



# Technology and Innovation Management Roadmapping

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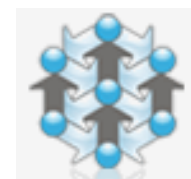
University of São Paulo

São Carlos Engineering School

Production Engineering Department

Advanced Manufacturing Nucleus

Integrated Engineering Group





## Goals of the lecture

To explore  
basic  
knowledge  
and  
capabilities  
on TIM

To present  
approaches,  
tools,  
methods and  
concepts  
useful for  
TIM

TIM: integrated  
Technology and  
Innovation Management

# Lecture Content

## Theory

- Basic definitions
- Innovation management
- Technology management



## Hands-on activities

- Roadmapping
- Design thinking (value proposition)
- Portfolio management
- Business Model Innovation

Integrated technology and innovation management (TIM)

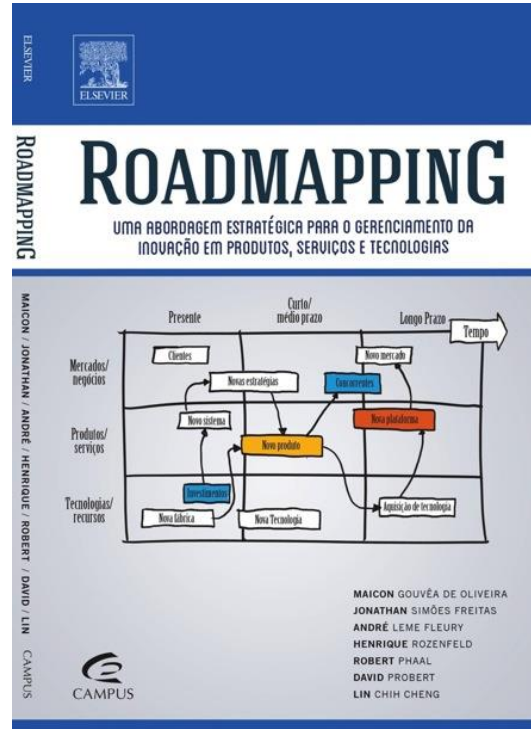
# Objective of this presentation

- To present basic concepts of roadmapping theory
- To Prepare to hands-on application



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# Book on roadmapping (in Portuguese ☹️)



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# We follow Cambridge roadmap process

Dr. Robert Phall



Prof. Emeritus David Probert



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# We follow Cambridge roadmap process

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CR Roadmapping — cambridge roac x +

← → ↻ 🔒 https://www.cambridgeroadmapping.net/roadmapping

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# CAMBRIDGE ROADMAPPING

+ CAMBRIDGE ROADMAPPING

## Roadmapping

'Roadmapping' is an interesting and flexible class of method (management tool) for supporting strategy and innovation, with application beyond the high tech sectors where it originated, including business, corporate, sector and national initiatives. Its use has been demonstrated to correlate with business performance in the context of product innovation, with plenty of scope for increased use, reflected by the relatively low levels of uptake to date (roadmapping is not covered in most business school education programmes and text books):

*"About twice as many best performers (38%) use product roadmaps than do worst performers (19%)" - Cooper & Edgett (2009)*

As a structured visual framework, roadmapping supports communication and alignment, providing a scaleable platform for developing coherent strategic management toolkits. Roadmapping is a flexible approach in terms of purpose and format, underpinned by a simple generic conceptual framework defined by six fundamental strategic questions highlighted in red in the figures below.

