IfM Briefing Day

Collaborative Opportunities in Technology and Innovation Management

Tuesday 21 May 2013

David Probert, Rob Phaal, Clare Farrukh,

Simon Ford, Clive Kerr, Man Hang Yip, Clemens Chaskel

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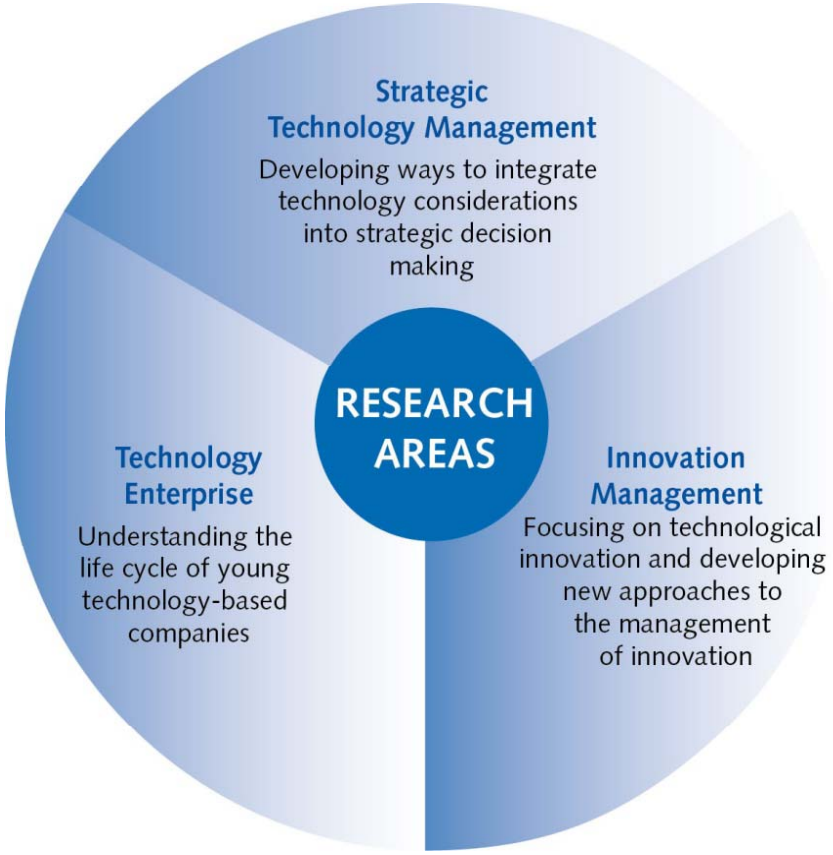
CTM research



Objectives:

- Integrated understanding of science, engineering and business
- Better management of technology as a resource
- Help for managers facing practical problems

Agenda

• CTM Introduction	David Probert
• The Strategic Technology and Innovation Management Consortium	Rob Phaal
- Lightweighting innovation strategy	Clare Farrukh
- Organising the front-end of innovation	Simon Ford
- Customisable multi-factor scoring system for project selection	Rob Phaal
• Visual communication of strategy	Clive Kerr
• Multiple stakeholder engagement in early-stage new product-service system development	Man Hang Yip
• Towards an integrated technology strategy	Clemens Chaskel
• Questions and discussion	All

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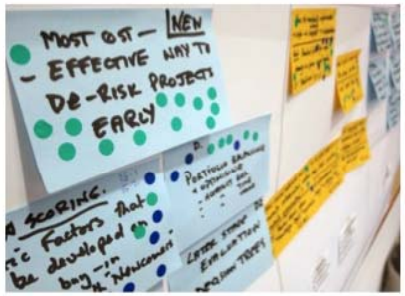
Strategic Technology & Innovation Management (STIM) Consortium



A practice-oriented research and networking collaboration between industrial partners and the Centre for Technology Management, delivering a combination of practical and academic outputs

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Contact: Dr Rob Phaal, rp108@cam.ac.uk

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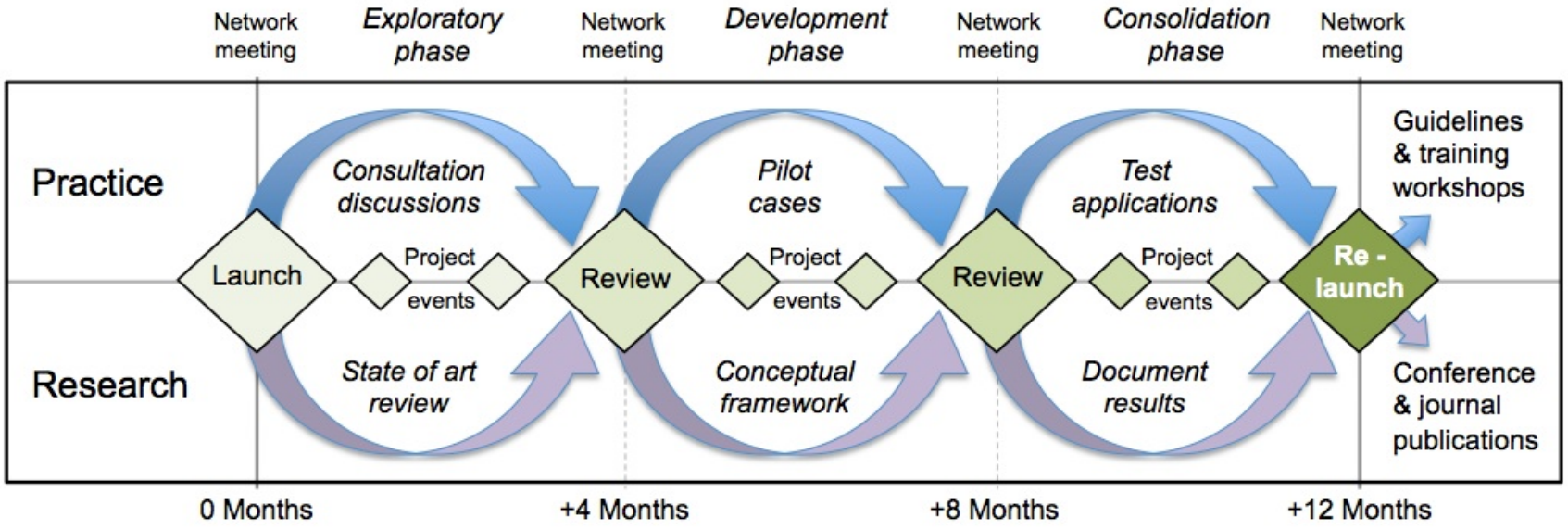
STIM – an annual rolling programme



2013 Research Portfolio:

1. Light weighting innovation strategy: roadmap-portfolio process toolkit
2. Organising the front-end of innovation
3. Articulating strategic content: a template-based approach
4. De-risking projects early
5. Customisable multi-factor scoring system for project selection
6. Intelligence - how to evaluate information?
7. Technology leadership and deployment – sharing best practice

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Strategic Technology & Innovation Management Consortium

Light Weighting Innovation Strategy:
Roadmap-Portfolio Process Toolkit

21 May 2013

Clare Farrukh **cjp22@cam.ac.uk**
Centre for Technology Management

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Aims & deliverables

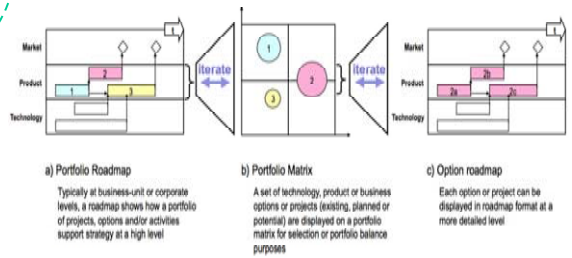
What? To develop and test a light weighted approach to support innovation strategy development, aimed at smaller companies, which may also find utility within large organisations.

Why? Existing tools for aligning technology investments with business objectives (critical for successful innovation) are often perceived as heavy weight/resource hungry, rather than dynamic, easy to operate and with tangible value.

Ongoing cycle

OPPORTUNITY TITLE?	Overall summary description of product/process/service/system opportunity	(Author's initials)
WHAT	*What are the unique/valuable features of the opportunity?*	
WHY	*Why should we invest?* *E.g. Market potential/strategic benefits*	
HOW	*How can we realise/do it?* *E.g. Technology/resources*	
WHEN	*Over what time frame?* *Short/Medium/Long*	

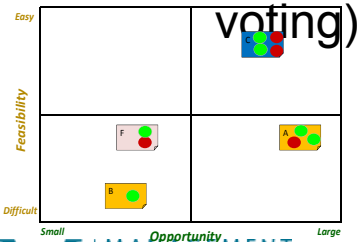
New opportunities



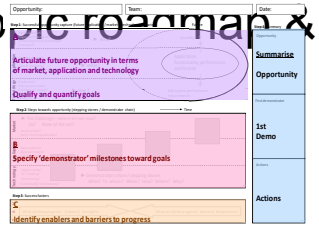
Opportunity definition (designed post-its)

Portfolio roadmap (permanent display)

Portfolio by triage (dot voting)



Explore and score "top opportunities"
(topic roadmap & selection criteria)



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Summary

- We are looking for pilot companies:
  - ➢Short workshop to trial opportunity focused approach
  - ➢Feedback on templates and process
- We would value your input!

