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# Project Controls Expo – 13<sup>th</sup> Oct 2015

## Emirates Stadium, London

**An overview of High Speed 2**  
***(including a pragmatic approach to EV)***

# About the Speaker

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- Will is the Programme Control Director for HS2 Ltd responsible for the design and implementation of the systems, process and people capability to deliver the scheme on budget and to time in an emerging world of new technology and ways of working that encompasses BIM as part of the way we deliver projects successfully. Previously, Will was Head of Programme Controls at EC Harris where he oversaw programme controls for the successful delivery of the new Heathrow Terminal 2a project. He has worked on many large infrastructure programmes in the UK and abroad including West Coast Route Modernisation, Qatar National Vision, Dubai Metro, North Sea projects and the Channel Tunnel.
- Will has created new and sustained profitable business units specializing in programme management and controls. He has formed and led PMO's and managed teams to deliver programmes covering all aspects of product design, manufacturing launch, capital design and construction activities in often difficult and demanding circumstances.

# About the Topic

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- Addresses some of the key drivers for the HS2 Programme such as why HS2 so important to rebalance and build a sustainable economy, as well as being a catalyst for growth for Britain.
- Outline how HS2 are delivering this vision by developing a world class, optimised Programme Controls function that integrates best in class systems and innovative processes that have the benefit of experience many years in the making.

# Stockton to Darlington Railway

September 27<sup>th</sup> 1825

190 Years Ago



# September 18th 2015 – 190 years later

## Financial Times

“.....The owner of one of the biggest steel plants in the UK is to suspend production.

.....The decision threatens the future of thousands of jobs at the Teeside site and thousands more in the supply chain.”

## July 28th 2015 – UK GDP Growth:

10 successive quarters of growth!!

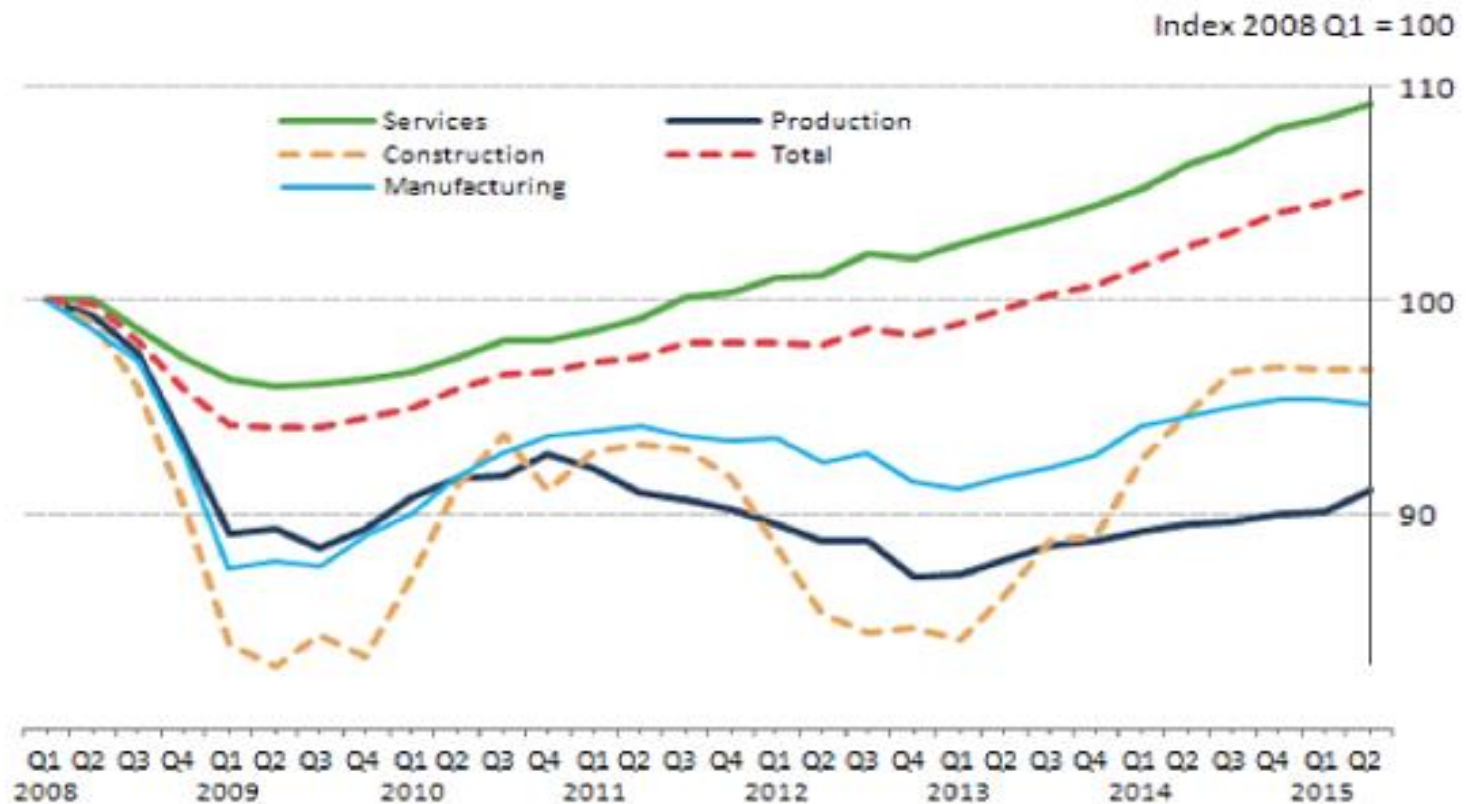
“We’ve rarely had it so good. Today’s GDP data will confirm UK is enjoying its 3<sup>rd</sup>- longest spell of growth since 1955”

