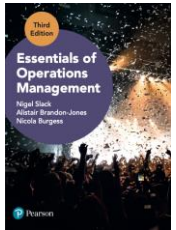
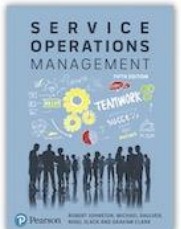
Adapting Operations Management Teaching to a Changing World

Nigel Slack & Alistair Brandon-Jones

- Is the operations environment getting more turbulent?
- What is changing / has already changed / likely to change?
- What will be the impact on operations management?
- How will / should it affect our teaching?
  - Which changes to incorporate?
  - How to incorporate them?

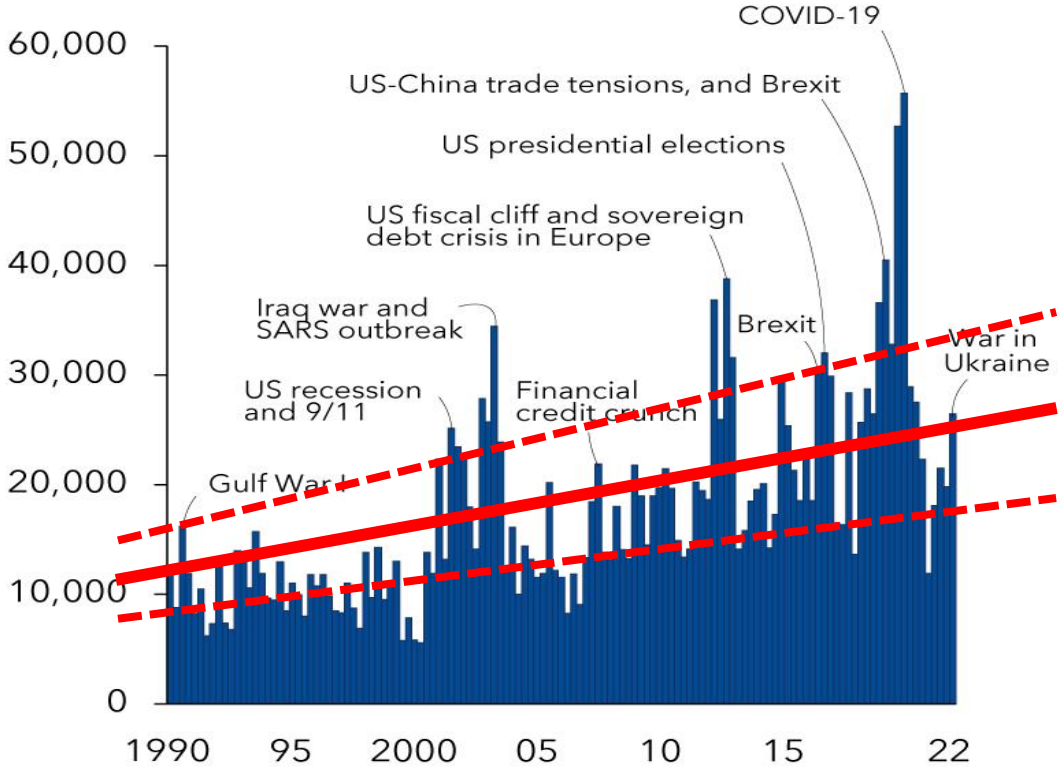




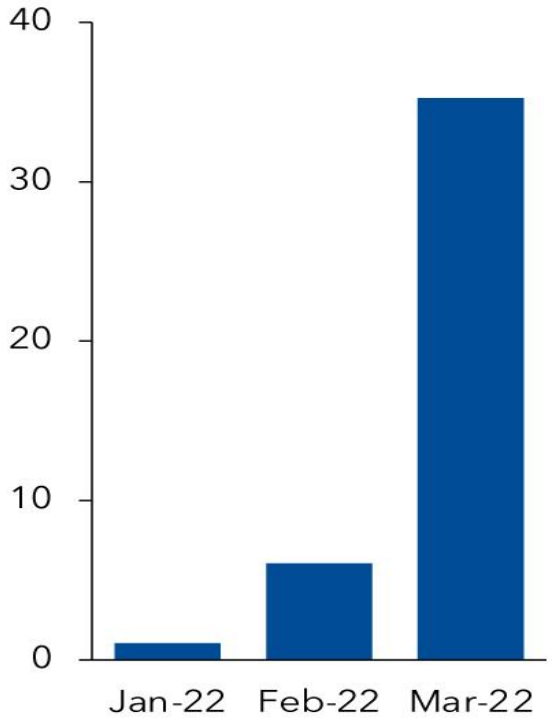
Fog of war

The World Uncertainty Index is climbing again as the invasion of Ukraine clouds the economic outlook.

Overall uncertainty
(Index, GDP weighted average)



Uncertainty related to the war in Ukraine as a share of overall uncertainty



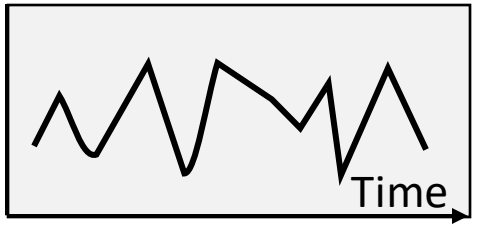
Source: Ahir, Bloom, and Furceri (2022).
Note: The left chart is computed by counting the percent of the word "uncertain" (or its variant) in the Economist Intelligence Unit country reports. The index is rescaled by multiplying by 1,000,000. A higher number means higher uncertainty and vice versa. The right chart is computed by counting the percent of the word "uncertain" (or its variant) that appear near a word related to the war in Ukraine in the Economist Intelligence Unit country reports and is calculated as a percentage of overall uncertainty.

IMF

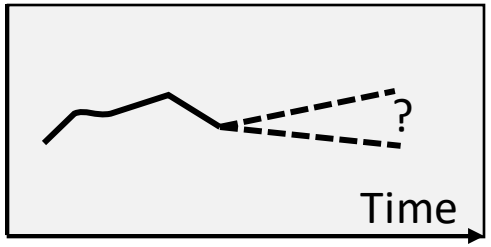
The VUCA (volatility, uncertainty, complexity, ambiguity) framework

Reduce effect by

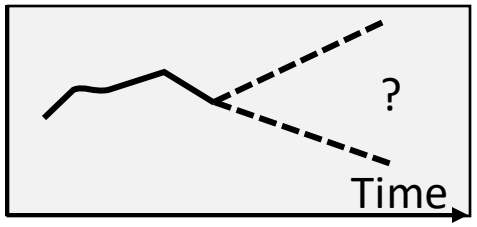
Low Volatility High



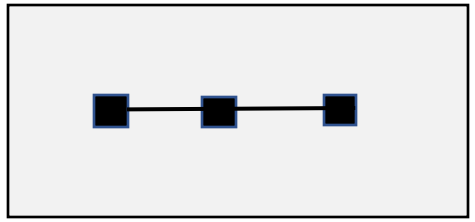
Vision
Redundant / surplus resources,
Preparedness



