

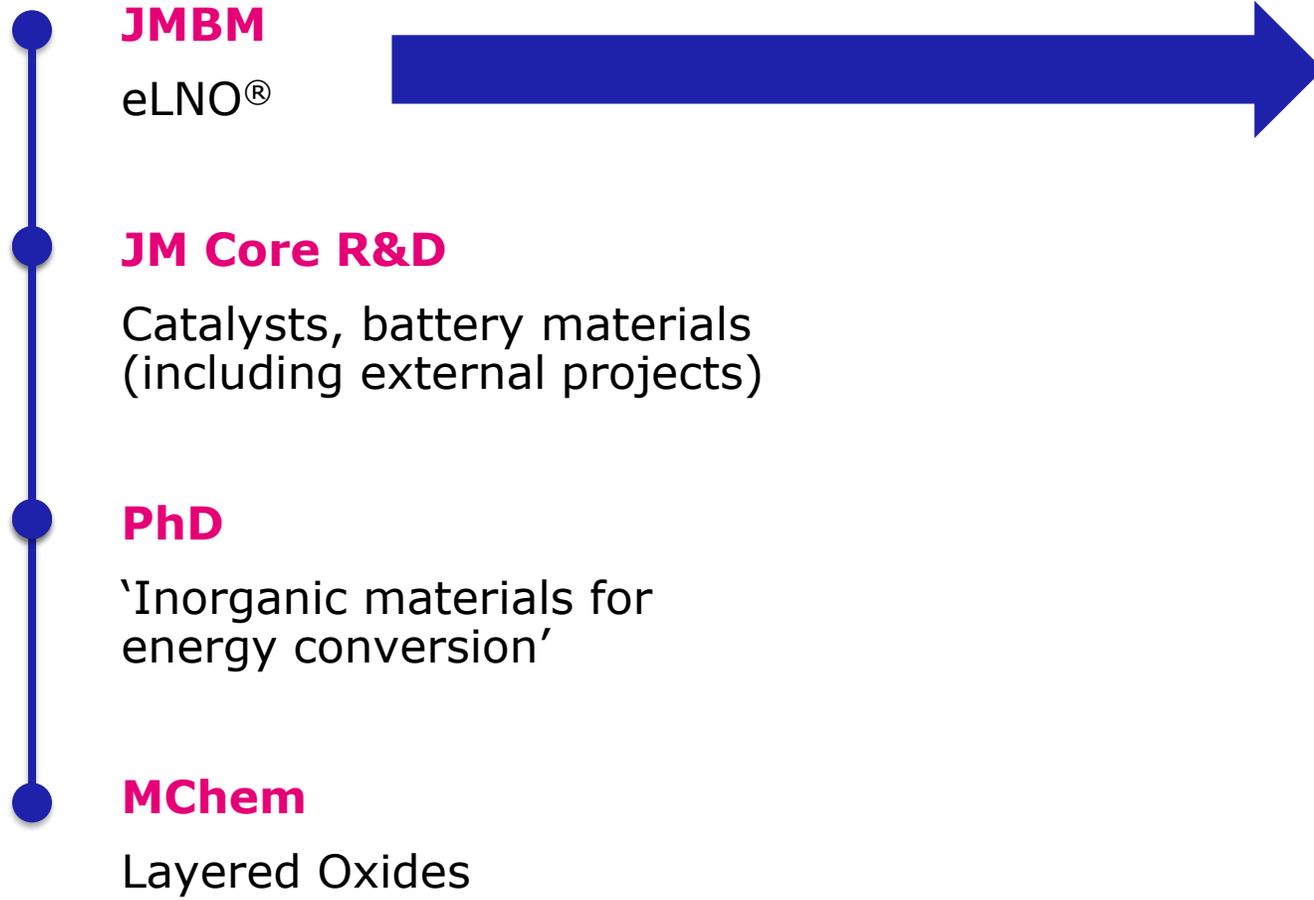
Johnson Matthey
Inspiring science, enhancing life

Acceleration of eLNO[®] Commercialisation and Development Through a Start-up Culture

