

# **Steeling for a sustainable future: How the UK steel industry could compete through supply chains**

**Thank you for joining us. The event will start shortly.**



# Webinar etiquette...



**The session is being recorded.**

The recording and the slides will be shared after the event.



**Be interactive.**

Post questions and thoughts in chat, throughout the session.



**Questions will be addressed during the panel discussion.**

Please put your hand up if you would like to ask a live question.



# Welcome & Introduction

**Jan Godsell**

**Professor of Operations and Supply Chain Strategy**

**WMG, University of Warwick**



# **Steeling for a sustainable future: How the UK steel industry could compete through supply chains**

**Dr Frances Zhang & Dr Sumeer Chakuu**  
**WMG Supply Chain Research Group**



# Research project

- ❑ **EPSRC funded project ‘Critical Technological Assessment of the Viability of Future UK Steel Production’** (Project Ref: EP/S013318/1).
- ❑ The aim is to **assess the viability (both SC and technology) of increasing scrap utilisation in the UK steel making to support ‘low carbon’ economy.**
- ❑ Project team:



## Advanced Steel Research Centre

- Dr Zushu Li (PI)
- Prof Claire Davis (Co-I)
- Dr Hiren Kotadia

## Supply Chain Research Group

- Prof Jan Godsell (Co-I)
- Dr Taofeeq Ibn-Mohammed
- Dr Frances Zhang

# Agenda

1. Current landscape of the UK steel industry
2. Assessing the current scrap steel supply chains to identify issues
3. Strategies and enablers to build sustainable scrap steel supply chains



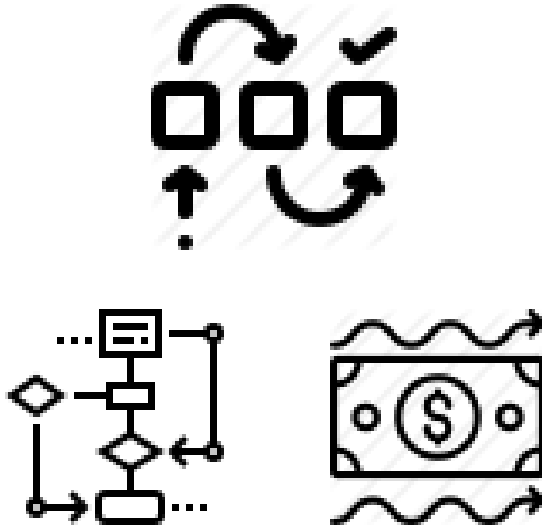


# What is supply chain (management)?

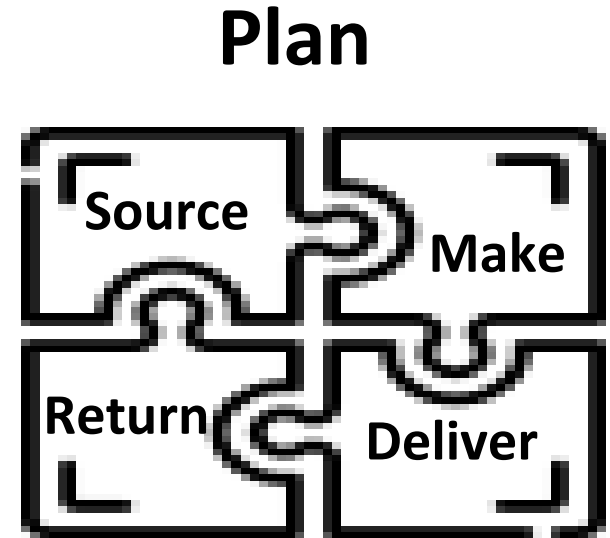
# 3 lens through which to view supply chains...



