



INNOVATION – Uncertainty & Risk

Session IV
February 2022
Alan Mumby

Uncertainty

The dilemma.....

- Out of all the things we could do, what are we going to do?
- There are obvious constraints; ?

Uncertainty

by its nature innovation is about....

- the unknown
- about possibilities and opportunities associated with innovation
- doing something new



In your Company

Does somebody have a responsibility for innovation

Are there people accountable for innovative direction

Uncertainty.....the challenge

We don't know in advance if an innovation will work –

will the technology actually do what we want it to do?

Is the service provision we're considering commercially viable?

will the market still be there and behave as we anticipated?

will competitors move in a different and more successful direction?

will the new production management really make such a difference?

will a pandemic come along and scupper all of our plans.....?

Uncertainty.....the challenge the options

Incremental Innovation

We have prior knowledge of the product process or service type



We have experience in the marketplace



Known return on our current investment, we can see the profit margins



Uncertainty.....the challenge the options

Incremental Innovation ...the advantages

The technology is likely to remain the same, i.e. manufacture, assembly and packaging. ✓

The service provision doesn't really change ✓

No major changes to logistics ✓

More resource friendly i.e. finance, manpower & time. ✓

Uncertainty.....the challenge

Radical (Disruptive)

Doing something completely different, new incentive.. exciting times !



Completely new customer base



Could be market leaders.....greater market share



Greater profit



so what isn't there to like about radical innovation ?



Uncertainty.....the challenge the options

Radical (Disruptive)

Possibly a lack of in-house knowledge and capability ?

Possibly new technologies or new software with a high financial cost ?

All that time and effort creating a service which the client might reject ?

The new product struggles in the market.....it's not accepted ?

So.....Radical or Incremental ?.....?

Radical
Innovation

Requires new
knowledge & resources

1

Existing competence
loses value

2

Step changes in
performance

3

Relatively rare

4

Incremental
Innovation

Relatively small changes in
performance\utility

1

Build upon existing
knowledge and resources

2

Competence - enhancing

3

The life blood of
innovation ?

4

Incremental Innovation

- Improvements to existing products, services and processes, such as line extensions
- New products or services that address the same existing market.
- Easy to develop, based on customer needs.
- Growth is only possible through taking a greater market share

Breakthrough Innovation

- New products or services with unique features that provide real benefit to customers.
- Difficult to develop, as they require deeper customer insight.
- Generate growth through adjacent markets.
- May take time to generate sales.

Radical Innovation

- Develops products, services for markets that don't exist at this time
- New business models that transforms markets.
- Rare and difficult to develop

The Golden Ratio

70

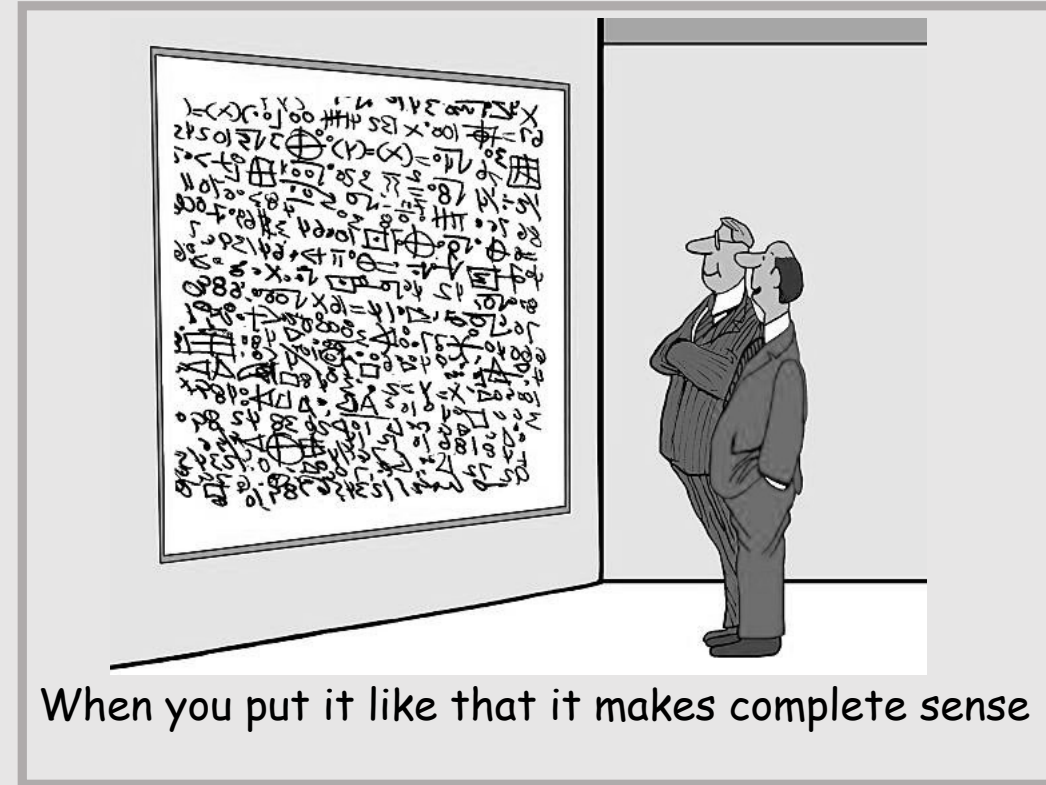
20

10

Uncertainty ...we need assurance, we need

...knowledge, intelligence, information.....

so we can calculate a risk



The more we know about something, the more we can take calculated decisions about whether or not to proceed. And in a competitive environment this puts a premium on getting hold of knowledge as early as possible.

