Canterbury Christ Church University

CREATIVE SCIENCE FOUNDATION

Creativity Workshop

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Creative Science Foundation

www.creative-science.org

About Me

- Director of Creative Science Foundation (see www.creative-science.org)
- President of Association for the Advancement of Intelligent Environments (oversees www.intenv.org)
- Professor of Computer Science at Essex University
- Expert in robotics and artificial intelligence (founded Robotics at Essex)
- Part of organizational team for numerous conferences, workshops, journals (see http://victor.callaghan.info)

http://victor.callaghan.info

- ***Parkland of 200 acres***
- ***13,194 students***
- ***20% post graduates***
- ***40% overseas (130 countries)***
- ***University of the Year*** *(Times Higher Education Awards, November 2018)*

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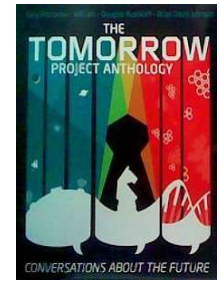
Outcome of Workshop

- An important aim of this workshop is to introduce **narrative fiction as a useful business tool.**
- You will write a short story of just 160 characters (around 30 words) to describe a **business innovation.**
- Award for best **short story** (to make it a bit more fun!)



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CERTIFICATE

Entrepreneur Workshop on Creativity, Ideas & Innovation Workshop

This is to certify that ???? Was judged as being 1 of the 3 best SFPs

Signed:
Director CSf

These notes are available to download from:
http://victor.callaghan.info/publications/2019_CCCU_CeativityWorkshop(16Mar19).pdf

Structure of Workshop

"This workshop seeks to introduce fiction as a methodology for inspiring, capturing and communicating innovations for scientific, business and societal innovations".

- **Morning Session**:
  - ICT as a driver of change
  - Imagination, Creativity & Brainstorming
  - Diegetic Innovation Templating
  - Micro & Mini Sci-Fi Prototyping
- **Afternoon Session**:
  - Imagination workshop (group brain-storming)
  - µSFP writing exercise.
  - µSFP presentations
  - Best µSFP award

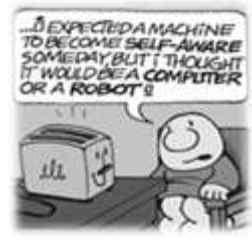

Chart: Isabelle Turner (io9)

Why creative thinking is important?

- The challenge to companies is how to avoid being sidelined by new **innovations**, or how to produce their own innovations. One solution is to employ creative-thinking methods, to **augment** other technical skills.

Examples: Kodak, Nokia

- Innovations come from **Creative Thinking**
- To get an '*edge in life*', we all need to be able to thi**nk creatively !**

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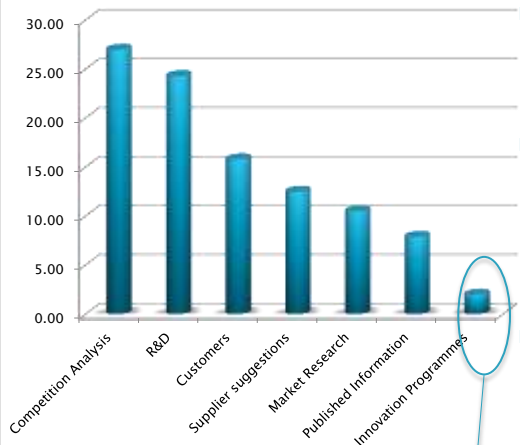
Where Do Businesses Get Ideas?