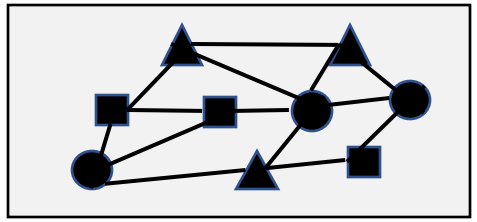
Low Uncertainty High



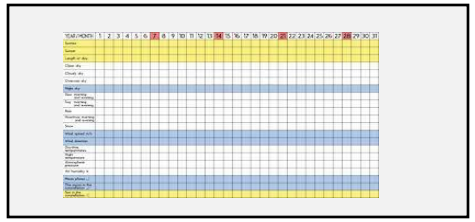
Understanding
Collecting / modelling and
Sharing information



Low Complexity High

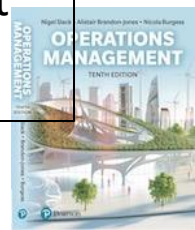


Clarity
Develop expertise /
understanding of relationships



Low Ambiguity High

Agility
Learning through experiment
and simulation

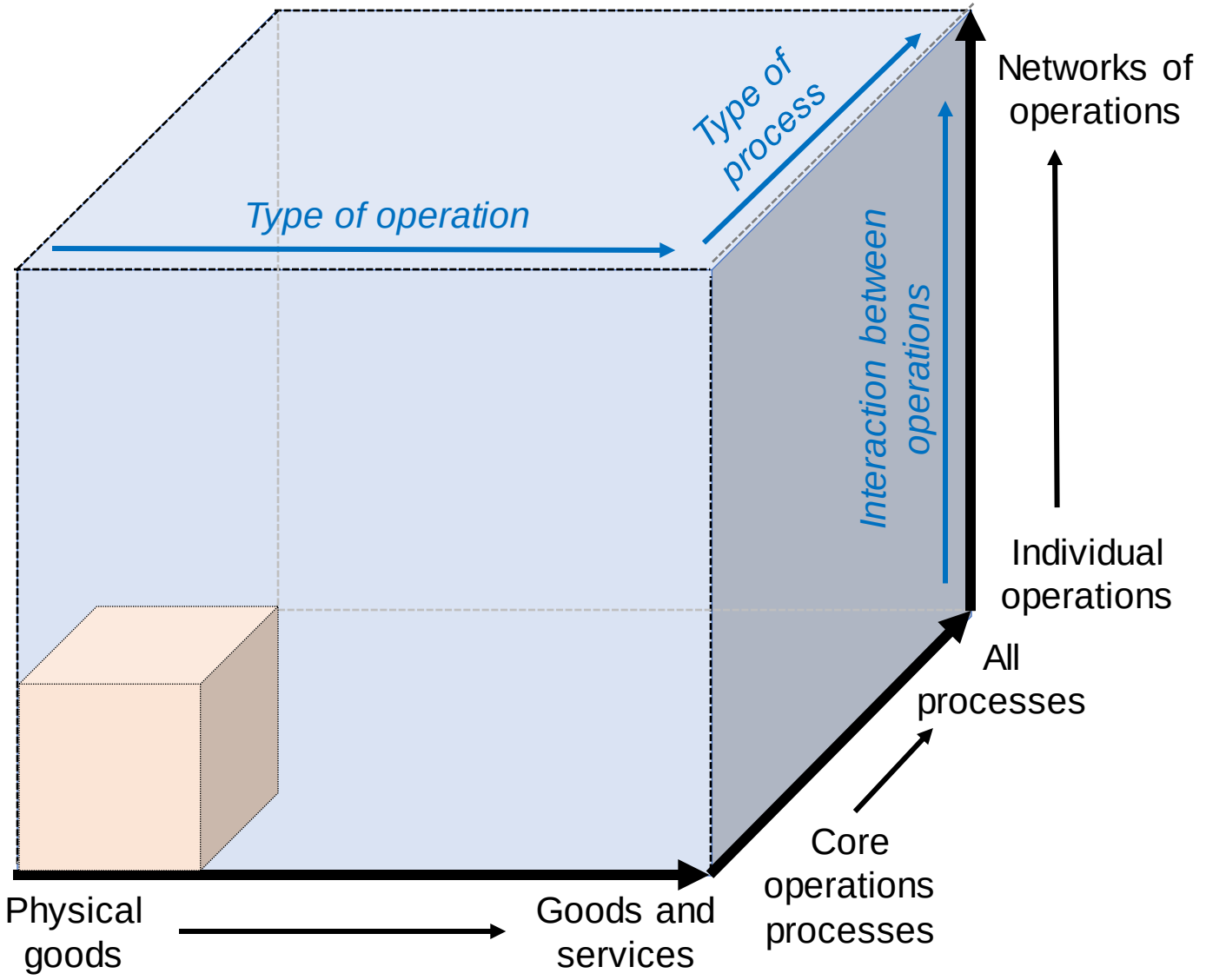


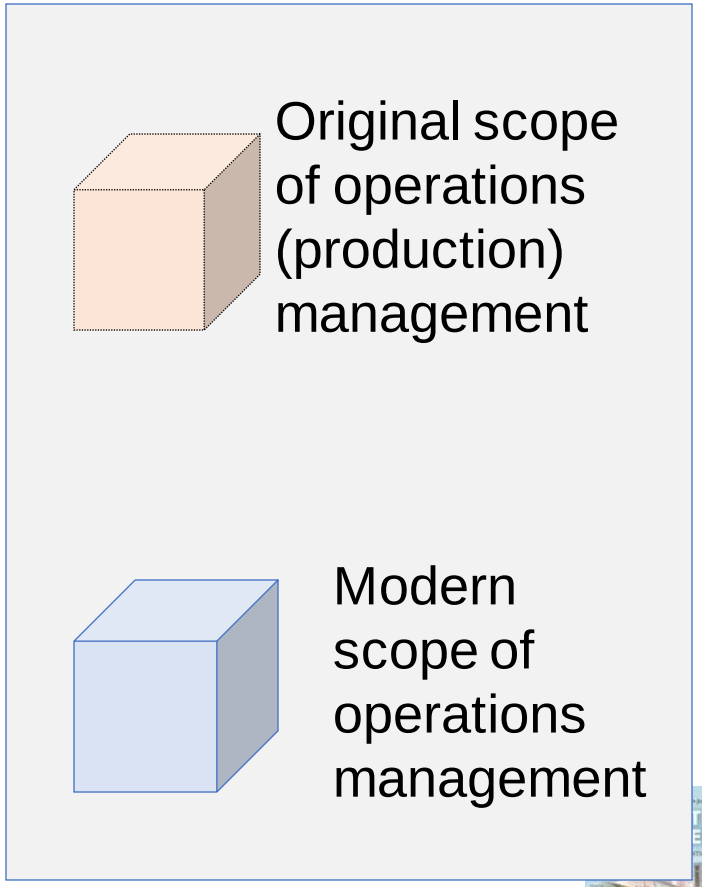
Before we consider current and future changes …

does our teaching reflect what has already happened?