Network



Flow

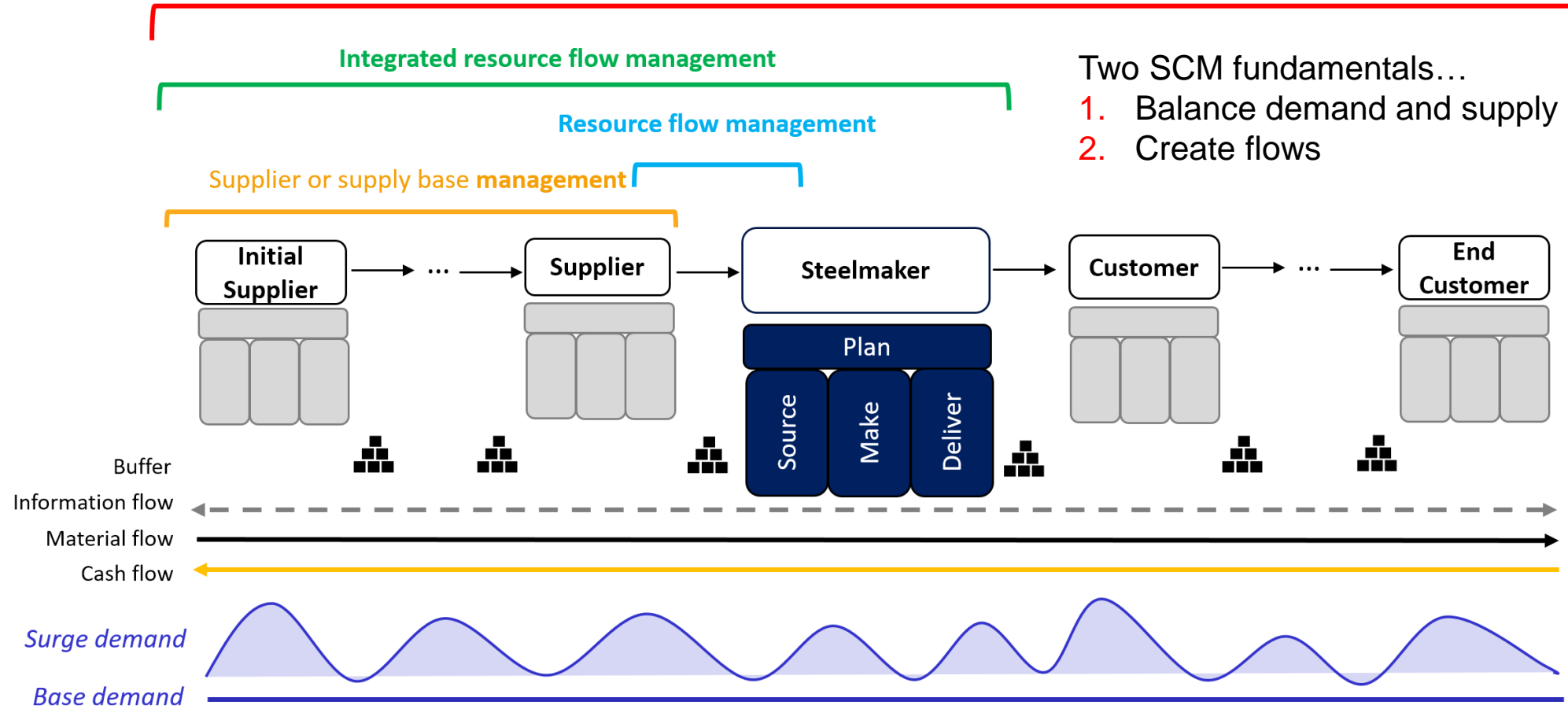


Process



# Four perspectives of supply chain management...

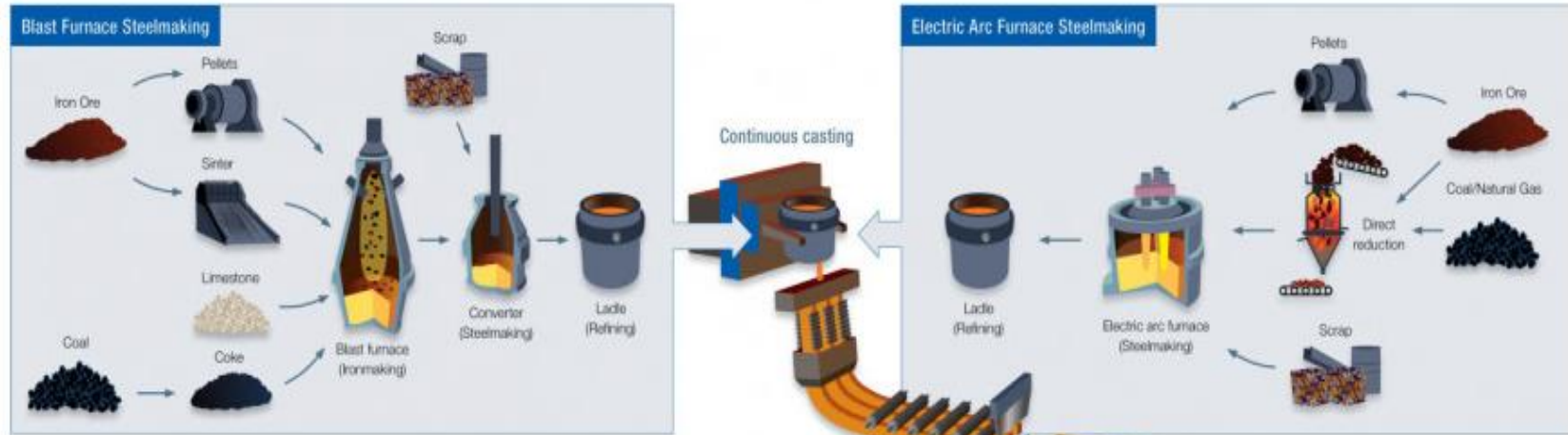
End-to-end supply chain management



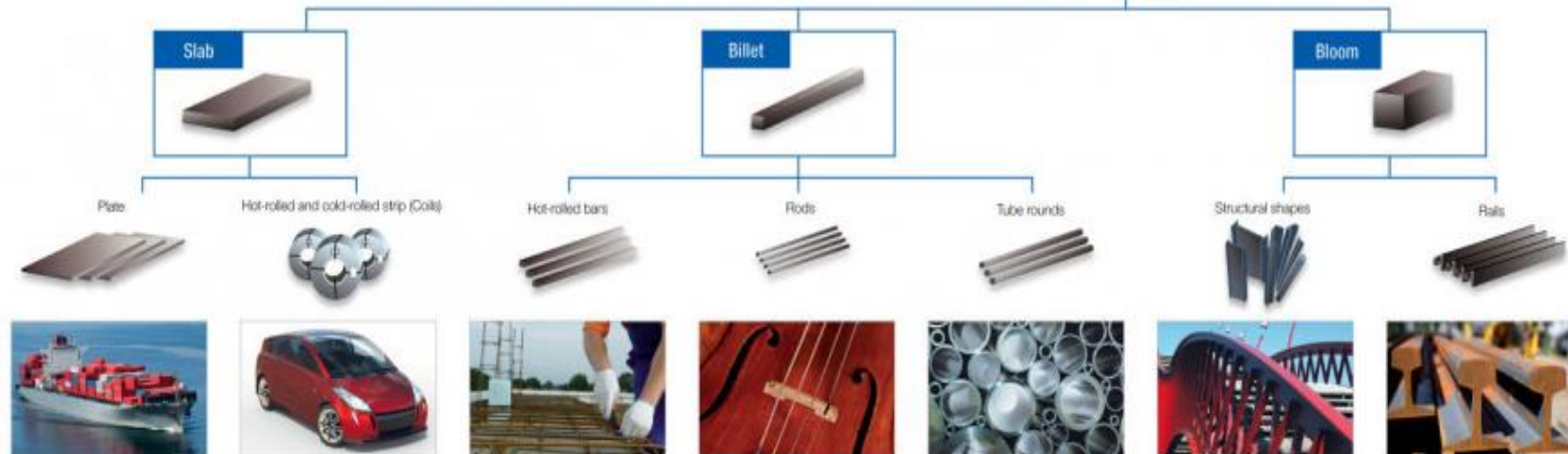
# Current landscape of the UK steel industry

# There are two types of steelmaking technologies current adopted in the UK...

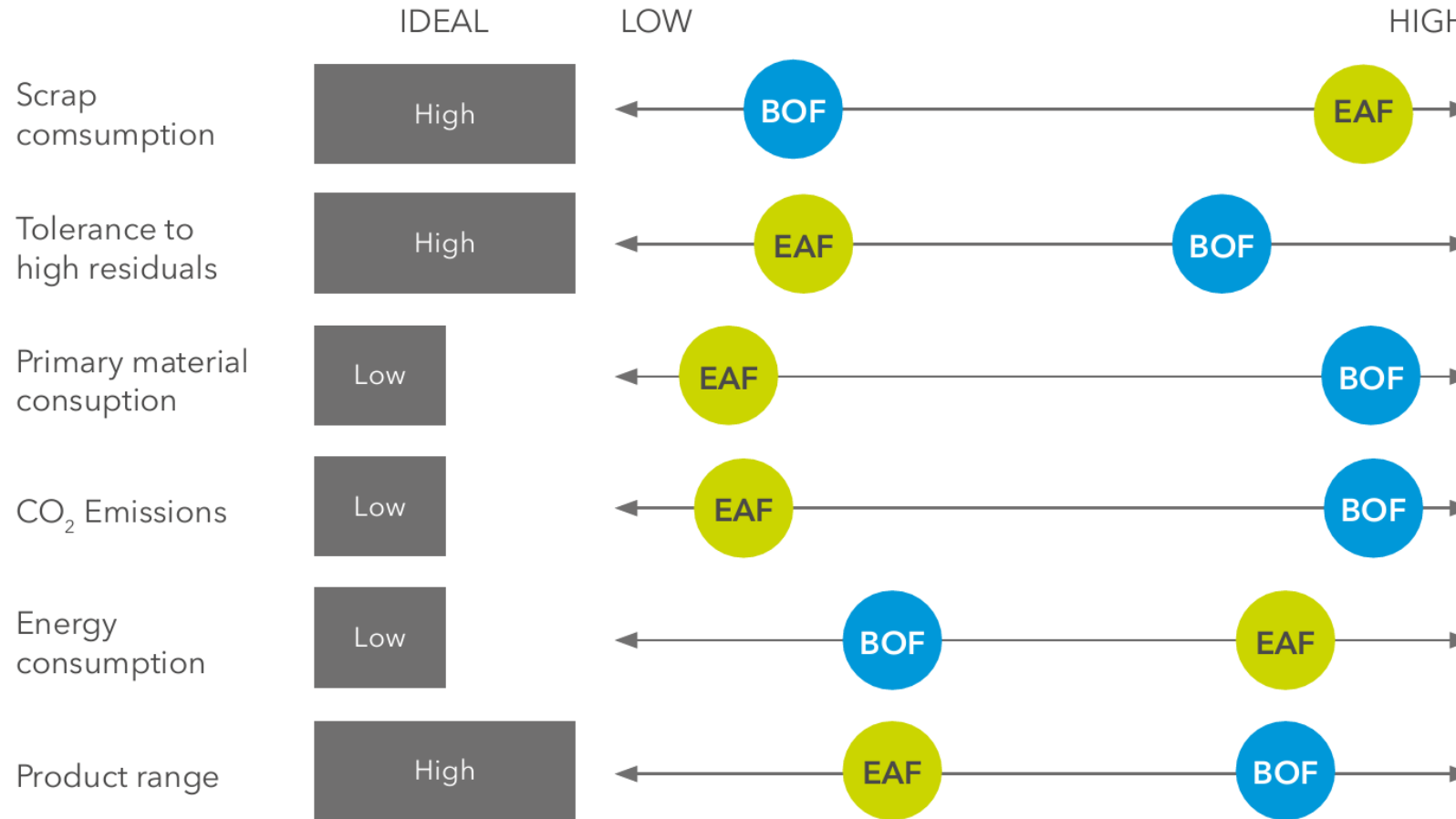
Blast Furnace –  
Basic Oxygen  
Furnace  
(BF-BOF)