@RBS\_Economics

# July 28th 2015 – UK GDP Growth:

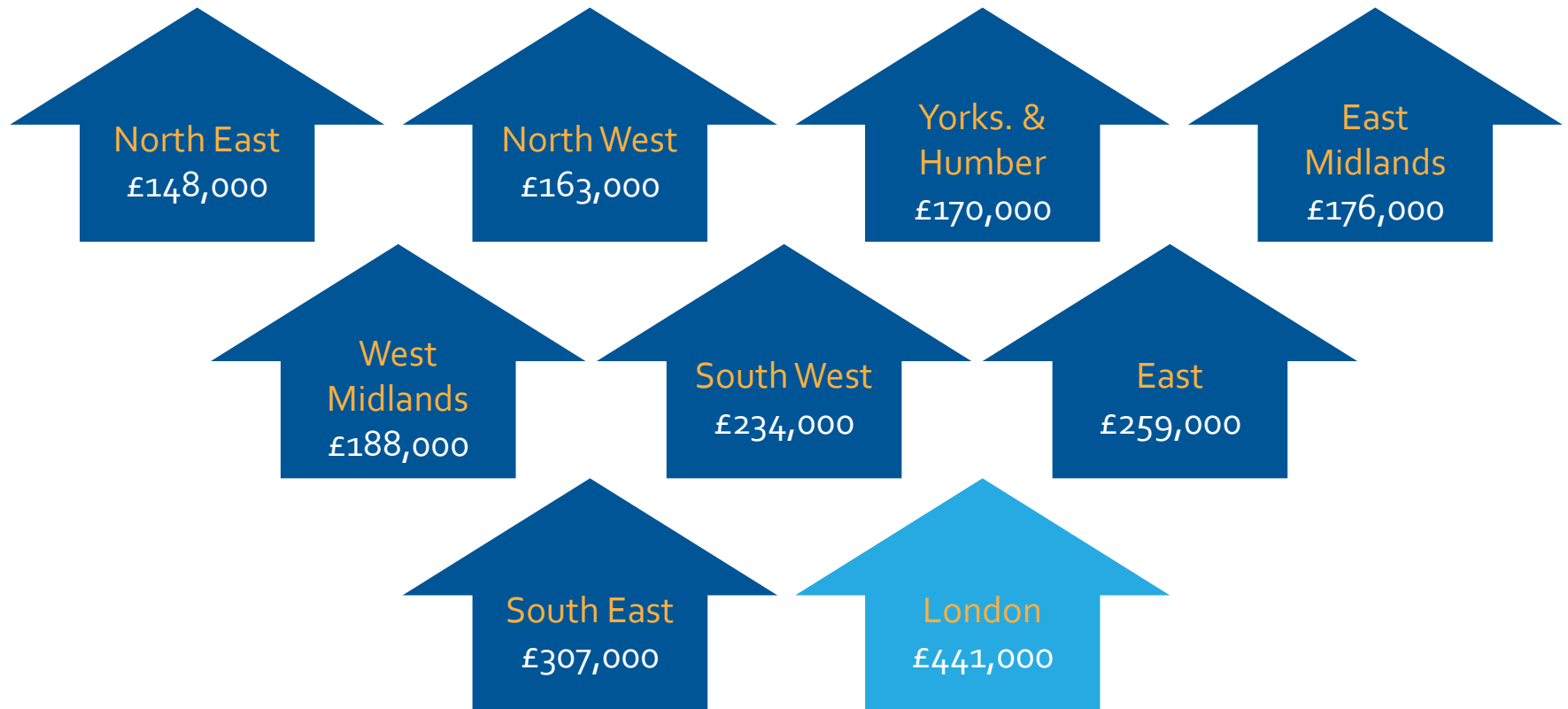
UK, 2008 to 2015

Source: Office for National Statistics



HS2 could help to rebalance the economy by improving connectivity to Northern cities with lower house prices and the potential to create a Northern Powerhouse

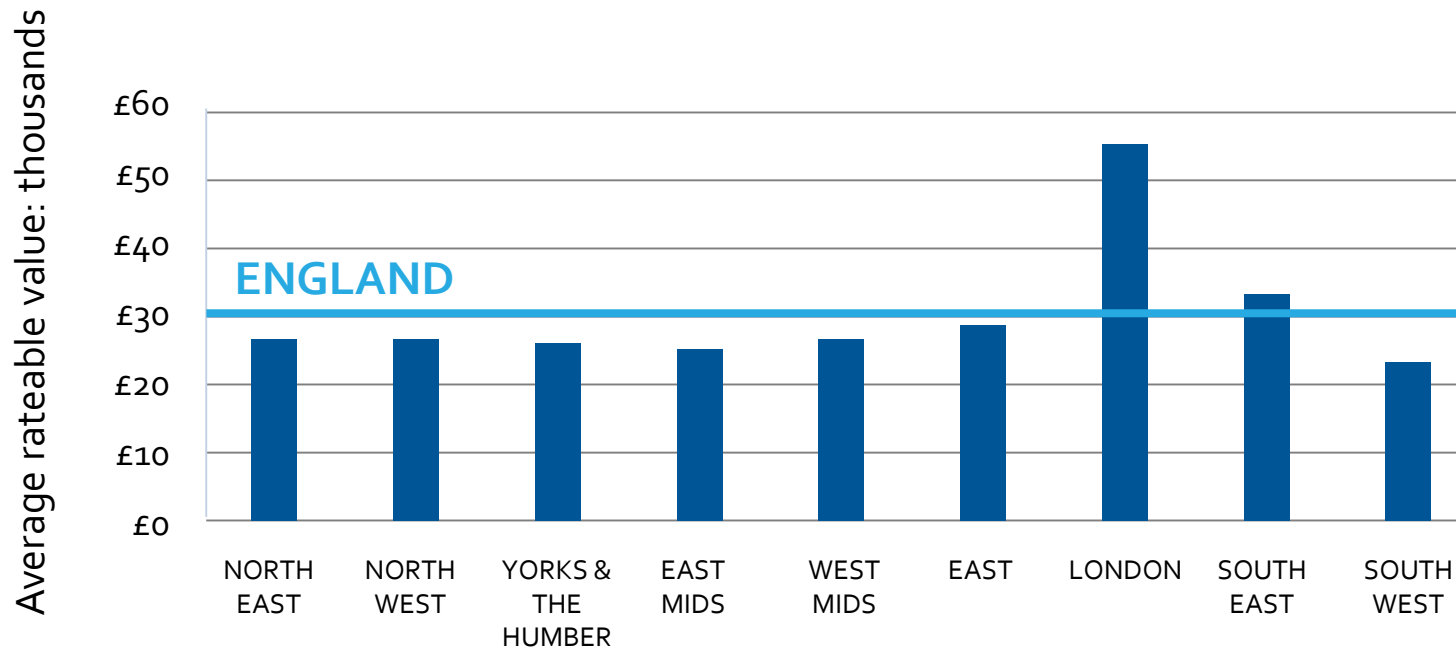
Mix-adjusted average house prices, Nov 2013





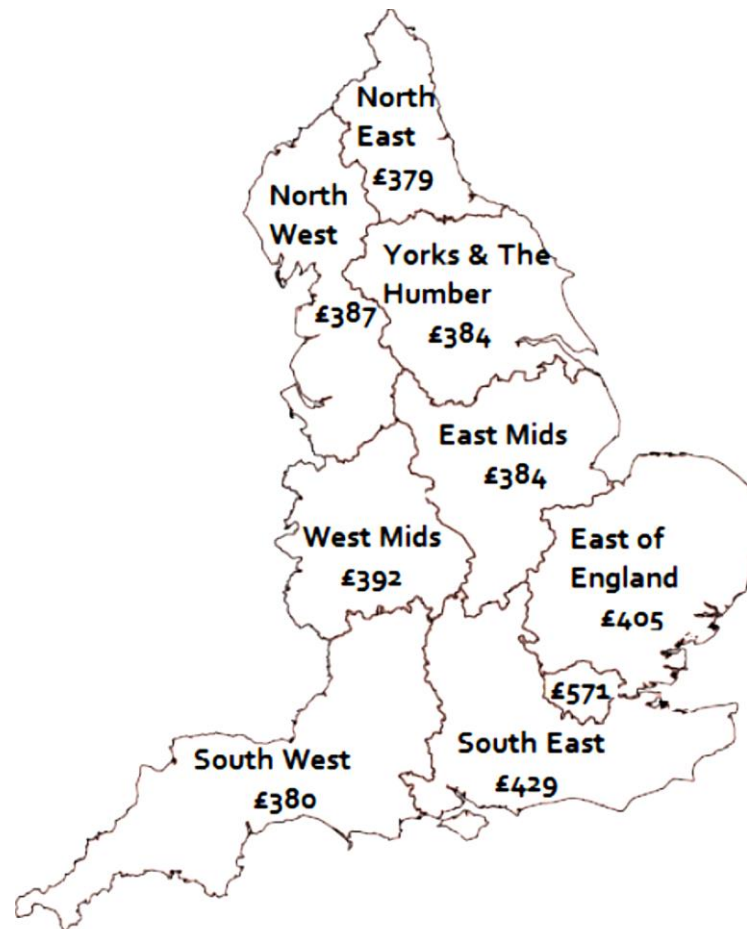
HS2 could help to rebalance the economy by improving connectivity to Northern cities with lower house prices and the potential to create a Northern Powerhouse

## Average rateable values (30 Sept 2014)



HS2 could help to rebalance the economy by improving connectivity to Northern cities with lower house prices and the potential to create a Northern Powerhouse

Median weekly pay (gross, 2013)

