

The background features a dark blue globe with various white icons. These icons include a factory with a crane, a train, a recycling symbol, a person walking, a person on a bicycle, a person watering a plant, a house, a tree, a person sitting at a desk with a laptop, and a person holding a briefcase. The globe is centered, and the icons are arranged around it, creating a sense of global connectivity and socio-technical integration.

TECHNOLOGY MANAGEMENT FROM A SOCIO-TECHNICAL PERSPECTIVE

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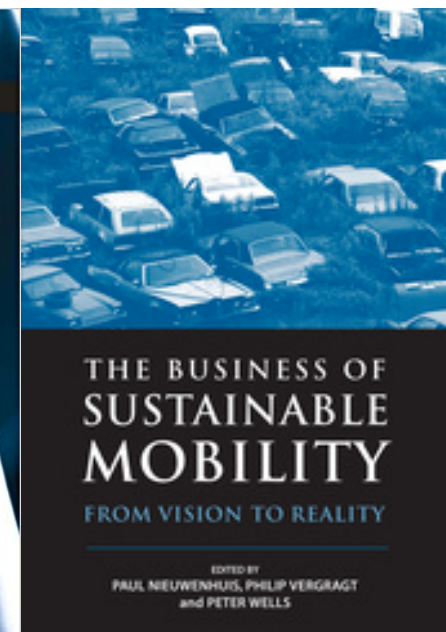
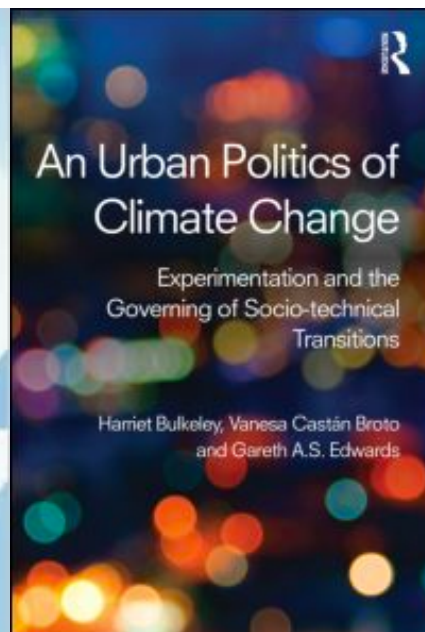
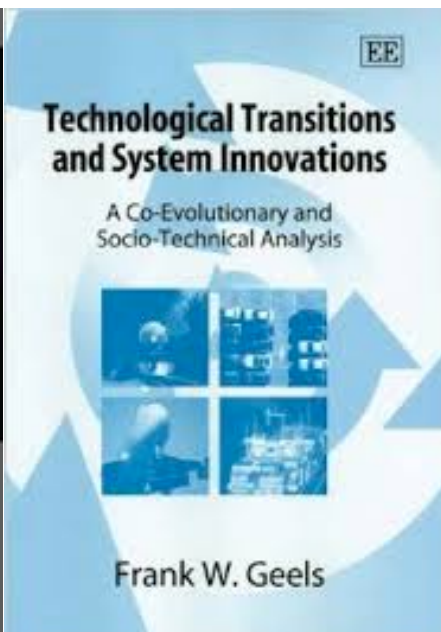
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WHERE DID IT ALL START?

SOCIO-TECHNICAL TRANSITIONS / SUSTAINABILITY TRANSITIONS



A socio-technical system is defined as the '*linkages between elements necessary to fulfill societal functions*' (Geels 2004), and transitions are large-scale transformations of socio-technical systems, and involve long-term processes and shifts to 'novel' socio-technical configurations, hence the term 'socio-technical transitions'.

WHERE DID IT ALL START?

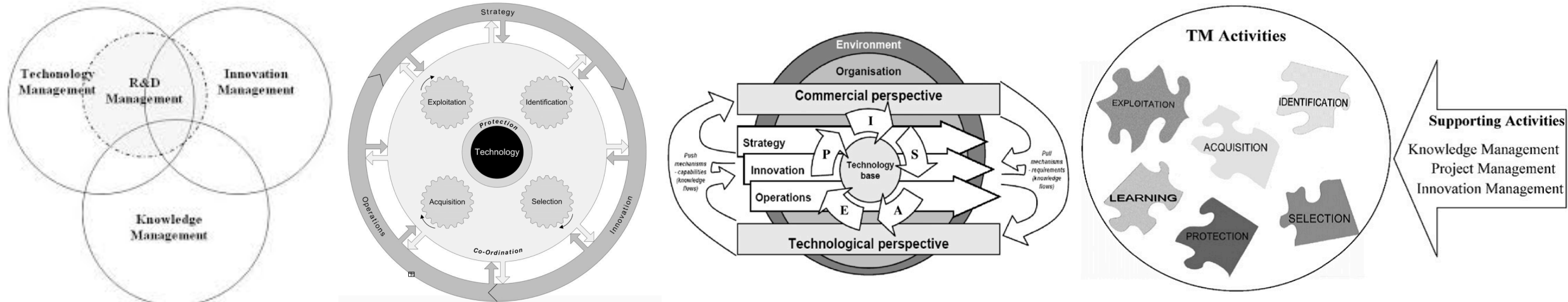
THE ROLE OF TECHNOLOGY IN SOCIO-TECHNICAL TRANSITIONS



