

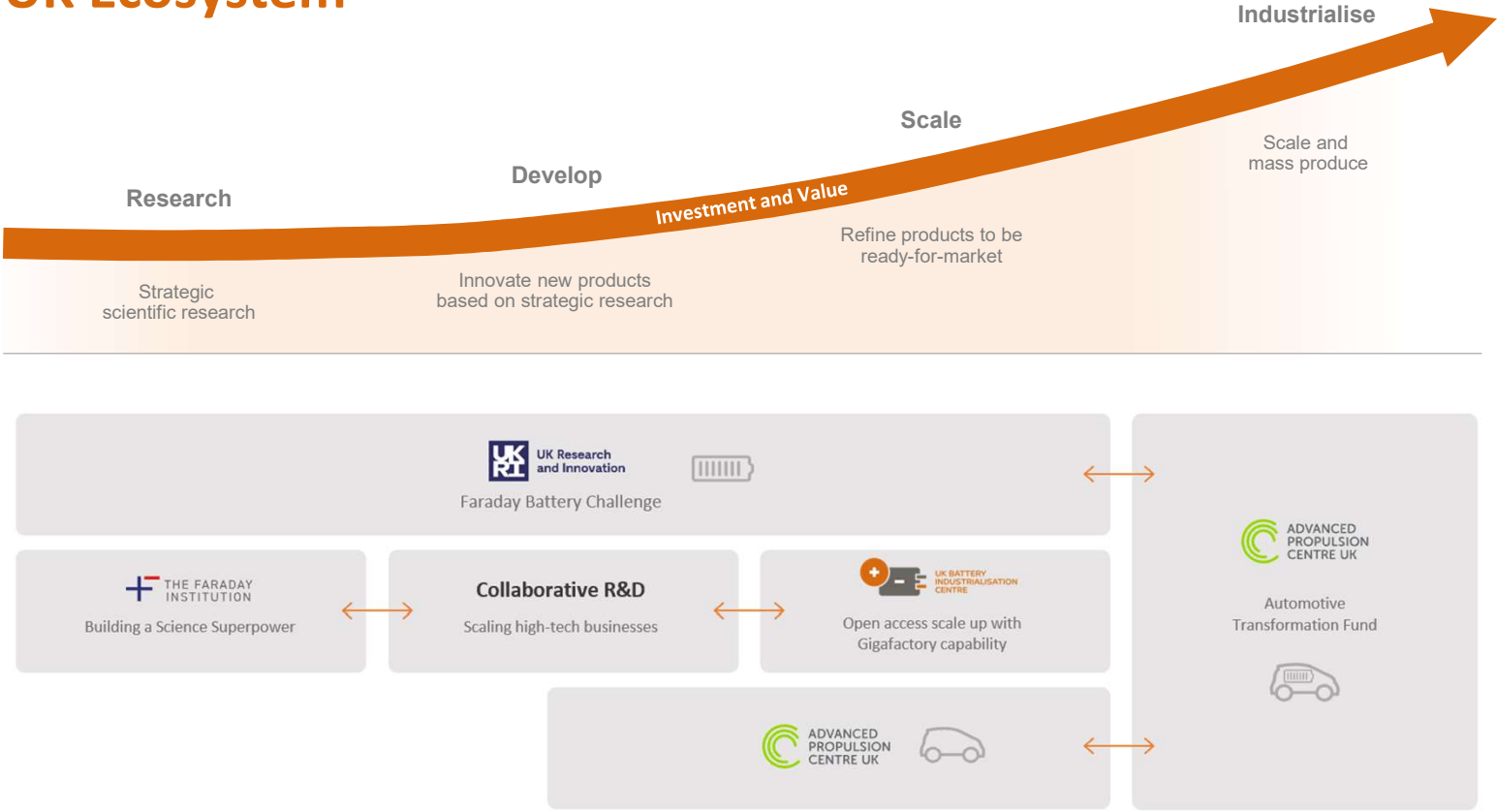
UK Battery Industrialisation Centre

John Poli

10th October 2022



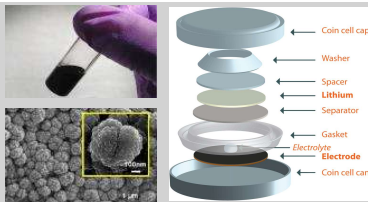



The UK Ecosystem



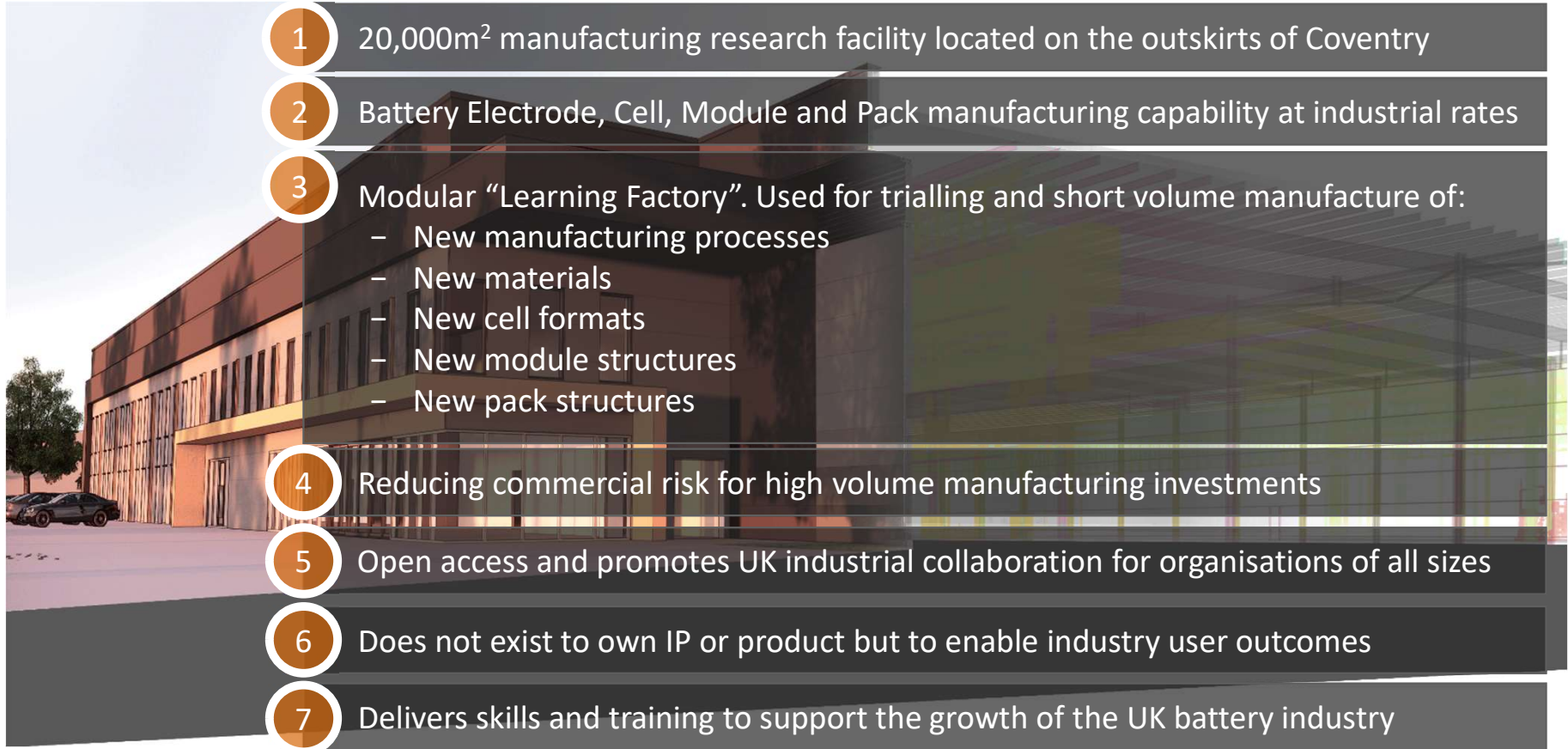
Source: Advanced Propulsion Centre

Bridging the Gap from R&D to Mass Production

UKBIC
scope

Volume, TRL, MRL										
Gramme Scale			Kilogramme Scale			Tonne Scale			Giga Scale	
										
Characteristic	<ul style="list-style-type: none">University scale research labs using small quantities of hand-made materials.Fundamental materials researchInitial half-cell experiments at coin cell scale.			<ul style="list-style-type: none">Corporate R&D pilot line or university / Catapult centre.Used to demonstrate early scalability of materials to full size cellDevelop and demonstrate electrode mixtures, deposition processes and cell formats.			<ul style="list-style-type: none">Full-scale GWh/yr manufacturing facilities used at low output rate.Used to develop and validate materials, cell design, manufacturing processes and parameters at industry rates prior to full plant investment.			<ul style="list-style-type: none">Full-scale, high volume manufacturing plant. Typically 6-50GWh/year.Used to deliver very large volumes of cells with no variation or flexibility to chemistry, format or quality.Cost/kWh and process consistency are critical.
	TRL 1	TRL 2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9	
	Principles & Research	Explore Applications	Analytical Experiments	Validation & Requirements	Design & Performance	Model & Prototype	Performance & Testing	Test & Demonstrate	Real World & Launch	
	Research & Development			Industrial Engineering			Commercialisation			
Manufacturing Readiness	MRL 1	MRL 2	MRL 3	MRL 4	MRL 5	MRL 6	MRL 7	MRL 8	MRL 9	MRL 10
	Implication & Materials	Identify Processes	Proof of Concept	Identify Technology & Test	Prototype Materials, Tools & Skills	Processes & Detailed Costs	Pilot Line & Materials	Process Maturity Demonstration	Manufacturing Processes Proven	Production Ready
	Material Solution Analysis				Technology Development		Engineering & Manufacturing Development		Production & Deployment	Operation & Support