We will examine innovation programmes that focus on **Imagination**

- Analyzing competitors, asking customer & market research are popular but rarely lead to disruptive innovations
- **Professor Clayton Christensen** of Harvard Business School found "*that leading companies who have followed what their customers say have lost out to new innovations from other companies*".
- **Steve Jobs of Apple** said "I*nnovation has nothing to do with how many R & D dollars you have. When Apple came up with the Mac, IBM was spending at least 100 times more on R&D*"
- **Albert Einstein** famously remarked that "***Imagination*** *is everything. It is the preview of life's coming attractions*"

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Technological drivers of change and opportunity

Some Rapidly Developing ICT Areas

- **Internet-of-Things** – small (invisible) networked computers being integrated into everything (eg home appliances, factory management, cars, city infrastructure etc)
- **Big Data** – Gathering, analyzing and selling/using data from monitoring our interactions with ICT devices (Apps, social media, mobile-phones IoT devices etc) for political or business advantage.
- **Robotics** – Combining computers with mechanical systems to make humanoid robots, self-driving cars, advanced automated factories, medical prosthetics, domestic robotics, drones etc)
- **Virtualization** – merging computer created worlds with our own eg games, smart-phones, Bitcoin, virtual & augmented reality, digital twins
- **Artificial Intelligence** – Powering and extending all the above by creating computer software that mimics people's intelligence to the extent such systems can even program themselves.

https://www.information-age.com/strategic-technology-trends-123475549/

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Virtual & Augmented Reality Videos

+Spaces (2.57)

Metalogue (3.10)

British Telecom (2.57)

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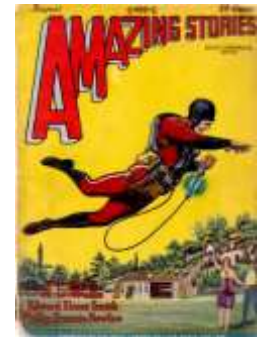
Fiction as a Creativity & Prototyping Tool

- Fictional stories provide a means to inject **imaginative leaps** into the innovation process.
- Well written stories can provide **virtual analogs** of the real world of such fidelity that they can be used as **prototypes** to explore the possible implications of technology on people, societies, and the world at large.
- Stories also provides a shared language to allow **communication** between the various stakeholders of innovation.



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Diegetic Innovation Templating

- Method uses existing imaginative stories or films to trigger ideas
- Involves scanning published fiction to identify fictional products or processes that might be transferred into real life products.
- Such innovation instances are called *Diegetic Innovation Template* **s** (DITs)
- How closely a given fiction is to a particular industry is called the *Diegetic Gap' (DiG)*

Example: For a company that produces *mobile phones* the DiG for the '*Harry Potter*' story would be large; for a *Fashion House*, it may be small.

Diegetic - a term used in films to describe artefacts (mainly sounds) that are sensed by the characters as part of the story

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DIT Examples

Frankenstein – the monster's long coat

- **Sunfed Fashion** – top selling professional women's fashion-wear uses SF/Fantasy to inspire new designs embedded in popular culture (which aids marketing)
- **Dali Cashmere** (founded in 1996, 180 employees, turnover US$4 million) – High-tech manufacturer of cashmere used ideas from '***Transformers***' to create a flexible production facility and ideas from '***1984***' to manage remote operations making it 8 times more productive than competitors.

Harry Potter – Cape Coat

Copy of paper available from http://www.sciencedirect.com/science/article/pii/S0016328717302914

Taking creative ideas from existing fictions is called Diegetic Innovation Templating

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Science Fiction Prototyping

- SFP **introduced by** intel to overcome problem of anticipating future use of their chips (that take 7-10 years to produce).
- Science Fiction Prototypes are stories **written by ordinary people** describing a desired innovation.
- Written to **persuade** people to buy into your innovation (through credibility & emotion)
- Loosening the remit from *'the likely'* to '*the possible*' allows leaps & **disruptions** to be addressed
- Two types of SFP
  - **Micro-SFP** (μSFP): a very small SFP
  - **Macro-SFP**: a large SFP
- As part of this activity you will create an **μSFP**

VIDEO INTRODUCING SCIENCE FICTION PROTOTYPING

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µFiction (Micro-Fiction)

Provides quick method to capture the initial idea

Polytron Technologies, (Taiwan)