The importance of technological innovation to advance towards sustainability is debated in literature. However, the opinion that aiming to address sustainability challenges without innovative technologies will be difficult, remains popular .

WHERE DID IT ALL START?

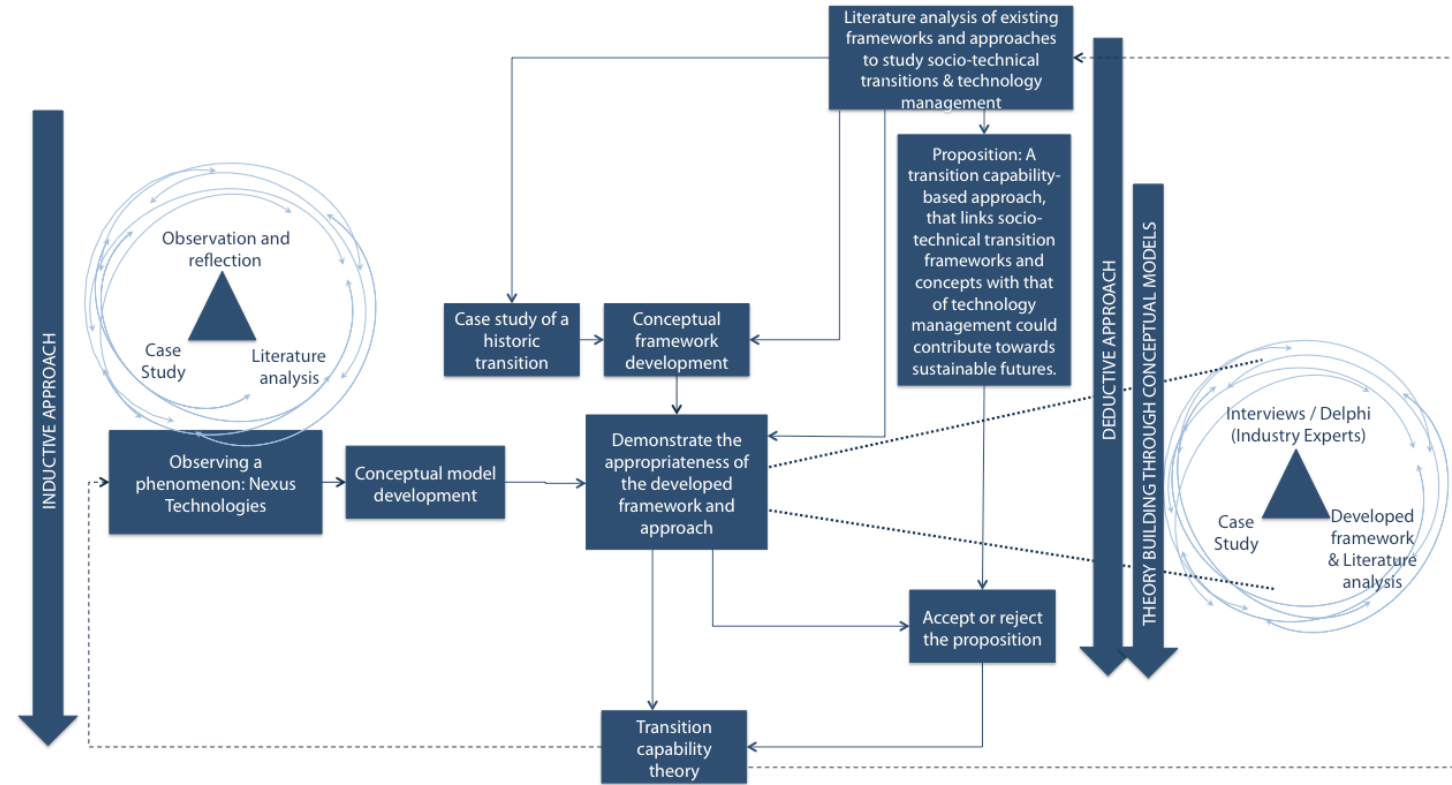
TECHNOLOGY MANAGEMENT



...it is common knowledge that sustainability is not only about technology, but that in order to realise the promise of sustainable development, sustainable products, systems, services and supply chains are necessary, and more importantly, all of this has to be managed towards sustainability (Cetindamar et al. 2016).

