

@KTPA2017

Innovate UK  
Technology Strategy Board

#KTPA2017

# KTP Associates Conference 2017

## Birmingham



UNIVERSITY OF  
BIRMINGHAM



BIRMINGHAM CITY  
University



Aston University

# Associate Presentations (am)

- Femi Adeyemi-Ejeye, Kingston University
- Josep (Pep) Canyelles-Pericas, Northumbria University
- Shuai Wang, University of Manchester
- Michael Taylor, Queen's University Belfast



Next up:  
Femi Adeyemi-Ejeye,  
Kingston University



# Towards a Smart Hybrid Door Phone System

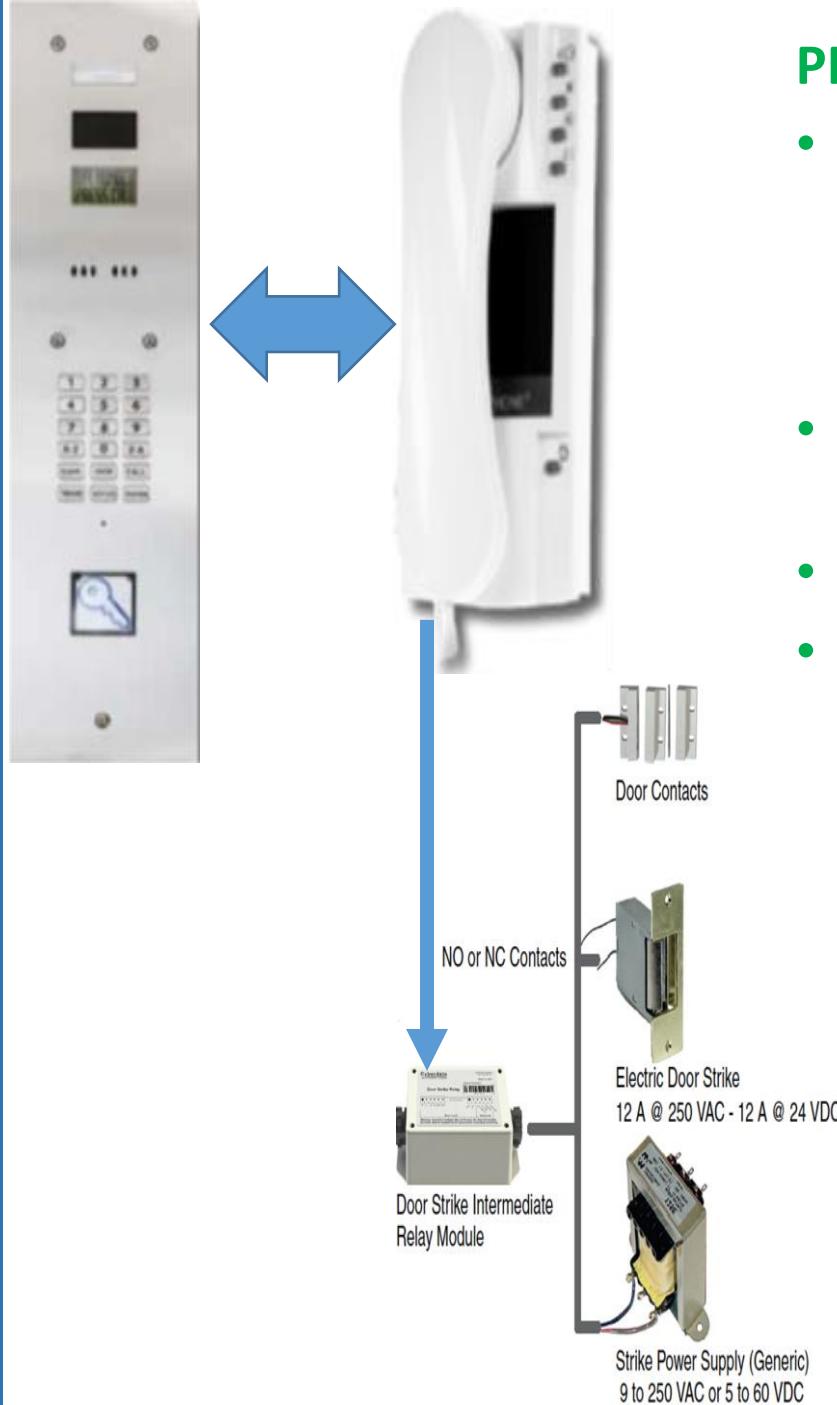
Dr Femi Adeyemi-Ejeye



# Overview

- Current Door Phone Systems
  - Analogue/Legacy
  - IP-based
- Opportunities
- Project Goal
- Initial Outcome: Prototype

# Legacy Door Phone Systems



## PROS

- Can see who is at the door and Open
  - Even if you live on the 15<sup>th</sup> floor
- Uses Old Telephony Technologies
- Can deliver Audio and Video
- Open the Door

## CONS

- A phone per flat/office
- Can only answer and control the door using the provided phone
- No log of visitors
- Can't ask the postman to leave your parcel somewhere when not at home

# IP Door Phone Systems



## PROS

- Can call multiple phones per flat
  - Even mobile phones/landlines
- Uses internet based technologies
  - Voice and Video over IP
- Call Logs
- Open the Door

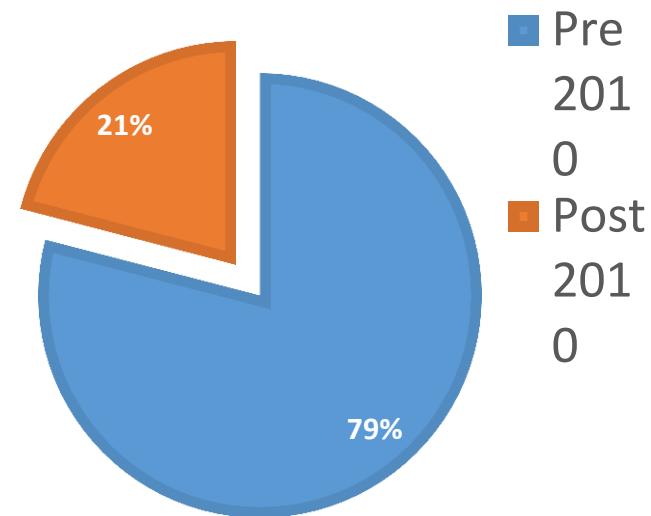
## CONS

- System Replacement costs
  - Need builders, surveyors, engineers
- Unreliable if the Internal Network is down

# Opportunities

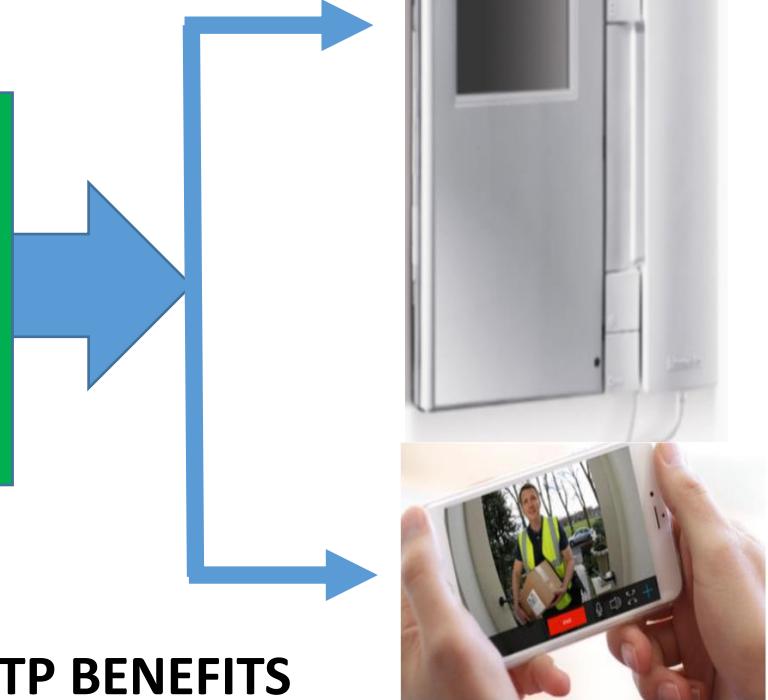
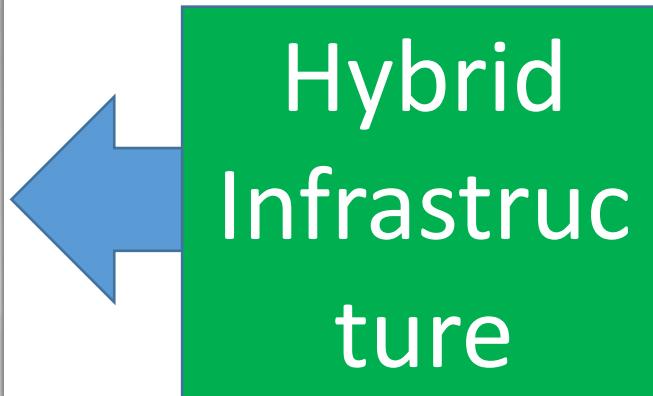
- UK Market is Estimated at £150M
  - 40% located in Greater London (£60M)
  - Part of the £2 billion p.a UK electronic security market
- From 1992 – 2016
  - 3,510,220 residential dwellings were built in England
  - 30% of them are Flats
- 2N released the First IP Door phone released in 2008
- Entryphone currently 10,000 sites

ENGLAND: FLATS BUILT



Source: Department for Communities and Local Government

# Project Goal



## PRODUCT BENEFITS

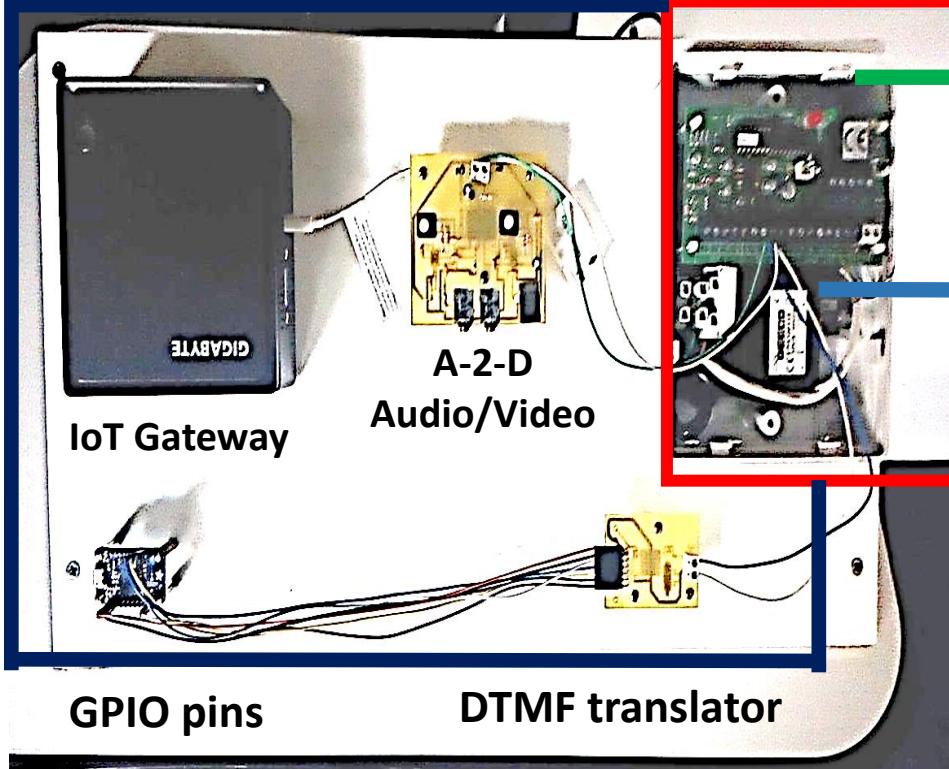
- Can have IP Door phone features
  - Callings multiple phones
  - Use of Internet
- No need to replace entire system
- If the Internet goes down the Apartment Phone still works

