ skills-marketplace-job-trends.html?utm_medium=referral&utm_source=pulsenews

REPUTATION METRICS incentivise scientists to share their work openly, and will also play a role in changing science in a number of ways:

BETTER PEER REVIEW. Right now the peer-review system takes 12 months to complete, and surfaces the opinions of only two scientists whom may be biased, uninformed about the subject matter, or just in a bad mood when writing the review. Reputation metrics will bring about a system where opinions are surfaced from the entire scientific community, and in real time. A mathematician who sees an incorrect theorem in a paper will rush to publish a refutation by 6pm in order to earn the reputation metrics related to the insight. INSTANT DISTRIBUTION. Reputation metrics will incentivise scientists to share their work instantly, rather than accepting publication lags of 12 months.



DATA SETS AND OTHER CONTENT FORMATS. Historically, papers have been the standard method for sharing data, because the journal publications were the only reputation metric – and journals only publish papers. There was previously no outlet for publishing data sets, code, videos, and other types of scientific output. Seventy-five percent of the world's scientific data is never shared because there are no incentives to encourage sharing it. New reputation metrics will provide the necessary incentives.

http://techcrunch.com/2013/02/03/the-future-of-the-scientific-journal-industry

FACTS

EXPECTATIONS

•

Manufacturing is increasingly high-tech, from the factory floor to the back offices where big data experts will be analyzing trillions of bytes of data from machinery, products in the field, and consumers.

The global supply of high-skill workers is not keeping up with demand, and the McKinsey Global Institute projects a potential shortage of more than 40 million high-skill workers by 2020. Aging economies, including China, will face the greatest potential gaps. [1]







ATTITUDES TO WARDS EMPLOY MENT

The big idea: Age of hyperspecialisation, "Just As people in the early days of industrialisation saw single jobs transform into many jobs, we will now see knowledge - worker jobs: salesperson, secretary, engineers, etc. these will automise into complex networks of people all over the world performing highly specialised tasks." [2]

"Occupations requiring post-secondary degrees will be among the fastest growing between 2010 And 2020". [4]



4.1 M workers were self-employed this past year, according to the office for national statistics, and millions of others supplement their income with freelance work. $^{[5]}$

In 2012: 54% of college graduates expected to have 2 - 5 employers

In 2012: 54% of college graduates expected to have 2 - 5 employers in their lifetime vs. 25% expecing to have 6 + employers. In 2008: 75% expected 2 - 5 employers vs. 10% that expected 6 + . [5]



Career progression is the top priority for millennials in choosing an employer at 52% compared to 44% who chose salary. [5]

.....

74% of millennials workers currently are either actively searching for a new job or open to new opportunities. This creates great opportunities for connecting like-minded employers and employees. [5]

Millennials expect to keep on learning as they enter the work place; they spend a large portion of their time gaining new experiences and absosrbing new information. 35% listed excellent training and development programs as the top benefit an emplo yer could offer. [5]

Almost 40 percent of employers say a lack of skills is the main

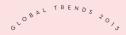
reason for entry-level vacancies. [6]

Half of youth are not sure that their postsecondary education

has improved their chances of finding a job. [5]

Millennials relish the opportunity to engage, interact, and learn from senior management. [5]

(ABOUR OF LO



76% said they enjoy working with senior management. [5]



In the recent years there has been a rise of professional bloggers, people that write well about what they know, in extensive detail. The goal of 70% of bloggers is to share their expertise or main interest. 61% are personally satisfied when blogging, and the primary influence is other experts and/or bloggers. [7]

Millennials feel constrained by what they see as traditional, outdated working practices. 65% said they felt that rigid hierarchies and outdated management styles failed to get the most out of younger recruits, and 46% believed that their managers did not always understand the way they use technology in their work. [5]

However, 38% stated that older senior management did not easily relate to younger workers, and 34% felt that their personal drive could be intimidating to older generations: 38% men and 31% women. ^[5]

The rise of micro-entrepreneurship platforms and contribution to a do-it-yourself economy. startups (etsy, Airbnb, taskrabbit, & uber) have catapulted from niche followings to household standards. And a handful of "newbies" including Skillshare (education), Loose Cubes (coworking), Getaround (cars), RelayRides (cars), and Vayable (tour and activities) are also growing month by month. [8]

SELF-LEARNING



12 million college students currently take one or more online courses. That number is expected to exceed 22 million in 5 years. [10]

Udacity

From Stanford has 14 free, university -level courses. They include artificial intelligence, intro to computer science, etc. $^{[n]}$

"Students will want to learn from whoever is the best teacher."

"The key is to make education logical." [11]



Udemy

Offers 4653 courses (prices Has 45 million unique visitors ranges from free to \$29+) and 25, 000 lectures. 160,000 problems per day and viewed people from 190 countries have all 3,400 published free videos registered. Particiants created courses (from K-12, SAT prep, Facebook pages for online GMAT prep, and collegediscussions and volunteers level subjects) over 200 translated the information to million times. The videos were 44 languages. [11]

edX

Offers MIT. Harvard, and Berkeley classes for free online, and will soon add courses from Georgetown and Wellesley University, edX (non-profit startup by Harvard and MIT) Coursera had 370,000 students enroll in 198 free college courses. their first official courses during the Fall 2012 semester. [11]

Khan Academy

who solved more than 2 million translated into 24 different languages by volunteers, and have become an official part of more than 20,000 classrooms around the world. [12]

.....

2,064,703 people have joined Coursera since it was founded in January 2012; it is growing faster than Facebook. [11]

The Education Focus Report by OECD shows that, based on current trends in higher education, the educated population among the OECD countries (Spain, Chile, and Canada, among others) will grow by at least 40%. This report also points out that these numbers do not necessarily reflect the efforts other countries are making in order to cultivate the talent pool among young citizens. [13]

China increased from 830,000 graduates in 1998 to 6.8 million in 2012. [13]

By 2020, 4/10 graduates in the world will be from China and India.[13]

The US is targeting a 60% increase, and China is working toward at least 20% of the whol epopulation (equal to the entire projected 2020 population of 25 to 64-yearolds in the US). [13]



60% of people surveyed believe higher education in 2020 will be guite different than today. There will be mass adoption of teleconferencing and distance learning to leverage expert resources. Significant numbers of learning activities will move to individualised, just-in-time learning approaches. [14]





- 1 Manufacturing the future: The next era of global growth and innovation, 2012 by McKinsey & Company
- 2 Harvard Business Review, Thomas Malone,
- **3** Jamie Wong, fastcoexist.com, The rise of the micro entrepreneurship economy, 2012
- 4 According to the US Bureau of Labor Statistics.
- **5** pwc.com, 2011, Millennials at work: Reshaping the workplace)
- **6** Source: Education to Employment: Designing a System that Works by McKinsey, 2012
- 7 Technorati's State of the Blogosphere series chronicles the rise and evolution of the Blogosphere as we know it
- **8** www.fastcoexist.com, The rise of Micro-Entreperneurship economy, 2012
- 9 Michael Noer, Forbes, 2012, "One man, one computer, 10 million students: How Khan Academy is reinventing education"
- **10** Edudemic.com, Surprising facts about technology use in college.
- 11 "Going the distance: Online Education ib the USA", 2011, anewodmain.net/2012/08/07/ online-education-takesoff-infographic/
- 12 Michael Noer, Forbes, 2012, "One man One computer, 10million students: How Khan Academy is Reinventing Education"
- 13 Global Post, Benjamin Carlson, 2012 14 Technorati's State of the Blogosphere
- 14 Technorati's State of the Blogosphere series chronicles the rise and evolution of the Blogosphere as we know it.

CASE STUDIES

SPECIALIST EMPLOYMENT PLATFORMS

TOPCODER — is the world's largest platform for open digital innovation. They provide a platform and a global community of over 425,000 members (software developers, algorithmists, and digital designers) to accelerate the development of new digital products and services for clients – Fortune 1000 enterprises, small and mid-sized businesses, and government agencies. People can join the platform simply to share digital and technological knowledge, but the option also exists to propose a project for the community to collaborate on. In this way, the person proposing the new project becomes a manager, delegating the project to the TopCoder community. TopCoder assigns a "co-pilot" to help guide the project within the platform.

<u>PEARL.COM</u> — offers one-on-one online conversations with verified professionals from a broad spectrum of fields. The objective is for people to save time and money on doctor visits, trips to the mechanic, tech support, etc. Pearl.com is a revolutionary new way to help solve life's everyday issues. http://info.pearl.com/how-it-works





NICHE ONLINE COMMUNITIES

RESEARCH GATE — is an online social network for scientists from different disciplines. It permits members to share experiences and learn from other professionals from a variety of fields. The website is constantly evolving and has recently topped 2 million members.

SQUIDOO - is an online platform where people can create pages to share their interests, experiences, and knowledge. The majority of the pages are aimed at sharing expert knowledge about a variety of subjects (especially craftrelated: cooking, knitting, jewelry, cars, etc.). Using the concept of "lenses" to "snap your point of view into focus". people have the opportunity to learn from each other, share knowledge about a subject, and create an atmosphere where everyone is both teacher and pupil. Members also have the opportunity to generate revenue through their craft. As an incentive for becoming experts and continuing to learn, people can generate more revenue and web presence based on the amount of people that sign up as "lensmasters" under their lenses. Squidoo is not a new website, but they continue evolving and growing with a recent increase of 13% in just one month.https://www.squidoo.com

<u>COGNOSCENTI</u> — is a website that encourages "contributors" to share in-depth knowledge about their field and generate learning and discussion among readers. Entries range from expert essays to personal musings on topics spanning politics, health, technology, and many more. http://cognoscenti.wbur.org/http://www.youtube.com/watch?feature=player_embedded&v=4mWll9Y9J74

ONLINE LEARNING MARKETPLACES

FLOQQ - is the first online learning marketplace for the

Spanish-speaking market. Anyone can share knowledge by creating a course on Floqq. Instructors choose which teaching format(s) they want to use: physical on-site courses, online courses, or video courses. Students can choose from a wide range of subjects – some very practical and others more specialised – including: business & entrepreneurship, academics, the arts, health & fitness, language, music, technology, games, and more. Floqq is finalising a crowdfunded documentary #Paroo about new forms of Labour Recycling Human Resources. According to Floqq, certain professions and sectors linked to new technologies were not affected by the economic crisis and should be promoted. http://www.floqq.com/ http://vimeo.com/54302732



COURSERA — is a for-profit educational technology company. Coursera currently offers over 200 free courses consisting of video, multiple-choice tests, and computer-graded exercises. Some courses also include peergraded papers combined with social features like discussion forums. Coursera partners

with various universities to make online courses available for free to a large audience. As of November 2012, more than 1,900,241 students from 196 countries had enrolled in at least one course (although only "hundreds of thousands" had attended courses and completion rates were at 7-9% according to a Daphne Koller interview with Knowledge@Wharton). The website provides free online courses in computer science; healthcare, medicine, and biology; society, networks, and information; humanities and social science; mathematics and statistics; and eco-





nomics, finance, and business www.coursera.org

COURSE HERO — Hosts an open platform for Premier Members to share and access a variety of user-uploaded documents to supplement their current studies. Resources include class notes, study guides, and practice problems. http://www.coursehero.com/

VIDEO http://www.youtube.com/watch?feature=player_embedded&v=CEaTk9q6gCw

ACHIEVEMENT TRACKING

LEARN27 — has created an enterprise e-learning solution that weaves together social interaction and education to keep workers up to date on desirable new skills and track their learning goals. With a social platform for workers to exchange knowledge, colleagues are able to take advantage of the diverse and dynamic knowledge base within their company. Coursework is available across web and mobile platforms for on-the-go and remote workers. Companies can also create a virtual academy to provide courses about specific subjects. http://www.psfk.com/2013/01/learn27-e-learning.html

OPEN BADGES — is a Mozilla Project that allows workers to visually depict their skills and share throught social media. The program lets workers accumulate badges in two ways: (1) as they master specific skills taught by a variety of badge issuers, including online learning programs, job training programs, and the peer-



to-peer learning platform Skillshare, or (2) when peers, co-workers, or supervisors vouch for someone's soft skills, such as the ability to work in teams and communicate. Displaying skills and achievements that fall outside of

traditional education, the cross-platform award system provides workers a new way to depict their capabilities. http://www.openbadges.org/en-US/

FOLLOWER COUNTS — fulfills an increasing demand for scientists seeking direct, unmediated relationships with their audiences. Twitter, Facebook, and similar sites have put content-creators directly in touch with their audiences, and scientists are seeking similar direct relationships with their readers. Scientists' personal brands are starting to eclipse the status previously held by journals; follower counts help a scientist understand the growth of their personal brand. http://techcrunch.com/2013/02/03/the-future-of-the-scientific-journal-industru/

MATCHMAKING SERVICES

<u>COFOUNDERSLAB</u> — is a matchmaking service aimed at connecting entrepreneurs interested in starting new ventures. CoFoundersLab has created the largest online community of entrepreneurs looking for partners, with Meetups (www.meetup. com) in 15 startup-friendly cities. After creating a profile, members are matched according to complementary skills, compatible personalities, similar goals, and harmonious values. The teambuilding platform accelerates the startup process and extends entrepreneurial networks beyond an individual's existing social network. One startup has reached \$2.7 million in seed funding through CoFoundersLab. https://www.cofounderslab.com/

<u>BRIGHT</u> — is a matchmaking service that has released a new "Friends with Opportunities" feature, which uses Facebook to connect job-seekers to openings at companies where their friends already work. Built on the premise that most hiring takes place as an extension of social connections, Friends with Opportunities transforms Facebook – a platform not originally designed with the job market in mind – into a tool





for connecting employers to like-minded employees. Over 98,000 people searching for work use this feature to focus more clearly on companies that fit their personality. http://www. bright.com/

UPMO – is the social network that profiles past and present professional lives, offering profiles that show possible career options within a current company along with outward mobility options. By sharing data available on their LinkedIn profiles, workers are able to receive scores based on their chronicled career milestones and current estimates of present-day demand in the job market. Conversely, human resource managers are able to integrate information from their systems to better match available candidates with opportunities that are developing at their company. UpMo hopes to facilitate a more optimal worker-placement process by helping workers map their aspirations and matching them to human resource needs.

http://www.upmo.com/ http://www.psfk.com/2013/01/upmo-worker-mobility.html

LIFE DECISION-MAKING SERVICES

SOKANU — is a career platform with a single mission: connect every person with the career they are meant to have. Sokanu functions like a modernised version of the job-aptitude tests common in schools. As you provide more and more information about yourself, the site's algorithm is able to show how well your values overlap with different career paths. http://www.sokanu.com/

SENTIO SEARCH INFOGRAPHIC - is a video about descision making. It explores how people make decisions in order to be happy, and how the Internet is used to help make or support those decisions. Evidence shows that people end up dissatisfied with the results and regret decisions after making them. Sentio provides experts, or "surrogates", to help improve decisions and, in turn, increase happiness. http://www.youtube.com/watch?v=2CMzc7ryO2g

IMPLICATIONS FOR TELEFÓNICA

ATTRACTION AND MANAGEMENT \sim Present our organisation OF SPECIALISTS in a way that is attractive and compelling for specialists, offering relevant rewards and incentives to manage and retain them. Recognition will be more important than reputation.

ORGANISATIONAL STRUCTURE \sim Evaluate the impact of working with senior specialists with no headcount as opposed to generalist managers with large teams.

TALENT MANAGEMENT

 \sim Offer ways for employees to specialise within the company. For example, develop self-learning platforms to promote specialisation among employees and increase expertise.





EVALUATION TOOLS \sim Create evaluations that track and reward specialised accomplishments and increased knowledge.

PROJECT MANAGEMENT \sim Quickly match workers' skills to specific projects (requires new systems and processes). For example, an internal search engine could be created to matching services and skills among employees.

SPECIALIST KNOWLEDGE \sim Increase the sharing MANAGEMENT of expertise and improve the overall organisational and collective knowledge. Find ways to recognise and incentivise specialists for sharing knowledge.

IMPROVED REMOTE WORKING \(\square\) Provide tools for easier. **SOLUTIONS** more effective collaboration with experts, regardless of location.

IMPORTANCE OF BUILDING **RELATIONSHIPS WITH** COMMUNITIES OF SPECIALISTS AND

WITH SUPPLIERS OF SPECIALISTS

IMPORTANCE OF KEEPING TRACK OF NEW PROFESSIONS AND UNDERSTANDING HOW THEY CAN BENEFIT OUR **ORGANISATION**

BETTER ACCESS TO THE BEST \sim Ensure that we know how **SPECIALISTS** to identify specialists and that we are able to work with them (importance of rethinking our internal system and processes).

SPECIALIST COMMITTEES \sim Create expert groups to provide support on specific issues or projects.





IMPLICATIONS FOR TELEFONICA 52

55



ADDITIONAL SOURCES

Greene, Robert: Mastery, 2012

Coyle, Daniel: The Little Book of Talent: 52 Tips for Improving Your Skills, 2012

Gladwell, Malcolm: Outliers: The Story of Success, 2011

 Shenk, David: The Genius in All of Us: New Insights into Genetics, Talent, and IQ, 2011

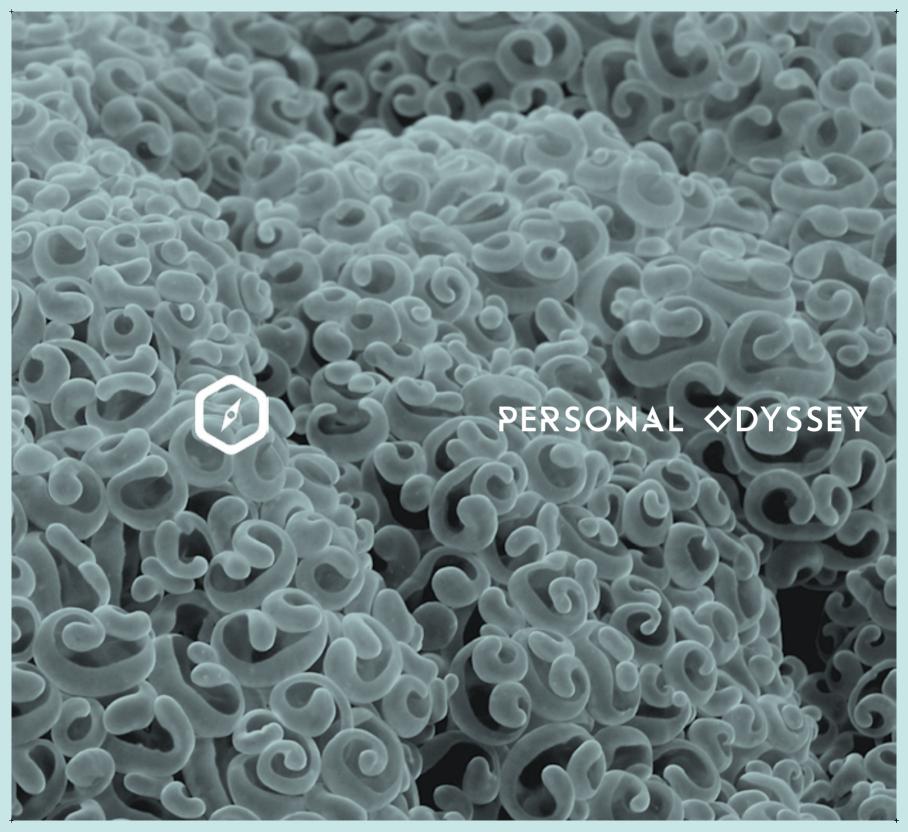
Coyle, Daniel: The Talent Code: Greatness Isn't Born. It's Grown. 2010

 ∞ Evans, Robert: Rethinking Expertise, 2009

Wright, Alex, Glut: Mastering
 Information Through The Ages, 2007

~ Leonard, George: Mastery: The Keys to Success and Long-Term Fulfillment, 1992

55	555	55	55	555	555	555	55	55	555	555	555	55	555	55	55'	555	55	555	55'	559	5555	55	555	555'	555	55'	555	55'	5555	555
SS	555	55	55	550	555	555	55	55	555	550	555	55	554	55	55	555	55	555	55'	559	5555	55	550	555'	559	55'	555	SS	5555	555
55	SSS	55	55	SSC	5559	555	555	555	555	SSC	555	555	SSC	555	SS'	555	55	ςςς	555	SS°	5555	555	559	555'	ςςς	555	SSS	SS'	SSSS	555
$\leq \leq$	$\leq \leq \leq$	$\langle \zeta \zeta \rangle$	$\leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta$	$\langle \langle \langle \langle \langle \rangle \rangle \rangle \rangle$	$\langle \zeta \zeta \zeta \rangle$	$\zeta\zeta\zeta$	$\leq \leq \leq$	$\leq \leq \leq$	$\langle \zeta \zeta \zeta \rangle$	$\zeta \zeta \zeta$	$\zeta \zeta \zeta$	$\langle \zeta \zeta \rangle$	$\leq \leq 0$	$\leq \leq \leq$	$\leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\zeta\zeta\zeta$	$\leq \leq \leq \leq$	$\zeta \zeta \zeta$	$\langle \langle $	$\leq \leq \leq '$	$\zeta \zeta \zeta$	$\langle \zeta \zeta \rangle$	$\leq \leq \leq$	$\leq \leq 0$	$\leq \leq \leq \leq$	SSS
$\leq \leq$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\langle \langle \rangle$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \zeta \langle$	$\langle \langle \langle \langle$	$\langle \langle \langle \langle$	$\zeta \zeta \zeta$	$\langle \langle \langle \langle$	$\zeta \zeta \zeta \zeta$	$\langle \zeta \zeta$	$\langle \zeta \zeta \zeta \rangle$	$\langle \langle $	$\langle \zeta \zeta \rangle$	$\zeta\zeta'$	$\leq \leq \leq$	$\zeta\zeta$	$\zeta \zeta \zeta$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	<<<<	$\langle \zeta \zeta$	$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	<<<	$\langle \langle \langle \rangle \rangle$	<<<<	$\zeta \zeta \zeta \zeta$
<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\langle \langle \rangle$	$\zeta\zeta$	$\langle \langle $	$\frac{1}{2}$	$\langle \langle \langle \langle$	$\langle \zeta \zeta$	<<<	$\zeta\zeta\zeta$	$\langle \langle \langle \langle \rangle \rangle$	$\langle \zeta \zeta \zeta \rangle$	$\langle \langle \langle \langle \langle \langle \rangle \rangle \rangle \rangle$	$\langle \langle \langle \langle \rangle \rangle$	$\zeta\zeta'$	<<<	$\langle \zeta \zeta \rangle$	$\langle \langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	<<<<	$\langle \zeta \zeta \zeta \langle$	<<<	222	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\langle \langle \langle \langle$	$\zeta \zeta'$	<<<<	$\zeta \zeta \zeta \zeta$
ے کے	222	ر کر (ے کے	220	,	ے کے کے	ر ر	777	ے کے کے	220	ے کے ر	، کے ک	220	ے در	ر کے ک	ے کے کے	ے کے ا	ے کے د	رے کے ر	220	222	، کے ک	ے کے کے	، اے اے ا	220	ا کے کے ا	ے کے ک	، کے ک	كككك	'222
2 ح	ح ح ح	7	22	22	722	ے د د	ر د د	722	ح د د	22	ح د د	، ح ح	ے کے کے	ررر	22	ح ح د	ے ج	ے کے کے	77,	22	ح ح ح د	، ح ح	ے د	, ح د د	ے کے کے	ر ح د	ے کے کے	22,	حرجرج	'222
$\geq >$	222	$\langle \zeta \zeta \rangle$	$\geq \geq$	222	$\langle \zeta \zeta$	$\zeta \zeta \zeta$	$\langle \zeta \zeta \rangle$	$\langle \zeta \zeta \zeta \rangle$	$\langle \zeta \zeta$	222	$\langle \zeta \zeta$	$\langle \zeta \zeta \zeta \rangle$	$\supset \supset \subset$	$\langle \zeta \zeta$	22	$\supset \supset \supset$	$\langle \rangle \rangle$	$\geq \geq >$	$\rangle\rangle\rangle$	22,	\leq	$\langle \zeta \zeta \rangle$	$\supset \supset \subset$	>>>	$\geq \geq >$	$\langle \zeta \zeta \rangle$	$\geq \geq \geq$	22,	\leq	522
$\geq >$	$\geq \geq \geq$	$\langle \langle \langle \langle \rangle \rangle$	$\geq >$	$\geq > >$	$\rangle\rangle\rangle\rangle$	$\supset \supset \supset$	ンシン	$\langle \langle \langle \langle \rangle \rangle \rangle$	こうさ	$\geq >$	こうさ	$\langle \zeta \zeta \rangle$	$\geq \geq >$	$\langle \langle \langle \langle \rangle \rangle$	$\geq >$	ングラ	$\langle \rangle \rangle$	$\geq \geq >$	$\rangle\rangle\rangle$	$\geq >$	ングラン	$\rangle\rangle\rangle$	$\rangle\rangle$	>>	$\geq \geq >$	$\rangle\rangle\rangle$	ンシン	$\geq >$	ングシグ	$\langle \rangle \rangle \rangle$
>>	>>>	$\langle \langle \langle \langle \rangle \rangle$	>>	>>>	>>>	$\supset \supset \supset$	$\langle \langle \langle \rangle \rangle$	$\langle \zeta \zeta \rangle$	$\langle \langle \langle \langle \rangle \rangle$	>>>	$\langle \langle \langle c \rangle \rangle$	$\langle \zeta \zeta \rangle$		$\langle \langle \langle \langle \rangle \rangle$	>>)	$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	55	>>>	ラララ	>>;	>>>>	$\langle \zeta \zeta \rangle$		こううじ	>>>) > >)	>>>	>>'	ころろう	>>>
55	555	55	55	555	555	555	55	55	555	555	555	55	555	55	55'	555	55	555	55'	55	5555	55	555	555'	555	55'	555	55'	5555	555
SS	555	55	55	559	555	555	55	SSS	555	SSC	555	SS	SSC	55	55	555	55	ςςς	55'	SS	5555	55	550	555'	ςςς	55'	SSS	SS	5555	555
$\leq \leq$	$\zeta\zeta\zeta$	555	SS	$\zeta\zeta\zeta$	SSS	$\leq \leq \leq$	555	SSS	SSS	$\zeta\zeta\zeta$	555	SSS	$\leq \leq \leq$	555	SS	$\leq \leq \leq$	55	$\zeta\zeta\zeta$	555	$\leq \leq c$	$\leq \leq \leq \leq$	SSS	SSC	555'	$\zeta\zeta\zeta$	SSS'	$\leq \leq \leq$	SS'	$\leq \leq \leq \leq$	555
$\leq \leq$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta$	$\langle \langle \langle \langle$	$\langle \langle \langle \langle$	$\langle \zeta \zeta$	$\leq \leq \leq$	$\langle \langle $	$\langle \zeta \zeta$	$\langle \zeta \zeta$	$\langle \langle $	$\langle \zeta \zeta \rangle$	$\zeta \zeta'$	$\leq \leq \leq$	$\leq \leq$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	<<<<	$\langle \zeta \zeta$	$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	$\langle \langle \langle \langle \rangle \rangle$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\leq \leq \leq$	$\leq \leq c$	<<<<	$\zeta \zeta \zeta \zeta$
<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\langle \langle \rangle$	$\langle \langle $	$\langle \langle \langle \langle \langle \langle$	<<<	$\langle \zeta \zeta \zeta \rangle$	$\langle \zeta \zeta$	<<<	$\zeta\zeta\zeta$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \zeta \rangle$	<<<	$\langle \langle \langle \langle \rangle \rangle$	$\zeta\zeta'$	<<<	<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	<<<<	$\langle \zeta \zeta$	<<<	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle $	$\langle \langle \langle \langle \rangle \rangle$	<<<	$\langle \langle \langle \rangle \rangle$	<<<<	$\zeta \zeta \zeta$
22	222	25	22	220	222	$\frac{1}{2}$		777	222	220	777	۲۲)	220	, , ,	22	222	77	222	22	220	2222	22	$\frac{1}{2}$	722	222	,77,	222	2	2222	777
ر ر	نے دے دے	ر ر	ے ح	ے کے کے	ے د	ے د د	כ כ נ	, 22	כ כ כ	ے کے کے	ر ر ر	، ح ح	ے کے کے	ر ر ر	ے کے	כ כ כ	رح د ا	ے کے کے	, ر ر	ے کے	ה כ כ כ	، د د	ے د د	ן כ כ נ	ے کے کے	ן כ כ נ	ر ر ر	، ح ح	رررر	יכ כ כי
22	222	77	22	ے کے کے	777	ے ح د	ح ح د	777	ح ح د	222	ح ح د	722	ے ح ح	ررر	22,	ح ح د	رح ج	222	77	22,	ح ح ح د	77	ے ح د	, ح ح د	ے کے کے	777	222	22,	حرحرد	522
22	222	$\leq \leq 0$	$\geq \geq$	222	$\mathcal{I} \mathcal{I} \mathcal{I} \mathcal{I} \mathcal{I} \mathcal{I} \mathcal{I} \mathcal{I} $	$\zeta \subset C$	> $>$	777	\leq	222	$\langle \zeta \zeta$	$\langle \zeta \zeta \zeta \rangle$	222	$\langle \zeta \zeta$	22	>>>	22	222	$\rangle\rangle\rangle$	22	>>>>	$\langle \zeta \zeta \zeta \rangle$	$\supset \supset \subset$	> > >	222	$\langle \zeta \zeta$	> $>$ $>$	22,	7777	522
$\geq >$	$\geq \geq \geq$	$\langle \langle \langle \langle \rangle \rangle$	$\geq >$	$\geq > >$	$\rangle\rangle\rangle\rangle$	$\supset \supset \supset$	\gt	$\langle \langle \langle \langle \rangle \rangle \rangle$	ングラ	>>>	$\langle \zeta \langle c \rangle$	$\langle \zeta \zeta \rangle$	$\geq \geq >$	$\langle \langle \langle \langle \rangle \rangle$	$\geq >$	$\supset\supset\supset$	$\langle \rangle \rangle$	$\geq \geq >$	$\rangle\rangle\rangle$	$\geq >$	ングシン	$\langle \zeta \zeta \langle \zeta \rangle$	$\supset \supset \supset$	>>	$\geq > >$	$\langle \zeta \zeta \zeta \rangle$	$\geq \geq \geq$	$\geq >$	ンシシシ	$\langle \rangle \rangle \rangle$
$\geq >$	>>>	$\langle \langle \langle \langle \rangle \rangle$	>>	$\geq > >$	$\rangle\rangle\rangle\rangle$	$\supset \supset \supset$	\gt	$\langle \zeta \zeta \zeta \rangle$	\leq	>>>	$\langle \langle \langle c \rangle \rangle$	$\langle \zeta \zeta \rangle$	>>>	$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	$\geq >$	ングラ	$\langle \rangle \rangle$	$\geq \geq \geq$	>>	$\geq >$	>>>>	$\langle \zeta \zeta \zeta \rangle$		>>	$\sum \sum $	$\langle \zeta \zeta \zeta \rangle$	ンシン	$\geq \geq$	ンシシシ	>>>
55	555	55	55	>>;	>>>	>>>	$\langle \langle \langle \langle \rangle \rangle$	$\langle \zeta \zeta \zeta \rangle$	>>>	555	$\langle \langle \langle c \rangle \rangle$	$\langle \zeta \zeta \zeta \rangle$	>>>	55	22,	$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	55	555	ううう	>>;	>>>>	$\langle \zeta \zeta \rangle$		555'	555	55'	>>>	55	>>>>	555
55	555	55	55	55	555	555	55	55	555	555	555	55	55	55	55	555	55	555	55'	55	5555	55	555	555'	555	55'	555	55	5555	555
55	SSS	55	55	SSC	5559	555	555	555	555	SSC	555	SSS	SSC	555	55	555	55	ςςς	55'	559	5555	SSS	550	555'	SSC	555	SSS	55	5555	555
$\varsigma\varsigma$	$\leq \leq \leq$	555	SS	$\zeta\zeta\zeta$	$\langle \zeta \zeta$	$\leq \leq \leq$	$\langle \zeta \zeta \zeta \rangle$	SSG	SSS	$\leq \leq \leq$	555	SSS	$\leq \leq \leq$	555	SS	$\leq \leq \leq$	55	$\zeta\zeta\zeta$	555	$\leq \leq 0$	$\leq \leq \leq \leq$	SSS	$\leq \leq \leq$	555'	$\zeta\zeta\zeta$	$\langle \zeta \zeta \zeta' \rangle$	$\leq \leq \leq$	$\leq \leq 0$	$\leq \leq \leq \leq$	SSS
$\leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\leq \leq$	$\langle \langle $	$\langle \zeta \zeta$	$\langle \langle \langle \langle$	$\langle \zeta \zeta$	$\langle \zeta \zeta$	$\leq \leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta$	$\langle \zeta \zeta$	$\langle \langle $	$\langle \zeta \zeta \rangle$	$\zeta\zeta'$	$\leq \leq \leq$	$\leq \leq$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	<<<<	$\langle \zeta \zeta$	$\langle \langle \langle \langle \langle \rangle \rangle \rangle \rangle$	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle \langle \langle \langle$	$\langle \zeta \zeta'$	$\leq \leq \leq$	$\leq \leq c$	<<<<	$\leq \leq \leq$
<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\langle \langle \rangle$	$\langle \langle $	$\langle \langle \langle \langle \langle \langle$	<<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta$	<<<	$\zeta\zeta\zeta$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \zeta \rangle$	<<<	$\langle \langle \langle \langle$	$\zeta\zeta'$	<<<	<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\langle \langle $	<<<<	$\langle \zeta \zeta$	<<<	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle $	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle \langle \langle$	$\langle \langle \langle \rangle \rangle$	<<<<	$\langle \zeta \zeta$
$\langle \langle \langle$	$\zeta \zeta \zeta$	(22	$\langle \langle \rangle$	$\zeta\zeta$	$\langle \langle $	$\frac{1}{2}$	$\langle \langle \langle \langle \rangle \rangle$	$\langle \zeta \zeta$	222	$\zeta\zeta\zeta$	$\frac{1}{2}$	$\langle \zeta \zeta \zeta \rangle$	<<<	$\langle \langle \langle \langle \rangle \rangle$	$\zeta\zeta'$	<<<	$\langle \zeta \zeta \rangle$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	<<<<	$\langle \zeta \zeta$	$\frac{1}{2}$	222	$\langle \langle $	$\langle \langle \langle \langle \rangle \rangle$	<<<	$\langle \langle \langle \rangle \rangle$	2222	$\langle \zeta \zeta$
ے کے	222	ر کے (ے کے	220	,	ے کے کے	ے کے ر	777	ے کے کے	220	ے کے ر	، کے ک	220	اے کے د	ر کے ک	ے کے کے	ے کے ا	ے کے د	رے کے ر	220	ے کے کے کے	، کے ک	ے کے کے	، اے اے ا	220	ا کے کے ا	ے کے ک	، کے ک	كككك	'222
ر ر	ن ر ر	ر ر	ے ح	ے کے ر	ے در	ے د د	כ כ י	، ح ح	ر ر ر	22	ر ر ر	، ح ح	ے کے کے	ررر	22	ר כ כ	رح ج	ے کے کے	ر د د	22	י כ כ כ	، ح ح	ے د د	ו כ כ כ	ے کے کے	י כ כ נ	ے د ح	، ح ح	رررر	'כ כ כ
22	225	77	22	223	777	ے ح د	7	777	ح ح د	222	ح ح د	، ح ح	222	77	22,	ررد	رح ج	222	77,	22	ح ح ح د	77	ے کے د	> $>$ $>$ $>$	222	777	222	22,	2222	522
$\geq >$	222	$\leq \leq $	$\geq \geq$	222	$\mathcal{F} \mathcal{F} \mathcal{F}$	$\zeta \zeta \zeta$	$\langle \zeta \zeta \rangle$	777	ζ	222	$\langle \zeta \zeta$	$\langle \zeta \zeta \zeta \rangle$	222	$\langle \zeta \zeta$	22	$\supset \supset \supset$	$\langle \rangle \rangle$	222	$\rangle\rangle\rangle$	22,	>>>>	$\langle \zeta \zeta \rangle$	$\zeta \zeta \zeta$	>>>	222	$\langle \zeta \zeta \zeta \rangle$	222	22	7777	522
$\geq >$	$\geq \geq >$	$\langle \langle \langle \langle \rangle \rangle \rangle$	$\geq >$	$\geq >$	$\rangle\rangle\rangle\rangle$	$\supset \supset \supset$	ンシン	$\langle \zeta \zeta \rangle$	$\langle \zeta \zeta$	222	$\langle \zeta \zeta$	$\langle \zeta \zeta \rangle$	$\supset \supset \subset$	$\langle \zeta \langle \zeta \rangle$	≥ 2	ングラ	$\langle \rangle \rangle$	$\geq \geq >$	$\rangle\rangle\rangle$	$\geq >$	ンクシン	$\langle \zeta \zeta \rangle$	$\supset \supset \subset$	>>	$\geq \geq >$	$\langle \zeta \zeta \rangle$	$\geq \geq \geq$	$\geq >$	ンシシシ	$\langle \rangle \rangle \rangle$
$\geq >$	>>>	$\langle \langle \langle \langle \rangle \rangle$	>>	>>>	>>	$\supset \supset \supset$	ンシン	$\langle \zeta \zeta \rangle$	ころう	>>>	$\langle \langle \langle c \rangle \rangle$	$\langle \zeta \zeta \rangle$		$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	>>)	ンシン	55	$\sum \sum $	>>	>>;	ころろと	$\langle \zeta \zeta \zeta \rangle$		>>)	$\sum \sum $	$\langle \zeta \zeta \zeta \rangle$	ンシン	$\geq \geq$	ンシンシ	>>>
55	555	55	55	555	555	555	55	55	SSS	555	SSC	55	555	55	55	>>>	55	555	55'	553	>>>>	55)	555	555'	555	55'	222	55	>>>>	555
55	555	55	55	555	555	555	55	55	555	555	555	55	55	55	55	555	55	555	55'	559	5555	55	553	555'	555	55'	555	55	5555	555
SS	555	55	55	559	555	555	55	SS	555	SSC	555	SS	SSC	55	55	555	55	ςςς	55'	SS	5555	55	550	555'	ςςς	55'	SSS	SS	5555	555
SS	SSS	55	SS	SSC	5559	555	555	SSS	555	SSC	555	555	SSC	555	SS'	555	55	ςςς	555	SSC	5555	555	55°	555'	SSC	555	SSS	SS'	SSSS	555
$\leq \leq$	$\langle \langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta$	$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	$\langle \zeta \zeta \zeta \rangle$	$\zeta \zeta \zeta$	$\leq \leq \leq$	$\zeta \zeta \zeta$	$\langle \zeta \zeta \zeta \rangle$	$\zeta \zeta \zeta$	$\langle \langle $	$\langle \zeta \zeta \rangle$	$\zeta \zeta'$	$\leq \leq \leq$	$\leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\zeta\zeta\zeta$	$\leq \leq \leq \leq$	$\langle \zeta \zeta$	$\langle \langle $	$\langle \zeta \zeta \zeta' \rangle$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\leq \leq \leq$	$\leq \leq 0$	$\leq \leq \leq \leq$	$\zeta\zeta\zeta$
$\leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\langle \langle \rangle$	$\langle \langle $	$\langle \langle \langle \langle \langle \langle$	$\langle \langle \langle \langle$	$\langle \langle \langle \langle$	$\langle \zeta \zeta$	$\leq \leq \leq$	$\zeta\zeta\zeta$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \zeta \rangle$	$\langle \langle $	$\langle \zeta \zeta \rangle$	$\zeta\zeta'$	$\leq \leq \leq$	<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	<<<<	$\langle \zeta \zeta$	$\langle \langle \langle \langle \langle \rangle \rangle \rangle \rangle$	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	<<<	$\langle \langle \langle \rangle \rangle$	<<<<	<<<
<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\langle \langle \rangle$	$\langle \langle $	$\langle \langle \langle \langle \langle \langle \rangle \rangle \rangle \rangle$	<<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta$	<<<	$\zeta\zeta\zeta$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \zeta \rangle$	<<<	$\langle \langle \langle \langle \rangle \rangle$	$\zeta\zeta'$	<<<	<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	<<<<	$\langle \zeta \zeta$	<<<	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle $	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle \langle \langle$	<<<	$\langle \langle \langle \langle \langle \langle$	$\langle \zeta \zeta$
$\langle \langle \langle$	$\zeta \zeta \zeta$	22.	$\langle \langle \rangle$	$\zeta\zeta$	$\langle \langle $	$\frac{1}{2}$	$\langle \zeta \zeta \zeta \rangle$	$\langle \zeta \zeta$	<<<	$\zeta\zeta\zeta$	$\frac{1}{2}$	$\langle \zeta \zeta \zeta \rangle$	<<<	$\langle \langle \langle \langle \rangle \rangle$	$\zeta\zeta'$	<<<	$\langle \zeta \zeta \rangle$	$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	2222	$\langle \zeta \zeta$	$\frac{1}{2}$	222	$\langle \langle $	$\langle \langle \langle \langle \rangle \rangle$	<<<	$\langle \langle \langle \rangle \rangle$	2222	777
2 ک	222	7	22	220	222	ے کے کے	رے ر	77	ررر	220	ے کے د	، کے ک	220	777	22	ررر	ے ک	220	، ح ح (220	2222	، کے ک		، ے ے د	220	اکاکا	ے کے ک	کے ک	2222	'222
ے ح	ز د ح	رر	ے ح	22	ے د د	ے د د	ر ر	, 22	ررر	22	ر ر ر	، ح ح	ے کے کے	ح د د	22	ررر	ے ج	ے کے کے	ر د د	ے کی	ے د د د	، ح ح	ے د	, ح د د	ے کے کے	, כ כ נ	ے د ح	ے کی	رررر	ے دے دے
22	222	77	22	223	777	ح ح د	77	777	ررد	222	ررد	777	222	77	22,	ررد	22	222	77	22	7777	777	555	> $>$ $>$.	222	777	222	22,	2222	522
$\geq >$	$\geq \geq >$	$\langle \langle \langle \langle \rangle \rangle \rangle$	$\geq \geq$	$\geq \geq 2$	$\rangle \rangle \rangle \rangle$	$\supset \supset \supset$	$\langle \langle \langle \langle \rangle \rangle \rangle$	$\langle \zeta \zeta \zeta \rangle$	$\langle \zeta \zeta$	$\geq \geq 2$	$\langle \zeta \langle \zeta \rangle$	$\langle \zeta \zeta \zeta \rangle$	>>>	$\langle \zeta \langle \zeta \rangle$	≥ 2	ングラ	$\langle \rangle \rangle$	$\geq \geq >$	$\langle \rangle \rangle$	$\geq >$	>>>>	$\langle \zeta \zeta \rangle$	$\supset \supset $	>>	$\geq \geq >$	$\langle \zeta \zeta \rangle$	$\geq \geq \geq$	$\geq >$	ンシシシ	$\langle \rangle \rangle \rangle$
$\geq >$	$\geq \geq \geq$	$\langle \langle \langle \langle \rangle \rangle$	$\geq >$	$\geq > >$	$\rangle\rangle\rangle\rangle$	$\supset \supset \supset$	ンシ	$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	ングラ	$\geq >$	$\langle \langle \langle c \rangle \rangle$	$\langle \zeta \zeta \zeta \rangle$	>>>	$\langle \langle \langle \langle \rangle \rangle$	$\geq \geq$	ングラ	$\langle \rangle \rangle$	$\geq \geq >$	$\rangle\rangle\rangle$	$\geq >$	ングラン	$\rangle\rangle\rangle$	$\rangle\rangle$	>>	$\geq \geq >$	$\langle \zeta \zeta \rangle$	ンシン	$\geq >$	ンシシシ	$\langle \rangle \rangle \rangle$
>>	>>>	$\langle \langle \langle \langle \rangle \rangle$	>>	>>>	>>>	$\supset \supset \supset$	\gt	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle \langle \langle \rangle \rangle$	>>>	$\langle \langle \langle c \rangle \rangle$	$\langle \zeta \zeta \rangle$		$\langle \langle \langle \langle \langle \rangle \rangle \rangle$	>>)	\gt	$\langle \rangle \rangle$	>>>	>>	>>;	>>>>	$\langle \zeta \zeta \zeta \rangle$		>>)	>>>	$\langle \zeta \zeta \zeta \rangle$	>>>	$\geq >$	ンシンシ	>>>
55	555	55	55	555	555	555	55	55	>>>	355	355	55	555	55	55	255	55	555	55'	55	335	55	555	555'	555	55'	555	55'	>>>>	555
55	555	55	55	559	555	555	55	55	555	559	555	55	55	55	55	555	55	555	55'	559	5555	55	55	555'	555	55'	555	55	5555	555
55	SSS	55	55	SSC	5559	555	555	555	3 3 3 3 3 3 3	SSC	555	555	SSC	555	\$\$; \$\$;	555	55	ςςς	555	550		555	559	555'	} } } }	355		SS'	SSSS	555
$\leq \leq$	$\zeta\zeta\zeta$	555	$\leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta$	$\leq \leq \leq$	$\langle \zeta \zeta \zeta \rangle$	$\zeta\zeta\zeta$	$\leq \leq \leq$	$\zeta\zeta\zeta$	355	SSS	$\leq \leq \leq$	$\langle \zeta \zeta \rangle$	$\leq \leq 0$	$\leq \leq \leq$	55	$\zeta\zeta\zeta$	555	$\zeta\zeta\zeta$	$\leq \leq \leq \leq$	$\zeta\zeta\zeta$	$\leq \leq \leq$	555	$\zeta\zeta\zeta$	$\langle \zeta \zeta \zeta' \rangle$	$\leq \leq \leq$	$\leq \leq 0$	$\leq \leq \leq \leq$	SSS
$\leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\leq \leq$	$\langle \langle $	$\langle \zeta \zeta$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \zeta \rangle$	$\langle \zeta \zeta$	$\leq \leq \leq$	$\zeta\zeta\zeta$	$\langle \zeta \zeta$	$\langle \zeta \zeta$	$\langle \langle $	$\langle \zeta \zeta \rangle$	$\zeta\zeta'$	$\leq \leq \leq$	$\leq \leq$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	<<<<	$\langle \zeta \zeta$	$\langle \langle \langle \langle \langle \rangle \rangle \rangle \rangle$	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle $	$\langle \zeta \zeta'$	$\leq \leq \leq$	$\leq \leq c$	<<<<	$\leq \leq \leq$
<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\langle \langle \rangle$	$\langle \langle $	$\langle \zeta \zeta \zeta \langle$	<<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta$	<<<	$\zeta\zeta\zeta$	$\langle \langle \langle \langle$	$\langle \zeta \zeta \zeta \rangle$	<<<	$\langle \zeta \zeta \rangle$	$\zeta\zeta'$	<<<	<<	$\langle \langle \langle \langle$	$\langle \zeta \zeta \rangle$	$\langle \langle $	<<<<	$\langle \zeta \zeta$	<<<	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle $	$\langle \langle \langle \langle \rangle \rangle$	$\langle \langle \langle \langle$	$\langle \langle \langle \rangle \rangle$	<<<<	$\langle \zeta \zeta$
$\langle \langle \langle$	$\langle \langle \langle \langle \langle$	25,	$\langle \langle \rangle$	$\zeta\zeta\zeta$	$\langle \langle \langle \langle \langle \langle \langle \rangle \rangle \rangle \rangle \rangle$	$\frac{1}{2}$	$\langle \langle \langle \langle \rangle \rangle$	$\langle \zeta \zeta$	222	$\zeta\zeta\zeta$	$\frac{1}{2}$	$\langle \zeta \zeta \zeta \rangle$	<<<	$\langle \langle \langle \langle \rangle \rangle$	$\zeta\zeta'$	<<<	$\langle \zeta \zeta \rangle$	$\zeta\zeta\zeta$	$\langle \zeta \zeta \rangle$	$\zeta\zeta$	2222	22	$\frac{1}{2}$	222	2	$\langle \langle \langle \langle \rangle \rangle$	222	$\zeta \zeta'$	2222	777
$\langle \rangle$	222	(2)	22	220	777	770	77	$\frac{1}{2}$				$\langle \zeta \zeta \rangle$	$\langle $	777	22;	$\langle $	55	222	$\langle 2 \rangle$	330		22	$\frac{1}{2}$		\$) 	\$\$\$ \$\$\$	22	777	722
ح ک	222	77	22	55	ر کے ر	ح د ر	ح رے ر	72	ح د د	22	ح د د	72	ے کے کے	ر د ر	22	ح د د	5	ح کے کے	رح د	250	ح د د د	72	ے در	ر د د	ے کے کے	ر کر ر	ح کے کے	55; 55;	255	555
22	222	55	25	22	555	ح ح د	7	555	255	225	ح ح د	55	ح کے کے	55	22	255	55	222	125	22	7777	55	ح د	$\zeta \zeta \zeta$	222	55	555	22	5555	555
22	222	55	55	22,	(55	777	77	777	555	222	$\langle \zeta \zeta$	55	222	55	22	$\langle \zeta \zeta$	55	222	55	22)	2555	777	$\zeta \zeta \zeta$	$\zeta \zeta \zeta$	222		225	7 7	2555	525
2>	222	>>>	22	227	$\langle \zeta \zeta$	$\langle \zeta \zeta$	7	>>>	777	222	$\langle \zeta \zeta$	77)	>>>	55	22)	$\langle \zeta \zeta$	>>	222) > >)	22)	$\langle \zeta \zeta$	77))))	$\langle \zeta \zeta$	222	(< C	777	ZZ;	$\langle \zeta \zeta$	222
	>>>	>>>	>>	>>>		>>>	>>	>>>)))))))		>>>		33;		>>	>>>		33°			>>>))))) () () ()	} } } } } }	55,	>>>>	>>>
>>	>>>	25	>>	>>;	>>>	555	>>>	>>>	255	>>>	55	>>)	>>>	>>>	>>	>>>	>>	>>>	55	>>	>>>>	>>>	>>;	555	>>>	>>>	222	>>	>>>>	222
55	555	55	55	550	555	555	55	550	555	550	55	555	559	55	55	555	55	555	55	55	5555	559	550	555	559	55	555	55	5555	555



