Centre for Data-driven Innovation in Manufacturing

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University of Strathclyde

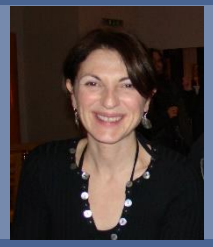
Advancing UK manufacturing through data-driven technologies and innovative people management

Introductions	**(10:05)**
Data Driven Transformation & the Centre for Data-driven Innovation in Manufacturing	
Breakout Groups	**(10:20)**
Breakout Group Feedback	**(10:35)**
Next Steps	**(10:50)**
Next Questions	**(10:55)**

Introductions

Prof Ian Cunningham
Strathclyde Business School
Professor of Employment Relations

Prof Jonathan Corney
School of Engineering
Professor of Digital Manufacturing



Prof Dora Scholarios
Strathclyde Business School
Work, Employment & Organisation

Prof Andrew Sherlock
School of Engineering
Professor of Data-driven Manufacturing

ISCF Manufacturing Made Smarter Research Centres

£20 million funding available through EPSRC

4-5 centres to be funded across UK – 42-month duration

Objective: to increase adoption of IDT's in UK manufacturing

Industrial partners co-create research programme with academia

Industrial match funding (£ or in-kind) of 25% required at application – rising to 60% during lifetime of Centres

How can data-driven approaches in Big Tech and investment banking transform manufacturing through innovative people management?

In Big Tech and investment banking:

Data platforms enable a culture of Quants and Developers

Staff can quicky access and explore large amounts of data

Algorithms are rapidly developed and deployed to address business problems

In Manufacturing:

Data is siloed in spreadsheets, ERP and PLM systems

There is no easy access to analytics and development platforms

Workforce skills and people management require further innovation

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Target Sectors & Example Challenges

Digital twin of facilities

Digital twin of products

Data interoperability

Understanding data across value chains

Production planning/Scenario modelling

Agile product/volume changes aligned to customer need

Changing quality requirements

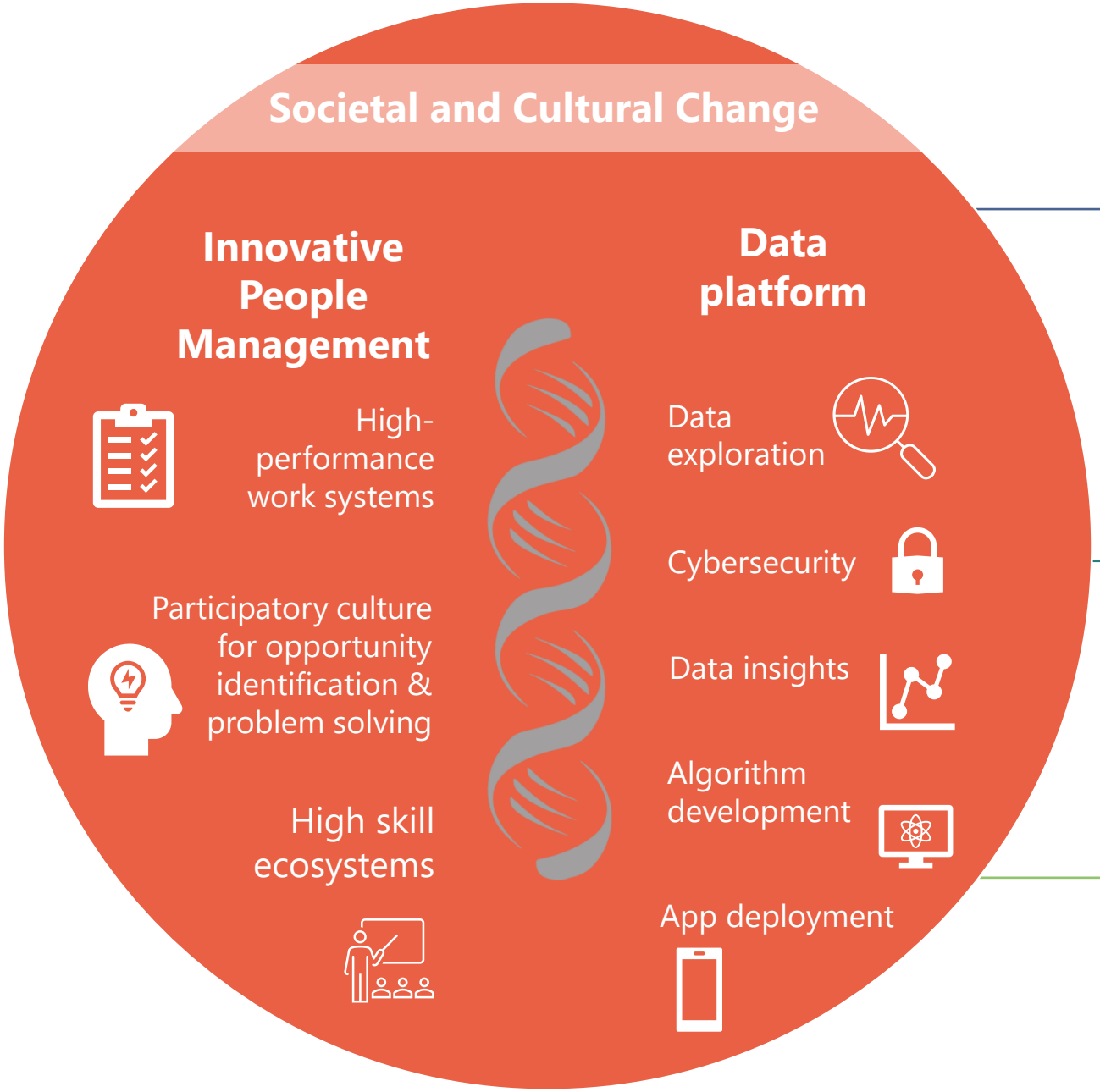
Demand data for supply chain optimisation