Uncertainty ...increase our knowledge

Need for early knowledge to get early information to feed the decision-making, through;

- technological R&D,
- market research,
- competitor analysis,
- trend-spotting etc.

Uncertainty ...increase our knowledge

Knowledge, information, and technical data are key to reducing chance and clarifying any potential risk.

Uncertainty ...increase our knowledge

Robert Cooper (2001)

... In the 'game' of 'Russian roulette'



.....most people when faced with the uncertainty of pulling the trigger would be happy to 'buy a look' at the gun chamber to improve their knowledge of whether or not there is a bullet in it !

Uncertainty ...increase our knowledge

An investment in knowledge always pays the best interest.

Benjamin Franklin

Not to know is bad....

African Proverb

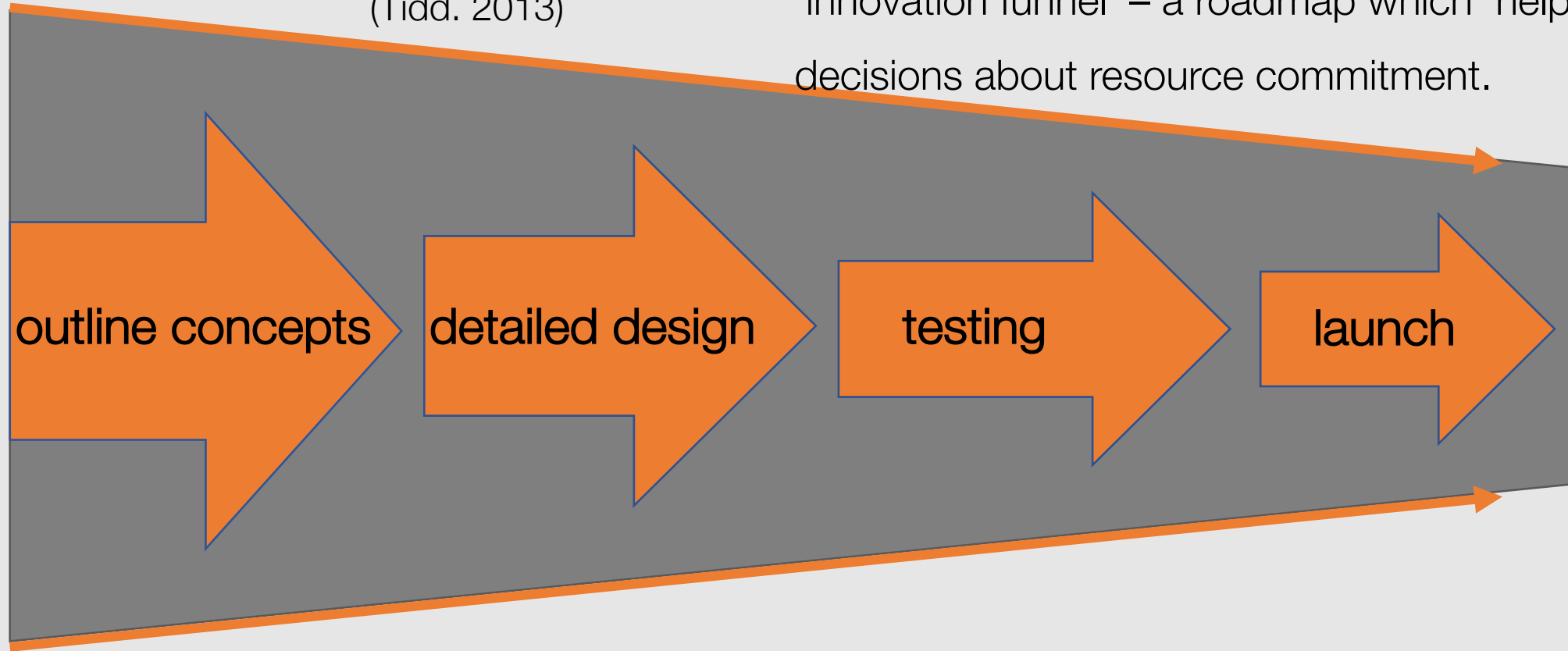
Uncertainty managing the
innovation project.....

Uncertainty managing the innovation project...