- *"LIE DETECTOR EYEGLASSES PERFECTED: Civilization collapses"* - *Richard Powers*
- *"TIME MACHINE REACHES FUTURE!!! - nobody there "* - *Harry Harrison*

Examples of 6-Word µFictions

This is the style Micro-SFPs adopt

- No agreed specification; Range from 6 to 1000 words; **Popular size 25-30, words** (text message size!).
- Similarities to *fables*, *parables*, *anecdotes*, *sayings*, *adages*, ***proverbs*** and *maxims*
- English speaking world called *micro-fiction*, *nano-fiction*, *flash-fiction*, *sudden-fiction* or *postcard-fiction*
- Around the world called *microrrelato* or *ficcione* (Latin-America); *nouvelles* (France); *minute-long* or *smoke-long* (China); *Haibun* (Japan)
- **Technology based – *Mobile-phone* (Ketai) fiction (160 characters ~30 words);'*Twitter Lit*' (140 characters ~25 words)**
- Examples can be found at
  - *Wired* (6-word) -http://www.wired.com/wired/archive/14.11/sixwords.html
  - *Espresso Stories* (25 words) - http://espressostories.com
  - *Micro-SFPs* (Twitter-size) - http://www.creative-science.org/activities/microsfp/

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Writing a µSFP

Innovation oriented story writing?

Mu is the 12th letter of the Greek alphabet which, in science, means small, or micro

µSFP components
1. Innovation
2. user
3. event
4. benefit

- Twitter / SMS sized fiction (140 /160 characters – 25 words)
- **Simple writing procedure**
  1. Start by identifying an innovation (technology, sevice etc)
  2. Identify a user (use a very short name eg Joe)
  3. Then create an event that illustrates the use and benefit of the technology, process or service (should include an inflection point)
  4. Simple µSFP template

     [Person] in [Situation] uses [Innovation] to do [Action] resulting in [Benefit]
  5. Start big, then reduce it to <140 characters / 25 words

Some Examples ⇒

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Examples – µSFP (text size 160 characters, 25 words)

…. created by 16/17 year-olds in 90 mins!

New Creatives, Essex, 2014

1. technology
2. user
3. event
4. benefit

- *Jack fall asleep in the sun. His **smart sun protection sensor** woke him up with an alarm & soft vibration. He avoids sun strokes!*
- *Amy can't diet but her **bracelet** helps stop her eating a naughty treat over a salad. It clamps tight on her wrist & shocks her.*
- *OMG where did u get ur coat from? It was the only one left in the store. But I can **3D-print** it 4 u. Thank u so much.*
- *With my new **eFridge** I can have my cake & my stay at home. I come home 2 a full stock of food & no court orders for a drunkard.*
- *I'll just pop off to get some sushi. Bob established a **wormhole link** to Japan and vanished.*

http://www.creative-science.org/activities/microsfp/

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Mini-SFPs

A cross between an academic paper and a short story

- Are bigger, multi-page versions of µSFPs (4-12 pages)
- Being bigger allows them to:
  - Describe the technology or business processes in more details
  - Create more realistic and credible characters and contexts (ie be more accurate and reliable prototypes)
  - Better engage the various stakeholders
- Require more time to write than µSFPs, so are used later in the product development cycle, when ideas need to be tested or communicated to key stakeholders (or sometimes as part of a pitch or business plan).

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Example '*Tales From a Pod*' (SFP written in 2010 about education in 2046*)

Extract – *iPods were effectively small cocoons; something like a comfortable armchair enclosed within a sound-proof egg-like structure packed with sophisticated but largely invisible technology that included immersive mixed reality and sophisticated AI. When participating in a movie (the industry had long dropped the word "watching" which describing these new immersive movies) the immersive reality technology aimed to make the participant feel as though they were truly part of a fictional physical world*

http://dces.essex.ac.uk/Research/iieg/papers/TalesFromAPod(Paper).pdf

Video demonstration (3.28)
ImmersaVU

Manufactured by Immersive Displays Ltd
www.immersivedisplay.co.uk/

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The Product Innovation Process In Simple Steps