WHERE WILL IT END?

THE BIG PICTURE



The global challenge of sustainability, the role that technology has to play in the quest for transitions towards sustainability, and challenges faced by technology management within this context, inspired this research.

EXPLORING THE DISCONNECT (?) BETWEEN TM AND STT

3 PERSPECTIVES

1

BIBLIOMETRIC ANALYSIS

Understand the level of integration and overlap between the two scientific networks

To identify the key dimensions across which these bodies of knowledge share intellectual roots

2

TECHNOLOGY MANAGEMENT FROM A SOCIO-TECHNICAL TRANSITIONS PERSPECTIVE

What are the contributions that a socio-technical transitions perspective can make to the concept of technology management?

Explore how the principles and concepts that underpin socio-technical transition frameworks and approaches, could potentially enhance technology management

3

NEW INSIGHTS INTO SOCIO-TECHNICAL TRANSITIONS: A TECHNOLOGY MANAGEMENT PERSPECTIVE

What alternative insights into socio-technical transitions we can gain by exploring such transitions from a technology management perspective?

Explore how the principles and theories that constitutes technology management, could potentially improve our understanding of socio-technical transitions

?

CONTEMPORARY TM CHALLENGES

Challenges can be attributed to:



Technologies and markets are highly dynamic



Ongoing changes in core business processes



Impact on the management of technology

The primary causes of the changes required are due to:



Rapidly changing global
technological and
market environments



Constant need for
technology management
to evolve

CONTEMPORARY TM CHALLENGES

An overview

Changes in innovation	Sustainability	Integration of services with products	Strategy
<ul style="list-style-type: none"> Changes in types of innovation Transformations in innovation processes These innovations face a number of challenges 	<ul style="list-style-type: none"> Rising interest to manage technology within the context of sustainable development Concurrently address productivity as well as safeguarding society and the environment 	<ul style="list-style-type: none"> Technology management has to support the dynamics of manufacturing and service industry given within the context of sustainability New business models Additional set of capabilities aimed at the integration of products and services Increasing need for cross-disciplinarity 	<ul style="list-style-type: none"> Reform (or at least revised) approach to most aspects of an organization New opportunities Lack of strategic approaches to deal with these new opportunities Existing approaches does not take all aspects of commercial, ethical, societal and environmental into account