## KTP BENEFITS

- New product line for Entryphone
  - Cost effective product
- Enhance Kingston IoT research profile
  - Publications and Collaborations
- Associate's exposure to Product development cycle

# Prototype

## Hybrid Components



## Entryphone's Current System

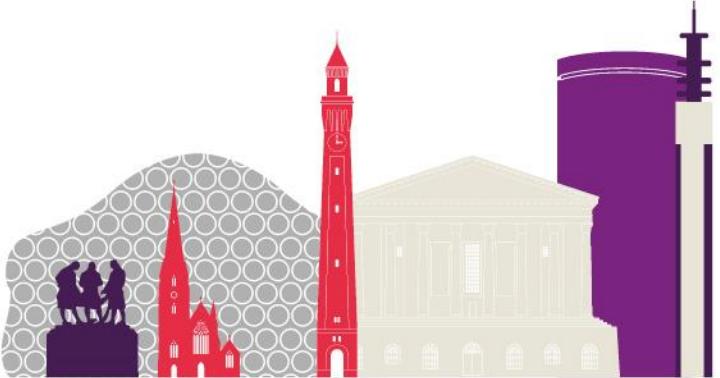


Analogue Door and Apartment Phone

**Thank you for listening**

**Questions/Comments**

Next up:  
Shuai Wang,  
University of Manchester



KTP Conference Presentation



# Integrated Sludge Recovery and Deployment System for Nuclear Decommissioning

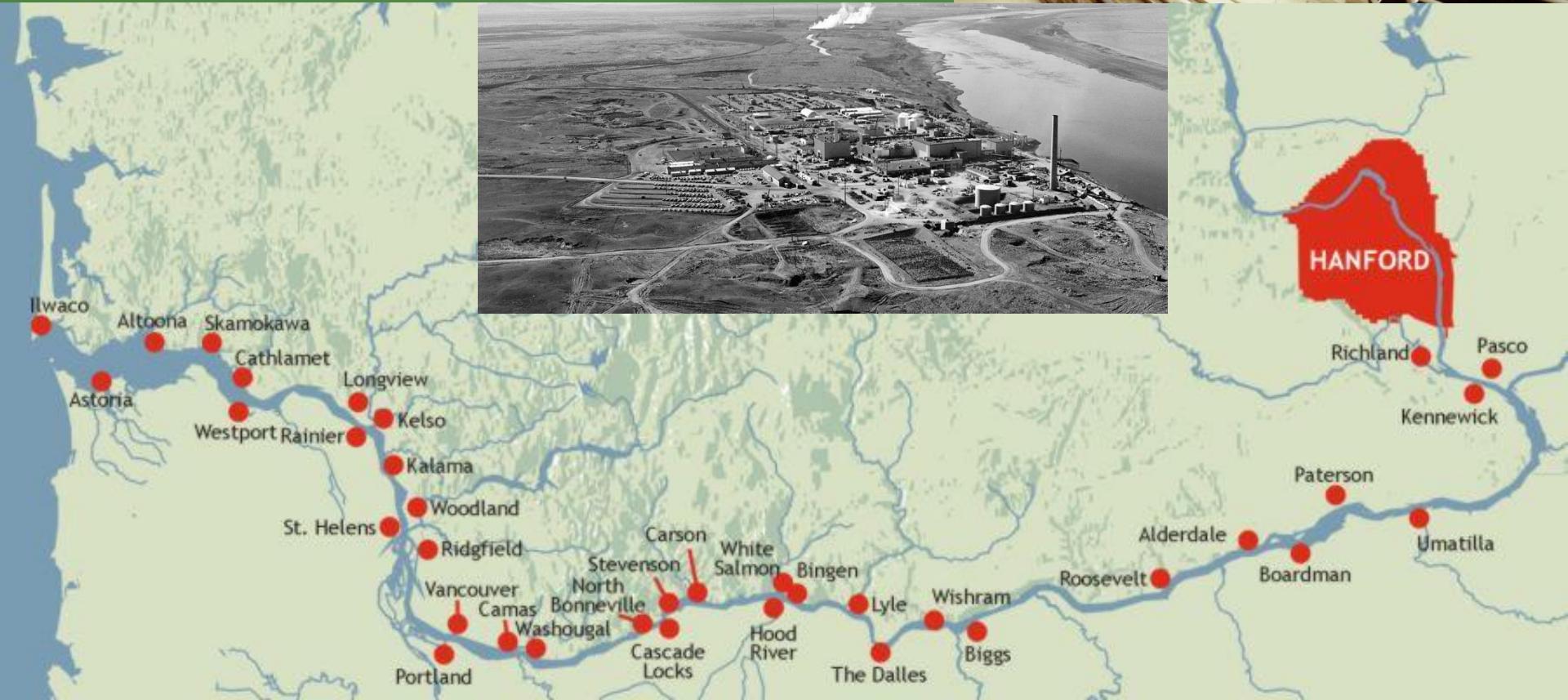
Shuai Wang  
The University of Manchester  
Barrnon Ltd

# Problem to be solved

- Nuclear sludge recovery
- Deployment system

We need to:

- Comply the requirement of nuclear site
- Avoid radiation to human beings



# Our solution

**Bladecutter:**  
Pond  
sludge  
recovery

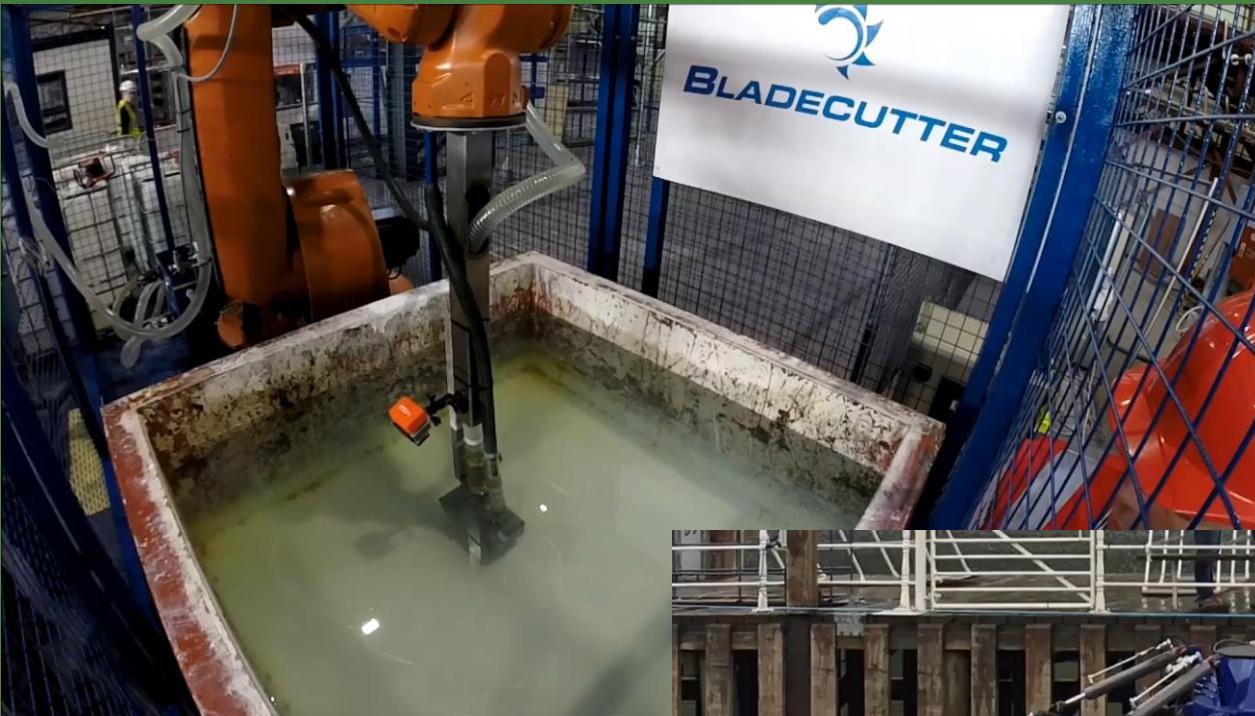
**Rotocutter:**  
Hard  
sludge dig-  
out

**Hydrospyder:**  
Equipment  
deployment

Nuclear Decommissioning

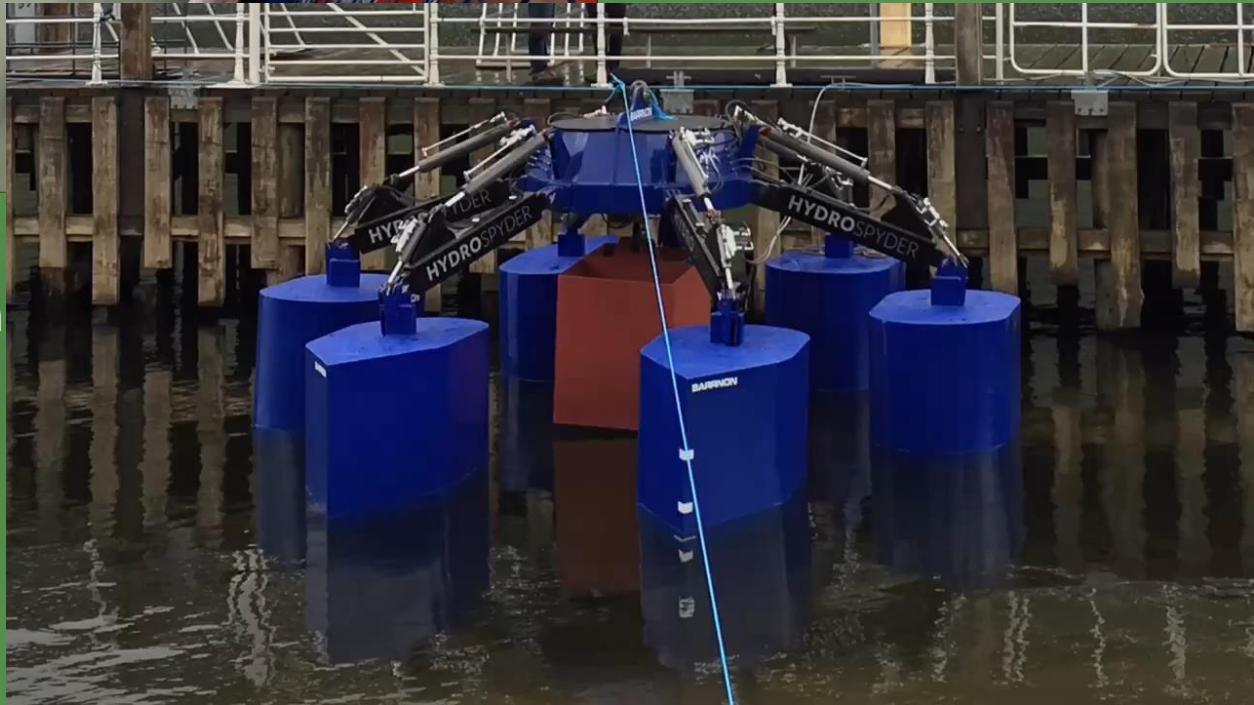


# Products demonstration



## Potential customers:

- National Nuclear Lab - Sellafield
- Fukushima, Japan
- Hanford, US
- Hunterston, Scotland