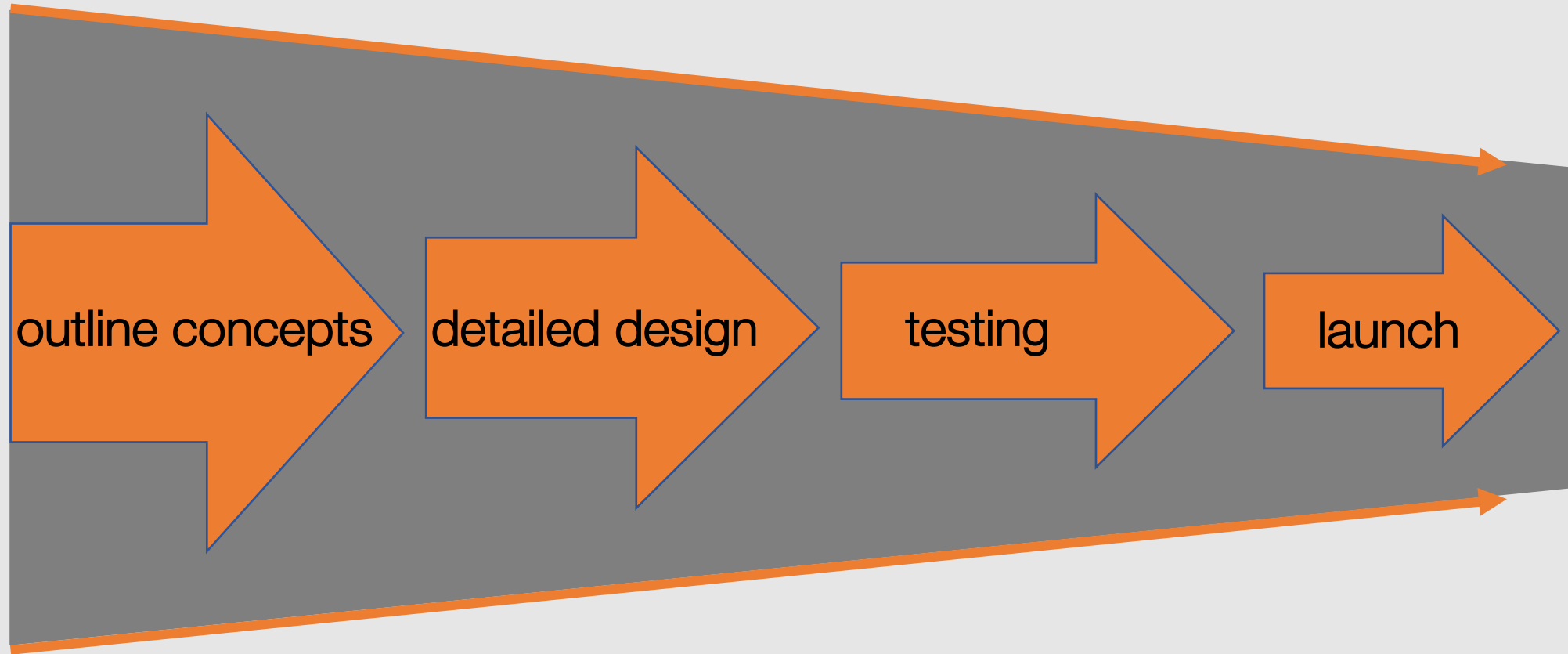
(Tidd. 2013)

‘innovation funnel’ – a roadmap which helps make (and review) decisions about resource commitment.



.....The innovation funnel

convergence from a wide mouth of possibilities into a much smaller section which represents those projects to which resources will be committed.



outline concepts

detailed design

testing

launch

.....The innovation funnel

At the beginning of a project there is the space and time where anything is possible, concepts are mused over, tweaked and then re-tweaked

Managing innovation at this point can be a fine balancing act between

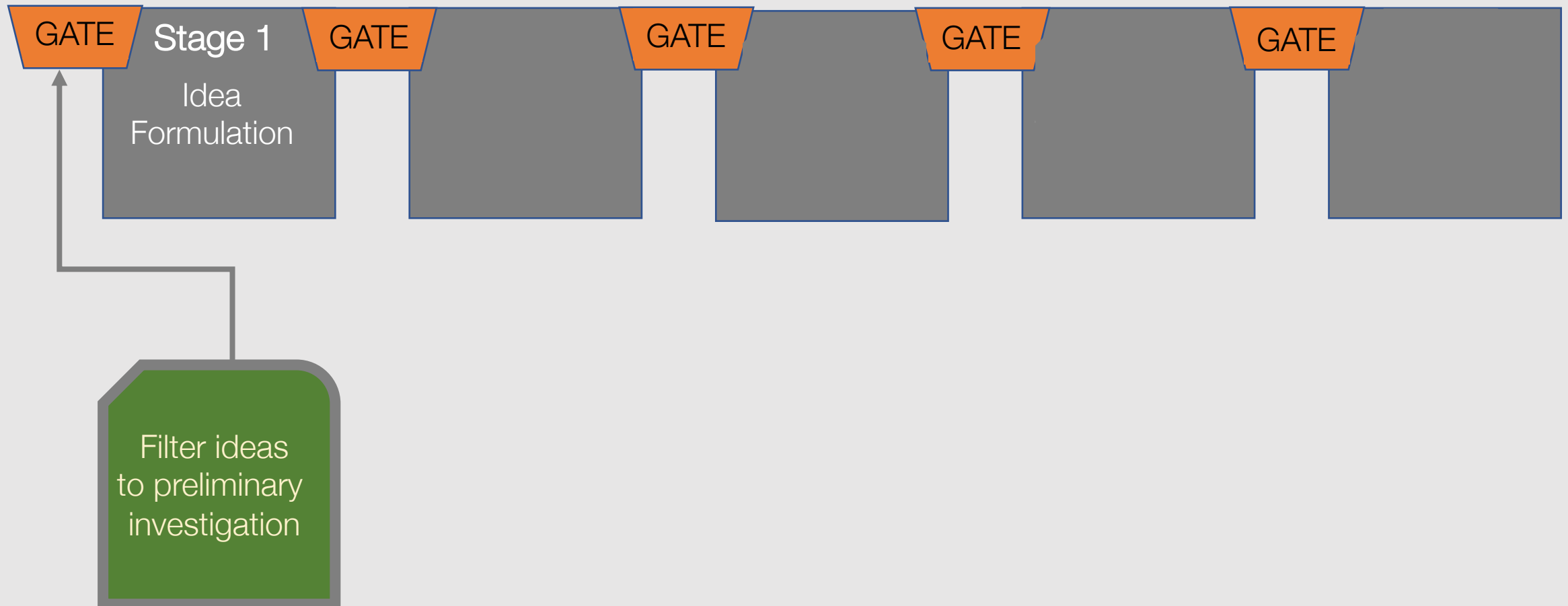
- A. The costs of continuing with projects which may hold no or limited success.
- B. The danger of closing down too soon and cancelling out any chance of a potentially successful innovation.

