

# Providing Practical Classes Online to Distance Learning Students

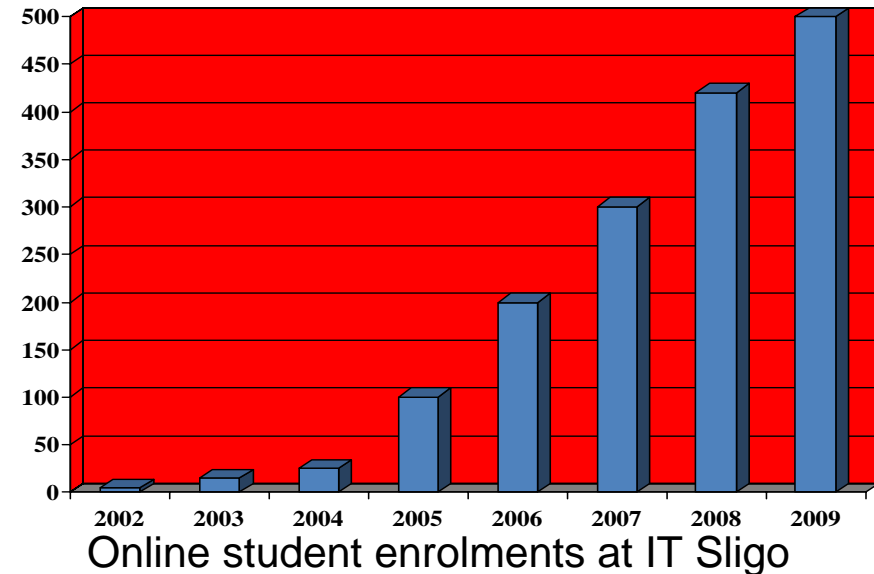
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Frank Carter



# Growth in Demand for Online Learning

- Growth in Third Level Online Enrolments far exceeds that of overall HE student population\*
- Mainly in Adult Education – ‘up-skilling’ and retraining
- Government €4bn commitment to up-skill 170,000 workers to third level by 2020
- Flexible Learning Mode – ability to combine with work and home life

\* Babson Survey Research Group, 2009



## Challenges in Delivering Engineering Education Online

- Need for high quality educational experience – collaboration; interaction; reflection; practical application.
- No compromise on learning outcomes
- Current Mode – Interactive Live Lectures & Practical Days onsite



# The KITE project

## (Knowledge & Innovation Transfer in Engineering)

- Aims of IT Sligo
  - Facilitate Delivery of Online Practicals to enhance student learning and knowledge transfer with industry
  - More interactive, practical, real-world application throughout the course



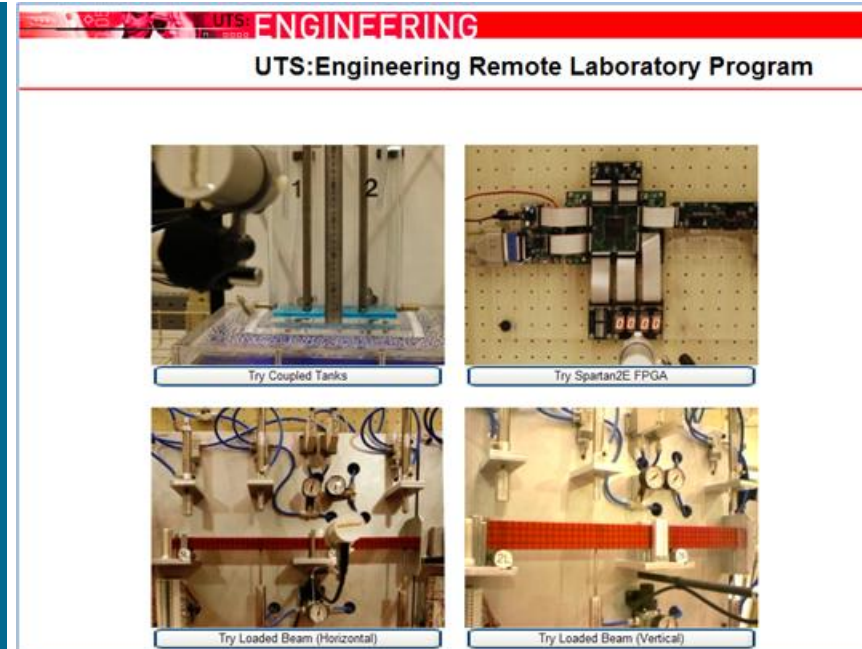
- Remote Access to Hardware rigs for experimentation and application of theory,
- Provide a 'PC Farm' for Remote Access to software
- Interactive training in computer based applications in an 'online classroom'
- Develop additional online resources

# Technology for Remote Labs

- Internet Simulations
- Software teaching – via tutorials, videos – need student licenses. Remote desktop & online meeting spaces a new opportunity.
- Interaction with Hardware via internet - eg. MIT iLabs

## Existing Online Labs

- Time and Cost in development
- Controlled exercises – little scope for open-ended experimentation
- Difficult to integrate different software applications
- Lack of direct supervision; interaction with peers or instructor



## Demo: On-demand Access to an Online Lab:

<https://itsligo.webex.com>

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# Live Hands-On Practical Class