Dynamic, real time production planning & scheduling

Connected, secure data

Job re-design & skills

Workforce engagement & adoption



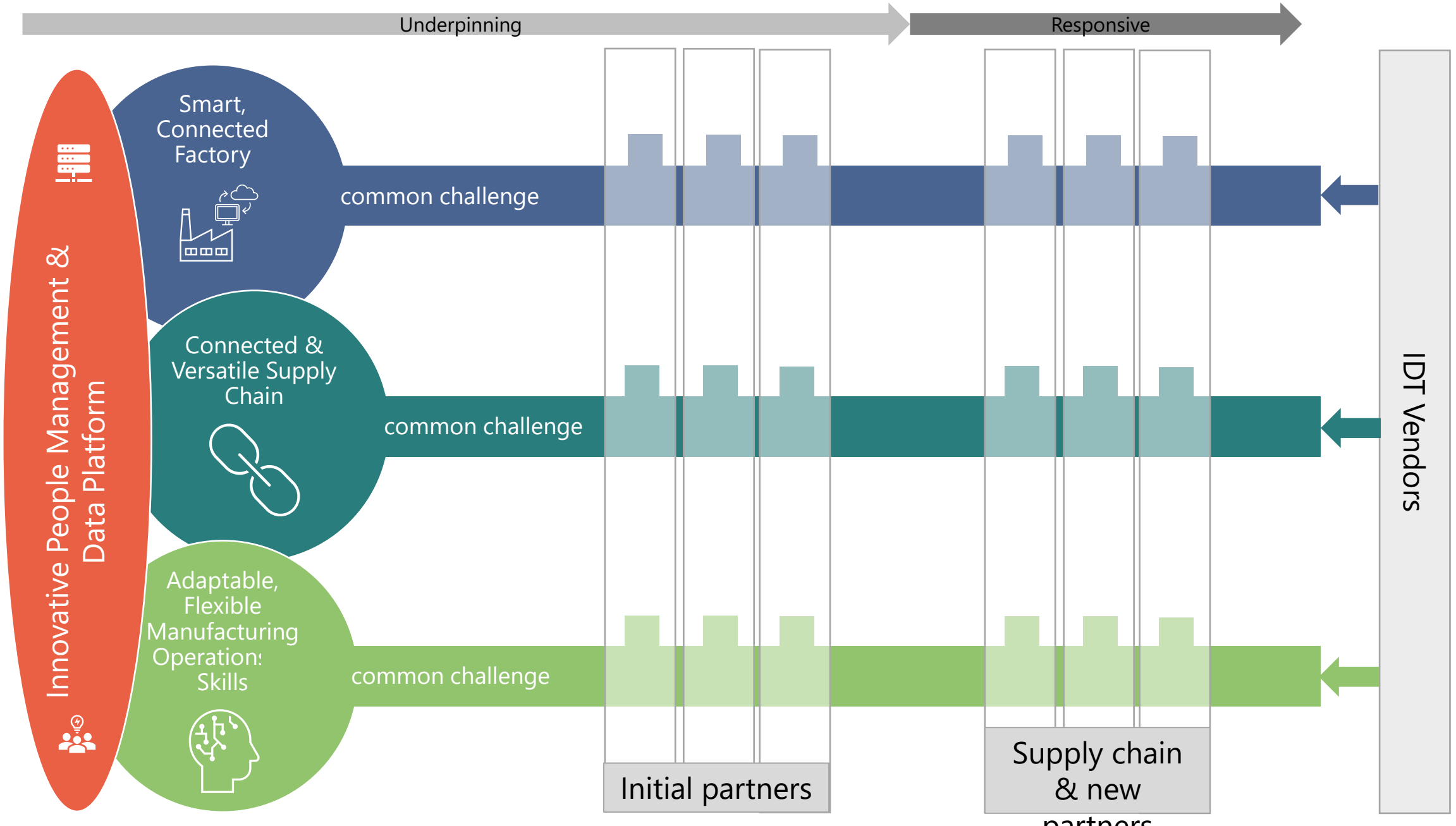
Smart, Connected Factory

Connected & Versatile Supply Chain

Adaptable, Flexible Manufacturing Operations & Skills

Demonstrators through programme of R&D chosen by industrial partners

Approach


Underpinning
Responsive
Innovative People Management & Data Platform
Smart, Connected Factory
common challenge