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Personal Background



Case study explored in this talk

Accelerating progress
using Start-Up principles

Customer and Production
focus in an R&D
environment

Our current position in the battery material value chain

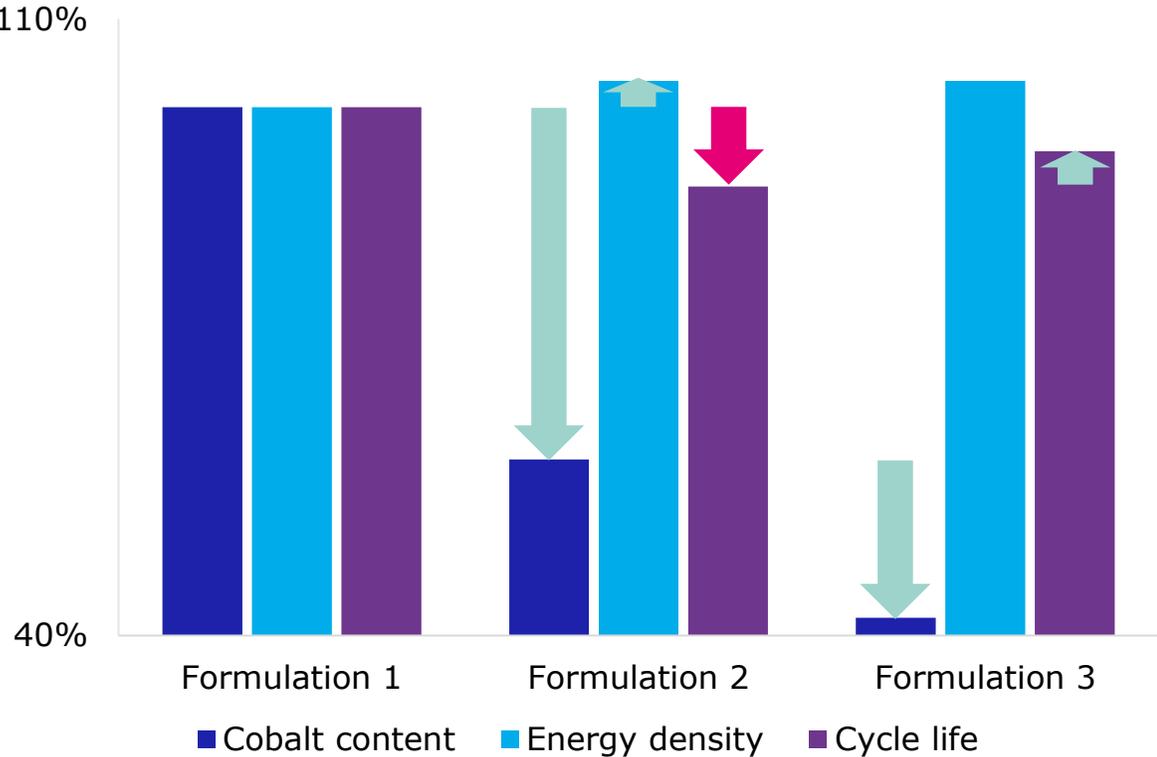


Cathode Materials

LifePower® Lithium iron phosphate	eLNO® High nickel, low cobalt
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Customisation is key to capturing value

Tailoring eLNO[®] to meet customer requirements



Technology expertise enables rapid development and customisation

Committed to customisation with positive customer feedback:

*"JM is a **preferred** cathode material company to work with due to fast response, **willingness to customise** the product [and] investing in science"*

No single material meets the needs of all customers

How have we driven this?

Accelerating progress through a non-traditional R&D setting

Adopting a Start-up Culture

Mindset shifts

Embedding a customer focus

Getting comfortable with ambiguity and risk

Collaboration across JM

Working across functions to understand the bigger picture

Leveraging strengths in other parts of JM

Building the team for success

Rapidly expanding the team looking for 'team fit' and a start-up mindset

Diversity of thought and experience; not always looking for proven track record in the battery field

Embedding a 'Production Mindset'

The Importance of Customer Focus and Taking Risks



Minimum Viable Product

Voice of the customer

It is not the scientist in the lab who determines if their latest material or process is better than the previous version

How do you know what the customer wants?

