Bridging the gap between industry and academia

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How can we work together?
Why should we work together?

- Better staff
- Better student experience
- Right thing to do
- Relevant research
- USP
- Better quality graduates
- Impact
- Training
- Company bottom line
- Funding
Sandwich Placements

75% Kent CS students go on placement in their third year.

Principles into practice:

• real salary

• real experience

win – win – win
Sandwich Placements

75% Kent CS students go on placement in their third year.

Principles into practice:

• real salary
• real experience
Student Projects

Just off the critical path

*Pro bono*

Prototype

A real customer and environment.
Recruitment

200,000 grads/yr
Employability
Student experience
‘Human resources’
Research

Joint research projects

• EU Horizon 2020
• BIS
• CASE

Contract research

Consultancy

Impact
KTP

Joint projects to transfer know-how from uni to company.

• Gov. funds 60%
• 2 year job for new grad
• Work for the uni but based in the company.
Training

Pharmacy CPD
The Big Journey
Drama for Pharma
Java coding for schools
And the rest …

Strategic advice from us
Strategic advice to us
Informal interaction
Student mentoring
Guest lectures

…
Impact
Impact

“an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia”

REF 2014

The research of 154 UK universities was assessed

They made 1,911 submissions including:

- 52,061 academic staff
- 191,150 research outputs
- 6,975 impact case studies

The overall quality of submissions was judged, on average to be:

- 30% world-leading (4*)
- 46% internationally excellent (3*)
- 20% recognised internationally (2*)
- 3% recognised nationally (1*)
The impact agenda

Showing how government money is spent …

… for the wider benefit of society.

The REF is retrospective www.ref.ac.uk

EPSRC etc. want researchers to plan to have an impact www.epsrc.ac.uk/innovation/fundingforimpact/
So what does it mean?
Can a robot teach a child how to interact with others?
Meet KASPAR, the interactive robot.

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<thead>
<tr>
<th>Type of Impact</th>
<th>Number of Case Studies</th>
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<tr>
<td>Automotive</td>
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<td>Environment</td>
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<td>Spinouts</td>
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http://cs-academic-impact.uk
BlueJ and Greenfoot

Decisive impact on teaching and learning coding.

1,000,000 downloads/year.
Students working as IT consultants … … getting it right and getting it wrong
This will tell you the story of an experiment.
Setting up an IT consultancy where the consultants are students.
The context
The big idea
How it works
People
Resources
Where next?
The context
Kent
University of Kent

Campuses in Medway and Canterbury
Industry in Kent

60,000 small companies
The big idea
The big idea

Students

Industry

Universities
A win for students

Invaluable practical experience.

Part of the course, so better results.

Very different from working for a big company.

Learn new skills, like negotiation.
A win for companies

High quality work

Work is supervised by an experienced consultant.

At a competitive price

Industry

Students

Universities
A win for the university

Better motivated students

Better links with industry

Better student exam results

Better student recruitment

Universities

Students

Industry
How it works
The KITC in a nutshell

Students work for clients.

Students ‘earn’ credit towards their degree.

Clients pay for work ... this and student fees pay the coordinators.

Academic team say how to give credit for the work.

Coordinators look after the business.

KIE sort out the contracts.
3 examples of work

- Re-implement in Java a touch-typing tutor for learning-disabled students. Originally written in Visual Basic, it should run from a server.

- Set up and support a linux-based network for a local charity organisation. Need availability of support.

- Develop a website for a local organisation, based on an open source Content Management System.
3 more examples

Provide an on-campus repair service for student laptops.

Can’t sell hardware but can install hardware and software.

Develop software in Java for a company making equipment for training on phone marketing and sales.

Deliver training for the clients of a local company of solicitors.

Also trained for Medway council.
The current offer

Streamlined offer begins with business diagnostics …

then offering a standard set of technology solutions …

… including a starter website, using a content-mgt system.
Stakeholders

- University
- Students
- Partners
- Customers
- Alumni
- Advisory Group
- Academic Team
- Kent Innovation and Enterprise
- Coordinators
- The Department
People
Managing client expectations

“We’re not IBM … and clients have to realise this.

However, we do need rules that

- explain to clients what they can expect, and
- explain to student consultants what they have to deliver.