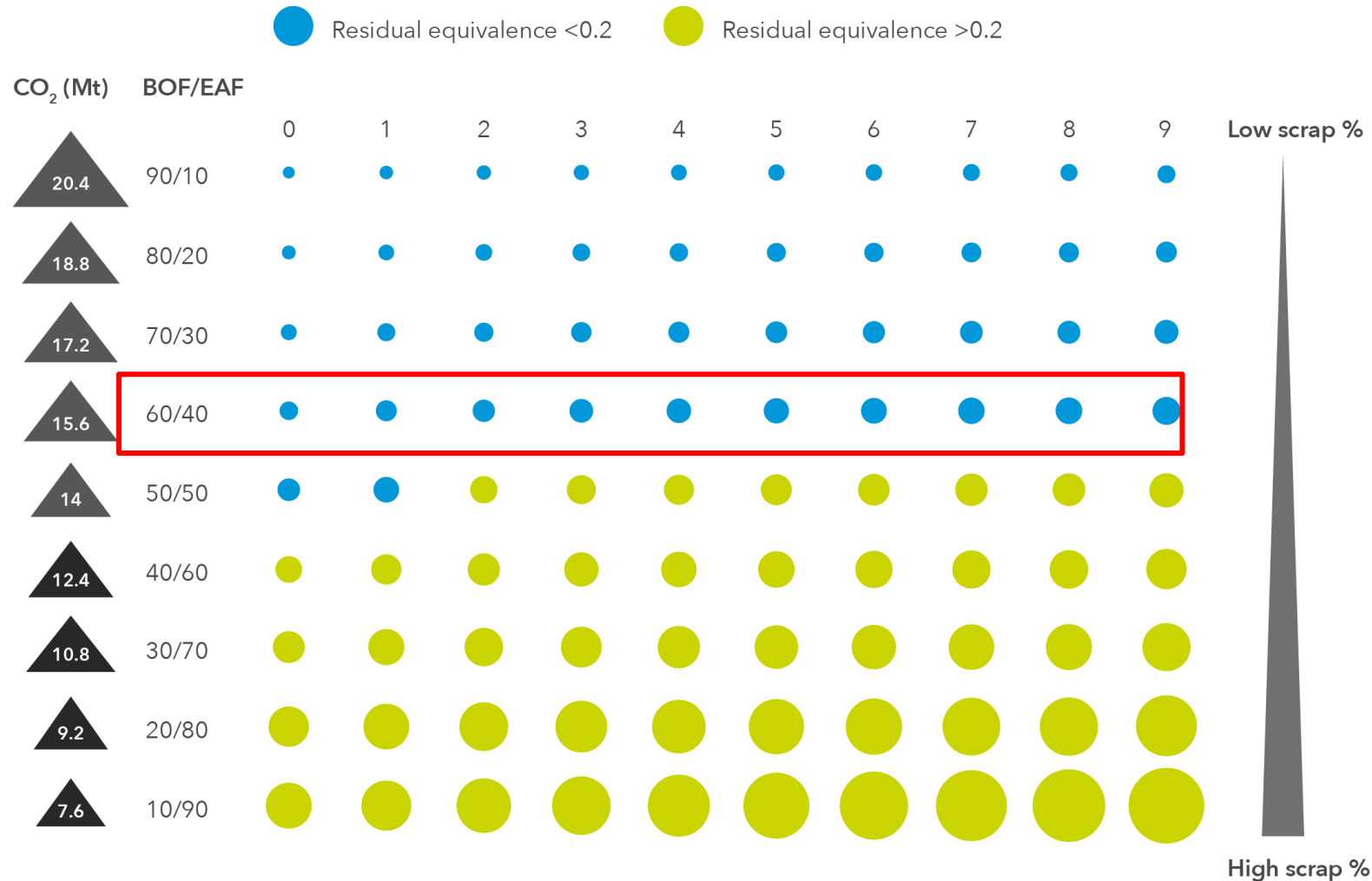
Electric Arc  
Furnace  
(EAF)



