Panel: Visions of the Future – Knowledge and Education 10 years from Now

Moderator

Stephen White, University of Huddersfield, UK

Panelists

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22nd – 27th February 2015, Lisbon, Portugal

The Seventh International Conference on Mobile, Hybrid, and On-line Learning eLmL 2015

The Seventh International Conference on Information, Process, and Knowledge Management eKNOW 2015


MUSIC FROM INSPIRED BY
STEVEN SPIELBERG PRESENTS
BACK TO THE FUTURE PART II
A ROBERT ZEMECKIS FILM


MONTH
DAY
YEAR
AM
PM
HOUR
MIN
OCT
26
1985
01
20
LAST TIME DEPARTED


MONTH
DAY
YEAR
AM
PM
HOUR
MIN
OCT
21
2015
04
29
DESTINATION TIME

Siri.
Your wish is
its command.

Skyvi

Talk to Your Internet.

GLASS


NDO


10
Years


Learning
Analytics

Panel: Visions of the Future – Knowledge and Education 10 years from Now

Over to the Panel…

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IARIA

Images

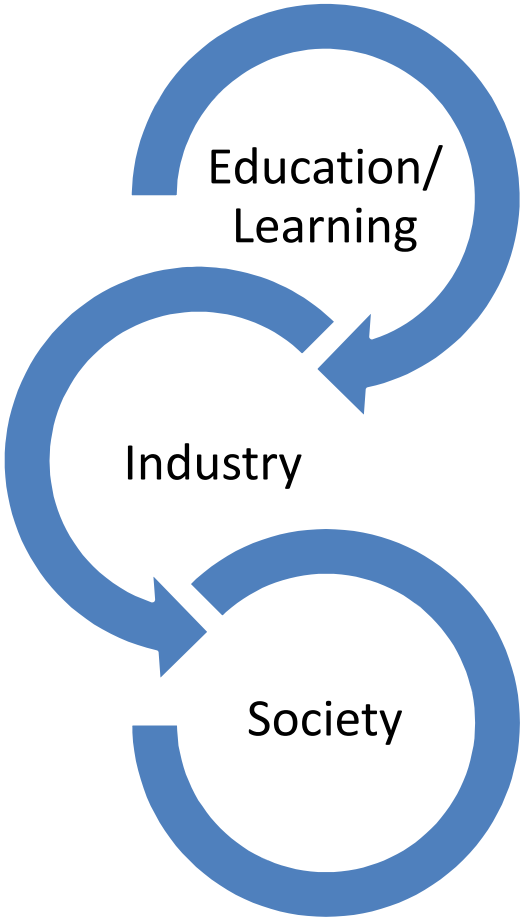
Lisbon: http://commons.wikimedia.org/wiki/File:Lisbon_09882_Lisboa_Pra%C3%A7a_don_Pedro_2006_Luca_Galuzzi.jpg
Crystal ball in hand: https://www.flickr.com/photos/valeriebb/3488188022/
2015 Calendar: https://openclipart.org/image/300px/svg_to_png/202454/calendar-2015.png
Back to the Future Poster: http://thegalatf.deviantart.com/art/Back-To-The-Future-II-Soundtrack-385231802
DeLorean car: http://en.wikipedia.org/wiki/DeLorean_DMC-12#mediaviewer/File:BTTF_DeLorean_Time_Machine.jpg
Back to the Future Talking Computer: http://static02.mediaite.com/themarysue/uploads//2010/10/12-ordering-from-dead-people.jpg
Back to the Future Glasses: http://img.gawkerassets.com/img/17ikac0czf875jpg/original.jpg
Google Glass: http://en.wikipedia.org/wiki/Google_Glass#mediaviewer/File:A_Google_Glass_wearer.jpg
Back to the Future Hoverboard: http://aliencyborgs.com/wp-content/uploads/2012/02/BTTF2_1.jpg
Hoverboard: screen capture from: http://www.telegraph.co.uk/culture/film/film-news/11237396/Go-Back-To-The-Future-with-the-worlds-first-hoverboard.html
Crystal ball: http://pixabay.com/en/fortune-telling-glass-ball-239171/
Classroom: http://pixabay.com/en/speakers-speaker-training-lecture-414560/