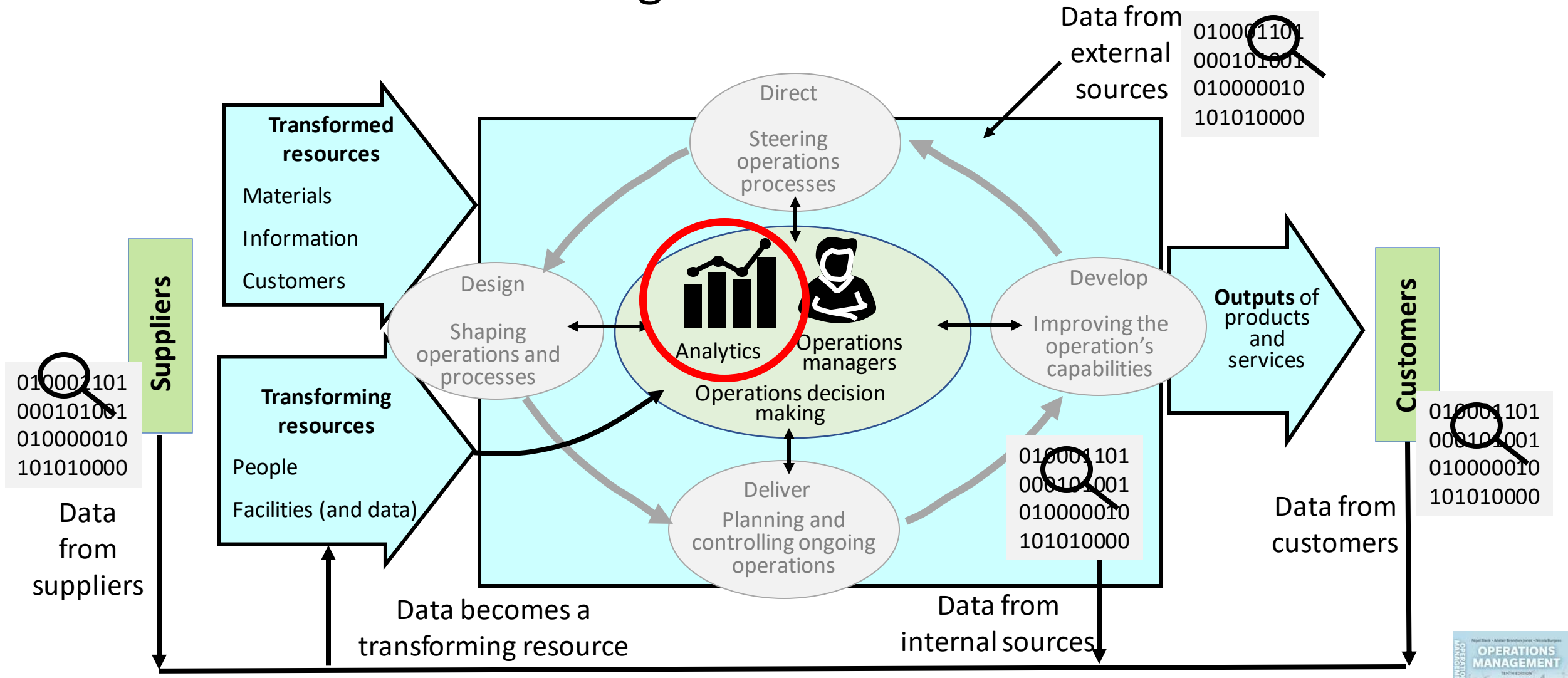
…what examples do we use to illustrate OM?

Scope - from core manufacturing … to all types of operation, process, and supply network





Sometimes we are late in including issues. For example the importance of data in OM decision-making



Sometimes we are ‘about right’. For example, introducing cases that speak to significant changes in strategic direction or operational realities

https://www.youtube.com/watch?v=DXfwLFyxtls

IKEA looks to the future

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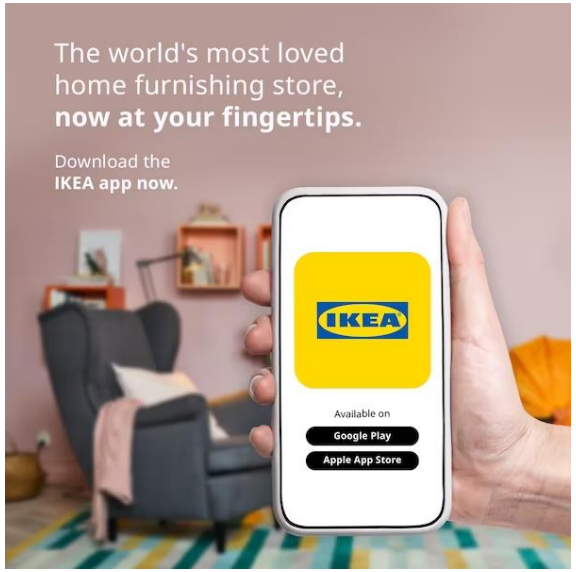
IKEA looks to the future

- Expansion slowing, new generation not as enamoured, negatives getting more important – *“it is clear that one era is ending and another beginning.”*

- The response ->

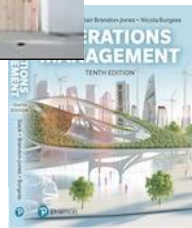
BIZTECH NEWS

IKEA to spend €3 billion turning stores into online distribution centres as it adapts to e-commerce