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Organising the front-end of innovation

Simon Ford

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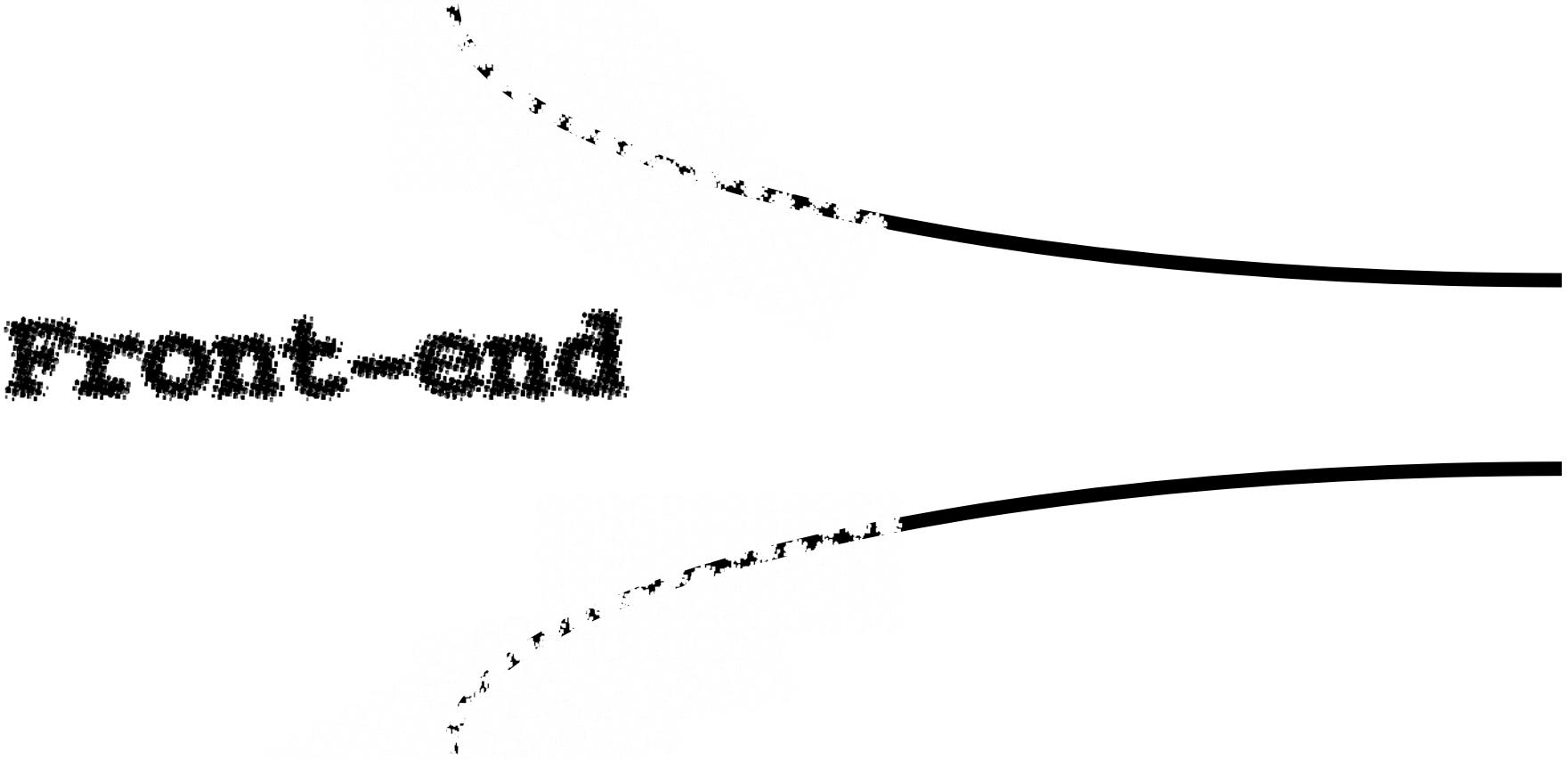

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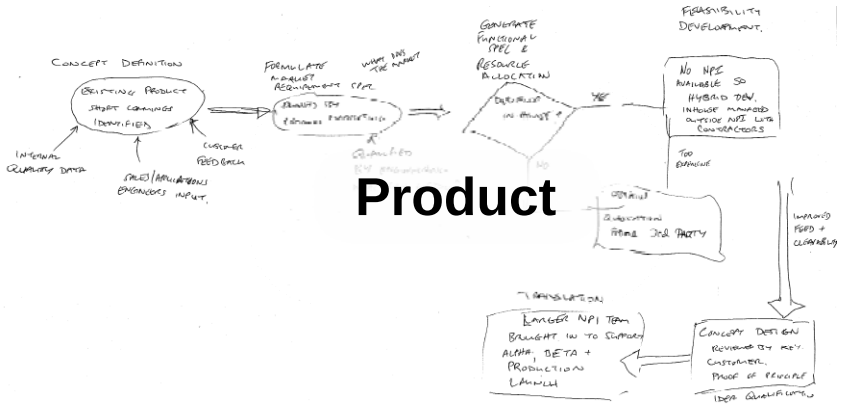
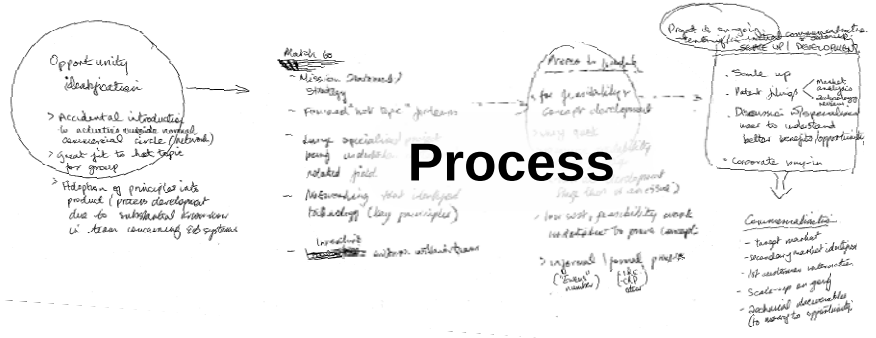
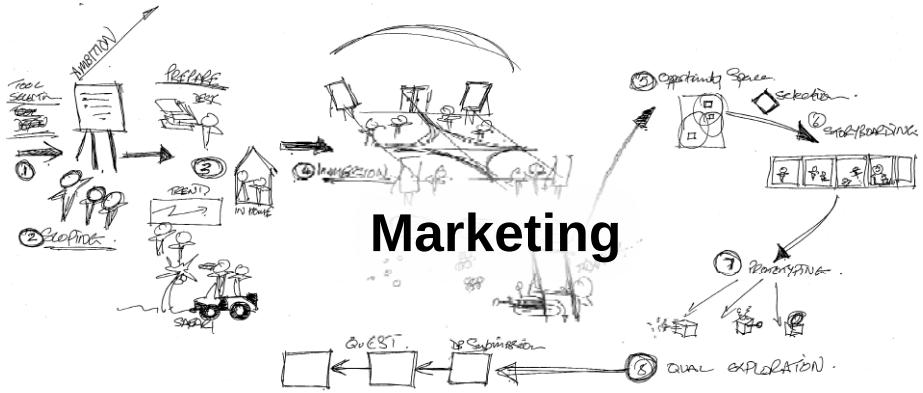
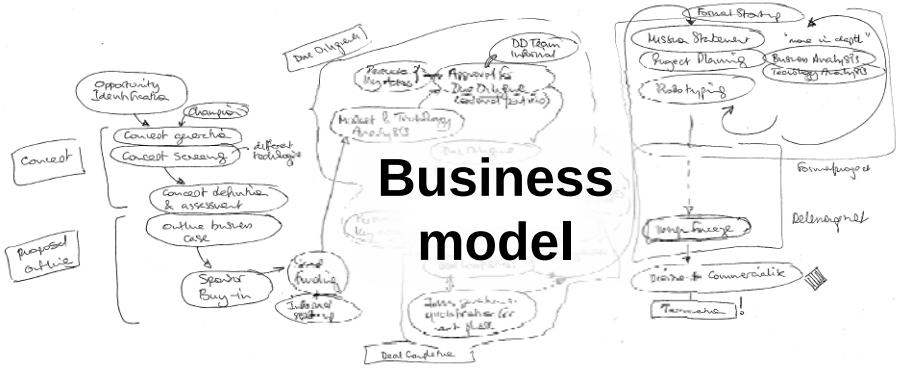
What does the front-end of innovation look like?