# BOF and EAF technologies offer different competitive advantages...



# Accumulative residual element builds up significantly as EAF becomes a dominant production technology...

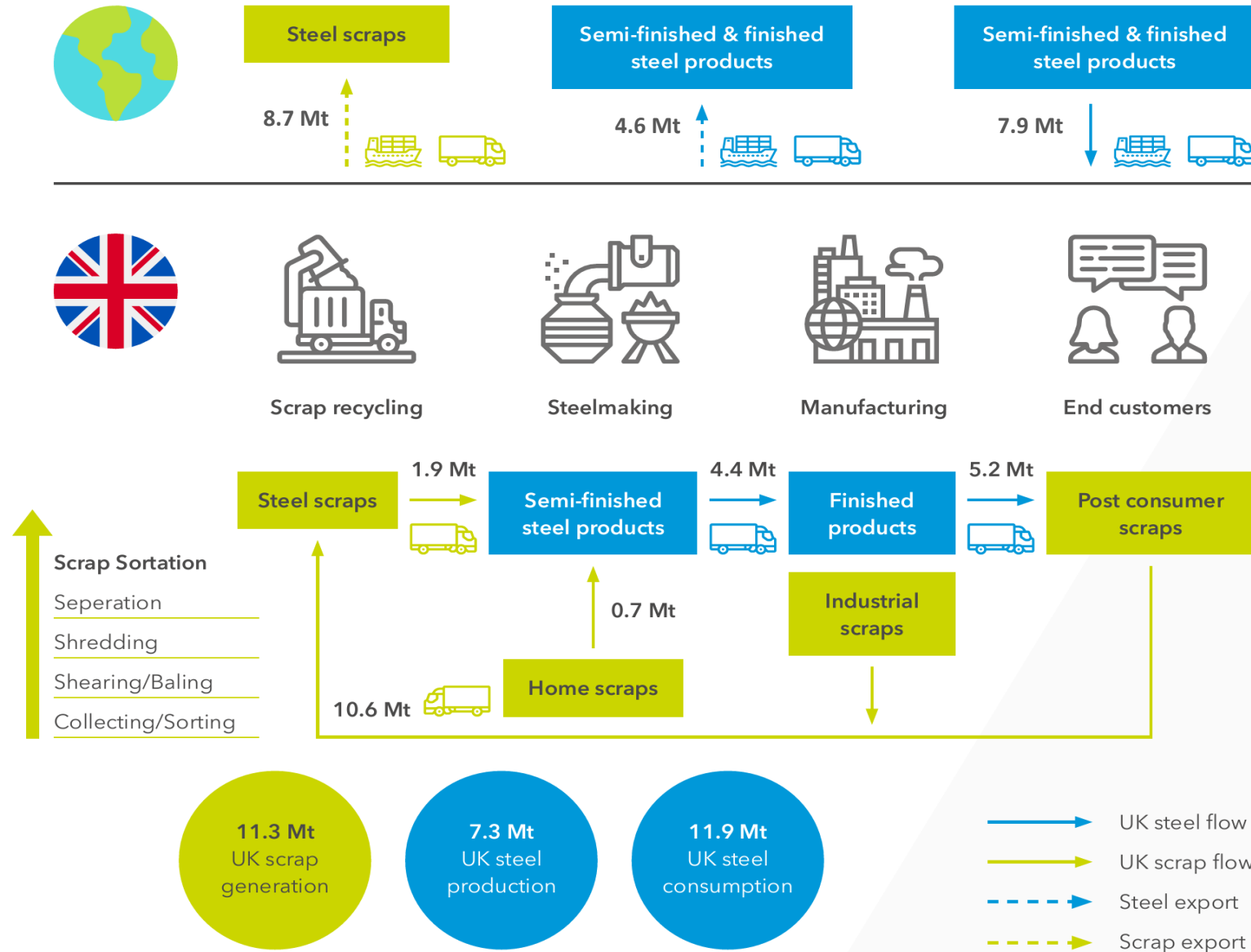


\*Note: 0.2 is the threshold used by steelmakers in the UK; BOF is charged with 20 wt.% scrap according to industry practice

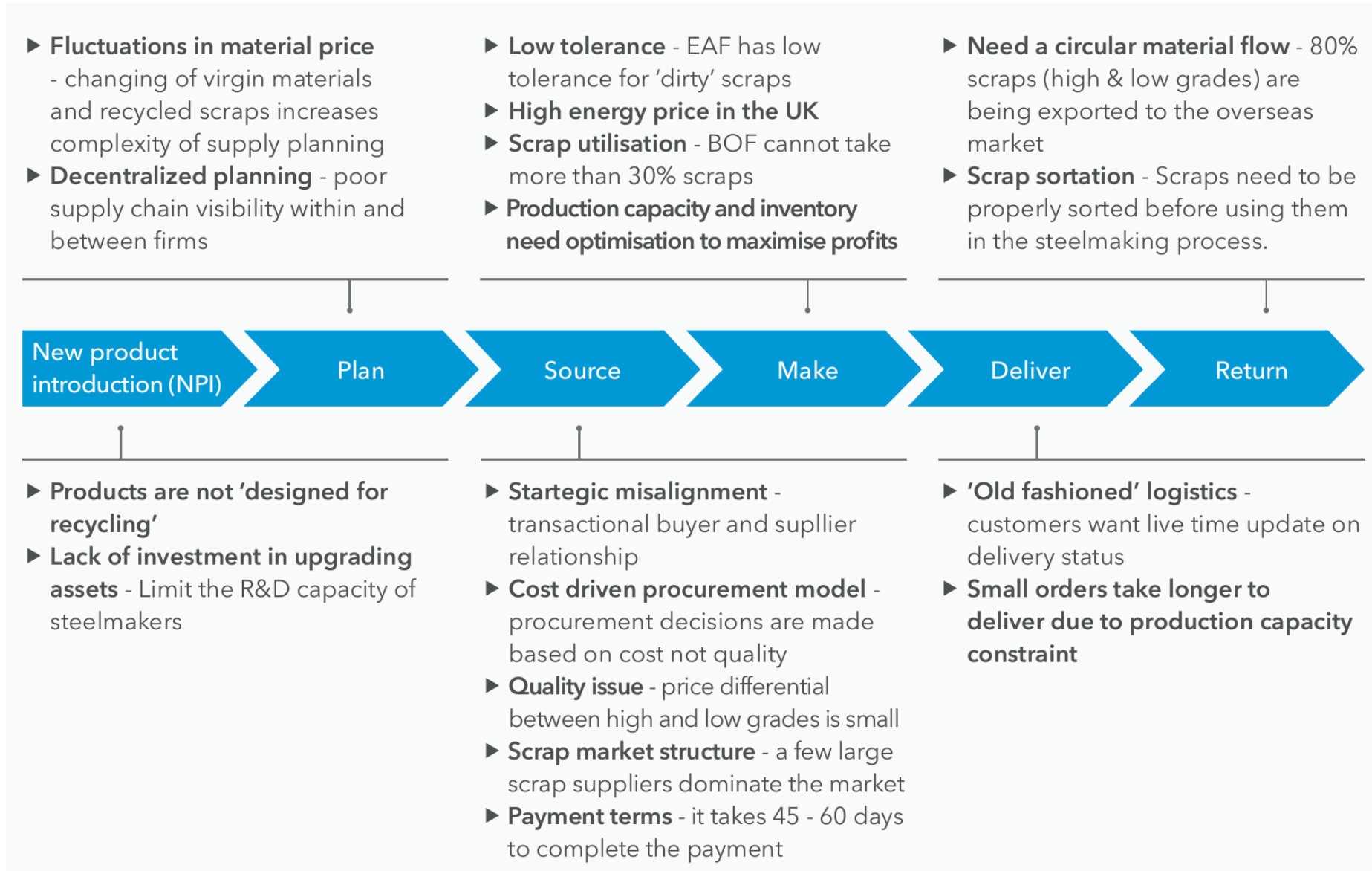
# Assessing the current scrap steel supply chains to identify issues



# Overview of the UK scrap steel supply chains...



# Assessing the current supply chains to identify issues...



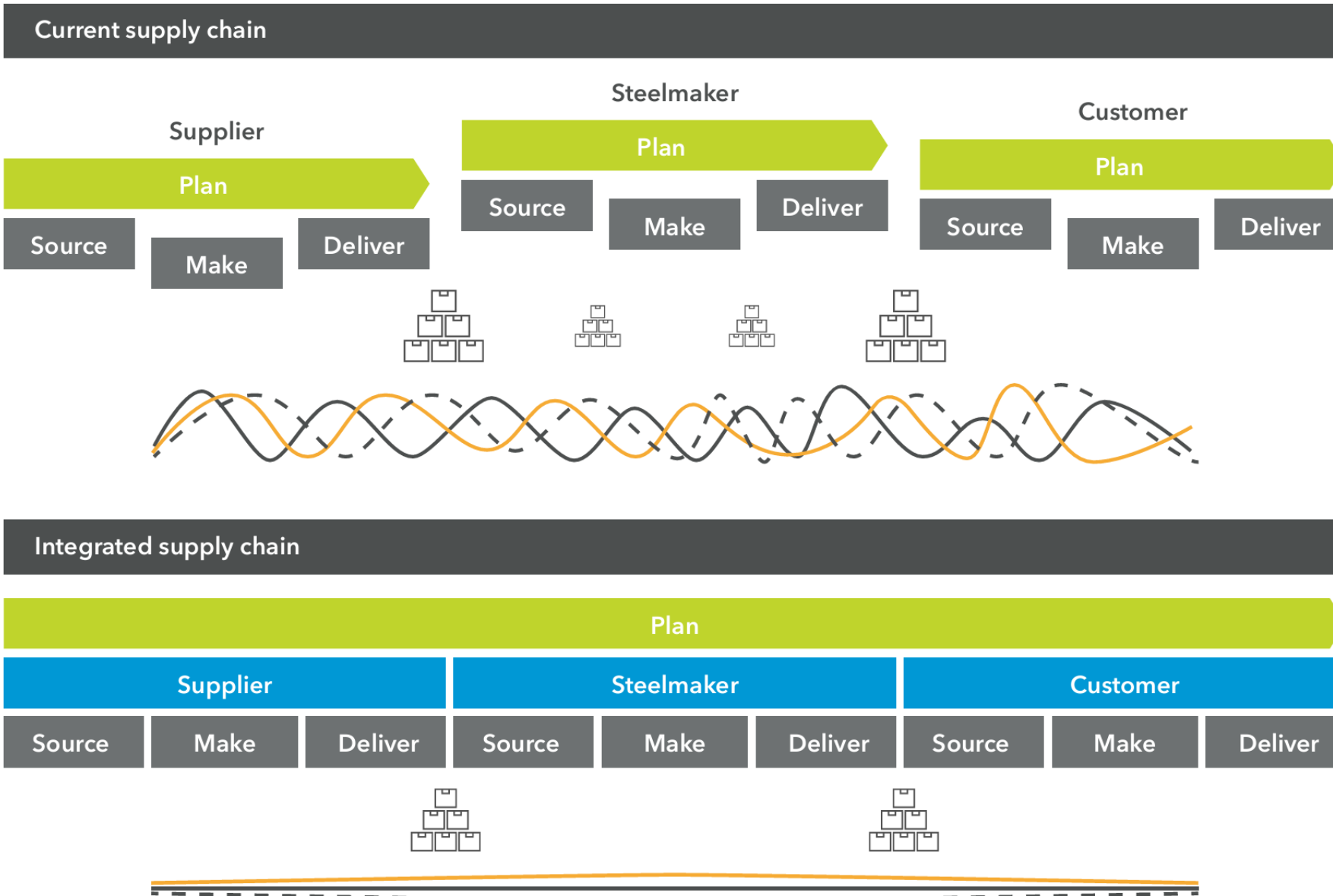
# Strategies and enablers to build sustainable scrap steel supply chains