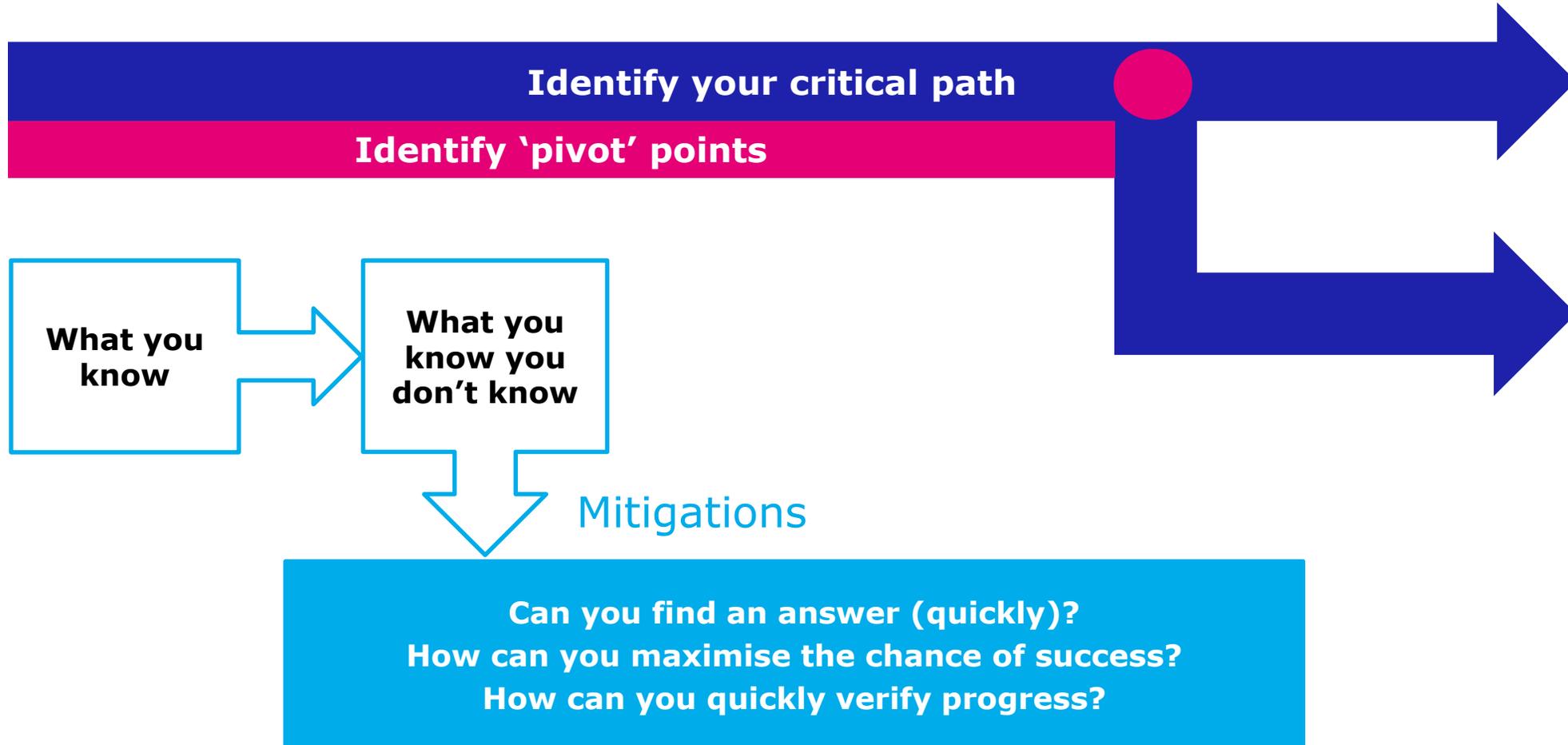
How do you get feedback from them quickly so you don't spend time going down the wrong path?