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Project objectives

- **Identify how to improve the organisation of the front-end of innovation**

- **Develop a front-end of innovation review process**

Simon Ford, sjf39@cam.ac.uk

Where you come in...

- **Provide insights into the front-end of innovation through interviews**

- **Help to develop and pilot the front-end of innovation review process**

Simon Ford, sjf39@cam.ac.uk

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Selecting early stage projects

Rick Mitchell, Rob Phaal & Nicky Athanassopoulou

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Challenge of early stage valuation

- "… over-reliance on strictly financial data and criteria may lead to wrong portfolio decisions, simply because financial data are often wrong!"

  Cooper et al, 1998

- And yet decisions must still be made… So, assess project against several criteria known to be correlated with success, as part of a portfolio approach:
  - e.g. Product differentiation, growth market, leverage of core skills

- But, limited guidance on how to design / customise such approaches in practice…

  This project aims to develop and pilot practical & efficient methods for this

How to design a scoring tool for a particular purpose?

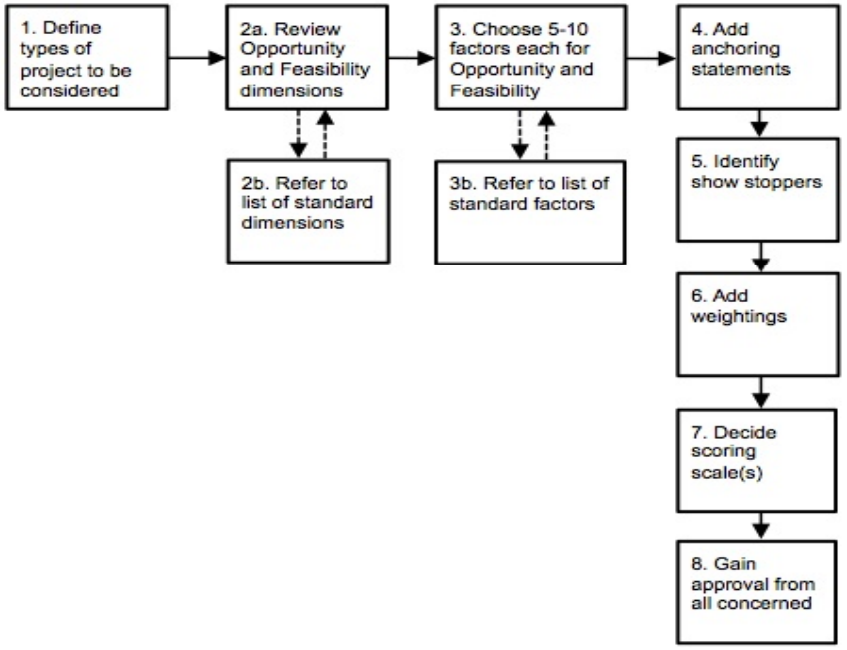
- A logical way is required to:
  - Select the factors
  - Create the score
  - Deal with risk and uncertainty
  - Manage the process

- The method must be able to evolve coherently as projects mature

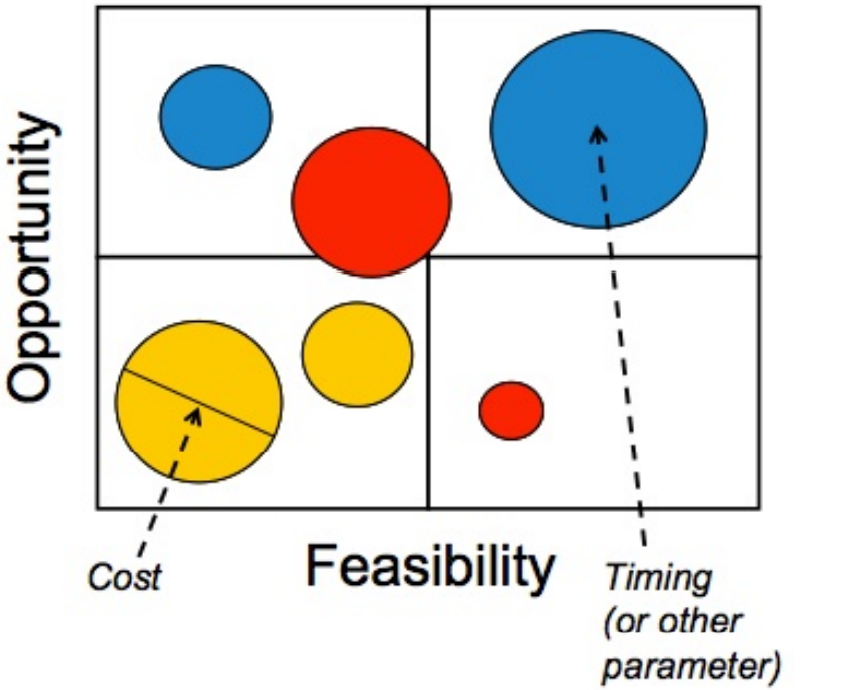
Approach

The size of the potential *Opportunity*, and how *Feasible* it is for the organisation, are treated as independent aspects