<https://www.cambridgeroadmapping.net/roadmapping>



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# Basic concepts





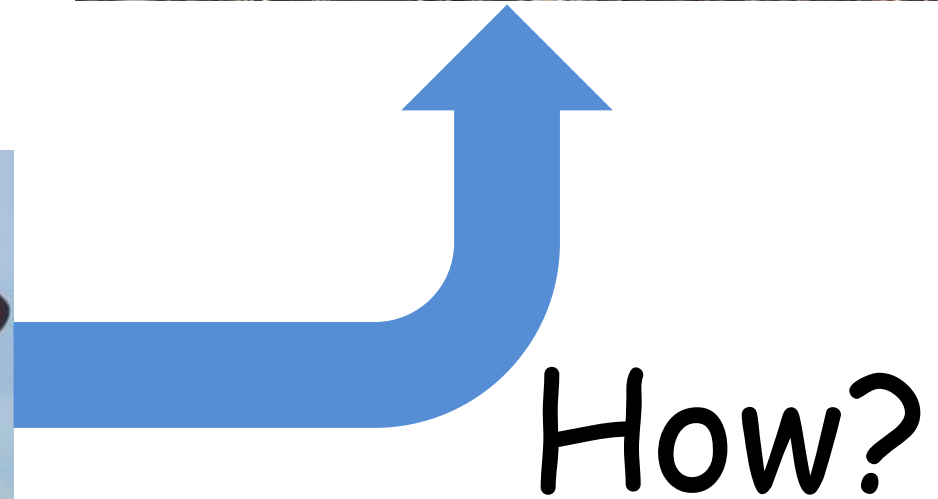
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We would like to be there

9



We are here





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# How do we get there?



# Roadmap





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# How do we get the roadmap?