Connected & Versatile Supply Chain
common challenge
Adaptable, Flexible Manufacturing Operations Skills
common challenge
Initial partners
Supply chain & new
IDT Vendors

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babcock™

LEONARDO

ANACONDA

CeeD
Centre for Engineering Education & Development

ShapeSpace

Boundary PLM

SMAS
Scottish Manufacturing Advisory Service

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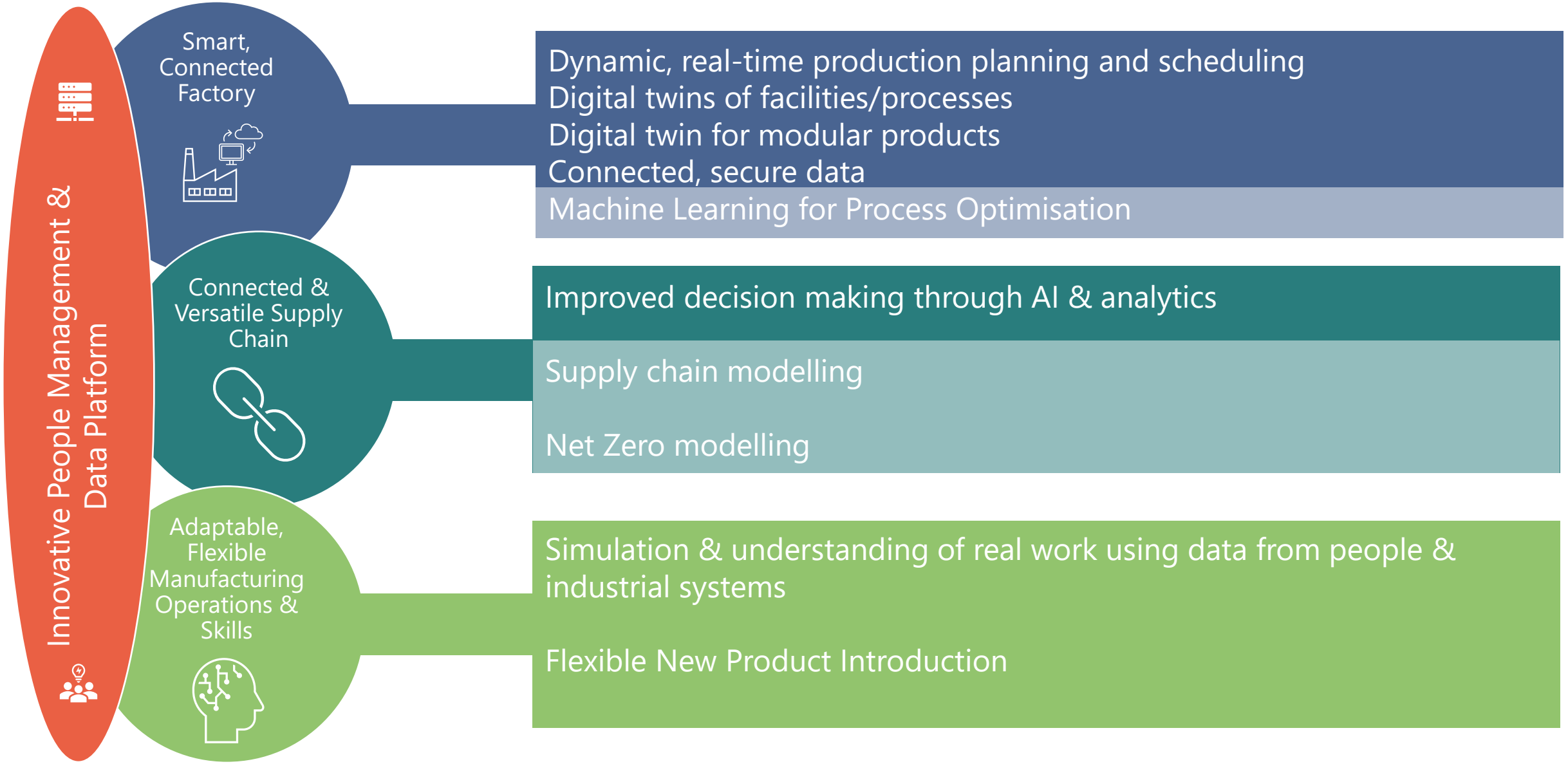
Confirmed Partners

