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Technology Road Mapping (TRM): Research, Business Practice and Policy for Scotland

Literature Summary and Project Goals

Technology roadmapping (TRM) in its simplest form represents a powerful technique for supporting technology management and planning, especially for exploring and communicating the dynamic linkages between technological resources, organisational objectives and the changing environment (Phaal, Farrukh, & Probert, 2004). TRM allows an industry, organisation or individual to describe a future environment. With respect to the future environment, objectives and plans on how these are to be achieved over a period of time are illustrated (Albright, 2003), allowing ways to identify, evaluate and select strategic alternatives that can be used to achieve a set objectives (Kostoff & Schaller, 2001). The popularity of TRM has increased over the years, particularly given the use of TRM by Motorola in the 1980s, academics, researchers and policy-makers see this tool as an extremely useful device for technology management and industrial policy planning with signs indicating that this can become a reliable procedure in future technological planning, and may even be utilised to lead strategy policy and operation levels (Choomon & Leeprechanon, 2011).

Although much has been written on TRM there are concerns that the discussion is no longer advancing theory or practice, in that, much has been written on TRM definitions, the application of TRM, the process, the different types of roadmapping and the challenges facing such a process. Its practices vary widely, which is important as companies need to coordinate their activities and investments with one another and/or with governments locally and internationally but an important emphasis of TRM is that it enables key stakeholders to articulate and identify these key relationships and points of alignment (Cetindamar,

Phaal, & Probert, 2010). However, there has been no effort to advance the discussion of TRM within the academic literature with respect to technology push integration where the need to develop a roadmapping method specific to the situation taking into partnerships is considered (Caetano & Amaral, 2011). With respect to partnerships, there are “studies suggesting the involvement of partners in technology roadmapping (Gerdri, Vatananan, & Dansamasatid, 2009; Phaal, Farrukh, & Probert, 2001; Wells, Phaal, Farrukh, & Probert, 2004) as well as authors that propose identification of partners (Daim & Oliver, 2008; Lee, Yoon, Lee, & Park, 2009; Lichtenthaler, 2008) but neither the studies or authors have a system of identification, selection, prioritisation and incorporation of partners into roadmapping or take into account the different types of partners to be identified” (Caetano & Amaral, 2011, p. 12). The partners specifically in this context are small and medium-sized enterprises (SMEs) who can engage with firms to collaborate in developing TRM either as partners or suppliers. What is required is to explicitly discuss how these relationships can be sought out, built and utilised.

To address this gap, this SUII programme’s objectives include, to:

- Capture state of the art knowledge about TRM among internationally recognised researchers in science, technology and innovation studies, and in strategy practices.
- Capture and contrast expert practices in TRM among large companies and SMEs, compared with other analytical practices in support of decision-making, and across different industry sectors

important to the Scottish economy, assessing the extent to which practices can be made generic.

- Appraising the uses of TRM in policy, as practiced in decisions making, as libraries, and as practices to be diffused.

TRM is a popular process not only for individuals but also for organisations and industries and our programme is thus timely. The programme's greatest scope for impact in Scotland is in diffusing technology strategy practices among companies, and influencing policy-makers in their uses of TRM, to publish roadmaps, and establishing training.

We will address the following questions:

- What counts as best practice in TRM, and how does TRM compare with other frameworks, tools and techniques in supporting strategic decisions?
- How do practices in TRM vary with respect to: company size, industry sectors (including proximate ones connected in supply, or as customers), and exporting intensity?
- In policy terms, how can TRM as a social-technical-economic process establish consensus, and what are the qualities of such consensus in scope and durability?

More information about the programme and associated meetings can be found at:

<http://bit.ly/ysNEW2>

The programme team includes:

- John Finch, Strathclyde Business School
- Raluca Bunduchi, Aberdeen Business School
- Scott Wilson, Scottish Enterprise
- Paul Mitchell, University of Aberdeen
- Norin Arshed, University of Aberdeen

For further details, contact Prof. John Finch at:

john.finch@strath.ac.uk

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