Design process



Option depiction



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Workshop process pilots

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Visual Strategy

Tools

Templates

Graphics

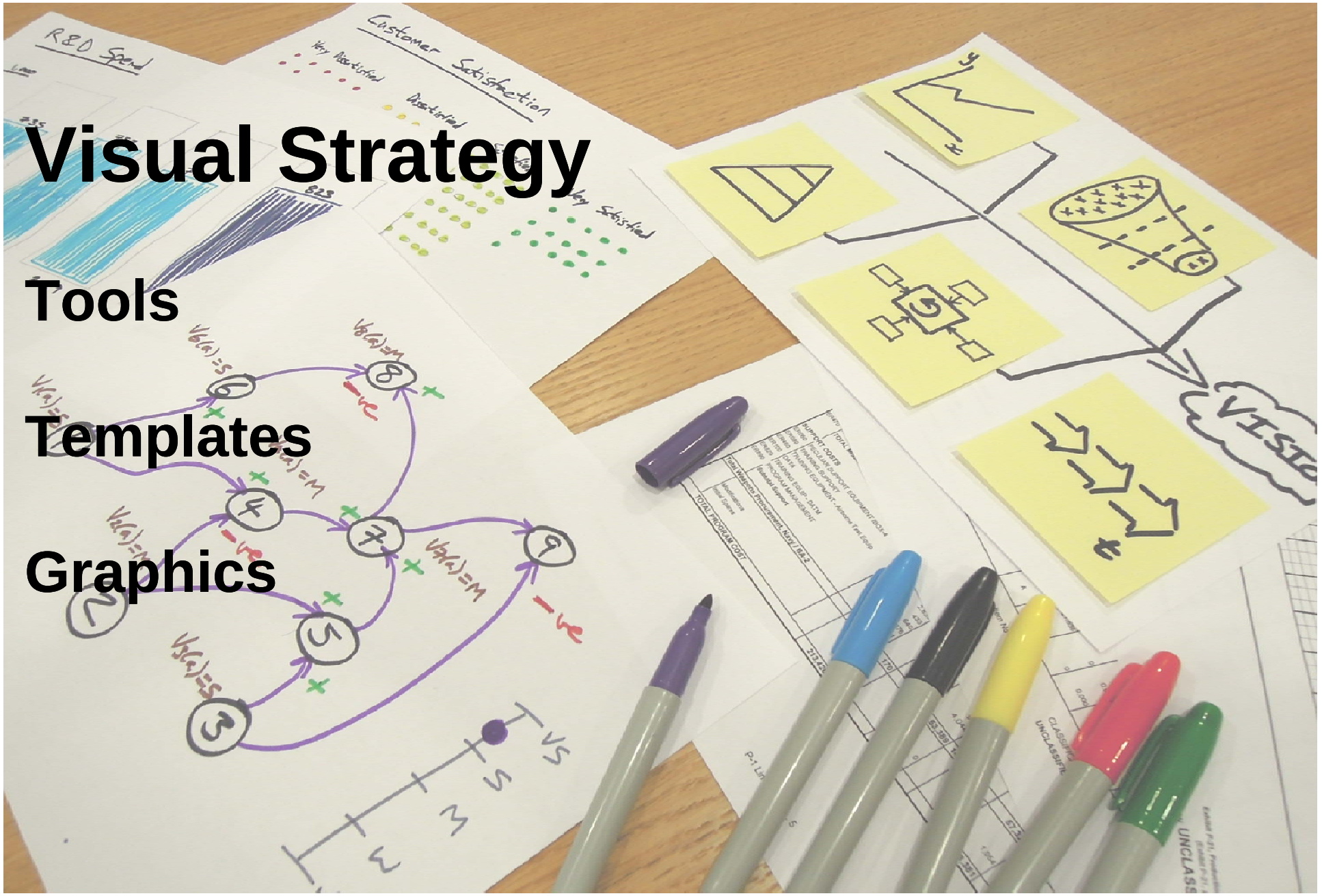
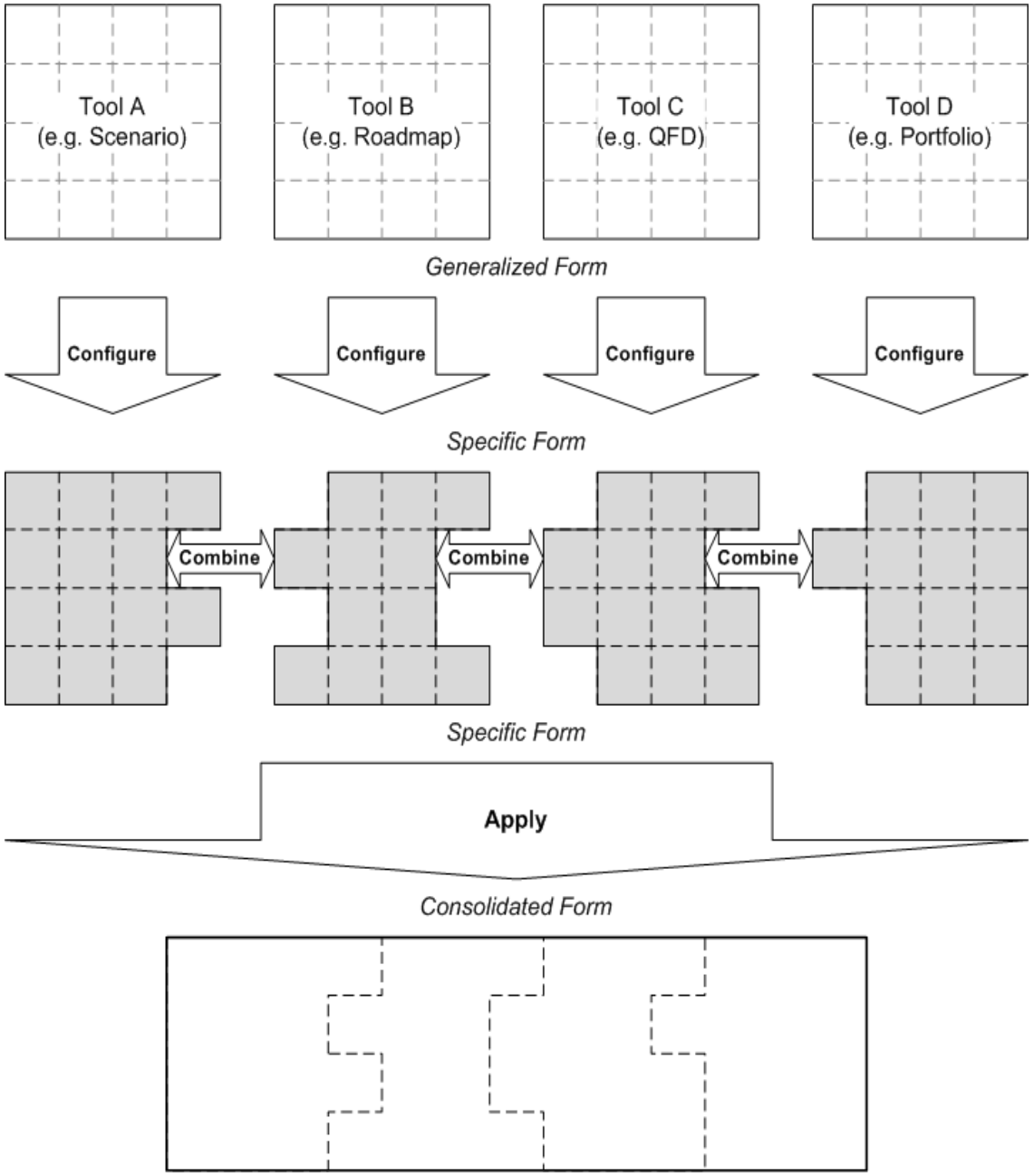
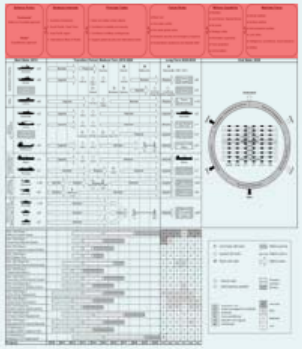
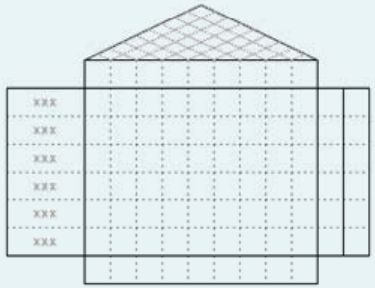
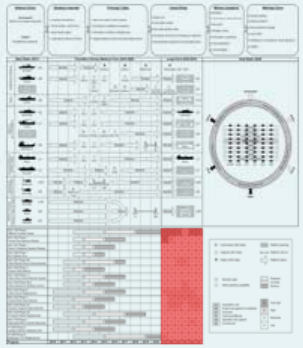


Image: Clive Kerr



Adapted from Phaal *et al*. (2006)

Tool	Function	Output
Concept Mapping	To map: • National policy • Stakeholder interests • Principal tasks • Future roles • Key requirements	Context and Operational Environment 

Tool	Function	Output
Project Scoring 	To conduct trade-offs between the attributes of: • Acquisition cost • Project management complexity • Schedule • Technical difficulty • Operation and support • Commercial	Key Performance Indicators 

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Kerr *et al*. 2011

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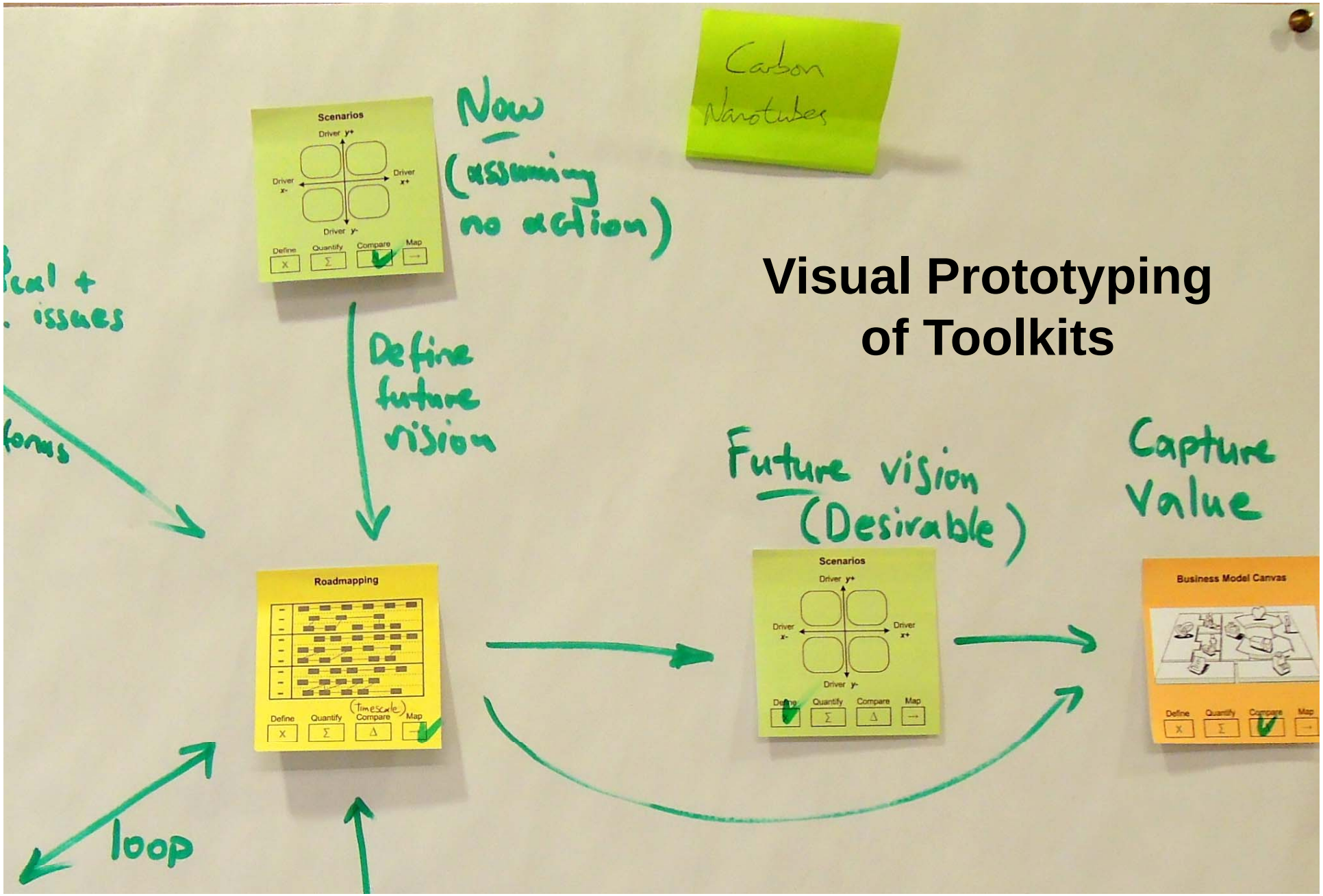
Visual Prototyping of Toolkits