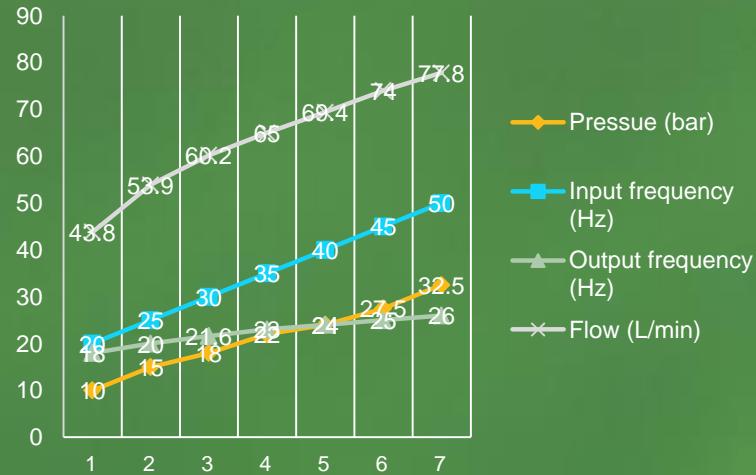
## Collaborators:

- 2<sup>nd</sup> largest engineering com in Japan - IHI
- University of Manchester
- Atkins

# Academic contribution

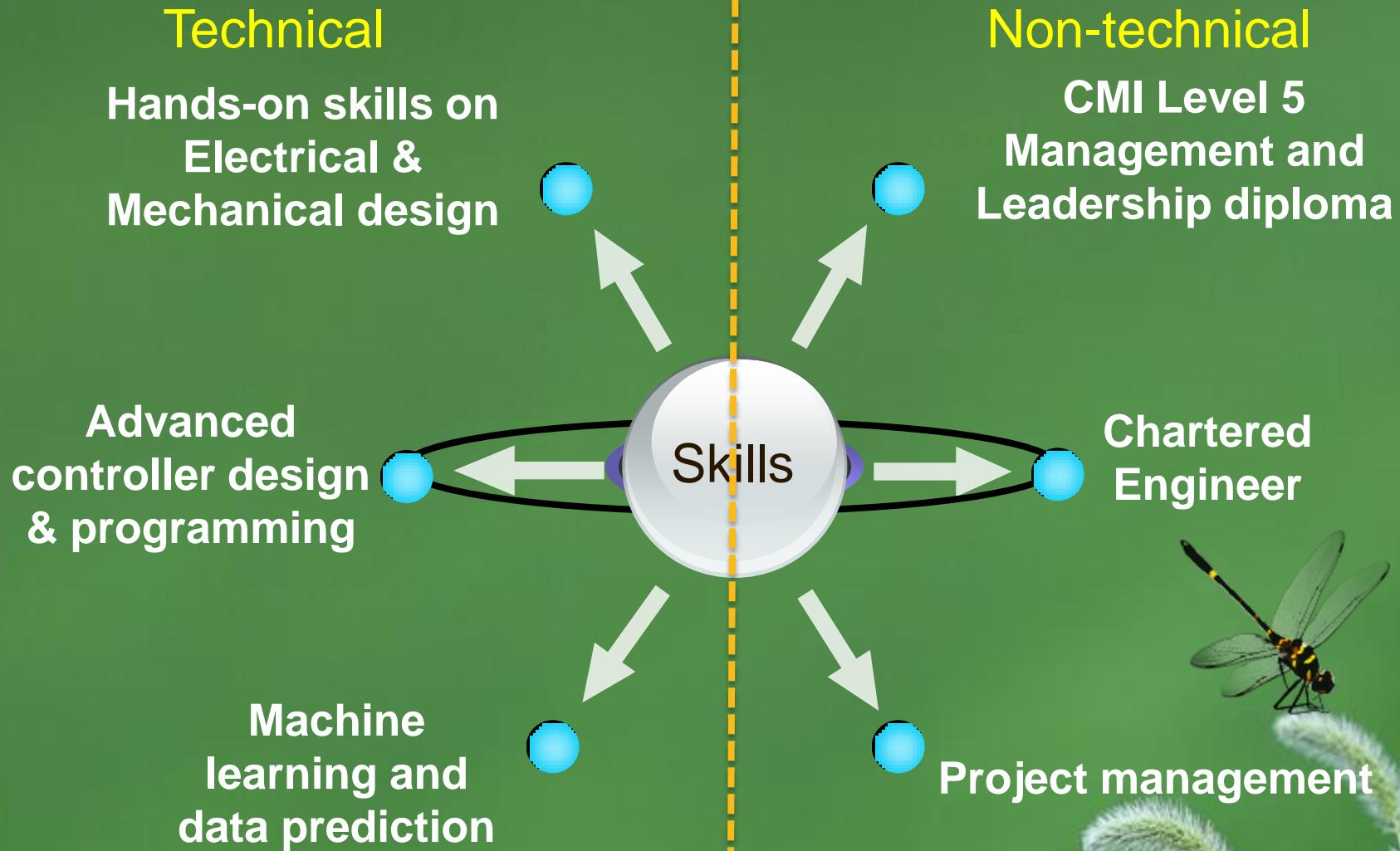
Data analysis and prediction:

- The least amount of water to be consumed
- To remove as much sludge as possible
- Academic paper “Design requirement in nuclear decommissioning water and radiation environment: a case study” is in preparation for Journal of Engineering Design submission