# Roadmapping

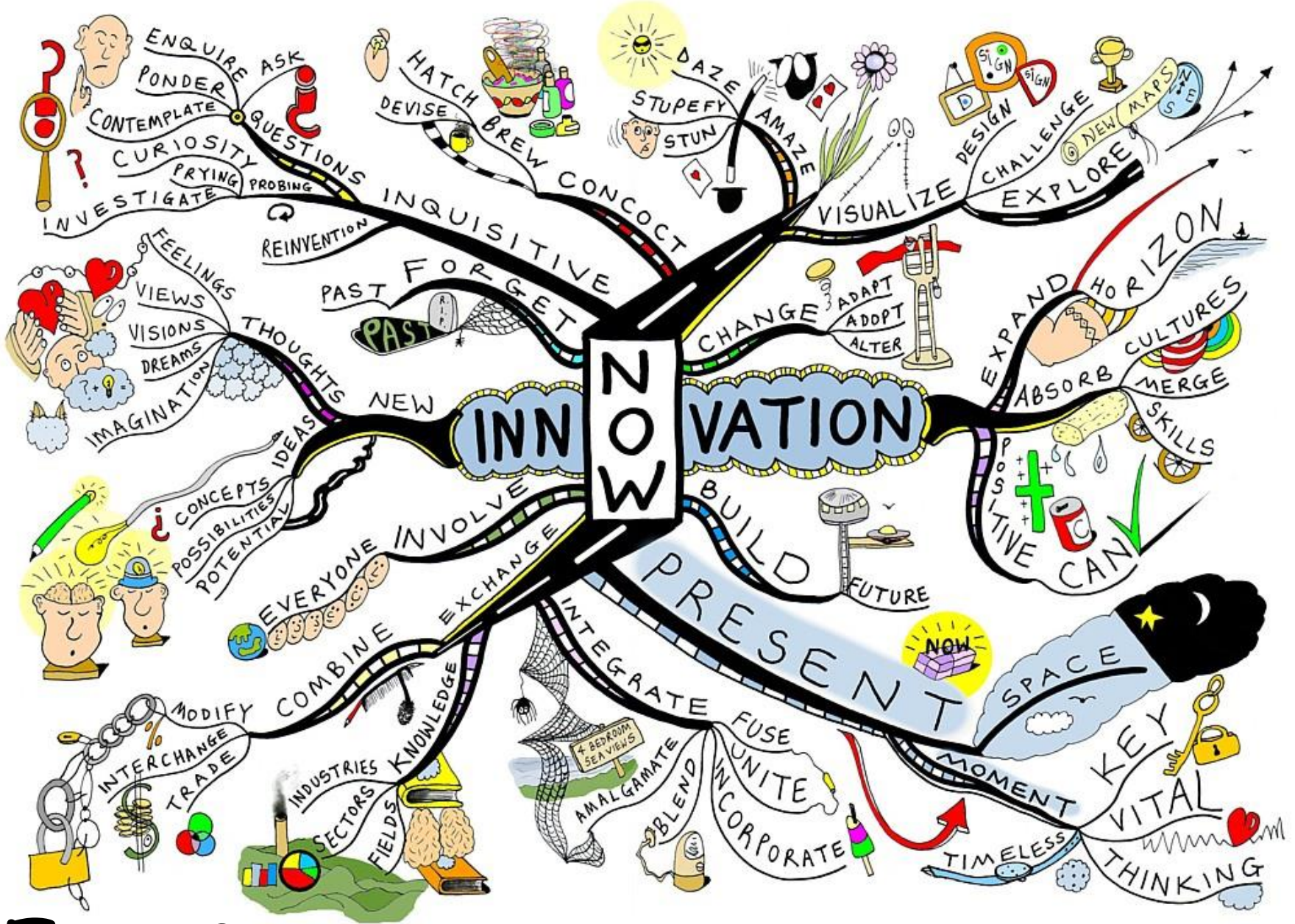
# Process

# Result

## Roadmapping

## Roadmap





Easy?

Is there a generic roadmap for innovation?





**Create a particular  
roadmap for your  
company**




**Do not  
look  
only at  
the  
past**



# Roadmaps

# Roadmapping





Explicit / synthesize  
knowledge

Also the tacit  
knowledge !!!!



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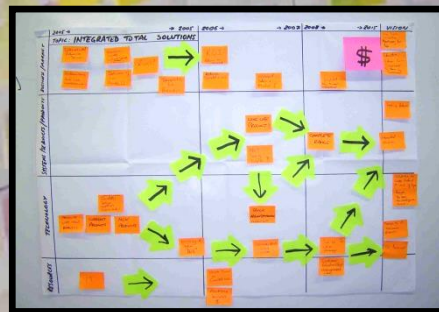
# Roadmap elements

Architecture

Form

Colors

Content



# Basic questions of a roadmap

Time → (When?)

?	?	?
?	?	?
?	?	?

a) Why do we need to act?

b) What should we do? 