**Part 1: Optimising the current supply chains**




Part 2: Supporting the future transformation



# 1. The steel industry needs integrated SCs...




# Adopting the 'process thinking' is key to build SC integration...

Benefits of 'process thinking'	 Seamless process	 Integrated planning	 Better visibility	 Effective buffer management
<b>From</b>	Business is organising around functions	Decentralised planning and functional segmentation	Unable to visualise real-time situation	Managed by individual functions - buffers either too big or too small
<b>To</b>	Build business linkages following SC flows	Integrated business planning and segmentation across SC	Able to visualise the real-time situation across E2E SC	Managed by coordinative approach across SC - right-sizing buffers
<b>How to transform</b>	Organise business around functional linkages and integrate all stakeholders	Collaborate with SC partners and integrated planning and segmentation	Integrate real-time situation visibility across E2E SC	Take coordinative approach across E2E SC to right-size buffers

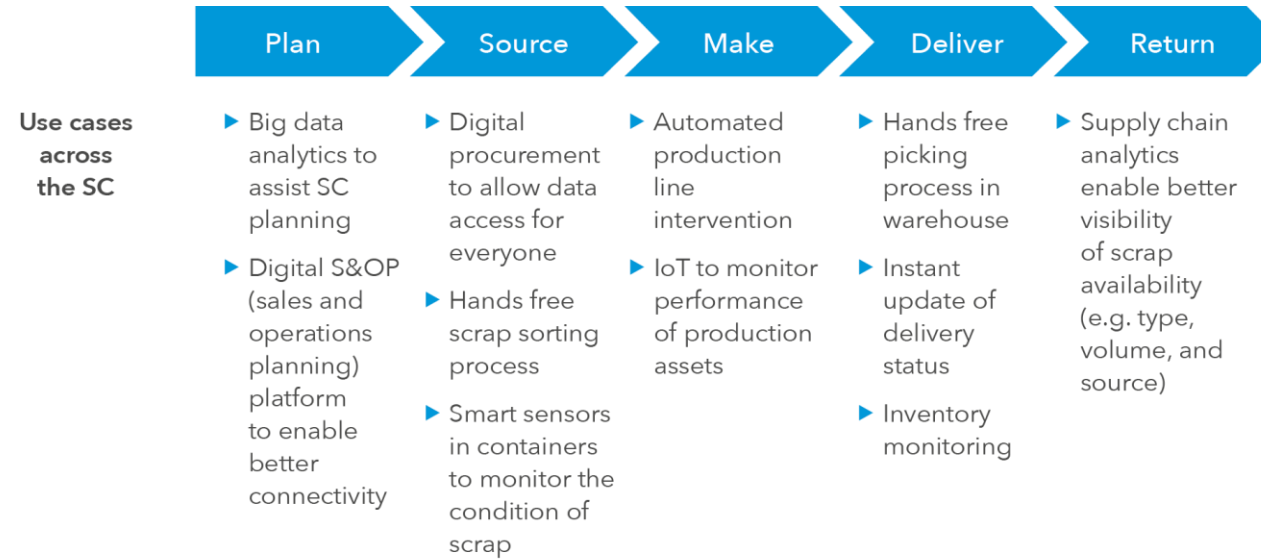
# 2. Establishing circular SCs to enable material flow...

Create four types of values

					
	<b>Environmental Value</b>	<b>Economic Value</b>	<b>Information Value</b>	<b>Customer Value</b>	
	<ul style="list-style-type: none"> <li>▶ Corporate image</li> <li>▶ Green processes and products</li> </ul>	<ul style="list-style-type: none"> <li>▶ Cost reduction</li> <li>▶ Risk mitigation</li> </ul>	<ul style="list-style-type: none"> <li>▶ Product and process information</li> <li>▶ Product lifecycle</li> </ul>	<ul style="list-style-type: none"> <li>▶ Serving customers better</li> <li>▶ Corporate image and brand protection</li> </ul>	
	<b>Financial</b>	<b>Institutional</b>	<b>Operational</b>	<b>Social</b>	<b>Technological</b>
<b>Enablers</b>	<ul style="list-style-type: none"> <li>✓ Value of recycled materials</li> </ul>		<ul style="list-style-type: none"> <li>✓ Capability of reverse logistics</li> <li>✓ Supply and demand balance</li> </ul>	<ul style="list-style-type: none"> <li>✓ Awareness</li> <li>✓ Customer perception</li> </ul>	<ul style="list-style-type: none"> <li>✓ Technical feasibility of scrap sortation</li> </ul>
<b>Inhibitors</b>	<ul style="list-style-type: none"> <li>✗ Upfront investment costs</li> <li>✗ Operating costs</li> </ul>	<ul style="list-style-type: none"> <li>✗ Financial government incentives</li> <li>✗ Recycling policy</li> </ul>	<ul style="list-style-type: none"> <li>✗ Information visibility</li> <li>✗ Dependency</li> <li>✗ Business model</li> </ul>		<ul style="list-style-type: none"> <li>✗ Digitilisation</li> </ul>