TELEFÓNICA DIGITAL PDI





TO REALISE OUR FUTURE CREATIVE
POTENTIAL – IN OUR ORGANISATIONS,
IN OUR SCHOOLS AND IN OUR
COMMUNITIES – WE NEED TO THINK
DIFFERENTLY ABOUT OURSELVES AND
TO ACT DIFFERENTLY TOWARDS EACH
OTHER, WE MUST LEARN TO BE CREATIVE

SIR KEN ROBINSON



PERSONAL ODYSSEY



PERSONAL ODYSSEY

In the 2012 report, we explained the importance of people embracing digital technology in order to experiment with different aspects of their personality and achieve Self-Realisation (see Newborn Identity trend*).

In the Reinvention Era, people will actively engage in exploration. They will embark on a Personal Odyssey to uncover their potential and true aspirations. In a world where there are very little guarantees about the future and where it is virtually impossible to guess where the next source of change will come from, people will take time to explore themselves and the environment around them. People will turn themselves into explorers: individuals who envision their life as a work in progress. Robert Safian referred to this group of people as **Generation Flux**[1], because they embrace adaptability and flexibility, and are open to learn any way they can (see Additional Insights). They value

the process of exploration as an important phase of their life in order to find their space, both psychological and social.

Explorers will look for opportunities to accumulate experiences that offer them multidisciplinary perspectives about themselves and about the world around them. For example, most Millennials aspire to live abroad as part of their life journey. In fact, 93% of

ration phase. In the US, some 39% of 25 to 34-year-olds have lived with their parents in recent years[3].

This phenomenon cannot be attributed to the financial crisis or rising cost of living alone. Rather, it stems from a desire

to extend their Personal Odyssey and continue living without the pressure

As the "exploratory phase" becomes a crucial period in life, we are also seeing the growth of **singledom** in our society (see Supporting Facts). Indeed, according to the Neo-Eriksonian "identity status paradigm" (see Additional Insights), its principal protagonists.

Millennials say they expect an individual's sense of to live and work abroad identity is determined in someday^[2]. This generation large part by his or her is also known for "boomer- explorations and commitanging" back to the family ments regarding certain home as part of their explopersonal and social traits.

> EXPLORERS BELIEVE THAT THERE IS NO WISDOM WITHOUT WANDER, AND THEY WILL INDULGE IN THEIR PERSONAL ODYSSEY THOROUGHLY. DIGITAL TECHNOLOGY WILL MAKE THE PERSONAL ODYSSEY AVAILABLE TO ALL ASPIRING EXPLORERS

As people feel it is impossible to predict the skills and jobs of the future. they take time to explore what actually interests them and postpone the decision about the direction they want their life to take.

Explorers believe that there is no wisdom withof long-term commitments. out wander, and they will indulge in their Personal Odyssey thoroughly. Digital technology will make the Personal Odyssey available to all aspiring explorers. Learning by exploring will become the new motto of the Reinvention Era and the explorers will be





DEVELOPING AN EXPLORER MINDSET BY ENGAGING IN A PERSONAL ODYSSEY

n some cultures the "exploratory phase" is perceived as crucial to the development of an individual from child to adult (see Additional Insights). It is through exploration, play, and wander that the individual acquires emotional and social intelligence (see Additional Insights). In the Reinvention Era, people will become

EXPLORERS ARE RISKLEARNERS, PEOPLE WHO
BELIEVE THAT RISKS AND
FAILURE ARE A NECESSARY
PART OF THE PERSONAL
ODYSSEY. BECAUSE THEY DO
NOT HAVE A CLEAR IDEA OF
THEIR DESIRED OUTCOME,
FAILURES ARE PERCEIVED AS
LEARNING OPPORTUNITIES
FROM WHICH THE EXPLORER
CAN ACQUIRE MORE WISDOM

increasingly interested in exposing themselves to new environments and experiencing new ways of being. People will engage in an exploratory cycle where every new experience is an opportunity to shape their identity. Unlike the specialists (see Labour of Love trend), who are focused and strategic in their approach to acquiring new skills and knowledge, the explorers indulge in wander. They believe in the benefits of being open to the unknown and they are willing to engage in activities without having a clear goal or a specific outcome in mind. As a result, we will see an increase in people taking sabbaticals and/or living abroad (see Supporting Facts) as ways to engage in a Personal Odyssey.

Explorers are risk-learners - people who believe that risks and failure are a necessary part of the Personal Odyssey. Because they do not have a clear idea of their desired outcome, failures are perceived as learning opportunities from which

the explorer can acquire more wisdom. In a time when many aspects of society will be reinvented, becoming a risk-learner and being able to fail fast will be instrumental to foster an innovative mind. The exploratory cycle will shape people's identity and help explorers cultivate their uniqueness by discovering what really interests them. Explorers will uncover their passions and their purpose in life through trials and tribulations, but also through play and fun.

Nurturing an exploratory mind can be achieved through alternative learning approaches. In Finland, for example, children begin school at 7 years of age and, once they start schooling, are encouraged to be independent. They are given opportunities to experiment and explore, and are not assigned homework or formal tests until they are 16 year old^[4]. The entire schooling phase is envisioned as an exploratory cycle. As a result, Finland is currently ranked as the best education system in the world^[5]. Thanks to this exploratory environment, 93% of Finns graduate from high school and 43% of Finnish high-school students go to vocational schools to pursue their passion^[6]. Such exploratory approaches will become more popular as they prepare people to enjoy taking risks and to develop flexibility. The Institute of Play in New York City (see Case Studies) is already pioneering such new models of learning and engagement, and with great results.

In a world where already fierce competition will continue to intensify, developing a flexible, resourceful, and open mind will be a crucial advantage. Companies will value wisdom and experience over university degrees (See Additional Insights), which will make explorers highly valued assets once they are ready to focus on long-term commitments.





DIGITAL TECHNOLOGY WLLL MAKE THE PERS♦NAL ODYSSEY ACCESSIBLE T♦ M♦ST

there are so many options available online. Technology opens the doors to experiences people would never have been able to access before. In the Reinvention Era, digital technology will create opportunities for people to engage in a Personal Odyssey and explore until they decide on their interests and passions. Explorers will take time to engage with digital experiences that help them further their sense of identity. Many digital natives will embark on a Personal Odyssey through a virtual world, learning real-life skills in a digital environment. Tweens, for example, are spending more time in virtual worlds; the top 10 tween sites make up nearly 50% of all virtual world and MMO (massively multiplayer online gaming) traffic^[7]. Sites such as WeeWorld. com. Webkinz. and Fantage (see Case Studies) are popular because tweens are even

inding yourself takes time, because more emotionally invested in their virtual experiences than in the real world. They have total freedom and control over the virtual choices they make, the way they dress, whom they befriend, etc. Social and emotional intelligence can be learned online, as virtual worlds have their own social codes that are not terribly different from

> EXPLORERS WILL BE MOTIVATED TO ADOPT TECHNOLOGIES THAT ALLOW THEM TO ACCESS EXPERIENCES AS A MEANS TO EXPLORE THEMSELVES AND THE WORLD AROUND THEM

those of the real world. Virtual world play is an opportunity to discuss and hash out issues that can easily translate into real life. In fact, Personal Odysseys will happen increasingly through online channels. Platforms centered around specific interests. such as Tumblr, Pinterest, or Instagram, enable people to explore different "worlds" and connect with communities of like-minded individuals. Tumblr alone reports over 70,000,000 accounts and an 85% user-retention rate, compared with Twitter's 40%^[8]; evidence that explorers seek engagement at a deeper level with specific communities of interests. These interestspecific sites are leading the way to an "emotional web" that engages users in emotional exploration. Innovations in emotional technology will enable people to experience the world around them in an increasingly realistic and compelling way (see Enriched Reality trend). Discovery and exploratory services (see Case Studies) will become richer and more engaging with 3D and AR (Augmented Reality). Indeed, AR browsers for Android and iPhone platforms are growing in usage. and the AR market is expected to reach \$3 billion by 2016^[9].

Digital technology will also turn education into a Personal Odyssey by offering creative and sometimes experimental approaches to learning. For example, Matchbook Learning (see Case Studies) creates more highly engaged and personalised experiences for teachers and, in turn, more personalised learning for each student.







Explorers will be motivated to adopt technologies that allow them to access experiences as a means to explore themselves and the world around them. They will be active contributors to the Reinvention Era, applying their wisdom to discover new possibilities.





- HTTP://www.fastcompany.com/1802732/ GENERATION-FLUX-MEET-PIONEERS-NEW-AND-CHAOTIC-FRONTIER-BUSINESS
- move guides, gen y and global mobility: http://
 INSIGHTS.MOVEGUIDES.COM/MOVE-GUIDESANNOUNCES-FIRST-QUARTERLY-WHITE-PAPER/
- $pew\ research: \verb|HTTP:|/|PEWSOCIALTRENDS.ORG|$
- THTP://www.thedailyriff.com/articles/the-finland-phenomenon-inside-the-worlds-most-surprising-school-system-588.php
- HTTP://THELEARNINGCURVE.PEARSON.COM
- HTTP://WWW.BUSINESSINSIDER.COM/FINLANDS-EDUCATION-SYSTEM-BEST-IN-WORLD-2012-11?OP=1
- *
 WWW.GLOBALTRENDS.TELEFONICA.COM



STEFAN SAGMEISTER The famous designer has taken two year-long sabbaticals. The first was in 2001 at age 38. The second began at age 46 and concluded just recently; he spent a year at Sagmeister Inc.'s Experimental Outcamp in Bali.

SAGMEISTER'S SABBATICAL LESSONS
http://mindset.yoursabbatical.com/2009/10/28/
four-sabbatical-lessons-from-stefan-sagmeister/

CESAR KURIYAMA "My personally produced work has generated millions of views online & has been featured on publications such as Wired, Gizmodo, & CNN. I've also taught courses in computer animation at NYU, Harvard University, and my alma mater, Pratt Institute. Recently quit my job in advertising to pursue more personal creative endeavors. I'm an American... born in Lima, Peru... some Japanese added in from my grandfather... raised







in New Jersey... currently living in Brooklyn, NY." One of his most recent projects was to film a second of every day. On his 30th birthday, Cesar Kuriyama quit his job in advertising. At the same time, he started a project: "One Second Every Day" for which he cuts together one second of footage from every day of his life into an ever-expanding project. We've seen these daily-picture kind of projects before, but this is certainly ambitious. As Kuriyama explains, it's a project he plans on conducting for the rest of his life. "If I live to 80, I will have a five-hour video that summarises 50 years of my life," he says to applause. "At 40, I'll have a one-hour video of my 30s." This became an app that was then popularised through kickstarter. (http://www.kickstarter.com/projects/cesarkuriyama/t-second-everyday-app.

http://blog.ted.com/2012/03/02/filming-one-second-every-day-cesar-kuriyama-at-ted2012/

DR. JANE MCGONEGAL

She holds a PhD and is a worldrenowned designer of alternatereality games, designed to improve real lives and solve real problems. She believes game designers are on a humanitarian mission, and her #1 goal in life is to see a game developer win a



Nobel Peace Prize. She is the New York Times best-selling author of Reality is Broken: Why Games Make Us Better and How They Can Change the World (Penguin Press, 2011), and is the inventor and cofounder of SuperBetter, a game that has helped more than 120,000 players tackle real-life health challenges such as depression, anxiety, chronic pain, and traumatic brain injury. She has created and deployed award-winning games and secret missions in more than 30 countries on six continents for partners such as the American Heart Association, the International Olympics Committee, the World Bank Institute, and the New York Public Library. She specialises in games that challenge players to tackle real-world problems – such as poverty, hunger, and climate change – through planetary-scale collaboration. Her best-known works include EVOKE, Superstruct, World Without Oil, Cruel 2 B Kind, and The Lost Ring. These games have been featured in The New York Times, Wired, and The Economist, and on MTV, CNN, and NPR. http://janemcgonigal.com

ADDITIONAL INSIGHTS

GENERATION FLUX a term coined by Robert Safian in FastCompany, describes a psychographic rather than a demographic. People of all ages can be described as GenFlux. Their characteristics are clear: an embrace of adaptability and flexibility, an openness to learning any way possible, and decisiveness tempered by the knowledge that business life can shift radically every three months or so. http://www.fastcompany.com/3001734/secrets-generation-flux

BOOMERANG GENERATION is one of several terms applied to the current generation of young adults in Western culture. They are so named for the frequency with which they choose to cohabitate with their parents after a brief period of living on their own, "boomeranging" back to their place of origin. Between 2008 and 2012, the number of young unemployed people living with their parents doubled from 218,000 to 429,000 (in the UK). Young people with jobs are also increasingly likely to return home after university. According to research by Ann Berrington at the University of Southampton's ESRC Centre for Population Change, young people with degrees are much more likely to live with their parents. The change is most noticeable among women; since 1998, the proportion of young women living with their parents has increased twice as quickly as the male population. http://www.economist.com/node/21564601





young person chooses baptism within the Amish church or leaves http://lrieber.coe.uga.edu/play.html the community. The vast majority chooses baptism and remains in the TIME FOR EXPLORATION is extended discussion of adolescence among the Amish), but Amish elders that subscribe to the concept generally view rumspringa as a time for courtship and finding a spouse http://en.wikipedia.org/wiki/rumspringa

ADMONITION ABOUT SUCCESS

you set out your life in a series existence has progressed in an ordered, structured way, to bring you to this current interview. http:// www.youtube.com/watch?v=MtSE4rglxbY

RUMSPRINGA (Pennsylvania PLAY AS A CRUCIAL PART Dutch: a noun derived from the OF LEARNING is an idea that Pennsylvania "Dutch" German verb is increasingly supported by rumspringen "to jump around") scientific evidence. A review of generally refers to a period of that evidence published by the adolescence for some members University of Georgia shows of the Amish, a subsect of the that education is not the same Anabaptist Christian movement. The as disinterested drudgery; for rumspringa period begins around children and adults, "play is an the age of 14-16 and ends when a important mediator for learning and socialisation throughout life."

church. Not all Amish use this term increasingly adopted as an (it does not occur in John Hostetler's important part of education. New York University, Amherst College, Princeton University, Harvard University, Massachusetts Institute of Technology, Yeshiva University, and Reed College have formal policies allowing students to defer admission. Harvard believes so KEN ROBINSON'S much in the gap year that they encourage every enrolled student We're being brought up with this to consider a year off. Princeton idea that life is linear. This is an has a program called the "bridge idea that's perpetuated when year" where students spend a year you come to write your CV- that performing public service abroad before beginning their freshman of dates and achievements, in year. York University announced a linear way, as if your whole their "Bridging the Gap" program, which allows students to defer admission on the basis of a gap year. (http://www.studentawards.com/stacks/articles/ gap-year-thinking-outside-the-box.aspx)

GAP-YEAR TRAVEL is a golden opportunity after A-levels according to Tom Griffiths, director of GapYear. com. "The difficult task for admissions tutors is that every applicant is so similar. So many students have three As. Now it is all about differentiating yourself, and a gap year, used correctly, can help achieve that." Griffiths asserts that there is a growing body of evidence that the students who have taken a gap year are less likely to drop out of university than those who have not. "They have had a break, they know what they want and have had a chance to realise their talent and interests." http://www.telegraph. co.uk/travel/activityandadventure/7953767/Gapyear-travel-A-golden-opportunity-after-A-levels.html

THE NEO-ERIKSONIAN "IDENTITY STATUS PARADIGM" focuses on the twin concepts of exploration and commitment. The central idea is that any individual's sense of identity is determined in large part by the explorations and commitments that he or she makes regarding certain personal and social traits. It follows that the core of the research in this paradigm looks into the degrees to which a person has explored certain concepts, and the degree to which he or she displays a commitment to those explorations. James Marcia created a structural interview designed to classify adolescents into one of four identity statuses. The identity statuses are used to describe and pinpoint >





the progression of an adolescent's identity formation process. In James Marcia's theory, the operational definition of identity is whether an individual has explored various alternatives and made firm commitments to an occupation, religion, sexual orientation, and a set of political values.

The four identity statuses in James Marcia's theory are:

IDENTITY DIFFUSION: When a person has not yet thought about or resolved their identity and they have not yet established a life direction. IDENTITY FORECLOSURE: When a person is committed to an identity, but that commitment was made without exploration as to what really suits them best.

IDENTITY MORATORIUM: When a person is actually experiencing an identity crisis and actively searching for the answers to questions they have about life commitments.

IDENTITY ACHIEVEMENT: When a person has solved the identity issues by making commitments to goals, beliefs, and values. http://en.wikipedia.org/wiki/Identity_(social_science)

EMPHASISE CURIOSITY AND OPEN-MINDEDNESS through international travel. According to Stacie Nevadomski Berdan, international careers expert and coauthor of Get Ahead By Going Abroad: A Woman's Guide to Fast-Track Career Success (HarperCollins, 2007): "In the research I conducted for Get Ahead By Going Abroad, several traits emerged as critical to successfully working across cultures. Curiosity and openmindedness rank in the top five among professionals who have lived and worked overseas, and among companies that employ and appreciate these internationalists. Curious, open-minded individuals enjoy the overseas experience for its breadth of newness and for the sheer joy of operating in an environment that is outside their comfort zone. Dealing with differences in culture as well as in infrastructure - be it while taking classes in a second language or figuring out local transportation - requires the ability to enjoy risk and the spirit of adventure. The world economy is in flux but one thing is certain: Globalisation is here to stay. Companies recognise that they need workers who not only understand international business but can also operate successfully - thrive, really - in cross-cultural situations." http://stacieberdan. com/2010/11/28/study-abroad-students-emphasize-your-curiosity-and-open-mindedness/

MILLENNIAL EMPLOYEES are energetic and creative. They are also flexible, technology-savvy, resourceful, can retrieve information quickly and efficiently, and are open-minded. Millennial employees are eager to learn and are not afraid of trying new things. http://womenofwisdom.com/next-generation-leaders-what-they-want-and-need-from-the-workplace-2/

COMFORT ZONE is a behavioural state within which a person operates in an anxiety-neutral condition, using a limited set of behaviours to deliver a steady level of performance, usually without a sense of risk (White 2009). Highly successful persons may routinely step outside their comfort zones to accomplish what they wish. A comfort zone is a type of mental conditioning that causes a person to create

"Nobody ever died of discomfort, yet living in the name of comfort has killed more ideas, more opportunities, more actions, and more growth than everything else combined."

T. Harv Eker

and operate mental boundaries. Such boundaries create a sense of security. Like inertia, a person who has established a comfort zone in a particular axis of his or her life will tend to stay within that zone. To step outside a comfort zone, a person must experiment with new and different behaviours, and then experience the new and different responses that occur. Research by WhatlsMyComfortZone suggests that challenges that are commonly outside of one's comfort zone can be categorised as either professional, adrenaline, or lifestyle. (http://en.wikipedia.org/wiki/Comfort_zone)

SABBATICALS ARE BENEFICIAL to employee development and retention. Once considered the preserve of academics, sabbaticals are increasingly popular as a commercial employee benefit. Almost a quarter of the Fortune 100 Best Companies to Work For include fully paid sabbaticals on their list of perks for staff (2012). http://www.personneltoday.com/articles/29/05/2012/58558/the-benefits-of-taking-a-sabbatical.html http://money.cnn.com/magazines/fortune/best-companies/2012/benefits/sabbaticals.html





¿TE ATREVES A SOÑAR?, GAMIFICATION the use of BY INKNOWATION is a video game design elements in non-game based on the service's goal of contexts, has tremendous potenporations transform and adapt ing truly meaningful experiences to to new and constantly chang- students. ing realities. Inknowation helps http://www.knewton.com/ leaders and their teams trans- gamification-education/ form their paradigm, structures, VIDEO company culture, strategies, etc. http://www.youtube.com/ (http://www.inknowation.com/es/)

FOREIGN-STUDIES TREND IS BOOMING IN EUROPE with initiatives like the Comenius Individual Pupil Mobility Scheme, a European program

helping organisations and cor- tial for educational use by deliver-

watch?feature=player_ embedded&v=i07qz_6Mk7q#!