Brainstorming – Unlocking Ideas – Grounding Ideas – Prototyping Ideas (SFP, Mockups), Businesses/Implementation Plans

- **Brainstorming**
  - Ideation process where ideas are generated through group interaction dynamics (thoughts in one person sparking thoughts in another)
  - Form groups with odd number of people (eg 5 or 7)
  - Elect a coordinator & scribe (to record ideas)
  - Chose an innovation focus (eg ideas for new VR applications)
  - List as many ideas as possible – either fresh ideas or building on others (chose quantity above quality)
  - **Do not worry about practicality** of ideas
  - **Don't criticise ideas** (out of the box thinking is encouraged)

Don't let what other people might think stop you having dreams or ideas

ALBERT EINSTEIN
He wasn't able to speak until he was almost 4-years-old and his teachers said he would "never amount to much."

WALT DISNEY
Fired from a newspaper for "lacking imagination" and "having no original ideas."

OPRAH WINFREY
Was demoted from her job as a news anchor because she "wasn't fit for television."

THE BEATLES
Rejected by Decca Recording Studios, who said "We don't like their sound - they have no future in show business."

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The Product Innovation Process In Simple Steps

Brainstorming – **Unlocking Ideas** – Grounding Ideas – Prototyping Ideas (SFP, Mockups), Businesses/Implementation Plans

- Create a 'cross impact matrix' by listing emerging technologies or trends against potential impact on business area?
- Discuss how each might by used to benefit business or product.

Significant moments of scientific disruption include –**The Technological Singularity** … *the moment machine intelligence exceeds human intelligence* (around 2050 according to Kurzweil)

	Impact on Business
Artificial Intelligence	?
Big Data	?
Cloud Computing	?
Internet-of-Things	?
Smart Glasses	?
Augmented Reality	?
Virtual Reality	?
Virtual Presence	?
Image Recognition	?
Teleconferencing	?
ePaper	?
Social Networking	?
Game Technology	?
Wearable /Mobile Tech	?
Medical Implants	?
Robotics	?
Nano Technology	?
Automated Translation	?
eLearning	?
MOOCs	?

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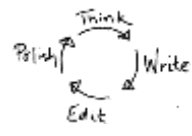
The Product Innovation Process In Simple Steps

Brainstorming – Unlocking Ideas – **Grounding Ideas** – Prototyping Ideas (SFP, Mockups), Businesses/Implementation Plans

	Future Technology	Current Technology
Future Activity	**1.** Initial Brainstorming leads to SFP	2. SFP edited by engineers to what is possible now
Current Activity	4. SFP edited by senior management to align with static goals.	3. SFP editing by sales marketing team to reflect market needs



- **Ideation Grounding Spirals** – these work by passing ideas around various stakeholders, refining product innovation to fit company capability and market.

- References:
- **Vavoula G.N., Sharples M.**,"*Future Technology Workshop: a collaborative method for the design of new learning technologies and activities"*, International Journal of Computer Supported Collaborative Learning, 2(4), pp. 393-419. 2007
- Brian David JOHNSON "*Science Fiction for Scientists (*Intel's 'Expanded Consumer Experience Architecture')", Creative-Science 2010. Kuala Lumpur, Malaysia. 19th July 2010
- Hsuan-Yi Wu, "*From Imagination to Innovation: A Creative Development Process (*Creative Innovation Development (CID) Process)", CS'16, London, 12th-13th September 2016

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The Product Innovation Process In Simple Steps

Brainstorming – Unlocking Ideas – Grounding Ideas – **Prototyping Ideas** (SFP, Mockups), **Businesses/Implementation Plan**s

- **Fiction** based depictions (eg SFP & DIT)





- Paper & cardboard mock-ups

- Tangible Prototypes (eg emulations & simulations, simplified working prototypes)



- Business or implementation plan

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Practical Session – Imagination Workshop

Producing a micro-SFP to describe a product or business innovation

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Practical Work

- Brainstorming Ideas (Group)
- Writing μSFP (Individual)
- **Presentation of $\mu SFPs$ (Group + Individual).**
- **Voting (Individual).**

This activity is supposed to be a fun so try to enjoy it.