Speed - not perfection - is key

The faster you can understand what your customer wants, the sooner you can address their needs

Taking Risks

Making decisions when we don't have all of the data



Collaboration across JM

Every team is greater than the sum of it's parts

Metal procurement and management

- Long history of working with and scaling Ni compounds (100+ years of Ni based powder manufacture)
- Leveraging Ni and Co contracts
- Strategic partnership with Nemaska Lithium



Manufacturing excellence

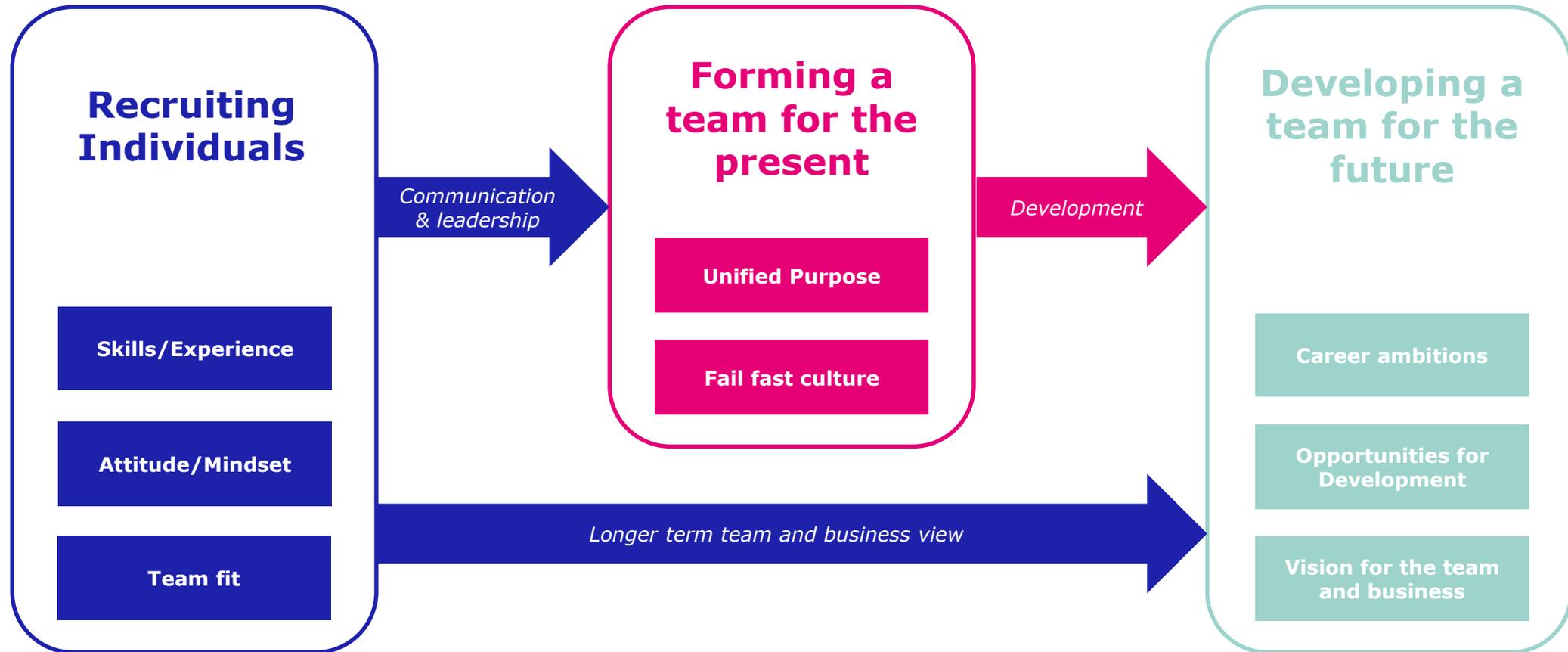
- History of supplying battery materials into automotive customers

40+ years of automotive supply

- Largest market share of automotive catalysts
- Experience with automotive accreditation (ISO, TS16949, VDA)
- 1 in 3 cars on the road use a JM catalytic converter

Building the team for success

For now and into the future



What does success look like?

The importance of purpose, objectives and agility

Why are the team here?

Aligned to steer through uncertainty and change

Purpose

Objectives

What do we need to do, and how do we know when we've done it?

Targets and measures of success

External alignment

Are we working on the right things?

Objectives under constant review to ensure they stay relevant

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