ICONOGRAPHIC

http://inknowation.com/blog/wp-content/ uploads/2013/01/SO%C3%91AR-V2espa%C3%B1ol.jpg

that allows secondary-school students to spend between three and ten months at a host school in another country. Introduced in 2010, the Comenius exchange programme is growing in popularity. This year, more than 1,300 pupils will study abroad, bringing home not only new language skills but also a broader understanding of their European neighbours and the world they live in.

http://www.euronews.com/2012/09/10/studies-abroad-booming-trend-in-europe

KOKORO is a Japanese noun that in spoken language is as ubiquitous as "feel and think" in English. It is central to an immense variety of personal charcteristics including will, insight, sensibility, self-control, and emotion, representing both human nature and human potential. Kokoro has been linked to psychological therapy and prophylactic practices through work, stages of life, and other matters. The word has Chinese origins meaning "heart", and was later interpreted as "core, essential, and basic nature." With this term we enter into the idiom of cultivation: the idea that "mind" or "spirit" can be improved, strengthened, fostered, forged, tempered, and purified. The term is often used in discussions of growth and aging, of morality and aes- >

thetics, and of human nature in the realms of religion and philosophy. (Thomas Rohlen, The promise of adulthood in Japanese Spiritualism, pages 129-131. http://www. jstor.org/discover/10.2307/20024404?uid=3737952&uid=377851013&uid=2134&uid=377851023& uid=2129&uid=2&uid=70&uid=3&uid=377851013&uid=60&sid=21101762734357)

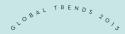
UP MULTICAREERS "'What do the Aboriginal Australian cusyou do?' Good question. For young tom where a man breaks off adults juggling multiple gigs, the from the daily grind and walks in answer is anything but straightfor- solitude across desert and bush ward. Dubbed "sidetrepreneurism" country on a spiritual quest. The by MTV/Viacom, wearing many distance covered on a walkabout different hats in the marketplace may exceed 1000 miles, done has become business as usual for without aid of compass or ramulticareerist Millennials. Wheth- dio. The walker finds his way, it er they work multiple jobs simulis believed, under the guidance taneously or sequentially, freewheelin' Millennials are building portable skill sets." http://www.forbes. com/sites/larissafaw/2012/07/19/how-millennials-are-redefining-their-careers-as-hustlers/ watch?v=gQGMuxJovCc

YOUNG FREE AGENTS HUSTLE THE WALKABOUT refers to of a spiritual power. http://www.november.org/razorwire/rzold/03/0313.html) MOVIE TRAILER

"Walkabout" 1971: http://www.youtube.com/







FACTS

MILLENNIAL'S EXPECTATIONS: PROFESSIONAL LIFE



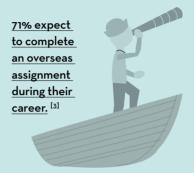
Women earned 78% (average) as much as men in 2010, up from 60% in 1980, across all US occupations. [1]

Childless Millennial women in their 20s earn 16% more than men of the same age," in certain urban markets. [1]

A global linkedin survey of **8,000 professionals** showed that just under **9% of professionals** work in the dream job of their childhood of the workers surveyed – from 15 countries including Brazil, Australia, US, and India – the most common childhood dream jobs fell in the creative and artistic categories. [2]



MILLENNIALS HAVE A STRONG APPETTITE FOR WORKING OVERSEAS. [3]



This is great news for many employers looking for global growth. The bad news, though, is that Millennials place destinations like the US, UK, and Austrailia at the top of their wish list, while only 11% are willing to work in India and 2% in mainland China. Despite these numbers, over half say they would be willing to work in less developed places to further their career. According to a survey on moving abroad conducted with GenY and Millennial professionals in the US and UK. [3]

^^^^

93% of GenY and Millennials expect to live and work abroad, and 86% would move to a new country without visiting first. [3]

GAP YEAR

According to a 2010 Time Magazine article, "The number of Americans taking gap years through Projects Abroad, a U.K. company that coordinates volunteer programs around the world, has nearly quadrupled since 2005." [4]

In January of 2012, the UK's National Student Newspaper, Student Times, released the results of a study that estimated 2.5 million young people living in the UK were planning a gap year in 2012. Nonetheless, STA Travel believes that the number of gap-year students may eventually increase to 3 million. [5]







91% of Millennials expect to stay in a job for less than 3 years

They expect to have 15-20 jobs over the course of their working lives. Job hopping can speed career advancement. By trying out a variety of roles and workplaces, new skills are learned that help workers achieve job fulfillment and a positive working environment.[6]

^^^^^

Millennials stay at their jobs for only 2 years, as opposed to 5 years for GenXers and 7 years for Baby Boomers. 61% of Generation Y feel personally responsable for making a di fference in the world. 81% have volunteered in the past year and 79% want to work for a company that cares about how it affects or contributes to society. [7]

81% of Millennials want to set their In 2011: Australia and New Zealand own hours at work, compared to just 69% of Baby Boomers. The trend is quite unsettling as the number of young people living with their parents continues to break 276,241 members, marking a 7.2% records. [8]

THE U3A MOVEMENT IS MARKED BY AN EXTENSIVE INCREASE IN **CENTRES AND MEMBERS ALL OVER** THE FIVE CONTINENTS



In 2008: the number of Chinese U3As reached 40.000, with over 4.3 million members (Swindell, 2011). [9]

included 240 (69.086 members) and 65 (11,336 members) U3As. respectively.

In 2012: there were 854 U3As and increase in U3A centres and a 9.7% rise in U3A members in the UK. [9]

MILLENNIAL'S EXPECTATIONS: MARRIAGE

70% of adult Millennials say they want to marry someday. [10]

^^^^

Fewer are marrying. Less than one fourth (22%) of adult Millennials were married in 2010. By contrast, 29% of adult GenXers were married at the same age.[10]

.....



Millennials are marrying later than ever, pushing the median age of first marriage to new heights: 28 for men and 26 for women. When GenXers were this age, the median was 26.5 for men and 24.5 for women. the highest on record since 1890. [11]

Americans under 35 are living with their parents at rates not seen in decades. According to a 2012 poll by the Pew Research Center, 29% of 25 to 34-year-olds have lived with their parents in recent years, and 61% of millennials know people in this circumstance. [10]

As Singled Out author Bella DePaulo notes, the combination of later first marriages and higher divorce rates means that "Americans now spend more years of their adult lives unmarried than married." [12]

Cohabitation is on the rise with slightly over 9% of adult Millennials living together outside of marriage. In 1997, when GenXers were this age, just under 6% were cohabitating. [10]

^^^^



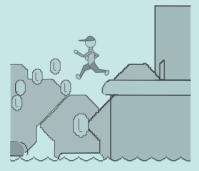


The number of Britons between 20 and 34 still living at home has increased by 28% since 1997, now reaching 3.2 million. The trend is accelerating; over the past year alone the number has increased by 6%. Around one in three young men and one in six young women now live with their parents. [13]

Second-world nations have also experiences an increase in age at first marriage. In spite of typically more traditional cultures, first marriages happen at least three years later than in the 1970s. Examples include Algeria, Qatar, Kuwait, and Malaysia, among others. [12]

GAMING AND EDUCATION

"Game players regularly exhibit persistence, risk-taking, attention to detail, and problem solving, all behaviours that ideally would be regularly demonstrated in school." [14]





1.2 Million students in the US fail to graduate from high school every year. According to Joey Lee and Jessica Hammer at Columbia Teachers College, the default environment of school often results in undesirable outcomes such as disengagement, cheating, learned helplessness, and dropping out. [15]

Studies point out that video game play satisfies the same criteria for "positve youth development": Intrinsic motivation, concentration and cognitive effort, and cumulative effort over time to achieve a goal. [16]

Video game players, regardless of gender, reported higher levels of family closeness, activity involvement, attachment to school, less risky friendship networks, and positive mental health. [16]

ELEMENTS OF GAMING THAT CAN BE HARNESSED FOR EDUCATIONAL PURPOSES

Levels Ramp up and unlock content.

Points Increase the run numerical value of your work.

Achievements Earn public recognition for completing work.

Appointments Check in to receive new challenges. **Collaboration** Work with others to accomplish goals.

Virality

Epic meaning

Work with others to accomplish goals

Virality

Be incentivised to involve others.

Epic meaning

Work to achieve something sublime.

Bonuses Receive unexpected rewards.

Discovery Navigate through your learning environment

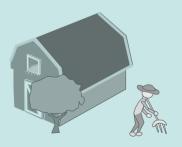
and uncoverpockets of knowledge.

Infinite play Learn continuously until you become an expert.Countdown Tackle challenges in a limited amount of time.Loss aversion Play to avoid losing what you have gained.

.033 aversion Play to avoid losing what you have gained.

Synthesis Work on challenges that require multiple skills to solve. [15]

28 million people harvest their crops on FarmVille everyday. Zynga's farmville gained 10 million daily active users in its first six weeks on the market, and cityville reached 20 million users in 11 days making it the fastest-growing game in history. [15]







multiplayer and involve virtual reality, role-playing, and user-created content: they also adopt new elements like augmented reality. [17]

Today's games are massively 135 million people play at least one hour of games per month compared to 56 million in 2008. [19]

^^^^

According to virtual worlds research firm KZero Worldwide. virtual worlds gained 214 million new users in the second guarter of 2011. [18]

^^^^

^^^^^

Most of these gamers are casual gamers and have been attracted to the gaming world by social or freeto-play games - the majority through new, convenient platforms such as tablets and smartphones. [19]

Over 5 million people play an About 80% of US gamers play average of 45 hours of games each week. [17]

······

either free-to-play online games or Facebook games. [19]

^^^^^

As a planet, we spend 3 billion hours a week playing video and computer games. [17]

People spend an average of \$29 on social/Facebook games, \$21 within free-to-play games. [19]

······



Number of gamers in the US increased 241% from 2008 to 2011. [19]

^^^^

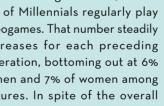
Today about 18% of all games are downloaded on smartphones, up from 7% in 2008. [19]

^^^^

Kids who play videogames score 23% higher in creative tests involving tasks such as drawing pictures and writing stories, according to researchers from Michigan State University. [20]

^^^^

Gender gap shrinks as consumers age overall, about half of Millennials regularly play videogames. That number steadily decreases for each preceding generation, bottoming out at 6% of men and 7% of women among Matures. In spite of the overall decrease in numbers of gamers, the percentage of men and women equals out as age increases. [21]



Parenthood Trumps Marriage," Pew Research Center, March 9, 2011, http://pewsocialtrends.org.) 11 US Census Bureau, Current Population Survey, cited in Wendy Wang and Paul Taylor, "For

Millennials, Parenthood Trumps Marriage," Pew Research 12 www.psychologytoday.com.

10 Wendy Wang and Paul Taylor, "For Millennials,

1 Bella DePaulo, "Living Single Longer: It's a Global Phenomenon," Living Single, blog, Psychology Today, November 1, 2008, www.psychologytoday.

13 http://tinuurl.com/c24evlb

2 http://tinyurl.com/c5cnkwn 3 http://tinyurl.com/dx5d3hc

4 http://tinyurl.com/2fotgzm 5 http://tinyurl.com/2fotgzm

6 http://tinyurl.com/cyca6ou

9 http://tinyurl.com/c7yy8u4

7 http://tinyurl.com/cnxfyln 8 http://tinyurl.com/d7h3hx6

14 The Education Arcade at MIT

15 http://www.knewton.com/gamificationeducation/

16 http://tinyurl.com/cmcf280

17 http://www.knewton.com/gamificationeducation/

18 http://www.hypergridbusiness.com/2011/07/

virtual-world-usage-accelerates/

19 http://tinyurl.com/cma4fn9

20 USAToday.com | 1 December 2012)

21 https://www.iconoculture.com/SMART/public/ view.aspx?ContentID=346630







CASE STUDIES

ALTERNATIVE LEARNING

THE INSTITUTE OF PLAY — in New York City, pioneers new models of learning and engagement. They are a not-for-profit design studio founded in 2007 by a group of game designers. Their first project was the design and implementation of an innovative New York City public school called Quest to Learn. At the core of the experiences they design are games, play, and the principles that underlie them. Using these principles they have created successful institutions, games, programs, events, digital platforms, and products. Their work unlocks the transformative power of people as seekers, solvers of complex problems, risk takers, inventors, and visionaries. They work wherever people are: in communities, businesses, schools, and cultural and civic institutions. http://www.instituteofplay.org

MATCHBOOK LEARNING — 's vision is to completely turn around America's most underperforming public schools by designing and implementing a unique, teacher-centric, hybrid model of schooling. Their proposed model coaches teachers to personalise instruction through technological content, enhanced by the teacher's experience, mastery, and purpose of instruction. This highly engaged, personalised teaching experience leads each student to high levels

of autonomy over their learning, mastery of the content, habits for success, and a life purpose for setting goals and making decisions. Matchbook Learning's blended school model stems from an educational philosophy with five key pillars. http://www.matchbooklearning.com/

- 1 TURNAROUND SCHOOLS
- 2 HYBRID DESIGN
- 3 TEACHER-CENTRIC
- 4 MOTIVATIONS. SUSTAINABILITY AND SCALABILITY

PORTMONT COLLEGE – is a new type of educational experience that includes a system of coaching, cohorts, and corporate relationships aimed at building life skills. Designed by IDEO and MyCollege Foundation, Portmont offers both physical and online courses. The IDEO team conducted field research in Los Angeles and Denver, learning from the students they spoke with about what they were looking for in a college and why many of their previous college experiences had been unsuccessful. The team also talked with many potential employers of college students and learned that there was often a mismatch between the skills possessed upon graduating and the actual skills required in the workplace. While students were seeing a degree as the singular key to unlocking their career, future employers wanted more. Employers were looking for proven skills and experience - elements students were not currently achieving with just a degree. Portmont is not a traditional college; it is not focused on traditional measures like grades and test scores, but rather on teaching what employers are looking for. Thus, at Portmont, they teach and measure these invaluable skills so students will leave with visible credentials clear thought, tough-problem solving, teamwork, effective communication, and efficient learning. http://portmont.la.edu/

LIFELONG LEARNING / SELF-LEARNING

THE AMAZINGS — is a website that offers fun, friendly, informal classes in everything from feltmaking to journalism. Classes are taught by





people with a lifetime of experience at a reasonable price and at fun locations. Anyone over the age of 50 with a lifetime of experience in a skill can teach classes for The Amazings. Formal teaching certificates or official awards are not necessary, as long as the person is passionate about what they do and desire to share their knowledge. http://www.theamazings.com/pages/about

THE LIFELONG LEARNING PROGRAMME — is the European Union's programme for education and training. It enables people in all stages of their lives to take part in stimulating learning experiences, and works to develop the education and training sector throughout Europe. With a budget of nearly €7 billion for 2007 to 2013, the programme funds a range of actions including exchanges, study visits, and networking activities. Projects are intended not only for individual students and learners, but also for teachers, trainers, and all others involved in education and training. There are four sub-programmes which fund projects at different levels of education and training: Comenius for schools, Erasmus for higher education, Leonardo da Vinci for vocational education and training, and Grundtvig for adult education. http://ec.europa.eu/education/lifelong-learning-programme/doc78_en.htm

EXPLORATORY EXPERIENCES



BLANK WAYS — is a mobile app, designed by Tom Loois, that helps smartphone users discover new routes in their city. The app uses GPS technology to log where the user has travelled, and then applies this information to offer alternative routes. Blank Ways essentially targets and displays unvisited areas

with the intention of introducting the user to unknown, potentially inspirational places. We have seen a rise in the number of apps that monitor consumer behaviour and movements; Blank Ways is a great example of an app that takes such information and gives consumers alternative ways to get from point A to point B. http://www.tomloois.com

<u>LAYAR</u> — a company specialising in augmented reality apps, can attest to the growing demand for exploratory experiences. It reports its browser is now available on over 20 million smartphones globally, with active users averaging between two to three million. Since its launch in June of 2009, over 17,500 organisations have started developing on the platform, publishing over 4,300 layers. (http://www.layar.com)

BANJO — is a social discovery app that enables people to see which of their friends are in their immediate vicinity. Founder Damien Patton had the idea after an experience in the departure lounge of Boston Airport. A friend that Patton had not seen for years was waiting at the gate next to him. Patton tweeted and the friend checked in, both while in the lounge, but they didn't see each other. Banjo shows social media updates routed in the geography of the city in which you are located. http://ban.jo

VIRTUAL WORLDS

<u>WEE WORLD</u> — is an avatar-based massive multiplayer online (MMO) social network. Users can communicate, explore the community, play games, and participate in quests within the virtual Wee World. http://www.weeworld.com/

MOSHI MONSTERS — is an online world of adoptable pet monsters for kids aged 6-12, with over 70 million registered users in 150 territories worldwide. Children choose from one of six virtual pet monsters — Poppet, Luvli, Katsuma, Zommer, Furi, and Diavlo — that they can create, name, nurture, and even provide with online pets (moshling). Players can navigate their monster around Monstro City, taking the daily puzzle challenge to earn "Rox", playing games, personalising their room, reading stories, and communicating with friends in a safe environment. http://www.moshimonsters.com/

 ${\color{red} {\sf FANTAGE}}$ — is a MMORPG (massively multiplayer online role-playing game) involving a virtual world with a range of online games and





activities. This Fantage, Inc. game lets players customise their cartoon avatars from hair colour to clothes, and explore a town-like virtual world. Fantage was made available to the general public in April of 2008[1] and has since expanded into a large online community. The virtual world had grown to over 16 million registered users by January of 2012. http://www.fantage.com/

IDENTITY

EAST CHICAGO INSIGHT LAB — part of The Narrative Renewal Project, is a group of education experts recently convened by Insight Labs to discuss how communities like East Chicago, Indiana can refresh their collective story. Consider the typical mix of students who graduate from high schools in economically depressed communities; because of their age, nearly all of these students can still imagine many different possibilities for who they will be and how they will live their lives. For the small percentage of students who leave home and go to four-year colleges, this process of self-actualisation continues as it should. But the majority of students enter low-wage jobs (or if that fails, the welfare system) leading to a sudden collapse in their imaginative possibilities. The Chicago Insight Lab proposes a third path that directly connects young people's optimism and imagination with the community's needs. http://narrativerenewal.org/

LADY GAGA'S BORN THIS WAY FOUNDATION — led by Lady Gaga and her mother, Cynthia Germanotta, was founded in 2011 to foster a more accepting society in which differences are embraced and individuality is celebrated. The foundation is dedicated to creating a safe community that helps connect young people with the skills and opportunities they need to build a kinder, braver world. "We believe that everyone has the right to feel safe, to be empowered and to make a difference in the world. Together, we will move towards acceptance, bravery and love." http://bornthiswayfoundation.org/

<u>I SECOND EVERYDAY</u> — is an app developed by Cesar Kuriyama, who decided that he wanted to remember every day of the rest of his life starting at the age of 30. Passionate about this self-realisation project, he developed the app for others to do the same, making it easy to create a movie about their lives with a one-second clip from each day. http://isecondeveryday.com/







IMPLICATIONS FOR TELEFÓNICA

ENCOURAGE AN INTERNATIONAL More international rotations. **WORKFORCE** sabbaticals, gap years, and training that is purposeful and provides a real challenge.

REWARD EXPLORATION BY VALUING THE IMPORTANCE OF BUILDING **MULTIDISCIPLINARY PERSPECTIVES**

Encourage employees to use their new knowledge in their work.

LIFE-LONG LEARNING AND Provide employees with regular opportunities to learn and improve their skills, find new interests and specialities, and grow by exploring their potential.

DISCOVERY/EXPLORATORY AND Building on existing initiatives **SERVICES** to encourage employees to learn about each other, learn from each other, and support each other.

SELF-DISCOVERY SERVICES Find ways for employees to discover new aspects of themselves to improve their performance; provide feedback about their behaviour.

PERSONALISED/ALTERNATIVE \times Enable employees to learn **LEARNING** based on their own style, focusing on the results instead of the methodology.

VALUE EXPERIENCE OVER DEGREES \(\square\) Encouraging the recruitement of employees who display a richness of experience and multidisciplinary perspectives.

ACCUMULATE EXPERIENCES example.

CREATE A RECOGNITION \times Inspired by O2 Fan Club SYSTEM FOR EMPLOYEES WHO and by Mozilla Open Badges, for





95



ADDITIONAL SOURCES

Wagner, Tony: Creating Innovators, 2012
White, Alasdair: From Comfort Zone
to Performance Management, 2009
Rieber, L. P: Seriously considering
play: Designing interactive learning
environments based on the blending of
microworlds, simulations, and games, 1996



PERS NAL

ADDITIONAL SOURCES 94

ARIANE VAN DE VEN



TELEFÓNICA DIGITAL PDI







AN IDEOLOGY FOUNDED ON PERSONAL FREEDOM AND SOCIAL RESPONSIBILITY GIVES BOTH INDIVIDUALS AND THE ECONOMY THE GREATEST POSSIBLE SCOPE TO DEVELOP

KLAUS SCHWAB



SUSTAINABLE UTOPIA



SUSTAINABLE UTOPIA

In the 2012 trend report, we explained that the Project Economy would lead people to take a proactive attitude toward life and impacting the world around them. We discussed the determination people would show to change their lifestyles, adopting more sustainable, long-term approach to life (see Making Meaning trend*).

In the Reinvention Era people will realise that, beyond their personal determination, they have the power to change the world around them and create new systems thanks to digital technology. These

new systems will be based on timeless values of collaboration, fairness, and sustainability. To realise this change, people and organisations will need to transform and reinvent their culture. Kindheartedness will drive actions and people will become modern utopians: individuals who feel empowered to build a sustainable utopia for themselves and the community. A sustainable utopia is a realistic, achievable vision of what society could become. Utopians, after all, believe it is possible to achieve collective success. So far in human history we have never been able to scale an equal distribution of societal benefits; an enormous and growing divide remains between the haves and have-nots. But the digital divide is shrinking: 24 billion connected devices are expected to be in use by 2020[1], many of which will be owned by people in China and India. Thanks to the spread of affordable technology (see Case Studies),

more people are aware of the imbalance in the world and less are willing to ignore it. According to Shaun King, founder of HopeMob (see Case Studies): "People that previously had no idea of the difference they could make in the world have been emboldened by social media and are now aware of issues and needs and ways that they can provide solutions to them that just didn't exist decades ago^[2]." This awareness is increasing pressure on businesses and governments to work toward equality, and empowering people work for change. The transparency that comes with such widespread information access also builds empathy. Modern utopians are

A SUSTAINABLE UTOPIA IS A REALISTIC,
ACHIEVABLE VISION OF WHAT SOCIETY COULD
BECOME. UTOPIANS, AFTER ALL, BELIEVE IT IS
POSSIBLE TO ACHIEVE COLLECTIVE SUCCESS

focusing their attention on specific areas where they most want to have a positive impact and find solutions to problems. They take a proactive approach[3], investing their own resources through timebanking, volunteering, or social enterprise. Modern utopians will harness digital tools to reinvent systems and improve society. Transparency will be essential as a way to track and measure impact. They will be "repats", "rurbans", "living prototypes", active citizens, movement entrepreneurs, and generally kindhearted people. They will embrace a bottom-up approach to create a society that operates harmoniously and equitably.

GIVING BACK AND CREATING SUSTAINABLE IMPACT

eople are increasingly concerned about their contribution to the world. The question "How will you measure your life?" is taking on more importance, and with it, people's desire to create a lasting legacy. Modern utopians are concerned about giving something back.





people seek the feeling of belonging somewhere. waves of expats returning to of the economic downturn growth of some emerging of people's desire to create a the rise of movement entrepreneurs

In a world that is more digital example, former Microsoft employee and globalised by the day, Patrick Awuah founded Ashesi University (see People). A native of Ghana, Awuah believes that what Migration will take a new Africa needs most is leadership. His turn and we will witness goal is to train a new generation of ethical and entrepreneurial business their home countries. This leaders who can become an engine will happen partly because of growth for Ghana. Indeed, modern utopians will look for ways to help of Western countries in improve their culture by nurturing contrast with the economic local geniuses in a bid to promote knowledge and develop local markets, and partly because economies. As a result, we will witness

THESE MODERN UTOPIANS WILL BE MOTIVATED BY KINDHEARTEDNESS AND WILL SHARE THEIR KNOWLEDGE TO CREATE TANGIBLE CHANGE

countries. Governments in many emerging countries will create initiatives to bring back who return to their country of birth, citizenship, or origin - will use the knowledge and time abroad to have a positive impact in their own countries. These modern utopians will be motivated by kindheartedness and will share their knowledge to create tangible change. For

positive impact in their home (see Additional Insights) emerging from developing countries. They are a new breed of entrepreneurs who now have knowledge and inexpensive tools their expats. Repats - people to address social issues. These socially driven change-makers are finding increasing support, as the issues they are tackling can often be aggregated skills acquired during their and applied to other contexts. The Global Diaspora Forum, for example, launched a new business competition in Latin America this year (see Additional Insights) to encourage diaspora groups in the United States to "give back" to their countries of origin.

ans aspire to live a more balanced life.

Providing people technology enables people to their community with means to ex- connect from a rural context. pand their influence Modern utopians will use in order to address digital technology to work their circles of con-remotely and stay connected cern is more power- to their networks. Their less privileged ful than a top-down technology choices will be approach. In the same motivated by function, and way, modern utopi- we will witness an increase of interest for the "minimite" lifestyle; minimites live with tending more toward the least amount of technolkindness to other ogy to accomplish what they people, the communeed. The rurban lifestyle nity, and the planet. will bring an injection of fresh As a result, we will talent to micro-communities. notice reverse mi- In Spain, towns of fewer for the microgration whereby than 1000 inhabitants are city-dwellers move to growing while cities of over the countryside. This 100,000 have stopped^[4]. fairer society. rurban phenomenon The modern utopians will happen in many "healthy life philosophy" will countries where encourage people to nurture

and develop their local economy. They will positively impact the groups who have moved to the countryside based on expensive living costs and unemployment in bigger cities. The modern utopians will open up new possibilities economies in a bid to contribute to a

CREATING KINDER SYSTEMS AND COMMUNITIES

odern utopians sources to cooperatively create new understand the systems that are kinder to people. importance of They adopt a bottom-up approach proactively designing the (see Additional Insights), focused on future, connecting people's fostering long-term solutions through needs with available re- common action. Small and nimble





change is often what will characterise sustain- of people who truly feel able utopia projects, as borders are a necessary like global citizens. For part of smooth and equitable society - at least at many years, the concept of first. These utopians are happy to become living collaboration with "sister prototypes that experiment with new systems of cities" (see Additional living. They change and reinvent cultures as they Insights) has been fosterincreasingly understand their place and power ing sociocultural exchange within the culture cycle (see Additional Insights). between cities. Dating as They will strive to perpetuate new cultures by far back as 836 in France, engaging with people who share the same values these villes jumelées are and goals for a sustainable utopia. A current now taking a more local example is the Seasteading Institute, which approach. Neighborland, a

advocates for the creation of floating cities to be used for incubating controlled society experiments (see Case Studies). The Reinvention Era will be characterised by the rise of experimental sustainable utopia initiatives created by individuals

DIGITAL TECHNOLOGY WILL BE THE CORE ENABLER FOR CREATING SUSTAINABLE UTOPIAS, AS IT WILL CREATE TRANSPARENT AND COLLABORATIVE WAYS FOR PEOPLE AND ORGANISATIONS TO IMPROVE SOCIETY AS WHOLE

and groups that harness digital technology to knowledge transfer, and transform microscale movements into global citizen participation, all change. Successful societies will spread by of which are facilitated by sharing best practices and experiences across digital technology. Cities communities. Cities will become experimental will become sustainable labs for new societal systems. In the future, development labs where city-states will have an advantage over nations modern utopians are able due to the ability to foster collaboration; cities to experiment with ideas can more easily create networks for exchanging for the next generation of and transferring knowledge. New urban, globally governance. Governments linked geopolitical models will appear, particular are already taking note, as to each city. This will lead to a growing number demonstrated by Iceland's

New Orleans-based social network aims to improve living conditions in neighbourhoods across the US. Their motto, "a healthy neighbourhood is a connected neighbourhood", emphasises the importance of collaboration.

crowdsourced constitution, up for vote in Spring of 2013. Iceland's government gathered ideas through an online feedback loop between government and citizens, taking advantage of Facebook, Twitter, and YouTube technologies.

This is a great example of a country encouraging and enabling active participation from citizens, who are given the power to design the future they want for themselves. Measuring the positive impact of such initiatives on the wellbeing of citizens will be key to ensuring global adoption. Measures such as PERMA or the Happiness Index (see Additional Insights) can help achieve this; with many other countries requiring major social change,







these initiatives are a great way for nations to demonstrate kindheartedness instead of self-interest. The challenge will be ensuring that modern utopians are armed with the necessary knowledge to participate. For sustainable utopias to become a reality and fundamentally change society, the divide between knowledge haves and have-nots must disappear. Digital technology will be the core enabler for creating sustainable utopias, as it will create transparent and collaborative ways for people and organisations to improve society as whole.



- GSMA Connected Life report: http://www.gsma.com/ connectedliving/wp-content/uploads/2012/05/howthe-connected-life-drives-revenue-gsma.pdf
- 2
 HTTP://WWW.FASTCOEXIST.COM/1680994/HOW-SOCIAL-MEDIA-HAS-CHANGED-HOW-WE-GIVE
- Stephen Covey's The 7 Habits of Highly Effective People,
- Minder, Raphael, The Country Beckons Spaniards as Jobs in Cties Grow Scarce, The New York Times, September 12, 2012
- WWW.GLOBALTRENDS.TELEFONICA.COM

PEOPLE



PATRICK AWUAH After living in the US for 20 years, he moved back to Ghana to start a new university in hopes of educating Africa's next generation of leaders. Becoming a father made him consider returning to Ghana: "What kind of world is it that my son is going to grow up in? And how is Africa represented in that world?" His goal: to establish an ivy-league quality university in his home country and train the next generation of African leaders, with the focus on ethical entrepreneurship and integrity.

Ashesi is a private, hi-tech university in a leafy residential suburb of Ghana's capital city. Currently, 80% of their students are from Ghana and the rest are from other African countries; 50% of the student population receives financial aid.

 $http://www.ted.com/talks/patrick_awuah_on_educating_leaders.html \\ http://www.ashesi.edu.gh/about/office-of-the-president/biography.html$

WHIT ALEXANDER worked for Microsoft, helped develop the maps for the first Encarta encyclopaedia, and created the best-selling board game Cranium. He's now the founder and CEO of Burro, based in Koforidua, Ghana. Burro is a for-profit company providing innovative products like batteries, irrigation pumps, and eyeglasses to low-income families in rural areas.

http://mkshft.org/2012/09/meet-a-maker-whit-alexander-electrifies-ghana/







EMERSON SPART (born February 17. 1987) is the CEO of Chicago-based Spartz Media. Spartz founded the Harry Potter site, MuggleNet, at age 12. In 2009, Spartz launched Spartz Media. In May 2009, GivesMeHope (GMH) was founded by Spartz and Gaby Montero. On GivesMeHope, users share true stories of kindness and generosity; people share with the world their most hopeful, uplifting moments while answering the question, "What gives you hope?" The site was created

in response to FMyLife (FML), itself a spin-off of popular French website Viedemerde.fr. In November 2010, GivesMeHope released a book of the top 127 stories from the site. In the book, each story is accompanied by an illustration. In January 2010, Spartz launched OMG Facts. OMG-Facts. com receives 30 million monthly page views, has 500,000 subscribers on YouTube, and 4.5 million followers on Twitter. http://www.emersonspartz.com

MALIHA ZULFACAR, an Afghanistan immigrant to the US, spent many years separated from her homeland. During the US invasion, though, she saw the opportunity to give back and reconnect to Afghanistan. She travelled back and forth launching fundraisers, giving conferences, and helping people on the streets by giving them the chance to speak of their experiences. Two young girls they were able to travel into the US and start a new life. Zulfacar is currently collecting interviews with all sorts of people in order to create a book and produce a history of Afghanistan, by Afghans. Afghan Returns to Collect the Stories of Her People, NPR, Malifa Zulfacar's Afghan Higher Education Reconstruction project. *



ADDITIONAL INSIGHTS

PERMA is a comprehensive HAPPINESS INDEX is index of well-being that an annual report that allows for combining describes and analyses objective and subjective studies on happiness and indicators, developed by life satisfaction in over 200 Martin Seligman (director countries. Iceland, New of the Positive Psychology Zealand, and Denmark are Center, University of at the top of the happiness Pennsylvania). PERMA is index list, while Bulgaria, an acronym for Positive Moldova, and Zimbabwe emotion, Engagement, rank at the bottom. The positive Relationships, countries with the highest Meaning and purpose, and life satisfaction are Costa Accomplishment. PERMA Rica, Puerto Rico, and can index the well-being of Denmark (between 85 and individuals, of corporations, 87%), compared to Tanzania, and of cities. Seligman Zimbabwe, and Ukraine that argues that if we want global fall to 38-40%. http://www. well-being, we should also measure and try to build PERMA. http://en.wikipedia.org/ Happiness%20Report.pdf wiki/Martin_Seligman#PERMA

earth.columbia.edu/sitefiles/file/ Sachs%20Writing/2012/World%20





shorthand abstraction as a cognitive

tool is to find examples that we know

evolved from the bottom up; language

and knowledge production are such

examples. Shermer argues that the

Internet is the ultimate bottom-up.

self-organised, emergent property of

millions of computer users exchanging

FORGIVENESS, according to new THINK BOTTOM UP, NOT TOP evidence in the medical community, **DOWN** argues Michael Shermer, is good for our health in myriad ways: author of The Believing Brain: From it lowers blood pressure, improves Ghosts and Gods to Politics and sleep, and increases lifespan. More and Conspiracies-How We Construct more studies support the theory that Beliefs and Reinforce them as Truth. kindness can be a powerful healing tool, He believes that almost everything both psychologically and physiologically. important that happens in both nature Forgiveness and kindheartedness and society happens from the bottom might even be able to rid us of the up, not the top down. One way to need for medications altogether. get people to adopt a bottom-up

http://www.good.is/posts/forgive-to-live-new-

research-shows-forgiveness-is-good-for-the-heart/

THE CULTURE CYCLE describes how culture works, but also prescribes how to make lasting change. The Culture Cycle is the iterative, recursive process whereby people create cultures to which they later data across servers. And although there adapt, and cultures that shape are some top-down controls involved, people so that they act in ways that the strength of digital freedom perpetuate the cultures. This process derives from the fact that no one is involves four nested levels: individual in charge. http://www.michaelshermer.com selves (one's thoughts, feelings, and

actions), the everyday practices and artefacts (education, law, media) that afford or discourage those everyday practices and artifacts, and pervasive ideas about what is good, right, and human that both influence and are influenced by all four levels. The Culture Cycle rolls for all types of social distinctions, from the macro (nation, race, ethnicity, region, religion, gender, social class, generation, etc.) to the micro (occupation, organisation, neighbourhood, hobby, genre preference, family, etc.). Humans are culturally shaped shapers. Built into the Culture Cycle are the instructions for how to reverse engineer it: a sustainable change at one level usually requires a change at all four levels.