The future of Ikea: Small stores in big cities

By Nathaniel Meyersohn, CNN Business
Updated 11:34 AM EST, Mon December 3, 2018



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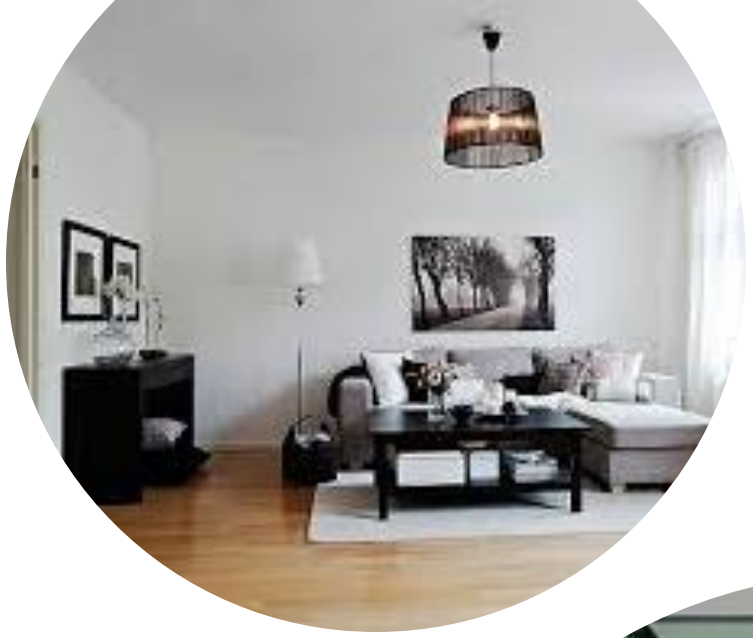
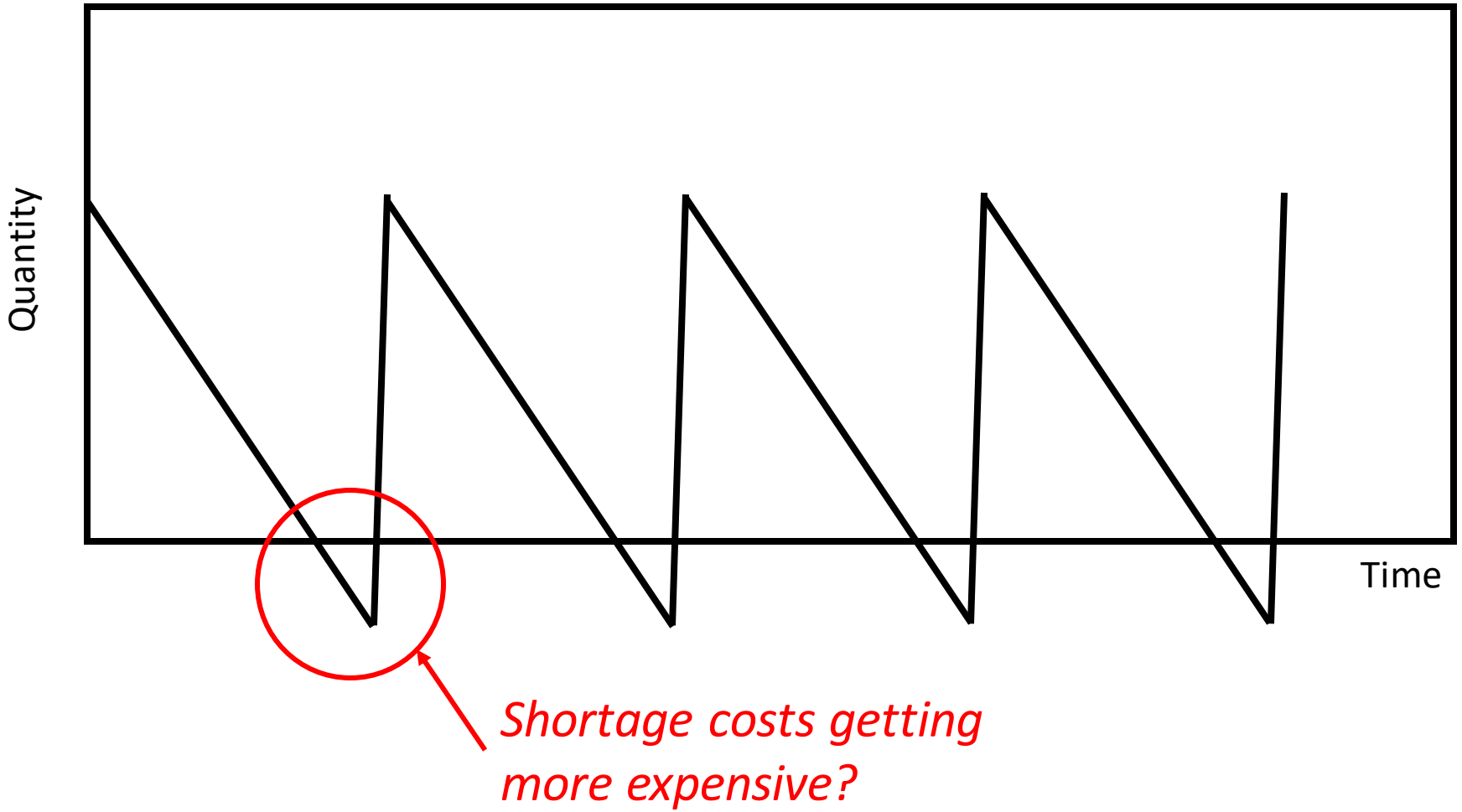
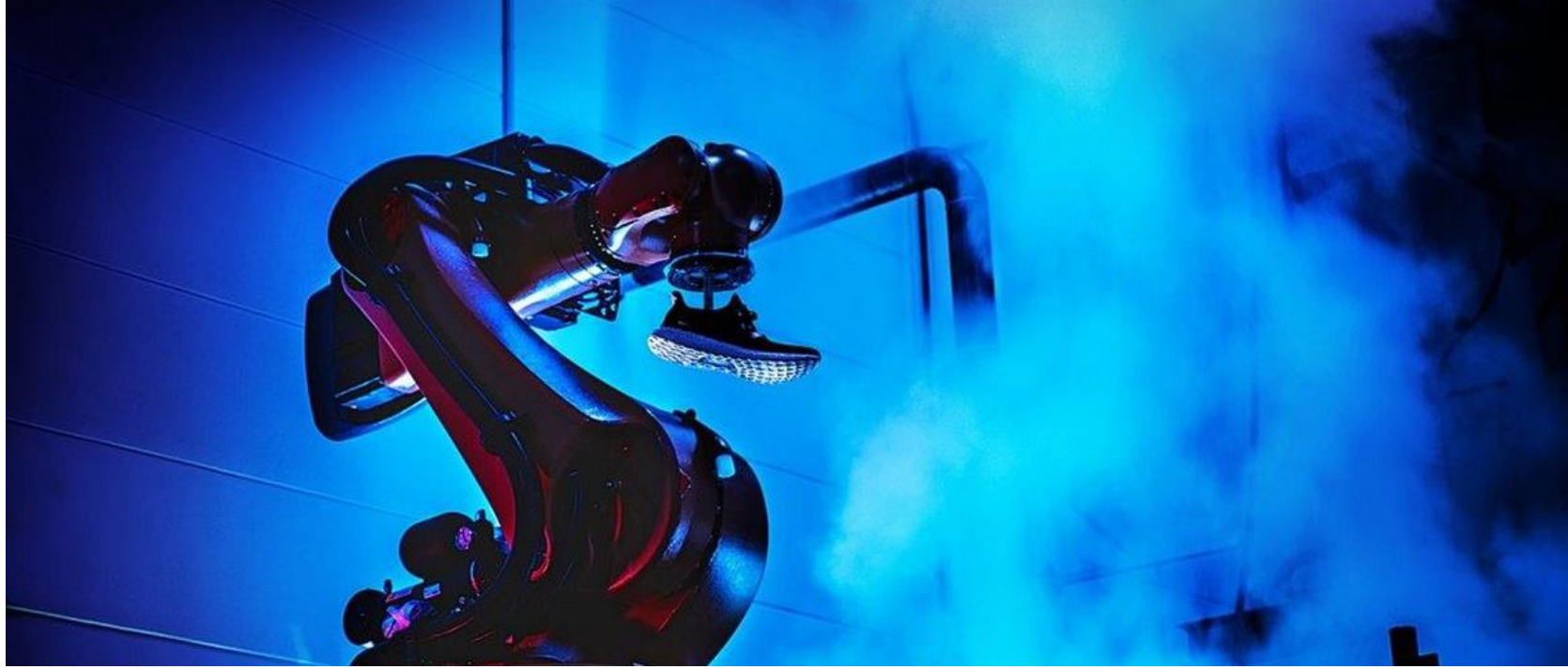
IKEA case questions



