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Virtual Labs

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The Teaching Labs of the Future Mini-Conference

IT Innovation Centre

Mission:

Look ahead for new ideas, technology and initiatives to help the University anticipate and benefit from change whether in the business processes, teaching or research activities.

IT Innovation Centre – What do we do?

1. Observatory

- Horizon scanning (looking for new technologies/trends): Gartner, industry, research directions...

2. Innovation Community

- Engagement with students, academics, corporate services, external

3. Ideas Generation/ Exploration

- Ideas management application, challenges, suggestion box
- Ideas bank knowledge base of ideas, experiments, evaluation reports, follow-up

4. Innovation Events

- Student Mobile App Competition
- Mobile Apps in Research Summit
- Seminars, Workshops, Clinics...

5. Experiments/Prototypes

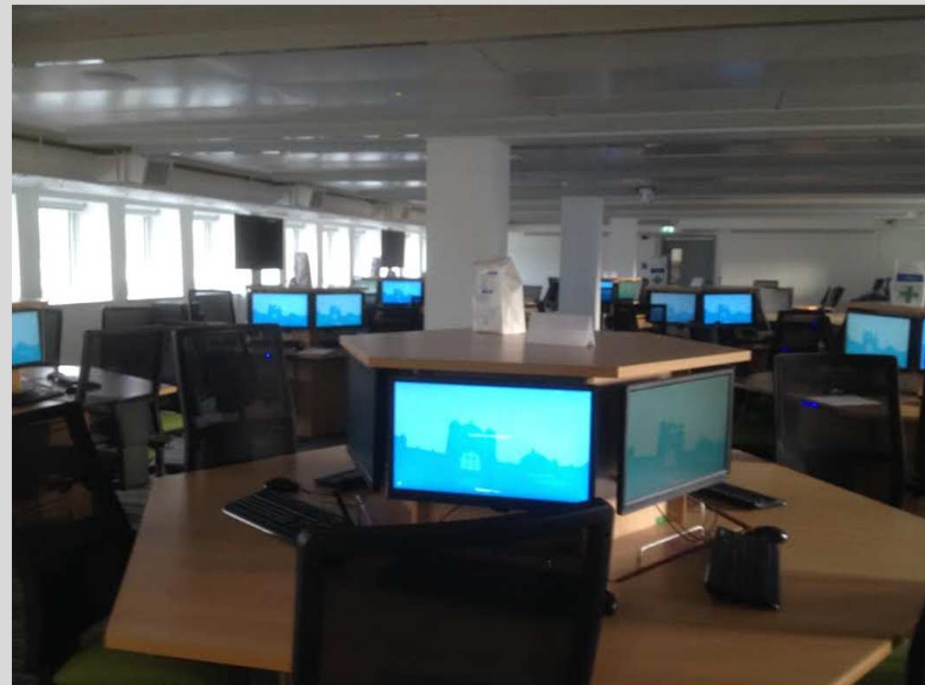
- An on-going programme of experiments and evaluations

Teaching Labs

In the context of Collaborative Teaching Lab Project



Chemistry Lab



Pharmacy Virtual Lab

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Case Studies

Outside the UK:

- ❑ Using immersive virtual environment to teach secondary school students
 - Stanford University: Transformative Learning Technologies Lab
 - Harvard Graduate School of Education : EcoMUVE
- ❑ Australian Government project as part of the Super Science initiative: Nectar Virtual Laboratories

In the UK:

- ❑ University of Bristol: eBiolabs
- ❑ Birmingham City University : Virtual Case Creator
- ❑ Open University : OpenScience Laboratory
- ❑ University of Birmingham: Pharmacy Virtual Lab

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Virtual Lab – what is it?