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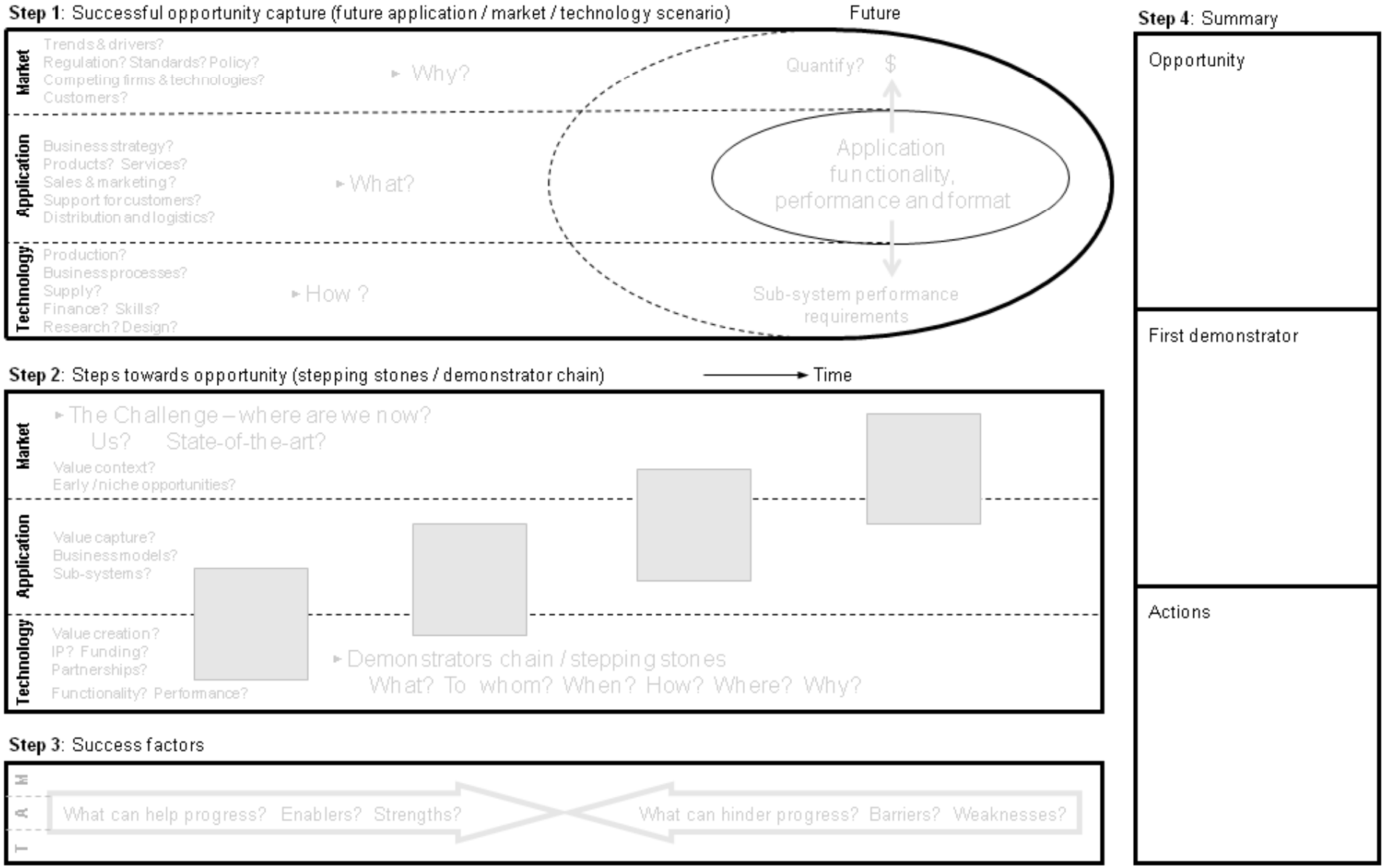

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Phaal *et al*. (2011)

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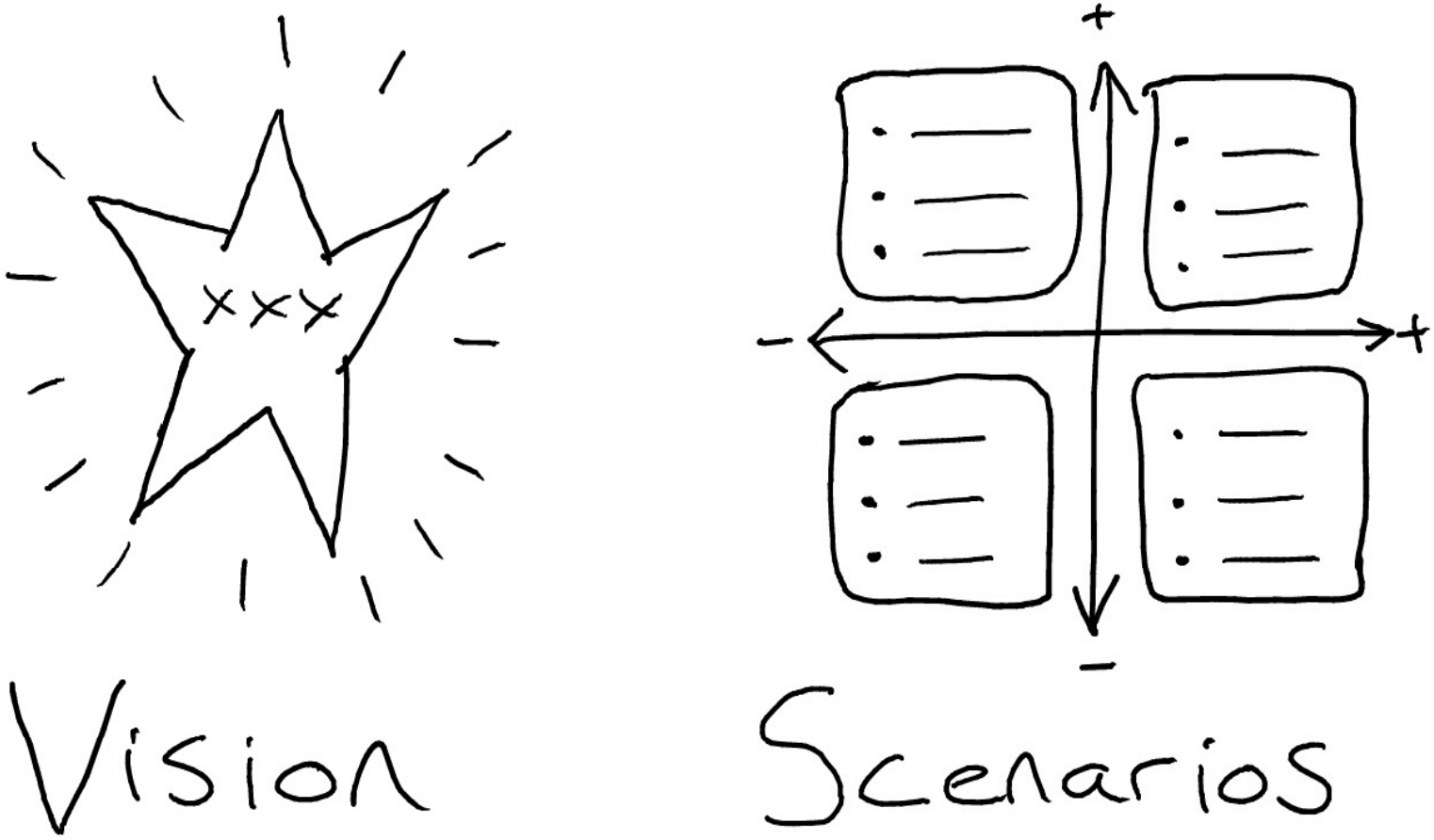
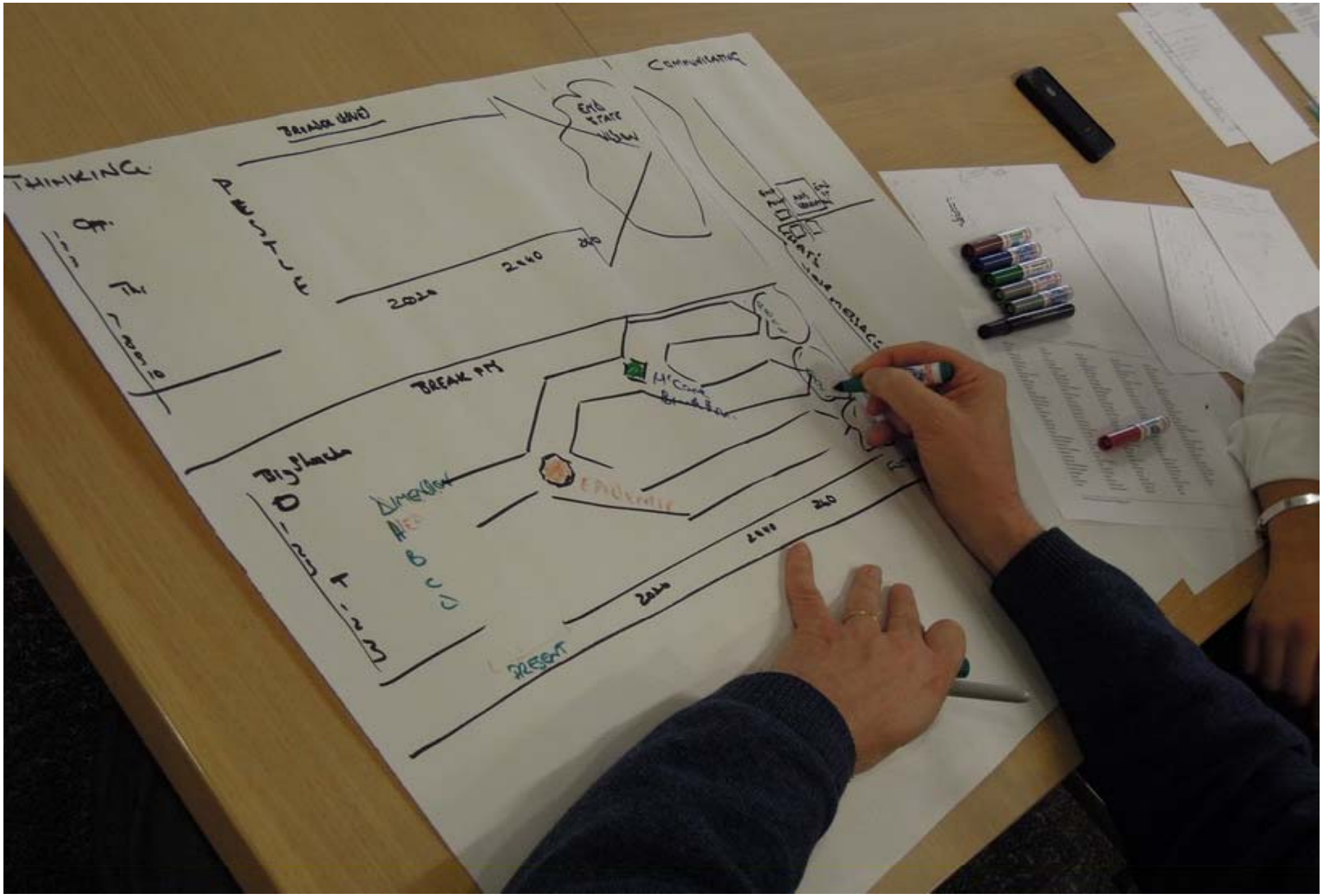
STIM Consortium





