An Online Immersive–Reality Innovation–Lab

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About Me

University of Essex

▸ 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

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• *Parkland of 200 acres*
• *Royal Charter in 1965*
• *13,169 students*
• *27% post graduates*
• *40% overseas (150 countries)*
• *Ranked 2nd for student satisfaction*

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Overview of Talk

This work–in–progress project concerns the integration of immersive reality, Science Fiction Prototyping and Innovation Labs to create a novel online creative space.

▸Innovations Labs
▸Creative Science
▸Creative Innovation Development
▸Tsinghua EFL Book
▸Virtual Spacestation
▸'OurHex'
▸Reflection

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This Talk

▸ Introduces something called *OurHEX*
▸ Describes one of three components of a larger project that is illustrated below.

Shumei Zhang, Victor Callaghan "*Improving English as a Foreign Language Education in China with Creative-Science*", CS' 16, London, 12th-13th September 2016

Unity–3D spacestation

Vic Callaghan, Marc Davies, Shumei Zhang "*An Online Immersive Reality Innovation-Lab*", iLRN' 16, Santa Barbra, 27th June – 1st July 2016

SFP 4 EFL

OurHEX

Hsuan-Yi Wu, Vic Callaghan "*From Imagination to Innovation: A Creative Development Process*", CS' 16, London, 12th-13th September 2016

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SFP 4 Innovation

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Innovation

▸ A recent report by PriceWaterhouseCoopers, (the largest professional services firm in the world), found that "*Five years ago, globalisation would have been the most powerful lever for growth and every business would have been talking about China. But now, the growth lever that has the greatest impact is innovation. Ninety three percent of executives tell us that organic growth through innovation will drive the greater proportion of their revenue growth.*"

▸ Important to all counties – eg the UK has government agency, *Innovate UK*, China's 15-year national plan *(National Outline)* advocates nationwide structures for innovation.

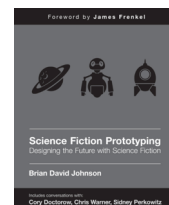▸ One metric is number of patents registered annually (USA, Japan & EU & China in leading positions)

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Innovation Labs

▸ An innovation-lab (i-Lab) is an "*inspirational facility designed to transport users from their everyday environment into an extraordinary space encouraging creative thinking and problem solving*"

▸ Concept arose in UK Royal Mail's '*Futures and Innovation Group*' in 1997
  ○ Purpose is to help management teams brainstorm future possibilities

▸ Lab session is mix of the following activities:
  ◦ Icebreaker & reviver activities
  ◦ Discussion & getting other people's perspectives
  ◦ Brainstorming & voting
  ◦ Headlines, cut & paste collages and PowerPoint presentations
  ◦ Wall activities (collaborative writing, doodling etc)
  ◦ Scenario building
  ◦ Role play

▸ 100+ globally located i-Labs (eg Standard Bank, Walmart, John Lewis, UK National Health Service, Ryan Air & New York's 'Public Policy Lab'

Essex Innovation Lab

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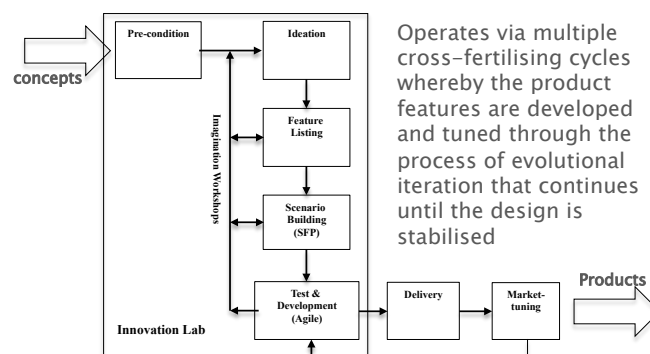**Essex University**

Creative Science

▸ Science Fiction Prototyping
  ◦ Proposed to solve the Intel chip 7–10 years design challenge
  ◦ Different types; µSFP, mini–SFP, DiT etc

▸ Core Principles – To use fictional stories for:
  ◦ Communication (everyone likes a story)
  ◦ Source of innovation inspiration (DiT)
  ◦ Way of extrapolating the present to the future (SFP)
  ◦ Way of asking 'what if' question
  ◦ Searching for disruptive ideas
  ◦ A way of testing innovation (creating realistic lives that are credible analogues of our own)

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Creative Innovation Development (CID)

▸ This is an end-to-end product innovation process that uses SFP.

▸ Model incorporates:
  ◦ Process flow (idea to market product)
  ◦ Agile Innovation (Cyclic-SFP for evolving technology and features over time)
  ◦ Agile Programming (to evolve the software in synchronism with the ideation)

Operates via multiple cross–fertilising cycles whereby the product features are developed and tuned through the process of evolutional iteration that continues until the design is stabilised

The 'Creative Innovation Development' (CID) Model

LivingPattern Technology Inc. is an Internet–of–Things start–up company focusing on profiling living patterns to introduce products and services that support people's everyday life. It is funded by a large and an experienced security sensor manufacturer. In achieving its goals, the company is applying CID.