Hazel Rose Markus and Alana Conner, http://www.edge.org/q2011/q11_14.html

MOVEMENT

ENTREPRENEURS are a new breed of entrepreneurs who use mobile and internet platforms to aggregate and organise action. We are entering an era of global movements, many of which will emerge in the global South, where individuals have had little say over the conduct of their governments and corporations. New technologies offer ways to address these issues through easy cross-border information exchange, which has enormous potential for political change. In time, the global mobilisation of consumers and citizens may create a countervailing that, until now, have been powered by the International diaspora Engagement accountable only to national governments. http://www. can empower and increase diaspora philanthropy, purpose.com/media/

process emphasising the broad participation of constituents in the direction and operation of political systems. Participatory democracy tends to advocate more involved forms of citizen participation than traditional representative democracy. It strives to create opportunities for all members of a population to make meaningful contributions to decision-making, and seeks to broaden the range of people who have access to such opportunities. Since so much information must be gathered for the overall decisionmaking process to succeed, technology may provide important forces leading to the type of empowerment needed for participatory models, especially those technological tools that enable community narratives and correspond to the accretion of knowledge. As an example, the 2011 Occupy movement generated considerable grassroots interest in participatory democracy. http://en.wikipedia.org/wiki/Participatory_democracy

PARTICIPATORY DEMOCRACY is a

power to global businesses THE 2012 GLOBAL DIASPORA FORUM,

Alliance (IdEA), focuses on how new technology

social entrepreneurship, volunteerism, and social innovation. In honour of this event, IdEA launched a partnership with GlobalGiving as a way to promote philanthropy among diaspora communities. US Secretary of State Hillary Clinton announced the launch of a new business competition for Latin America. The competition aims to encourage diaspora groups in the United States to "give back" to their countries of origin, in line with the theme of this year's Global Diaspora Forum. Interested applicants will have a chance to win grant funding to get their business ideas off the ground. They will be provided with a range of resources - from



counselling to networking with international buyers and sellers - to develop their >



business concepts. The public will have a chance PONYRIDE is a study to to vote for their favourite business plans online. see how the foreclosure Participants will also have a chance to share their crisis can have a positive ideas through different social media networks. impact on our communities. http://www.state.gov/r/pa/prs/ps/2012/07/195375.htm

SISTER CITIES INTERNATIONAL is a non-profit citizen diplomacy network that creates space for socially conscious and strengthens partnerships between United artists and entrepreneurs to States and international communities. More than 2,000 cities, states, and counties are partnered in 136 countries around the world. The organisation http://ponyride.org/ "strives to build global cooperation at the municipal

Using an "all boats rise with the tide" rent subsidy, they are able to provide cheap work and share knowledge, resources, and networks.

level, promote cultural understanding and stimulate economic development". As the official organisation which links jurisdictions from the US with communities worldwide, Sister Cities International recognises, registers, and coordinates sister cities, counties, municipalities, oblasts, prefectures, provinces, regions, states, towns, and villages. The US sister city program originated in 1956 when President Dwight D. Eisenhower proposed a people-to-people citizen diplomacy initiative. Originally a part of the National League of Cities, Sister Cities International became a separate, non-profit corporation in 1967, due to the tremendous growth and popularity of the US program. The organisation's mission is to "promote peace through mutual respect, understanding, and cooperation - one individual, one community at a time." http://www.sister-cities.org

GREAT TRANSITION INITIATIVE is an international group working for a planetary civilisation rooted in solidarity, sustainability, and human well-being. The potential of a Great Transition is linked to the emergence of a global citizens movement (GCM) to advocate for new values to underpin global society. GTI put forward The Widening Circle (TWC), a new organising effort to nourish the formation of a movement of global citizens. Rather than a rigid blueprint, TWC's strategy envisions growing in successive waves, adapting to changing circumstances as it expands and diversifies. Its constants would lie in dedication to a vision of a just and sustainable global society; commitment to a politics of trust, tolerance, and mutual respect; and continual search for ways to balance pluralism and unity on the road to one world with many places. http://www.GTInitiative.org.

one time credit, which is exchangeable for an by the United Nations hour's worth of help in return. The time banking entity for supporting rural movement has been 25 years in the making. Time development and the US banks have been used in a variety of contexts. State Department. They for example: the Time Dollar Youth Court (a help tap the resources of juvenile diversion program), the National Homecomers

Academy (challenging recidivism and improving reintegration into society for ex-cons), and CareBanks (a way of assuring health care for seniors). Edhar Cahn - the US-born inventor of time banking - believes that "as the market economy reveals its limits, time banking's message has never been more powerful". http://www.cles.org.uk/features/

timebankingedgarcahn123/

TIME BANKING is a moneyless alternative THE DIASPORA INVESTMENT with a straightforward concept: one hour of help IN AGRICULTURAL providing a good or service for another earns INITIATIVE was launched emigrant communities for

> investment in agriculture in their countries of origin. The Diaspora Investment in Agricultural Initiative will work with emigrants seeking investment in agricultural projects in their home communities, with a focus on postconflict countries and fragile states. The International Fund for Agricultural Development will work to involve migrant entrepreneurs. diaspora organisations, and key strategic entities to implement projects that stimulate the development of the agricultural sector. (UN and US launch plan tap emigrants' resources to boost agriculture, United Nations News Center, http://www.un.org/ apps/news/story.asp?NewsID=38421&Cr=IFAD&Cr1=#. UNGiNKXZ-Nc)

KEVIN KELLY ON THE AMISH APPROACH TO TECHNOLOGY

"Amish are living about fifty years behind us. Half of the inventions they use now were invented within the last 100 years. They don't adopt everything new, but when they embrace it, it's half a century after everyone else does. By that time, the benefits and costs are clear, the technology is stable, and it's cheap. They are slow geeks". (What Technology Wants, 2012, http://www.youtube.com/watch?v=Tk2Ngz16Ecs)

JAPAN'S YOUTH TURN TO RURAL AREAS SEEKING A SLOWER LIFE Many young Japanese Millennials cannot find a permanent job. Temporary workers now make up one third of the workforce, with a majority of young >





people. They never know when they will have to change jobs. These young people are turning to the country and learning about the rural life. In the countryside, local authorities are desperate to repopulate the rural agricultural areas, so they organise and pay the workers. "There are more people that want to be farmers now, and numbers are increasing." An example is Hitoshi Kajiya, a system engineer in Yokohama who decided to change and become a farmer. He is now an apprentice of Giichi Tanaka, an 86-year-old farmer who went to the farms right after coming back from World War II. "The work is slower paced and its really fulfilling...I know I will enjoy my life much more in touch with my community. Here you even talk to strangers, kids say hi. I think I will enjoy the country life." http://www.bbc.co.uk/news/business-15850243

TIME AS A NEW CURRENCY IN SPAIN The residents of the city of Málaga, on the country's southern Mediterranean coast just 130km from Africa, have set up an online site that allows them to earn money and buy products using a virtual currency. The Catalonian fishing town of Vilanova i la Geltrù has launched a similar experiment, but with a paper credit card of sorts. It implements a new currency worth slightly more than the euro when it is used at local stores. Started as a way of breaking with the global financial system, the alternative currency - named after a traditional wind instrument - has been embraced by only about 190 of the town's 67,000 residents. But organisers say more are signing up as the crisis deepens. Ton Dalmau, 57, one of the founders of the initiative, said the goal is to keep the money in circulation; to help, the bank where people keep their Turutas does not offer any interest. "This is a way for people who are on the fringes of the economy to participate again," said Josefina Altés, coordinator of the Spanish Time Bank Network. In Spain, however, the economic crisis has been an impetus to move faster. There are now more than 325 time banks and alternative currency systems in Spain, involving tens of thousands of citizens. Collectively, these projects represent one of the largest experiments in social money in modern times. Peter North, a senior lecturer at the University of Liverpool, says the efforts in Spain may last longer because they are connected to the 15M, or indignados movement. "Instead of just being a desperate way for people to survive a horrible economic crisis, this is part of the cooperatives, credit unions, community banks, organic farms, and recovering factories - the alternate economy - that the Occupy movement is groping towards" North said. http://www.quardian.co.uk/world/2012/sep/04/spain-euro-free-economy

CAUSE BRANDING As the sheer number of media channels and advertisements has risen, it has become harder and harder to reach Millennials. Cause Branding has become an effective tool to reach and communicate with the Millennial generation. It is a generation that is comprised of individuals who are extremely ambitious and not only have high expectations for themselves, but also for those around them, including their friends, families, communities, and brands. It is also a generation that has been shaped by tragic world events such as 9/11, and natural disasters

such as Hurricane Katrina. The result is a group that has developed a strong social conscience amplified by technology. http://www.greenbook.org/marketing-research.cfm/millennial-cause-study





FACTS

MILLENNIALS' EXPECTATION

It is estimated that there are 78 million The so-called "work-life balance" has Millennials in the United States alone. As a group, the Millennial Generation embodies a spirit of optimism and cooperation. Experts believe that this group is better educated as well as more disciplined and achievement-oriented than the generations that have preceded them. [1]

For some, though, the realities of working life have not met their expectations. 30% of employed Millennials said that the work-life balance was better than they expected, but for 28% the reverse was true. [2] always been a priority for Millennials, and this year's results reinforce that



95% SAYING THAT THE BALANCE IS IMPORTANT, [2]

Studies have found that when a causemessage is linked to a brand in an authentic and relevant way, it can gain the attention and respect of today's young people. Furthermore:

A shared passion for a cause can foster a strong personal relationship between a brand and its target consumer.

Millennials are ready to reward or punish a company depending on its commitment to social and/or environmental causes.

Cause marketing should be considered as a loyalty strategy for engaging Millennials. [1]

They see themselves as: friendly. open-minded, intelligent. responsible, socially minded & informed. [1]



TIME BANKS

World Time Banks: There are 300 registered On time banking with Edgar time banks in the US with a total of 30,000 members. There are an additional 30,000 members in the UK and another 100,000 members throughout 34 other countries. In Washington, D.C., the founder of Time Banks USA, Edgar Cahn, has addressed both the Occupy DC camp and the Freedom Plaza group, and both encampments have started time banks of their own. [3]

Cahn: "We're learning that money isn't what we thought it was, bankers aren't what we thought they were and the monetary system is not enabling us to get to where we need to go. Time banking says that everyone is an asset. [4]







It's a tool that unlocks connectivity and trust and can be applied to each and every social problem...It's a medium of exchange that invites creativity, new enterprises, organisations, and fundamentally different relationships between community and government and public professionals." [4]

"Time banking does not have to push against any closed doors. As the financial economy nosedives, time exchange is enjoying a resurgence and boosting social capital." [5]

SOCIAL CHANGE IS A GLOBAL STATE OF MIND

BEING PERSONALLY INVOLVED IN SOCIAL CHANGE REMAINS IMPORTANT TO...

73% of citizens around the world agree thta what happens in other parts of the world can impact their local community. [6]



84% of adults around the world in 2012. [6]

85% have been engaged in social change activities within the past 6 months. [6]

estimated 536 crowdfunding platforms globally say that the environment and around the world, and the year-over- "green" issues willhave the largest year industry growth is increasing. [7] impact over the next few years. [6]

By the end of 2012, there will be an 66% of adults and 65% of young adults

crowdfunding sites during 2012 is frontier with #Giving Tuesday. estimated to 91% higher than 2011. [7] Following the shop-happy holidays

media increases each year: [7]

2012: \$59 2011: \$55 2010: \$38

The amount of money raised through Social giving has breached a new of Black Friday and Cyber Monday, the Tuesday after Thanksgiving has become a charitable movement powered by social media. In 2012. The avarage donation through social the holiday brought in \$10 million in online donations, a 53% increase over the same day in 2011. (2012: It Was a Very Good Year for Social Giving). [7]

RURBAN EFFECT

For most of the major cities in the US, inbound migration has slowly gone down due to outbound migration to smaller cities and towns. From 2005 to 2010, there was larger increase in outbound movement from New York City than inbound. This has been the case throughout recent years, but 2010 saw a more marked difference.

Inbound migration to Los Angeles has been constant, but the levels of outbound migration suggest that, in the years since 2010, people have decided to stay close to home. The same is true for Chicago and the Boston areas. [8]





In 2008, the world's population was evenly split between urban and rural areas for the first time. There were more than 400 cities with over 1 million inhabitants, and just 19 over 10 million. More-developed nations were about 74% urban, while 44% of residents in less-developed countries lived in urban areas. However, urbanisation is occurring rapidly in many less-developed countries. It is expected that 70% of the world population will be urban by 2050, and that most urban growth will occur in less-developed countries. [9]



For example, the county of Maricopa, Many people will live in the growing with similar growth numbers. [8] numbered 16 in the year 2000. [9]

Arizona, has seen a significant increase number of cities with over 10 million in inbound migration compared to inhabitants, known as megacities. the other cities mentioned. The As the map "Largest Urban population has grown by more than Agglomerations" shows, just three 140,000 residents in just 5 years. cities had populations of 10 million Hidalgo County, in Texas, is another or more in 1975, one of them in a example of the reverse effect, less-developed country. Megacities

> By 2025, 27 megacities will exist, 21 in less-developed countries. [14]

GOING OFF THE GRID

variety of reasons, and they vary in how deeply they go off-grid. "You can't get off all of the grids all the time," he says. "It's living in a cooperative manner a question of which grids you choose to get off of and in what way and for how long." Some people live off the grid part of the year for leisure purposes, taking a few months off from their jobs so they can live in a more relaxed manner. Others get themselves off the public electrical or water systems but still participate in what Rosen calls the "car grid" or the "supermarket grid" or "bank grid".[10]

Rosen says people go off the grid for a Some off-the-grid communities take the intentional community approach. a gathering of like-minded residents (and if you think that sounds like a commune, well, you'd be right). [10]

> 500 homes: Three Rivers Recreation Area includes more than 500 homes scattered across 4.000 acres about an hour's drive from Bend, Oregon, None of them is connected to the power grid. [10]



An April 2006 article in USA Today stated that, according to Richard Perez, publisher of Home Power magazine, about 180,000 American households were living off the grid. [10]

Greater World Community is a 634acre development near Taos, New Mexico. It claims to be the world's first Earthship subdivision - an Earthship is a passive solar house made of natural materials such as adobe, recycled tires, cans, and other materials. [10]

Emerald Earth is an intentional community living on 189 acres

in Mendocino County, near Boonville, California. The community, founded in 1989, includes a dozen people who share a common house with a main kitchen, eating and meeting areas, and a shower. [10]





MAHGRATION

Immigrants are no longer flocking to "Some of the sheen has come off the the US, and some have made a U-turn US economy as the place to make and returned home. Data from the your fortune, especially if you're Internal Revenue Service show that from another country and have a US

either renounced their US citizenship or handed in their green cards - more than the total number of people who did so in 2007, 2008, and 2009 combined. A few made taxes on income earned abroad. but others are seeking greener pastures in the global economy.[11]

More than 215 million people, or 3% of the world's population, are now living outside of their home countries. Diaspora communities already play a vital role in many nations. [12]

education...They know all the hot things that are going in the US, and see a real opportunity to replicate 1,800 people, most living abroad, them or do something similar in their home country that doesn't have it."[13]

the choice to avoid paying US US APPLICATIONS FOR PERMANENT WORK VISAS IN BRAZIL ROSE 77%, AND TEMPORARY WORK VISAS TO 36%. [13]

> The Philippine government formally began encouraging immigration as a way to boost its economy in 1974, placing their workers over seas. Today, one in ten Filipinos have left home to seek work abroad. The money sent back accounts for 10% of the Philippine's gross domestic product. [13]

Over the next five years, diaspora throughout the world will send home more than 1.5 trillion dollars. [12]

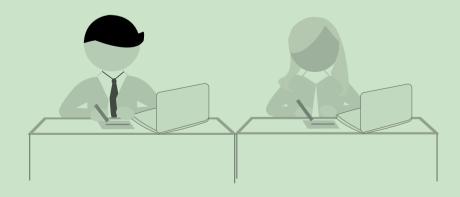
STUDENT ALIGRANTS

expires after 6 years. They are not permitted to start their own companies The highest percentage of students who which also needs to be sponsored. [14] are children of immigrants. [15]

At least 100,000 Indian professionals One third of all US college degrees and students returned in 2010 in engineering go to foreign-born according to Alwyn Didar Singh, a students, as do 27% of those in former Secretary at the Ministry of mathematics, computer sciences, and Overseas Indian Affairs. In order for a statistics. In the physical sciences, foreign student to remain in the US after 24% of degrees go to foreign students; graduating, they must be sponsored by 17% of them in biological, agricultural, an employer and apply for a visa that and environmental sciences. [14]

unless they apply for a green card, excel at high-level science competitions

Michael Clemos of the Global Development Center in Washington calls increasing immigration the biggest no-brainer for raising growth. [15]







CHINESE IMMIGRANTS

the area of New York grew from been greater among the Asian Ameri-11 with assets of \$23 million in can because of rising education and 1990 to at least 47 with assets of wealth. The Asian American share more than \$218 million in 2007. [16] affluent US households: those with



INDIA AND CHINA'S ECONOMIES ARE **EXPANDING AT AROUND 7%. [17]**

Chinese family foundations in The philanthropic potential has never more than \$500,000 in investible assets grew from 1% to 5% in 2 years. Nearly half of all Asian Americans haveat least college degrees, compared to 27% of Americans overall. [16]

> The Chinese Ministry of Education estimates that the number of Chinese living overseas who returned to China more than tripled between 2007 and 2010, from 44,000 to 135,000. [17]

OTHER SILICONE VALLEYS

The map at www.slate.com shows around 20 places that, at one time or another, have entered the race to become a potential successor to Silicon Valley - or at least a regional counterpart. [18]



Among these new Silicone Valleys are:

Bangalore, India

(according to The New York Times)

Berlin, Germany

(according to NPR)

Brno, Czech Republic

(according to Leaders Magazine)

Indonesia, Kenva, Sao Paulo, Shenzhen, Singapore, and Skolkovo.

Among many other cities, all have been noted by reputed magazines, journalists, and bloggers. [18]



- 1 http://tinyurl.com/bqss6az
- 2 http://transitions.s410.sureserver.com/?cat=7
- 3 http://tinyurl.com/cp9zipi
- 4 Edgar Cahn, About Time, 2011, http://tinyurl.com/ c4axq83
- 5 Clare Goff, "Crunch Time", 2011, http://www.cles.org.uk/ features/crunch-time/
- 6 Walden University's Social ChangelMpact Report: Global Survey, conducted by Harris Interactive, 2012
- 7 2012: It Was a Very Good Year for Social Giving.
- 8 http://www.forbes.com/special-report/2011/migration. html
- 9 http://www.prb.org/Educators/TeachersGuides/ HumanPopulation/Urbanization.aspx
- 10 http://tinyurl.com/78fmrlm/ http://www.off-grid.net/
- 11 http://tinyurl.com/c5tktjd
- 12 http://tinyurl.com/bnheznl
- 13 US Immigrants Give Back to Their Homelands, Mary Godoy. http://tinyurl.com/ckda7je
- 14 http://tinyurl.com/brmyjkr
- 15 Bruce Bartlett, "Immigration: The Real Cost of a closed Door Policy", the Fiscal Times, 2011, thefiscaltimes.com/ columns/2011/11/25/Immigration-the-real-cost-of-aclosed-door-policy.aspx
- 16 studies done at University of NY and Georgetown University respectively, "Chinese Immigrants give back to US, LA Times) http://tinyurl.com/5udfjs
- 17 http://tinyurl.com/brmyjkr
- 18 http://tinyurl.com/bpfampj



FACTS 126



CASE STUDIES

TIME BANK/SHARING

<u>CAMDEN SHARES</u> — is a time bank network founded in 2009 for individuals, groups, and organisations to share their time, resources, and much more. It is about making stuff happen. Using time banking, Camden Shares encourages individuals, groups, and organisations to share resources. This could be energy, expertise, knowledge, space, contacts, or something else entirely. University College London became involved with Camden Shares in 2010, initially when exploring training locations with the local community. The university quickly recognised that through Camden Shares it could offer one of its most plentiful resources – space – on a reciprocal basis. Allowing the community to book meeting and training space on campus brought a new audience into the university, while simultaneously opening up the local community to the students. http://www.camdenshares.org.uk/

SHARE TOMPKINS — based in Ithaca, New York, steers people to resources that already exist, such as food pantries and freeskool, as well as sharing platforms that are emerging locally, such as the Ithaca Carshare and the Ithaca Biodiesel Cooperative. It also helps to organise and spread the word about skillshares, swaps, barters, and other sharing events. http://sharetompkins.wordpress.com

THE MUTUAL — is a website that offers participants treasure chest deals. But instead of paying for discounts at individual businesses, they pay for donations to non-profits and get the discount as an added benefit. Participants pay \$10 per month, and each month they have the chance to choose which partnering cause will receive their cash. Unlike Groupon, business participants don't have to face one-time customers that take advantage of deep discounts and never come back, and yet there is still huge potential to make an environmental impact. http://www.fastcoexist.com/1679024/the-mutual-a-groupon-for-good-that-rewards-you-for-donating-to-nonprofits

KNOWLEDGE TRANSFER PROGRAMS

HONEY BEE NETWORK — seeks to bridge the gap between the information haves and have-nots by tapping into and democratising the wealth of knowledge at the community level and digitising that knowledge in electronic networks. The Honey Bee Network addresses one of the major impediments to realising the innovative potential of Indian communities: the lack of an efficient feedback system. Unlike the more developed segments of urban society, the creativity of knowledge-rich peoples in rural and isolated areas go largely unseen because they lack the necessary channels for sharing their ideas with the wider population. By providing publicly available access points (e.g. kiosks) in remote villages throughout India, the Honey Bee Network affords these geographically disadvantaged peoples an opportunity to share their creations and ideas with their peers in other parts of the country and the global community. http://www.sristi.org/hbnew/

SAMASOURCE — is a non-profit organisation that brings dignified, computer-based work opportunities to people living in poverty around the world. The organisation's mission is based on the belief that poverty can be alleviated by tapping into the brainpower of the poor, and empowering them as producers of goods and services in the global economy. Samasource secures contracts from enterprise customers to provide data entry, digitisation, content moderation, and other outsourcing services. The work is divided into smaller tasks called "microwork", which are completed by Samasource's distributed workforce. This workforce comes from Service Partners in 6 different





countries including Haiti, India, Kenya, Pakistan, South Africa, and Uganda. Samasource is headquartered in San Francisco, California. http://samasource.org

AAKASH ANDROID TABLET — Enabling India for \$38: The Indian government and Datawind company have released the Aakash, a 7 Android-based tablet. The Indian government has contracted to buy some 8-10 million of the devices by March 2012, and will initially be giving the devices away to students for free. When available commercially, the devices will sell for around \$38. "The rich have access to the digital world, the poor and ordinary have been excluded. Aakash will end that digital divide," Telecoms and Education Minister Kapil Sibal told The Times of India. http://the-gadgeteer.com/2011/10/06/akash-android-tablet-enabling-india-for-38/

MAKE A DIFFERENCE

<u>HOPEMOB</u> — is an initiative based on generous strangers uniting to make a real difference all around the world by voting on which lives to help. HopeMob will bring caring strangers together to create sudden yet organised relief and hope all over the world. http://hopemob.org/

<u>DOSOMETHING.ORG</u> — harnesses energy and unleashes it on causes teens care about. Almost every week a new national campaign is launched; the call to action is always something that has a real impact and doesn't require money, an adult, or a car. With a goal of 5 million active members by 2015, DoSomething.org is one of the largest organisations in the US for teens and social change. http://www.dosomething.org/about

<u>OPEN IDEO</u> — is an open innovation platform. It is a global community that draws upon the optimism, inspiration, ideas, and opinions of everyone to solve big challenges for social good together. People can share ideas and inspirations about answering a big question, and then see their ideas refined and strengthened through the collaboration of the community. After evaluating the different ideas, there is a winning concept chosen and evaluated by the community of participants and experts. http://www.openideo.com/how-it-works/full.html

PARTICIPATORY DEMOCRACY

PARTICIPATORY DEMOCRACY IN BRAZIL'S PORTO ALEGRE - The Workers' Party's big idea was to allow the 1.5 million citizens, rather than the politicians, to allocate a significant proportion of the city's budget. In other words, they turned Porto Alegre into a participatory democracy. To this day, each neighbourhood gets together every week to analyse the previous year's budget and discuss what they want to build into the next. Anyone can speak, and together they elect representatives who - with delegates from other areas - put their proposals to a citywide assembly that makes the final decision on what gets funded. The effects have been overwhelmingly positive; within seven years, the percentage of locals with access to sewers doubled from 46 to 95. The rate of road building, particularly in the favelas, rose five-fold. Tax evasion fell as people saw what their money was being spent on. Best of all, the process gave a voice to people who had traditionally been ignored by the political process. According to academic Rebecca Abers, who spent years studying the city, citizens from the poorest 12% accounted for a third of the assembly participants in 1995. Today, 15,000 locals take part in the orgamento participativo each year, and one in 10 citizens have taken part in some way. (http://www.guardian.co.uk/world/2012/sep/10/participatory-democracy-in-porto-alegre)

ALTERNATIVE LIVING



THE SEASTEADING INSTITUTE'S — goal is to enable seasteading communities: floating cities which will allow the next generation of pioneers to peacefully test new ideas for governments. The most successful communities will inspire change in governments around the world, enabling humanity to live together better and unlock its full potential. http://www.seasteading.org

LA MAISON DES BABAYAGAS — based in Montreuil, France (a suburb of Paris), is a self-managed cooperative society for senior women, free of the



CASE STUDIES 130



institutional constraints of a nursing home or a rest home. The self-managed housing is designed to accommodate twenty women living independently in studio kitchen apartments, sharing common areas. It has no permanent nursing staff or medical equipment. The residents share the duties of running the house and provide on-going support to each other. They secured significant funding from the community by creating a partnership with UNISAVIE, a University of Knowledge about Old People. In addition to the senior apartments, there are four additional units for university students within the community. There is also a spa on the premises to take care of the body, a place for entertainment, and rooms for education and continued learning, all thoughtfully designed to stimulate the mind and nurture the spirit; all this, at one tenth of the cost of a nursing home. http://www.lamaisondesbabayagas.fr/

ANASTASIA ECOVILLAGE MOVEMENT — in Russia advocates the structure of the "Family Domain" – a hectare of land with woods, fruit trees, a vegetable garden, and a small pond – owned outright by a family and passed down through the generations. The "ecovillage" members individually own their one-hectare family domains, linked by a common infrastructure through which people share resources including community space and schools. Kovcheg and Rodnoye are the most famous ecovillages, but there are other Anastasia-inspired projects already established and hundreds in the planning stages in Russia. Such villages attract both locals and foreigners. http://www.eco-kovcheg.ru/

SUCCESSFUL COMPANIES FROM EMERGING COUNTRIES

ORGANIQUE ENERGY DRINK — "Is the first organic energy drink in Brazil. After years of research, travel, and meticulous preparation, we made a sustainable energy drink, with certified organic ingredients from Brazilian Amazon." http://organique.com.br

NATURA COSMETICS — is a beauty and personal-care space from Brazil that has now extended to several countries in Latin America. They promote good living and health through their products, while transmitting the importance of transparency for their company with the stated goal of keeping an open dialogue with their public. They are now buying 65% of Aesop, a high-end beauty brand

operating in APAC, Europe, and North America. http://scf.natura.net/SobreANatura/

<u>DADO BEER</u> — called the number one beer in Brazil, started the fabrication of specialised beers as a micro-brewery and have since become a gastronomic reference. They are known for their array of flavours and experimentation in the brewing process. http://cervejaria.dadobier.com.br/tradicao





IMPLICATIONS FOR TELEFÓNICA

DEFINE AND PROMOTE OUR VISION OFDefine the values of Telefónica

ETHICS TO POSITION TELEFÓNICA AS A Digital and create new KPIs regarding GOOD BUSINESS sustainability, transparency, and credibility while encouraging intercultural communications.

TRACK THE SUSTAINABILITY OF OUR Ensure our suppliers and the

NEW INNOVATIONS information are reliable.

RECRUIT EMPLOYEES WHO CARE ABOUT Develop ways to assess this. SUSTAINABILITY

ACTIVELY REWARD AND INCENTIVISE
Through employee engagement

SUSTAINABLE BEHAVIOUR and commitment to initiatives such as carpooling, recycling, Think BIG, Proniño, etc.

ALLOCATE INVESTMENT TO DEVELOP

Make sustainabilty a key

SUSTAINABLE/GREEN TECHNOLOGY evaluation criteria for innovation

FOCUS ON SOCIAL INNOVATION

Create an internal movement to raise awareness about social needs. and enable employees' own utopias to be achieved through collaboration and bottom-up innovation.

WORK MORE CLOSELY WITH LOCAL OBS = Find ways to incentivise them to be part of our innovation process. Identify where innovation transfers can happen between countries, especially from emerging to mature markets.

LOOK OUTSIDE OUR CORE FOOTPRINT
Monitor frugal innovation and develop a deeper understanding of emerging markets in asia, africa, etc.

RENEW IMPORTANCE AND INTEREST

Create partnerships with cities/

FOR SMART CITIES communities to generate more sustainable urban solutions.







ADDITIONAL SOURCES

■ Wadhawa, Vivek: The Immigrant Exodus: Why America Is Losing the Global Race to Capture Entrepreneurial Talent, 2012

Gansky, Lisa: The Mesh: Why the Future of Business is Shαring, 2010

Stiglitz, **Joseph**: The Price of Inequality, 2012

Emistensen, Clayton.M. How Will You Measure Your Life? 2012

Brockman, John, Culture: Leading Scientists Explore Societies, Art, Power, and Technology, 2011

Heath, Chip, Switch: How to Change Things When Change Is Hard, 2010

Interactive map: American Migration within the US: an interesting look at how some cities are growing, some are dwindling, and towns are seeing massive influxes of expats returning home. http://www.forbes.com/special-report/2011/migration.html

S U - S T

A

I

N A 8 L E

U

T

P - I A

ADDITIONAL SOURCES 136

ARIANE VAN DE VEN



TELEFÓNICA DIGITAL PDI





HUMAN HISTORY BEGAN WITH AN ACT
OF DISOBEDIENCE, AND IT IS NOT
UNLIKELY THAT IT WILL BE TERMINATED
BY AN ACT OF OBEDIENCE

ERICH FROMM



INTELLIGENT DISOBEDIENCE



INTELLIGENT DISOSEDIENCE

In the 2012 trend report, we discussed people's increasing distrust for governments, institutions, and corporations, and the rise of self-organised groups that are challenging the norm, motivated by a thirst for credibility and independence (see Micro Mightiness trend*).

In the Reinvention Era, people will become more daring and increasingly question authority. For the last decade in the Western world – and for a large part of history in the rest of the world – institutions.

governments, and corporations have proven that they do not have the interest of the majority of people at heart. Established authorities have shown that they are mostly funded by antagonistic interests, whereby what is advantageous for the authority is detrimental to most people. Because people do not feel safe and protected by obeying authority, disillusion and lack of trust in our systems and society will continue to increase. Most citizens distrust their government,

up about 9% since a year ago^[1]. The least trusted institution is banks, at the bottom of the trust barometer for sevaral years now and increasingly distrusted as time passes.

To cope in this challenging environment, disobedience can be deemed necessary and people will defy the rules set by established authorities. Especially for Millennials, the self-proclaimed **Generation**Screwed (see Additional Insights), defiance will take centerstage as a way to challenge the principles of power in a bid to overthrow an

unjust authority that offers few prospects for a positive future. People will display *Intelligent Disobedience* (see Additional Insights): the ability to make an informed decision about when and where to be disobedient.

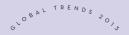
Intelligent Disobedience will lead people to turn themselves into Solvers: individuals who are looking for alternative solutions in order to mend a desperately broken system. Solvers are everyday people, hackers, tinkers, artists, activists, anyone who is involved in trying to approach issues and fix problems in a different way. Solvers

INTELLIGENT
DISOBEDIENCE WILL
LEAD PEOPLE TO TURN
THEMSELVES INTO
SOLVERS: INDIVIDUALS
WHO ARE LOOKING FOR
ALTERNATIVE SOLUTIONS
IN ORDER TO MEND A
DESPERATELY BROKEN
SYSTEM

are outspoken: they expose wrongdoing and dare to say no to the established authority. They are critical and are not afraid to go beyond their *mental script* (see Additional Insights) to face the new realities, regardless of how challenging they are. Solvers are doers; they are motivated by action and result. They display resourcefulness and ingenuity in making repairs and improvements to the system they are trying to fix. They are solution-driven.

Solvers reveal that good behaviour and obedience alone won't always accomplish the needed goals. Breaking the law isn't solvers' motivation, but rather making things better in spite of the limitations the law might impose. In the Reinvention Era people will become solvers, harnessing digital tools to fix problems and reinvent the future on their own terms.





SOLVERS MURTURE A TINKER MINDSET

In a context where instability and change are the only constant. developing a mindset that helps people find their own solutions will be important. The tinker mindset will help people become active participants in the Reinvention Era. Tinkering can be linked to specific cultural habits; in fact, the more constraints that are placed on people, the more creative and ingenious they tend to become (see Additional Insights). In this sense, emerging markets in LatAm, Africa, and Asia have a tradition of Intelligent Disobedience and Jugaad Innovation, a form of for frugal innovation (see Additional Insights). People have been displaying epistemic and civil disobedience for a long time (see Additional Insights) by building underground and alternative systems for survival. They develop a tinker mindset, which emerges from the constraints of their environment. For instance, as Cuba grew increasingly isolated due to the US embargo, Cubans learned to repair and repurpose objects

so that they could be used in a different way than their original design. Cubans became tinkerers that displayed technological disobedience. Tinkerers change the lifecycle and use of objects depending on specific needs; they find new functions for objects and, in doing so, invent new ones. Their motives are not based on transgressing authority, but are rather about finding coping mechanisms within a highly restrictive system. Their proactive attitude towards repurposing and repairing things will come as a great strength in the context of the Reinvention Area. It will provide people with inspiring lessons about how to innovate.

e can envision that some of the greatest examples of reinvention will rise out of "constrained" regions such as CIVETS (Colombia, Indonesia, Vietnam, Egypt, Turkey, South Africa) and MIKT (Mexico, Indonesia.

ANYBODY WHO CAN IDENTIFY A PROBLEM CAN CONTRIBUTE TO THE SOLUTION.

FOSTERING CRITICAL THINKING SO THAT PEOPLE CAN DEVELOP THEIR OWN
INTELLIGENT DISOBEDIENCE WILL BE INSTRUMENTAL IN THE REINVENTION ERA

South Korea, and Turkey). For example. South Korea ranks as the second most innovative country due to its leading innovation in electronics and telecommunications[2]. The innovation transfer will increasingly happen from Third World to First World, as opposed to from First World to Third World. It will change the dynamics of the globally connected society and will demonstrate that the greatest innovations can truly come from anywhere. For example, Vostu (see Case Studies), established in Brazil by three returning Harvard graduates, is the largest social gaming company in Latin America. It has over 50 million registered users for their apps and games, and an estimated value of \$300 million[3].

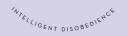
Nurturing the ability to be critical and take a proactive approach to life will become a recurring topic. People will look at how the educational system can be reinvented to encourage a tinker mindset. The educational system

does not traditionally encourage non-linear or divergent thinking. Instead of being told what to do and follow instructions, some studies are showing the value of encouraging students to break the rules and take risks as part of the learning process. This can help increase cognitive ability. According to Alison Gopnik, "While learning from a teacher may help children to get to a specific answer more quickly, it also makes them less likely to discover information about a problem and to create a new and unexpected solution"[4]. The capacity for being disobedient is now perceived as instrumental to our intellectual development toward becoming independent and daring individuals.

A

nybody who can identify a problem can contribute to the solution. Fostering critical

thinking so that people can develop their own intelligent disobedience will be instrumental in the Reinvention Era.





IDENTIFYING THE REAL PROBLEMS AND EXPOSING WRONGDOING

he Reinvention Era will be characterised by people's desire to fix things, by identifying real problems and exposing wrongdoing. With more access to information, knowledge, and networks, the world is becoming more transparent and injustice is more difficult to hide. At the same time, it makes it difficult for people to remain passive observers. They become solvers, and solvers are doers. Solvers care about results instead of fame. They use subversion to approach problems from a different angle. Tinkerers don't embarrass themselves with convention - they look for effective ways to make things happen. They are willing to look outside the perimiters of the law to put things right. Many solvers will draw inspiration from underground and secretive movements to organise themselves and learn how to build their adaptability. uncover new possibilities. and challenge the authorities. Intelligent Disobedience will lead people to embrace digital tools and engage in cyber civil disobedience (see Additional

TINKERERS DON'T EMBARRASS
THEMSELVES WITH CONVENTION THEY LOOK FOR EFFECTIVE WAYS
TO MAKE THINGS HAPPEN. THEY
ARE WILLING TO LOOK OUTSIDE THE
PERIMITERS OF THE LAW TO PUT
THINGS RIGHT

Insights) to fix problems while retaining anonymity. As a result, tinkerers organise themselves in groups that use underground and alternative channels to expose injustice and plan ways to disrupt the authorities. For example, *The* **Deep Web**, the set of information resources on the World Wide Web not reported by normal search engines (see Additional Insights), provides a platform for many illegal operations; however, there is also a lot of valuable data located within it. Solvers are willing to use such tools as long as they serve in resolving a problem. For example, the Deep Web can be used to communicate amongst themselves, hidden



from the authorities. It is a powerful instrument that is vital for people to freely exchange ideas and information. The Deep Web can promote new ideas and forms of protest. Indeed, solvers fight for the right to privacy and are inexorably combatting initiatives such as **SOPA** (see Additional Insights), which are increasingly threatening to erode people's privacy. Solvers demonstrate the importance of social criticism and going beyond our mental script.

