TRM software

Stephen Lupini
Cambridge University
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Introduction
For the early stages of TRM or for one-off roadmaps common desktop software applications such as Microsoft PowerPoint are normally adequate for roadmap creation. However, as TRM becomes embedded as a common planning tool, organisations often request a dedicated software tool to support the capture, storage and communication of roadmaps. As TRM matures, roadmaps become more complex and there is often a need to collaborate on an enterprise-wide basis. This report provides a brief overview of three software applications that directly support or could be adapted to support TRM.

It is important to remember that a key benefit of TRM is the opportunity for sharing and communication of information and knowledge within a group, across appropriate functions and from different perspectives. This requires people to participate in one or often a series of workshops with support from research and consultation. Therefore, while there may be a need for software tool to support TRM, it should not form the core element of the process.

Software components
It is proposed that a TRM software solution could consist of two major components:

- A graphical presentation tool – facilitates the creation of easy to understand roadmaps and permits the on-screen customisation of roadmap information to the needs of a specific audience.
- A central database - facilitates the capture and storage of roadmap data and allows data to be shared across multiple roadmaps and dispersed locations.

It is assumed that the above components are separable and that an organisation does not have to have both in a TRM software package. Figure 1 shows a possible architecture for how such a TRM software system could function. The central...
database forms a core element of knowledge management within the organisation, shared between two groups of roadmap users. These groups of users could be separate departments based in the same location or they could be two separate locations sharing information via Internet or Intranet.

The three software applications considered in this report are:

- Microsoft Project
- Graphical Modelling System
- Geneva vision Strategist

It also considers a TRM initiative being run by Purdue University in the USA (Indiana).

**Microsoft Project**

This is a project management software tool that can be used to schedule and track project and resource information in increments of time; data is then typically presented in a Gantt chart (see Figure 2). Although this software tool has no specific functions to support technology roadmapping it is possible to adapt it for this purpose by treating projects as roadmaps and project tasks as roadmap elements.

**Features overview**

A layered roadmap structure can be created by using a custom outlining function within Microsoft Project to develop a series of discernible levels similar to a diagram.
Windows file structure. Custom fields enable specific roadmap element data to be entered and views allow the user to customise roadmap displays for different audiences by filtering or grouping elements. Multiple roadmaps are possible by creating hierarchies and links among roadmaps and two or more roadmaps can be combined to form a consolidated roadmap. Icons in the Gantt chart indicate that supplementary notes are attached to certain roadmap elements.

![Screen-shot from Microsoft Project showing layered Gantt chart structure](image)

**Figure 2.** Screen-shot from Microsoft Project showing layered Gantt chart structure

It is possible to save roadmaps as .html files for viewing over the Internet or corporate intranet. Project 2000 comes with an additional web based component called Project Central that can be installed on company’s intranet. Team members can update roadmap elements, which a roadmap owner can approve via e-mail before adding them to the roadmap. It is possible to work on roadmaps offline and Microsoft Project also has a database that allows roadmap data to be stored and retrieved.

**Key benefits**

- Familiar Microsoft user interface, views and icons.
- Compatible with other Microsoft Windows software applications and various database applications.
- Hyperlinks can be added for quick connection to commonly used supporting documents, analyses, plans or Web sites created in software packages other than Microsoft Project, without leaving the project roadmap.

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All team members can view roadmaps over a corporate intranet or Internet.
Snapshots of roadmaps can be exported in presentation packages such as PowerPoint and it is possible to customise and print any project view for inclusion in reports.

Graphical Modelling System

The Graphical Modelling System (GMS) is a TRM software tool developed by the United States’ Office for Naval Research (ONR) which can be downloaded free of charge from their website\(^1\). The ONR has long recognized the need for the development of technology roadmaps that depict the connections between technology and external drivers. GMS was developed to assist program managers in the management of complex technology development projects that span long time frames, multiple disciplines, multiple organizations, and multiple development paths. It offers a wide array of functions to help TRM participants capture, visualize, manipulate, communicate and manage information contained in technology roadmaps.

Features overview

The Graphical Modelling System (GMS) Version 4.0 consists of four separate and distinct software applications, shown schematically in Figure 3 below:

![GMS software components](image)

Figure 3. GMS software components.

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\(^1\) [www.onr.navy.mil/gms/gms.asp](http://www.onr.navy.mil/gms/gms.asp)
1. The *GMS editor/viewer* is the main component of the system. With this tool, users construct and maintain data elements for individual graphical models, use simple point-and-click manipulation tools to arrange the data for each model, and perform automated updates from on-line graphical model repositories.

2. The *Repository Manager* application is designed to assist in the creation and management of large graphical model repositories. Graphical model repositories are especially useful in situations where reliable information needs to be easily maintained for inclusion in multiple graphical models.

