Training Across Realities: Conestoga's Virtual and Augmented Reality Lab (VARLab)

Agenda

- Your Presenters

- Goals and Terms

- Where is the demand being generated?

- Realities of AR/VR @Conestoga

- The VARLAB

- Demo & Discussion

Your Presenters

- Justin St. Maurice, PhD. – Coordinator, Professor Bachelor of Applied Health Information Sciences

- Russell Foubert, MSc. – Professor, Software Engineering Technology, Applied Researcher

Goals

- Set the stage for why these technologies are so important for Polytechnic education

- Tell the story about the amazing student work that has led to the opening of VARLab

- Discuss the realities of moving quickly to set the stage for success in a college environment

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Terms

- AR– Augmented Reality
  - Similar to drawing computer graphics to your eyeglasses – your actual reality is 'augmented'
  - Pokemon Go! Is an example of an AR Game
- VR – Virtual Reality
  - Headsets around your eyesight encloses your experience

Terms

- MR – Mixed Reality
    - Microsoft's branding of AR/VR solutions
    - Supported by hardware like HoloLens 2, Kinect
    - Powerful support from the Azure 'Cloud'
- XR – Extended Reality
    - A quick way of referring to basically everything here ☺

The Polytechnic Advantage: a high-quality, job-focused education

- Strength in academic offerings
- Strength in industry connections
- Strength in applied research

Top 10 Strategic Technology Trends for 2019

Intelligent

Autonomous Things

Augmented Analytics

AI-Driven Development

Digital

Digital Twin

Empowered Edge

Immersive Experience

Privacy and Ethics

Quantum Computing

Mesh

Blockchain

Smart Spaces

gartner.com/SmarterWithGartner

Canada's Changing Skill Requirements

AR/VR Solutions are providing immersive entertainment and productivity solutions.

Top 10 Strategic Technology Trends for 2019

Intelligent	Digital	Mesh
Autonomous Things	Digital Twin	Blockchain
Augmented Analytics	Empowered Edge	Smart Spaces
AI-Driven Development	Immersive Experience	

Privacy and Ethics

Quantum Computing

Canada's Changing Skill Requirements

Industry is expanding the use of AR/VR as a means to consume, interpret and share data acquired through:

- Digital Twinning
- Next Generation Business Intelligence
- Smart Spaces

In summary…

There is a growing demand for AR/VR solutions across all industries including:

- **Trades and manufacturing**

- **Business and hospitality**

- **Healthcare and social services**

- **Research and education**

"Realities" of AR/VR Development and Activity @Conestoga

- Curriculum Integration & Intentional Skill Development

- Innovation in Teaching & Delivery

- Funded Applied Research

- Research Partnerships

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Curriculum Integration & Intentional Skill Development

- Working to meet Canada's evolving skill requirements

- Ensuring our students have skills the jobs of the future

- Student engagement through coop, field placements, capstones, and course projects

Innovation in Teaching & Delivery

- Extension of existing Simulation Education and Applied Learning

- New content for degrees, continuing education, and corporate training

- Ability to offer impossible and impractical leaning experiences

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Funded Applied Research

- Solution building to address community needs and to address real world challenges

- Towards the development of a technology access center

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Research Partnerships

- Unique opportunity to control of visual, auditory and emotional stimulus
- Able to contribute to research activities by removing logistical barriers
- Able to contribute to a new area of study

VARLab

- Started in May 2018, under support from the **Centre for Smart Manufacturing and Digital Innovation**

- Faculty members and students from different areas of the college engaged in cross-disciplinary projects and created several virtual reality training simulation prototypes

VARLab

- Goal: Engage in AR/VR development work using our students
  - Critical to development of HQP

- Goal: Support Capstone Applied Research and Funded Applied Research projects

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VARLab Co-op Portfolio

- Restaurant Inspector Trainer
- Factory Safety Trainer
- VR Orientation
- MRI Procedure Simulator
- Forklift Safety Inspector
- Police Services Traffic Stop Safety Simulator
- Interactive Case Studies

