Innovation: The Scaling Challenge

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CPI: From Innovation to Commercialisation
Centre for Process Innovation Limited

- UK based Technology Innovation Centre
- Independent Company Limited by Guarantee founded in 2004
- Key part of UK’s High Value Manufacturing Catapult (HVMC)
- Innovation partner of choice for large and small companies
- International with customers and partners in 35 countries
The High Value Manufacturing Catapult: 7 Centres

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<tr>
<th>Centre</th>
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<td>Advanced Forming Research Centre</td>
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<td>Advanced Manufacturing Research Centre</td>
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<td>Manufacturing Technology Centre</td>
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<td>National Composites Centre</td>
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<td>Nuclear Advanced Manufacturing Research Centre</td>
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<td>Warwick Manufacturing Group</td>
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The HVM Catapult:

- **£460 million** invested to date
- **Over £240 million** investment for next 4 years
- **More than 2300** industry clients
- **>1300** staff across the country
CPI is a UK technology innovation centre helping companies to **develop, prove, prototype** and **scale-up** their products and processes.
Graphene Applications Innovation Centre

- £14 million Graphene Applications Innovation Centre hosted by CPI announced March 2014

- Building on existing capabilities to provide facilities and expertise to help companies to develop, prove, prototype and scale up graphene based products and processes.

- Graphene’s electrical and thermal conductivity, optical purity and mechanical strength could be used in high-capacity batteries, flexible screens, ultra-fast transistors and other electronic components, super-bright lasers and materials from sports equipment to aircraft wings.
Printable Electronics at CPI

CPI has established open-access capability in the scale-up and commercialisation of printable electronic applications.
What is Innovation?

The art or science of converting existing inventions and ideas into practical products or services that can be used in everyday life.
The CPI Innovation Integrator® Process

TRL 1-3
Research & Invention
Mainly Public

TRL 4-7
Innovation
Public/Private Collaboration

TRL 8 & 9
Commercial Market
Private

Innovation Centres translate research into the clarity of a commercial business proposition

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Where does Innovation fit in?

Innovation costs money at every stage up to TRL 7. Product is successful and money is recovered at TRL 9.
The CPI Innovation Integrator® Process

Without all these factors in place Innovation will fail
Long term Commitment and Collaboration is essential
Innovation Across the Supply Chain
The Innovation Equaliser®

Supply chains do not function unless all steps are higher than TRL 7
Focus innovation and development on the low TRL steps
## Innovation Summary

Long term commitment and collaboration are the key to successful innovation

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<td>Innovators convert inventions into successful commercial businesses</td>
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<td>Innovation is a complex systematic process: TRL is an international approach</td>
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<td>If innovation is not focused on a market need (whether perceived or not) then it will fail</td>
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<td>Success needs the right people to come together, in the right place at the right time</td>
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<td>Innovators gravitate to places with favourable conditions available to get their idea to market</td>
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<td>Collaboration is essential</td>
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Innovation is a cash drain until it gets beyond TRL 7:

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<td>It needs long term commitment</td>
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<td>It needs organisations like CPI to de-risk the process</td>
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Case Study: Polyphotonix

- Biomedical device providing non invasive phototherapy for diabetic retinopathy.
Case Study: Polyphotonix

- Started working with CPI in 2009
- Received support from people and equipment in CPI
- Grown to 20 employees
- CE Approvals, clinical trials
- Entered market 2015

“It was very risky, if we hadn’t had access to the Centre for Process Innovation, we would have needed £30m of kit, and that would have been impossible for a startup.”

Richard Kirk
Chief Executive
PolyPhotonix
Case Study: PragmatIC

- FlexIC microprocessor
Case Study: PragmatIC

- Started work with CPI in 2012
- Used a range of equipment in CPI’s facilities as a ‘Virtual Pilot Line’.
- Now has 15 employees working at CPI
- £5.4M funding round 2015 (CIC / ARM)

“Working with CPI has saved us at least 18 months and capital investment in the order of £10-20 million.”

Dr Richard Price
Chief Operating Officer
PragmatIC Printing
REMEDIES: PRINTED ELECTRONICS

Develop product concepts which demonstrate the potential for printed electronics in the Pharmaceutical Supply Chain, around ‘intelligent packaging’

Outputs will be:
- Prototype samples, cost analysis and a scalable manufacturing route.
- Assess commercialisation route for prototype products; determine supply chain issues and partners; determine steps required to implement this supply chain.

Strands summary
- ‘Intelligent packaging’ product concepts
- Prototype samples
- Commercialisation route(s)
SMART PACKAGING

NFC

- Near Field Communication
- Designed for use by devices within close proximity to each other
- Smart phone enabled & app's available / also with a dedicated reader

RFID

- Radio Frequency Identification (RFID)
- Greater operating distances than NFC
REMEDIES: PRINTED ELECTRONICS

During the project, AZ, CPI & GSK will be seeking to address key supply chain issues & ensure that exceptional (& practical) science remains at the heart of what we do.

We will be working through a journey, taking standard electronic components and engineering solutions for a flexible, digital packaging market.
Thank you...
For more information visit www.uk-cpi.com

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Twitter: @ukCPI