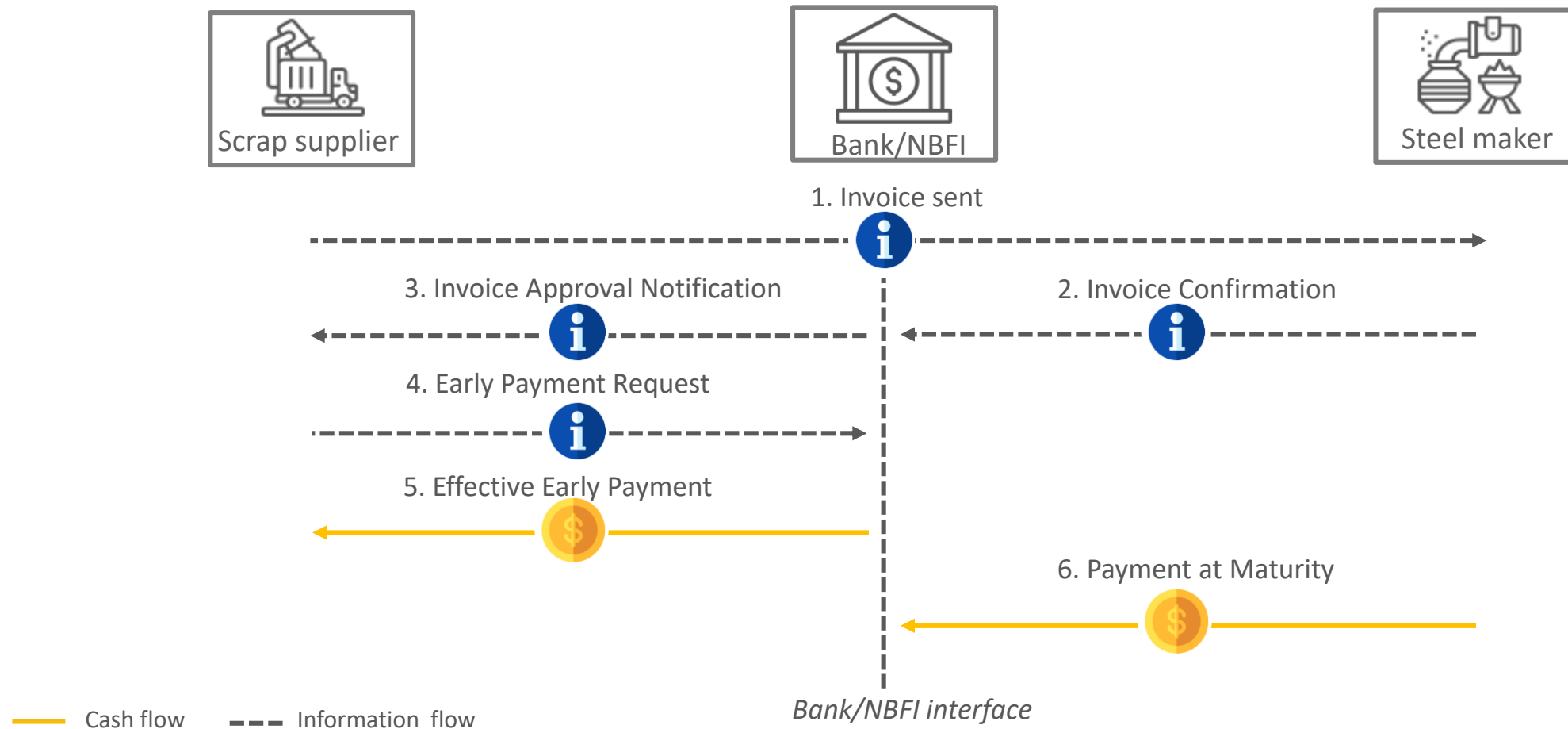


# 3. Adopting digital technologies to support the information flow...



		Plan	Source	Make	Deliver	Return
		✓	✓	✓	✓	✓
Existing Technologies	Better visibility	✓	✓	✓	✓	✓
		✓	✓	✓	✓	✓
		✓		✓	✓	
			✓		✓	✓
		✓		✓	✓	✓
Seamless process				✓		
			✓	✓	✓	✓
		✓	✓	✓	✓	
		✓	✓	✓	✓	✓
			✓		✓	

# 4. Implementing SC finance solution, such as reverse factoring, to facilitate the cash flow...



# 4.1 What to avoid in SC finance



# Strategies and enablers to build sustainable scrap steel supply chains

Part 1: Optimising the current supply chains

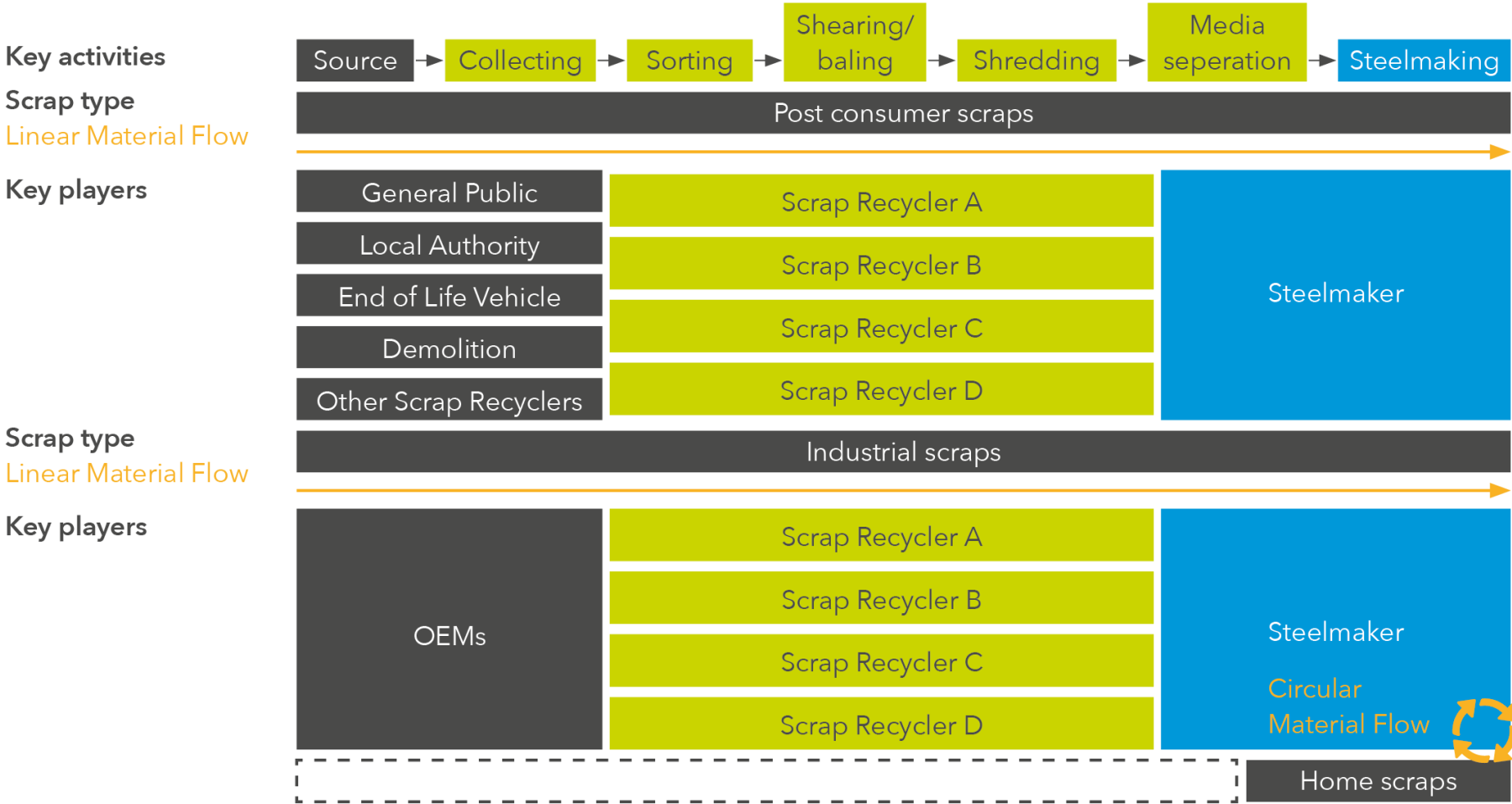
**Part 2: Supporting the future transformation**