- ❑ In the most general terms, a virtual laboratory is a computer-based activity where students interact with programmed-in processes.
- ❑ The virtual laboratory is an **interactive environment** for creating and conducting simulated experiments: a playground for experimentation.
- ❑ *Discussion item: Should Virtual labs **replace** real laboratories or are they just an enhancement to the real labs?*

Virtual Lab Main Features

- ❑ Based on an online platform offering accessible experiments
- ❑ Available at anywhere and anytime
- ❑ Designed for one specific subject or course: a virtual simulation of a science process or explanation of the topic
- ❑ Data and process are collected from the real world experiments, sometimes may involve remotely controlled instruments

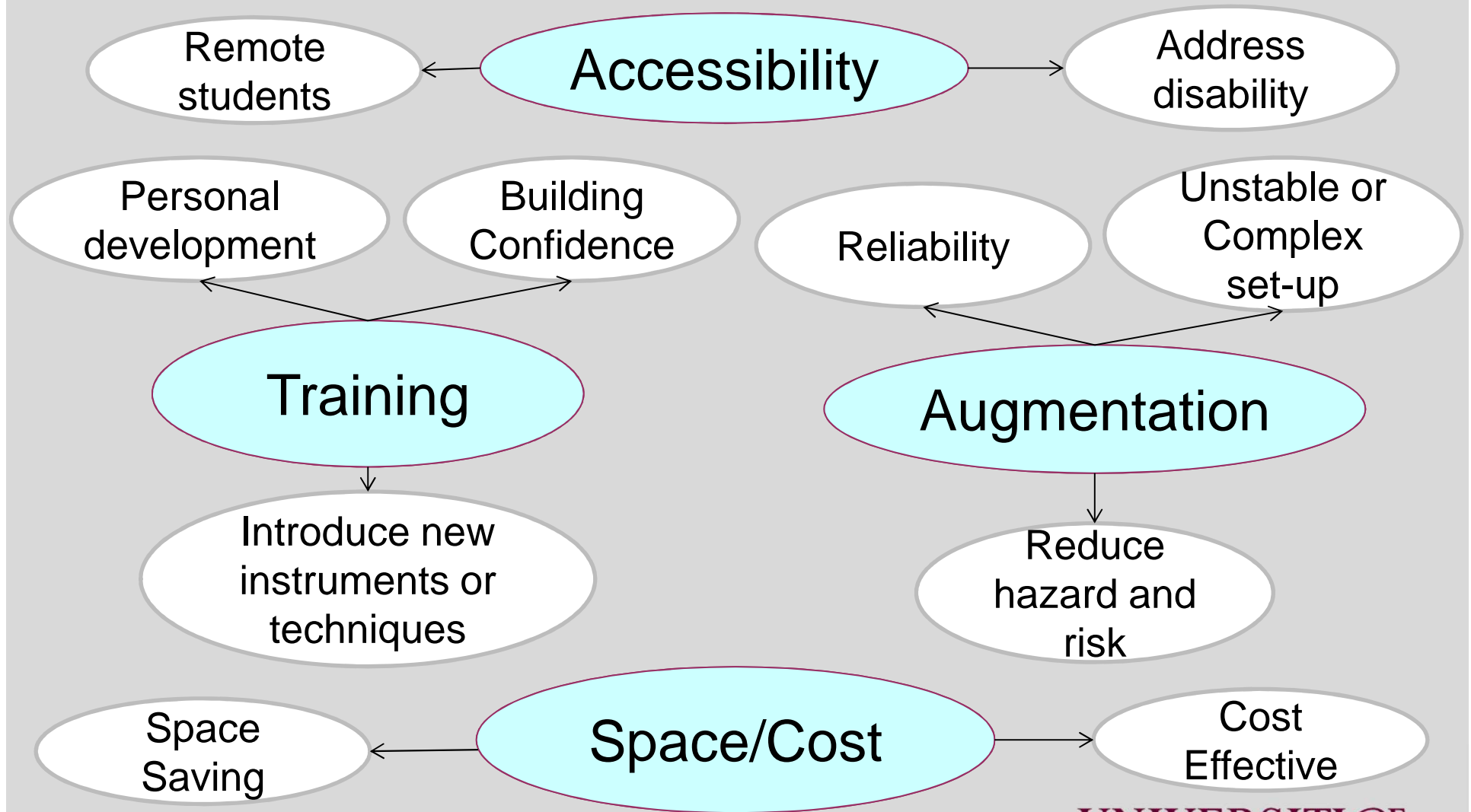
Why Virtual Labs – Demands

- ❑ Explosive popularity of online learning: MOOCS



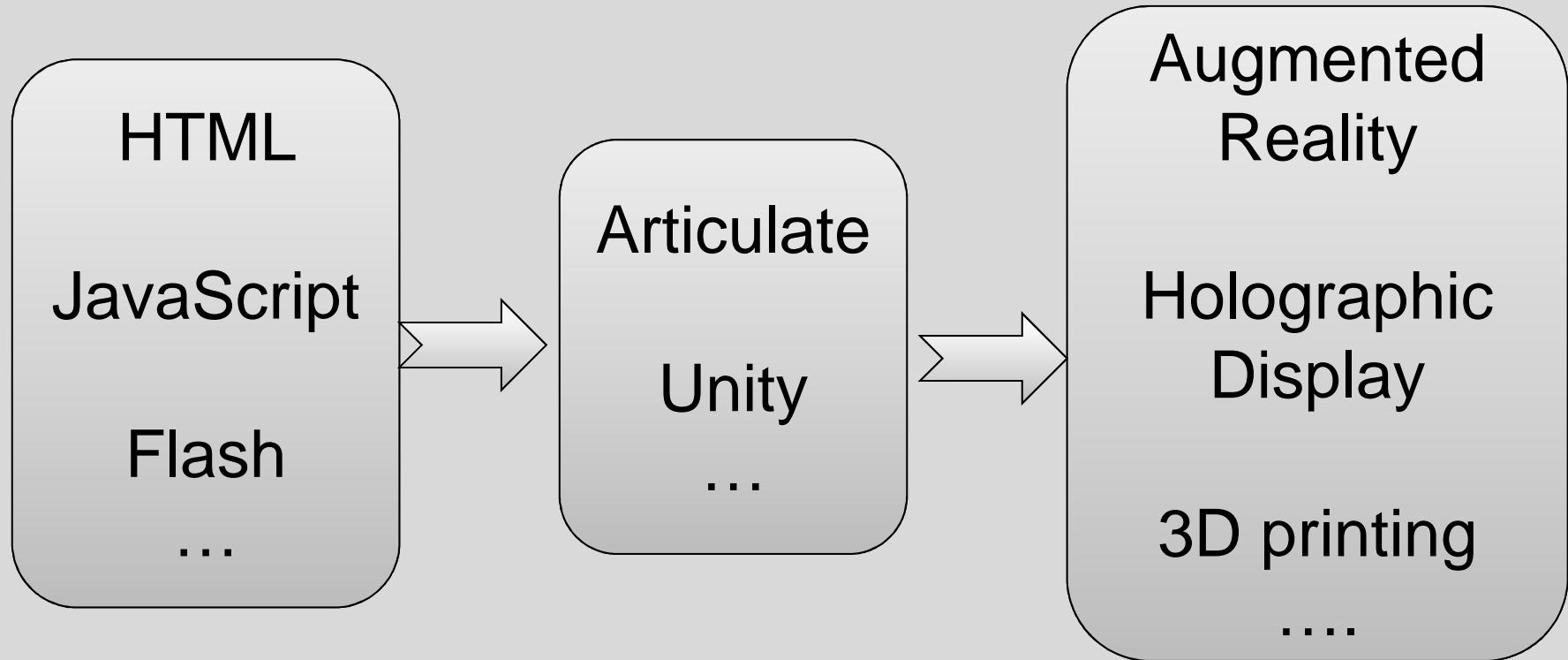
- ❑ New ways to teach the practical skills of STEM subjects (Science, Technology, Engineering and Mathematics)

