the ‘gamification’ of life: building social communities through games
three strands of consideration:

1) grand challenges of society. key grand challenges of modern societies e.g.: (a) population growth is leading to greater pressures on our environments (climate change, restricted resources, education systems, energy sources) (b) globalisation is leading to more interconnected and complex social structures (self-organised criticality) > futurICT

2) the role of ‘gamification’ in social (behavioural) change and awareness raising. games/vws as cultural forms, games/vws processes (to be mapped against human behaviour), motivation, engagement, social interactivity, games/vws as interface/wrapper for other technologies. social and the immersive

3) examples demonstrating how virtual environments and social collaboration are changing much about how we live, learn and work. will the future of society move more towards social networked virtual communities? does virtual world technology open up new solutions for old problems?

move towards more complex structures and socially driven innovation and technology development
grand challenges of society: e.g. population and city growth, climate change leading to complexity and data explosion challenges
Lee C. Bollinger, president of Columbia University, formulated the issue as follows: “The forces affecting societies around the world … are powerful and novel. The spread of global market systems … are … reshaping our world …, raising profound questions. These questions call for the kinds of analyses and understandings that academic institutions are uniquely capable of providing. Too many policy failures are fundamentally failures of knowledge.”

1. Financial and economic crisis
2. Debts and inflation
3. Stability of the European Union
4. Political revolutions, war
5. Critical infrastructure risks
6. Environmental change
7. Epidemics (SARS, H1N1 pandemic)
8. Migration and integration
9. Extremism, terrorism
10. Corruption, organized crime
We have explored the universe, and have sent men to the moon. It turns out, however, that our current knowledge of society is too limited to efficiently tackle the global challenges of humanity in the 21st century. Thus, it’s time to pay attention to our Earth and create an ICT Flagship to explore social life and everything it relates to.

Dirk Helbing

>300 scientists from all over the World

- FuturlICT will build a **Living Earth Platform** for a global-scale simulation of our techno-socio-economic-environmental system and more
- This will integrate **Crisis Observatories** running massive data mining for the advance detection of possible crises:
  - financial market instabilities
  - emerging conflicts
  - health risks and disease spreading
  - environmental changes, etc.
- **Participatory Platforms** will inform decision-makers and involve citizens
- The **Innovation Accelerator** will speed up research, development, and the creation of new business opportunities.
- The focus on **Managing Complexity** will develop integrative system designs and new decision-making and governance tools.
predicting the sequence of possible impacts of earthquakes
Data Models Validation Forecasts

- demographic data
- transport data
- geographic data
- contact network models
- multi-scale models
- agent-based models

...complexity...

scenario analysis prediction

priorities policies

copyright Alex Vespignani and FuturICT
2: gamification: a vehicle for social change? the social and the immersive
beginning of 2010 the games industry posted total sales of $1.17 billion for the month of january

value of sg in 2010 was estimated to be 1.5 billion, and is set to increase by average 47% between 2010 and 2015 (idate market report)

international software federation of europe (isfe, 2010): 74% of those aged 16-19 considered themselves gamers (n=3000), 60% of those 20-24, 56% 25-29 and 38% 30-44.

32% of the total uk population consider themselves gamers (n=3000). 31% of females described themselves as gamers and 34% of males.

several studies demonstrating the efficacy of serious games for training in particular through behavioural change (sg-ets, hope lab’s re:mission, pulse project)

wide uptake of social software (e.g. facebook, wikipedia), crowdsourcing

learning in multimodal ways: mixed reality, augmented reality, mobile learning, haptics (more flexible approaches)

converging technologies: mobile devices, ar devices, bci/eegs, sensor networks, robotics, virtual world mashups, gps, geocoding, web technologies and services (soa)
Choosing Behaviors

“If more than 50% of my friends are green, I’ll be green”
more complex social structures emerging...
towards open innovation?