# Three scrap sorting archetypes – Type 1: Laggard

Type 1: Laggard

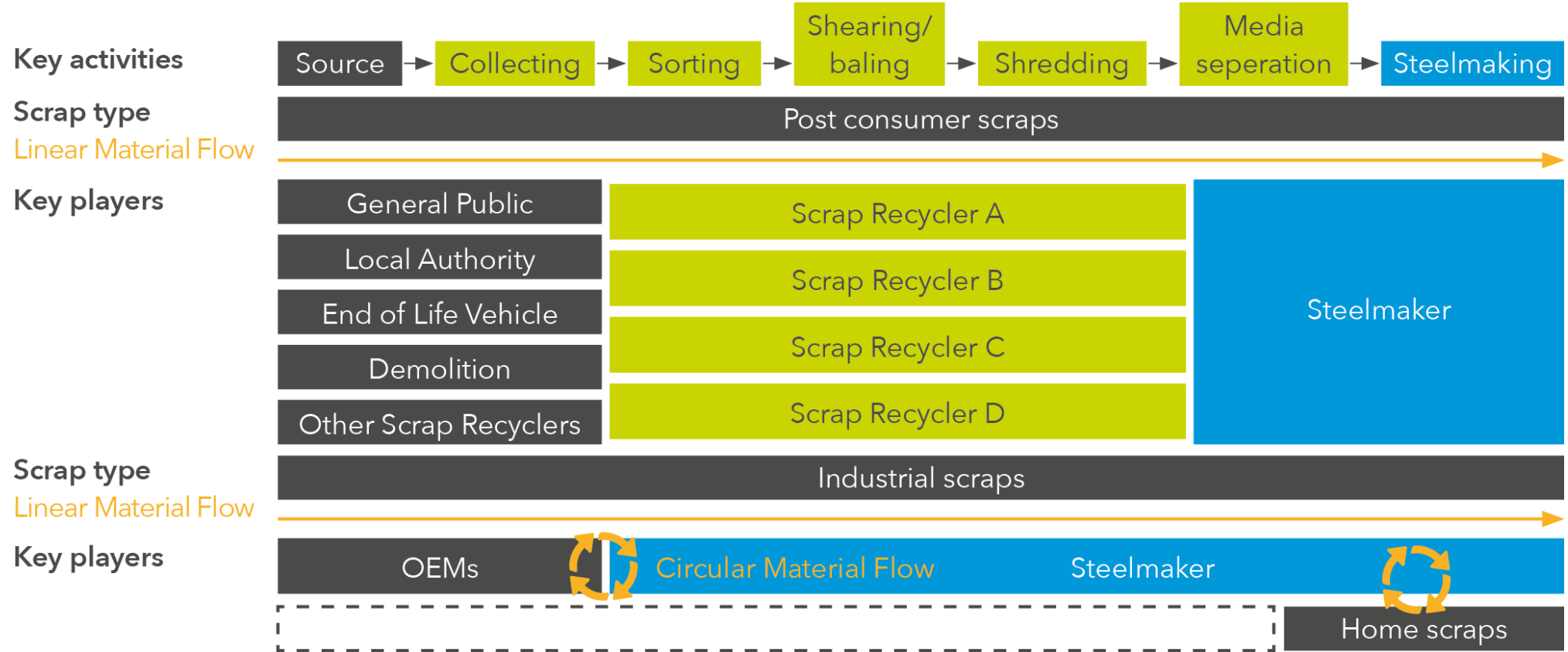
Scrap sortation process



# Three scrap sorting archetypes – Type 2: Integrator

## Type 2: Integrator

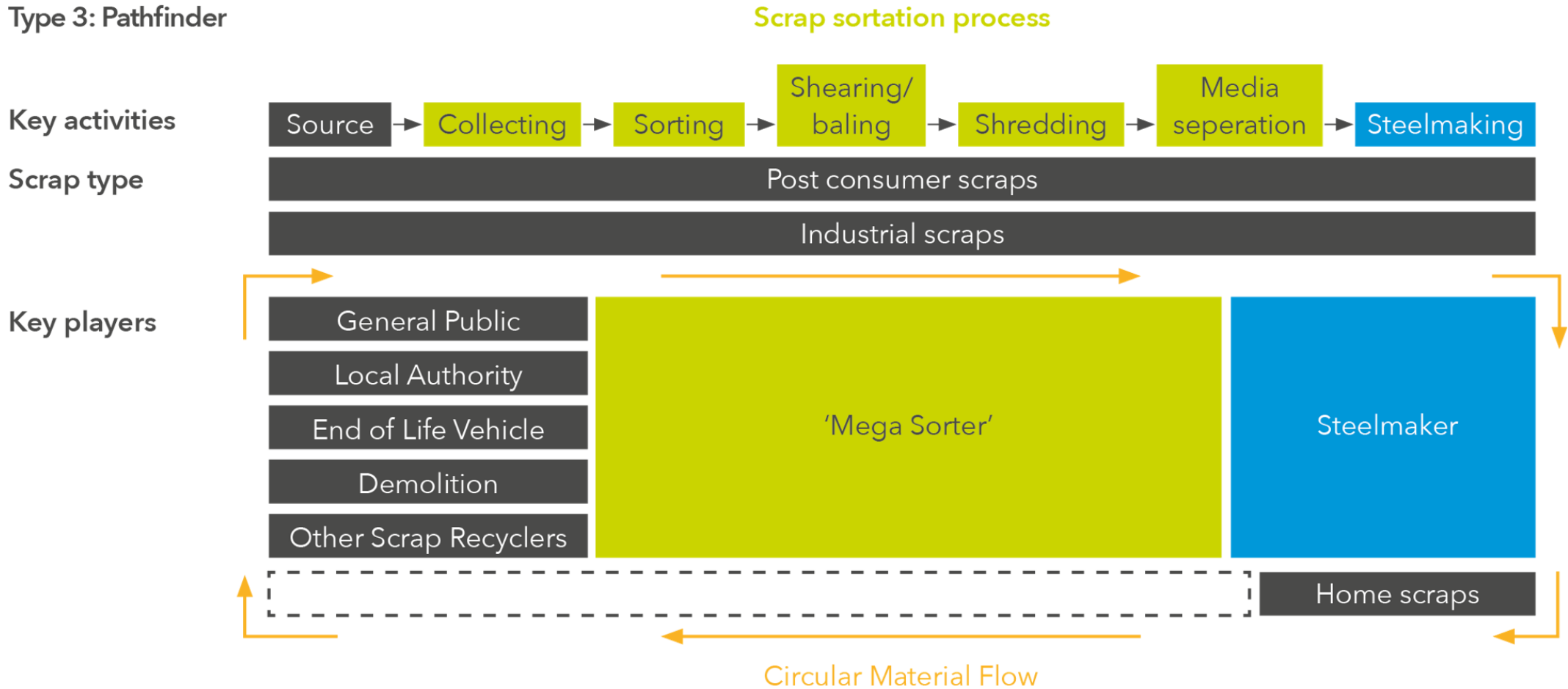
### Scrap sortation process



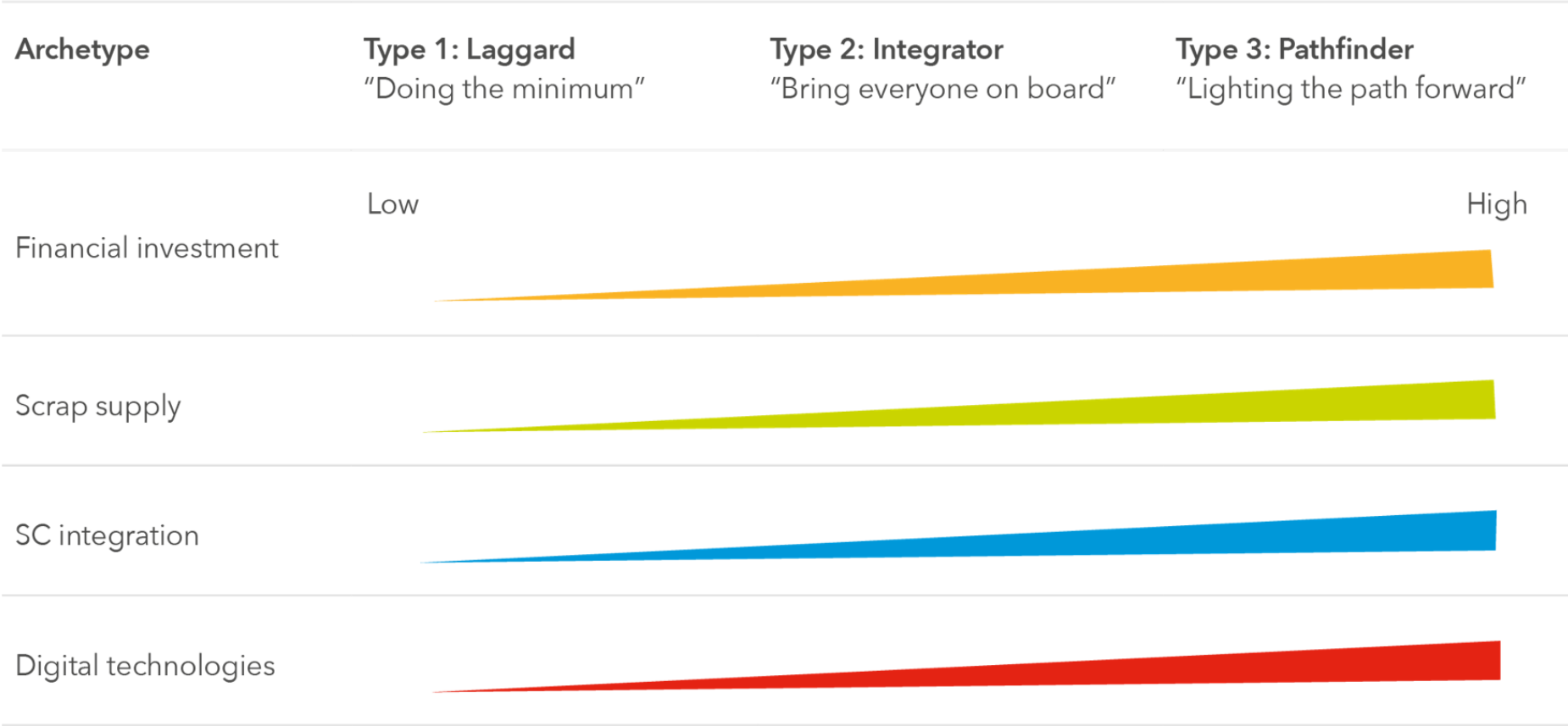


# Three scrap sorting archetypes – Type 3: Pathfinder

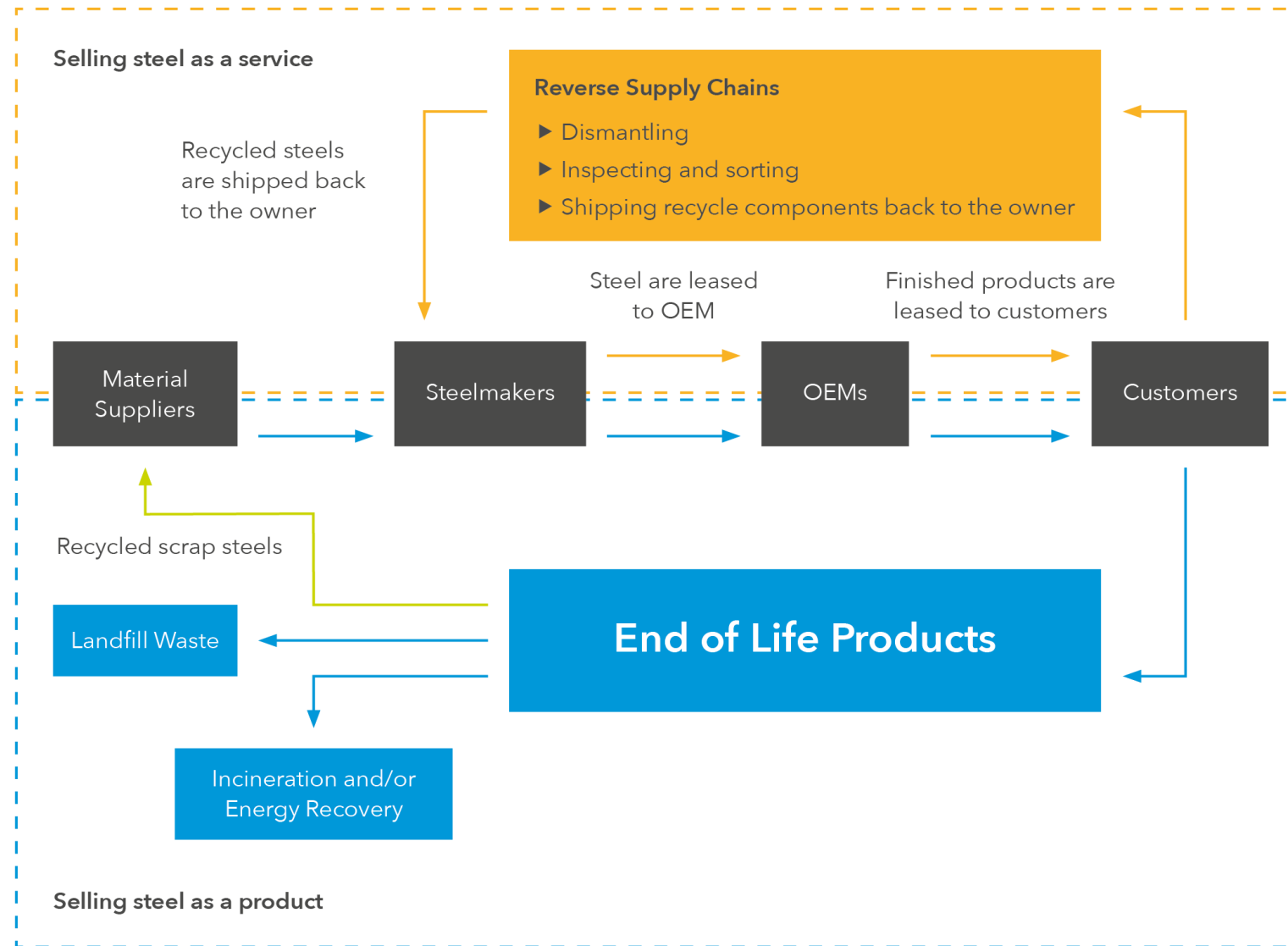
## Type 3: Pathfinder



# Three archetypes have different strategic focuses...



# What would be the future business model look like for the steel industry?







**Circular Economy is the way forward**  
We should mine from the current 'system', not from the ground.





# Panel Q&A

# Keep in touch...

## Supply Chain Resilience Hub Launch Thursday 1<sup>st</sup> July 2021

<http://www2.warwick.ac.uk/fac/sci/wmg/research/scip/networking>

@JanGodsell  
@WMGSupplyChain  
#SCinPractice  
[j.godsell@warwick.ac.uk](mailto:j.godsell@warwick.ac.uk)