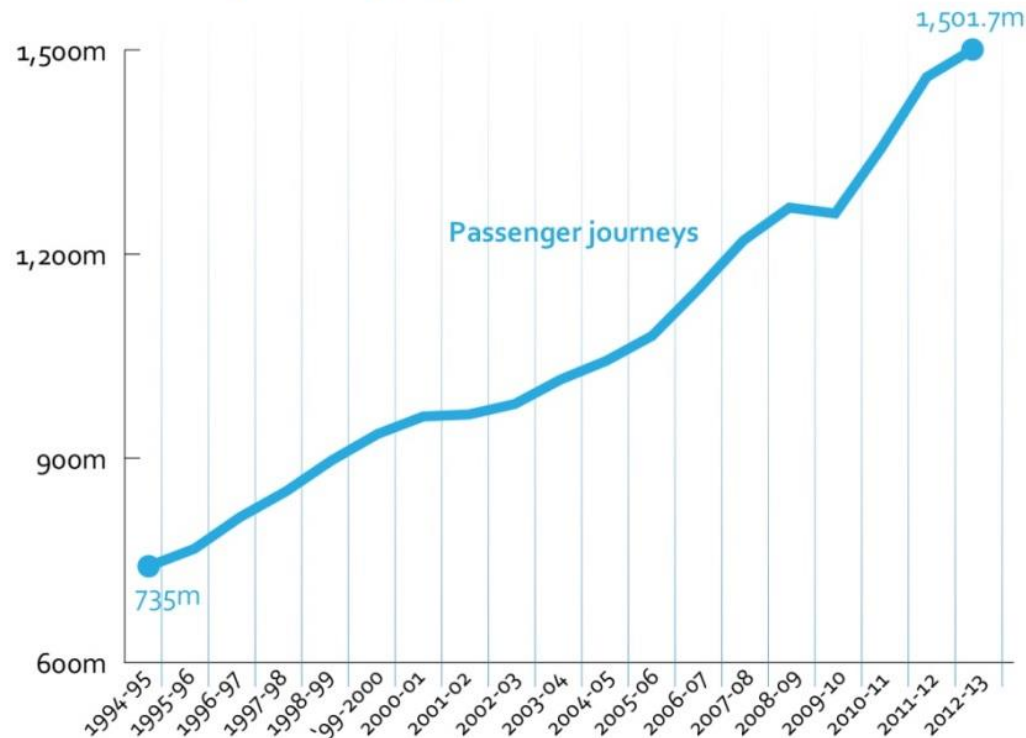


HS2 vision:

To be a catalyst for  
growth across Britain

# Unprecedented levels of demand for rail

## Overall rail passenger growth



Source: Office of Rail Regulation





Rail demand continues to rise





Over-crowding  
in the South



Poor connectivity  
in the North



# Regenerating our cities

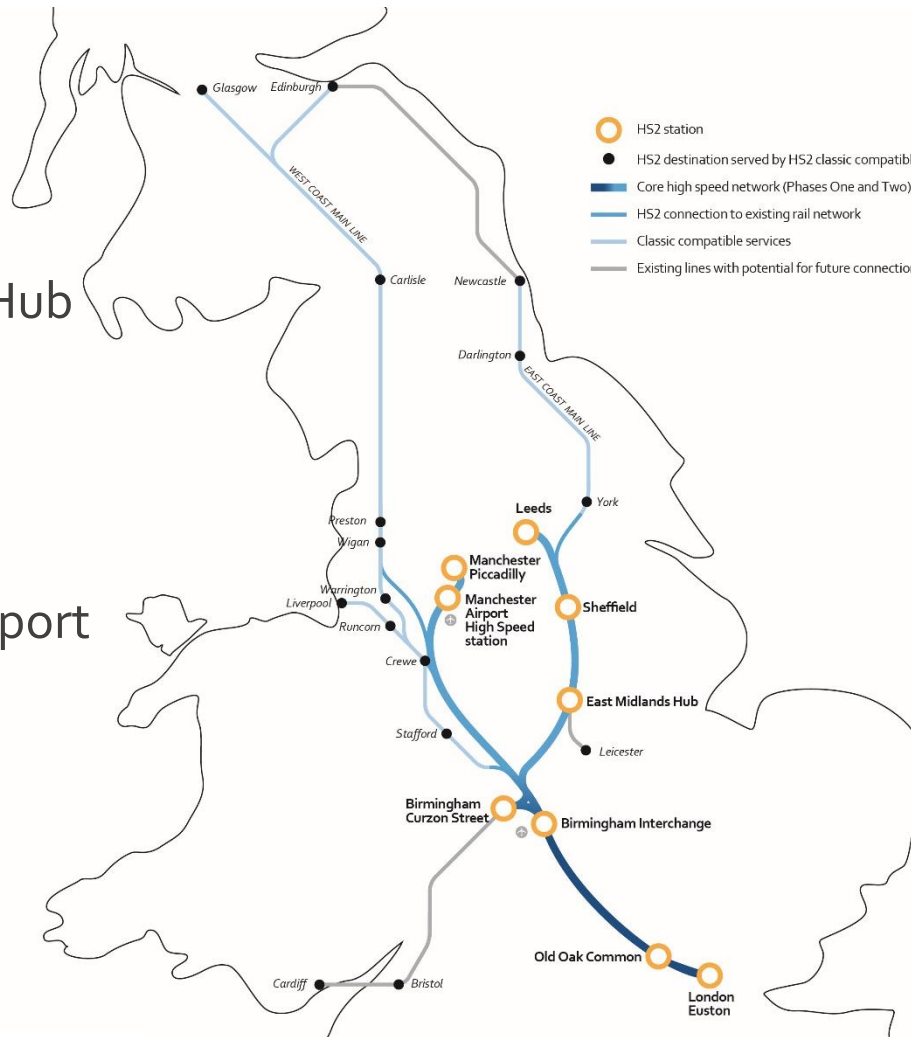


# HS2: a strategic transformation

## Phase Two

### Stations:

East Midlands Hub  
Sheffield  
Leeds  
Manchester  
Piccadilly  
Manchester Airport



## Phase One

### Stations:

Euston  
Old Oak Common  
Birmingham  
Interchange  
Birmingham Curzon  
Street



# Journeys will be fast, frequent and reliable







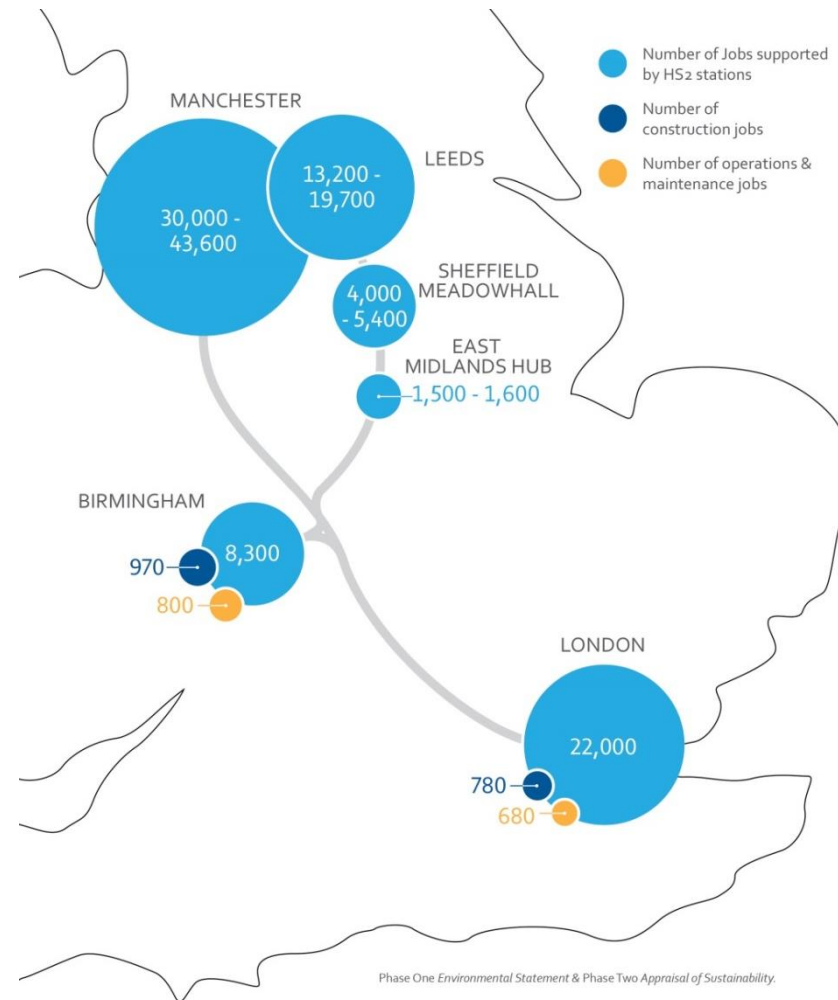
A high-tech programme for a high-tech economy