models of innovation (linear model, actor network theory, social shaping of technology) to open innovation (Chesborough) and user innovation
and the immersive...
mapping our systems more closely against human behaviour

neuro-psychology approaches to learning with games

artificial intelligence and life

multimodal interfaces

models and frameworks 2006-2011
Thinking: Physiological and Cognitive Functions

projects & games at the serious games institute

meducator
alice
code of everand
roma
nova
gala
floodsim
modes
edugamelab
maseltov
simaula
mirror
vtrade
customer
futurict
sex health game
3: examples of virtual environments and serious games in learning and teaching
immersion and engagement: sg-ets
triaje trainer - preliminary trial results

triage trainer (tt) trial summary:

independently conducted by the university of birmingham

trial participants:
91 uk nhs doctors, nurses & paramedics
all on alsg major incident medical management and support (mimms) training courses

participants were randomly distributed:
tt game (n = 47)
non-game (n = 44)
triage trainer - preliminary trial results

tt game group:
- 15 minute tutorial in game play / user interface
- 60 minutes playing the tt game on their own
- instructor available to answer questions

non-game group:
- 75 minute normal alsg instructor-led table top exercise
- involved sorting cards with vital signs variables written on them into priority groups
trial results of tt game trainees versus non-game trainees: tagging accuracy of tt game trainees: 

*significantly higher* accuracy \[\chi^2 = 13.126, p<0.05\]

step accuracy of tt game trainees. comparing the ratios of participants who achieved an 8/8 accuracy rating (i.e. followed the correct protocol for all 8 casualties):

*significantly more accurate* (28%) than the non-game group (7%) \[\chi^2 = 7.29, p<0.05\]

time taken by tt game trainees to complete triage of all 8 casualties:

*no significant difference* on time taken \(p>0.05\)
possible conclusions:
a ‘serious game’ such as the triage trainer offers the potential to:
   enhance learning; and
   improve transfer of training
possible reasons are that the game offers:
   opportunity to practice skills and knowledge gained on the course in a more realistic and more engaging environment
   personalised feedback which enables the game player to correct procedural errors made, through repeated play
research challenges
fragmented research and development communities (e.g. gala)

literature in different disciplinary areas (e.g. psychology, educational science, computer science, neuro-science, law, medicine etc.)

vws a new area so lack of frameworks and metrics for effective learning

technical and cost issues preventing uptake

division between practice and theory

conservatism of education sector

new paradigm of learning emerging slowly - so hard to define for academics and practitioners

need for academy and industry to work together

networks emerging but need for more defragmentation and interworking

establish methods and evaluation strategies

need for ethical considerations in different context
immersion and engagement: roma nova
artificial intelligence and crowd modelling
multimodal integration
bcis and interface design: neuro-psychology approaches
behavioural change: code of everand and metycoon
awareness raising: climate health impact and floodsim
emergency response training: games for change
can gamification solve world-scale problems?
so does gamification offer a solution to the grand challenges?

- scalability of game environments to large global communities
- adaptivity to user requirements
- closer modelling of user behaviour (feedback loop)
- behavioural change
- flow, feedback, visual and actual realism leading to higher levels of immersion
- increased motivation and engagement

user innovation with games technologies (e.g. ai, haptics, biofeedback, sensors networks etc) from convergence, mash ups and user/community interaction
conclusions

so are applications of vw/games technologies really changing our approaches to working, learning, social interactions and how we consider experiences?

providing new tools for flow, feedback, visual and actual realism leading to higher levels of immersion

great potential for the medium for supporting immersive education through increased motivation and engagement

potential changes for e-assessment, recruitment and cpd (gbl assessment, peer assessment, collaborative assessment, competency analysis, skills development, monitoring performance, mentoring)

move towards immersive learning experiences and design: with increased motivation, immediate feedback and sophisticated user models

need for serious games community to work with user communities and educationalists to answer some of the key grand challenges
upcoming second wednesday events:
  robotics workshop 9th november

upcoming conferences:
  ieee vs-games conference in genoa, november 2012

upcoming workshops:
  Urban crisis: emergency response and management training workshop, 17th november

any questions contact: prof. sara de freitas
  s.defreitas@coventry.ac.uk

How can gaming and simulation technologies be used to engage learners?
How can they be used to motivate and accelerate learning?
What are their main strengths for learning?

Explore these, and many other questions in 'Digital Games and Learning' edited by Sara de Freitas and Paul Maharg

www.continuumbooks.com
selected references