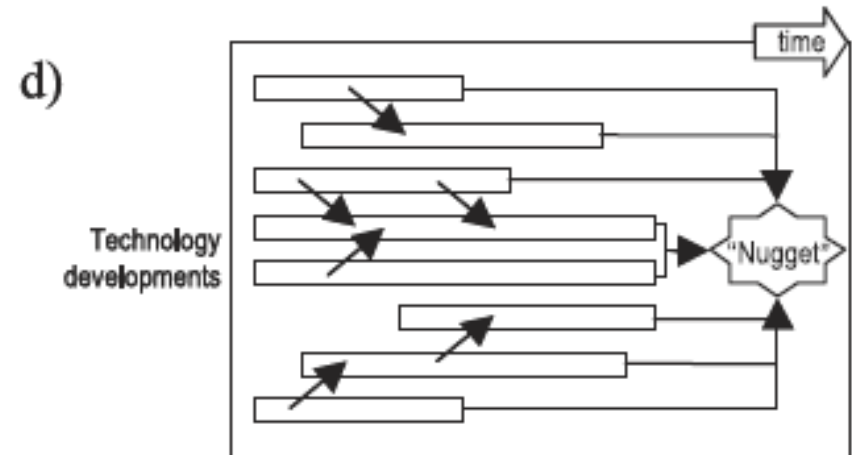
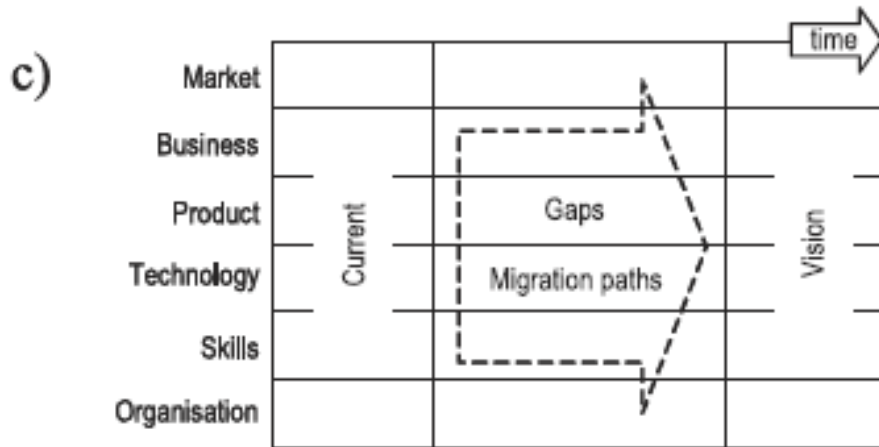
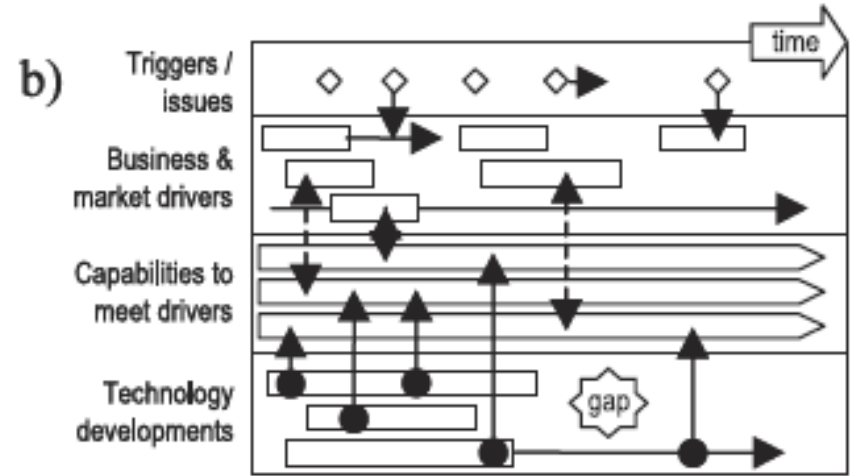
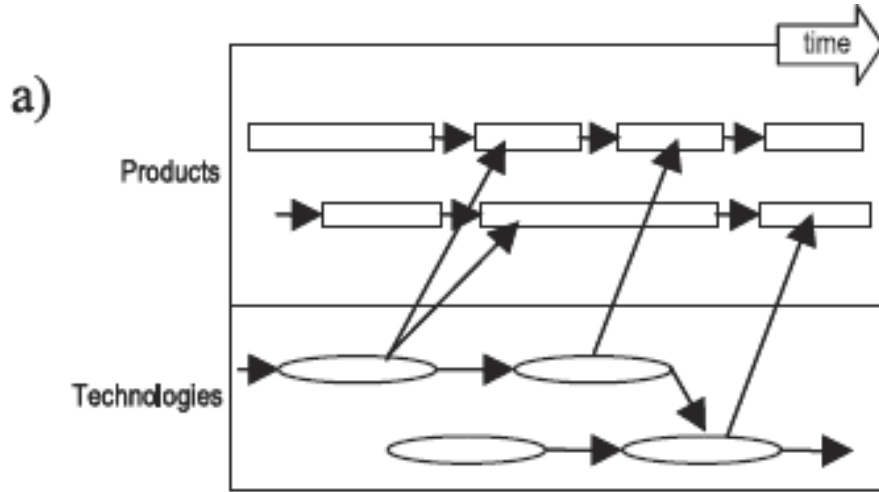
c) How can we do it?

2) Where are we now?

3) How can we get there?