- Consider smaller town-centre stores and discuss ->
  - What do you see as the customer value proposition?
  - What are the challenges of delivery this new service?

Sometimes use the same idea (EOQ), but with a different emphasis





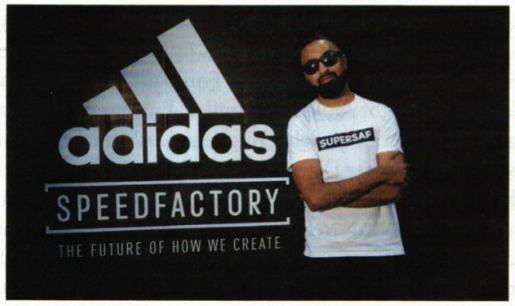
And sometimes we're maybe too early!

TRADELENS

Things change, OK?

OPERATIONS IN PRACTICE

How Adidas coped with shrinking fashion cycles



There is a vast industry involved in designing, making and distributing trainers (sneakers). It is an industry where supply chains are complex, and involve an extensive network of specialized operations, each focusing on the individual components that make up the shoes. A single part could have crossed back and forwards between several different countries before being assembled into the finished product, usually by hand. Most of the making is done in Asia

all suppliers must conform). Finally, this globalised and complex supply chain means a long lead-time between conceiving a new trainer and it eventually arriving in the shops. And it is this last point that can be the most problematic, particularly for fashionable trainers with a short 'fashion life'. From the initial design for a new train through prototype creating and testing, to placing o on suppliers, setting up the production process, ramp up production, and finally sending the trainers to the shops, can take as long as 18 months. Even orders to replenish stocks can take two to three months. But fashion cycles for trainers are getting shorter, with some designs lasting only one to three years.

Faced with this tension between slow lead-times on one hand and short fashion cycles on the other, Adidas developed its 'Speedfactory' operation, the first one of which was located in Ansbach, Germany, halfway between Munich and Frankfurt (the second one is near Atlanta in the US). The Speedfactory is totally automated, and designed to be able to accommodate new technologies,

ONS IN TICE

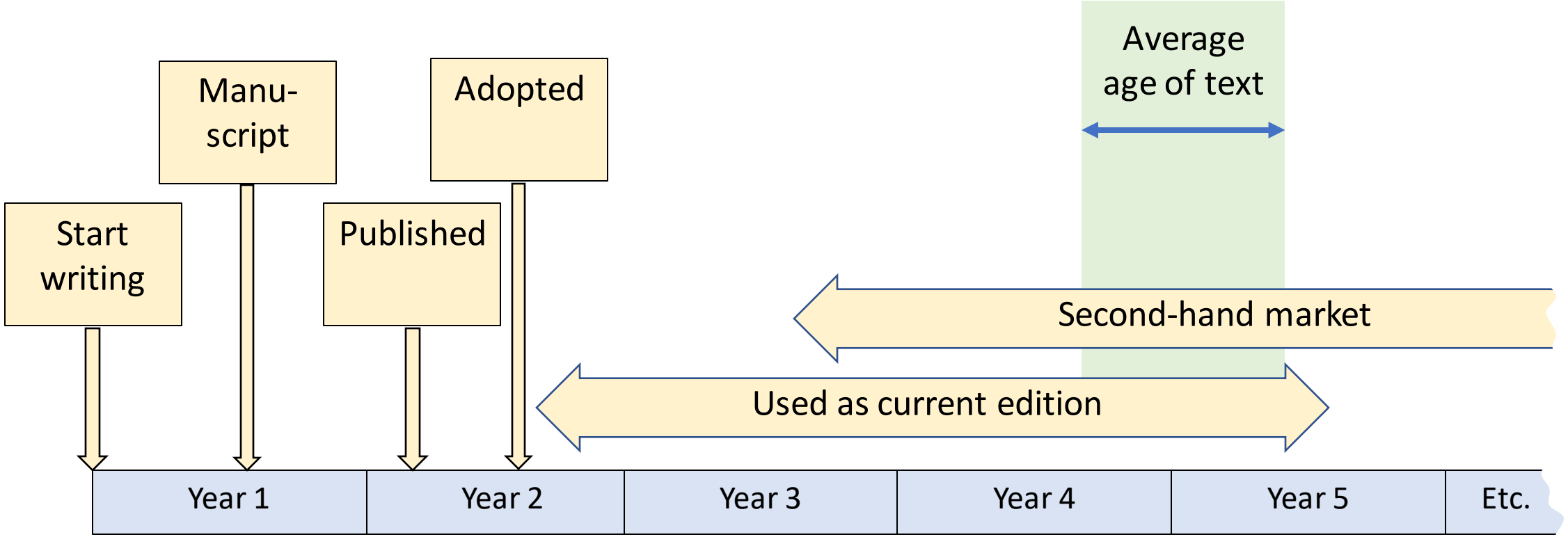
Adidas shuts its 'near market' factories[2]

like such a good idea. Like almost all of its rivals, tended to concentrate on the design, market-

18 months) between conceiving a new trainer and it arriving in the shops. And it is this last point that was the most problematic, particularly for fashionable trainers with a short 'fashion life'. Even orders to replenish stocks can take two to three months. But fashion cycles for trainers are getting shorter, with some designs lasting only one to three years. Faced with this, Adidas developed its 'Speedfactory' operation, the first one of which was located in Germany and the second one in the United States. The Speedfactory was totally automated, and designed to be able to accommodate new technologies, such as **3D printing** enabled by motion capture technology. And because almost all the stages of manufacturing were done on the same site, the intention was to make Adidas faster and more flexible, especially in producing small batches of fashionable products. It was hoped that the Speedfactories could produce shoes in days and replen-

Textbook writing schedule and usage

Governs the risks generated over content decisions



Question ….

Do the examples you use cover a reasonable range of types of operation?

Examples in Slack et al ‘Operations Management’ 10th Ed.