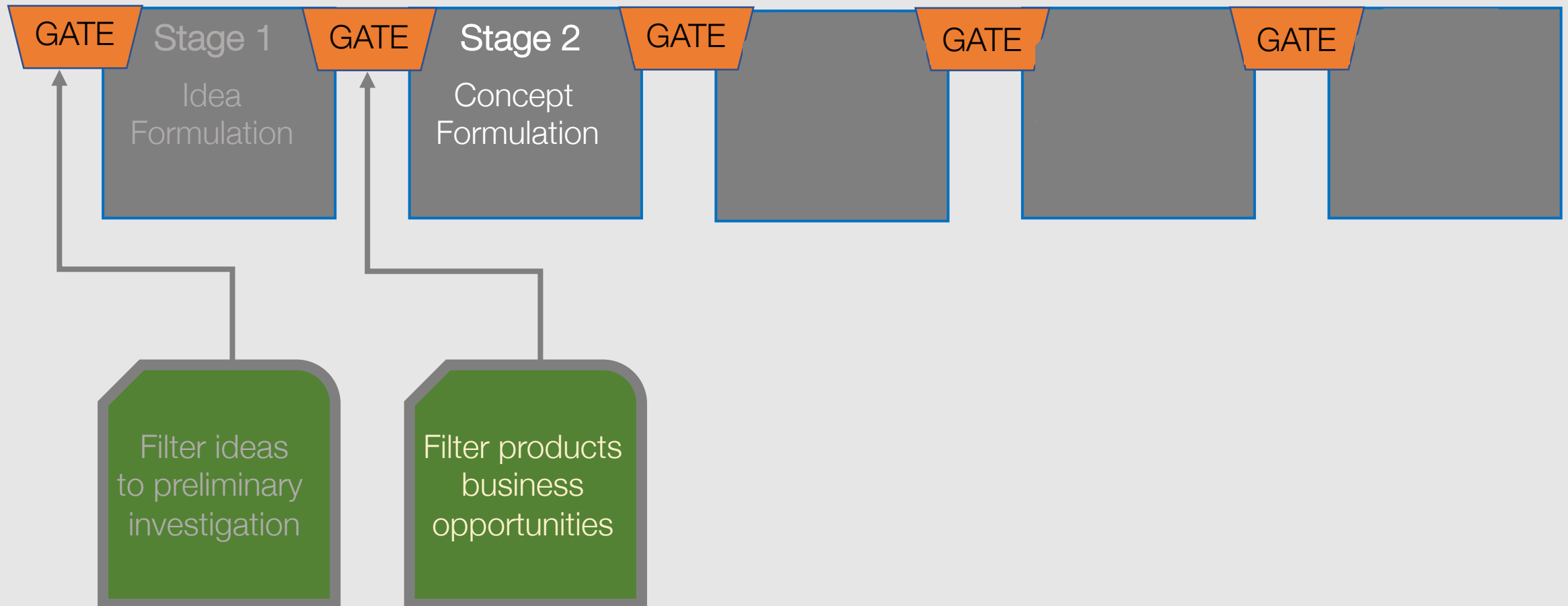
Taking these decisions can be done on an ad-hoc basis.

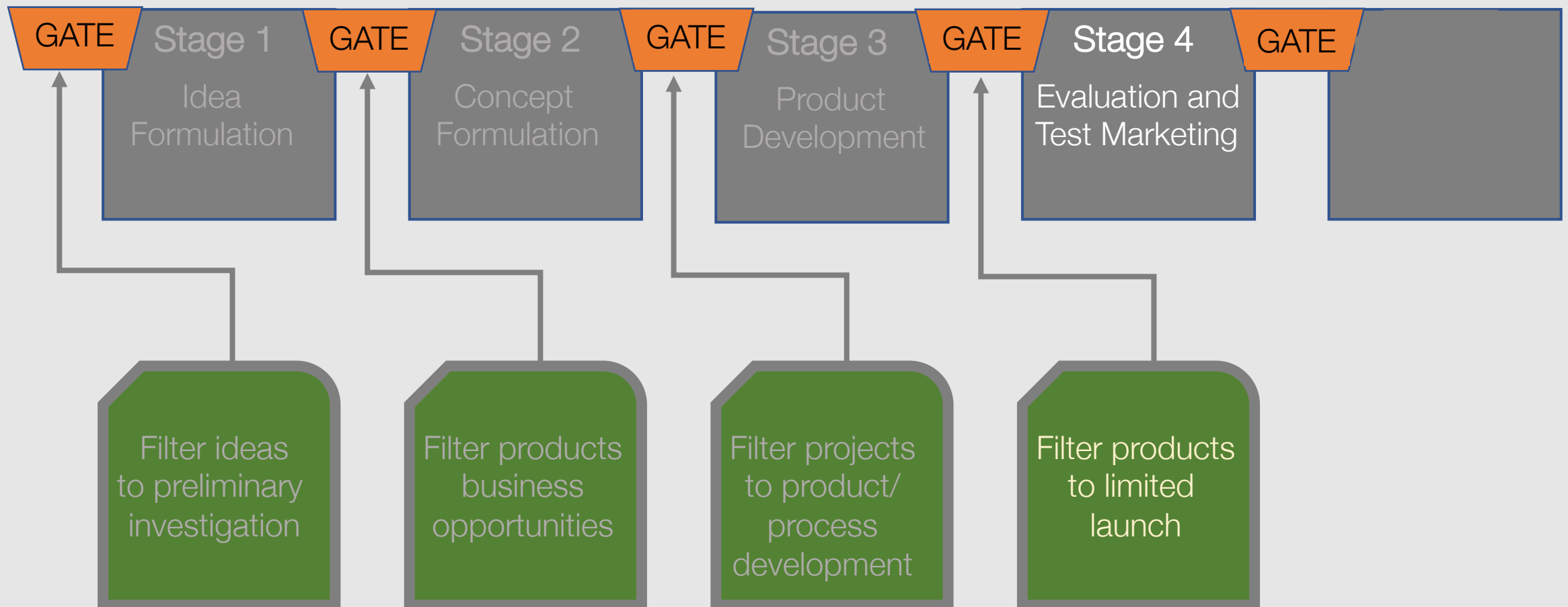
But experience suggests some form of structured development system with clear decision points and agreed rules on which to base go/no-go decisions, could be more effective approach.