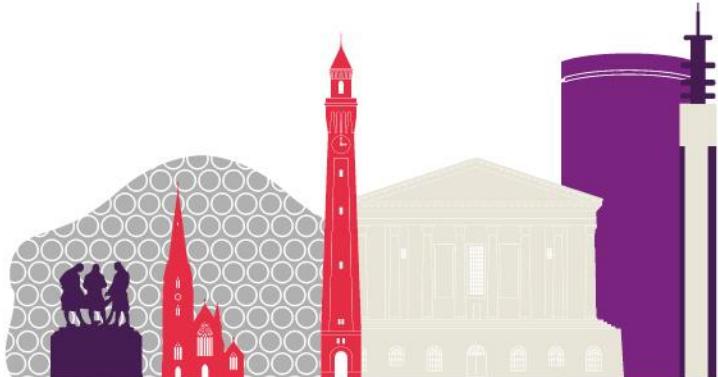


Advanced controller design on HydroSpyder

# Personal development



Next up:  
Michael Taylor,  
Queen's University Belfast





# SEE.SENSE® KTP ASSOCIATE PRESENTATION

Dr. Michael Taylor

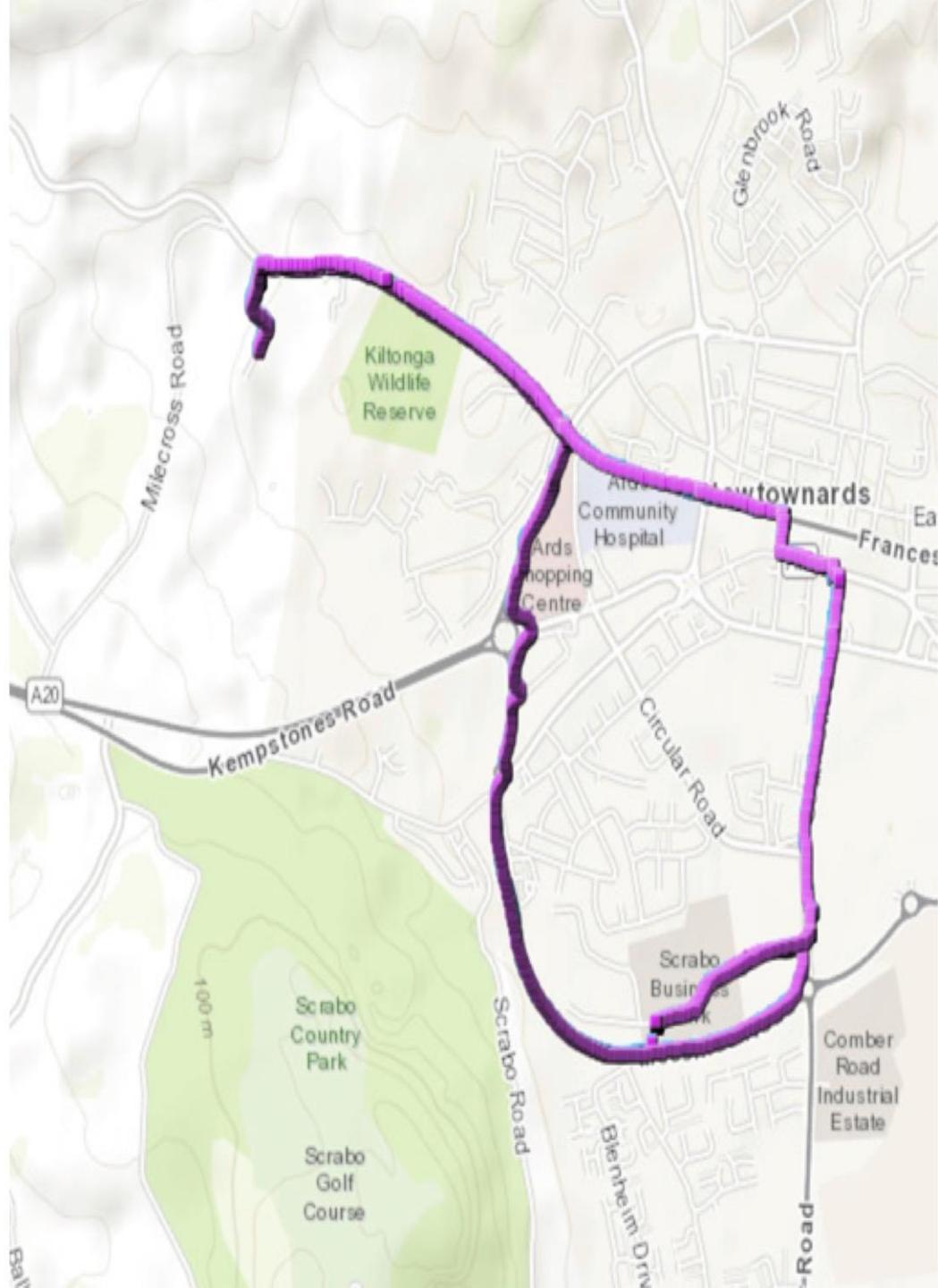
# INTRODUCTION



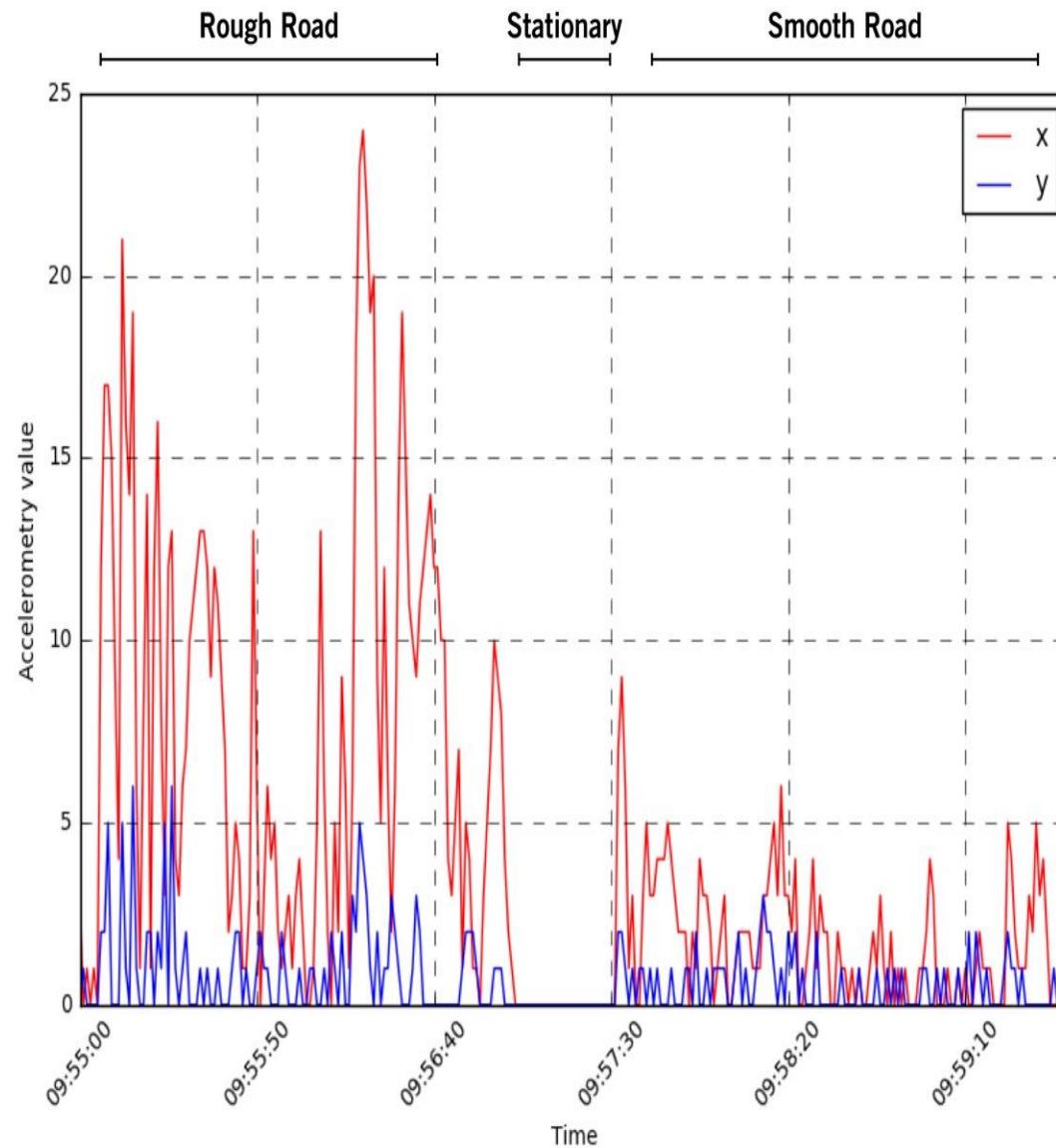
# WHERE ARE CYCLISTS GOING?

From the data we collect, we can deduce the most used routes within a city as well as:

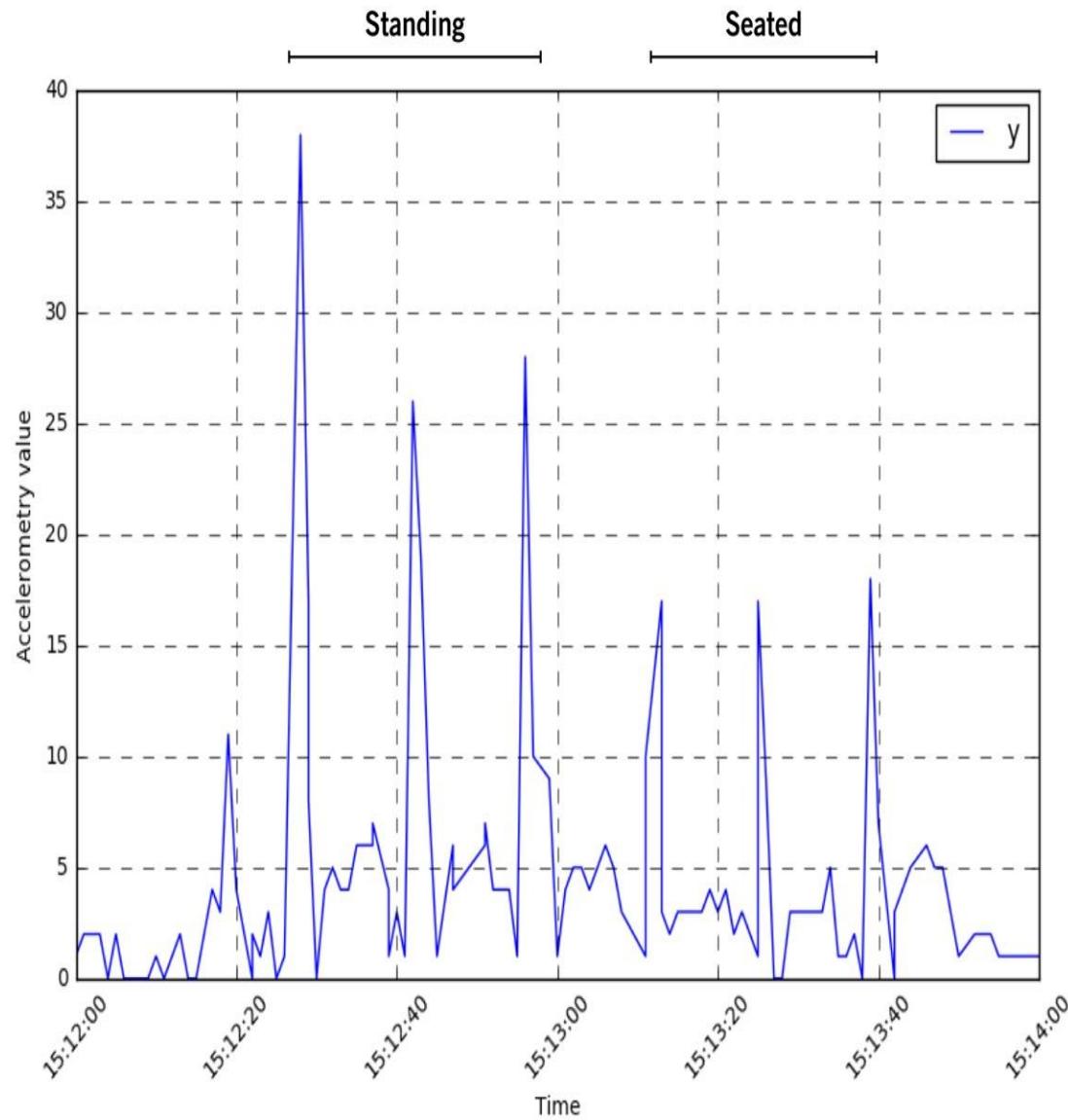
- \_ The busiest times for cycling
- \_ Journey distances
- \_ Average speeds for journeys
- \_ Slowest areas for cyclists



# ROUGH VS SMOOTH



# IMPACTS



# HOW CAN WE USE THIS?





# THANK YOU

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Dr. Michael Taylor  
Data Scientist  
[michael@seesense.cc](mailto:michael@seesense.cc)  
[www.seesense.cc](http://www.seesense.cc)

**SEE.SENSE®**  
 Queen's University  
Belfast

# Associate Presentations (pm)

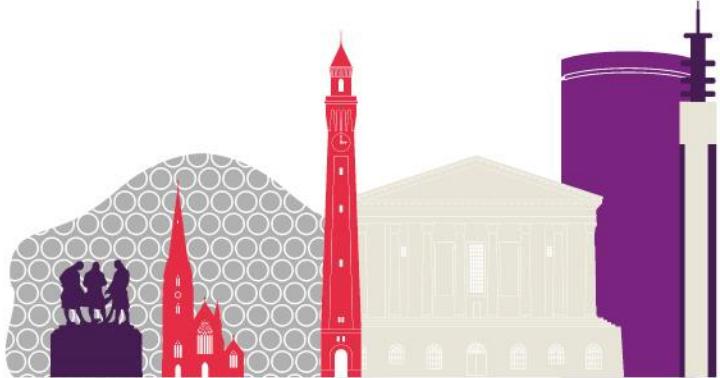
- Anthony Simpson, University of Reading
- Hassan Al-Budairi, University of Glasgow
- Hadeel Safaa Saadoon, Queen's University Belfast
- Elena Perez-Barrado, Keele University
- Louis Clift, University of Essex
- Robert Stewart, University of West of Scotland



# Presentation:

# Hassan Al-Budairi,

# University of Glasgow





University  
of Glasgow

Knowledge  
Transfer  
Partnerships

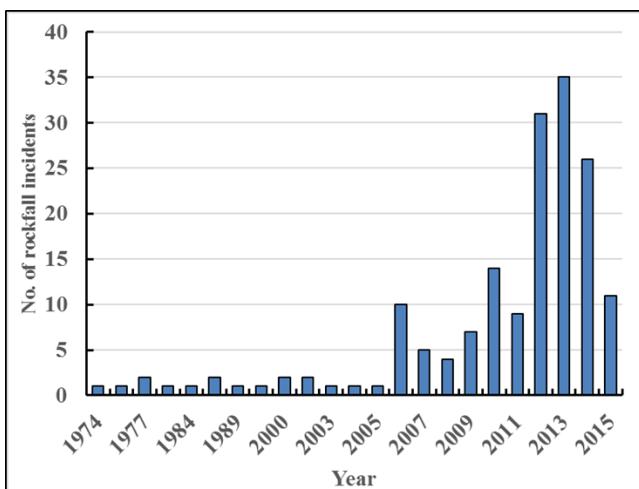
**QTS**  
[WWW.QTSGROUP.COM](http://WWW.QTSGROUP.COM)

# IMPROVING THE DESIGN OF ROCKFALL CATCH FENCES FOR RAILWAYS

Hassan Al-Budairi  
KTP Associate  
QTS Group Ltd  
University of Glasgow

# The problem

- Rockfall accidents have increased in the UK
- Causes significant damages, long delays and expensive repairs on railways
- An **effective** and a **cost efficient** rockfall catch fences design is needed to prevent these damages.