The ‘degree of service’ dimension	20% manufacturing
The ‘unit of analysis’ dimension	Most in supply chaps
The ‘producer-recipient’ dimension	B2C (50%), B2B (44%)
The ‘for-profit, non-profit’ dimension	≅7% non-profit
The ‘strategic focus’ dimension	33% some strategic coverage
The ‘volume-variety’ dimension	20% low volume-high variety

Examples in Slack et al ‘Operations Management’ 10th Ed.

The ‘revenue flows’ dimension	<2% platform-based operations
The ‘order penetration’ dimension	≅45% create-to-order
The ‘functional scope’ dimension	<2% non-operations function
Steady state-transient dimension	<5% deal with transient conditions.
The ‘operations activities’ dimension	≅ Equal split ?

Question ….

What is changing in the operations world, and what impact will it have?

What will have an impact on OM teaching?

Cause → Effect

Attitudes to sustainability

Geopolitical uncertainty

Climate change

Political conflict

Hybrid working

New / developing technologies

Commodity prices

Customer expectations

Regulation

Labour / skill shortages

Supply security

How will the relative importance of operations objectives change?

Quality	Speed	Depend-ability	Flexi-bility	Cost	Sustain-ability

All will remain important, and …

Different objectives will have different degrees of importance for different operations

…. But generally, …..

Question ….

How do we judge which developments to include in our teaching?

Judging how much of the change to incorporate into teaching

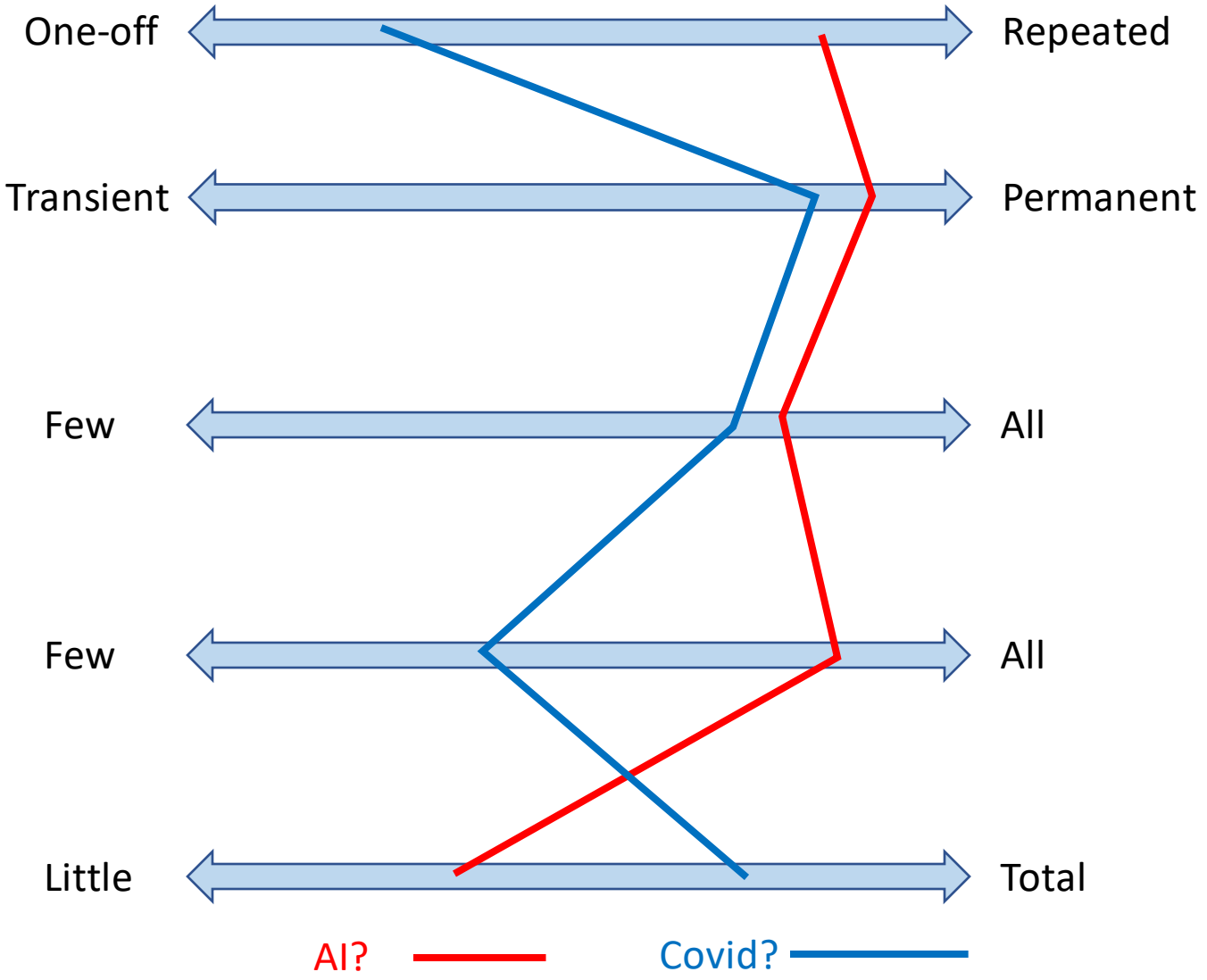
How Frequent is it likely to be?

How enduring are its effects likely to be?

How many types of operation will it affect?