Why Virtual Labs - Benefits



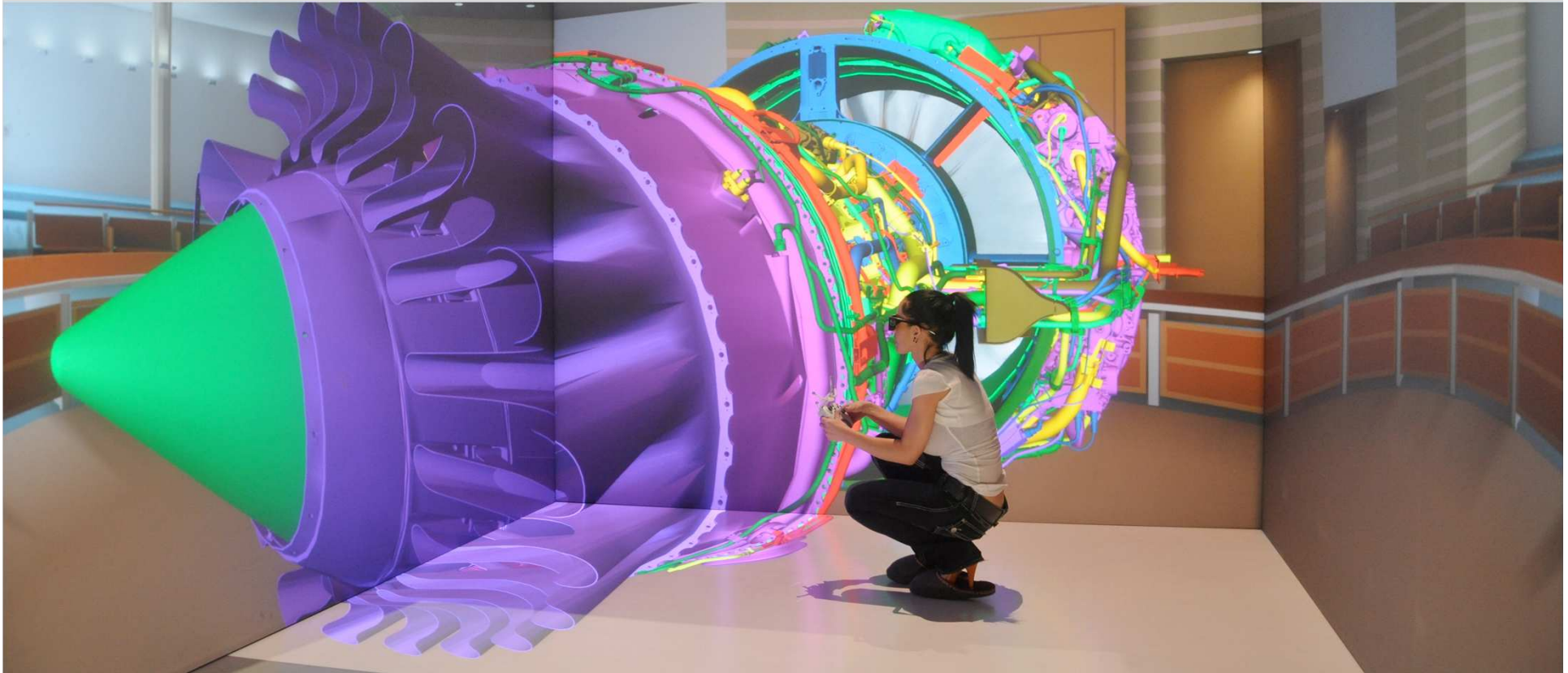
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Technology for developing Virtual Labs



Timeline

Virtual Lab – What's next



Picture Ref: <http://www.hypergridbusiness.com/2014/05/report-virtual-reality-market-to-exceed-1bil-by-2018/>

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Thanks!

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