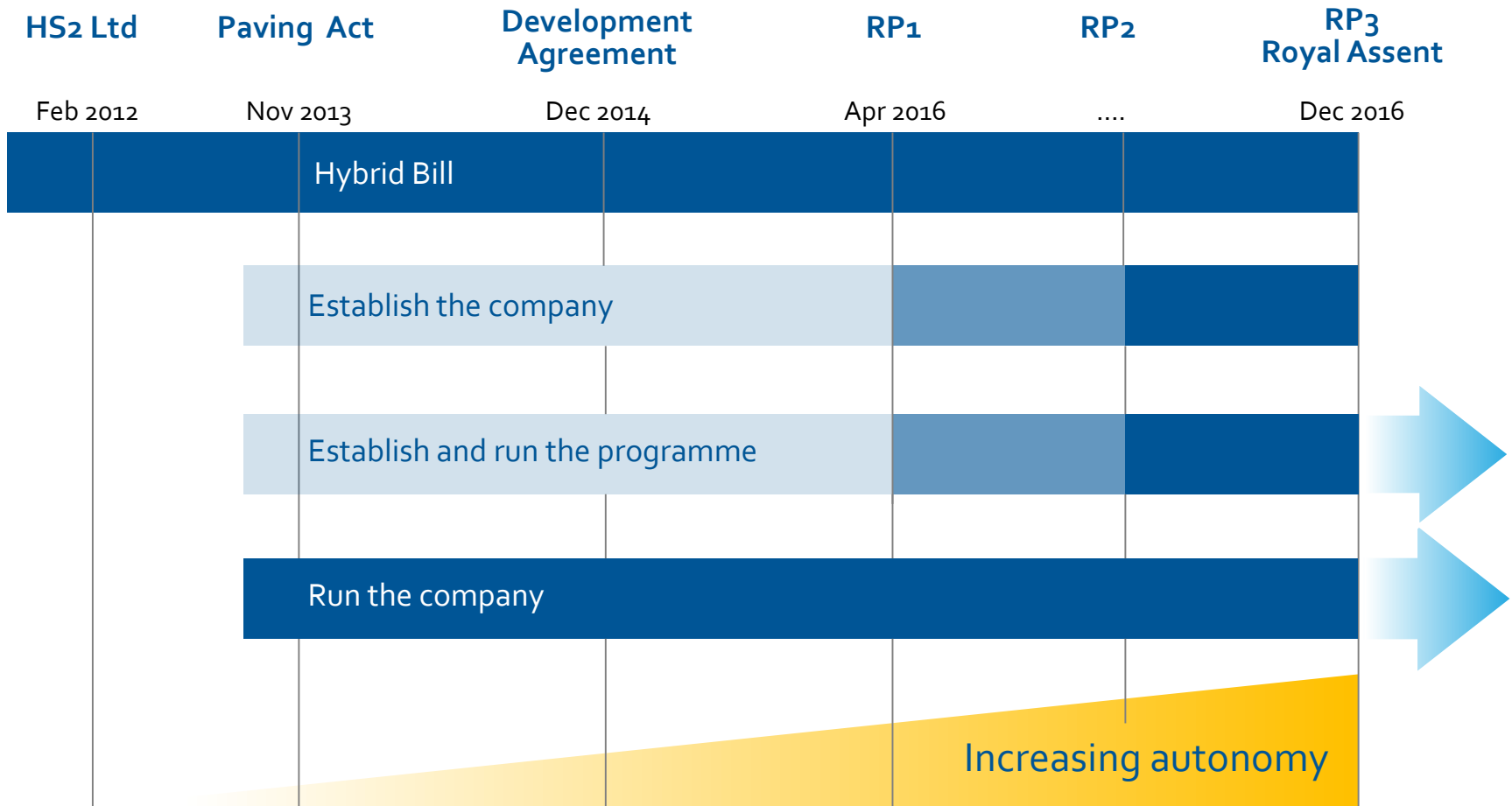
Develop the people within our industry

# HS2 will create 24,600 construction jobs and 3,100 operations and maintenance jobs

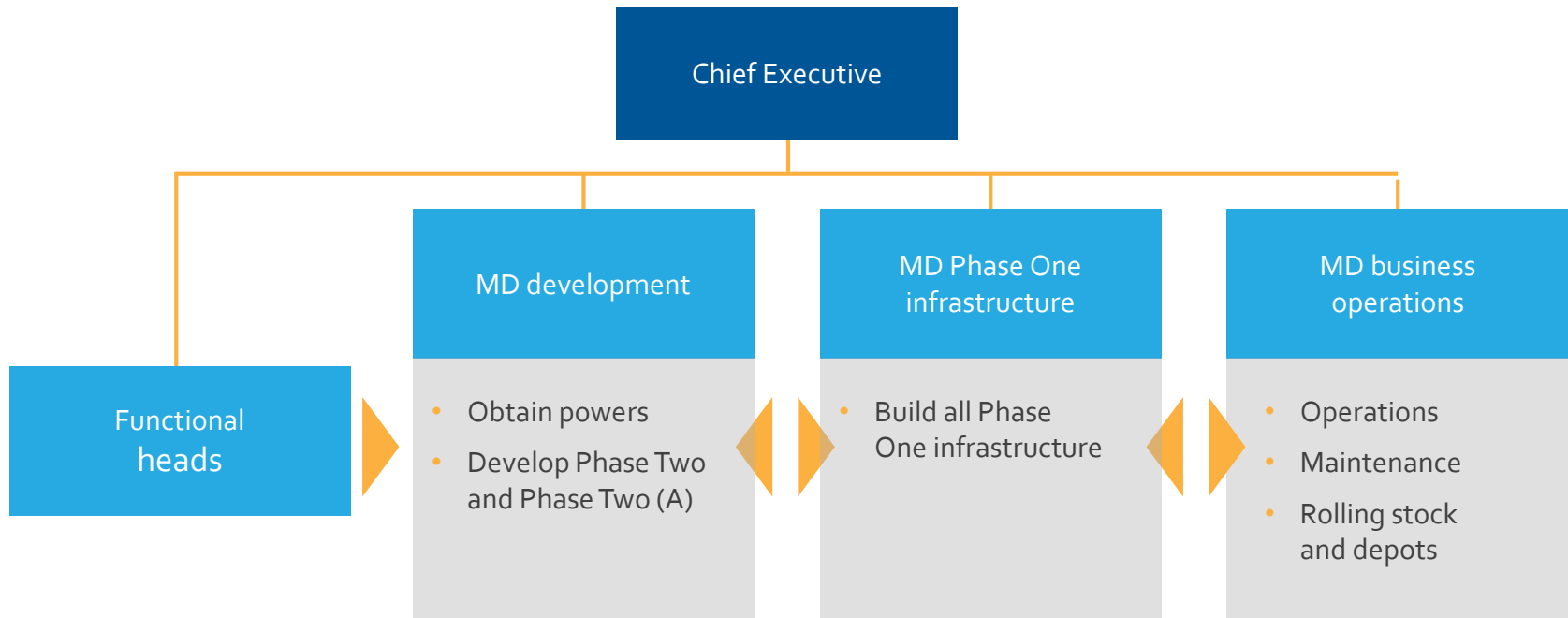


How is our  
company growing?