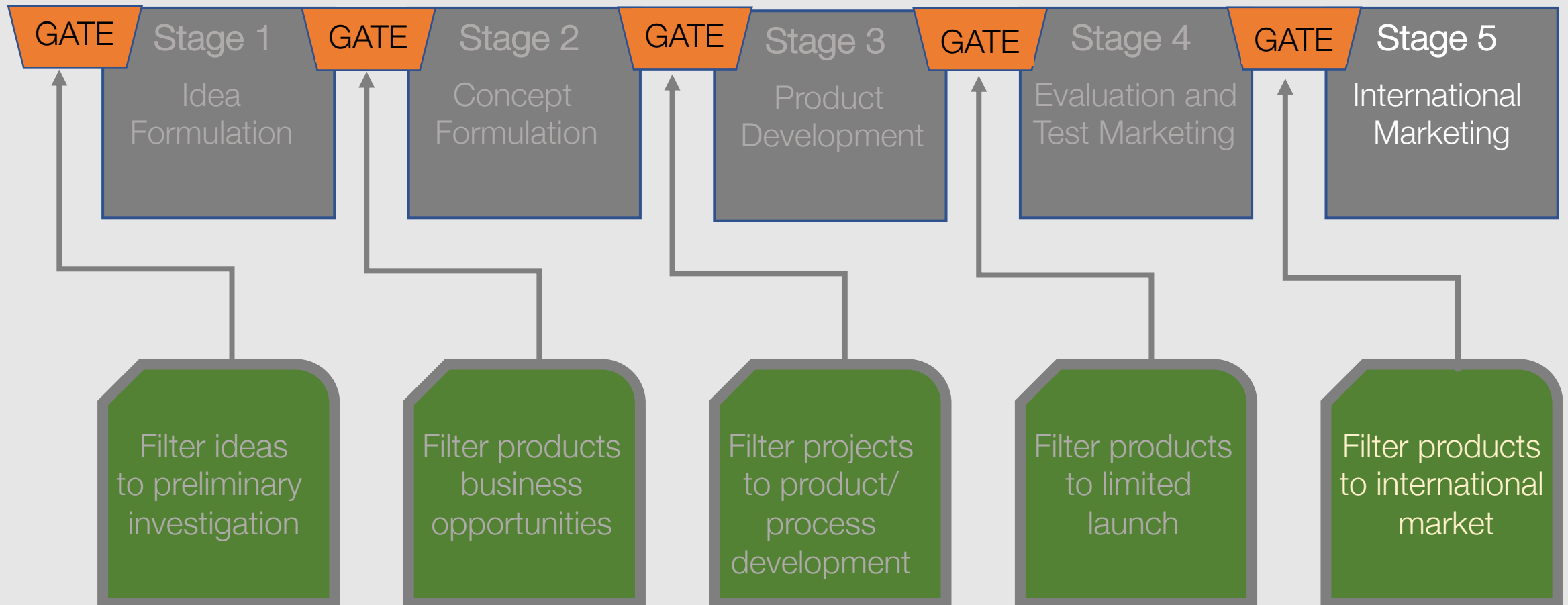
R. Cooper's Stage Gate process



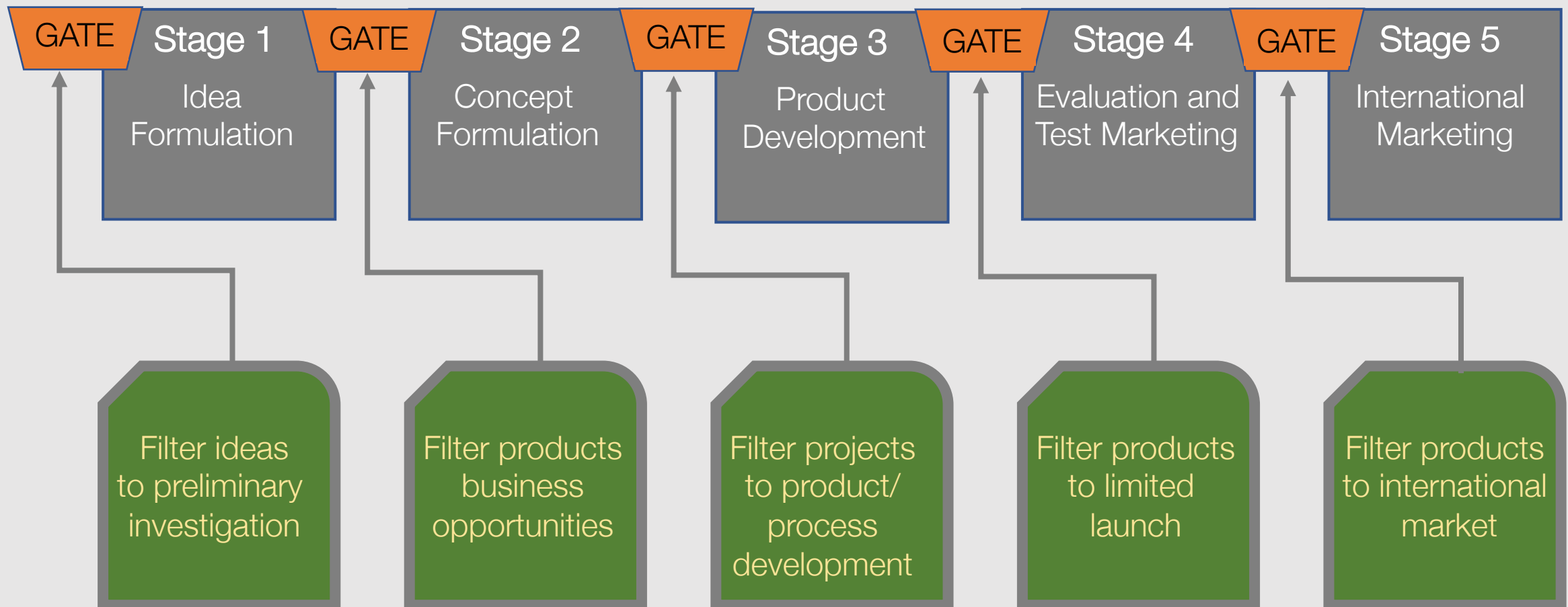




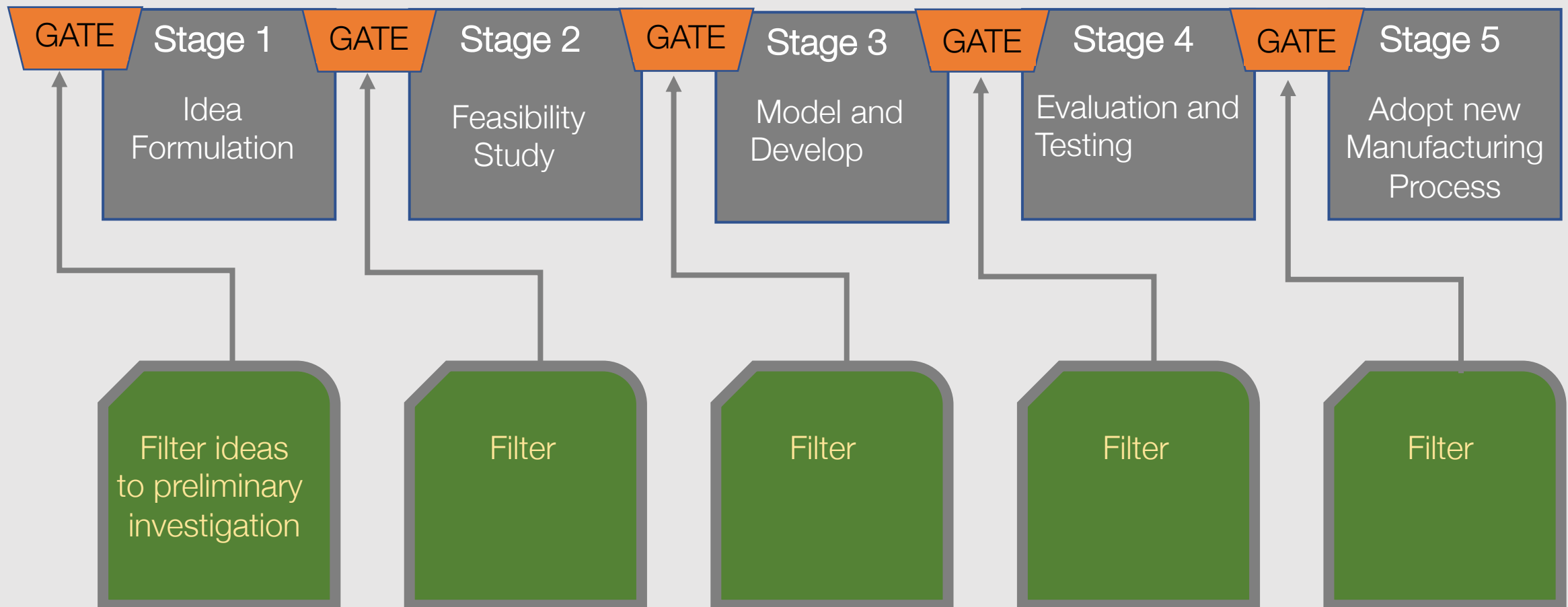




R. Cooper's Stage Gate process



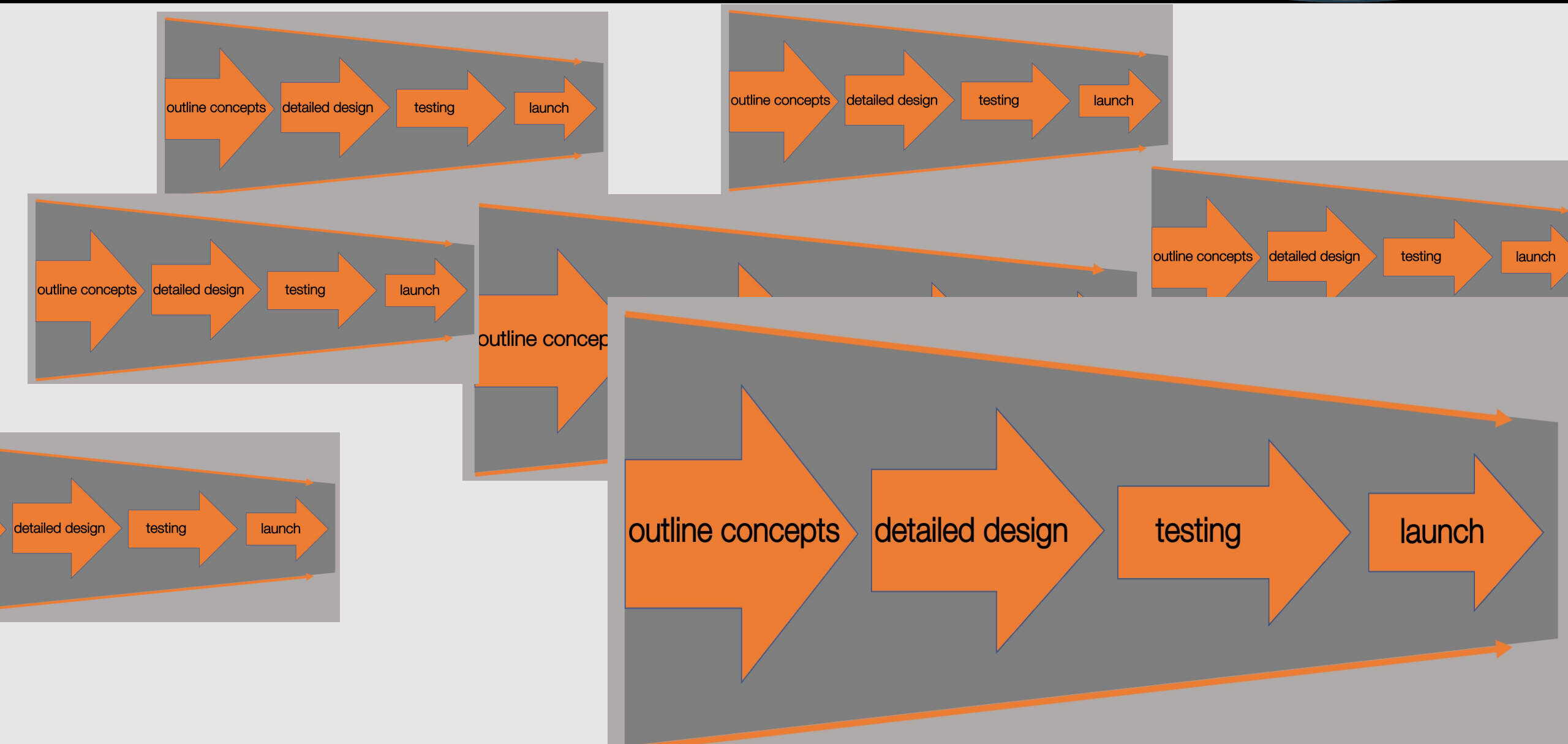
R. Cooper's Stage Gate process Works just as well for new manufacturing processes



Innovation managing the portfolio.....

Uncertainty & Risk managing the portfolio...

Innovation Management



So, within the portfolio which projects take priority and in what order? How do you ensure a balance between risk, reward, novelty, experience and other elements of uncertainty.

so it's a choice try to create a broad portfolio which helps with the agenda of both

- The do what we do, but do it better. → incremental
- and
- The do something different. → radical

A number of ways have been developed to deal with the question of what is broadly termed 'portfolio management'.

These range from simple judgements about risk and reward to complex quantitative tools based on probability theory.