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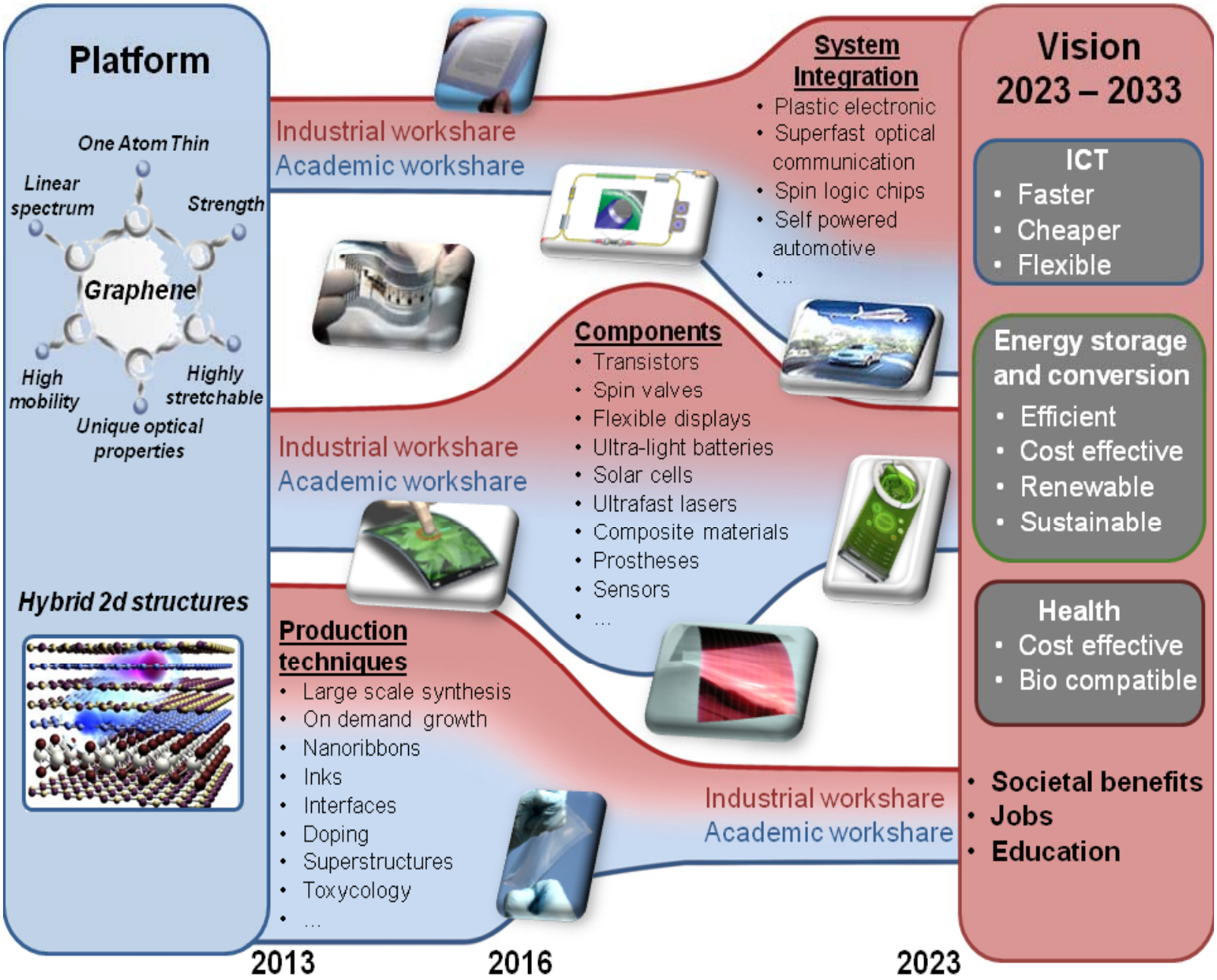

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Image: Francesco Bonaccorso

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Visual Strategy

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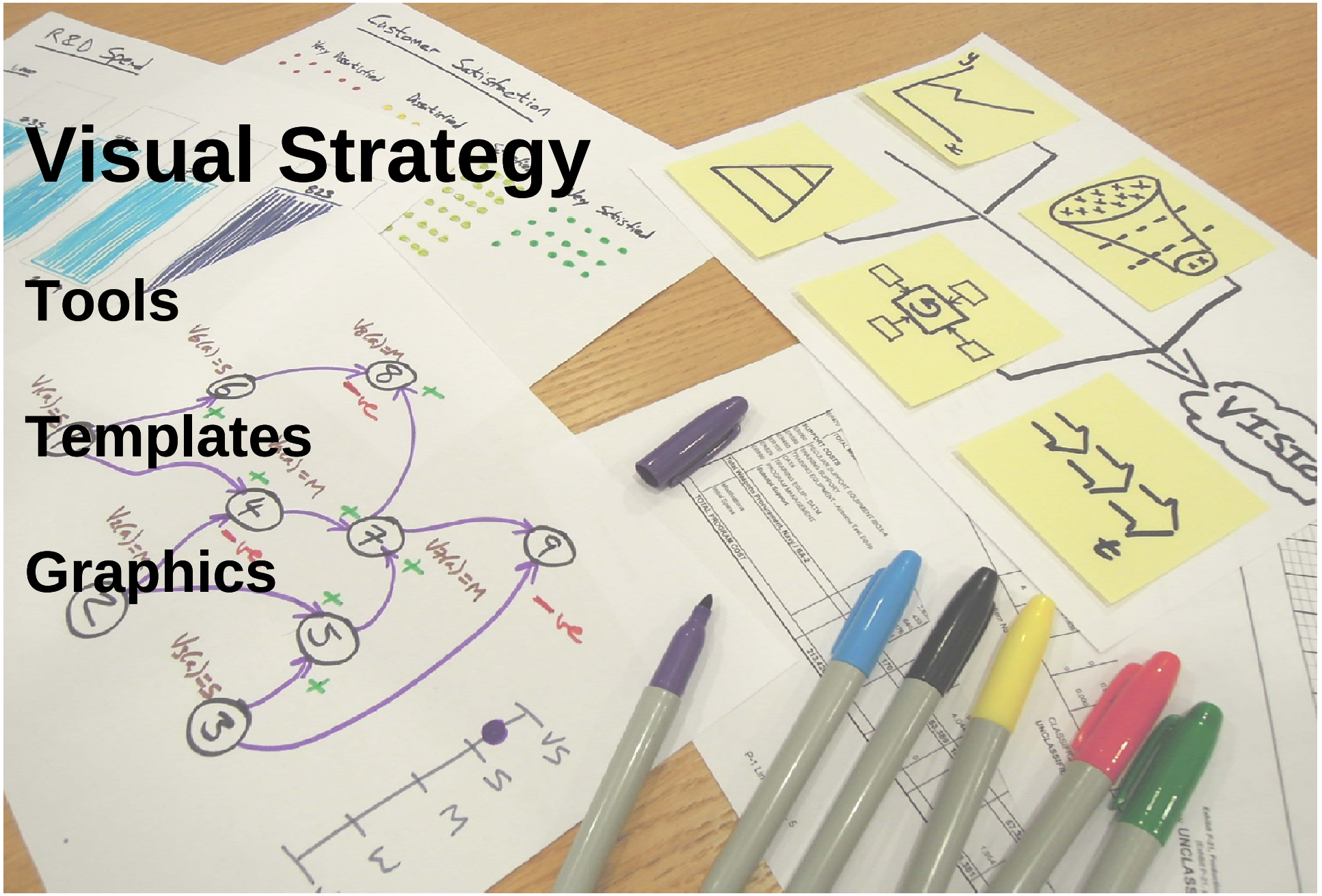