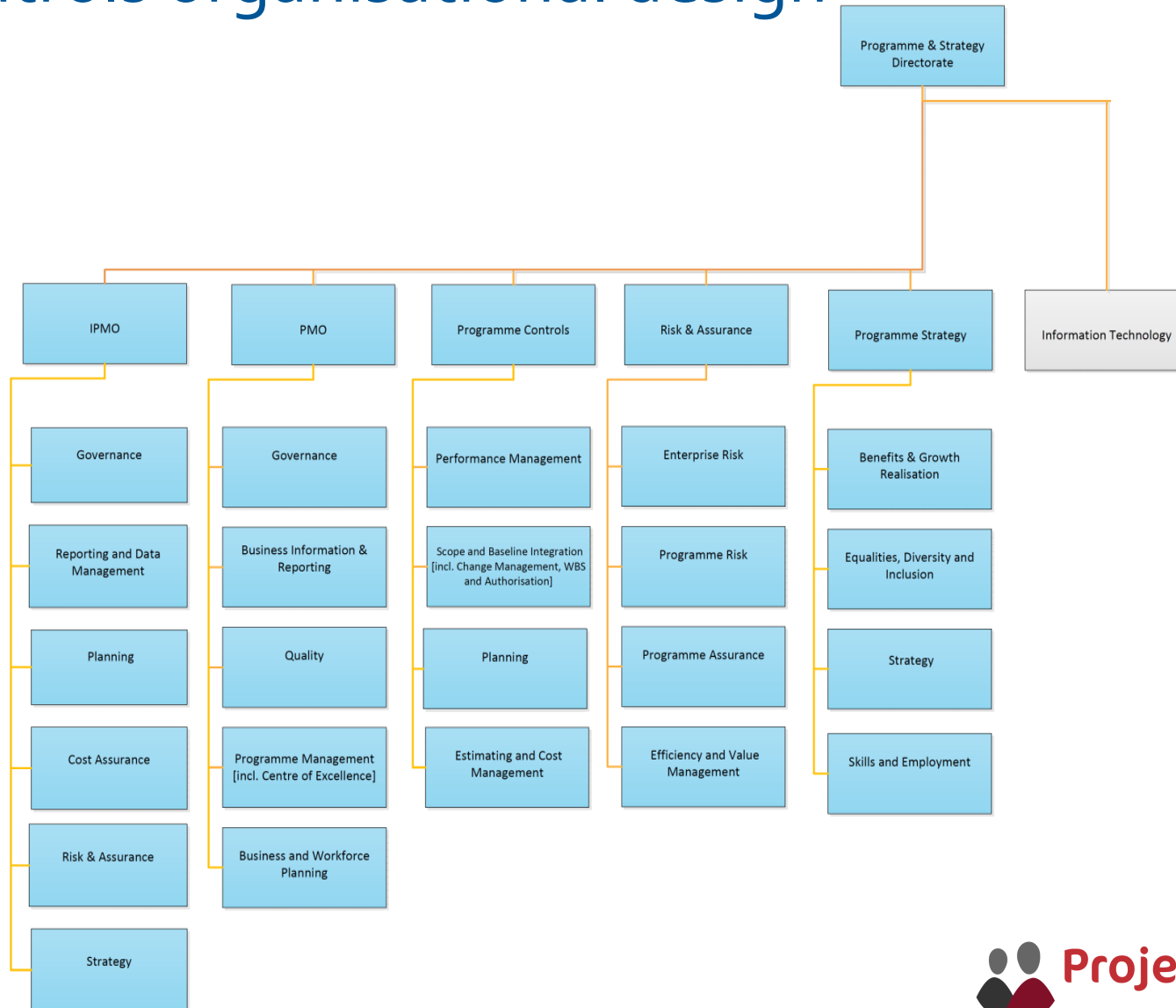
# The challenge of an emerging organisation



# HS2 organisation: a classic matrix



# Controls organisational design





Proving our capability

# Proving our capability

## Functional owners

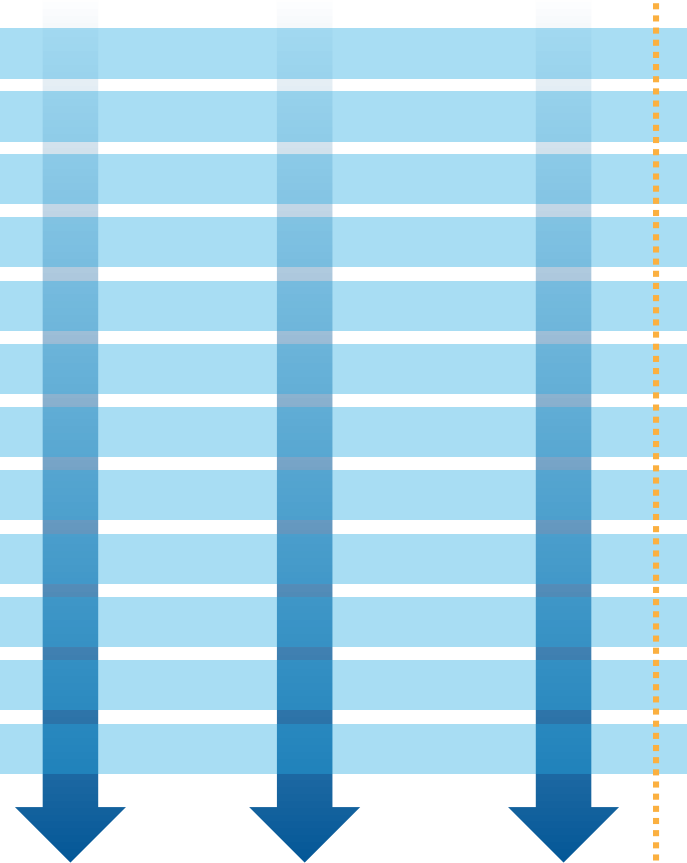
Design  
Programme management  
Risk  
Management information  
Finances  
Budgeting  
Procurement  
Contract management  
Engagement  
Land  
Internal assurance  
Health & safety

## Managing the functional matrix

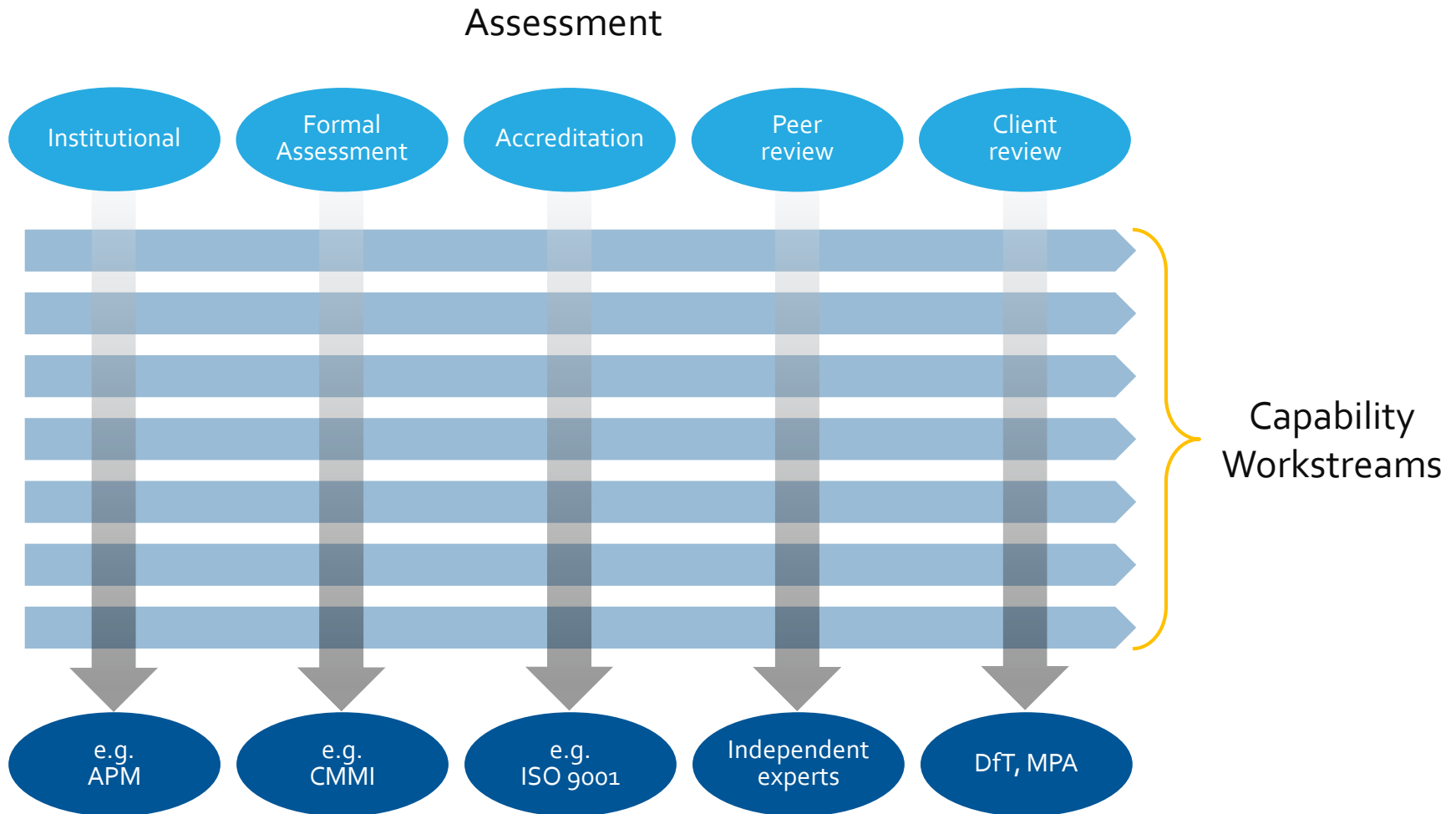
People

Process

Systems



# Proving our capability: methods of assurance at each RP Stage



What's our Programme  
Controls Strategy?