Disobedience will creep into many aspects of society, wherever people feel there is injustice or inefficiencies. Civil and epistemic disobedience led by organised minorities who refuse decisions made by the government - exemplified by the Occupy Wall Street movement and Los Indignados - will continue to propagate. Citizen Journalism is a movement led by citizens who want to play an active role in the process of collecting, reporting, analysing, and disseminating news and information (see Additional Insights); these types of movements encourage social criticism. The "critical mood" will also affect people's consumption. Consumer disobedience will manifest through the use of alternative currencies - such as **Bitcoins**, a digital currency that is



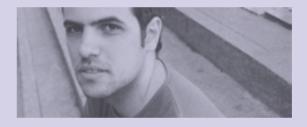
untraceable (see Case Studies) - or by using cash instead of credit cards. Disobedient consumers will also combat planned obsolescence by fixing things the tinkerer way: swapping and repurposing them. They will go off the grid (see Additional Insights), engaging in piracy, saying no to logos, and becoming brand disloyal. Similarly, artists will participate in Intelligent Disobedience and help nurture the critical mood by exposing injustice and wrongdoing. Rhizome, for example, offers a platform for people to expose issues occuring around the world through art projects; the group sometimes commissions projects around specific issues such as surveillance or privacy (see Case Studies).

In the Reinvention Era, solvers will challenge authority and will create alternative solutions for people to become active participants in a globally connected society.



- Edelman, Trust Barometer 2012: HTTP://TRUST.EDELMAN.COM/ TRUST-DOWNLOAD/GLOBAL-RESULTS/
- Bloomberg Business Week: HTTP://IMAGES.BUSINESSWEEK.COM/ SS/09/03/0312_INNOVATIVE_COUNTRIES/30.HTM
- HTTP://WWW.FASTCOMPANY.COM/MOST-INNOVATIVE-COMPANIES/2012/INDUSTRY/BRAZIL#VOSTU
- Why Preschool Shouldn't Be Like School: New research shows that teaching kids more and more, at ever-younger ages, may backfire by Alison Gopnik, for Slate: HTTP://www.SLATE.COM/IS/2288402/
- WWW.GLOBALTRENDS.TELEFONICA.COM

PEOPLE



ENRIC DURAN GIRALT, also known as Robin Bank, Robin Banks, or the Robin Hood of the Banks, is a Catalan anticapitalist activist and member of the Temps de Re-volts collective. On September

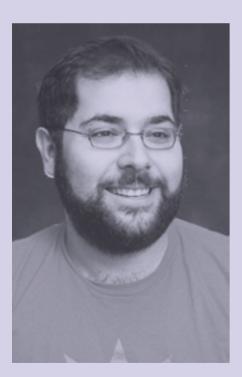
17, 2008, he publicly announced that he had "robbed" dozens of Spanish banks of nearly half a million euros as part of a political action to denounce what he termed the "predatory capitalist system". From 2006 to 2008, Duran took out 68 commercial and personal loans from a total of 39 banks with no guarantees or property as collateral. He had no intention of repaying the debts, and used the money to finance various anti-capitalist movements. In 2008, Duran released both an online article entitled I have "robbed" 492,000 euros from those who rob us the most, in order to denounce them and build alternatives for society (translated), and an online video (http://blip.tv/okupemlesones/robin-bank-eningles-1286958). Each explains what he had done, and that he had left the country to view the reaction and consider his next move. This was also published in the free magazine Crisis, in Catalan, of which 200,000 copies were printed and distributed by volunteers throughout Catalonia. A second newspaper, We Can! Live Without Capitalism was distributed on March 17, 2009, and a third, We on September 17, 2009. Duran stated that he sought to create a debate about the financial system and the current capitalist





system, proliferate protest actions against it and fund the social movements that seek to create alternatives. Duran called his action one of "financial civil disobedience", and stated that he was prepared to go to prison for his actions. http://en.wikipedia.org/wiki/Enric_Duran

ERNESTO OROZA, a Cuban immigrant to the US, is an artist and designer who demonstrates for us the inventiveness of Cubans in times of crisis. After much deliberation, he came up with a concept of technological disobedience in which many of the inventions served to keep batteries powered and electricity running. "When we accept the burgeois criteria that sanctions necessity as indignant and he who expresses his needs as weak and vulgar, we participate in the systematic reduction of creativity and freedom in which contemporary culture could manifest. Une étude sur la désobéissance technologique et quelques formes de réinvention." http://www.vice.com/en_uk/motherboard/the-technological-disobedience-of-ernesto-oroza http://creativethreshold.wordpress.com/2012/09/22/technological-disobedience-of-ernesto-oroza/

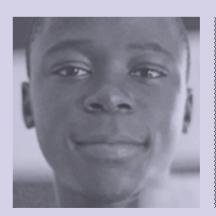


DARIUS KAZEMI is a game developer who has created a number of web projects that deal with randomness, similar to the type that creates algorithms for websites like Amazon. "In the process of making random stuff I realised that what I was coming up with is more interesting than the stuff Amazon recommends. This is a conscious effort to break the filter bubble. 'Random Shopper' is that experiment of random algorithm without a filter. By saying that it's totally random, you change the expectations. I am going to open source the code for the bot, and I will happily encourage anyone to take the source code and build something of their own, commercial or not." http:// www.huffingtonpost.co.uk/2012/12/05/randomshopper-darius-kazemi_n_2243122.ht



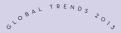
WILLIAM KAMKWAMBA, born August 5. 1987. is a Malawian inventor and author. He gained fame in his country when, in 2002, he built a windmill to power a few electrical appliances in his family's house in Masitala using blue gum trees, bicycle parts, and materials collected in a local scrapyard. Since then, he has built a solar-powered water pump that supplies the first drinking water in his village, and two other windmills - the tallest standing at 39 feet. He is currently planning two more, including one in Lilongwe, the political capital of Malawi. After being forced to drop out of school due to tuition prices (~\$80 USD), he took up self-education by going to his village's library. There he found the book Using Energy, and in it discovered a picture and

explanation of windmills. He then decided to try to create the windmills he read about. After a few attempts, he was able to build a working model. His story is told in The Boy Who Harnessed the Wind: Creating Currents of Electricity and Hope, written with journalist Bryan Mealer and published in 2009. http://en.wikipedia.org/wiki/William_Kamkwamba VIDEO: http://www.ted.com/talks/william_kamkwamba_on_building_a_windmill.html



KELVIN DOE, from Sierre Leone, observed when he was 13 years old that off-the-shelf batteries were too expensive for the inventions he was working on. So, he made his own at home. Kelvin did not have the privilege of working on his project in a school environment. Rather, he was compelled to act by necessity and for the joy of solving practical problems. Kelvin combined acid, soda, and metal, dumped those ingredients in a tin cup, waited for the mixture to dry, and wrapped tape





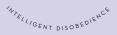
around the cup to make his first battery. One of his batteries was made by hacking an old rusty voltage stabiliser he had found in a dustbin. The generator's motor, plug, and other components are either homemade or picked from the garbage. In addition to providing electricity to his home, where neighbours come to charge their mobile phone batteries, the generator powers Kelvin's homemade FM radio station, fully equipped with a custom music mixer, recycled CD player, and antenna, which allow his whole neighbourhood to tune in. He was one of the finalists in GMin's Innovate Salone idea competition, in which Doe built a generator from scrap metals. As a result of his accomplishment, he received an invitation to the US and subsequently became the youngest person to participate in the Visiting Practitioner's Program at MIT. http://whatsnext.blogs.cnn.com/2012/11/14/diy-africa-empowering-a-new-sierra-leone/

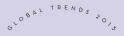


ADDITIONAL INSIGHTS

disobedience, can refer to any type of civil disobedience in which the participants use information technology to carry out their actions. Electronic civil disobedience often involves computers and the Internet, and has also been referred to as hacktivism. The term "electronic civil disobedience" was coined in a book title including the term: Critical Art Ensemble's (1996) Electronic Civil Disobedience and Other Unpopular Ideas. Electronic civil disobedience seeks to continue the practices of nonviolent yet disruptive protest, originally pioneered by Henry David Thoreau who, in 1848, published Civil Disobedience. A common form of ECD is a Distributed Denial of Service (DDoS) attack against a specific target, also known as a virtual sit-in. Virtual sit-ins are sometimes announced on the Internet by groups such as the Electronic Disturbance Theatre or the Borderlands Hacklab. Computerised activism exists at the intersections of politico-social movements and computer-mediated communication. Stefan Wray writes about ECD:

"As hackers become politicised and as activists become computerised, we are going to see an increase in the number of cyber-activists who engage in what will become more widely known as Electronic Civil Disobedience. The same principles of traditional civil disobedience, like trespass and blockage, will still be applied, but more and more these acts will take place in electronic or digital form. The primary site for Electronic Civil Disobedience will be in cyberspace." http://en.wikipedia.org/wiki/Electronic_civil_disobedience





their owner's instructions in an http://p2pfoundation.net/Holoptism effort to make a better decision. Dr. Gifford Jones, Seeing Eye dogs can HOLOPTISM is a term that

CONSTRAINTS Dr Patricia but also the vertical knowledge Stokes found that "constraints" related to the aims of the project. help structure the solution http://p2pfoundation.net/Holoptism path by limiting (precluding) and direction (promoting) MILLENNIALS - GENERATION The Psychology Breakthrough, 2005

slippery slope. Laurence Gonzales, http://www.thedailybeast.com/ Everyday Survival: Why Smart People do newsweek/2012/07/15/are-millennials-the-Stupid Things, (2008)

INTELLIGENT DISOBEDIENCE PANOPTISM describes how is a concept used in reference knowledge is distributed in to animals since 1936. It refers to hierarchical organisations. a situation where a service-an- Only the top of the pyramid imal trained to help a disabled has a full view of what is person goes directly against going on in the organisation.

teach us a lesson, December 5, 2003 describes the ability for any member to have horizontal knowledge CREATIVITY FROM of what the others are doing.

search in a problem space". SCREWED The wealth gap The secret to a creative today between younger and older solution is a precise problem. Americans is the widest on record. Since 2008, the percentage of the workforce under 25 has MENTAL SCRIPTS are dropped 13.2% according to the our conditioned responses to Bureau of Labor Statistics. The situations. Mental scripts push unemployment rate for people us, for example, to stubbornly between 18 and 29 is 12% in the cling to the notion that "this US, nearly 50% in Spain, 22% is how we have always done in the UK, and 8% in Germany. it" and refuse to accept the Generation Screwed is crippled realities of a new situation. So by debt incurred by the senior we find ourselves mistakenly population and their own student pushing into the future with bills. Nationwide tuition debt whatever worked in the past, a in the US is close to \$1 trillion. screwed-generation.html

process or method used to generate defined by Alfred Moore as "organised creative ideas by exploring many possible minorities refusing to accept expert solutions. It is often used in conjunction claims to authority". Alfred Moore, 2012, with convergent thinking, which follows a Epistemic Disobedience, http://www.ucl.ac.uk/sts/ particular set of logical steps to arrive at sts-publication-events/2012 06 20 PUS Seminar one solution: in some cases it is a "correct"

DIVERGENT THINKING is a thought EPISTEMIC DISOBEDIENCE was

solution. Divergent thinking typically occurs in a spontaneous, free-flowing manner, such that many ideas are generated in an emergent-cognitive fashion. Many possible solutions are explored in a short amount of time and unexpected connections are drawn. After the process of divergent thinking has been completed, ideas and information are organised and structured using convergent thinking. Psychologists have found that a high IQ alone does not guarantee creativity. Instead, personality traits that promote divergent thinking are more important. Divergent thinking is found among people with personality

CHANGE The 15-M movement emerged Additionally, researchers at Vanderbilt during the Spanish campaign for University found that musicians are more regional and municipal elections in adept at utilising both hemispheres, May of 2012. Social networks were key and more likely to use divergent to the success of the movement. The thinking in their thought processes. most interesting part of the movement http://en.wikipedia.org/wiki/Divergent thinking is that it was born and difused on

traits such as nonconformity, curiosity, SOCIAL NETWORKS AND SOCIAL willingness to take risks, and persistence.

the Internet, but also had an impressive offline presence. Opposition to the "Ley Sinde" opened the political opportunity to give structure to the movement. The support of thousands of youth around the world - through Wikileaks and the Arab revolution - brought about new venues for political activism online. An autoorganised event launched on Twitter, the movement had around 4,500 members on May 15, 2011, and then grew to about 45,731 within 6 days. As the movement kept growing online, so did the offline protests all over Spain. After the prohibition of the "Acampada Sol", there was an intensified rise in youth participation in the movement, and growing media coverage. http://dialnet.unirioja.es/servlet/articulo?codiqo=3809329)

CITIZEN JOURNALISM is based on public citizens playing an active role in the process of collecting, reporting, analysing, and disseminating news and information. Citizen journalism is a specific form of both citizen media and user-generated >





content in new media technology, such as social networking and media-sharing websites. These tools, in addition to the increasing prevalence of cellular phones, have made citizen journalism more accessible to people around the globe. Due to the availability of technology, citizens can often report breaking news more quickly than traditional media reporters. Meteorologists are increasingly turning to social media for reports and evidence that arrives quicker than traditional storm-spotters. According to one report, there was an overwhelming "ground truth" on social media during recent hurricane Sandy. A quarter of the 20 million tweets published during Sandy included photo and video, verifying meteorologists' predictions and giving clarity and certainty about the activity of the storm. Other notable examples of citizen journalism include the Arab Spring and the Occupy Wall Street movement.

Tim Pool learned about the Occupy Wall Street movement through social media and decided to see it for himself. When he arrived from Chicago, he began to record and document the protests with his smartphone. Before long he became one of the primary independent journalists broadcasting Occupy Wall Street. "With just a smartphone, you can send tweets, you can send messages, photos, and do a broadcast for a very long amount of time." He reached about 750,000 viewers on one of the most significant days of the movement. Another example is discribed in a documentary called High Tech: Low Life, which follows the journey of two of China's first citizen journalists as they travel the country chronicling underreported news and social issues. Critics of the phenomenon, including professional journalists, claim that citizen journalism is unregulated, overly subjective, amateur, and haphazard in quality and coverage. http://mashable.com/category/citizen-journalism/ & http://hightechlowlifefilm.com/film/

THE DEEP WEB refers to the set of information resources on the World Wide Web not reported by normal search engines. People can download special software to connect with what lies beneath the "surface" of the Web (the set of websites directly accessible through hyperlinks). The software masks the user's identity. encrypting the user's data. Such software has been downloaded over two million times, revealing the need for many people to find alternative, private communication channels. Activists and campaigners from around the world have been able to organise themselves thanks to this underground channel. For example, many of the videos shot during the Syrian revolution were first posted on the Deep Web. and later transferred to YouTube.

http://en.wikipedia.org/wiki/deep_web

GOING OFF THE GRID Some people STOP ONLINE PIRACY ACT will decide to show their consumer (SOPA) is a US bill to expand the reach disobedience by getting away from the of US law enforcement to fight online consumption economy. According to Nick trafficking of copyrighted intellectual The Movement For More Space, Less Provisions include the requesting of Government, And True Independence In court orders to bar advertising networks Modern America, this new lifestyle is "real and payment facilities from conducting life and a real choice for real people". People business with infringing websites, and who are living off the grid do not tend to fill search engines from linking to the their lives with the same amount of stuff websites. It also includes court orders as the average consumer. Rosen estimates requiring Internet service providers to that the average off-grid residence uses block access to the websites. The law about 20% of the energy consumed by a would expand existing criminal laws typical American home. Rosen believes to include unauthorised streaming that "perhaps the biggest motivation at the of copyrighted content, imposing a moment is a loss of trust in the government maximum penalty of five years in prison. and the ability of social networks to look Proponents of the legislation assert after us." The Internet is now making the off- that it will protect the intellectualthe-grid lifestyle a real choice and possibility. property market and corresponding

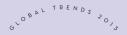
(http://www.off-grid.net/about-us)

Rosen, author of Off The Grid: Inside property and counterfeit goods. industry, jobs, and revenue. They proport that it is necessary to bolster

enforcement of copyright laws, especially against foreign-owned and operated websites. Opponents argue that the proposed legislation threatens free speech and innovation, and enables law enforcement to block access to entire Internet domains due to infringing content posted on a single blog or webpage. They have raised concerns that SOPA would bypass the "safe harbor" protections from liability presently afforded to websites by the Digital Millennium Copyright Act. Library associations have expressed concerns that the legislation's emphasis on stronger copyright enforcement would expose libraries to prosecution. Other opponents state that requiring search engines to delete a domain name could begin a worldwide arms race of unprecedented censorship of the Web; additionally, they believe that it violates the First Amendment. Opponents of the bill have proposed the Online Protection and Enforcement of Digital Trade Act (OPEN) as an alternative, but the plan to draft the bill is currently postponed.

(http://en.wikipedia.org/wiki/Stop_Online_Piracy_Act)





OBAMA ADMINISTRATION'S ARGENTINA'S CRUMPLED SHIRT RESPONSE TO PIPA & SOPA DAY CREATES SMILES AND GREEN OPPOSITION "While we believe AWARENESS Argentineans are intimately that online piracy by foreign websites familiar with angry protests. Perhaps they're is a serious problem that requires a weary of serious rallies, which could explain serious legislative response, we will why Día de la Camisa Arrugada (Crumpled not support legislation that reduces Shirt Day) on December 20, 2012, was freedom of expression, increases such a success. Local NGOs coordinated cybersecurity risk, or undermines the the inaugural event to help prevent global dynamic, innovative global Internet. Any warming by reducing electrical usage. effort to combat online piracy

must guard against the risk of businesses large and small."

http://www.whitehouse.gov/ bloa/2012/01/14/obamaadministration-responds-we-peoplepetitions-sopa-and-online-piracy

is a universal XML-based for hobbyist programmers, http://www.buynothingday.co.uk/ artists, and graffiti writers.

online censorship of lawful BUY NOTHING DAY (BND) is an international day activity and must not inhibit of protest against consumerism, observed by social innovation by our dynamic activists and concerned citizens. Buy Nothing Day is held the Friday after Thanksgiving in North America, and the last Saturday in November internationally. The event was founded in Vancouver by artist Ted Dave, and subsequently promoted by Canadian magazine Adbusters. Buy Nothing Day has recently been modified by Adbusters and renamed Occupy **GRAFFITI MARKUP LANGUAGE** Xmas, a reference to the Occupy Movement. The principles of Occupy Xmas advocate "something open file format designed as simple as buying locally, going out and putting to store graffiti motion data. money into your local economy, or making your The format is designed to Christmas presents by hand." The union of these maximise readability and ideologies calls for Buy Nothing Day to kick off a ease implementation, even season of supporting local economy and family.

http://www.nolaplanches.com.ar

Popular applications currently implementing GML include Graffiti Analysis and EyeWriter. Beyond storing data, a main goal of GML is to spark interest in the importance (and fun) of open data and introduce open-source collaborations to new communities. GML is intended to be a simple bridge between ink and code, promoting collaborations between graffiti writers and hackers. GML is today's new digital standard for tomorrow's vandals. http://www.graffitimarkuplanguage.com/ JUGAAD INNOVATION Western MILLENNIALS RELATIONSHIP TO corporations can no longer just rely AUTHORITY differs from that of previous on the old formula that sustained generations. Millennials weren't raised innovation and growth for decades: a with hierarchical, top-down parenting. mix of top-down strategies, expensive They've grown up with "peerents"; R&D projects, and rigid, highly they're used to seeing authority figures structured innovation processes. as equals. Add to that what it means to Jugaad Innovation argues that the beborn and live within the swarm-power West must look to places like India, of social media, and you have a potent China, and Africa for a new, bottom- mix. Millennials don't think of themselves up approach to frugal and flexible as outside the system. They believe they innovation. Jugaad is a Hindi term that are the system. The fact that there's translates as "an improvised solution no definitive leadership in New York's created from ingenuity and cleverness". Zuccotti Park speaks to this generation's Jaideep Prabhu, who coined the term, complex understanding of power. Young says that this approach to business people in the 1960s had a mandate and innovation could help Western a message. The Boomers stood outside companies access emerging markets, the gate and issued their list of demands. while providing their large, poor, http://www.washingtonpost.com/opinions/occupyingrural populations with simpler, more the-millenial-way/2011/11/02/g/QAc6cdnM_story.html affordable products. Additionally, it could inspire new products for Western markets. "Emerging markets are a big opportunity for Western brands as we live through the recession," says Prabhu. "It's important for them to understand that approach. It's also important because many conditions in Western markets are starting to emulate conditions in emerging markets... The West faces an era of austerity and perhaps, in order to operate in the West better, [Western brands] could learn from this more frugal approach to creation." http://jugaadinnovation.com





FA\$TS

CONSUMER DISOSEDIENCE



There are 945 "culture jammers" or communities of Buy Nothing Day supporters, gathering through www. meetup.com in 453 cities worldwide: 3 in Madrid | 29 in LA | 22 in NY 23 in London | 10 in Melbourn 8 in Berlin | 8 Sao Paulo | 7 Barcelona [2]

Buy Nothing Day More than one million people in at least 65 Total BTC: countries are expected to observe the call 10,627,625 to stop shopping. While there are many anti-consumer activists in the United Total avg. sent States, Buy Nothing Day has become more per hour: popular in Europe. [1]

BitCoin

96,990.53^[3]



	PIRACY	
71,060 jobs are lost in the USA every year due to online piracy.	98.8% of data transferred using P2P networks is copyrighted.	95% of downloaded music is pirated.
70% of online users find nothing wrong with online piracy.	The average iPod has \$800 worth of pirated music.	China leads the world in online piracy, followed by Colombia, India, Brazil. Italy is last on the list.
57% of digital piracy sites are hosted in North America and Western Europe.	More than 75% of computers have at least one illegally downloaded.	The most commonly pirated items on the Web are, in order of prevalence, pornography, movies (35.2%), TV shows, console
91.5% of files available for download in Cyberlockers sites are copyrighted material.	2.5bn in sales are lost each year due to piracy in the music industry.	games, software, and music (2.9%). [4] Rate of software piracy by
In 2010, 42% of people practiced online piracy worldwide.	42% of software in use worldwide in 2010 was illegally downloaded.	country in 2012 (average 60%): Armenia 93% USA 20% Germany 27%
	22% of all global Internet bandwith is used for online	Spain 43% South Korea 43% ^[5]



piracy.



MILLENNIALS' ALINDSET



4 in 5 young activists would be more likely to purchase from a company that Young adults care about 8 big supports a cause they care about.^[7] issues: quality education, access to education, cancer, obesity, literacy, access to healthcare, energy conservation, and freedom of speech.[7]

1 in 2 donates time to support the 1 in 5 participate in rallies or causes he or she cares about. [7]

meetings, or contact their local representatives. [7]

Social Activism:

the following: Donate time Donate money Participate in rallies or meetings Participate in fundraising activities businesses

Participate through mobile texting Subscribe to online news and feeds

Lead or organise group events Email, write, or call their representatives [7]

create economic value for society by addressing its needs. [7]

workforce.[7]

7 in 10 young adults in America Young adult social activists do are social activists, a dramatic rise from 38% in 2010. [7]

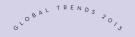
1 in 3 boycotts or supports a Boycott or support specific business based on the causes he or she cares about. [7]

Virtual Citizen:

Through increasing access to the Internte, social media and mobile phone technology, the power of the individual as a virtual 3 in 4 believe corporations should citizen is on the rise. The scale of social networks - Facebook has more than a billion useres while SinaWiebo boasts 400 million - and the speed of information transfer, has shifted the paradigm 3 in 5 are educated and in the of citizen expression. nonhierarchical communication structures are one result.[8]



FACTS 164



EMPLOY & ENT PERCEPTION



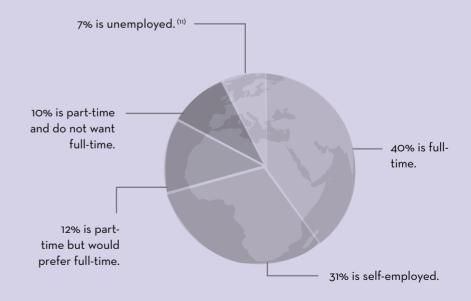
Student loan debt in the US passed 48% of graduates believe that one trillion dollars, exceeding they did not get a good education credit card debt and car loans. [9] for the money they spent. [9]

Prices for the majority of the bes- 25% of college graduates are working at known educational program in the jobs that do not require a college degree. [9] US create a difference of over 30% between what graduates are expected to earn and how much they have to pay for their student loans. [9]

are the best prepared with 59% knowing compromises. [11] how they will pay for retirement. 22% and 19% of Turkish and Russian, respectively, say they will most likely keep working after retirement age. [10]

The majority (67%) expect to be better Many Millennials say they had made off than their parents' generation, and compromises in order to get into work 32% expect to be considerably better during the economic downturn. 32% off. Millennials in western Europe are accepted a lower salary than expected, generally less optimistic, with 54% 17% were receiving less benefits, and believing they'll be better off than their 17% were working outside their ideal parents and 26% believing they will be location. Overall, 72% said they had worse off. Although they expect to be made some form of compromise in their better off, most Millennials have not professional expectations. 58% of the thought of retirement. North Americans population were willing to make those

61.2% is the global employment -topopulation average. [9]





FACTS 166



UNEMPLOY & ENT

According to International Labour An estimated 12.7% in 2012, the global Organisation (ILO) estimates, the youth unemployment rate is still a full global economic crisis increased world percentage point above its 2007 level. unemployment from 178 million in 2007 says ILO in a new report on the topic. to 212 million in late 2009. [12]

Within the Eurozone, Spain's unemployment has reached dramatic proportions, going from 8.3% in 2007 to 21.7% in 2011. [12]

Things have been difficult in the United Kingdom as well, with the unemployment rate growing steadily from 7.6% in 2009 to 7.8% in 2010 to 8.0% in 2011. [12]

By 2016, the youth unemployment rate is predicted to remain at the same high level of today. Once again, Spain leads this not-so-desirable ranking, with a youth unemployment rate that skyrocketed to 46.6% in 2011.

"Nearly 75 million youth are unemployed around the world, an increase of more than 4 million since 2007," the report explains. And projections are not hopeful. [12]

In Spain, 74,296 people registered as unemployed in November of 2012; a 1.5% difference from October. Since November of 2011, there has been an 11% increase. [13]

In the US, there is an average unemployment rate of 4% for people with a bachelor's degree or higher, versus an 8-13% rate for people with less education. [14]

There is a significan difference between International unemployment rates: the percentage of increase in payment Argentina - 10.2% in 2006 vs. 6.9% in 2012 for employees with MBA in contrast to Brazil - 10% in 2006 vs. 75% in 2012 the percentage of increase in cost of an Germany - 10.2% in 2006 vs. 6.2% in 2012 MBA: For those graduating from Carnegie Spain - 8.5% in 2006 vs. 20% in 2012 Mellon, while having an 8% increase in USA - 4.6% in 2006 vs. 9% in 2012 pay, their cost for the education increased UK - 5.4% in 2006 vs. 8% in 2012 [12] up to 102%, at Texas University their pay increased 12% while education rose 140%. [15]

Of the 30 jobs projected to grow at the faster rate over the next decade, only 7 tipically require a college degree of any kind. [15]



Entreperneurship:

Scandinavian and Chinese people perceive more opportunities for entrepreneurship. Currently, only 5 countries out of the 21 countries represented in this study fear failure when pursuing entrepreneurial endeavors. Only 4 of the 30 countries in this study need to see entrepreneurship in media to feel confident: the rest see entrepreneurship as a good career option. [16]

While unemployment among young people is traditionally around double that of adults, that figure has increased nearly triple during the recent recession, and up to four times in some countries. The gap is set to keep spreading, particularly in OECD countries. [12]





MILLENNIALS' ATTITUDE TOWARD PRIVACY

privacy." [17]

"The Millennial's decision to share one. 85% of surveyed Millennials generations." [17]

"While the older generation sees privacy as keeping as much personal information offline as much as possible, Millennials rather want to be found and see privacy settings as a way to control the visibility of their information depending on context and the audience." [17]

"The Millennial's are connected to According to an official report released by the Internet and technology in a the GSMA. Africa is now the second largest profound way. The acceptance of online mobile market in the world after Asia, connectivity strikes fear for the end and the fastest growing mobile market in of online privacy or the redefinition of the world. The report showed that during each of the past five years, the number of Africa's mobile subscribers has increased by 20% and is expected to reach over 735 million subscribers by the end of 2012.[18]

acknowledge that, by participating in Because they are selective and particular social media, they are giving up a part in the way they choose to control privacy of their privacy. 81% said that they or be connected, they are seemingly more only share a small portion of their knowledgeable and self-conscious about the personal information when crafting information they display on the Web. Despite their online identities. They are just this fact, they are not always 100% aware of as aware of the risks online as other the information they expose because of the tricky privacy settings of social websites. Against this kind of exploitation, Millennials have a defensive advantage based on growing increasingly defiant and distrusting companies and social media sites that expose their data. This means that they are not likely to contribute to these companies, making Millennials a hard target. [17]

"Benefits from social media outweigh the privacy risks that come with it." [17]

SUCCESSFUL MULTINATIONALS FROM EMERTING MARKETS

About 41% of new flows of foreign direct Argentina's Tenaris makes high-tech steel investment in the world originate from tubing for oil exploration and extraction, emerging economies, and about 30% of and is also the world's largest firm in its the 100,000 multinational firms in the sector with 24.26 billion in market cap and world come from emerging economies. At about 10 billion in net sales. [19] the current pace, companies from China, India, Mexico, Brazil, Indonesia, and other emerging giants will soon represent more than half of the universe of multinational firms and foreign investment in the world. [19]

Embraer is a Brazilian firm that has recently become the largest maker of regional jet aircraft with a market cap worth 5.02 billion USD and a net income of over 90 million USD. [19]

Haier, of China, has become a powerhouse in household appliances, and it is already It has a market cap of 35.39 billion and in market cap and \$2.25 billion in sales. [19] 23.3 billion USD in revenue. [19]

Other firms to watch include Indian IT giants like Infosys and Tata Consultancy Services With a market cap of 32.63 billion USD and sales at 6.17 billion, Infosys is number 19 in Forbes list of most innovative companies in the world. Tata is number 29 with global sales at 8.38 billion and a 45.53 billion market cap. [19]

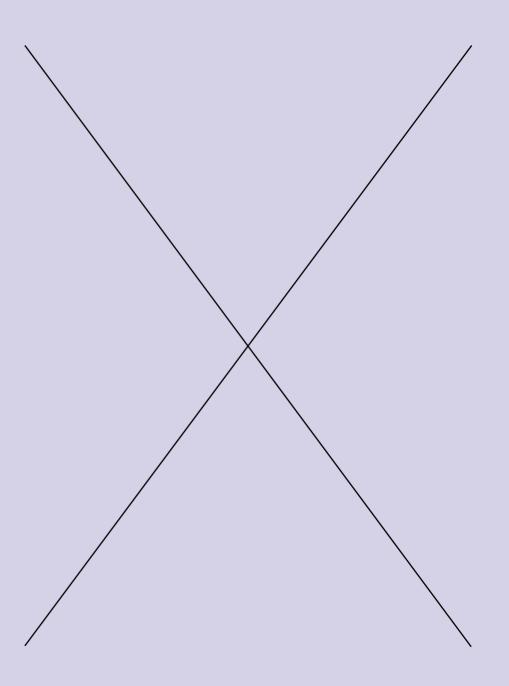
According to FORBES, the 5th most innovative company in the world is Baidu, from China. This Chinese-language search platform provides relevant information for the world's largest brand by market share. online searches, and sits at \$47.52 billion



+

OBAL TRENDS POLY

- 1 http://buynothingday.de/htm/english/why.htm
- 2 http://www.meetup.com/Buy-Nothing-Day/
- 3 http://bitcoincharts.com/bitcoin/)
- 4 http://www.go-gulf.com/blog/online-piracy/
- 5 http://www.nationmaster.com/graph/cri_sof_pir_rat-crimesoftware-piracy-rate
- 6 Solidarity Politics for Millennials: A Guide to Ending the
 Oppression Olympics (Politics of Intersectionality) by Ange-Marie
 Hancock, http://www.ange-mariehancock.com/
- 7 http://tinyurl.com/csxmvao
- 8 The Future Role of Civil Society, 2013.
- 9 http://tinyurl.com/cohopvq
- 10 http://tinyurl.com/bry3edq
- 11 www.economist.com, The Great Mismatch, 2011)
- 12 http://tinyurl.com/btq5qxu
- 13 http://tinyurl.com/d8gxalr
- 14 http://tinyurl.com/bt6o6vk
- **15** http://www.udemy.com/blog/self-learning-the-new-masters-degree-infographic/
- 16 entrepreneurship at a glance 2012, by OECD 2012, http://tinyurl. com/d7qtsm2
- 17 Millennial Dissonance: An Analysis of the Privacy Generational Gap, Matthew J. Sher, 2012
- 18 (IT News Africα)
- 19 http://www.forbes.com/innovative-companies/list/ http://tinyurl.com/bppwwq8



FACTS 173

" PELLIGENT DISOBEDIENCE



CASE STUDIES

URBAN DISOBEDIENCE

RHIZOME — is dedicated to the creation, presentation, preservation, and critique of emerging artistic practices that engage technology. Through open platforms for exchange and collaboration, their website serves to encourage and expand the communities around these practices. Rhizome programs, many of which happen online, include commissions, exhibitions, events, discussion, archives, and portfolios. They support artists working at the furthest reaches of technological experimentation, as well as those responding to the broader aesthetic and political implications of new tools and media. Their organisational voice draws attention to artists, their work, their perspectives and the complex interrelationships between technology, art, and culture. Rhizome recently commissioned artist Adam Harvey to host an exhibition about "antisurveillance" fashion. Each piece was accompanied by video documentation uncovering the counter-technology, which underpins each item of clothing. The Anti-Drone hoody and scarf are stealth wear intended to thwart thermal imaging, a technology employed by UAVs (aka Drones). The Off Pocket is an accessory that instantly blacks out your phone's signal. And the XX Shirt is a digital print that shields your heart from X-Ray radiation. http://rhizome.org

<u>SELAH</u> — means "pause and reflect." In 2010, Andrew Breitenberg founded Selah as a platform (and tag) for the creation of public art that appears primarily in the public spaces of the poor in Africa. The message of this work to those living in the margins

is, "You too have been seen, you too shall be heard." In 2012, a public studio-retail space was opened in Cape Town as a way to engage in a dialogue that stands at the intersection of hope, activism, and creativity. All proceeds from the physical shop and online store are reinvested in the vision and mission of Selah - to be a voice for the voiceless. http://selahmade.com