But the underlying purpose is the same – to provide a clear source on which to judge which projects should be undertaken, and to ensure a good balance across the portfolio of risk and potential reward.

Problems arising from poor portfolio management

Without portfolio management

There maybe...

No limits to projects taken on

Reluctance to kill off de-selected projects

Lack of strategic focus in the project mix

Weak or ambiguous selection criteria

Weak decision criteria

Impacts

Resources spread to thinly.

Resource starvation and impacts on time and costs – as well as overruns

High failure rates, or success of unimportant projects and opportunity cost compared with more important projects

Projects find their way into the mix because of politics or emotion or other factors. Down stream the failure rate is high with a diversion of resources that could have been used for other projects.

To many just 'average' projects selected, little impact down stream in the market place

Suggested reading

Innovation Management

Goffin & Mitchel

Chapter 6 - Selecting the Innovation Portfolio

Innovation Management & New Product Development

Paul Trott

Chapter 4 Managing innovation within firms

Managing Innovation

Tidd & Bessant

Chapter 7 Decision Making under uncertainty

Strategic Management of Technological Innovation

Melissa A. Schilling

Chapter 7 – Choosing innovation projects

NEXT WEEK

Technology Drivers

Introduction to Innovation Management Session IV

Assessment A

February 2022

Module Learning Outcomes

Demonstrate a systematic understanding of the key elements that contribute to successful innovation management processes.

You will all work in teams.

Your team is required to review the recent innovation history (say, over the past five or ten years) of a company of your choice that is involved in manufacturing, product development or service provision, anywhere in the world.