Potential Case Studies
(actual case studies driven by industrial partner need)



Example Case Study: Machine Learning Optimisation of Manufacturing Process

The Problem:

Anecdotal evidence of excessive failure of board on avionics system

Problem identification:

Small team undertakes initial investigation to quantify problem (data from MRO database)

Team Formation:

Multidisciplinary team formed: maintenance, manufacturing & design engineers, project manager, data scientists

Problem exploration (a):

Data gathered, missing data assessed, connections made between datasets (data from MRO database, ERP, PLM and MES systems)

Example Case Study: Machine Learning Optimisation of Manufacturing Process

Problem exploration(b):

Correlations found between failure, process parameters for adhesive process & environmental conditions

Problem exploration(c):

Experiments & testing to confirm cause of failures

Solution:

Design of improved process control system

Monitoring:

Deployment of ongoing monitoring to quickly identify failures in future

Example Case Study: Machine Learning Optimisation of Manufacturing Process

Early conclusions:

A data-centric approach proves successful at solving a significant business problem

The solution to problem required input from multiple domain experts, data scientists & project manager

Collection and integration of data is hard and time-consuming

Cross-skilling of team was effective (engineers learn about data, data scientists gain domain knowledge). Significant job satisfaction in team

Desire to actively find other problems and apply approach to solution of them

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Flexible engagement with industrial partners

Topics of research can be tailored to partner requirements

Spectrum from primarily Uni led research to primarily industry R&D with Uni support

Timing to suit industry partners over course of programme

Industrial Partners

Breakout Session

Questions:

What is the maturity of the digital vision in your business?

What are the roadblocks to deployment of IDTs in own business? Knowledge, skills, technology?

What are the roadblocks to deployment of IDTs in the manufacturing sector? Knowledge, skills, technology?

Are there particular challenges that your business would like to address via digital technologies?

Are there particular challenges that you believe the manufacturing sector (and supply chain) should address via digital technologies?

Next Steps

Finalise industry members of consortia	Oct 2020
Agree programme of work	Nov 2020
Secure initial match funding*	Nov 2020
Develop proposal	Nov 2020
Submit proposal	17 Dec 2020
Invitation to interview*	Apr 2021
Centre launch*	Jun 2021

*Subject to EPSRC selection

Any Questions?

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Thanks

Please contact us if you have any questions

One to one meetings can be arranged to discuss your particular requirements

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