“Do this … and I’d like it done by yesterday!”
The customer is always right?

“Yes it’s fine”

“Yes it’s fine”

... we ask for payment ...

“No it’s terrible”

We have to be completely clear about what we have to deliver, and what we do not.

This contract is not at all easy to get right.
Students work for money?

We thought that students would want to work in the Kent IT Clinic for money …

… in fact they would rather get credit, which will turn into better earnings in the long term.
Managing student expectations

“I’d like to …

… run this project.”

… talk to this potential client.”

The KITC practical courses expect different things from students than other courses.

That’s fine: they are not compulsory, but we have to be clear about what we expect from students.
Managing reputation

“Sorry I missed the meeting …

“Sorry I’m late …

“Sorry I didn’t get back to you about the server crash …

It’s very hard to establish a good reputation …

… but once you have lost it, it is very difficult to get back people’s trust.
Advisory Group

Advisory Group: people from outside the department who can help with KITC strategy.

Past students, industrial contacts, local council staff, ...

Chair of Advisory Group: help with choosing people, reassurance and business model.

Support for coordinators and students.

Others can help, especially with their experience.
Resources
It is almost never “light touch”

“Yes I’d like this …”

“and this needs fixing …”

... 6 months later ...

“and can you do this … ?”

We thought that we would have a lot of “one off” business, but in fact there’s little of that.

**Business continuity is a major problem.**
Everyone writes documentation?

“Can you add this ... ?”

“Can you fix this bug ... ?”

We’ve not always been able to answer these questions, without a whole lot of (wasted) work trying to work out what someone did a year ago!

It’s just something that we have to get right.
Pipeline

First Contact → Initial Estimate → Final Estimate → Work Done

How long?  How long?  How long?

We have no control over any of these delays.
Pipeline

First Contact
Initial Estimate
Final Estimate
Work Done

First Contact
Initial Estimate
Final Estimate
Work Done

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Initial Estimate
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Initial Estimate
Final Estimate
Work Done

First Contact
Initial Estimate
Final Estimate
Work Done

First Contact
Initial Estimate
Final Estimate
Work Done
All customers want something different

“I’d like one of these.”

“I would too …”

“And me …”

Very little similar except for Content Management Systems website work.

We need to know consultants’ skills and also we have to be prepared to train them.
Estimation

“I can write this in a couple of weeks …”

“… and then we can give it straight to the client.”

What gets forgotten? Time to understand the problem, to learn new technology, to test, to fix bugs, to integrate, to deploy, …

We must learn from experience … and mistakes!
Is agility possible?

It’s a blessing and a curse to be part of a large organisation: they help with contracts and insurance, but it takes time to get things done.

Recognise this, and make sure that everyone knows this is the situation.
Summing up
How far we have come

Over 250 students have first-hand experience of working as an IT consultant, before they graduate.

Two campuses, as many as 50 consultants each year.

National awards for “student project of the year” and other prizes.

The graduates of tomorrow helping the businesses of today
Where next?

Become self-sustaining …

… earn enough to keep the business going on its own.

Client base … can we find something where we get repeat business?

Decide what we can do … and when we should say “no”

Get the processes right …

… we have to decide what are the most important factors for success and …

… those which contribute most to the risk of failure.

www.kitc-solutions.co.uk
How can we work together?
Why should we work together?

Better staff  
Better student experience  
Better quality graduates  
Impact  
Relevant research  
Training  
USP  
Company bottom line  
Right thing to do  
Funding
Thank you
KITC to add?

Slides to add

Something about procedures
- getting them right
- not too complicated, and of apparent value to students
- student impulses to be bureaucratic (avoidance strategy?)

Something more detailed about the cash breakdown?

Something about internal systems
- documentation
- not too complicated
- teamwork
- ability to hand over
- etc
Abstract

Computing is a practical subject – in the end, computer scientists are engaged with building complex artefacts that affect the world we live in. While an academic course will be able to equip students with a range of skills, and academic researchers are able to advance the boundaries of their subject, it is only in partnership with industry that students can learn the practice of their field and researchers can have an impact on the future direction of computing. In this talk I will talk about the different links between industry and academia, giving some examples from Kent, and others from the rest of the UK.