Categorise the innovation developments which have taken place in terms of Greg Satell's typology and analyse them in relation to:

1. The extent to which they have shifted the chosen company's market position.
2. The extent to which they have influenced the company's internal structures and management processes.
3. The extent to which they have been technology dependent - and if so which technologies.
4. A consideration as to the outcome of the innovation.

Prepare a presentation of your findings. The presentation should end with:

1. An outline of what each of you contributed to the review on which the presentation is based;
2. What each of you learned in undertaking this assessment

The presentation should be made using PowerPoint and should last for 30 minutes. Each team member must present at least one element of the presentation. You should prepare for a 5-minute question period after your presentation is complete.

The Assessment in the form of a pdf needs to be submitted to Moodle no later than - noon on Wednesday 30th March

Your presentations will take place in or around 1st April, TBA

Monmouth TEAM 1

Arrell, Gary	SAFRAN	2117169@student.uwtsd.ac.uk
Scorgie, James Connor	PETROSTAT	2113853@student.uwtsd.ac.uk
Harris, Lois	BISLEY	1907505@student.uwtsd.ac.uk
Edwards, Thomas Joseph	BIOKINRTICS	2117195@student.uwtsd.ac.uk
Evans Josh	AXIUM PROCESS LTD	0452686@student.uwtsd.ac.uk

Pembroke TEAM 2

Shuker, Simon	HAFREN OUSQUE	2112202@student.uwtsd.ac.uk
Harrison, Anthony	BIOMET	2113362@student.uwtsd.ac.uk
Goddard, Nicholas	SAFRAN	2117167@student.uwtsd.ac.uk
Booth, Matthew	AMRC	2126718@student.uwtsd.ac.uk
Gale, Rhys	CE MARKING LTD	2127279@student.uwtsd.ac.uk

Glamorgan TEAM 3

Patel Pritesh	AMRC	2126963@student.uwtsd.ac.uk
O'Conner, Christopher	HANSON	1351620@student.uwtsd.ac.uk
Lonegran Christopher	SAFRAN	2117165@student.uwtsd.ac.uk
Davies, Laura	PENDERYN	2127190@student.uwtsd.ac.uk
Mcallister Livatt Bill	DISRUPTIVEINNOVATOR	2125810@student.uwtsd.ac.uk

Montgomery TEAM 4

Gonzales, Malvin	FRONTIER GROUP	2127191@student.uwtsd.ac.uk
Phillips Aista	PENDERYN	2126964@student.uwtsd.ac.uk
Buxton-Robbins, David Kenneth	HANSON	2116721@student.uwtsd.ac.uk
Mahadikar, Sudhir	SAFRAN	2114091@student.uwtsd.ac.uk
Davies, Christopher	MARKET CATALYST LTD	2126255@student.uwtsd.ac.uk

Camarthen TEAM 5		
Burnell, Richard	SAFRAN	2117173@student.uwtsd.ac.uk
Lawrence, Neil	MAGNET SCHULTZ LTD	2125311@student.uwtsd.ac.uk
Monks, James	QIOPTIQ / EXCELITAS	2126850@student.uwtsd.ac.uk
Mantilla Duran, Fernando	PETROSTAT	2114091@student.uwtsd.ac.uk
Ladd, Sara	HUIT	2113131@student.uwtsd.ac.uk

Caernarfon TEAM 6		
Thompson Rhys	TRIWALL	2127266@student.uwtsd.ac.uk
Barlea Ovidiu	PCT GROUP	2127098@student.uwtsd.ac.uk
Thomas Jack	FUEL ACTIVE	2127098@student.uwtsd.ac.uk
Sreenivasa Chalavadi	SAFRAN	2117168@student.uwtsd.ac.uk
Morgans, Bethan	PENDERYN	2127095@student.uwtsd.ac.uk

Flint TEAM 7

Quigley Neil	PENDERYN	2127097@student.uwtsd.ac.uk
Davies, Elin	JR BIOMED	1702172@student.uwtsd.ac.uk
Williams Catherine	?	2126505@student.uwtsd.ac.uk
Davies Lian	THE DO LECTURES	0902235@student.uwtsd.ac.uk
Luffman, Brandon	REFLEXALLEN	2127192@student.uwtsd.ac.uk

Cardigan TEAM 8

Prosser, Ryan	DOW LTD	2126851@student.uwtsd.ac.uk
Cheetham, Stuart	RUTH LEE	2116612@student.uwtsd.ac.uk
Gallego, Hanns Possu	SAFRAN	2117166@student.uwtsd.ac.uk
Gunter, Nathan	BIOMET	2110656@student.uwtsd.ac.uk
Shipman Maria	DIMOND CENTRE	2116519@student.uwtsd.ac.uk

Anglesey TEAM 9		
Jones Colin	SP FILLING SYSTEMS	2125470@student.uwtsd.ac.uk
Hughes Tomos	FUEL ACTIVE	2116582@student.uwtsd.ac.uk
Mason Royston	SAFRAN	2116777@student.uwtsd.ac.uk
Ford, John	PETROSTAT	2115200@student.uwtsd.ac.uk
Williams Nathan	UK WINDOW & DOORS	2126256@student.uwtsd.ac.uk

Barriers that will need to be addressed if
innovation management is to gain traction in our organisations:

1. ??
2. Short-term thinking
3. Lack of time, resources or staff
4. Lack of “spec time” to develop new ideas and opportunities
5. Innovation not articulated as a company-wide commitment
6. Lack of ownership by senior leaders
7. Leadership expects payoff sooner than is realistic