Rockfall accident (Falls of Cruachan, Scotland), 2010



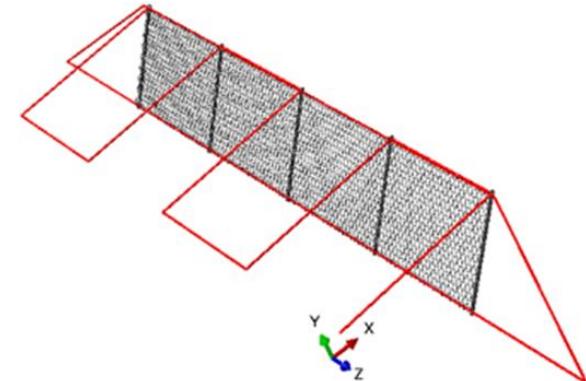
Derailed train (Loch Treig, Scotland), 2012

Major rockfalls in the UK recorded by British Geological Survey

# The challenges

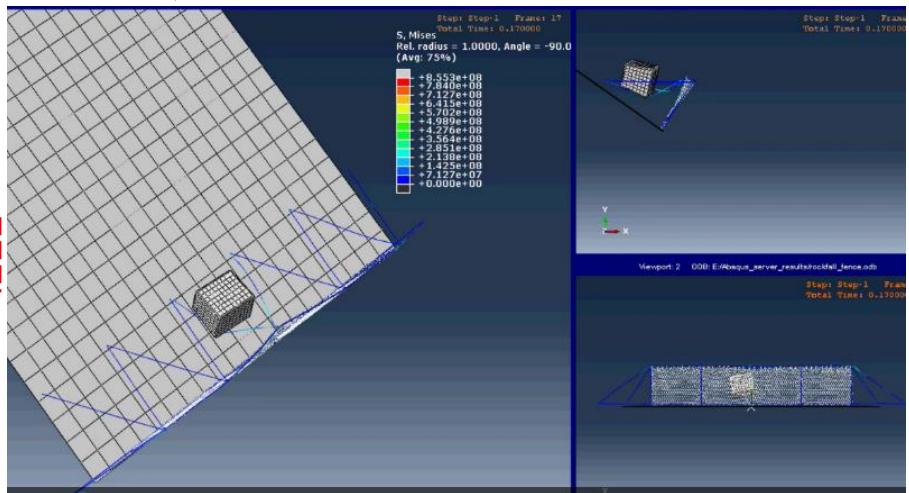
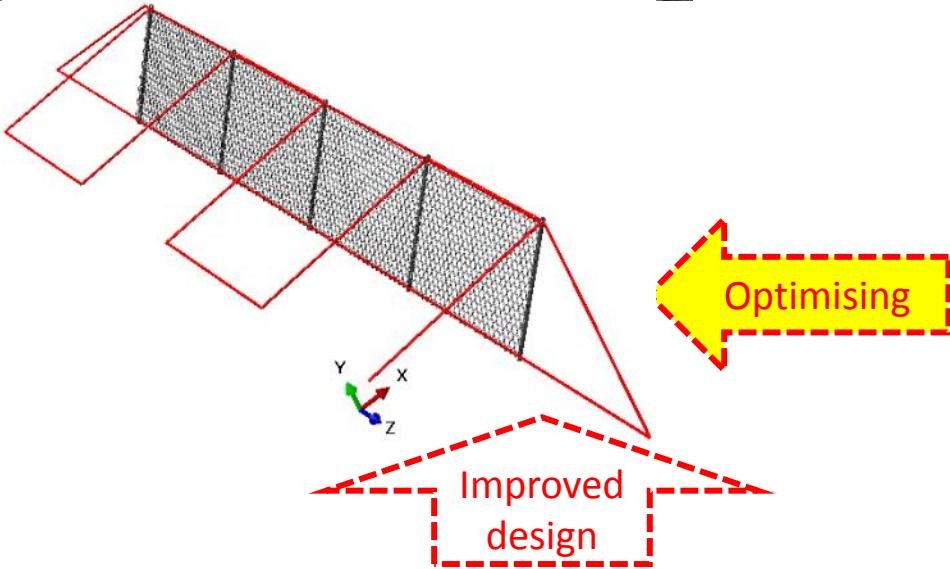
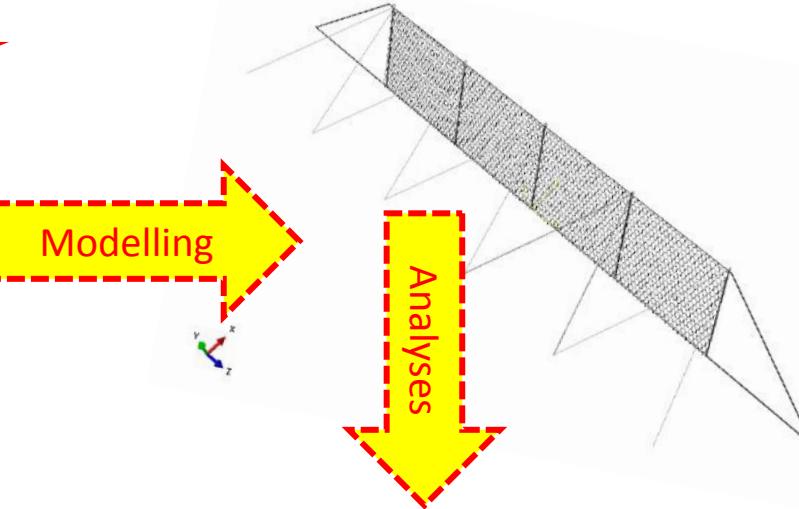
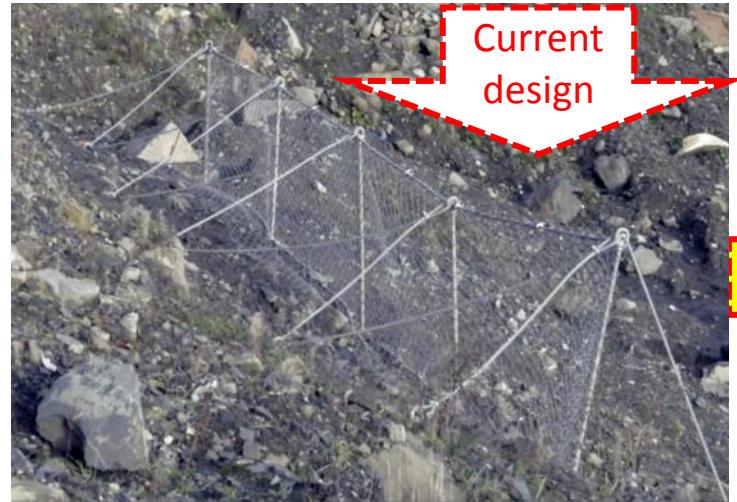
## Catch fences

- Are located near train lines/ difficult to access areas.
- Should easily install to minimise service disruption
- Can withstand for long lifetime (50 years) and for high energy limits
- Need to be cost-effective structures



Catch fences: along a train line, under construction (rope access works), and in service.

# Development approach



# Benefits



I- Basic catch fence design	II- Enhanced catch fence design
50% Materials	70% Materials
80% Energy dissipation limit	Over 200% energy dissipation limit

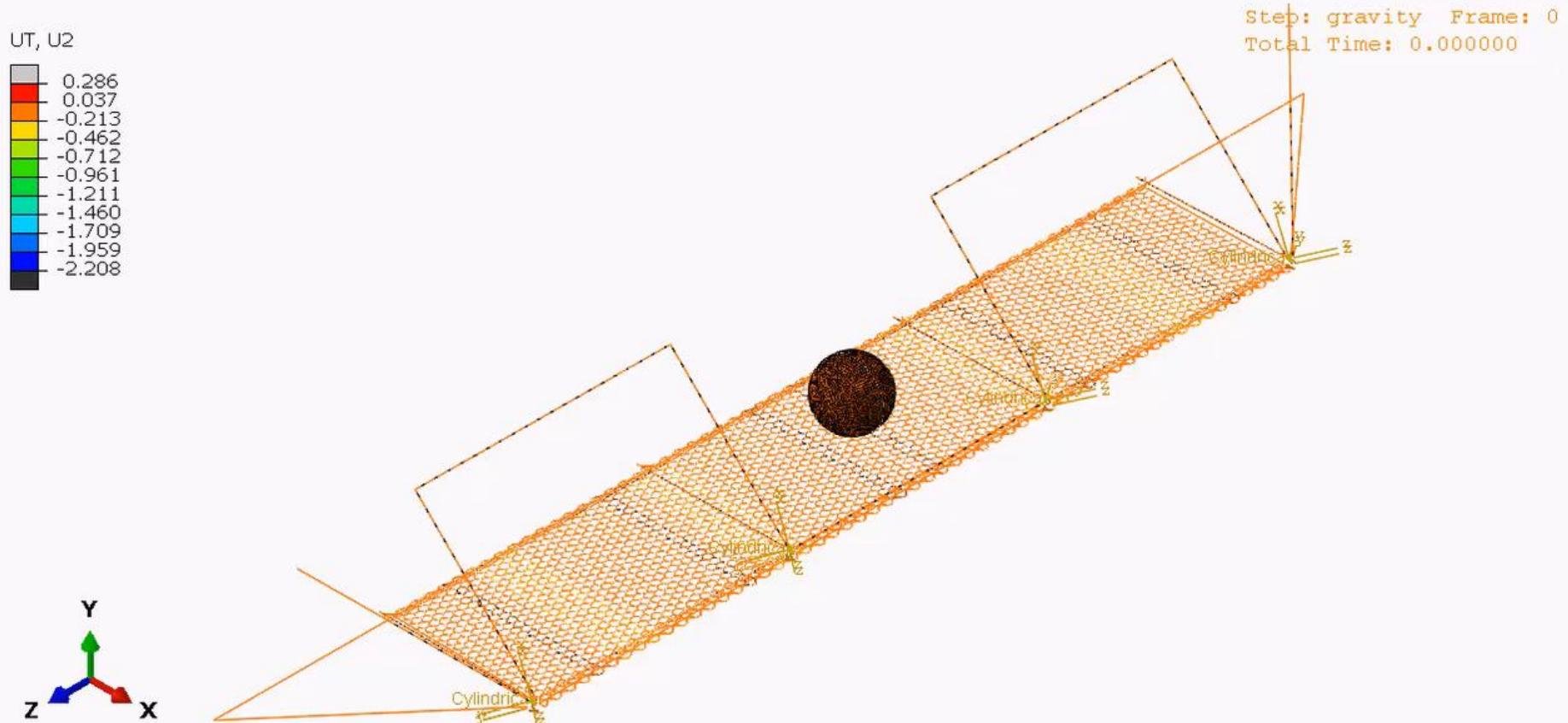
- Current railway Scotland earthworks project (£18M p.a./ 5 years)
- New markets in other areas (South-west England and Wales)/ expected value £10M p.a. / 5 years
- Long partnership with QTS (new project/ 94K/ 6 months)
- 2 Journal papers/3 Conference papers/ 2 Unpublished conference works
- One of three shortlisted projects for Scottish Knowledge Exchange Awards 2017
- Another successful project is added to the KTP journey!