<u>URBAN</u> — eXperiment is an underground organisation that improves hidden corners of Paris. Through meticulous infiltration, UX members have carried out shocking acts of cultural preservation and repair with an ethos of restoring those invisible parts of French patrimony that the government has abandoned or doesn't have the means to maintain. Their works have included restoring the Pantheon clock, building a hidden cinema – complete with bar and restaurant – underneath the

Trocadéro, restoring medieval crypts, and staging plays and readings in monuments after dark. The group claims to have conducted 15 such covert restorations all over Paris, often in centuries-old spaces. The organisation is divided into teams: an all-female team (the Mouse House) specialising in infiltration, a team running an internal messaging system and coded radio network, a team providing a database, another organising underground shows, a group doing photography, and finally a team (called Untergunther) doing actual restorations. Untergunther's membership is comprised of architects and historians. http://www.wired.com/magazine/2012/01/ff_ux/

CITIZEN JOURNALISM

INVISIBLEPEOPLE.TV—exposes more people to the homeless in hopes that the issue of homelessness makes its way into our everyday awareness. 37% of the homeless population in North America is families with children. Homelessness is a very complex issue, and there are many reasons that people try to ignore homelessness. Currently, InvisiblePeople.tv has over 3.4 million views on YouTube alone. On average, 15% of the site's vistors stay 5 to 10 minutes, and 8% stay 10 to 30 minutes. The purpose of





InvisiblePeople.tv is to make everyone known. "We believe that once someone knows the story of a man or woman on the exit ramp holding the cardboard sign, it's harder to ignore homelessness. http://invisiblepeople.tv/

FOTOMOVIMIENTO — is a platform that documents social reality in Spain through images. They photograph all the strikes and demonstrations in order to present an alternative point of view from the traditional media, sometimes exposing wrongdoing of authorities against demonstrators. http://fotomovimiento.org/



THE GUARDIAN CROWDSOURCED GOOGLE MAP — includes information about all the "verified incidents" happening since the beginning of Operation Pillar of Defense. In the wake of the assassination of Hamas leader Ahmed al-Jabari, violent conflict between Israel and Gaza reescalated. The Guardian crowdsourced Google Map opens up more information about a particular incident, including the precise location, the date,

the source of information, a description of the event, and sometimes a picture. The sources of the events are varied from Israeli newspaper Haaretz to Al Jazeera and the Guardian itself. The British newspaper also invites readers to submit events. http://www.guardian.co.uk/news/datablog/interactive/2012/nov/19/gaza-israel-verified-incidents-mapped?zoom=9&lat=31.754444 6866299&lng=34.79644775390625

TRANSPARENCY

BRIBR — is a new app that raises awareness about corruption in the bureaucratic complex of mother Russia — which ties with East Timor to rank 143 out of 183 on Transparency International's corruption index — by providing a platform to let citizens anonymously map out the amount, location, and reason for money they've spent on bribes. In countries where corruption and bribery are a regular part of daily life, part of the problem is that no one speaks up about particular incidents — which makes it hard to document, measure, and ultimately eradicate. Since September 24, users have documented 5,065,851 rubles (about \$159,970) worth of bribes, paid everywhere from fire departments to courts to that unexpected den of corruption, kindergartens. (Greasing the wheels to get five-year-olds

into school apparently accounts for nearly one-tenth of the bribe dollars reported on the site). The app, which was released in early October, was downloaded 7,000 times in the first two days, according to The Moscow Times. http://bribr.org

<u>HUELE A CORRUPTO</u>—gathers and displays links to references that mention the words "corrupt" or "corruption" and that include Spanish political parties. Soon, they will do the same with institutions and names of politicians. http://www.hueleacorrupto.com/

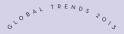
TU DERECHO A SABER — is the first website in Spain that facilitates information solicited from any public Spanish office. You can ask for whatever information you need and website will provide it. through their transparent process. This page was created for social organisations to facilitate their access to government information and promote their rights; it might be difficult for them to independetly find what they need, but not impossible. http://tuderechoasaber.es/es/help/about

DIY EDUCATION

<u>IFIXIT</u> —was started in 2003 by Kyle Wiens and Luke Soules in a dormroom at Cal Poly, San Luis Obispo. They help thousands of people repair their devices every day. Companies like Apple don't provide repair parts and documentation to end-users, and iFixit believes everyone should have the right to maintain and repair their products. They want to show the world how to fix anything. https://www.ifixit.com

<u>DIY EDUCATION</u> — Nicholas Negroponte, the founder of OLPC and MIT's Media Lab, is running experiments to see if DIY education can work. He was involved in delivering Motorola Xoom tablets and solar chargers with custom software to two remote rural villages in Ethiopia where literacy rates are close to zero. Negroponte recounted the event at MIT Technology Review's EmTech conference this year: "We left the boxes in the village. Closed. Taped shut. No instruction, no human being. I thought, 'the kids will play with the boxes!' Within four minutes, one kid not only opened the box, but found the on/off switch. He'd never seen an on/off switch. He powered it up. Within five days, they were using 47 apps per child, per day. Within two weeks, they were singing ABC songs [in English] in the village. And within five months, they had hacked Android. Some idiot in our organisation or in the Media Lab had disabled the camera! And they figured out it had a camera, and they hacked Android." It shows that the tinker mindset is inherent





to emerging countries, and that constraints can lead to better creativity and ingenuity. http://www.technologyreview.com/news/506466/given-tablets-but-no-teachers-ethiopian-children-teach-themselves/

INNOVATE SALONE — is a national high school innovation challenge in Sierra Leone, organised by an international organisation called Global Minimum. It is about "the Now and the Future of Sierra Leone". They are challenging young people to think about creative ways in which they can solve some of the most challenging issues within their communities. In March 2012, they asked students to invent solutions to problems that they saw in their daily lives. Six weeks later, 300 students submitted applications encompassing some of Sierra Leone's toughest problems. Some of them proposed new ways of providing quality education via the radio. Others suggested new agricultural programs for their communities. Eight finalist teams received several types of assistance: \$500 to develop a prototype for their ideas, access to a network of local and international mentors, an invitation to a 3-day immersive summer innovation camp, and an additional \$1,000 if their initial prototypes were still considered feasible, innovative, and especially promising after the first phase of development. http://www.gmin.org/innovate-salone

SECURITY/PRIVACY

KEEPSAFE—is a mobile safety app for iPhone and Android. You select photos and videos that you want to move into your secret folder or vault, then delete the originals from your Camera Roll (iPhone) or Gallery (Android). Your public photos remain available to your friends, family, and co-workers, but your private photos are out of sight. Extra features such as a decoy folder enable you to have two secret folders, one of them the decoy, with two different passwords. The Android version of Keepsafe has a tricky feature to send photos that "self-destruct" in 10 seconds, after they have been viewed by the recipient. http://www.getkeepsafe.com

MUL.TIVER.SE — lets you sort your connections into groups called "aspects". Unique to mul.tiver.se, aspects ensure that your photos, stories, and jokes are shared only with the people you intend. You own your pictures, and you shouldn't have to give that up just to share them. You maintain ownership of everything you share on mul.tiver.se, giving you full control over how it's distributed. Mul.tiver.se makes sharing clean and easy – it does the same for privacy, too. Inherently private, mul.tiver.se doesn't make you wade through pages of settings and options just to keep your profile secure. http://mul.tiver.se

PRIVACY FIX — available for Firefox and Chrome is a free web application that helps protect your privacy when using Facebook, Google, and other sites that track your activity. It tells you what privacy features might be tracked down by third party companies, and the possible ways they use your data to generate profit. It is a privacy management tool. https://www.privacyfix.com/start

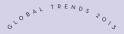
ALTERNATIVE EXCHANGE SYSTEMS

COMMUNITY EXCHANGE SYSTEM (CES) — is a community-based exchange system that provides the means for its users to exchange their goods and services, both locally and remotely. It could also be described as a global complementary trading network that operates without money exchange as commonly understood. Unlike the conventional money-based exchange system, CES has no physical currency. The idea that such a currency is required before any trading can take place is an ancient one, and increasingly irrelevant in this day and age of computers and the Internet. Information can replace currencies and, at the same time, eliminate most of the problems associated with regular money. There are many similar trading systems around the world, commonly know as Community Exchange Systems, Local Exchange Trading Systems (LETS), Mutual Credit trading systems, or Time Banks. Apart from using information instead of currencies to effect exchange, these exchange systems are community-focused in order to build community and keep wealth where it is created. CES takes this a step further by providing the means for inter-community trading, all the way to the global level http://www.ces.ora.za/index.ass

<u>BITCOINS</u> — are a digital cryptocurrency made up of processed data blocks used for online and offline purchases. Because Bitcoins are limited and their value is determined by market forces, Bitcoins are also traded like stocks. Relatively new and experimental, Bitcoin is described as "the first decentralised digital currency." http://www.techopedia.com/definition/27193/bitcoin

HOW TO CHANGE BUYING CARS FOREVER — The Kickstarter-inspired site, created by advertising agency Wieden + Kennedy, gives potential car buyers the ability to customise their own Dart online, choosing the colour, engine, wheels, door handles, and interior accessories. Once a user has finished creating their dream car, they can invite friends, family, and other Dodge Dart Registry users to sponsor their





purchase. Sponsors can give the user any amount from \$1 to \$30,000. Depending on the amount raised, users can then buy the car or pay partly with the sponsored cash and partly with their own money. Compact car models such as the Dodge Dart are becoming increasingly popular among US consumers. In September 2012, car sales were at a higher annual rate than in any other month since February 2008, according to research company Autodata. Small cars were the leading category. But many consumers are still feeling the pinch of the economic crisis and may not be able to afford to buy a car on their own. By incorporating the crowdsourcing model into online retail, Dodge is giving them the chance to own a car with the help of others. http://www.uoutube.com/watch?feature=player embedded&v=BCfxOWLuNwU

http://www.wk.com/campaign/how_to_change_buying_cars_forever/from/dodge

COMPANIES FROM EMERGING MARKETS

<u>vostu</u> — launched in 2007 in Brazil, is now the largest social-gaming company in Latin America — referred to as the Zynga of LatAm. Started by Daniel Kafie, Mario Schlosser, and Josh Kushner while they were students at Harvard University, as of February, 2010, Vostu is a private company with offices in Sao Paulo, Buenos Aires, and New York. The company is venture-backed by Intel Capital, who led a \$1.3M seed-round in early 2008 and a follow-up investment in November 2009 for an undisclosed amount. The CEOs of Vostu met at Harvard Business School and shared a common dream. One of them, inspired by Facebook and Mike Zuckerburg's story, was willing to leave school in order to create the startup; now, though, he assures that his education at Harvard was the key to their success. After completing their studies, they moved back to their native South America to start their business. http://www.cronista.com/financialtimes/Crear-juegos-para-redes-sociales-permite-crecimientos-explosivos-20110721-0039.html

<u>INFOSYS</u> — is an Indian multinational provider of business consulting, technology, engineering, and outsourcing services. It is headquartered in Bangalore, Karnataka. Infosys is the third-largest India-based IT services company by 2012 revenues, with a market cap of 32.63 billion USD and sales at 6.17 billion. Infosys is number 19 in the Forbes list of most innovative companies in the world. http://www.infosys.com/pages/index.aspx

<u>HAIER GROUP</u> — is a Chinese multinational consumer electronics and home appliances company. Its products include air conditioners, mobile phones, computers, microwave

ovens, washing machines, refrigerators, and televisions. In 2011, the Haier brand had the world's largest market share in off-brand goods, with 7.8%. It has become a powerhouse in household appliances with a market cap of 35.39 billion and 23.3 billion USD in revenue. http://www.haier.com/uk/

PIRACY/DEEP WEB/HACKING

ANONYMOUS — is a loosely associated hacktivist group. It originated in 2003 on the imageboard 4chan, representing the concept of many online and offline community users simultaneously existing as an anarchic, digitised, global brain. It is also generally considered to be a blanket term for members of certain Internet subcultures, a way to refer to the actions of people in an environment where their actual identities are not known. It strongly opposes Internet censorship and surveillance, and has hacked various government websites. It has also targeted major security corporations. They discuss issues such as the US-imposed financial blockade of WikiLeaks, the Arab Spring, Occupy Wall Street, or GoDaddy's support of the Internet blacklist bill SOPA. Its members can be distinguished in public by the wearing of stylised Guy Fawkes masks. http://anonnews.org

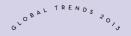
<u>FIXPERTS</u> — is an initiative that links designers with people looking for low-cost solutions to product-related problems; they hack products to make them more sustainable. So far the service has been particularly beneficial to vulnerable people and the elderly. http://fixperts.org/

BRIGHT PLANET — is a website all about the Deep Web. The team creates advanced technology tools to gather valuable information that resides within the invisible network, and analyses it for government needs (investigations), businesses (checking competitors, licenses, etc.), and personal use. You can monitor, track and locate information about certain subjects, social media and law enforcement. http://www.brightplanet.com

OFF THE GRID

<u>LAND BUDDY</u> — is an interactive world map of people who want to go off the grid, and those who already live off the grid. The map indicates that there is a very high number of people willing to go off the grid. http://www.off-grid.net/landbuddy





IMPLICATI♦NS FOR TELEFÓNICA

AND PROCESSES

INSTATE TRANSPARENT COMMUNICATION XXX Between teams and departments.

ENCOURAGE A SOLUTION-DRIVEN CULTURE XXX Ensure that the internal teams

support each other, removing long and tedious processes and systems, creating incentives for employees that improve collaboration, and rewarding ingenuity.

CREATE A DISRUPTIVE CULTURE XXX Encourage employees to challenge the rules and take accountability to solve problems themselves.

HIGHLIGHT THE IMPORTANCE OF XXX Partner with Wayra and other **ENTREPRENEURSHIP SPIRIT** entrepreneurs and disobedient, disruptive people.

EMBRACE INTERNATIONAL WORKFORCE XXX Encourage rotations that challenge

AND INTERNATIONAL EXPERIENCES mental scripts and established knowledge. Generate more knowledge transfer between employees, teams, and OBs.

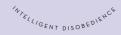
EMPLOYEES THE TOOLS TO BUILD THEIR initiatives OWN PRODUCTS

PROVIDE THE PLATFORM AND GIVE XXX Leverage current open-innovation

FOSTER AN ENTREPRENEURIAL SPIRIT XXX Create opportunities for people to "invest" in the best projects/initiatives, to act like an entrepreneur and "back" their own favourite initiatives.

RECRUIT WORKFORCE FROM NEW AND XXX Focus in bringing people from **EMERGING MARKETS** diverse backgrounds and from outside our current footprint.







ADDITI NAL

XXX Brynjolfsson, Erik & McAfee, Andrew, Race Against The Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and the Economy, 2011

XXX Cowen, Tyler, The Great Stagnation: How America Ate All The Low-Hanging Fruit of Modern History, Got Sick, and Will (Eventually) Feel Better: A Penguin eSpecial from Dutton, 2011

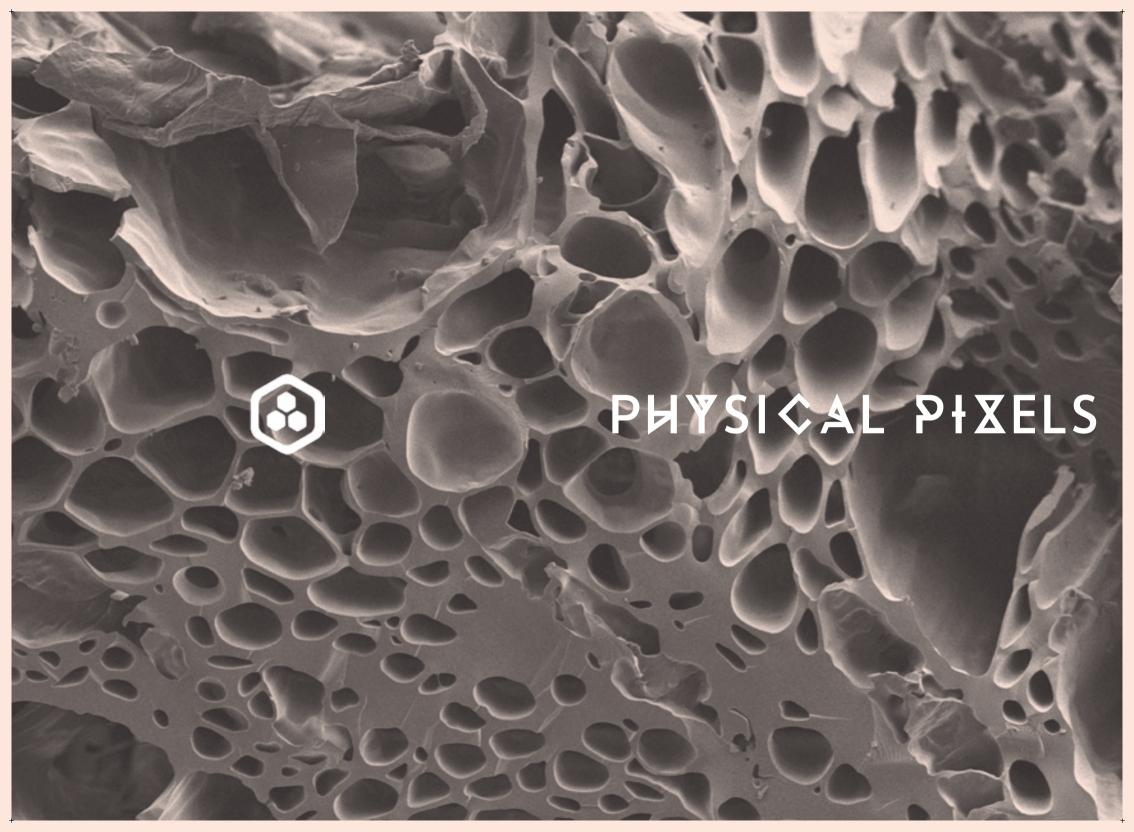
- XXX Oroza, Ernesto, Editing Havana: Stories of Popular Housing, 2011
- xxx Oroza, Ernesto: Technological Disobedience, 2009
- XXX **Oroza, Ernesto:** Objets réinventés: La création populaire à Cuba, 2002
- XXX **Guillén, M & Garcia-Canal, Esteban:** Growth Strategies of the New Global Giants: Emerging Markets Rule, 2012
- $>\!\!>$ Deep web research and discovery resources 2013

This is a growing collection of resources (articles, books, documents) all about the deep web, research data, ways of extracting information, how to navigate through it, and much more. http://whitepapers.virtualprivatelibrary.net/deepweb.pdf

INIELLIGEE NTD-IS \$ BEDIE N-\$

ADDITIONAL SOURCES 184

ARIANE VAN DE VEN



TELEFÓNICA DIGITAL PDI



DIGITAL IMAGES LOOK GREAT, BUT
THERE IS ONE BIG DISAPPOINTMENT:
THEY DON'T EXIST IN REALITY, THEY
ARE NOT REAL

189

FLORIAN KAPS



PHYSICAL PIXELS



PHYSICAL PIXELS

In the 2012 report, we revealed the importance of people embracing digital tools in order to build their social influence. We discussed the growing necessity of learning to manage an online reputation and keep control of one's digital footprint as people understand the impact of their digital actions on their real life (See Social Shake Up trend*).

In the Reinvention Era people are no longer people to differentiate themselves and develop satisfied with digital experiences alone. We are witnessing an over-pixelisation of the everyday: the fact that people are spending more time on screens. Surveys report that over 50% of kids between 13 and 17 spend over 30 hours a week recreationally in front of a screen [1]. Especially for digital natives, first experiences often occur online before happening in the real world, from playing to striking friendships, dating, etc. A survey found that about 12% of children aged 2 to 4 use computers every day, and 24% use them at least once a week^[2]. Online experiences are increasingly becoming a natural part of the everyday,

but humans are "sensual" beings, and they need physical and tangible experiences to be fulfilled individuals (see Additional Insights). In a world where everything is available online, real-world alliances and lived experiences will enable

to their sense of identity. As a result, we are already witnessing a growing appetite for analogue experiences (see Supporting Facts) as real, tangible things; not just their representations. In the Reinvention Era, there will be a renewed interest in the physical over the digital. People will aspire to become makers: individuals who can turn pixels into atoms thanks to the expansion of affordable means of self-production. Digital technology that enables instant prototyping and hyperpersonalisation will be important for them. The long tail, first defined by Chris Anderson^[3], will consist of the things created thanks to the democratisation of manufacturing. It will create a complementary ecosystem and an alternative to the global economy. At the same time. technology will be re-thought to respond to the over-pixalisation phenomenon, and will bring more tangibility in interaction with users. New physical interaction paradigms will be created so that technology enables people to feel and experiment in a more tactile and "physical" way. The Physical Pixels trend demonstrates the importance of re-introducing more physicality into our everyday lives by enabling people to become makers: individuals who are transformed from the passive role of users of technological advancements into active creators that embrace technology to turn their digital dreams into tangible realities.

IN A WORLD WHERE EVERYTHING IS AVAILABLE ONLINE, REAL-WORLD ALLIANCES AND LIVED EXPERIENCES WILL ENABLE PEOPLE TO DIFFERENTIATE THEMSELVES AND DEVELOP TO THEIR SENSE OF IDENTITY



MAKERS EMBRACE HYPER-PERSONALISATION AND INSTANT PROTOTYPING

hildren have always been buildings and design the buildings' interiors today are infinite. Children's

dreams can be turned into tangible realities, and even more importantly, they can do it themselves. Indeed, software such as **KidCAD** offers affordable architectural programs that allow kids to make 3D

interested in making things. (See Case Studies). Innovations in CAD The difference is that the software and 3D printers, together with possibilities for "making" things the whole movement of open hardware the likes of Arduino and Raspberry Pi (see Case Studies), will enable more people to become makers. The

global 3D market is expected to reach \$2.99 billion by 2018^[4]; as





POSSIBILITY OF CREATING PERSONALISED

OBJECTS THAT DON'T REQUIRE A LARGE

ECONOMY OF SCALE TO BE MADE

these tools grow in popularity, makers will be able to create anything from a small gadget to a house or even a spaceship (see Case Studies). Makers are motivated by the possibility of

creating personalised objects that don't require a large economy of scale to be made. As a result, the makers'

objects often come with slight imperfections or variability. Indeed, variability will become part of the design process and makers will show a newfound appreciation for craftsmanship. The Japanese refer to this as Wabi-Sabi: an aesthetic centred on the acceptance of transience and imperfection (See Additional Insights). We can imagine in the future that manufacturing will move from a standardised, largescale process to smaller quantities of highly personalised artefacts. These highly personalised objects will be increasingly connected objects that are appealing to people because they are made to their own specifications: they fit the unique profile of the user and are able to connect with a whole ecosystem of devices.

Makers will engage in social

manufacturing through online maker communities that offer 3D printing and other production services such as quick prototyping. They will set up instant labs where

> they can reinvent new objects and use crowdsourcing to fund their production. Fab labs. small-scale

fabrication laboratories offering personal digital fabrication, will grow in popularity (See Additional Insights). This is a real revolution in terms of manufacturing. As the maker movement takes more traction, it will encourage and revive local production. Makers will become entrepreneurs who can prototype, manufacture, sell, and test their ideas quickly and cheaply before potentially scaling them up. Because people will increasingly be able to make things for themselves, the number of people directly employed in making things will decline and the cost of labour as a proportion of the total cost of production will diminish. This will encourage makers to move some of the work back to rich countries, not least because new manufacturing techniques make it cheaper and faster

to respond to changing local tastes and enable "mass customisation" (see Additional Insights). It will create a new complementary production ecosystem and potentially revive some local economies. This is a real transformative change whereby industries are democratised and are handed over to regular people, the Makers. The challenge of this new trend will be the economy of scale of the digital world, and ensuring that these new makers exploit online power to tap into the needs of niche communities, thereby participating in the long tail of objects and making sizable profits from it.







REINVENTING TECHNOLOGY SO THAT IT FEELS MORE TANGIBLE AND BETTER FOR PEOPLE

veryone who has noticed a small child's interaction with screens will recall that the first reaction is to touch it. For the children of the "iPad generation", digital technology is seamlessly embedded into the everyday, and they want to be able to manipulate, touch, and feel it. According to cyborg anthropologist Andrew Warner, every generation of computing becomes more tactile. The first interfaces were awkward keyboards and terminals, then the mouse (which required the whole arm to move), then the touchpad (which we lovingly stroke with our fingertips), and then the touchscreen (which integrated display and touch). Warner believes that the next generation of technology will bring new ways for people to get similar tactile experiences: to be able to touch objects or materials. Indeed, people are not satisfied anymore with static and passive interactions.

They prefer to engage with more kinetic and active technology (see Additional Insights). We can already notice the growing availability and popularity of gestural interfaces that involve body interaction. The Wii. for example, has sold 96.56 million units worldwide^[6]. More innovations should leverage the idea that, as humans are sensual beings, the body is often indeed the best and most natural interface to use.

> technology with physical interaction, we can create playful and intuitive experiences. For example, Tangible User Interfaces (TUI) let a person interacts with digital information through the physical environment. TUI takes advantage of our haptic sense, the process of recognising objects through touch (see Additional Insights) to make information directly malleable and

By combining new digital

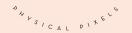
intuitively perceived. One of the pioneers in because it makes it TUI is Hiroshi Ishii, a professor at the MIT more "real" for them. Media Laboratory who heads the Tangible

Media Group. His particular vision for Makers will embrace tangible Uls, called Tangible Bits, is to give such technology physical form to digital information, so and participate in its that bits can be directly manipulated and development in order to perceived. The Tangible Media Group is turn their pixel dreams developing a pure vision of interaction that into physical realities, does not yet exist, but that may be invented in a way that feels more in the next 100 years by atom hackers connected and aligned (material scientists, self-organising with the fundamentals nano-robot engineers, etc.). Their vision of human interaction. •

ACCORDING TO CYBORG ANTHROPOLOGIST ANDREW WARNER, EVERY GENERATION OF COMPUTING BECOMES MORE TACTILE [5] speculates about new interaction techniques and applications that would be enabled by the Radical Atoms (see Additional Insights).

We are witnessing more examples of bridging the digital and physical worlds by giving a tangible presence to virtual elements. For example, Tangible Textural Interface (TTI) is a new sound system that embeds a tactile surface. TTI has flexibility that enables people to physically touch and feel the response through the controls and physical morph of the surface (see Case Studies). This can be especially helpful in enabling people to understand complex information

- HTTP://WWW.NYTIMES. COM/2012/11/30/OPINION/ GLOBAL/MARIA-POPOVA-EVGENY-MODOZOV-SUSAN-GREENEIEI D-ARE-WE-BECOMING-CYBORGS. HTML?PAGEWANTED=ALL&UTM MEDIUM=REFERRAL&UTM SOURCE=PULSENEWS
- HTTP://WWW.NYTIMES. COM/2011/10/25/US/SCREEN-TIME-HIGHED-THAN-EVED-EOD-CHILDDEN STUDY-FINDS.HTML
- The Long Tail, Wired Magazine, October 2004
- "3D Printing: A Global Strategic Business Report" by Global Industry Analysts, Inc.: HTTP://www. STRATEGYR.COM/3D_PRINTING_ MARKET_REPORT.ASP
- HTTP://TECHCRUNCH. COM/2012/11/04/5-PERSPECTIVES-ON-THE-FUTURE-OF-THE-HUMAN-INTERFACE/
- HTTP://WWW.NINTENDO.CO.JP/IR/EN/ SALES/HARD SOFT/INDEX.HTML
- WWW.GLOBALTRENDS.TELEFONICA





PEOPLE

GRANT BECKER is a young maker who attended the World's Maker Faire in 2011 and 2012. At the fair, Becker presented an amphibious bike that floats with the help of four boogie boards. The boards fold up when on land, and fold down when on water. The rear spokes are fitted with plastic fins cut from shampoo bottles to propel the vehicle in the water, and lengths of brake-line help stabilise the boogie boards. The modification cost about \$30 in materials. A more streamlined version could someday be sold as a kit to retrofit bicycles. Grant imagines that this kind of vehicle could be useful in developing countries to help people visit families, get medical treatment, or commute to places on the other side of a body of water. http://www.youtube.com/watch?v=JBvu84jol8s



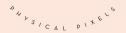
DAVID LANG is the founder of online magazine "Zero to Maker" and co-founder of Open Rov, an open-source underwater robot that can be used for scientific exploration. He was a businessman who took the initiative to become a maker and took advantage of the resources provided by Tech Shop. Within that community, he was able to create a highly skilled robot with funding through Kickstarter.

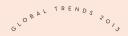
http://openrov.com/page/about, http://blog.makezine.com/2012/02/01/ zero-to-maker-at-least-im-not-alone/ TOMAS DIEZ is currently project manager of the digital fabrication laboratory "Fab Lab Barcelona", located at the Institute for Advanced Architecture of Catalonia (IAAC) in Barcelona, Spain. He is co-director of the program Fab Labs and Informalism, an international research program that looks into the relationship between personal fabrication and the immediate production of reality. He investigates the use of digital fabrication tools to transform reality, the search for a more fluid language between machines and humans, and the relationship of conscious and unconscious human actions with the production of reality.





of Jitsoo http://jitsoo.com, a platform for teaching others the smart way to turn their products—from handmade to digital to manufactured—into profit, and in much less time. Tina has taught the Jitsoo methodology countless times in various public workshops, she said she "realized that I didn't want to limit myself to teaching just classrooms full of people—I wanted to build a movement of motivated makers who just need the right strategies to get their creations out there." She currently has two shops on Etsy: BetterOffWed, SheHadThreeWishes.





ADDITIONAL INSIGHTS

ABOUT SOCIAL MANUFACTURING MASS CUSTOMISATION refers

"Everything in the factories of the future will be run to the use of flexible computerby smarter software. Digitisation in manufacturing aided manufacturing systems will have a disruptive effect every bit as big as in in marketing, manufacturing, other industries that have gone digital, such as call centres, and management office equipment, telecoms, photography, music, to produce custom output. publishing and films. And the effects will not be Those systems combine the low confined to large manufacturers; indeed, they unit costs of mass production will need to watch out because much of what is processes with the flexibility coming will empower small and medium-sized of individual customisation. firms and individual entrepreneurs. Launching Mass customisation is the new novel products will become easier and cheaper. frontier in business competition Communities offering 3D printing and other for both manufacturing and production services that are a bit like Facebook service industries. At its core is a are already forming online—a new phenomenon tremendous increase in variety which might be called social manufacturing." and customisation without a http://www.economist.com/node/21552901

corresponding increase in costs. At its limit, it is the mass production

of individually customised goods and services. At its best, it provides strategic advantage and economic value. Mass customisation is the method of "effectively postponing the task of differentiating a product for a specific customer until the latest possible point in the supply network." http://en.wikipedia.org/wiki/Mass_customisation FAB LABS labs (fabrication THE CENTER FOR BITS AND FABCENTRAL is a

laboratory) are small-scale ATOMS (CBA) was established site that supports the workshops offering personal in 2001 in the MIT Media Lab. digital fabrication fadigital fabrication. A fab lab is The cross-disciplinary centre cility and global netgenerally equipped with an array broadly looks at the intersection work of fab labs manof flexible computer-controlled of information to its physical aged by MIT's Center tools that cover several different representation. MIT's Center for for Bits and Atoms length scales and various Bits and Atoms is an ambitious http://fab.cba.mit.edu/ materials, with the aim to make interdisciplinary initiative that "almost anything". This includes is looking beyond the end of FAB ACADEMY technology-enabled products the Digital Revolution to ask is the distributed generally perceived as limited how a functional description educational platform to mass production. While of a system can be embodied of the worldwide fab labs have yet to compete in, and abstracted from, a network of fab labs. with mass production and its physical form. Researchers The Fab Academy is associated economies of scale explore new ways to turn digital a Digital Fabrication in fabricating widely distributed information (bits) into physical Program directed by products, they have already objects (atoms) and vice-versa. Neil Gershenfeld of shown the potential to empower "One of the core themes is the MIT's Center For Bits individuals to create smart idea of digitising fabrication," and Atoms. It is based devices for themselves. These says Neil Gershenfeld, CBA's on MIT's rapid protodevices can be tailored to local director. "That's not only typing course, MAS or personal needs in ways that computers controlling tools; it's 863: How to Make are not practical or economical also about putting programs (Almost) Anything. using mass production into materials themselves." To The Fab Academy http://en.wikipedia.org/wiki/Fab_lab that end, Gershenfeld and his began as an outreach colleagues have programmed project rom the CBA,

self-assembling strings of robotic modules and are now using and has since spread biological proteins to create self-assembling nanostructures. The to fab labs around the CBA is home to an impressive collection of machines. In fact, it's world. The program the ultimate workshop, and it's freely available to researchers and provides advanced students. "The freedom of access means they get used in a very digital fabrication indifferent way from conventional settings," says Gershenfeld. "People" struction for students get to play around more, which encourages speculative work." http://www.wired.co.uk/magazine/archive/2012/11/start/a-room-for-making-anything. http://cba.mit.edu/

through a unique, hands-on curriculum and access to tech-





nological tools and MAKERSPACES, or shared OPEN SOURCE ECOLOGY is

puter, and make it into

and software tools. The system designers and produc- http://opensourceecology.org/ goal is to show students tion innovators. http://makerspace. that they can have an com/2012/01/16/darpa-mentor-awars-

resources. Further- production facilities, now num- a network of farmers, engineers, more, Fab Academy is ber 1000 around the world, and supporters that has spent evolving to a Master's and they are growing at the as- the last two years creating the program through the tounding rate. Recognising the Global Village Construction development of applied power of the Maker Movement. Set. an open-source, low-cost. research projects and in early 2012 the Obama admin- high-performance technological thesis, as well as exploristration launched a program platform that allows for the ing expanded training to bring makerspaces into one easy, DIY fabrication of the 50 programs related with thousand American schools different Industrial Machines specific conditions of over the next four years. They that it takes to build a sustainable labs and communities. include complete digital fabricivilisation with modern comforts. http://www.fabacademy.org/ cant tools such as 3D printers The GVCS lowers the barriers and laser cutters. In a sense, to entry into farming, building, MENTOR MAKERSPACE it is a return of the traditional and manufacturing, and can introduces high schools workshop class, but upgraded be seen as a life-size Lego set to small-scale, distrib- for the Web Age. And this time of modular tools for creating uted digital design and it is not designed to train work- entire economies. The tools manufacturing technol- ers for low-paying, blue-collar are designed to be useful ogies in order to help jobs. Instead, it is founded on whether in rural Missouri their students realise the government's advanced where the project was founded the creative potential of manufacturing initiative aimed - in urban redevelopment, cutting-edge hardware at creating a new generation of or in the developing world.