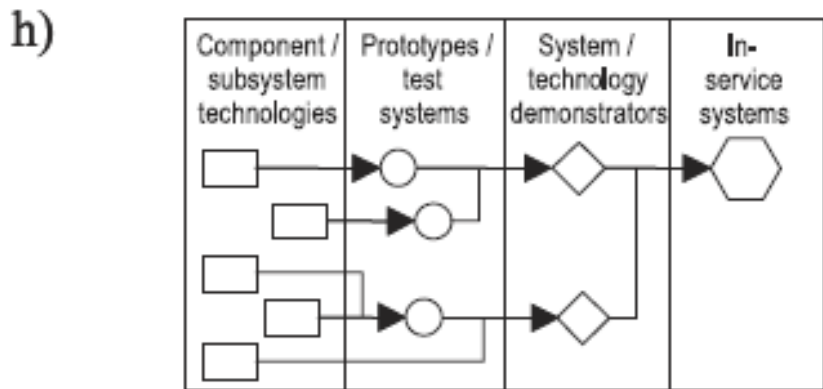
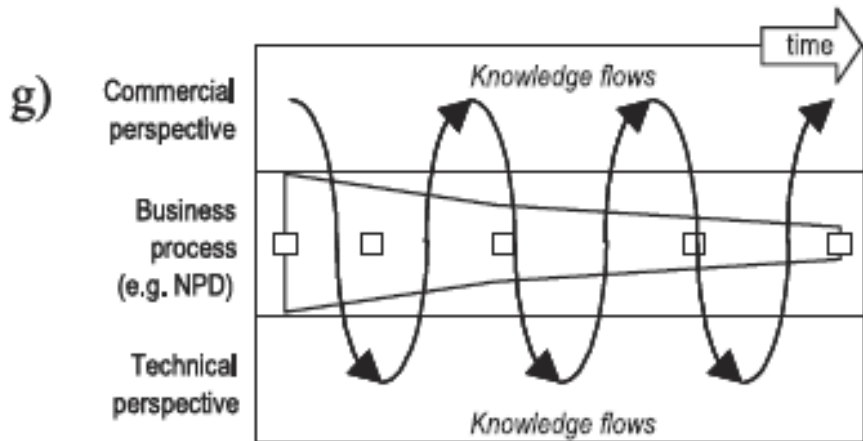
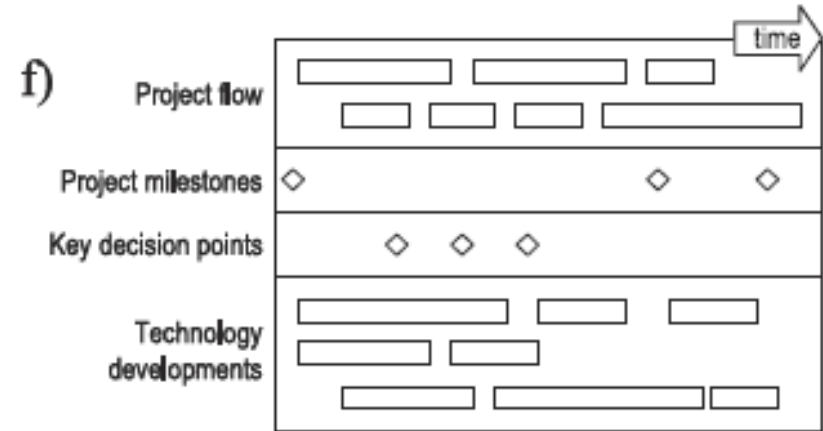
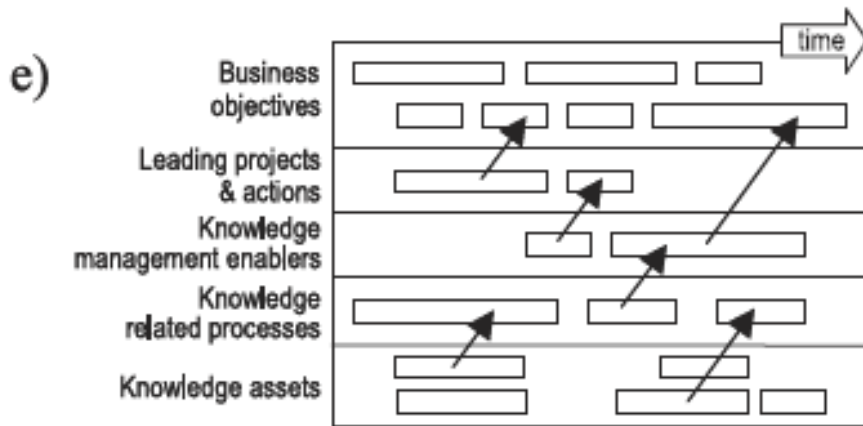
1) Where do we want to go?

# Examples of roadmap architecture 1/2



Phaal, Robert. 2004. "Technology roadmapping - A planning framework for evolution and revolution". *Technological Forecasting and Social Change* 71(1-2): 5-26.