Brainstorming …. Around Virtualisation

Virtualisation

- Digital Twins
- Wearable (eg phones)
- Virtual Reality
- Augmented Reality

µSFP Writing Session

- Use forms supplied to create short story
- Start big, then reduce it to about 25 words
- From earlier brainstorming select an idea to write a story around. The story should have:
  1. A named technology
  2. A named user
  3. An event to illustrate the idea.
  4. A benefit

Virtual Reality Applications
- Think of different places (eg home, business, school, city, travelling, hospital etc)
- Think of different ages baby, toddlers, teenagers, adult, elderly etc)

EXAMPLES

***Jack** fall asleep in the sun. His **smart sun protection sensor** **woke him up** with an alarm & soft vibration. He **avoids sun strokes**!*

***Amy** can't **diet** but her **bracelet** helps **stop her eating** a naughty treat over a salad. It clamps tight on her wrist & shocks her.*

This is an individual activity – try to imagine you are writing this as a phone text … it needs to be that short!

….. Let the writing begin!

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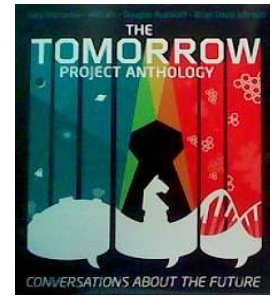
Competition

- Certificate for the best µSFP as **voted by you**!
- Prize – copy of the "The Tomorrow Project Anthology: Conversations about the Future" courtesy of the Intel Corp
- Certificate – courtesy of the Creative Science Foundation



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CERTIFICATE

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Was judged as being 1 of the 3 best SFPs

Signed:
Director CSf

http://tomorrow-projects.com/

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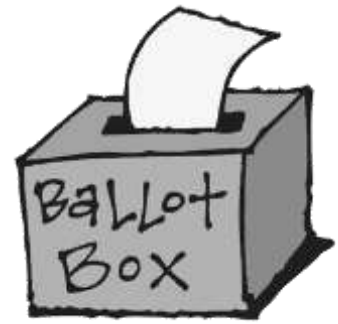
Voting

- You will be the judges!
- You may vote for 2 presentations (via placing a slip in a ballot box)
- We encourage you to make one of the votes for yourself (*introduced to remove the need to check for this for of cheating*)
- You should judge μSFP based on the following 3 criteria using :
  - **How novel the idea seems** (1-3)
  - **How good the benefits are** (1-3)
  - **How 'story-like' the SFP is** (1-3)

  3 is very good, 2 is good, 1 is ok, 0 is ☹



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Presentations

VOTE FORMAT:
How good the idea is?
How good the benefits are?
How 'story-like' the SFP is?

- Each Person has 2 minutes, with 2 Powerpoint slides that:
  - Provides information about you (name, course etc)
  - Presents your μSFP (write it in your slide) & explain the business opportunities it might create
- Followed by 3 minutes Q&A

10 register students
5 mins each = 50 mins

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Award Ceremony

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Signed:
Director CSf

And Finally

Help us improve this workshop by providing feedback ☺

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That's it!

*"**How do we change the future?** Change the story people tell themselves about the future they will live in"* Brian Johnson (Intel Futurist)

"We are what we pretend to be, so we must be careful what we pretend to be?" Kurt Vonnegut (American novelist)

There is a "need to bring art and science back together" Eric Schmidt (Chairman of Google

The Macintosh was so successful because the people designing it were musicians, artists, poets as well as skilled computer scientists" Steve Jobs, (Founder of Apple)

http://www.creative-science.org

http://victor.callaghan.info