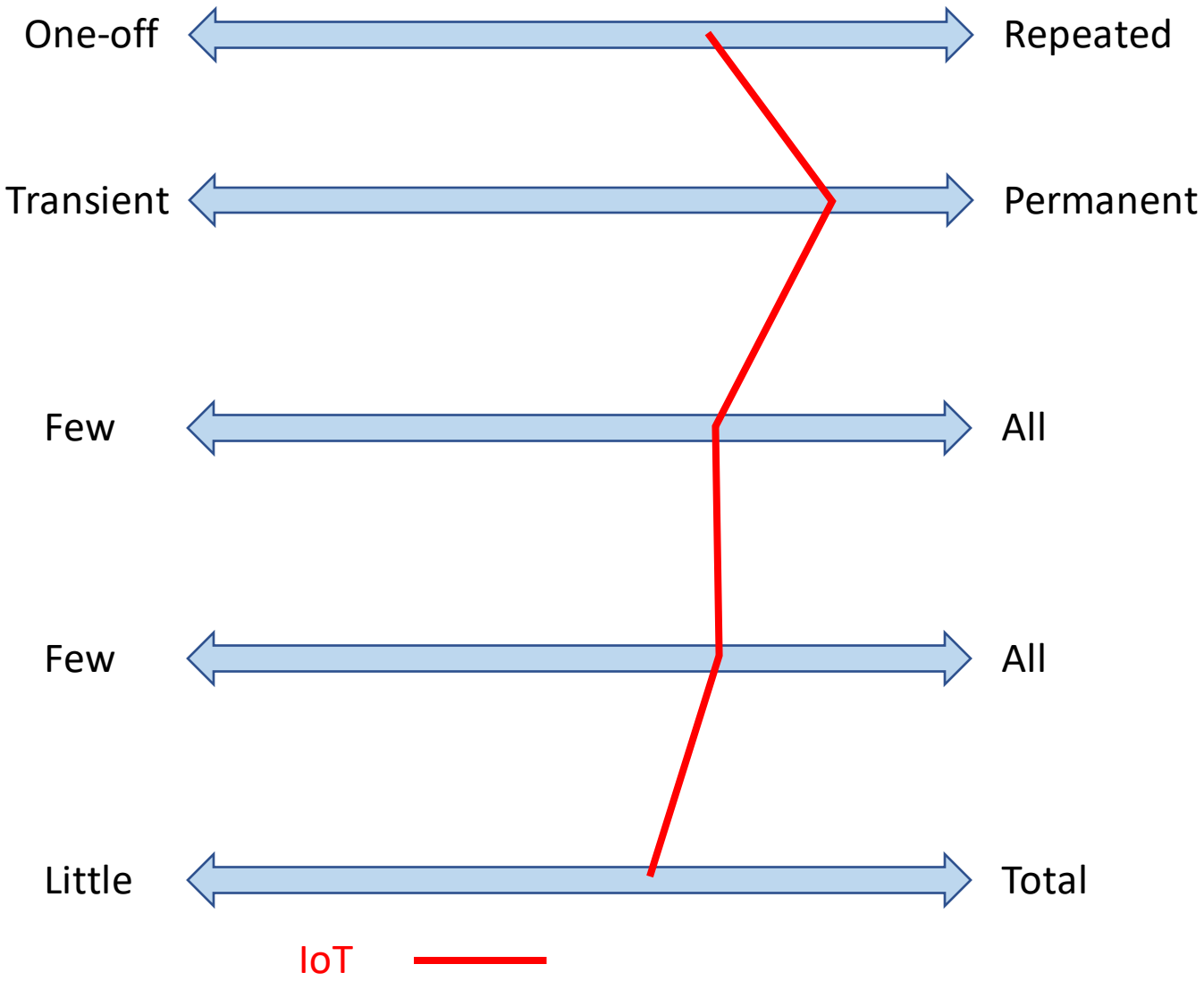
How many OM topics is it likely to affect?

How much consensus is there on the consequences of the change?



Judging how much of the change to incorporate into teaching

The Internet of things (IoT) More to the left, or right?



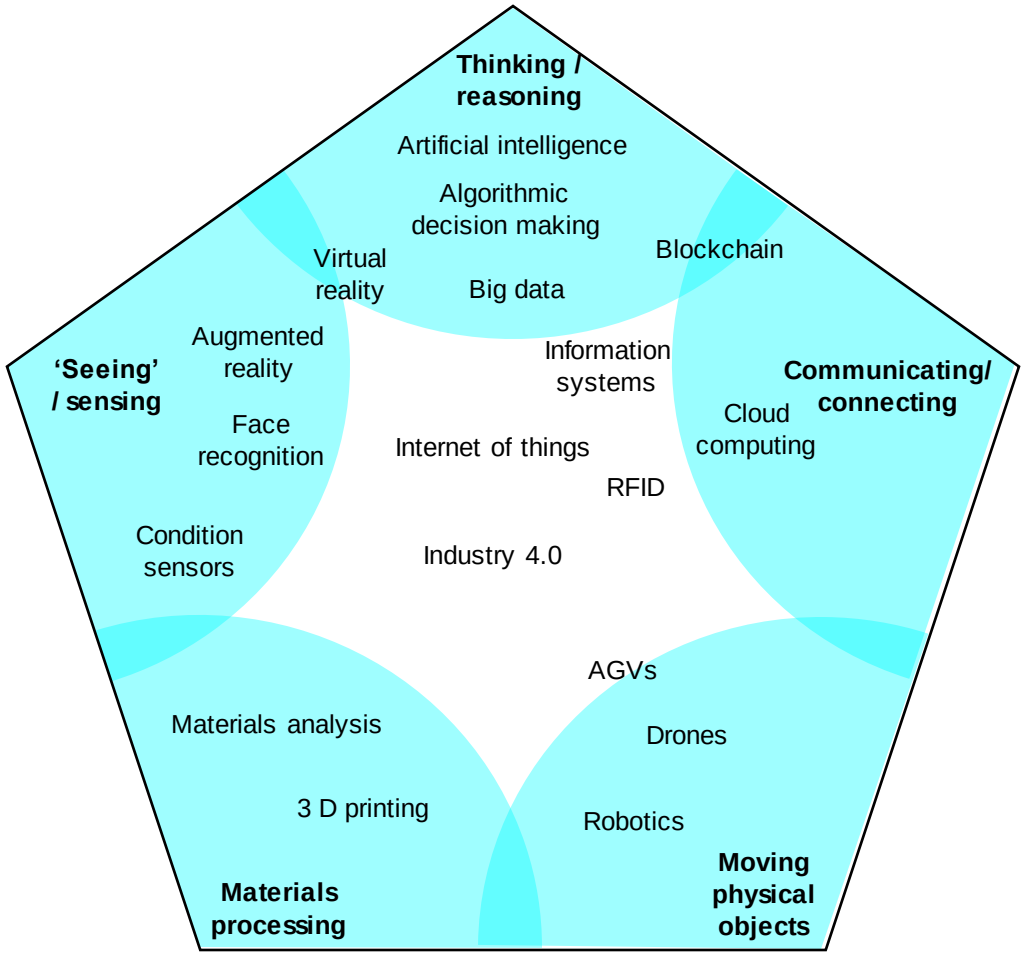
And the impact on teaching? ….

Question ….

As things change faster, or become less predictable, should we move to teaching ‘principles’ rather than ‘specifics’?

For example, Process technology ….

For example - process technology - Five ‘primary capabilities’



New Mac Desktop?