# Results



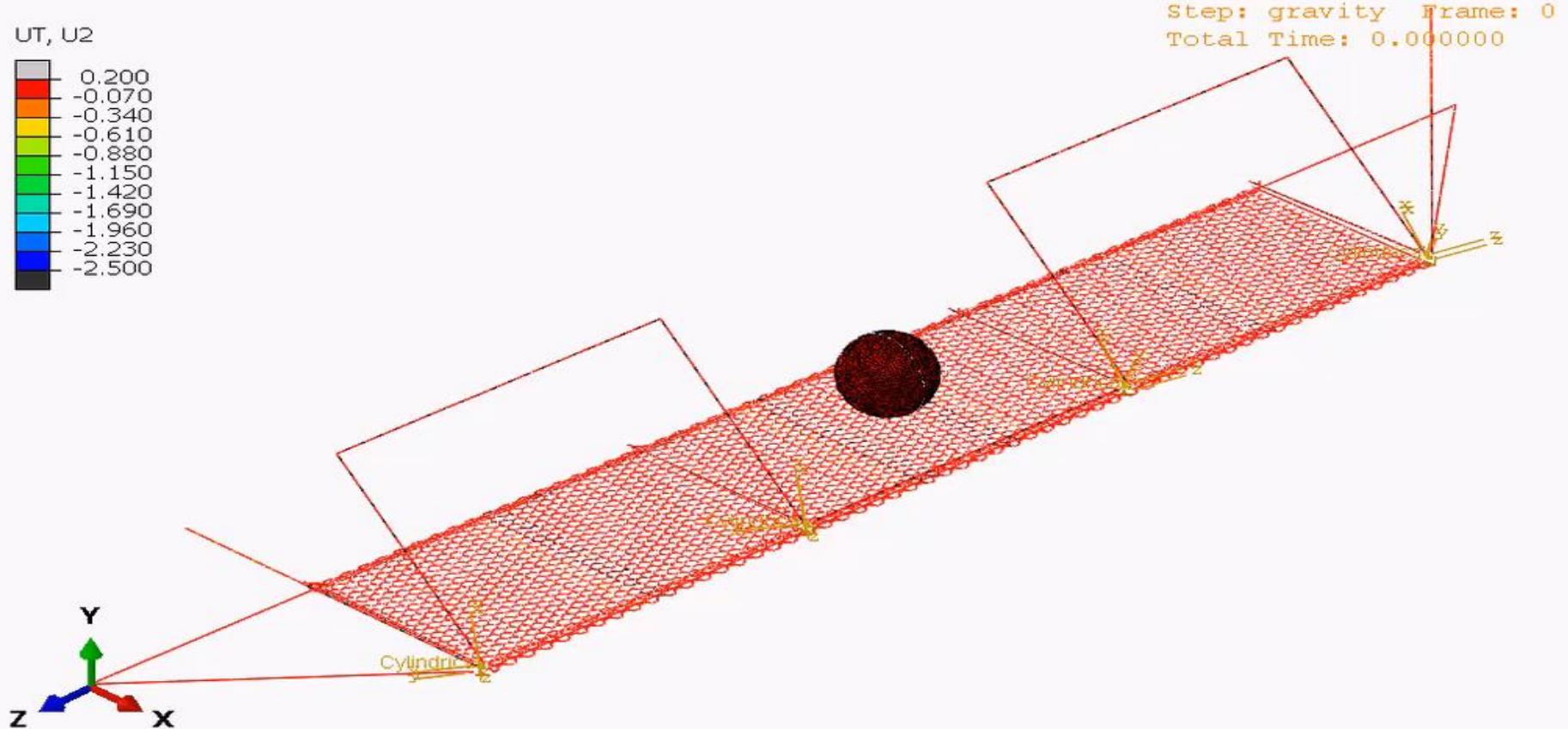
An impact of 500kg spherical mass on the basic catch fence design at 6.3 m/s



# Results



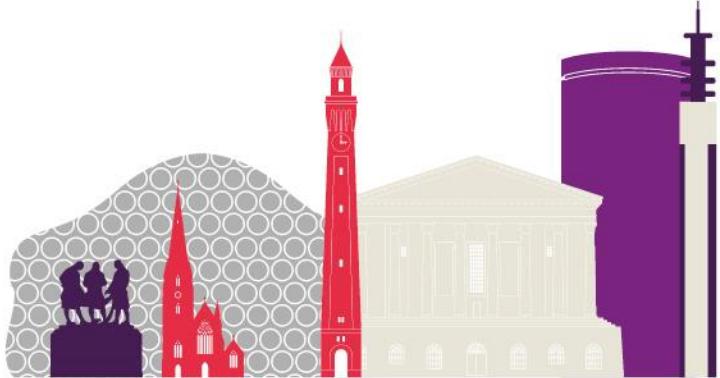
## Doubling the velocity to test the material failure model



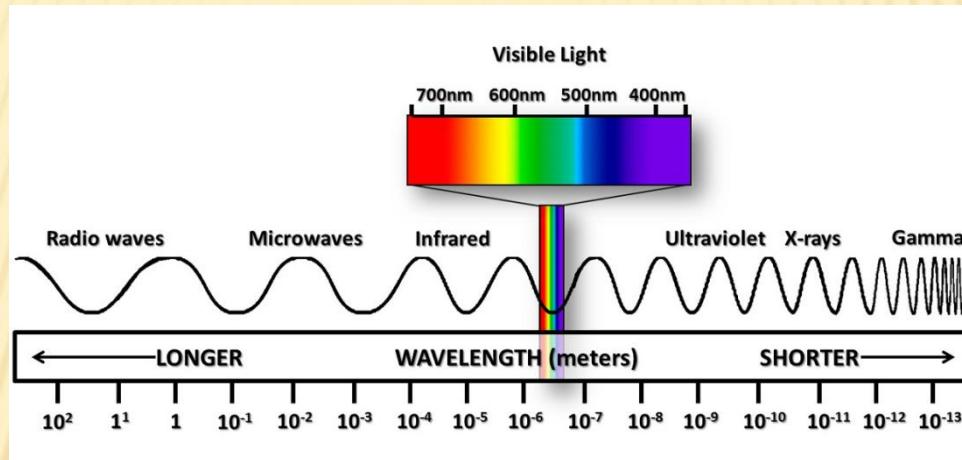


**Thank you for your attention  
Questions?**

Next up:  
Elena Perez-Barrado,  
Keele University



# Synthesis of inorganic materials with near infrared absorbing properties

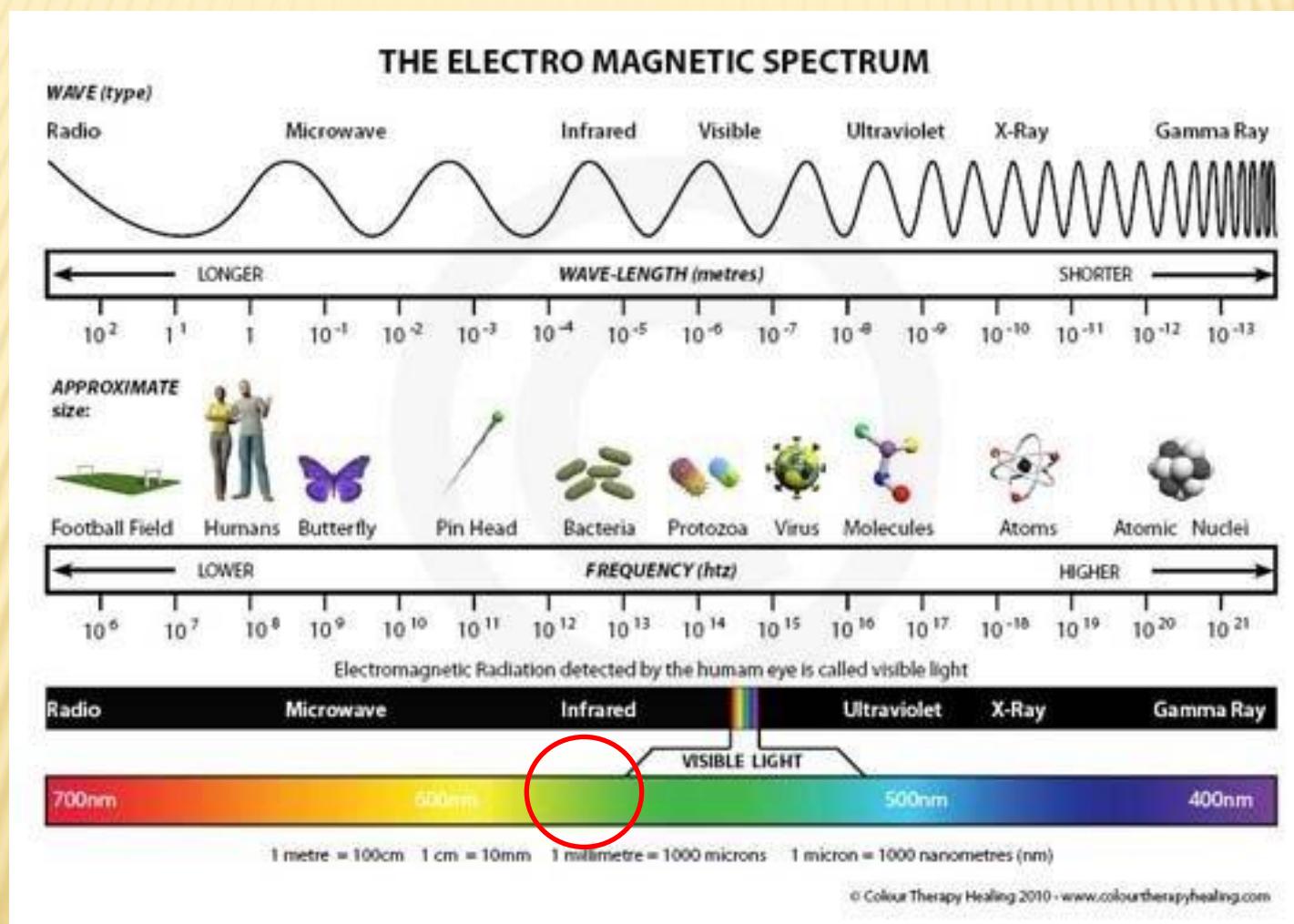


Dr. Elena Pérez-Barrado  
Keele University  
Keeling & Walker Ltd.