CHRIS ANDERSON ON idea, design it on a com- to-bring-making-to-education/#more-43 MAKERS "The digital natives are starting to hunger for life beyond

a real object. This goal the screen. Making something that starts virtual but quickly becomes is supported by design- tactile and usable in everyday world is satisfying in a way that pure ing low-cost tools (soft- pixels are not. The quest for 'reality' ends up with making real things." ware and hardware) Anderson, Chris, Makers: The New Industrial Revolution, 2012 with interfaces that are "We never perceive by vision alone; in fact, perceive means 'to powerful, yet intuitive. grasp'. We have many expressions about 'knowing' that invoke http://mentor.makerspace.com/ touch, such as wanting a 'hands on' experience. Especially in our relation to 'things', we desire to know them through closeness >

and the mediation of our touch. (...) We get to know objects, things in the world, through touch. We engage with the world proximally through touch, rather than merely encounter it in distanced, abstracted vision alone." http://geotheory.wordpress.com/space/

KINAESTHESIA is the sensa- HAPTIC PERCEPTION is the TANGIBLE USER

tion of movement of body and process of recognising objects INTERFACE (TUI) limbs relating to sensations origithrough touch. It involves a list a user interface in nating in muscles, tendons and combination of somatosensory which a person interjoints. Paterson, Mark, The Senses of Touch: perception of patterns on the skin acts with digital infor-Haptics, Affects and Technologies, 2007 surface (e.g., edges, curvature, mation through the and texture) and proprioception physical environment.

of hand position and conformation. People can rapidly and accurately One of the pioneers identify three-dimensional objects by touch. They do so through in tangible user interthe use of exploratory procedures, such as moving the fingers over faces is Hiroshi Ishii, a the outer surface of the object or holding the entire object in the hand. Gibson in The senses considered as perceptual systems (1966) Media Laboratory defined the haptic system as "The sensibility of the individual to the who heads the Tangiworld adjacent to his body by use of his body". Gibson and others ble Media Group. In emphasised the close link between haptic perception and body the last two decades. movement: haptic perception is active exploration. The concept of Tangible User Interhaptic perception is related to the concept of extended physiological faces (TUIs) have proprioception according to which, when using a tool such as a stick, emerged as a new perceptual experience is transparently transferred to the end of type of interface that the tool. Haptic perception relies on the forces experienced during interlinks the digital touch. This research allows the creation of "virtual", illusory haptic and physical worlds. shapes with different perceived qualities, which has clear application Drawing upon usin haptic technology. Loss of the sense of touch is a catastrophic ers' knowledge and deficit that can impair walking and other skilled actions such as skills of interacholding objects or using tools. http://en.wikipedia.org/wiki/Haptic_perception tion with the real,

professor in the MIT

non-digital world.

TUIs show potential to enhance the way people interact with and leverage digital information. TUIs are an emerging post-WIMP interface type concerned with providing tangible representations to digital information and controls, allowing users to quite literally grasp data with their hands. Interaction with TUIs is therefore not limited to the visual and audio senses, but also relies on the sense of touch. http://en.wikipedia.org/wiki/Tangible_user_interface http://www.academia.edu/232329/Tangible_User_Interfaces_Past_Present_and_Future_Directions





RADICAL ATOMS is Hiroshi Ishii and Tangible NANOTECHNOLOGY Media Group's vision for the future of human- (sometimes shortmaterial interactions, in which all digital ened to "nanotech") information has a physical manifestation is the manipulation of that allows us to interact directly with it. matter on an atomic Radical Atoms was created to overcomezthe and molecular scale. fundamental limitations of its precursor. The vision of Radithe Tangible Bits vision. Tangible Bits - the cal Atoms requires physical embodiment of digital information actuation nanoscale and computation - was constrained by (NEMS) and individthe rigidity of atoms in comparison with ual addressing of elethe fluidity of bits. This makes it difficult ments in the system to represent fluid digital information in (quantum computtraditionally rigid physical objects, and inhibits ing). Material propdynamic tangible interfaces from being able erty changes at the to control or represent computational inputs molecular level can and outputs. In order to augment vocabulary manifest themselves of Tangible User Interfaces, Radical Atoms as drastic property uses dynamic representations such as co- changes at the macrolocated projections or "digital shadows". scopic level (optical, However, the physical objects on the tabletop mechanical, electric, stay static and rigid. To overcome these etc.). Nanosciences limitations, Tangible Media Group began to aim to scale down experiment with a variety of actuated and technology to the kinetic tangibles, which can transform their atomic level. Comphysical positions or shapes into an additional monplace technoloutput modality beyond the traditional ogy, including inkjet manual input mode of TUIs.

Radical Atoms is based on new, vision- makes use of microdriven design research into interactions with Dynamic Physical Material that can:

- 1. Conform to structural constraints
- 2. Transform structure and behaviour
- 3. Inform new abilities

http://mas834.media.mit.edu/files/2012/08/RadicalAtoms_ ACM Interactios1.pdf

printers, already scopic-scale microelectromechanical systems (MEMS). http://mas834.media.mit.

edu/files/2012/08/Radica-

lAtoms_ACM_Interactios1.pdf

MECHATRONICS, in relation with robotics, is one of the most vibrant fields related to dynamic matter, self-reconfigurable robots, and assemblies. Adaptronics, by Janocha, summarises the sensor and actuator technologies to build systems that adapt to their environments. Self-reconfigurable materials were shown by the Claytronics project, which aims to explore how modular systems made up of nodes could be built. Large-scale prototypes have been built to explore the "ensemble effect", in which multiple nodes interact with each other. To scale down design,

files/2012/08/RadicalAtoms_ACM_Interactios1.pdf

the number of nodes has to be increased MATERIAL COMPUTATION SCIENCE dramatically. In order to scale proportionally. has been exploring novel intelligent assembly may become problematic. materials that could potentially assist in Kinematic self-replicating machines can the actuation of shape. These materials create nodes and establish a hierarchy could augment computational actuation internally between them, thus solving through material logic by interpolating assembly problems. http://mas834.media.mit.edu/ between actuated points. Today's TUIs are designed in a heterogeneous manner: actuation (structure) and cover (skin)

are designed and implemented separately. The Radical Atoms project needed new material-design principles, which treat objects as homogeneous entities with the ability to change their properties. A number of materials experience a shape-memory effect under external stimuli due to their molecular structures. Shape memory alloys (SMAs) return to a preprogramed shape when heat is applied, and magnetic shape-memory alloys experience a memory effect under strong magnetic fields. SMAs inspired the imaginary material Perfect Red, around which Radical Atoms explored the interaction

techniques for form-giving. Other materials can be actuated by driving electric PHYSICAL ACTIVITY can have current through them: electroactive psychological benefits. Studies show polymers and polymer gels change that exercise can increase the amounts their size, shape, and optical properties of neurotransmitters dopamine and when exposed to high currents. Optical serotonin in the brain. The increased properties of objects can change rapidly levels of neurotransmitters can help through certain stimuli. Thermochromic treat disorders, such as Parkinson's materials change their colour in response disease and depression, as well as help to heat, while halochromic materials people to feel more energetic overall. change their colour in response to http://www.livestrong.com/article/251785acidity levels. http://mas834.media.mit.edu/ exercise-and-its-effects-on-serotonin-dopaminefiles/2012/08/RadicalAtoms_ACM_Interactios1.pdf

levels/#ixzz2Ha0ie57l





EMBODIED INTERACTION THEORY, proposed by Paul Dourish in 2001 in his book Where the Action Is, provides a broad view of how our interaction with computers is intertwined with the psychical world. The author gives a wealth of examples of innovations in computer

Affordance is a term originally psychological, and sociological introduced by psychologist James issues and theories. As Donald J. Gibson in his 1977 article The Norman said: "As Dourish so Theory of Affordances and cogently explains, design should explored more fully in his book not be about tasks and their The Ecological Approach to requirements, or applications, Visual Perception in 1979. In 1988, or computing - design is really Donald Norman appropriated the about interaction with a focus term "affordances" in the context on ubiquity, tangibility, and of human-machine interaction most of all, shared awareness, to refer to just those action intimacy and emotions." possibilities that are readily http://www.dourish.com/embodied/ perceivable by an actor. Through his book The Design of Everyday THE RETURN OF ANALOGUE http://en.wikipedia.org/wiki/Affordance

technologies, along with a deep THE THEORY OF AFFORDANCE grounding in the philosophical,

Things, this interpretation Local independent record was popularised within the label Woodsist - home to such fields of HCI and interaction acts as Ganglians, Blank Dogs, design. According to Norman's and Psychedelic Horseshit definition, the term affordance releases vinyls and CDs and has "refers to the perceived and a cassette-only arm called Fuck actual properties of the thing, It Tapes. The Woodsist sound primarily those fundamental often includes the terms "lo-fi", that determinate just how the "noise pop", and "shit gaze". The thing could possibly be used." label is dominating the DIYmusic conversation in Brooklyn. G. Lucas Crane, Woodsist's

"tape manipulator" - the guy responsible for the undulating ambient drone at the label's live shows) - adds that the artists also share a determined aversion to trendiness.

http://nymag.com/arts/popmusic/features/59222/

INCREASE IN CONSUMERS' PASSION FOR LIVE MUSIC A growing number of American consumers are expected to attend concerts in 2013, according to a survey by live event intelligence company LiveAnalytics. Nearly 40% of consumers taking part in the survey said they would attend more concerts this year. Just 9% said they would attend fewer concerts in 2013 and 53% said the number of concerts they will attend would remain the same. In 2012, more than 36 million concert tickets were sold in North America, up 5% from the previous year, according to data from concert industry tracking company Pollstar, grossing more than \$4.3 billion (€3.2bn, £2.6bn). According to LiveAnalytics, North American consumers of all ages attended more concerts in 2012 than in

2011. The increase was most evident among consumers aged 25-34 and 45-54. Of the 10 highest-grossing tours in North America, six had an average ticket price of more than \$100 (€75, £62). It is no surprise, therefore, that people earning \$125k (€94k, £78k) or more attended the highest number of concerts in 2012. http://www.live-analutics.com







FACTS

3D PRINTING

Global 3D printing market to reach \$2.99 billion by 2018, according to New Report by Global Industry Analysts, Inc. [1]

The US government launched a \$60 million 3D-printing research and education program. [2]

Statistics on Shapeways, a 3D Printing marketplace and community.

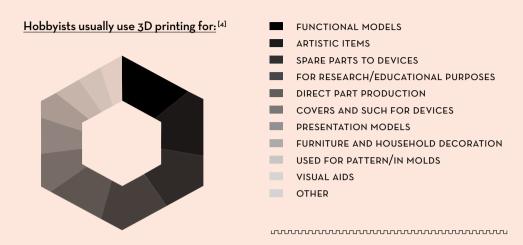
Funding the rise of creative commerce.^[5]

30 available materials

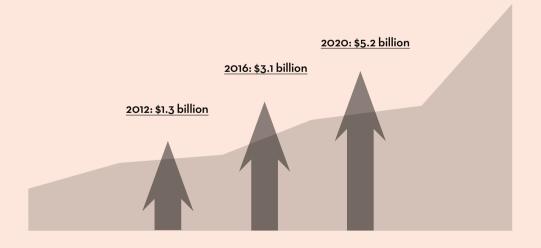
Over 1 million 3D printed products

50 employees, over 150,000 community members.

Over 6,000 shapeways shops



The 3D printing industry is expected to change nearly This represents every industry it touches, completely disrupting the <u>a 300% growth</u> traditional manufacturing process. As a result, the in just 8 years projected value of the industry is expected to explode in the near future, reaching:[3]







MANUFACTURING

following suit. [7]

Companies such as Dow Chemicals, Caterpillar, "The traditional threat of competition from low-GE, and Ford will start moving some cost labour countries may not be as daunting as manufacturing back to the US from it once seemed. China is getting more expensive China. Google recently announced that its (...) American workers are also up to three times Nexus Q streaming media player would be made more productive (...) because they tend to be in the US, putting pressure on Apple to start matched with more automatisation, which amplifies individual productivity." [8]

The Boston Consulting Group estimates that the cost of manufacturing in China will be the same as that in the United States by 2015. [6]

 a_{1}

Texas is closer to its customers 750 million dollars. and supply chains. NCR is bringing its ATM production back from China to Columbus, Georgia, so it can get to market faster and improve internal collaboration. And even toymaker Wham-O is bringing back half of its Frisbee production from China, thanks to increasingly automated and efficient US factories." [10]

"Caterpillar is tripling its 3.7billion Governments have invested billions of dollars in excavator operations in Texas, nanotechnology research. The US has invested 3.7 billion adding another five hundred dollars through its National Nanotechnology Initiative. manufacturing jobs, because The European Union has invested 1.2 billion, and Japan



EMBODIED INTERACTION

While mobile growth continues, overall time spent online including desktop and laptop computers, Internet-connected TVs, and other non-mobile connected devices - is growing at a slower rate. [11]



31% of Indians socialise more with their online friends than they do with real-world friends. This compares with 19% worldwide, according to research from Ipsos. [13]

eMarketer estimates that:

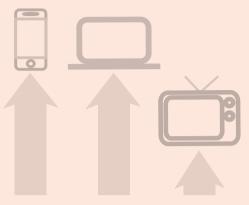
Time consumers spend using mobile devices - excluding talk time - will grow 51.9% this year to an average 82 minutes per day, up from just 34 minutes in 2010. [11]

Time spent online will grow just 3.6% to an average 173 minutes per day, compared to 7.7% growth in 2011 to 167 minutes per day. [11]









A recent survey by research firm NPD Group found that 37% of 4 and 5-year-old Americans were using mobile devices such as smartphones, tablets, or iPod Touches, compared with less than a quarter of children that age using a laptop computer. [12]

When it's time to sleep, smartphones in particular tend to linger in bed.

90% of 18 to 29 year olds say they sleep with their phone in or right next to bed.

95% of the time: browse the web, watch tv, and text before trying to sleep. [14]



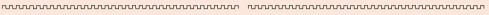
Kinect sales: 18 million Kinect sensors More than 750,000 Kinect units were sold had been shipped by January 2012. during the week of Black Friday in 2011. [16]



Already, 19% of US online consumers analyst Michael Pachter, Kinect bundles who own an Xbox 360 have used Kinect's accounted for about half of all Xbox 360 gesture capabilities to manipulate content, console sales in December 2010, and for like scrolling through movies on Netflix.7 [15]



With 8 million units sold in its first 60 days on the market, Kinect has claimed the Guinness World Record for "fastest selling consumer electronics device". According to Wedbush more than two thirds in February 2011. [16]





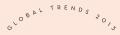
Wii sales: As of June 30, 2012, the Wii had sold 96.56 million consoles worldwide. [17]

According to Wedbush analyst Michael Pachter, Kinect bundles accounted for about half of all Xbox 360 console sales in December 2010, and for more than two thirds in February 2011.

Other interfaces such as touchless gesture and voice, popularized by the Kinect for Xbox 360 and Apple Siri, continue to gain traction.



FACTS 212



- 1 http://tinyurl.com/cobf702
- 2 http://tinyurl.com/dy52en5
- **3** Source: Infographics: Object on demand. The rise of the 3D printing revolution. 2012
- **4** Source: Infographic: 3D Printing How Long till the revolution
- 5 www.shapeways.com
- **6** http://tinyurl.com/3fapc7z
- 7 http://tinyurl.com/dymads8
- **8** Anderson, Chris, Makers: The New Industrial Revolution, 2012
- **9** Anderson, Chris, Makers: The New Industrial Revolution, 2012
- 10 Anderson, Chris, Makers: The New Industrial Revolution, 2012
- 11 http://tinyurl.com/cuwf9wt
- 12 WSJ.com | 17 September 2012
- 13 | psos-NA.com | 10 July 2012
- 14 http://tinyurl.com/cdwx5cl
- **15** Source: Customer Experience In The Post-PC Era by Forrester, 2013
- 16 http://en.wikipedia.org/wiki/Kinect#Sales
- 17 http://www.nintendo.co.jp/ir/en/sales/hard_soft/index.html

CASE STUDIES

OPEN SOURCE PROJECTS

ARDUINO — is an open-source, single-board microcontroller – descendant of the open-source Wiring platform – designed to make the process of using electronics in multidisciplinary projects more accessible. The hardware consists of a simple, open hardware design for the Arduino board with an Atmel AVR processor and on-board input/output support. The software consists of a standard programming language compiler and the boot loader that runs on the board. Arduino hardware is programmed using a Wiring-based language (syntax and libraries), similar to C++ with some slight simplifications and modifications, and a Processing-based integrated development environment. Current versions can be purchased pre-assembled; hardware design information is available for those who would like to assemble an Arduino by hand. Additionally, variations of the Italian-made Arduino (with varying levels of compatibility) have been released by third parties. Some of them are programmed using the Arduino software. http://www.arduino.cc

On July 13 at the Campus Party in Valencia, Arduino and Telefónica I+D presented Arduino GSM/GPRS Shield, an initiative that incorporates GPRS/GSM to a free hardware motherboard, resulting in a low-cost modem with multiple possibilities. The project promotes the so-called "Internet of things" (Machine to Machine) in an easy and economical way. This module will allow people to connect creations to the Internet, and to communicate with them through SMS or with voice via GPRS/GSM; furthermore, it will be accomplished cheaply and easily in most countries. http://www.iot-spain.com/?p=296





THE RASPBERRY PI — is a credit-card-sized, single-board computer developed in the UK by the Raspberry Pi Foundation, with the intention of stimulating the teaching of basic computer science in schools. The Raspberry Pi is manufactured through licensed manufacturing deals with Element 14/Premier Farnell and RS Electronics. Both of these companies sell the Raspberry Pi online. The Raspberry Pi has a Broadcom BCM2835 system on a chip (SoC), which includes an ARM1176JZF-S 7OO MHz processor, VideoCore IV GPU, and originally shipped with 256 megabytes of RAM (later upgraded to 512MB). The firmware includes a number of "Turbo" modes so that the user can attempt overclocking, up to 1 GHz, without affecting the warranty. It does not include a built-in hard disk or solid-state drive, but uses an SD card for booting and long-term storage. The Foundation's goal is to offer two versions, priced at \$25 and \$35 USD. The Foundation started accepting orders for the higher priced model on February 29, 2012. http://www.raspberrypi.com/

3D PRINTING

<u>CRAYON CREATURES</u> — is a service to turn children's drawings into figurines. It takes children's drawings, transforms them into a digital model, and then provides people with a 3D-printed version – in full colour. http://crayoncreatures.com/about/

SHAPEWAYS — is an online manufacturing community that specialises in 3D printing services. Founded in 2007 in Eindhoven, Netherlands, where it maintains a European production centre, the company moved its headquarters to New York City and is setting up a second 3D printing operation there. Last year, Shapeways shipped 750,000 products, and the numbers are growing rapidly. Shapeways's users upload their designs to get instant automated quotes for printing with industrial 3D printing machines in a variety of different materials. Users can also sell their goods online, setting their own prices. Buyers can customise some designs, such as adding their initials to cufflinks. Easy online access to 3D printing has three big implications for manufacturing, says Peter Weijmarshausen, Shapeways' chief executive. The first is the speed to market: Shapeways had covers for iPads on sale just four days after Apple first launched the device in 2010. Second, the risk of going to market falls to almost zero; entrepreneurs can test ideas before scaling up, and tweak the designs in response to feedback from buyers (some products go through 20 or 30 iterations a year). Third, it becomes possible to produce things that cannot be made in other ways, usually because they are too intricate to be machined. http://www.shapeways.com

PHYSIBLES — File-sharing site The Pirate Bay (TPB) announced Monday that they are adding a new category for users to download 3D files for recreating physical objects. This new category is called Physibles, and is being used to encourage the site's visitors to exchange digital designs for 3D printers, 3D scanners, etc. If you have a 3D printer at home, you can download any 3D models available on TPB and print a 3D physical object. http://www.3ders.org/articles/20120124-the-pirate-bay-goes-3d-digital-designs-sharing.html?utm_medium=referral&utm_source=pulsenews

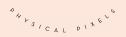
MAKERS

TECHSHOP — is a vibrant, creative community offering access to tools, software, and space. You can make virtually anything at TechShop, a playground for creativity. Part fabrication and prototyping studio, part hacker space, and part learning center, TechShop provides access to over \$1 million worth of professional equipment and software. It offers comprehensive instruction and expert staff to ensure users have a safe, meaningful, and rewarding experience. Most importantly, at TechShop people can explore the world of making in a collaborative and creative environment.

https://www.youtube.com/watch?feature=player_embedded&v=T6-pktRt4bl http://www.techshop.ws

MAKER FAIRE — is an annual event that celebrates makers of all kinds. At this massive event, 50,000 people gather to witness and participate in collaborations among an enormous variety of fields: electricians, mechanics, puppeteers, educators, computer scientists, artists, designers, chefs, and many more. Inspiration is bound to come at unexpected moments when people gather and create for the simple sake of creation. DOWNLOAD VIDEO: https://vialogues.com/vialogues/play/6583

CHARLWOOD DESIGN'S INSTANT PROTOTYPETM — is an effective rapid-prototyping service that turns 3D ideas into real, functional models. The state-of-the-art FDM technology allows high-resolution prototypes to be rapidly created in durable ABS plastic. http://www.charlwood.com.au/instant-prototype.aspx





TANGIBLE USER INTERFACES (TUIS)

KIDCAD — is a digital clay interface developed by Tangible Media Group in 2012, providing children the opportunity to remix their toys. Children can use KidCAD to imprint 2.5D shapes from physical objects into their digital models by deforming a malleable gel input device. Users can mash up existing objects, edit and sculpt, or draw new designs on a 2.5D canvas using physical objects, their hands, and other tools.

http://dl.acm.org/citation.cfm?doid=2208276.2208403

TANGIBLE TEXTURAL INTERFACE (TTI) - is a new type of sound system that embeds a tactile surface, allowing it to respond to simple touch and gestures. TTI has flexibility that enables people to physically touch and feel the response through the controls and physical morph of the surface. It delivers new aesthetics through integrated flexible surfaces as interface material, unlike adapting conventional materials for interfaces such as plastic or glass. Distinct from existing 2D interfaces, TTI has a curved 3D surface that opens new possibilities in making flexible forms and shapes within the interface. TTI consists of 3 main functions: backwards and forwards, volume control, and an equaliser. It meshes a physical feedback and control interface within one surface. As you control the functions, the left surface physically responds to the controls. The tactile surface also responds to the beat of the music. http://www.dezeen.com/2012/06/28/tanaible-textural-interface-bu-eunhee-io-at-show-rca-2012

CHRONOTAPE - is a tangible timeline for researching family history. Developed as part of the PATINA project, within the Bristol Interaction & Graphics group, the device allows you to interact with data using a physical object. It explores how a tangible interface can control time by essentially transforming it into something you can hold and manipulate. Deliberately simple, its internal makeup consists of a PS3 eye webcam for tracking the tape position, a battery-powered pico projector for projecting onto the underside of the tape, a USB hub for the memory stick, a USB light to illuminate the markers on the underside of the tape, a mirror, an Arduino, three arcade buttons, and quite a lot of empty space to allow for the projection to focus. http://www.psfk.com/2012/03/tangible-facebook-timeline.html

TOPOBO - is the world's first construction toy with kinetic memory - the ability to record and playback physical motion. Snap together passive (static) and active (robotic) pieces into a creation, and with a press of a button and a flick of your wrist you can teach your creation how to dance or walk. In the same way you can learn how buildings stand by stacking up blocks, you can discover how animals walk by playing with Topobo. It was awarded the

"most playful robotic toy" by the Robots at Play competition, and has been proven to teach advanced physics concepts to children as young as 5 and improve social interactions for autistic children. http://www.topobo.com

PHYSICAL GAMES

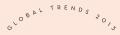
LIFE OF GEORGE — includes a building mode with single- and multiplayer options, as well as a creation mode where you design and capture your own models. In the building game, you receive challenges on your iPhone/iPod Touch, which you then build with real Lego bricks. In multiplayer mode, players can challenge friends and compete on different models to see who builds the fastest. There are various difficulty levels determined by the models and the time setting you choose (easy or hard). Life of George also includes My Life, where players can keep their own album of models and creations, which they can then challenge their friends with, http://george.lego.com/en-us. http://www.uoutube.com/watch?v=1DHZwSOVKBY

THE FIRST ANGRY BIRDS ACTIVITY PARK - in the UK opened at Sundown Adventureland, in Retford. The park includes animal spring riders, swings, sandpits, and a range of climbing towers with slides, as well as an Angry Birds arcade game that can be played outdoors in the park. ITV.com | 28 August 2012

PUPPETEERS — is a system for producing 3D animations using physical objects (i.e., puppets) as input. Puppeteers can load 3D models of familiar rigid objects, including toys, into the system and use them as puppets for an animation. During a performance, the puppeteer physically manipulates these puppets in front of a Kinect depth sensor. The system uses a combination of image-feature matching and 3D-shape matching to identify and track the physical puppets. It then renders the corresponding 3D models into a virtual set. The system operates in real time so that the puppeteer can immediately see the resulting animation and make adjustments on the fly. It also provides 6D virtual camera and lighting controls, which the puppeteer can adjust before, during, or after a performance. Finally, the system supports layered animations to help puppeteers produce animations in which several characters move at the same time. The accessibility of the system is demonstrated with a variety of animations created by puppeteers with no prior animation experience.

http://vis.berkeley.edu/papers/3dpuppet/ http://www.tangibleinteraction.com/ http://vimeo.com/36398545#





PHYSICAL OBJECTS/ANALOGUE

THE IMPOSSIBLE INSTANT LAB — is transforms any digital image in your iPhone into an instant photo, exposed using only the light from the display and then processed and developed with chemicals. The digital image is converted into a photo that exists physically; a one-of-a-kind original that can be shared, exhibited, and preserved with no need for an electronic device to view it. http://www.kickstarter.com/projects/impossible/impossible-instant-lab-turn-iphone-images-into-real

THE FOTOBAR CONCEPT — was announced this week at the International CES show, and the first store is due to open in Florida in February. Visitors will be led through an experience where they pick a surface on which to print their photographs, choosing the most compelling photos they have taken and edited with their smartphones. "The lessons that we hope to learn are twofold," Fotobar founder and CEO Warren Struhl tells LS:N Global. "One is that in a digital age, people are starting to value and care again about physicality. The second is about people's value of

physical stores. The Fotobar is a place where you can touch, feel, and be inspired." http://www.digitaltrends.com/photography/a-trip-to-polaroids-new-fotobar-retailer/



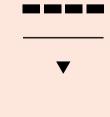
SELF CUSTOMISATION

LOCAL MOTORS — is an American open-source automobile company founded by John "Jay" Rogers and Jeff Jones, bi-located in Wareham, Massachusetts (founded) and Chandler, Arizona (facility). They co-create vehicles with their community of auto designers, engineers, enthusiasts, and customers. Local Motors is in production with their first vehicle, called the Rally Fighter, an off-road race vehicle designed to also be street legal. Customers buy the car as part of a build experience with Local Motors engineers in a Local

Motors micro-factory. http://www.localmotors.com/ VIDEO: https://www.youtube.com/watch?feature=player_embedded&v=ofwMSAoqcaU

NOKIA'S LUMIA 820 — Shells are based on 3D printing instructions that allow Nokia customers to print their own phone covers, expanding the customisation potential. As 3D printing becomes more affordable, self-customisation of all varieties of user gear will accelerate rapidly. Nokia has made a modest start, but has announced its intent to support more use of 3D printing technologies. http://www.gizmag.com/3d-printing-files-nokia-lumia-820/25881/

FABERDASHERY — aims to provide the 3D printing community with the best printing material available. Based in Somerset, England, Faberdashery grew out of the joint passions of ecodesigner Clare Cunningham and Andrew Dent, PhD in materials science and former supervisor on the RepRap project at Bath University. Dent describes Faberdashery's goal as creating "a place that offered a haberdashery like experience: friendly, tailored, highly skilled and attractive, that provided an emporium of fabbing resources." http://www.faberdashery.co.uk/





CASE STUDIES 220



IMPLICATIONS FOR TELEFÓNICA

ENCOURAGE MORE PHYSICAL/ TIME "No email day", Sweet

REAL-LIFE INTERACTIONS Friday, team sports, and events BETWEEN EMPLOYEES aimed at encouraging real-life contact.

ENABLE EMPLOYEES TO "MAKE TO Create makers labs where

THINGS" IN THE OFFICE people can experiment with 3D printing, CAD software, and other prototyping/making tools.

ENCOURAGE AN ENTREPRENEURIAL ¬¬¬ Empower employees to run

SPIRIT INTERNALLY their projects like start ups.

ADDITIONAL SOURCE\$

¬¬¬ Anderson, Chris: Makers, 2012

¬¬¬¬ Kelly, Kevin: What Technology Wants, 2012

¬¬¬ Hallgrimsson, Bjarki: Prototyping and

Modelmaking for Product Design, 2012

Lipson, Hod: Fabricated: The New World of 3D Printing, 2012

Consumers, Globalization and the End of Mass Production, 2012

The Editor of MAKE: Make: Ultimate Guide to 3D Printing, 2012

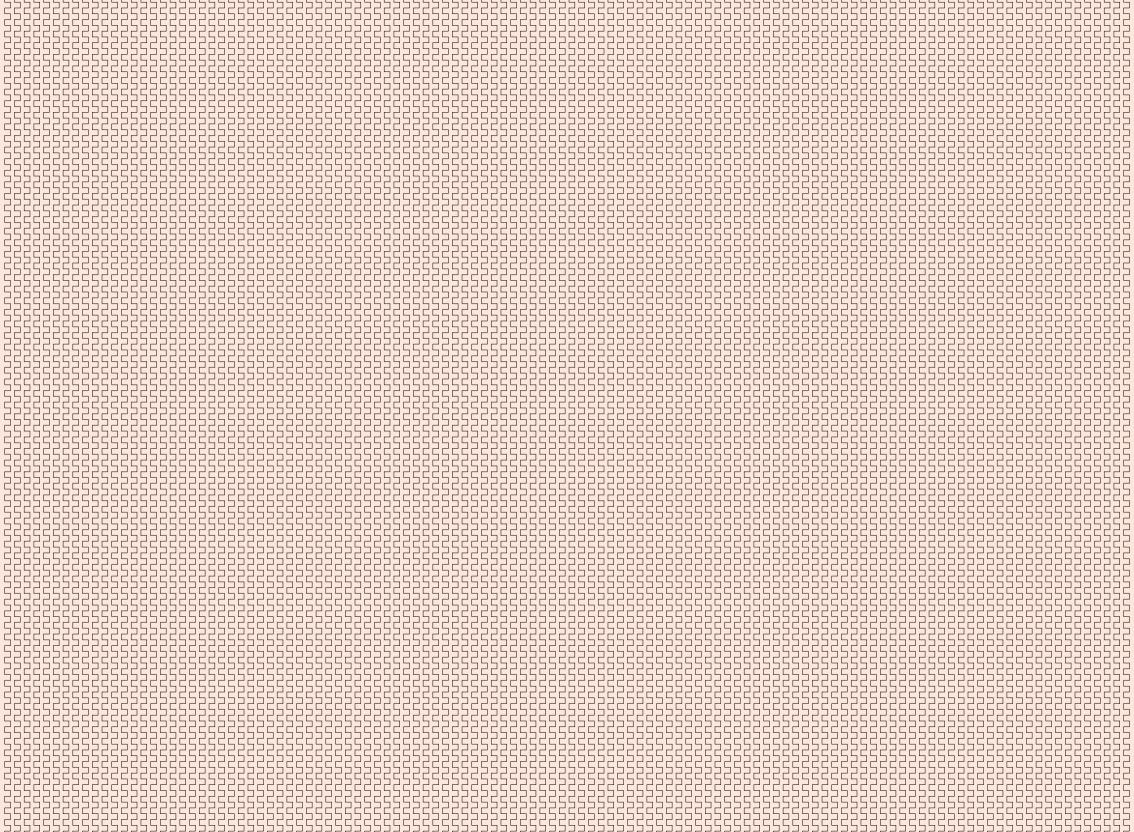


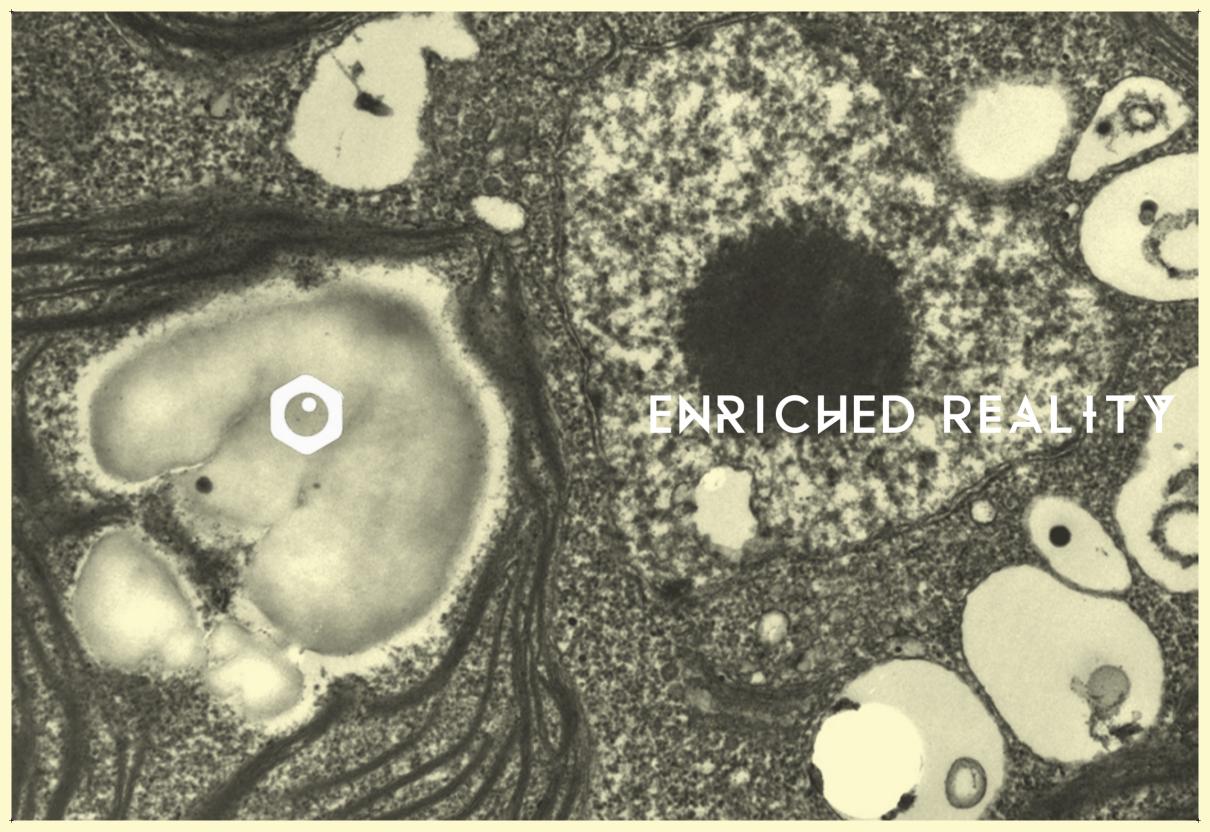
TELEFÓNICA DIGITAL PDI

225



- S
- S
- A
- P
- X
- X
- E
- L
- S





TELEFÓNICA DIGITAL PDI



228



TO PERCEIVE THE WORLD IS TO SUCCESSFULLY PREDICT OUR OWN SENSORY STATES

ANDY CLARK



ENRICHED REALITY



ENRICHED REALITY

In the 2012 trends report, we expressed the importance of people embracing change and uncertainty as sources of stimulation (see Curious Mind trend*). We discussed the importance of nurturing creativity and imagination in order to be successful in the Project Economy.