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Where you can *enjoy* a *secured* *lifestyle*

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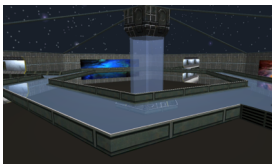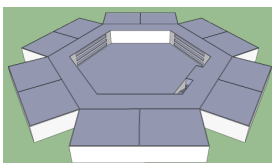Computer Science &
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Tsinghua University Press textbook

▸ In China teaching English to all students is mandatory.
▸ Shumei Zhang had idea that SFP could be used as an instrument to support teaching English
▸ SFPs use a rich set of language (written and spoken)
▸ SFP also offers creative thinking skills to students
▸ Shijiazhuang University operated a pilot trial during the period 2014-2016
▸ Science & Engineering students engage in ideation sessions, to fire imagination for their courses and careers (brainstorming proved especially popular).

▸ Shijiazhuang University's 'course has 160 students which, for group sessions, would require some 23 rooms (assuming maximum group sizes of 7 students).
▸ This led to idea for online meeting space (and the chance to go national, even international!)

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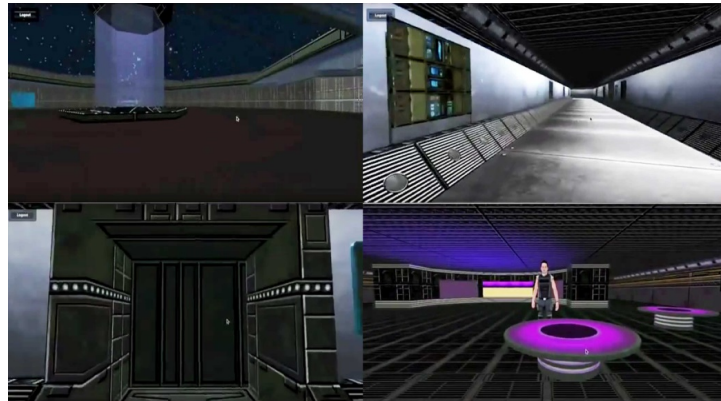**Essex University**

The Spacestation – an online i-Lab

▸ As Innovation concerns thinking about high-tech futures, the idea to base the online i-Lab on a simulation of a spacestation was born

▸ Structure was inspired by the *Hexagon Restaurant* (affectionately referred to as "*Our HEX*") at Essex University (sadly now defunct)

▸ Shown with 6 pairs of i-Labs but as they are simply software instances, there is no fixed number

▸ Functionalities similar to physical i-Lab – a communal electronic whiteboard, a set of anonymised editing stations (so ideas & comments can be offered without identifying the writer) and facilitator tools for managing & archiving the sessions.

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Unity 3D Prototype iLab space station

This is an early version commissioned by the Creative Science Foundation

Clockwise from the top left there is the Social-Deck, one of the radial connecting corridors, an i-Lab entrance and a view of an i-Lab
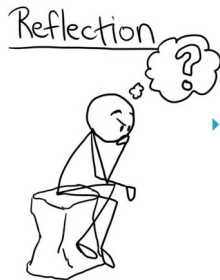

Our HEX

▸ As explained in the opening slide, 3 strands of work were brought together to for the online platform we call '*Our Hex*' ; *SFP based EFL* (for teaching English), *CID* (for product innovation and the *CSf Spacestation* (as the platform).

▸ **Completed**:
  ◦ This is a **work-in-progress** so it far from finished.
  ◦ Currently we have a rudimentary Unity-3D prototype running on our own bespoke server and screen based clients

▸ **To do** (target is to run with live students in September):
  ◦ Move to cloud based server (Investigating Amazon Lumberyard)
  ◦ Exploring *Oculus Rift*, or *HTC Vive* etc plus Meta-2, *HoloLen and BT300* to superimpose fragments of the spacestation onto the real world
  ◦ Considering live streaming services, such as *Twitch*, (allows live view of trainer)
  ◦ Integrate with Tsinghua University Press book

▸ Tsinghua estimate China has 250 million English learners (rising by 20 million pa), with need for 1 million English teachers.

Summary & Reflection

Reflection ?

▸ Described an ongoing project (spread across 3 continents) that is uniting immersive reality, i-labs and SFP to create:
  ◦ An EFL learning environment for science and engineering students
  ◦ On online product innovation environment

▸ Education Applications
  ◦ First live deployment aimed at Sept 2016 with Chinese students (from Shijiazhuang University Computer Science Department)
  ◦ Second trial planned for 2017 with Spanish students from Instituto Tecnológico de León, México

▸ Company Application
  ◦ First live online trial (part of a marketing campaign) scheduled for 3rd Quarter of 2107 (with LivingPatterns technology Inc)

▸ Work is at an early stage and we look forward to reporting on further progress in later conferences.

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That's it!

IDEAS

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