# Where are we located?

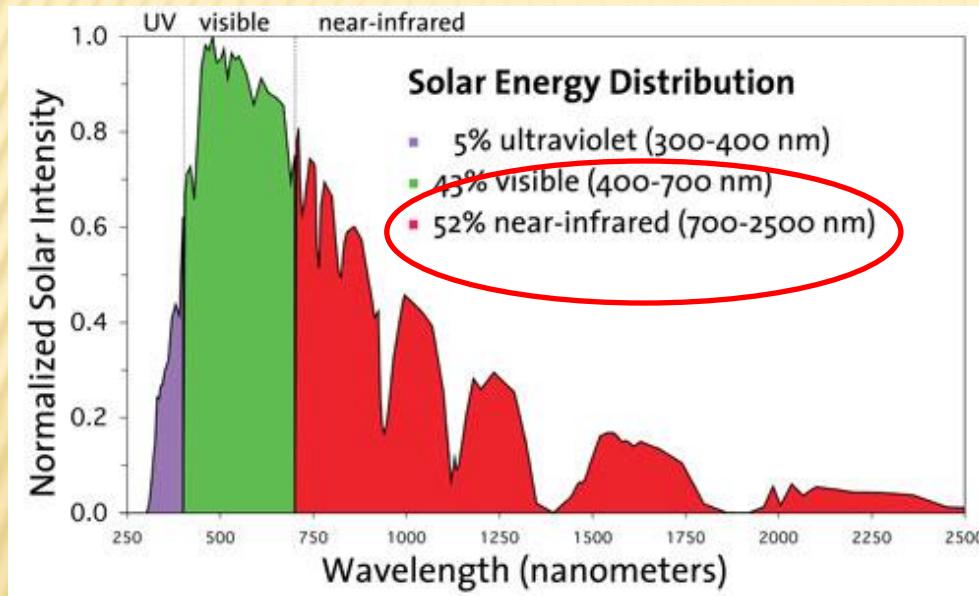


# What is infrared radiation?



# What is infrared radiation?

We feel infrared radiation as heat



Infrared lamps in a restaurant

Materials that reflect or absorb infrared radiation have numerous applications

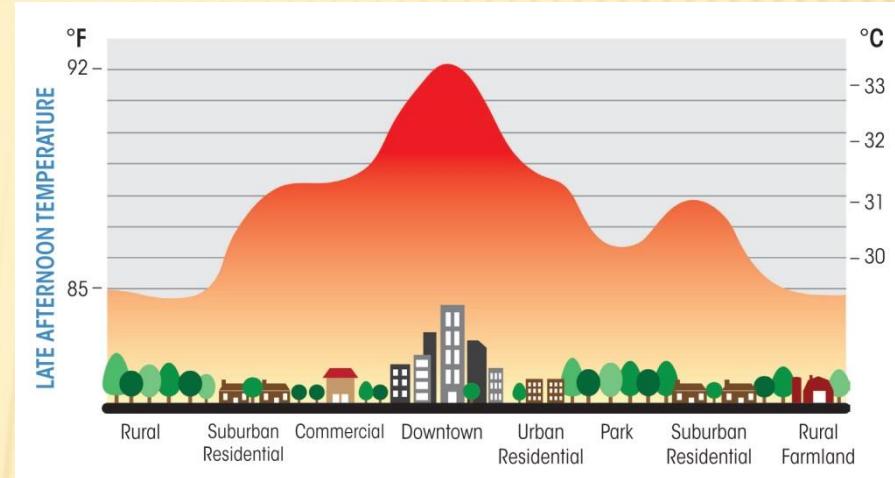
# Applications

Does the material reflect near infrared radiation?

- Glazing in buildings.
- Reflective surfaces in buildings (to avoid urban heat island effect).
- Energy-saving buildings.
- Greenhouses (agriculture).

Does the material absorb near infrared radiation?

- Glazing in cars.
- MID/3D technology (mobile phones).
- Security inks (banknotes, passports).
- Laser welding & marking.

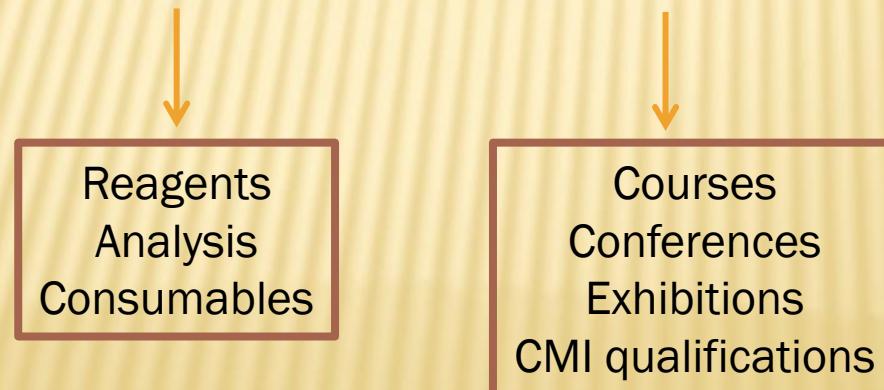


# How does the KTP programme help this project?

- Knowledge transfer between Keele University and Keeling & Walker Ltd.



- Budget for **resources** and **personal development plan**.



# Iterative product development



Prototype testing for a customer

Upscaling

# Benefits of the KTP programme

## KTP Associate

Management & delivery of a project  
Improve CV (conferences, courses).  
CMI qualifications + training modules in Ashorne Hill.

## Company

Revenue  
Knowledge transfer  
Improve position in the market

## University

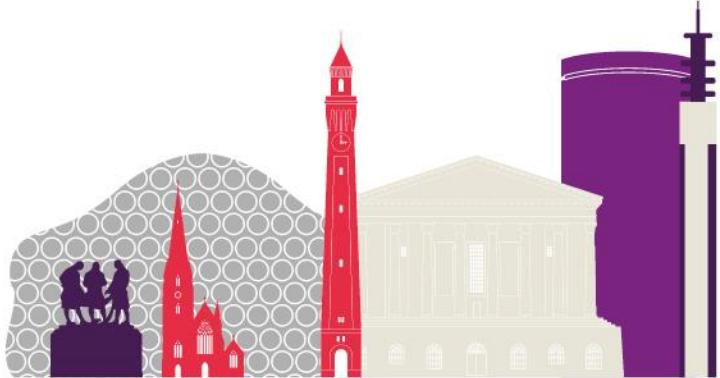
Knowledge transfer  
Publications in conferences & journals

# Synthesis of inorganic materials with near infrared absorbing properties

**THANKS FOR YOUR ATTENTION**

Dr. Elena Pérez-Barrado  
Keele University  
Keeling & Walker Ltd.

Next up:  
Robert Stewart,  
University of West of Scotland



Projecting KTP in the company  
Dr Robbie Stewart

**KTP Confidence**

# Sponsors

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Paisley Housing Association

University of the West of Scotland

Innovate UK: West of Scotland KTP

# Project Method for Procurement

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## Management Systems

Replaced every 10+ years

Low knowledge of IT systems

Cost between £250,000 and £1,000,000

# RISK

# Project Method for Procurement

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Tied in contract

Years of  
fire-fighting

RISK

High staff  
turnover

Loss of confidence in management

# Project Method for Procurement

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Template outputs

Timetable  
planning

**RISK**

Resource  
Evaluation

Costs assessment

# confidence: Business + Personal

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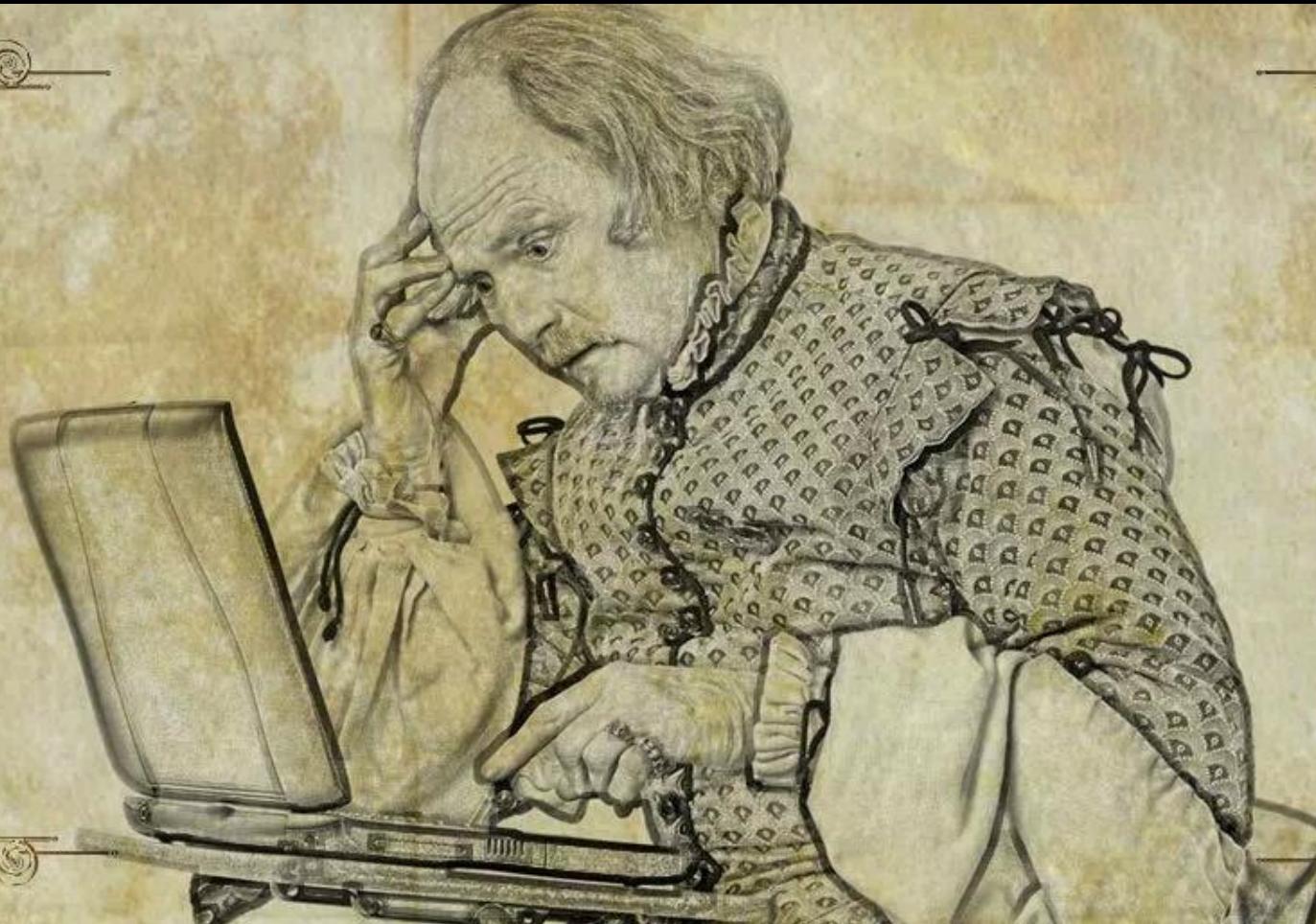
*“Lack of focus”   “Sponsor disengagement”*