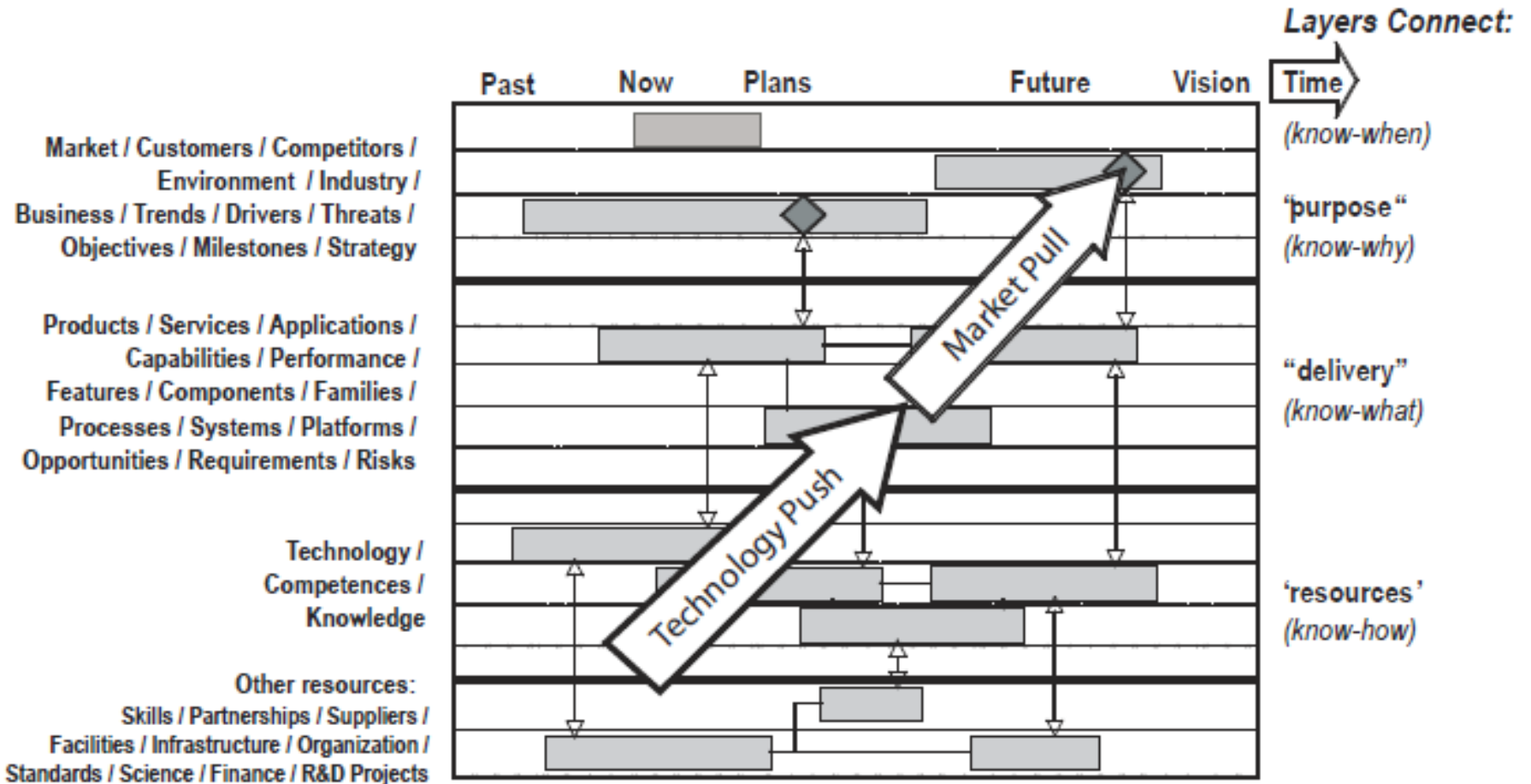
# Examples of roadmap architecture 2/2



Phaal, Robert. 2004. "Technology roadmapping - A planning framework for evolution and revolution". *Technological Forecasting and Social Change* 71(1-2): 5-26.

# Selected architecture for the hands-on activities

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Phaal, R, C J P Farrukh, e D R Probert. 2007. "Strategic roadmapping: a workshop-based approach for identifying and exploring innovation issues and opportunities, Eng". *Manag. J.* 19(1): 16–24.