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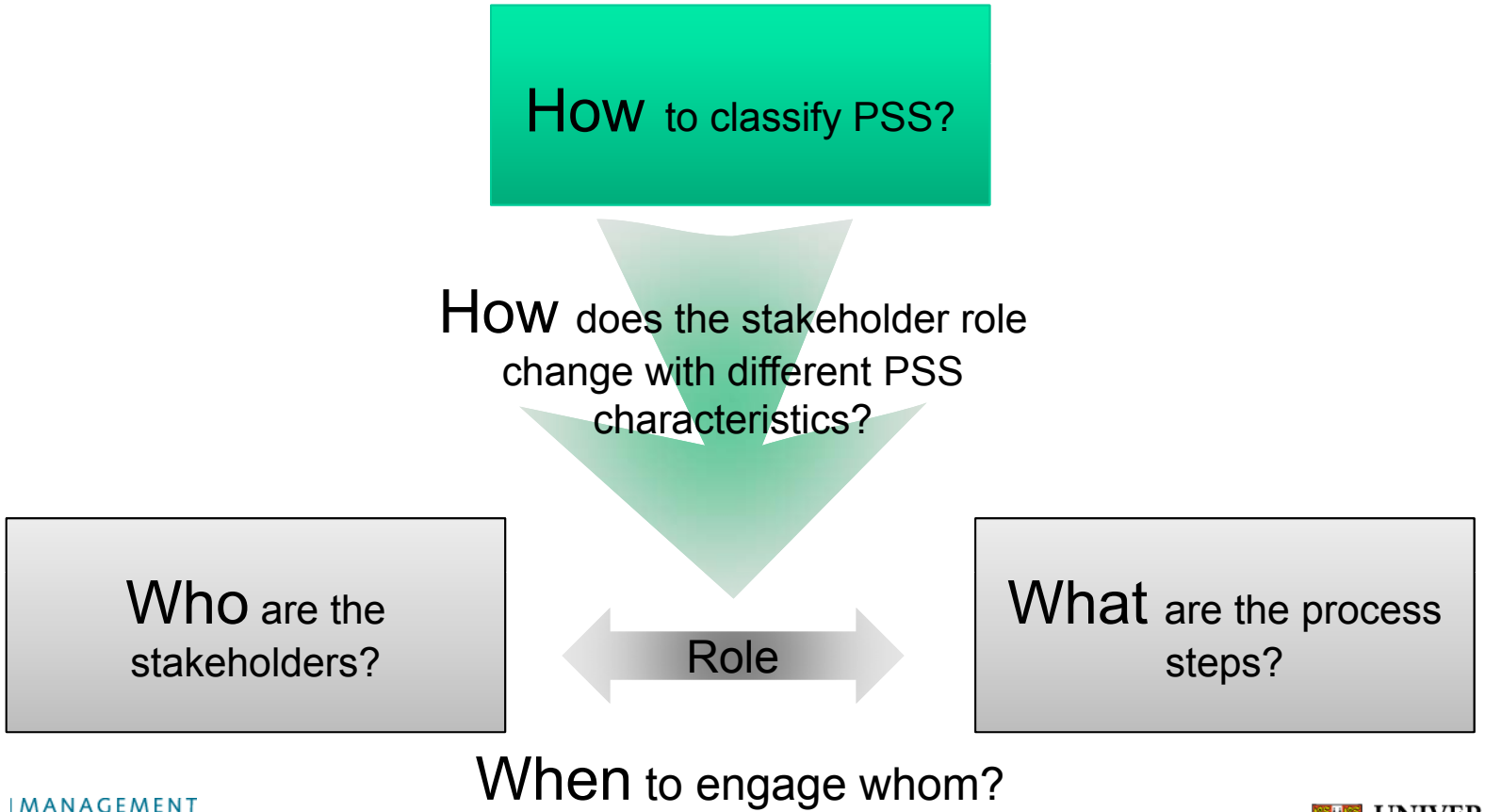
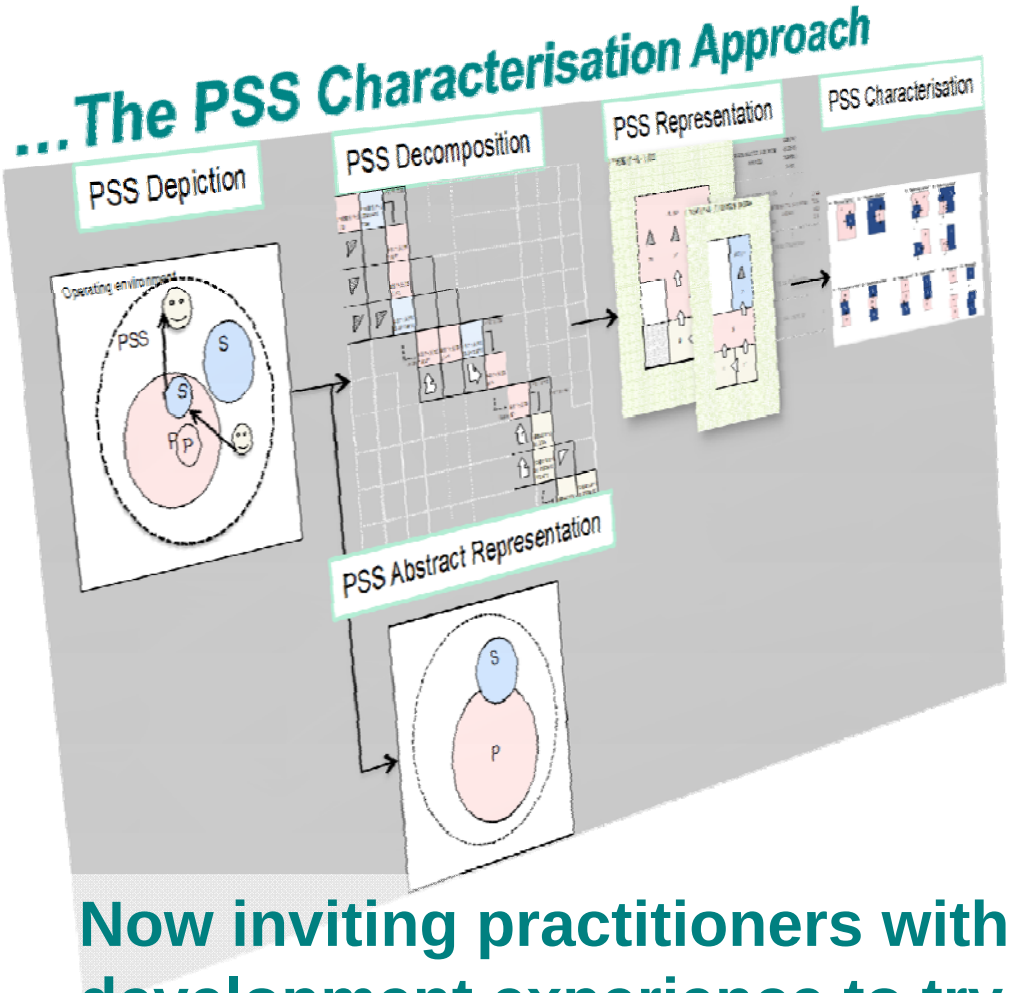
Stakeholder engagement in new product-service system (PSS) development

Context: new PSS development
Perspective: manufacturers – new product/service/PSS development team



How to classify PSS?