EXIT 03
THE FUTURE
NEXT EXIT

Interconnected Ecosystems

DRIVERS

Technology Changes
Globalization



Knowledge Creation (KC)

Sense of Community (SoC)

Knowledge Creation (KC)

Influence

Emotional Connection

Group Membership

Needs Fulfillment

Work Practices → Sense of Community (SoC) → Knowledge Creation (KC) - - →

Email

Text/Instant Messaging

Asynchronous
(Blogs, social networking, online forums)

Telecommuting

Face-to-Face

Video Technologies

Influence

Emotional Connection

Group Membership

Needs Fulfillment

3D and Tactile (Haptic) Systems in Future Education

Felix Hamza-Lup, Ph.D.

Input/Output - Communication Channels

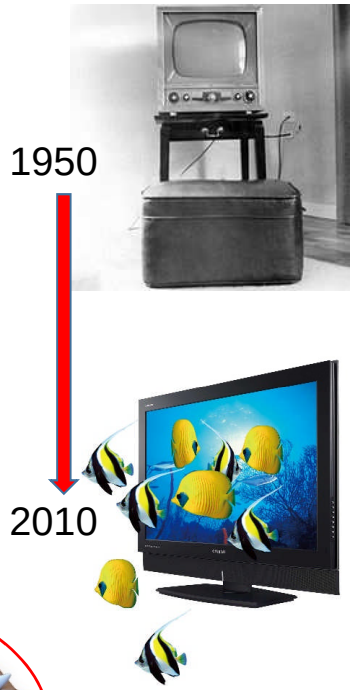
- 5 senses (or maybe more …)
  - I hear (hearing), I see (vision), I do (haptic), taste, smell
  - Input: all 5
  - Output: tactile, auditory and olfactive stimuli

- History of *Artificial* Stimuli:
  1. Sounds (1900s – Nikola Tesla - Radio)

  2. Vision - Remote Vision (Tele+Visor)
     - **No sound, black/white, 2D**
     - **+ Color**
     - **+ 3D – Widespread by 2015**