# Provides the foundation to:

Establish  
appropriate  
controls

Develop  
programme  
management  
capability

Establish robust  
links between  
technical scope,  
the cost of delivery  
and the schedule

Manage and  
integrate the  
flow of scope

# Provides the foundation to:

Implement change management

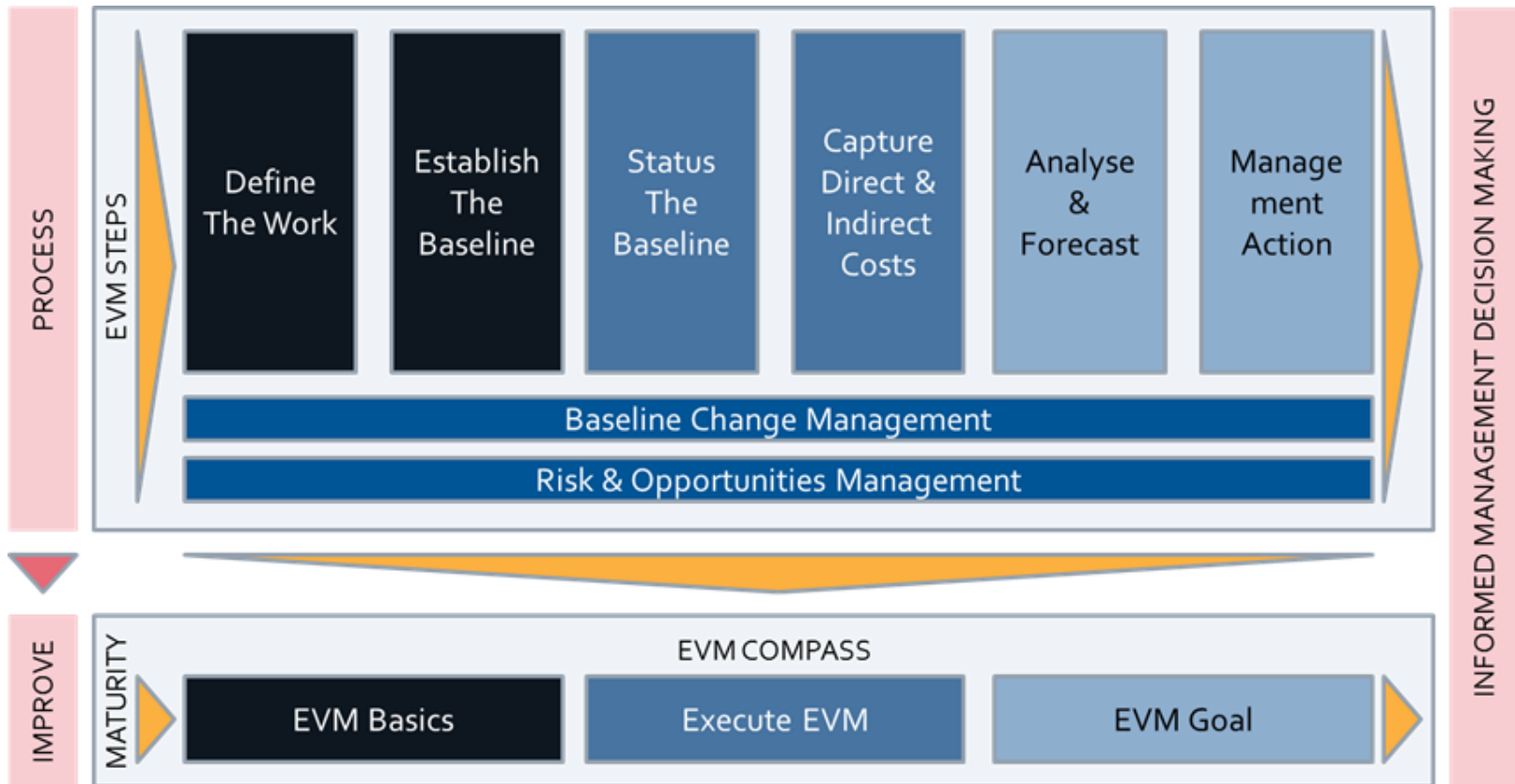
Implement a robust cost estimating and cost management framework