*“Poor publicity”   “Project direction changes”*  
*“Lack of recognition”*

*“Disinterested internal staff”*

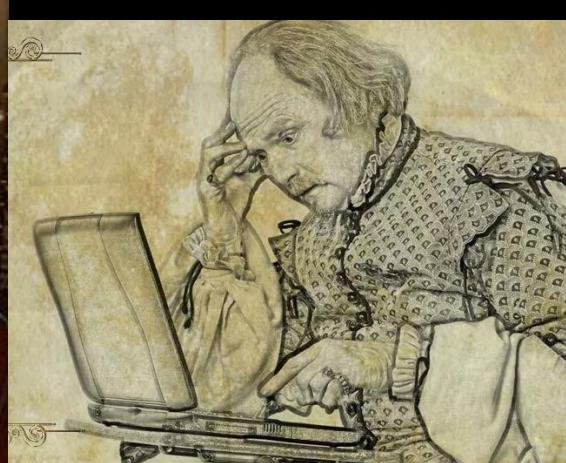
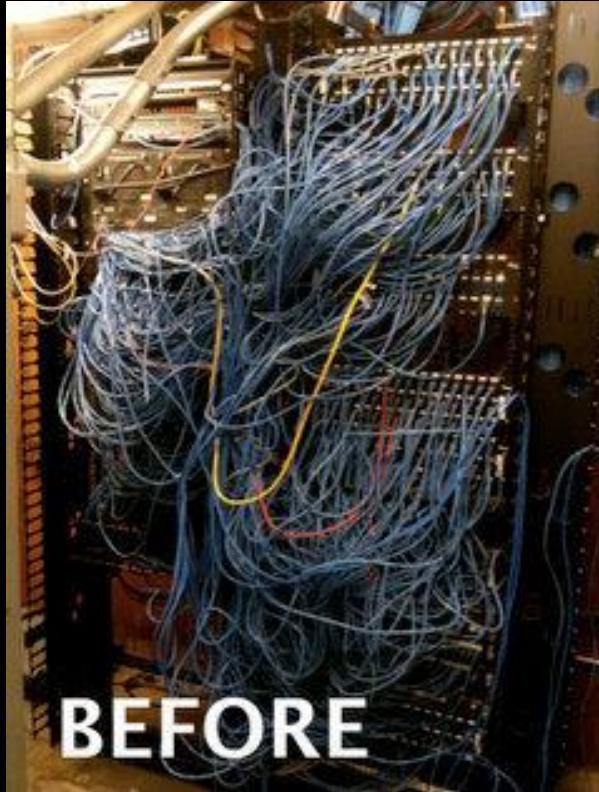
*“Burnout”   “Unassigned responsibilities”*  
*“Isolation”   “Frozen corporate culture”*

**“Write the script.”**



# confidence: Take Stock

Redraft the project plan



# confidence: Publicity

Management whiteboard: calendar & issues

CALENDAR					COMMS
		!			ISSUES

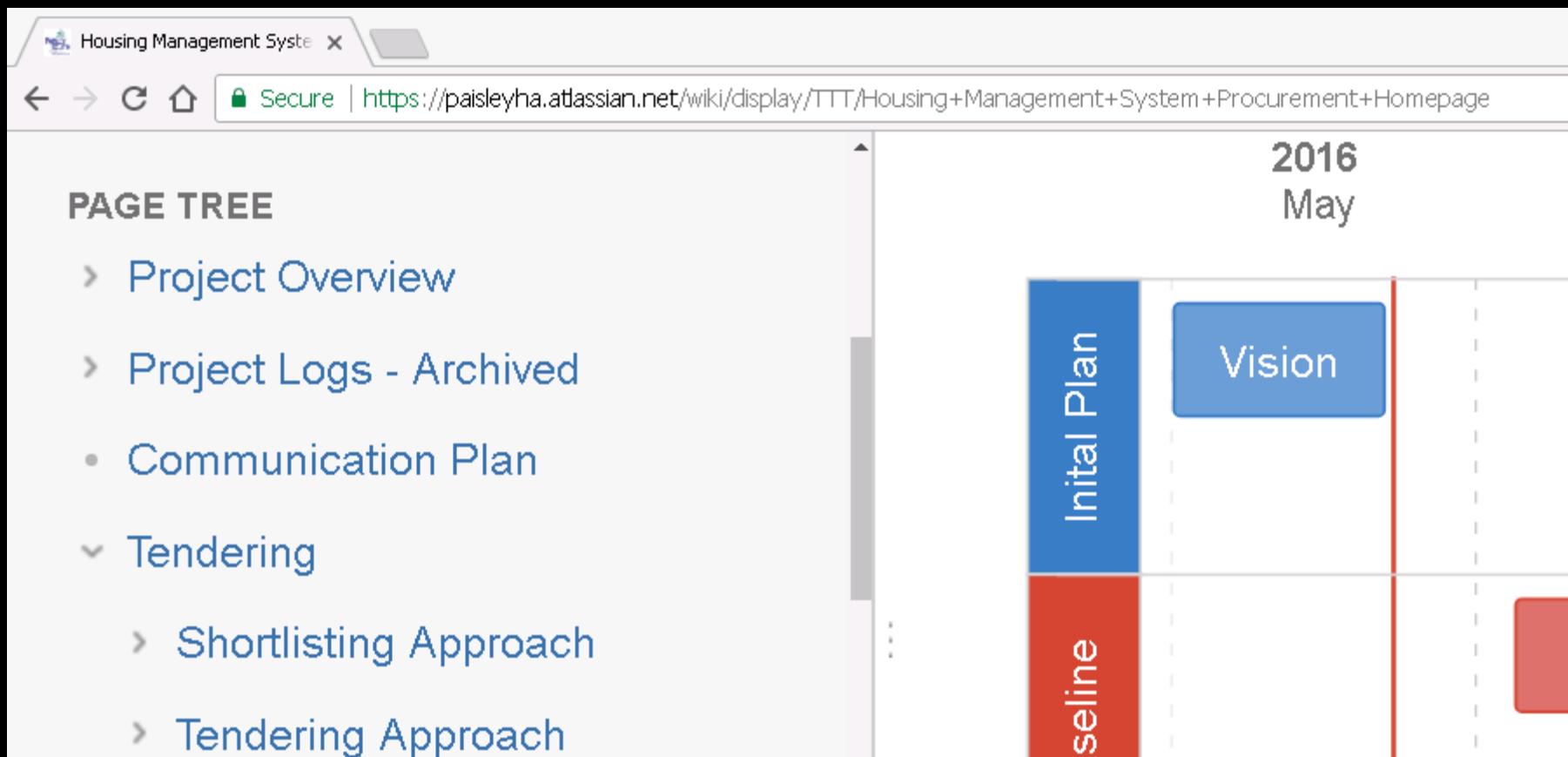
# confidence: Publicity

Staff whiteboard: Aims, Names & Gains

WORKING GROUPS	DIARY
Rents: AG, PS, RG	
Complaints: TS, FT	
OUTPUT	

# confidence: Control

## Cloud-hosted project management software



The screenshot shows a web browser window for a 'Housing Management System' (https://paisleyha.atlassian.net/wiki/display/TTT/Housing+Management+System+Procurement+Homepage). The left sidebar displays a 'PAGE TREE' with the following structure:

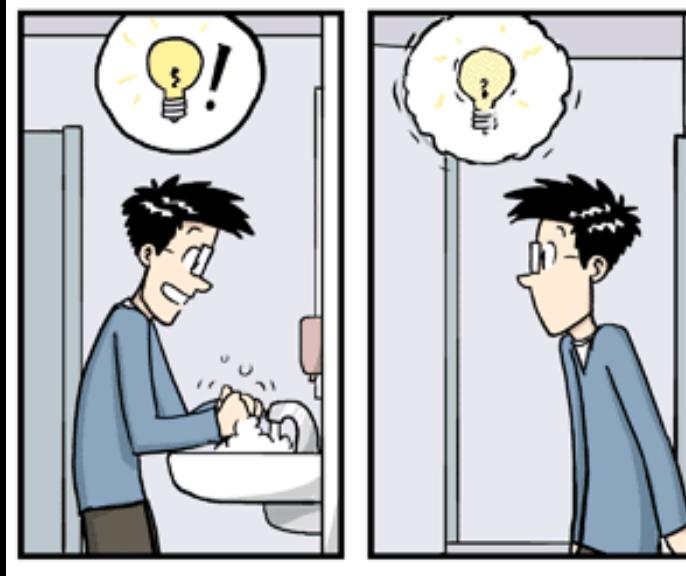
- Project Overview
- Project Logs - Archived
- Communication Plan
- Tendering
  - Shortlisting Approach
  - Tendering Approach

The main content area features a timeline for the year 2016, specifically for the month of May. The timeline is divided into two main phases: 'Initial Plan' (blue box) and 'Vision' (blue box). A red vertical bar marks the end of the 'Initial Plan' phase. A red box is also visible in the bottom right corner of the timeline area.

# confidence: Project Fluency

Give a lecture series

Atte



Programme

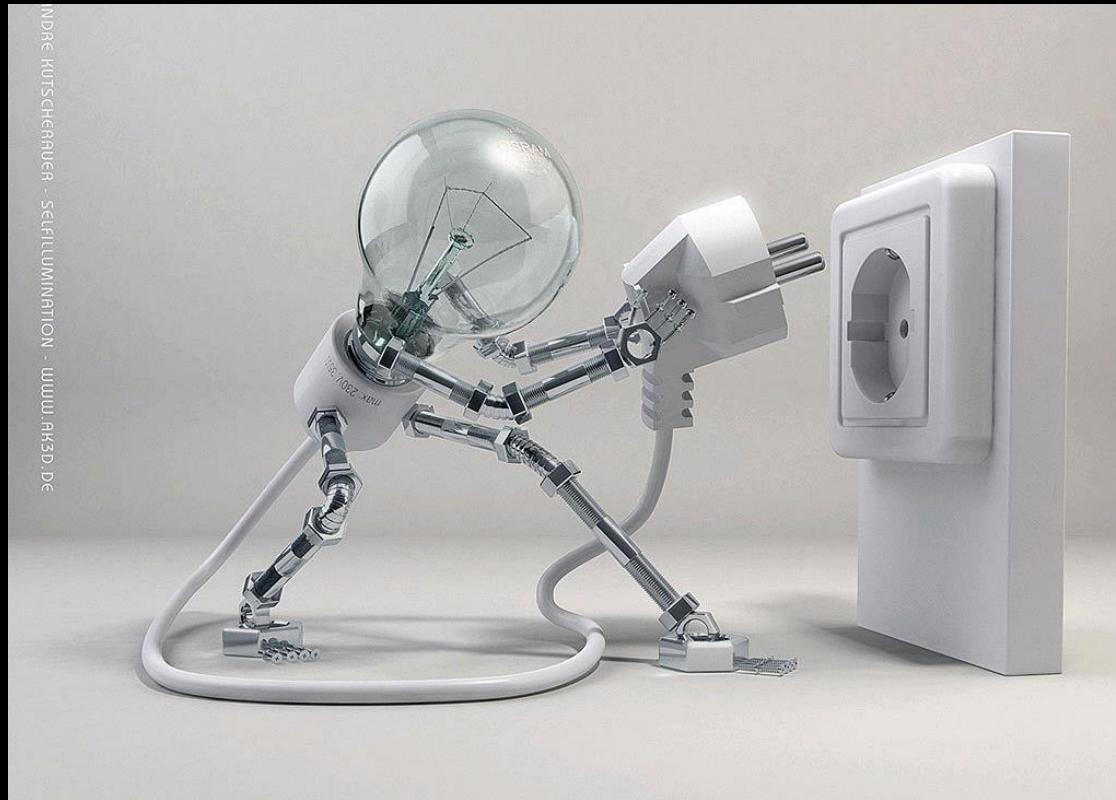
Book a conference

13:00 Lunch and Posters Presentations

14:00 Associate Presentations (2)

# confidence: Recharging

Take scheduled holidays!



# Be like Bill: Write the script