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VARLab Capstone Portfolio

- AR Remote Assistance for Cannabis Cultivation
- Observation Collection Assistant for ECE
- Resiliency/Tonal Analysis Trainer for ECE
- AR Policy and Procedure Trainer for ECE
- 360 Video Job Interview Coach
- AR Campus Tour for International Students*
- VR Procedure Trainer for Cannabis Cultivation*

Demonstration

Challenges

- Continuity of knowledge and skillset transfer from semester to semester

- Practical implications of existing hardware and software frameworks, and updates

- Socialization of VR/AR technology, access to technology, and space planning

Lessons Learned

- Partnerships and corporate partnership programs are available and very useful
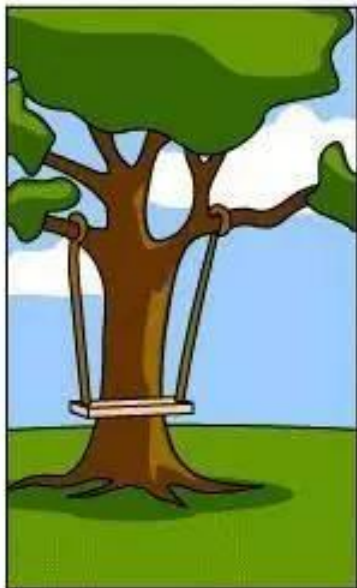- There is a tension between formal governance and ad-hoc planning, with pros and cons

Lessons Learned

- VR is challenging because it can literally be anything…
- Complex VR therefore requires interdisciplinary teams and approaches
  - (See next slide!)

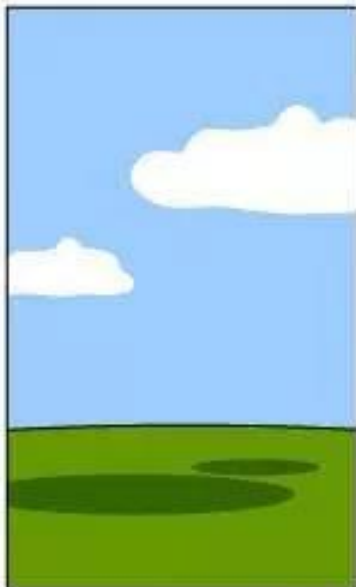How the customer explained it

How the Project Leader understood it
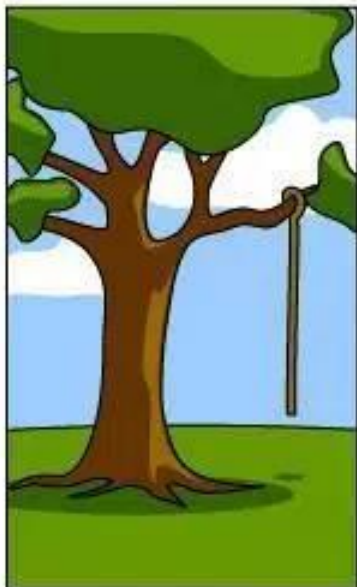
How the Analyst designed it

How the Programmer wrote it
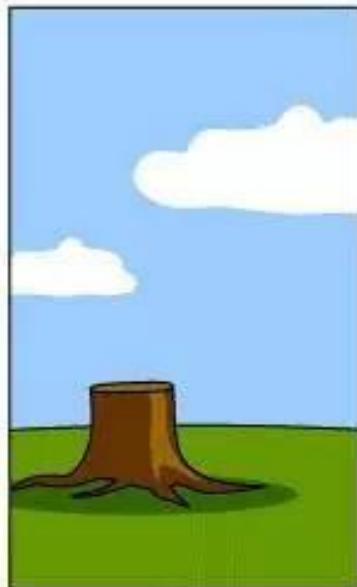
How the Business Consultant described it

How the project was documented

What operations installed

How the customer was billed

How it was supported

What the customer really needed

Discussion

or

Questions and Answers?