Implement a robust schedule planning and schedule management framework

Provide the metrics and reporting standards

Define metrics

# EV A Pragmatic Approach

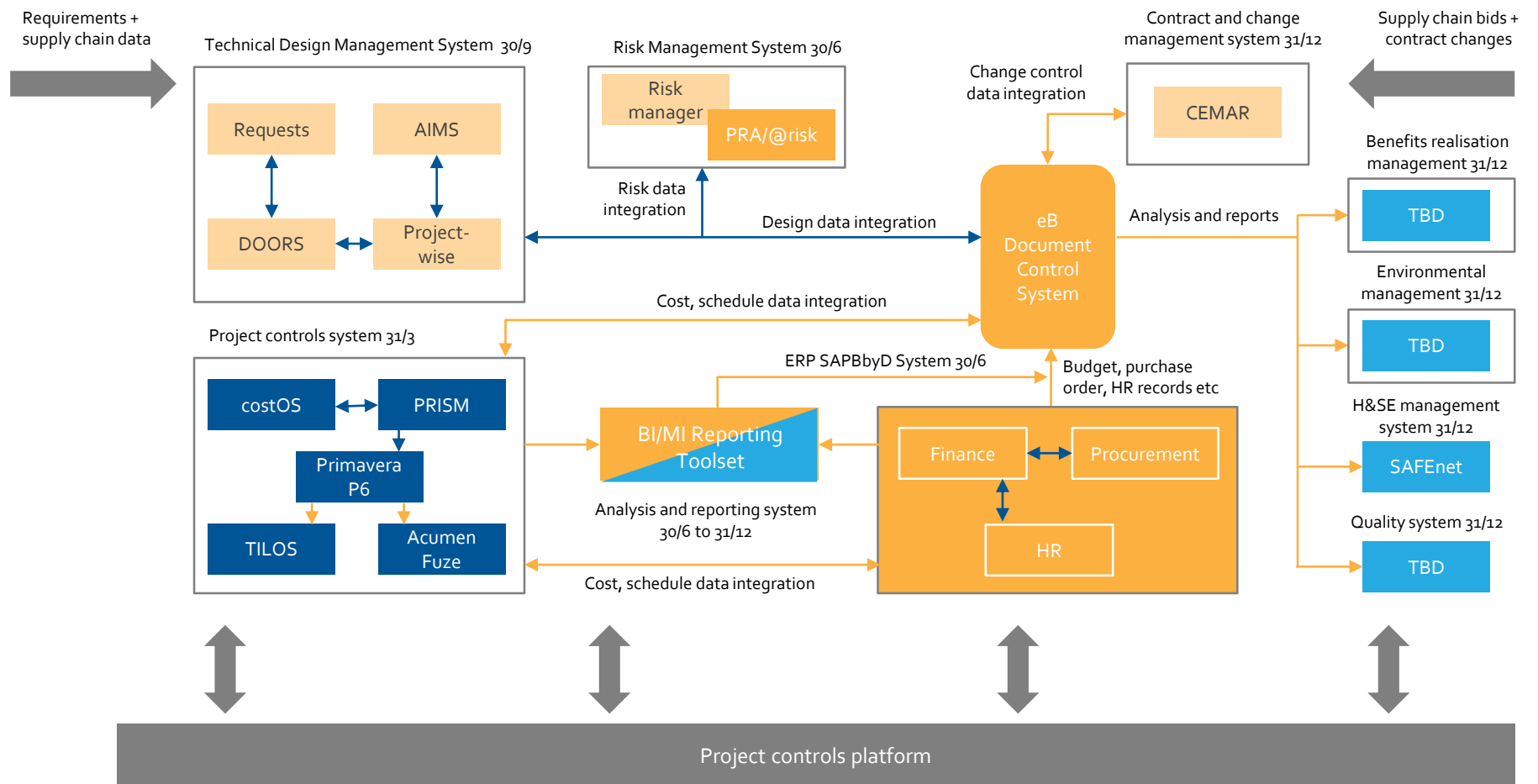


# Controls Software

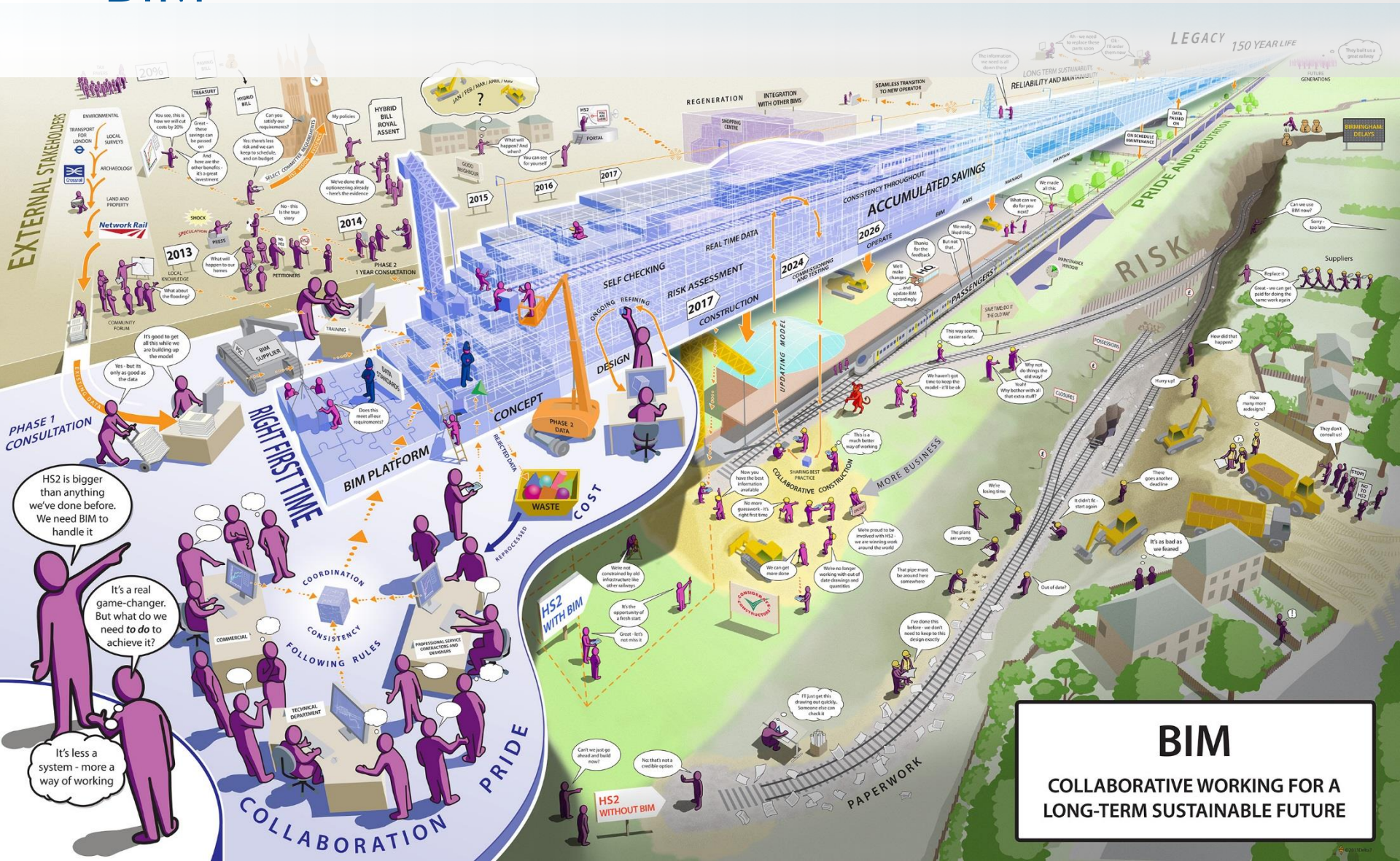
- Primavera P6 – Planning
- Deltek Acumen Fuse – Quality & Analysis
- Prism G2 – Cost & Performance
- CostOs – Estimating
- CEMAR – Contract Management
- EB – Document Control
- Xactium – Risk
- Tableau - MI



# HERMES



# BIM



**BIM**  
**COLLABORATIVE WORKING FOR A LONG-TERM SUSTAINABLE FUTURE**

# Planning at HS2

# Planning set up

- Functional fixed line management
- Strict system administration by dedicated team
- Full collaboration and communication by planners and other controls functions
- Full support by HS2 exec & organisation

# Data quality & Integration

- Fully aligned WBS & CBS
- Asset based approach to planning, cost and performance
- EV driven from supply chain schedules
- Full integration with other controls functions
  
- Schedule quality written into HS2 contracts and HS2 business processes

# The HS2 EPS

## EPS/WBS summary

0 – Client

1 – Programme

2 – Directorate

3 – Phase

4 – Delivery area

5 – Sector (package)