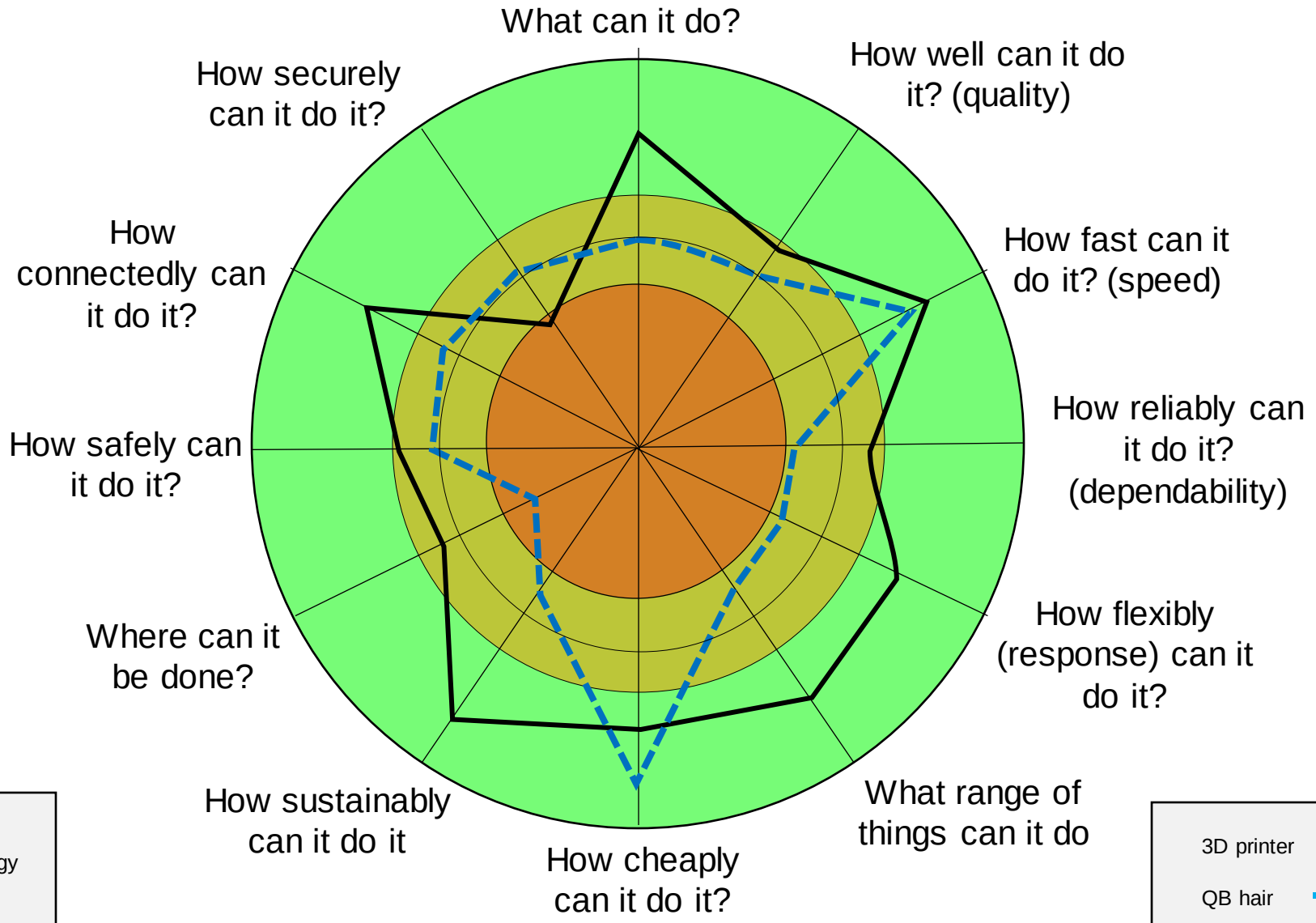
Might be upgraded next year …… but I want one NOW

Buy now or wait?

What factors should I consider?

It's the bionic duckweed problem

Assessing the impact of a processing technology on operations performance



Superior to existing technology
About the same as existing technology
Worse than existing technology

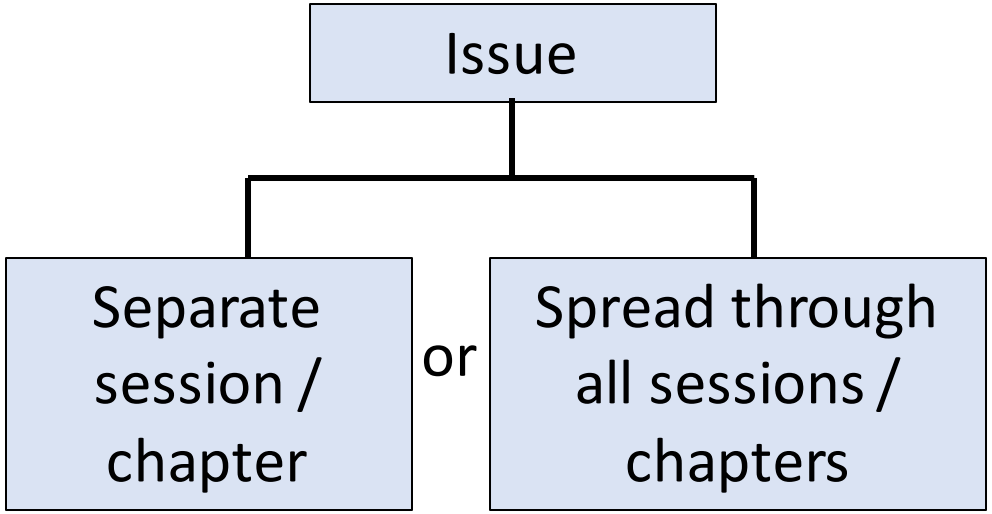
3D printer
QB hair

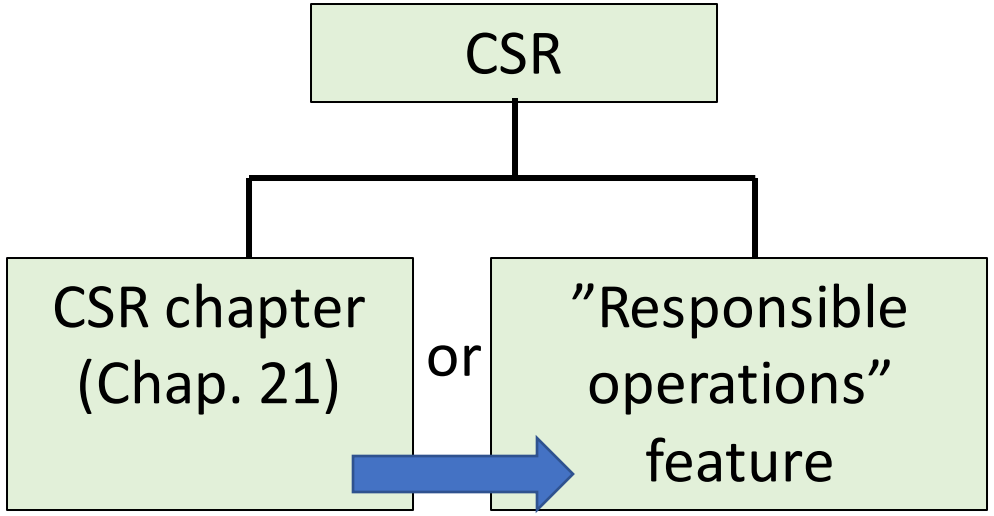
And the impact on teaching? ….

Question ….

To what extent should we be integrating new ideas into the curriculum?

Devote a session to a new topic, or spread it through the module (or book)





Thanks for viewing

Any more questions ….

Email me at ..

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Comments / questions