In the Reinvention Era, people harmoniously with minimum friction. This Enriched Reality will will look for ways to enhance their be made possible by technology that is invisible, ambient, and perception of themselves and of that seamlessly enhances people's perception by tracking, the world around them. Only a small monitoring, sensing, and recognising behaviours and situations. fraction (less than a ten-trillionth) People will aspire to become Perceivers: ones who discover of the electromagnetic spectrum hidden channels of perception about themselves and is visible to humans[1]. People the world around them with the aid of technology. They perceive enough to get by within experience Enriched Reality by using new technologies their ecosystem, but if they want to that enable them to know themselves better and increase reinvent new futures, they will have to self-awareness. People will embrace technology when increase their perception of themselves they see that it can provide tangible benefits, such and of the environment. People will as enhancing their mental and physical abilities or increasingly realise that technology can enhance their perception and build more environment. Enriched Reality will be embraced at empathy and efficiency to their lives. different levels depending on people's age and socio-

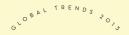
people to perceive more by tapping into hidden channels of perception. Enriched Reality is where technology and human interaction integrate

permitting them to experience more of the physical Technology will be instrumental in enabling demographic, but mostly depending on their culture and their specific needs. Japan, for example, has been very open and inclusive of technology; Near Field Communications (NFC) has an adoption rate of 85% in Japan compared to 10-15% in the US^[2]. It is interesting to monitor how cultures are integrating technology into everyday activities and examine their perceived benefits and

ENRICHED REALITY IS WHERE TECHNOLOGY AND HUMAN INTERACTION INTEGRATE HARMONIOUSLY WITH MINIMUM FRICTION. THIS ENRICHED REALITY WILL BE MADE POSSIBLE BY TECHNOLOGY THAT IS INVISIBLE, AMBIENT, AND THAT SEAMLESSLY ENHANCES PEOPLE'S PERCEPTION BY TRACKING, MONITORING, SENSING, AND RECOGNISING BEHAVIOURS AND SITUATIONS

drivers for adoption. We can argue that the increase in global competition, higher life expectancy, and a new population comprised of digital natives will lead to the acceptance of more pervasive technology throughout the world. Indeed, seers will create a new paradigm whereby there





is a causality effect between the improvement of human perception and machine perception. The more people use technology, the more their perception will improve. And in turn, they will improve technology's perception of themselves and of the overall environment. As a result, technology will become more human, displaying intelligent and empathetic behaviours toward users and the environment. Technology will increasingly be non-intrusive, learning about users and enhancing their perception, not replacing it. In the Reinvention Era, interaction between humans and machines will become frictionless: a coexistence with both parts learning to achieve Enriched Humanity.

PEOPLE WILL EMBRACE TECHNOLOGY TO BECOME PERCEIVERS

he subset of perception we are able to detect is referred to as "unwelt", but there is a bigger reality called "umgebung" that people are currently unable to detect (see Additional

Insights). Technology can help people become Perceivers, detecting more than their currently "limited" cognitive framework is able to. The more people use technology, the more their perception will improve. And in turn,

they will improve technology's perception of themselves and of the overall environment. People are able to see how they respond to specific situations, track their moods, and learn new techniques for improvement and learning. This will translate into a plethora of innovations geared at enhancing people's perception of themselves. In the field of affective technology, for example, the MIT Media Lab developed **Ginger.io**,

THE MORE PEOPLE
USE TECHNOLOGY,
THE MORE THEIR
PERCEPTION WILL
IMPROVE. AND
IN TURN, THEY
WILL IMPROVE
TECHNOLOGY'S
PERCEPTION OF
THEMSELVES AND
OF THE OVERALL
ENVIRONMENT

an app that checks how people are feeling emotionally and physically. The app discovers the user's specific patterns and is able to predict the beginning of issues such as anxiety or the

flu (see Case Studies). Another example of providing neurofeedback (see Additional Insights) is MundPlay (see Case Studies), a system that teaches the mind to meditate and focus through stimulus/ response training; it provides detailed brainwave feedback and the tools to develop greater mental awareness and emotional control. Innovation in sensor technology such as FEEL (see Case Studies) measures the electrodermal activity for signs of stress, anxiety, and arousal while the user is performing specific tasks. This helps the user perceive which activities provide negative or positive impact and adapt behaviour

accordingly. Additionally, wearable technology like **Smart Bra** will improve people's performance by providing biofeedback and potentially detect illnesses that require treatment (see Case Studies).

People will also aspire to an Enriched Reality because it enables them to perceive more of their surroundings and improve their situational awareness (see Additional Insights). For example, Augmented Reality (AR) provides people with access to layers of information about their surroundings that are impossible to perceive through human vision. This can help guide processes such as learning about the engine of a car, or simply assist in providing additional information such as rental apartments available within a specific vision field (see Case Studies). In the same way, Quick Read (QR) codes and Near Field Communication help develop a deeper relationship between the user and the environment. In some instances, these technologies create opportunities for transmedia storytelling, where pieces of content are not only linked together, but are in narrative synchronisation with each other (see Additional Insights). Seers will seize opportunities to understand their unique opportunity to improve many aspects of life spanning health, wellbeing, fitness, shopping, media, entertainment, and more. Such services will continue growing as people are keen to improve their perception of themselves and





understand how the world Insights). Technology can help also automatically experienced imagine new possibilities. in another way (see Additional

around them, their actions, challenge this by linking sensory and the choices they make experiences to new outcomes. impact their quality of life. For instance, it is possible to In a bid to improve people's induce visual sensations through perception, some scientists are sound (see Case Studies). Such experimenting with artificial experiments are usually geared synesthesia. Synesthesia is at helping people who are a perception condition of sensory impaired (blind, deaf, mixed sensations, where a etc.), but they could lead to stimulus that would normally innovations that help people be experienced in one way is perceive more than most and

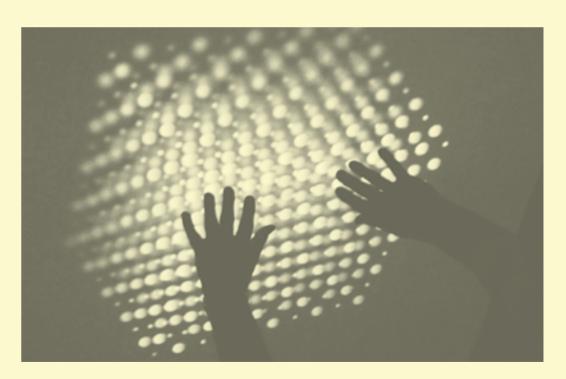
TECHNOLOGY WILL SECOME MORE HUMAN T♦ SUPPORT THE PERCEIVERS' NEEDS

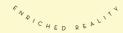
more intelligent, their perception of empathetic, and human the users; in turn, to be non-intrusive and the machines can enable frictionless interaction. develop new abilities Machines will increasingly that are aimed understand the user's feeling at enhancing the (frustration, stress, overall user's perception. mood) and will anticipate As people use the user's state thanks to technology, the developments in sensors, devices will have algorithms, and programs more empathy for that help computers perceive the users and fit human emotions. The more more naturally in the that machines are used, the human environment. more they learn about the For example, The

echnology will become users and enhance Affective Computing Group at MIT (see Case Studies) is looking for novel ways to make more intelligent and perceptive technology in order to reduce the gap between inanimate and animate objects. The idea is to build objects that work as services. We can imagine a multitude of uses for such intelligent technologies, becoming helpful agents with artificial or augmented human-like brains.

patented a set-top box, which uses eveprints to tailor and is a media-presentation system protect interaction based on that selects advertisements the user's profile. For such based on "ambient actions" in technology to become part of the room. For Perceivers, such the everyday life, it is important tools will become incredibly that it answers real needs and important to experience the provides tangible benefits full potential of Enriched for the users: it must also fit Reality. Advances in facial and "naturally" within the user's voice recognition will enrich context and environment. the interaction people have This will be critical to ensure with machines and help with the broad adoption of such

For example, Verizon recently **EueVerifu** (see Case Studies) security and privacy concerns. intelligent technology goes beyond just early-adopters or "geeks". Additionally, as this intelligent technology will rely on user data to function appropriately, it will be important to ensure that users stay in control of all their data. Ideally, there will be a user-centric data ecosystem that enables users to view all their data from one place, as opposed to device specific







dispersed. This would allow Robot, the iRobot Roomba more security and privacy as vacuum cleaner, or Sony's well as the ability to create a rich Aibo robot dog. Developers perception of the user, enhancing are hoping that in the future the performance and experience more bots will have an openof both the user and the devices. source operating system such

Furthermore, developments in Source platform) to allow robotics will enable people to for more customisation. delegate tasks to robots with human characteristics such as In the Reinvention Era. the intelligence, empathy, recognition, etc. For example, **Baxter** (see Case Studies) is a robot with eyes on a screen that register emotions like happiness or surprise. Baxter adapts to changing conditions and can be taught to perform new tasks. Robots like Baxter will play an important role in enabling innovations in many areas - from science to entertainment (see Case Studies) - by perceiving human emotions and identifying challenges and opportunities that people do not perceive on their own. As a result, robots, like smart objects, will become

As people use TECHNOLOGY, THE DEVICES WILL HAVE MORE EMPATHY FOR THE USERS AND FIT MORE NATURALLY IN THE HUMAN ENVIRONMENT

a part of people's everyday lives; there will be more opportunities to customise their behaviour and to tailor it to specific

user's needs. The RoboAppStore, a marketplace for bots, provides apps for

ecosystems where the data is consumer robots like the NAO as the ROS (Robot Open

> interaction between people and technology will become more intelligent, sensorial, and empathetic, and will contribute to create an everyday Enriched Reality. *

PFOPLF



NEIL HARBISSON is a Catalan-raised. Northern Irelandborn contemporary artist, composer, and cyborg activist best known for his self-extended ability to hear and perceive colours outside the ability of human vision. In 2004, he became the first person in the world to wear an eyeborg. The inclusion of the eyeborg on his passport photo has been claimed by some to be official recognition of Harbisson as a cyborg. Colour and the use of technology as an extension of the performer, and not as part of the performance, are the central themes in Harbisson's work. In 2010, he founded the Cyborg Foundation, an international organisation to help humans become cyborgs. http://en.wikipedia.org/wiki/Neil_Harbisson

CLAIRE CHESKIN used to live in a murky world of grey, her damaged eyes only seeing large objects if they were right next to her. She could detect the outlines of people, but not their expressions, and could make out the silhouettes of buildings without seeing any details. Nowadays, things are looking distinctly brighter for Cheskin. Using a device called vOICe, which translates visual images into "soundscapes", she has trained her brain to "see through her ears". When travelling, the device helps her identify points of interest; at home she uses it to find things she has put down, like coffee cups. "I've sailed across the English Channel and across the North Sea, sometimes using the vOICe to spot landmarks," she says. "The lights on the land were faint but the vOICe could pick them up."

http://www.newscientist.com/article/ma20727731.500



David Eagleman, The Umwelt in John Brockman, This Will Make You Smarter, 2012

HTTP://WWW.IMEDIACONNECTION. COM/CONTENT/33275.ASP

WWW.GLOBALTRENDS.TELEFONICA

KATCHA, partially blind at IBOS, Denmark, uses Sonivivi. The application was presented to her and her teacher, and she was able to play all the levels of the application fluently by herself after quick introduction - and greatly enjoyed the experience. Although she had never used a touchscreen device before, the assisted interface made it possible for her to learn. Her experience breaks the misconception that the partially blind can't use a touchscreen device because of its dependency on a graphical user interface. Sonivivi provides an opportunity for self-training so the partially blind can develop their listening skills without the help of a teacher. As they complete levels and their skills improve, it gives them a sense of achievement and boosts self-confidence. "If I can have confidence to go outside by myself without anyone helping me, I will be happy even more than now," said Katcha. http://awards.ixda.org/entry/2013/sonivivi



DAITO MANABE is a Tokyo-based artist and programmer. He has carried out a number of innovative technology projects, often involving him hacking the human body in some way. One system focuses on experimental music performances and linked a person's face to electric sensors. Instead of playing a guitar or drums, this system let you "play" your face like a musical instrument, using facial movements as a controller to trigger sounds. http://www.youtube. com/watch?feature=player embedded&v=xrSFZNb9m1o

IMOGEN HEAP is an eclectic, eccentric. and innovative British musician, considered the epitome of a digital diva by some. Her talent spans the craft of songwriting to elaborate live, multi-instrumental improvisations, building on a unique voice, classical training, and unusual tech-savviness. Self-produced, independent, and engaged, she blurs the boundaries between pure art forms and creative entrepreneurship, and uses her knowledge of the web and social networking to communicate and collaborate with her loyal following in pioneering ways. http://www.imogenheap.com

ADDITIONAL INSIGHTS

DAVID EAGLEMAN AND THE UMWELT The small subset DONALD HOFFMAN AND of the world that an animal is able to detect is its umwelt. The THE SENSORY DESKTOP bigger reality, whatever that might mean, is called the umgebung. Our perceptions are neither The interesting part is that each organism presumably assumes its true nor false. Our perception umwelt to be the entire existing objective reality. Why would any of space and time and objects of us stop to think that there is more beyond what we can sense? is part of our "sensory A good illustration of our unawareness of the limits of our unwelt desktop", which functions is that of colour-blind people: until they learn that others can see much like a computer desktop. hues they cannot, the thought of extra colours does not enter A graphical desktop is a guide to their conceptual reality. The more science taps into those hidden adaptive behaviour: it enhances channels, the more it becomes clear that our brains are tuned to useful behaviour and hides detect a shockingly small fraction of the surrounding reality. Our what is not useful, making it sensorium is enough for us to get by our ecosystem, but it does not easier to grasp the distinction approximate the larger picture.

between utility and truth. Our

It would be useful if the concept sensory experiences - vision, sound, taste, touch, etc. - can be of the umwelt were embedded thought of as a sensory desktop that has evolved to guide adaptive in the public lexicon. It neatly behaviour, not report objective truths. As a result, we should take captures the idea of limited our sensory experiences seriously. Our sensory experiences knowledge, of unobtainable have been shaped by natural selection to guide such adaptive information, of unimagined behaviours. Sensory desktops differ across species. The concept possibilities. John Brockman, of the sensory desktop can enhance our cognitive toolkit by This Will Make You Smarter, 2012 redefining our attitude towards our perceptions. It is common →





to assume that the way we see the world is, at least in part, the **NEUROFEEDBACK** is a type way it really is. We experience the world of space and time and of biofeedback that uses realobjects, and it is common to assume that these experiences time displays of electroencephare, or at least resemble, objective truths. The concept of the alography or functional magsensory desktop reframes all of this. It loosens the grip of sensory netic resonance imaging (fMRI) experiences on the imagination. Space, time, and objects might to provide a signal that can be just be aspects of a sensory desktop specific to Homo sapiens. used by a person to receive They might not be deep insights into objective truths, but feedback about brain activity. rather convenient conventions that have evolved to allow us to survive in our niche. John Brockman, This Will Make You Smarter, 2012 SKIN VISION, Leonid Yaroslavsky,

DONALD HOFFMAN ON SYNESTHESIA The phenomenon of University, suggests that humans synesthesia can help us understand the conventional nature of our sensory experiences. In many cases of synesthesia, a stimulus that is normally experienced in one way is also automatically experienced in another way. Someone with sound-colour synesthesia sees colours and simple shapes whenever they hear a sound. The same sound always occurs with the same colours and shapes. "Skin vision is not uncommon in John Brockman, This Will Make You Smarter, 2012

THE BIOMIMICRY APPROACH seeks nature's advice at all stages of such as pit vipers, who use design, from scoping to creation to evaluation. Working with "biologists at the design table," innovators explore the true functions they want their design to accomplish, and then ask: What organisms or ecosystems depend on performing those functions for their survival? http://biomimicry.net/

BIOFEEDBACK is a process that enables an individual to learn how to change physiological activity for the purposes of improving health and performance. Precise instruments measure physiological activity such as brainwaves, heart function, breathing, muscle activity, and skin temperature. These instruments rapidly and accurately "feed back" information to the user. The presentation of this information - often in conjunction with changes in thinking, emotions, and behaviour - supports desired physiological changes. Over time, these changes can endure without continued use of an instrument What is biofeedback?, Association for Applied Psychophysiology and Biofeedback, 18May 2008

a researcher at Tel Aviv might be able to "see" with their skin. He hopes that biomimicry gives way to the development of new kinds of imaging technology that obviate traditional optics. nature. Plants orient themselves to light, and some animals infrared vision, and reptiles, who possess skin sensors, can 'see' without the use of eyes. Skin vision in humans is likely a natural atavistic ability involving light-sensitive cells in our skin connected to neuromachinery in the body and in the brain." http://www.eng.tau.ac.il/~uaro/

THE UNCANNY VALLEY is a hypothesis in the field of robotics and 3D computer animation; it holds that when human replicas look and act almost, but not perfectly, like actual human beings, it causes a response of revulsion among human observers. The "valley" refers to the dip in a graph of the comfort level of humans as a function of a robot's human likeness. The term was coined by the robotics professor Masahiro Mori as Bukimi no Tani Gensh in 1970. The hypothesis has been linked to Ernst Jentsch's concept of "the uncanny", identified in a 1906 essay On the Psychology of the Uncanny. Sigmund Freud elaborated on Jentsch's concept in a 1919 essay entitled The Uncanny ("Das Unheimliche"). http://en.wikipedia.org/wiki/Uncanny_valley

HUMANOID ROBOT IN SPACE A consortium of Japanese SITUATIONAL AWARENESS companies will send a humanoid robot into space in 2013. Its is the perception of mission will be none other than to keep astronaut Koichi Wakata environmental elements with company and help him run operations on the International Space respect to time and/or space, Station, sort of like a humanoid HAL 9000. Takahashi expects the comprehension of their other uses for the technology to come out of the robot's trial run. meaning, and the projection of The robot was developed after JAXA requested ideas for "solving" their status after some variable social issues" on the space station. As the humanoid improves, it has changed, such as time, or could be used as a companion for lonely astronauts. The robot some other variable, such as a is still under construction, but once built, it will be 13 inches tall predetermined event. Situational and weigh 2.2 pounds. It will be able to recognise faces, do simple awareness (SA) involves being

experiments such as mixing http://www.space.com/18841-japanese-

space-station-humanoid-robot.html

aware of what is happening in the

liquid, and send information vicinity in order to understand how information, events, and one's back to scientists on the ground. own actions will impact goals and objectives, both immediately and The companies, which include in the near future. One with an adept sense of situational awareness car-maker Toyota, will build generally has a high degree of knowledge with respect to inputs two robots, sending one into and outputs of a system, and an innate "feel" for situations, people, orbit and keeping one on Earth and events that play out due to variables the subject can control. as a backup. If the project is Lacking or inadequate situational awareness has been identified as successful, it could pave the way one of the primary factors in accidents attributed to human error. for more collaboration between Thus, situational awareness is especially important in work domains humans and robots in space, where the information flow can be quite high and poor decisions making life easier for astronauts. may lead to serious consequences (e.g., piloting an airplane, functioning as a soldier, or treating critically ill or injured patients).

http://en.wikipedia.org/wiki/Situation_awareness





MINTCHIP is a pilot program by the Royal Canadian TRANSMEDIA Mint seeks to digitise cash using a chip onto which STORYTELLING people can preload money. Users can securely load (also known as an electronic value onto a smartphone, USB device, transmedia narrative

Canadian Mint launched

or tablet, or upload it to the

or multiplatform

cloud, and transfer money storytelling) is the technique of telling a by email or by tapping two single story or story experience across devices together. Although multiple platforms and formats using this is still using a government- current digital technologies, and is not regulated currency, MintChip to be confused with traditional crossenables people to pay more platform media franchises, sequels, conveniently. "Physical or adaptations. From a production currencies in a global world are standpoint, it involves creating content inconvenient," says technology that engages an audience using various futurist Daniel Burrus. "Digital techniques to permeate their daily lives. currencies provide the These pieces of content are not only possibility for an international, linked together (overtly or subtly), but universal currency that would are in narrative synchronisation with make things much simpler." each other. http://www.thefilmcollaborative. In August of 2012, the Royal org/blog/tag/multiplatform-storytelling/

The MintChip Challenge, a SOCIAL ROBOTICS is a research field competition for developers dedicated to robots that are placed in to create an app to support social spaces. Social spaces are defined MintChip. The winner was as spaces that involve the general public; MintWallet, by Coronox, which examples include hospitals, galleries, submitted an app concept nursing homes, museums, airports, and supported by the Nokia domestic environments (not factory Lumia phone. The app enables robots). The Centre for Social Robotics people to create payment at the University of Sydney is active in the networks, request money from creation and use of robotics technology in peers, send money to others, all types of intelligent machines, devices, and to create QR codes and products that assist, improve, and that others can scan to pay enhance people's experience in using specific people and causes. these technologies in everyday life http://merchant.mintchipchallenge.com activities. http://www.csr.acfr.usyd.edu.au/

TALKING, WALKING OBJECT There is evidence that objects will create emotional connections with their owners in a more active way. Simon is a humanoid robot that is part of a growing collection of social robots that can see.

hear, feel, and react **SOCIALLY ASSISTIVE ROBOTICS** this emotional con-

through humanlike "We define socially assistive sound and move-robotics (SAR) as the intersection ment. There are of AR (Assistive Robotics) and already a number of SIR (Social Interaction Robotics). high-tech products SAR shares with assistive robotics very much involved the goal to provide assistance in our day-to-day to human users, but it specifies lives: examples that the assistance is through include iPhone's social interaction. Because of the Siri or the Roomba emphasis on social interaction, vacuum cleaner. SAR has a similar focus as SIR. These objects are In SIR, the robot's goal is to creating a person- develop close and effective ality by translating interactions with the human for basic human emo- the sake of interaction itself. In tions through colour, contrast, in SAR, the robot's goal sound, and basic is to create close and effective language. Through interaction with a human user for these personalities, the purpose of giving assistance these objects offer and achieving measurable us emotional value, progress in convalescence, along with other rehabilitation, learning, etc." features. Research- http://robotics.usc.edu/~maja/

ers have found that teaching/cs584/papers/feilseifer.pdf

nection leads people to feel empathy for the product. making them much more accepting of mechanical flaws that would otherwise be seen as a nuisance.

http://www.nytimes.com/2013/01/27/opinion/sunday/our-talking-walkingobjects.html?pagewanted=all&_r=2&





FACTS

DATA TRAFFIC

Last year, the number of Internet users topped 2.4 billion - more than a third of all humans on the planet. The time spent on the screen was 16 hours per week globally - that number was doubled in high-use countries, with much of screen-time spent on social media. [1]

The Cisco Mobile VNI study predicts that, while smartphones, laptops, and other portable devices will drive about 90% of global mobile data traffic by 2016, M2M traffic will represent 5% of the world's mobile data traffic in the same year. Globally, M2M traffic will grow 22-fold from 2011 to 2016 - a compound annual growth rate of 86% - with M2M traffic reaching 508,022 terabytes per month in 2016. [2]

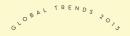


CONNECTED DEVICES

According to new data from NPD In-Stat, the There are 9 billion connected devices at present connected-device base will increase from 256 and by 2020 that number is going to explode to million devices (2011) to at least 1.34 billion by 24 billion devices. The total number of mobile 2016. That is a 56% combined annual growth connected devices doubles from 6 billion today rate. Connected devices include tablets and to 12 billion by 2020. [4] smartphones, as well as connected television and players and recorders.[3]

The US market for advanced patient-monitoring The cellular M2M connectivity service market systems has grown from \$3.9 billion in 2007 to grew at a robust 26.2% in 2011, rising from 87.7 \$8.9 billion in 2011, and is forecasted to reach million cumulative connections in 2010 to 110.6 \$20.9 billion by 2016 according to the Remote million cumulative connections globally in 2011. and Wireless Patient Monitoring Markets Despite the continuing global economic crisis, the report by Kalorama Information. Advanced cellular M2M market benefited from increasing patient-monitoring systems with wireless numbers of mobile network operators launching capability and other features continue to be M2M service offerings as their core voice/data one of the fastest-growing medical device services market grows increasingly mature and areas in terms of revenue growth, according to saturated. Likewise, strong growth, particularly in Kalorama Information. The healthcare market smart grid and automotive telematics programs, research publisher says sales of these systems helped to drive overall cellular M2M connections more than doubled between 2007 and 2011. [5] and revenue. [6]





The vision of more than 50 billion connected devices will see profound changes in the way people. businesses and society interact. With ubiquitous mobile broadband-enabled internet access, Connectivity and networking are becoming completely independent of location. combined with falling prices for communication modules, connectivity services and embedded computing, the drivers for new services and functionality - broadband ubiquity, cost of connectivity, and openness and simplicity - will lead to more efficient business models and improved lifestyle for individuals and society. We are already heading full-speed towards connectivity for everyone. in 2010, more than twice as many connected devices as subscribers were added to carrier networks in the Us market.^[7]

WEARABLE TECHNOLOGIES

that, by 2016, anywhere between 39.2m-171m wearable tech units will be shipped globally. [8]
Pebble technology has raised more than \$10 million from more than 68,000 backers on Kickstarter. com. Wearable technology is finally ready to move out of sci-fi movies and onto our own bodies. [9]
68% of us sleep with our phones at our bedside, according to a 5,000-person global survey by Qualcomm and Time. [8]

Leading research company IHS has claimed that



Increasing demand for actionable, real-time A new report from Juniper Research suggests data in a range of applications is driving strong that augmented-reality applications are poised to demand for wearable technology. 14 million take off in the near future, more than 2.5 billion wearable devices were shipped in 2011; by apps to be downloaded by 2017. According to 2016, wearable technology will represent a the report, titled Mobile Augmented Reality. minimum revenue opportunity of \$6 billion. according to World Market for Wearable Technology - A Quantitative Market Assessment - 2012, a new report from IMS Research. [8]



51% of men said they would not feel self-

be willing to pay \$80-\$160 for the glasses. [10]

Nokia vibration tattoo is a substance placed on the skin that can notify users of calls, texts, low battery, etc. [10]

PPSS Cut Resistance Fabric has been used to Lorex Vue are sunglasses that can record 2GB, or 5 create a sweatshirt that can withstand slashes from hours of high-resolution video and stereo sound. [10] knives, razor blades, and glasses, without tearing. [11]

Bionic contact lenses are lenses that can have conscious wearing the Google glasses, compared

information displayed directly on them, displaying to 17% that said they would and 52% who would a single pixel. [10]

Research shows that listening to up-tempo music, specifically songs with 125 to 140 beats per minute, motivates people to work out harder. RunningPlaylist.net has more than 100 line-ups, from pop to alternative, and cites the BPM for each song. [12]





R♦BOTI¢S

By 2015, it is expected that the Global Personal Robotics market revenue will reach \$20 billion. [13]

The fast growth of consumer robotics will be fuelled by the cloud, with the application stores playing an important role. [13]



Robots can be taught to handle many different tasks through the installation of robotic apps. Very soon, these robots will be upgradable in real time by connecting to the cloud and downloading apps. Among the robot apps, the most popular revolve around art, navigation, music, utility and surveillance, and entertainment. [13]

The global population of personal and service robots grew tenfold in the last 4 years, and is expected to keep growing at the same exponential rate until reaching more than 100 million robots in service by 2017. [13]

1 http://tinyurl.com/c97fnja

- 2 http://tinyurl.com/bmzfut2
- 3 http://tinyurl.com/ccyadvg
- 4 GSMA
- 5 http://tinyurl.com/cbg68uc
- **6** Source: Cellular M2M Connectivity Services by Machina Research, 2012
- **7** Source: More than 50 billion connected devices by
- Ericsson, 2011
- 8 http://tinyurl.com/cz5bkvu
- 9 http://tinyurl.com/9gwr876
- 10 http://tinyurl.com/dxn7k8f 11 http://tinyurl.com/dxn7k8f
- 12 http://tinyurl.com/cl559pz 13 http://visual.ly/future-cloudrobotics

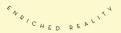
CASE STHDIES

ENHANCING PERCEPTION

GINGER.IO APP — is a startup founded by Madan and MIT alumnus Karan Singh; we first covered the app in last year's report after it won the Sanofi-aventis Data Design Diabetes Challenge. It is leveraging smartphone data to help people with a variety of ailments – including diabetes and heart disease – and better manage their moods. The Ginger.io app runs silently in the background of participants' smartphones, collecting text message habits, call frequency, and location. All that data is analysed and sent back to patients via the app, and doctors and researchers via an online dashboard. If you suddenly stop calling your friends or don't go to work for a few days, that could be a sign to your doctors that they need to check in on you more aggressively. http://ginger.io

MYNDPLAY — has created an interactive media player that gauges viewers' responses not with facial recognition, but by monitoring brainwaves. This technology is not just controlling what content the viewer is shown, but changes the content itself. "Using EEG brainwave technology, we can pick up on how concentrated, relaxed, happy, angry, or sad you are," says Tre Azam, founder of MyndPlay. "Using this data, we can create stories that have a range of possible endings and narrative cul-de-sacs that can be introduced as you watch." http://www.myndplay.com/

<u>PROJECT GLASS</u> — is a research and development program by Google aimed at developing an head-mounted display (HMD) of augmented reality. Project Glass products would display information in smartphone-like, hands-free formats and could interact with the Internet via natural voice commands. Project Glass is being developed by Google's X Lab, which has worked on other





futuristic technologies such as self-driving cars. The project was announced on Google+ by Babak Parviz – an electrical engineer who has also worked on putting displays into contact lenses, Steve Lee – a project manager and "geolocation specialist", and Sebastian Thrun – who developed Udacity and worked on the self-driving car. Google has patented the design of Project Glass. http://en.wikipedia.org/wiki/Project_Glass, http://www.youtube.com/watch?v=9c6W4CCU9M4

SYNESTHESIA

THE VOICE — works with artificial vision for the totally-blind to offer the experience of live camera views through sophisticated image-to-sound renderings. The vOICe implements a form of sensory substitution where the goal is to bind visual input to visual qualia with a minimum of training time and effort, and improve quality of life for blind users. The vOICe technology may now build on this with live video from an unobtrusive head-mounted camera encoded in sound. The extent to which cortical plasticity and dynamic rerouting allow for functionally relevant rewiring or unmasking of neural pathways in the human brain is under investigation. Apart from functional relevance, a cross-modal binding for inducing visual sensations through sound (mental imagery and artificial synesthesia) would also be of great psychological importance. The possible role of the vOICe perceptual interface technology in non-invasive neuromodulation and synesthetic effects is being explored and developed under the Open Innovation paradigm together with many R&D partners around the world. http://www.seeingwithsound.com



SONIVIVI — is a mobile application that helps the partially blind – especially those who have recently lost their sight – to become more confident in their everyday life. It does this by improving their sense of hearing and by encouraging them to be self-sufficient. Since it is intended for use by the visually impaired, Sonivivi has an interface that does not rely on sight. Using gestural input and audio output, the application allows the partially blind to train their listening skills. Sonivivi is a simple and playful training game that incorporates 3D stereo sound to position sounds in space. It offers a simpler and less labour-intensive alternative to more traditional methods, such as learning to play an instrument. While it is primarily designed for use by the partially blind, Sonivivi can also be of

use to the elderly or anyone who wants to train their hearing. This project is a work in progress. http://daimyoon.com/User-interface-for-the-partially-blind/http://vimeo.com/30808530

CRYOSCOPE — translates forecasted temperatures into a physical sensation, letting you experience current or future weather in different locations. http://www.psfk.com/2012/11/weather-vane-feel-temperature.html

TRACKING/MONITORING

<u>SMART BRA</u> — which could one day replace the mammogram, is being tested in the US. The non-invasive system "simply" detects temperature changes, but is showing signs of incredible accuracy and an ability to detect cancer at a much earlier stage than current detection methods. http://www.youtube.com/watch?feature=player_embedded&v=gtDUwWf7DVg

<u>THE SHINE</u> — is a small, disc-shaped fitness tracker created by Misfit Wearables that can sense a user's movement, including their swim strokes, bike pedals, and steps. The mobile tracker is the latest in a fast-growing product-line of fitness sensors, enabling users to closely monitor fitness levels by providing detailed breakdowns of daily activity. VIDEO: http://mashable.com/2012/11/16/tiny-metal-fitness-tracker/

MIRROR — is, in effect, a mirror, but one that is able to monitor vital signs and show the inner health of the person standing in front of it. Ming-Zher Poh, an electrical engineer in the Affective Computing Group at the MIT Media Lab, developed the product. When your heart beats, it sends a pulse of blood through your blood vessels and to your face. Because blood absorbs light, the mirror is able to use a simple webcam, like the one found in your smartphone, to record the fluctuation in reflected light coming off of your skin. Although the change in brightness is minute, the data can then be translated into a heart-rate reading via an algorithm, and the results are instantly displayed.

http://www.psfk.com/2012/12/integrated-health-technology.html?utm_medium=referral&utm_source=pulsenews

MORE EMPATHETIC/HUMAN TECHNOLOGY

<u>AFFECTIVA</u> — founded by MIT professor Rosalind Picard, has the mantra of "respectful emotion measurement and communication" and uses facial sensors to detect the reaction that media draws out from its audience. "If a program is accidentally annoying, boring, or upsetting me, a front-facing camera can pick up if I just smirk, and navigate me away from that content," says Picard. "Part of providing a better experience for people is to understand when you are not giving them a better experience." http://www.affectiva.com





FEEL (FREQUENT EDA EVENT LOGGER) — goes one step beyond the MindRider. FEEL is a wristband that can identify the exact reason you might be too distraught to ride a bike. It uses a sensor to measure electrodermal activity (EDA) for signs of stress, anxiety, and arousal while the user is reading or sending an email, taking a phone call, or holding a meeting. The wristband then displays by colour (red is bad and green is good) which messages, meetings, reminders, or phone calls caused the most stress. http://affect.media.mit.edu/pdfs/12.Ayzenberg-Hernandez-Picard-CHI.pdf

EYEVERIFY - software identifies you by your eyeprints, the patterns of veins in the white of your eyes. Uses for this include authenticating people who want to use smartphones to access their online medical records or bank accounts. It could also verify user details such as age.http://www.eueverifu.com

HUMANS AND ROBOTS



RETHINK ROBOTICS / BAXTER - Baxter Rodney Brooks, worldrenowned robotics expert and professor emeritus at Massachusetts Institute of Technology, along with his company Rethink Robotics, has created Baxter, a robot designed to help US manufacturers. Baxter was created to be more human than existing robots, with eyes on a screen that register emotions like happiness or surprise. Baxter adapts to changing conditions and can be taught to perform new tasks. Importantly, at \$22,000, Baxter is cheaper than most traditional robots, which may help revive US manufacturing. www.rethinkrobotics.com

SIMON - is a humanoid robot being developed at the Georgia Institute of Technology for the purposes of exploring intuitive ways for people and machines to live and work alongside one another. In testing, Simon understood spoken sentences and used social skills to respond appropriately. A research effort not intended to be sold, Simon is part of a growing collection of social robots that can essentially see, hear, feel, and react through humanlike sound and movement. http://www.simontherobot.com/

AIDA (AFFECTIVE INTELLIGENT DRIVING AGENT) — is a dashboard-mounted robot for cars and trucks. Partially designed to give truckers companionship on long-haul trips, AIDA chats with drivers and provides road information. The robot's video camera detects human emotions with full facial recognition, and includes a fully interactive touch screen. Developed in a collaboration between Volkswagen and MIT, AIDA expands the social aspect of driving and helps drivers establish a personal connection with their cars. http://www.youtube.com/watch?feature=player_embedded&v=R3tgKAjdpUQ

IMPLICATIONS FOR TELEFÓNICA

CREATE A SMART AND ENRICHED | Stimulate employees' senses WORKING ENVIRONMENT with sensory technology and use tracking/monitoring technology to provide employees with feedback on their performance and recommendations for improvement.

IMPROVE TELEPRESENCE IIIIIII Use holograms to help international teams work better together.

THINK IN TERMS OF UNIQUE USER | Leverage our data to **PROFILES** create dynamic user profiles.

of these sensory and emotional innovations.

RECRUIT THE RIGHT TALENTS || || Recognise the need for employees who are able to design hardware and software.







ADDITIONAL SOURCES

Mants, 2012
Mants,

Hidden Sense: Synesthesia in Art and Science, 2011 IIIIIIII Seaberg, Maureen: Tasting the

Universe: People Who see colors in words and rainbows in symphonies, 2011

E N N R - I C H E - - D - - R E A L - I T Y

ADDITIONAL SOURCES 256 ARIANE VAN DE VEN