INCREASING COMPLEXITY



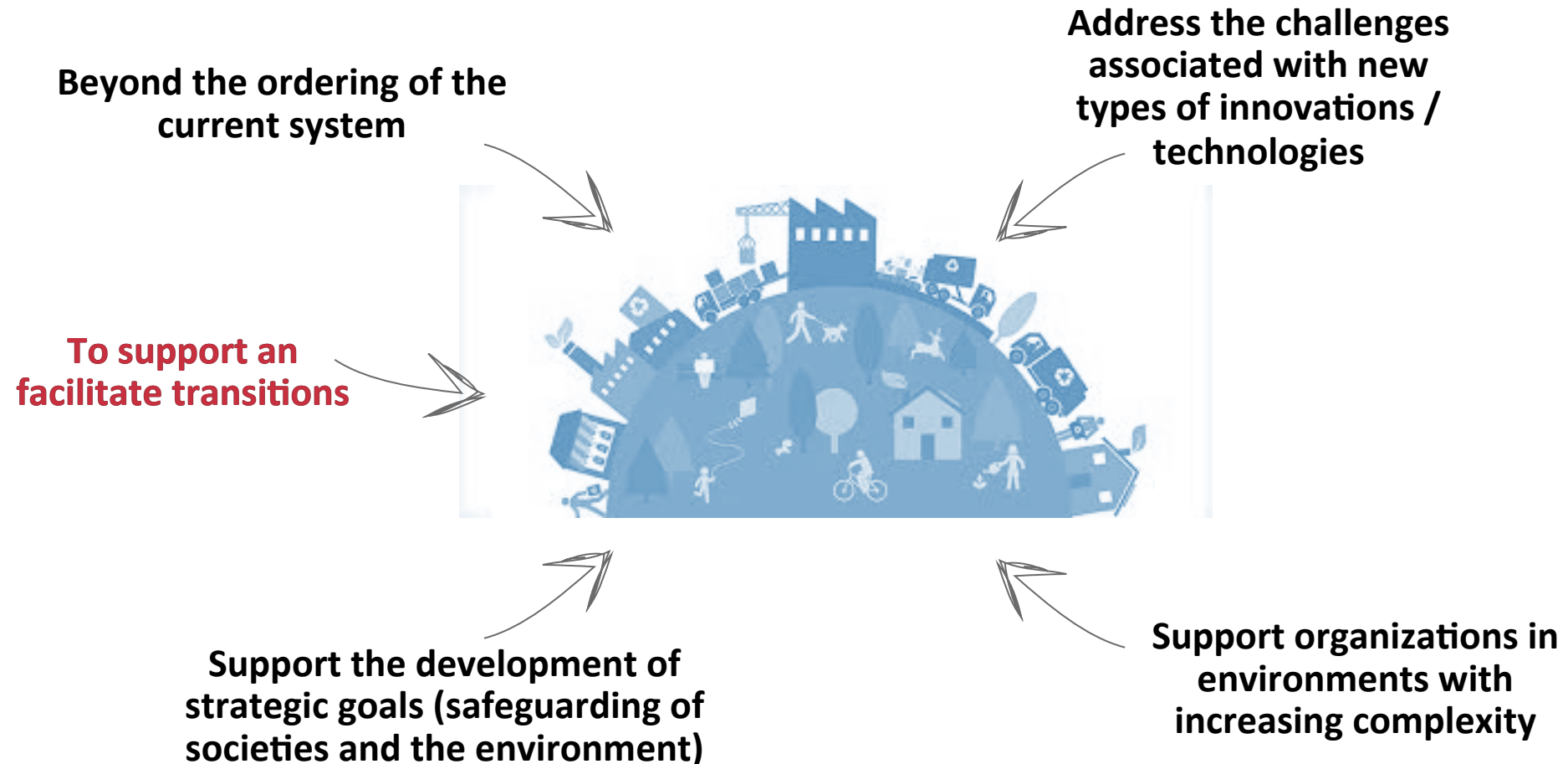
CONTEMPORARY TM CHALLENGES

An overview



TOWARDS NEW INSIGHTS INTO TECHNOLOGY MANAGEMENT

5 GOALS



SOCIO-TECHNICAL TRANSITION

MOST PROMINENT THEORIES, APPROACHES AND FRAMEWORKS

MULTI-LEVEL PERSPECTIVE

The key focus of MLP is to study and analyse the interactions and interplays between the new technological innovations (niche level) and the existing regime, which are situated within a macro environment (the landscape) that also have an influence on the regime (Verbong & Geels 2007; Geels 2002).

INNOVATION SYSTEMS APPROACH

The innovation systems approaches aim to unpack innovation systems into its elements with the objective of identifying which of the elements within the system do not realise their intended purpose or achieve its desired goal (Jacobsson & Bergek 2010).

STRATEGIC NICHE MANAGEMENT

SNM focuses on the dynamics around the early adoption stages of technological innovations that have prospects to contribute towards sustainable development. SNM aims to answer: “how and under what circumstances is the successful emergence of a technological niche possible?” (Schot & Geels 2008).

TRANSITION MANAGEMENT

The aim of transition management is to identify and analyse the opportunities, enabling factors, limitations and conditions under which transition management have to be set-up to effectively influence a socio-technical system to foster a transition. (Elzen et al. 2004).

TOWARDS NEW INSIGHTS INTO TECHNOLOGY MANAGEMENT

TECHNOLOGY MANAGEMENT FROM A SOCIO-TECHNICAL PERSPECTIVE

1	Beyond the ordering of the current system
2	Address the challenges associated with new types of innovations / technologies
3	Support organizations in environments with increasing complexity
4	Support the development of strategic goals (safeguarding of societies and the environment)
5	To support an facilitate transitions

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By taking a multi-level perspective, it could enhance technology management to support the interplay between the existing regime, and new technological innovations. In addition, taking this perspective will also then place the management of technologies within the existing regime in context with landscape pressures and emerging technologies (niches).

TOWARDS NEW INSIGHTS INTO TECHNOLOGY MANAGEMENT

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As mentioned throughout this paper, the characteristics of new types of innovations, especially those that are directed at societal and environmental issues, are often different from 'traditional' innovations. And, it is here that incorporating the concepts of SNM by focussing on the dynamics around the early adoption and diffusion stages of technological innovations into the management of technology might prove to add value to the management of such technologies.