**CAD TRAINING  
ONLINE**

**KITE**

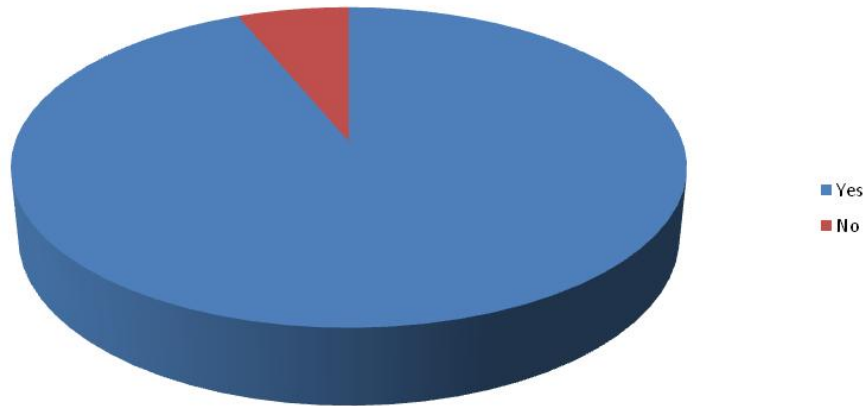
Knowledge &  
Innovation  
Transfer in  
Engineering



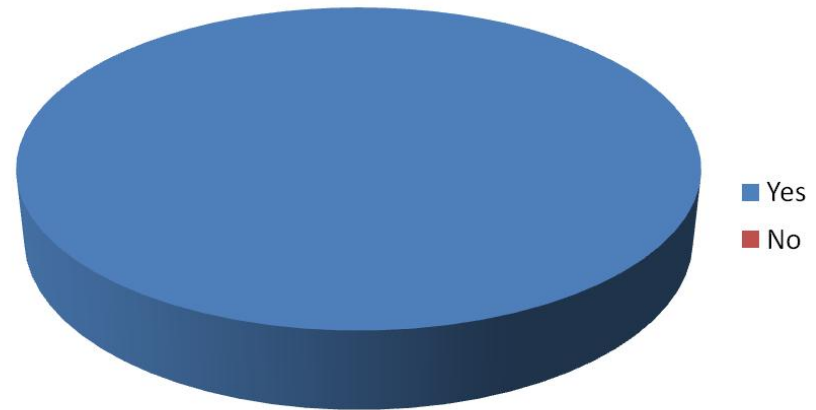
# Findings from CAD class

- Overall very successful class
- Some issues with VoIP (audio)
- Students on weak internet connections could lose connection (rare occurrence)

Would you find the live class to be of benefit if all demonstrations were available on video?

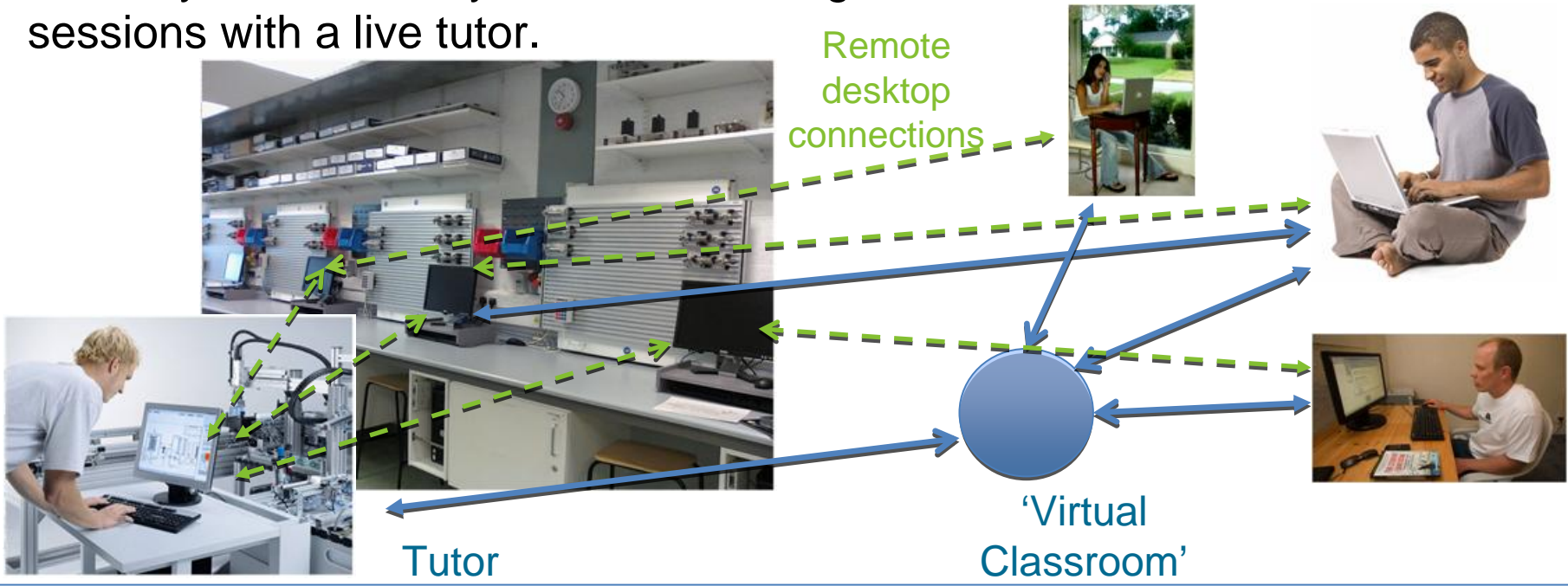


Would you recommend CAD training this way?



# Conclusions & Future Work

- Initial steps in implementing a range of online laboratory exercises in autonomous, cooperative and collaborative learning modes
- Successfully delivery of online CAD module through a mix of interactive live classes and on demand access to CAD software
- The technology used needs little computer programming knowledge; flexibility to be used by students working on their own or in collaborative sessions with a live tutor.



# Acknowledgements

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