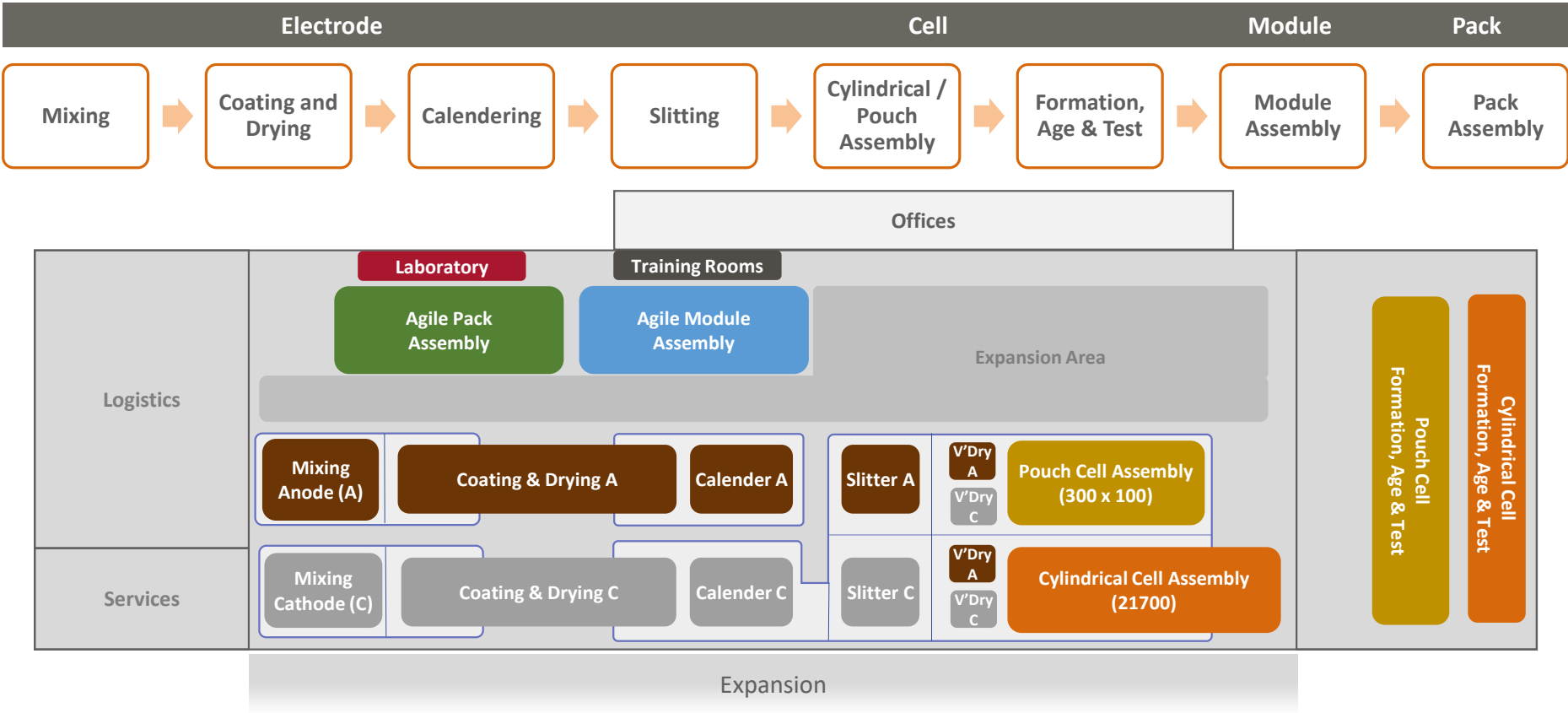
Key Facts



- 1 20,000m² manufacturing research facility located on the outskirts of Coventry
- 2 Battery Electrode, Cell, Module and Pack manufacturing capability at industrial rates
- 3 Modular “Learning Factory”. Used for trialling and short volume manufacture of:
 - New manufacturing processes
 - New materials
 - New cell formats
 - New module structures
 - New pack structures
- 4 Reducing commercial risk for high volume manufacturing investments
- 5 Open access and promotes UK industrial collaboration for organisations of all sizes
- 6 Does not exist to own IP or product but to enable industry user outcomes
- 7 Delivers skills and training to support the growth of the UK battery industry



Process Equipment Overview



What We Do

UKBIC Use Cases:



'Make to print' to enable investment

UK growth and benefit



Prototyping at scale

From materials to packs



Knowledge Transfer & Skills Development

Hands-on, real world experience



Collaborative R&D

Future technology scale-up



Consultancy and Advisory Support

UKBIC Customers:



Propulsion

Automotive, aerospace, rail, OHV, marine



Energy Storage

Grid, commercial, domestic



Industrial and Other Application

Warehousing, robotics, etc



Battery Cell Manufacturers

Tier 1 Producers



Battery Supply Chain

Materials, equipment, components

Thank You



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