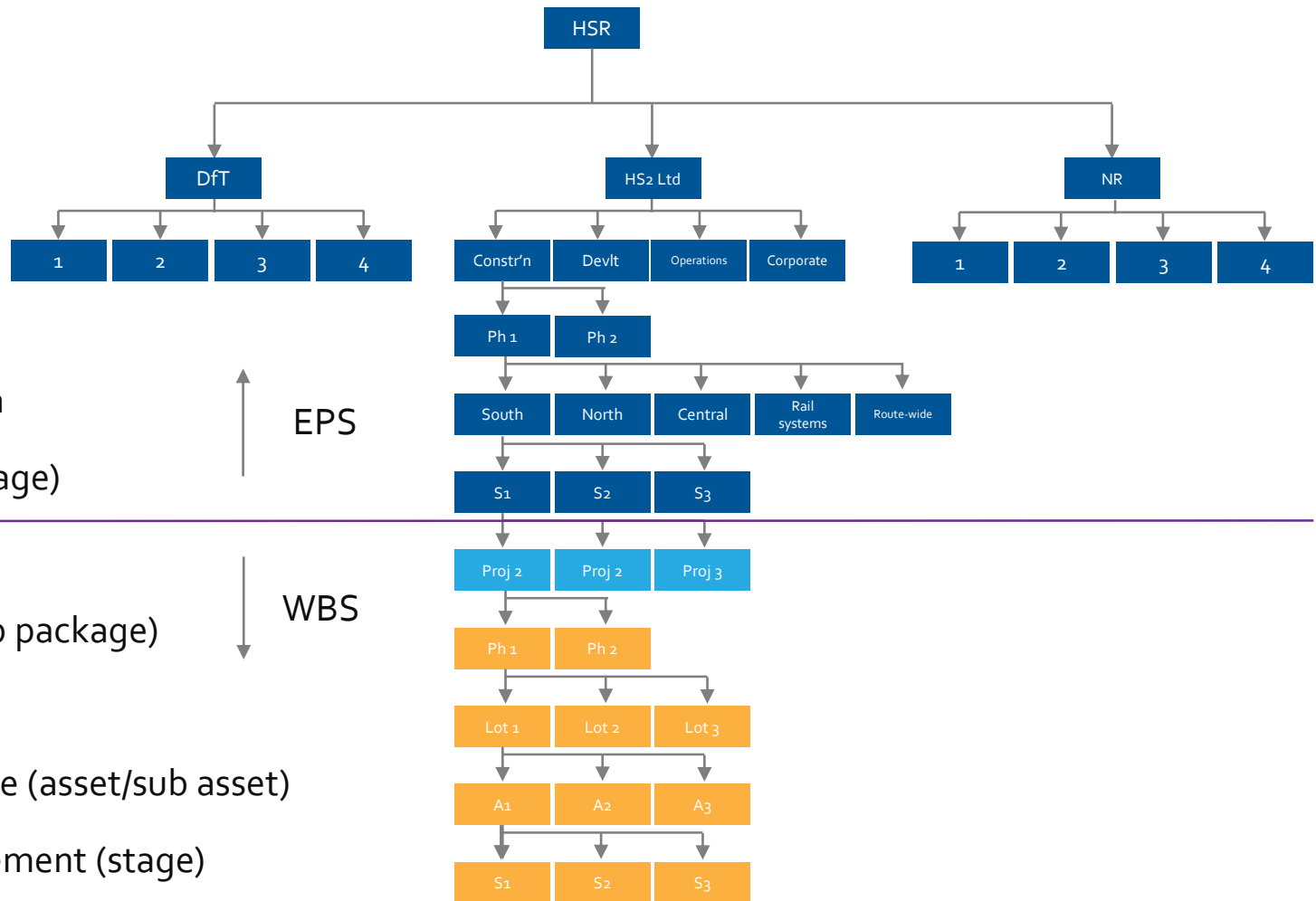
Project

6 – Sections (sub package)

7 – Lots

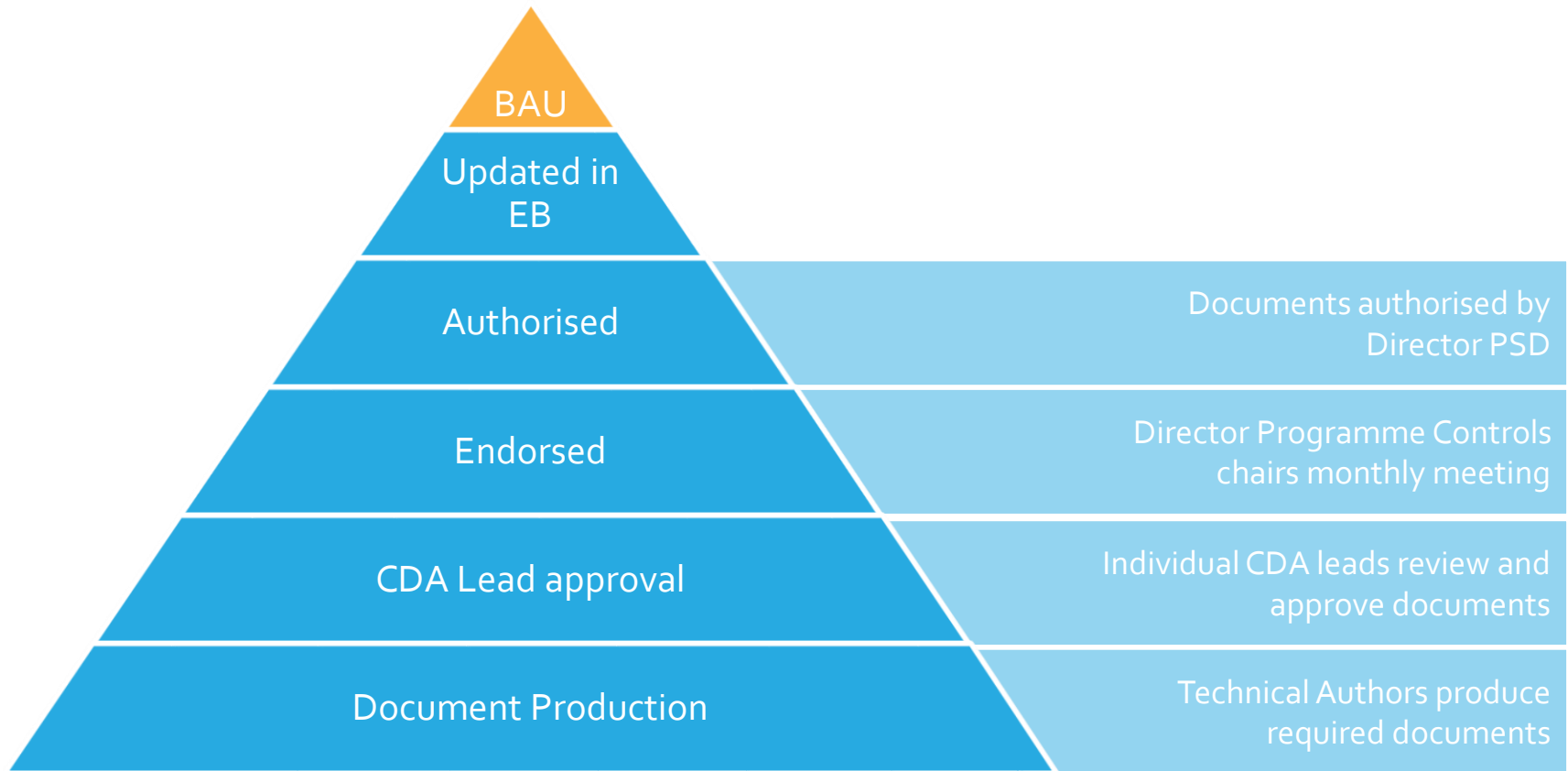
8 – Work package (asset/sub asset)

9 – Sub asset element (stage)



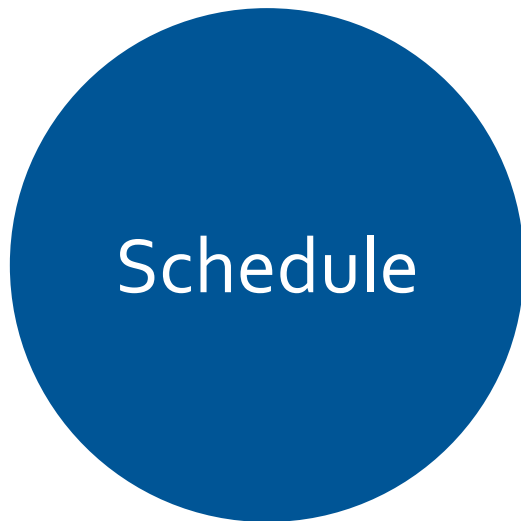


# The Controls Design Authority Process



Aligning people, process and systems.

# HS2 Schedule Confidence Indicator



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Planned Starts	25	23	50	45	88	65	61	53	42	21	21	25
Total Starts	25	15	45	24	34	56	76	40	43	16	18	20
Total Planned Finishes	10	23	45	64	43	67	54	34	56	54	23	38
Total Finishes	5	20	35	50	40	55	45	30	45	45	20	35
Baseline Budget	£4,000,000.00	£4,000,000.00	£4,000,000.00	£4,000,000.00	£4,000,000.00	£4,000,000.00	£5,000,000.00	£5,000,000.00	£5,000,000.00	£5,000,000.00	£5,000,000.00	£5,000,000.00
Variations	£ 20,000.00	£ 50,000.00	£ 30,000.00	£ 1,000,000.00	£ 20,000.00	£ 600,000.00	£ 50,000.00	£ 2,500.00	£ 5,000.00	£ 8,000.00	£ 250,000.00	£ 40,000.00
Plan Stability Score	86	76	84	68	56	84	105	80	90	81	86	87
Acumen Fuse Index	78	77	72	70	73	75	55	65	70	70	80	50
Scope Variance	99	98	99	50	99	70	98	100	100	100	90	98
SCI	0.88	0.84	0.85	0.63	0.76	0.76	0.86	0.82	0.87	0.84	0.85	0.79



Build the project strategically – leading process and technology within a progressive PMO framework



What will all of  
this give us?



# An exceptional passenger experience





“The result should be that  
**London** grows sustainably, and  
the **Midlands** and the **North**  
achieve their full potential.”

**Sir David Higgins**  
**Chairman, HS2 Ltd**