  3. **Touch (Haptics) – 2010 (fast growth)**

  4. Taste – do we want to simulate this ?
  5. Smell – this is possible, interesting to explore ?

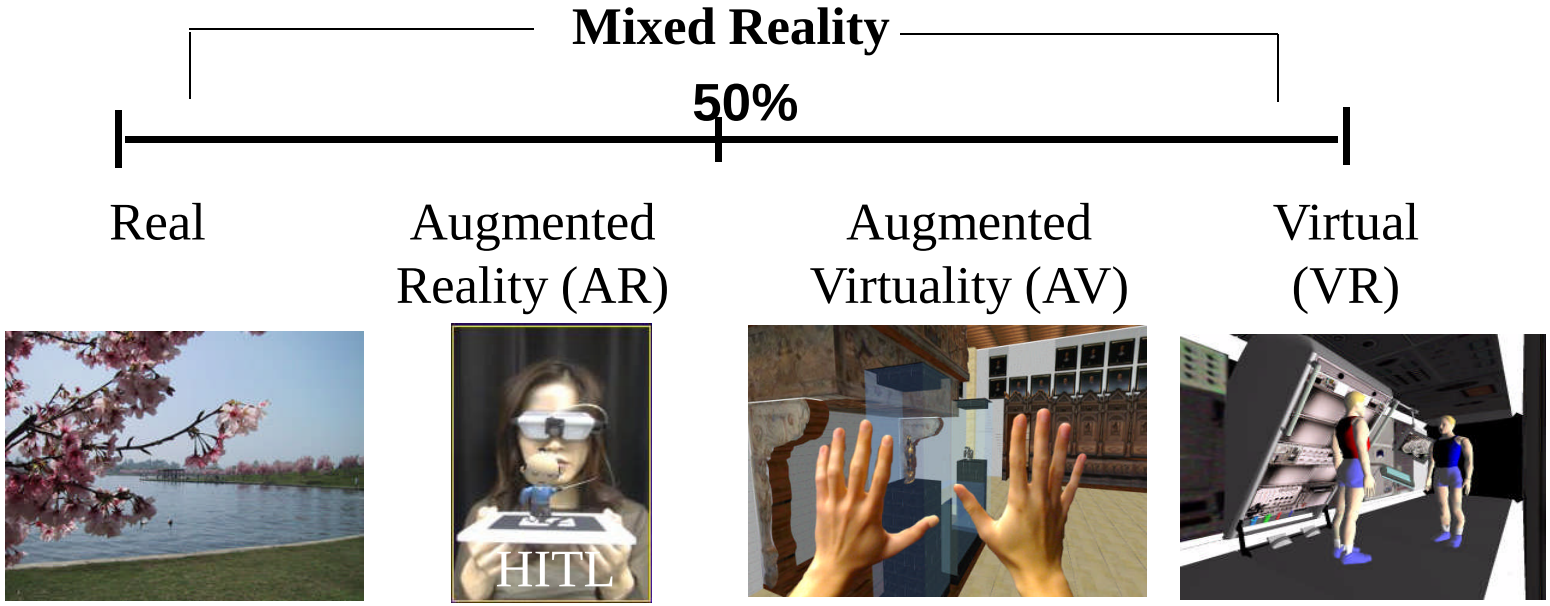


Multimodal Interaction

- Learning is about Knowledge transfer:
  - People must learn more today than 50, even 10 years ago (specially in technical fields)
  - Same main methods for teaching & learning:
    - concept understanding
    - some level of memorization
      - *"I hear and I forget. I see and I remember. I do and I understand"* – Confucius

- Knowledge transfer occurs through (social) interaction
  - Engagement
  - Immediate feedback (Interactive speed … seconds)
  - Real-world contexts (relate to real world contexts)

Reality-Virtuality Continuum

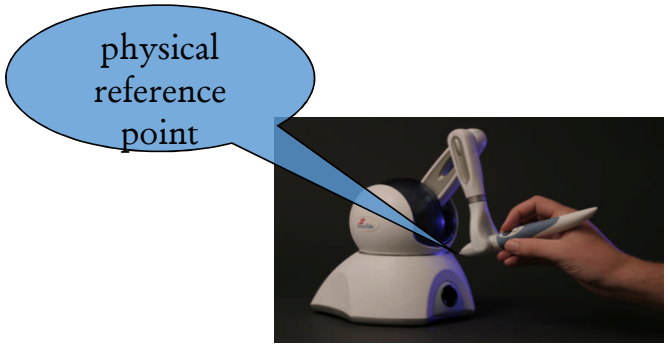


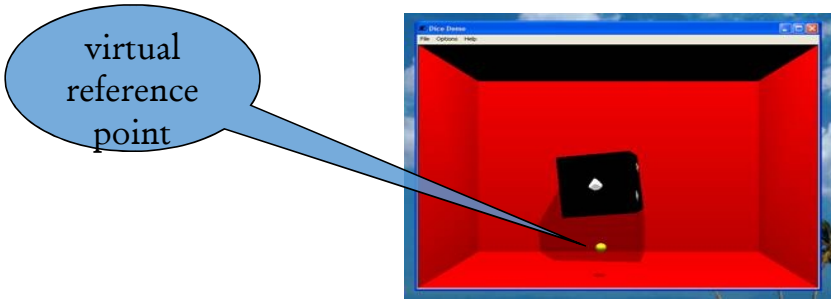
Reality - Virtuality (RV) Continuum*

(*) Milgram, Takemura, Utsumi, Kishino. "Augmented Reality: A class of displays on the reality-virtuality continuum"

Haptic Interaction

One point of interaction – reference point – a linkage-based system





- Robotic arm that tracks position and orientation of user's hand
- Updates position and orientation information every ms (1KHz)
- Visual representation of physical reference point within virtual application.

X3D/Haptic Prototype Systems for Education

- X3D (Web 3D)
  - Engineering Education
    http://projects.felixlup.net/view/
  - Medical Education
    http://3drtt.org/
    http://neuro-pathways.projects.felixlup.net/
  - City Planning & Education
    http://projects.felixlup.net/s3d/S3D.x3db

- Haptic & X3D:
  - Framework for Electronic Enhancement of Laboratories (FEEL)
    http://projects.felixlup.net/feel/index.html
  - Haptic Environments for K12-16
    http://projects.felixlup.net/haptek16/

X3D plugin available at: http://bitmanagement.com/en/download