TOWARDS NEW INSIGHTS INTO TECHNOLOGY MANAGEMENT

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Taking an innovation systems approach to understanding the increased complexity, and more specifically the increased number of actors involved, could hold potential for the management of technology. The innovation systems approach also supports goals (i) and (ii) in that the approach takes a broader view than just technological change

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When traditional transitions are considered, it is clear that the management of the technology that brought about these (traditional) transitions played a significant role in these episodes.

However, the sustainability or socio-technical transitions required, requires technology management to incorporate strategies that will facilitate such a shift towards sustainability.

TOWARDS NEW INSIGHTS INTO TECHNOLOGY MANAGEMENT

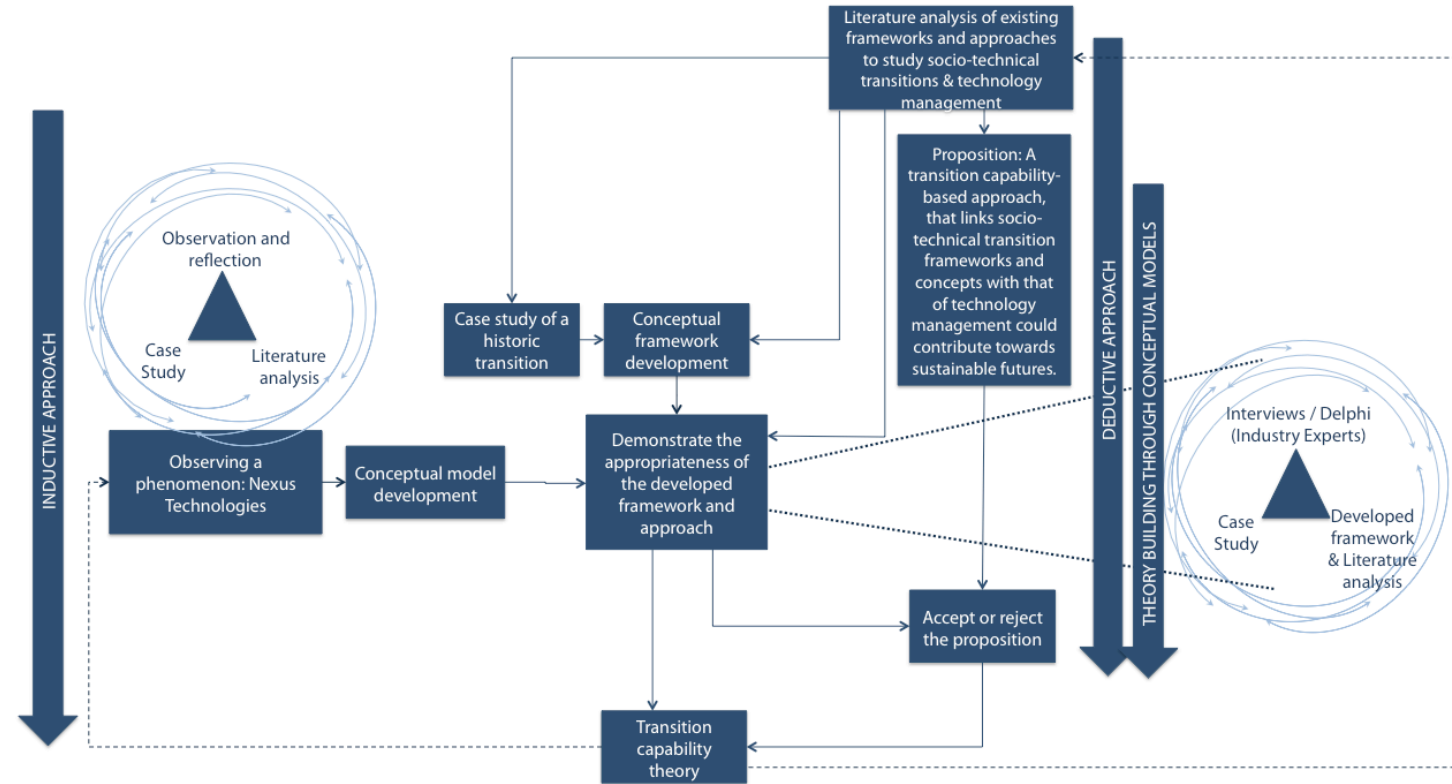
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Technology management develops technological capabilities, however, we foresee that technology management has a role to play in the development and exploitation of the ability of organisations and systems to transitions towards a more sustainable future state. And this is where valuable pages can be borrowed from book of socio-technical transitions.

WHERE WILL IT END?

THE BIG PICTURE



Proposition: A transition capability-based approach, that links socio-technical transition frameworks and concepts with that of technology management, could contribute towards sustainable futures.



THANK YOU

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