3. The *GMS Internet Viewer (GMS-IV)* application enables organisations to deliver graphical model content over the Internet (or any TCP IP network). People with viewers can probe and manipulate the information contained in any graphical model but are unable to change the content.

4. The *Welded Network Data Display (The Weld)* is designed to allow users to analyse graphical models by converting complex networks with a large number of links into a matrix in which individual links can be identified.

The GMS website offers support for downloading later versions of the software. The software comes complete with online context-sensitive help (similar to Microsoft programs), printable user manuals and eight online tutorials.

**Key benefits**

- Ability to sort, filter or group roadmap information according to element attributes to cater roadmaps to certain audiences.
- Links can be created between elements and annotated to show the nature of the relationship.
- Reliable roadmap information can be stored in the repository allowing it to be shared across multiple roadmaps.
- Data can be imported from Microsoft Excel into GMS editor/viewer or the repository.
- A single view of a roadmap can be saved as a snapshot.
9.7 **Geneva Vision Strategist**

This is an enterprise solution developed and supplied by a Californian company called The Learning Trust\(^2\). It is the only commercial system that has been identified that directly supports TRM and it is broadly based on the approach developed by Motorola.

**Features overview**

A key feature of Vision Strategist is the Active Digital Library (ADL), which is installed on a central company server and provides a central repository for roadmaps and supporting documents. It also contains a system to allow roadmaps to be viewed using a web browser. Every TRM project is associated with a ‘knowledge community’, which is a group of colleagues working in a common area of interest. The knowledge communities are maintained in the ADL, providing a means for roadmap collaboration across the organisation.

Vision Strategist breaks down the task of strategic planning into four hierarchical categories (see Figure 4):

1. **Projects** - a collection (folder) of related roadmaps. A project browser displays the hierarchy of projects and allows you to show or hide different levels of the project.
2. **Roadmaps** - a visual collection of scenarios and their associated roadmap elements placed on a timeline.
3. **Scenarios** - an informational model that represents a set of strategic assumptions. A scenario is depicted in a hierarchical display on the roadmap canvas.
4. **Elements** - timeline increments of a roadmap that provide the content of the roadmap. Each element represents a specific activity or idea within a strategic plan and can be associated with supporting information and external documents.

Other useful features include *views* that can be used to filter particular elements and scenarios to create roadmaps for different audiences. *Links* and *relationships* can be formed between roadmaps and roadmap elements to examine how a component of a

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\(^2\) The Learning Trust website: www.thelearningtrust.com

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strategic plan depends on other items; these can be displayed on the roadmap itself. Vision Strategist permits users to work both *online* (when connected to the server) and *offline* (when operating remotely from network access); a separate project folder stores roadmaps that need to accessed whilst offline. Synchronisation is the method of reconciling changes made to the system while offline. A search panel allows keyword queries of all projects for sub-projects, roadmaps, scenarios, elements and views that meet particular criteria. Vision Strategist provides a method for converting roadmaps into PowerPoint slides and a security model to control access to projects and roadmaps.

![Figure 4. Screen-shot from Geneva Vision Strategist showing the 4 hierarchical categories](image)

**Key benefits:**

- Supplier, customer and competitor roadmaps can be linked to quickly visualise how other participants affect a company’s market.
- Provides a searchable ‘knowledge network’ of roadmaps, scenarios, elements and supporting documents or web addresses.
- Supports composite roadmaps and roadmap hierarchies to produce a ‘big picture’ view of the business.
- Access to roadmaps via the Internet, corporate intranet or extranet.
- Organises the information contained in a roadmap into a comprehensive, printable or presentation format.
Purdue University’s Collaborative Roadmapping Laboratory.

Purdue University has partnered with The Learning Trust to set-up up a collaborative roadmapping initiative. The aim is to share industry roadmaps created using the Geneva Vision Strategist software tool over the Internet by accessing the university’s Centre for Technology Roadmapping website. Corporations can gain free access to Vision Strategist and receive training in the roadmapping technique. The solution will also be used to gather the latest information on developing technologies and market trends for creating global industry roadmaps. Participants will then be able to compare these industry roadmaps with their internal roadmaps.

Vision Strategist is stored on the websites central server with the Active Digital Library (ADL) housing ‘knowledge sharing’ and ‘learning’ communities allowing peers to collaborate globally in areas of interest. However, the software is tied to the website and any roadmap will appear in the ADL for other users to view. In areas where confidentiality is not a problem, Purdue will actively assist firms in creating their roadmaps. This could be useful for firms in gaining experience of using TRM software or collaborating on industry wide roadmaps such as Foresight initiatives where it is important to be able to share results and knowledge.

3 http://roadmap.ecn.purdue.edu

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