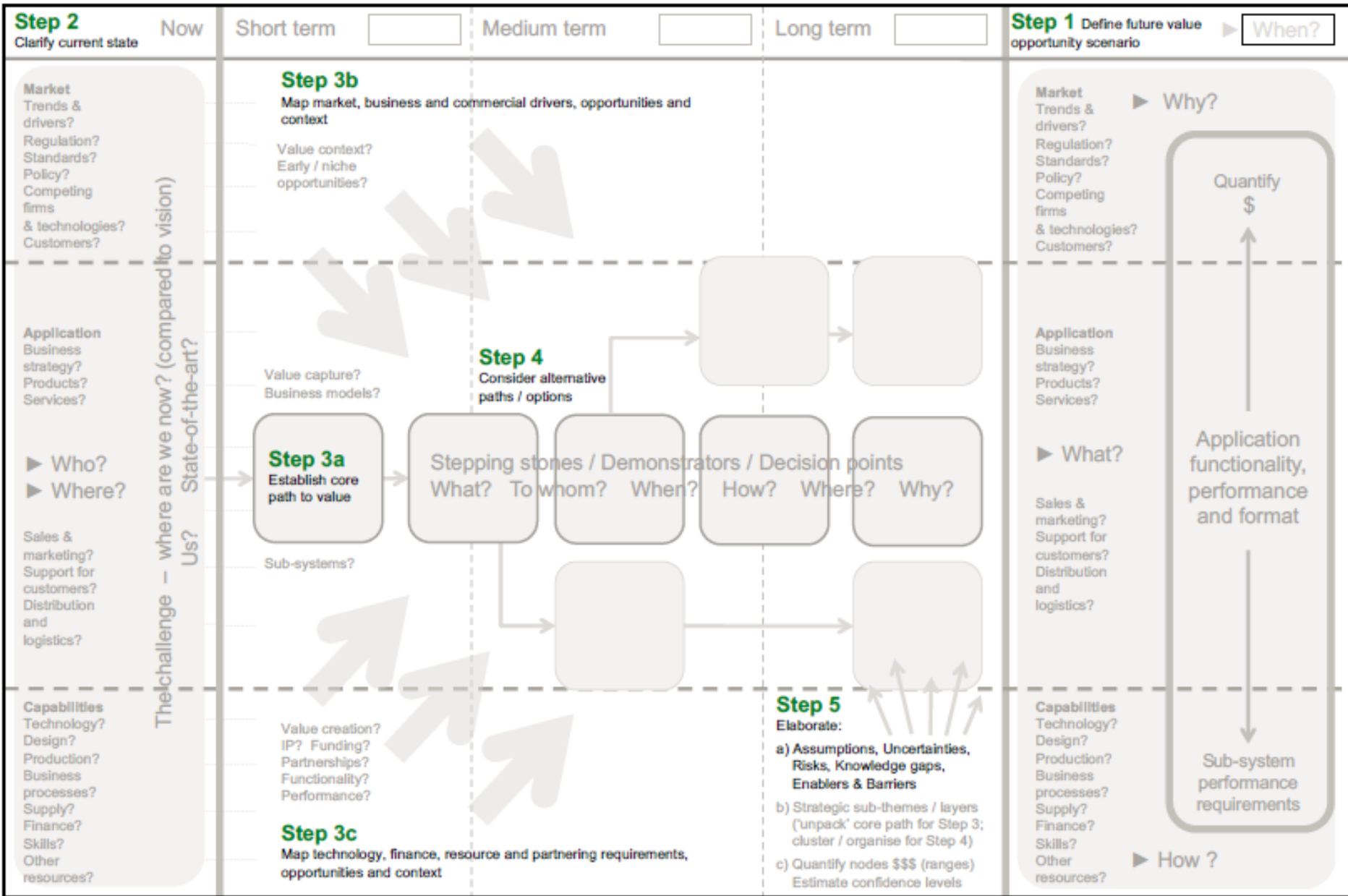


# Improved version

Topic:

Team:

Date:





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# Roadmapping steps

# Roadmapping