- ✓ Facilitates a common understanding of the new development
- ✓ Provides a common basis for comparing the complexity of different development ideas

Now inviting practitioners with new product/service development experience to try & feedback on the technique

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Integrated technology strategy

Tuesday 21 May 2013

Clemens Chaskel

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What is integrated technology strategy?

A strategy that closely links
technology, product and corporate planning.

Processes?
Management tools?
…but how do *you* link technologies and products with corporate planning?
Hierarchies?
Lots of other considerations…!
Communication?

Case studies

How do *you* ensure that your strategy is aligned to your firm's capabilities?

Home appliances

Aerospace & Defense

Transportation

Printing solutions

Industrial products

Starting soon

Automotive

Toys

Defense systems

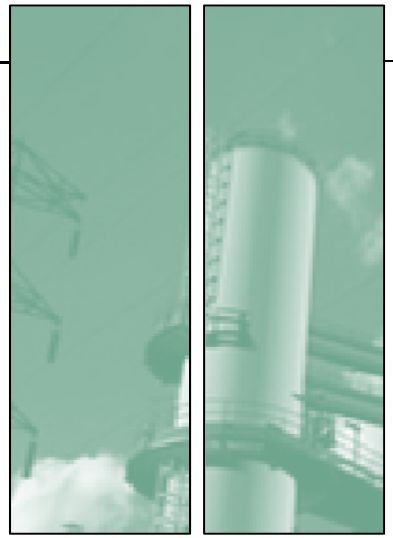
You?

Potential case study approach

Phase 1: Baseline data

Establishment of

- **Hierarchies and structures**
- **Current practices**
- **Management processes**
- **Support tools**

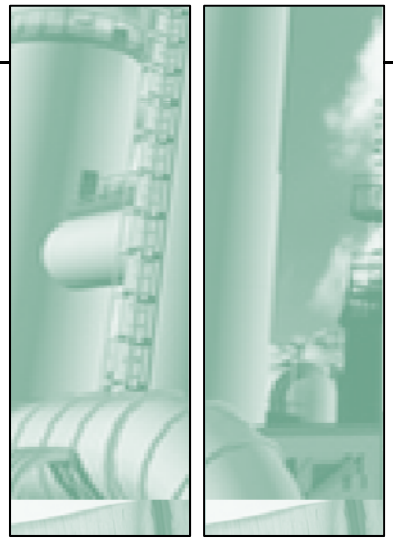


Phase 2: Further data collection

- **Analysis of stakeholder involvement**
- **Analysis of processes and tools**
- **Identification of improvement opportunities.**

Phase 3: Data validation

- **Improvement concept development and validation.**



Phase 4: Wrap-up

- **Presentation of findings and delivery of project report.**

… and later on:

- **Integration of findings into study**
- **Presentation of reserach results**

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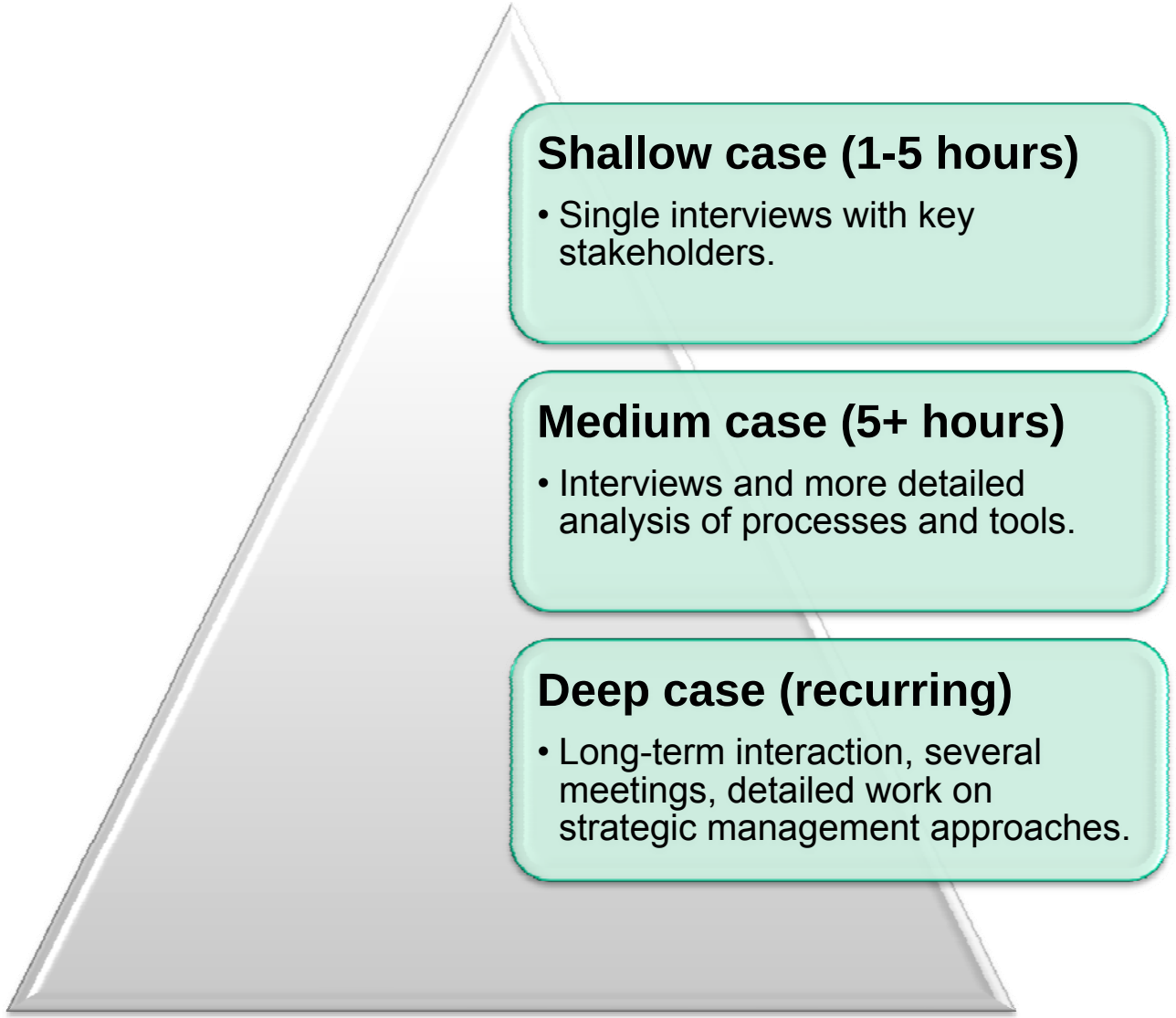
Interaction options



Shallow case (1-5 hours)

- Single interviews with key stakeholders.

Medium case (5+ hours)

- Interviews and more detailed analysis of processes and tools.

Deep case (recurring)

- Long-term interaction, several meetings, detailed work on strategic management approaches.

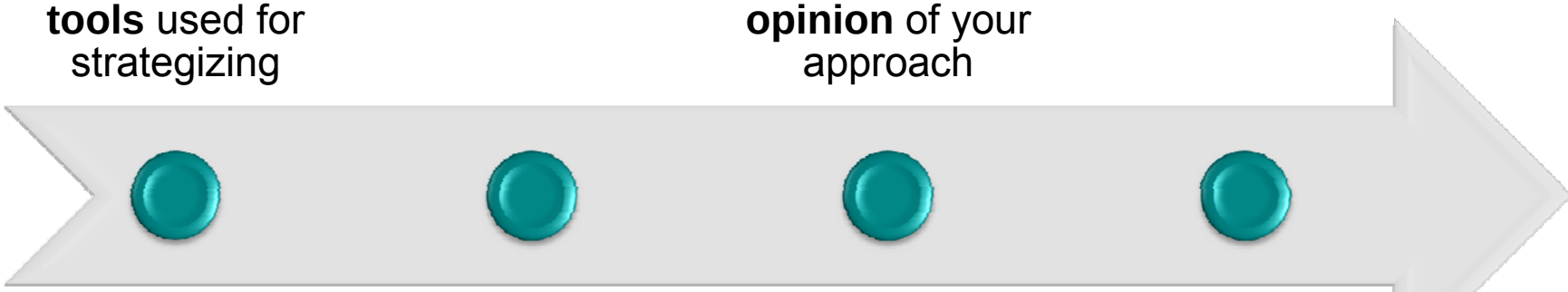
Deliverables

A **snapshot of your practices, processes and tools** used for strategizing

Assessment of strengths and weaknesses of your strategy related processes and tools

An **external view and opinion** of your approach

Development of a **reference process or "good practice"**



If you would like to get involved.....

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Questions and discussion