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# Strategic Roadmaps



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# Strategic Roadmaps

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A popular approach being applied to long-range planning is to produce a roadmap to show the path to the future. Roadmaps and the roadmapping process serve as excellent communications tools – an effective means to link strategic operations, collaborative ventures, and business plans. However, to achieve success, roadmaps must target the right approach, involve the appropriate group intelligence, and provide a specific level of detail. With shrinking product life-cycles and development times, roadmaps have become a valuable tool to help plot an organization’s future direction along with future market/customer needs. The business roadmap approach is based on the analogy to the maps each of us uses as we travel. The definition of a roadmap is:

A map for motorists, showing the roads of a given region, their route and condition, etc.<sup>1</sup>

Just as the map shows us our starting point and where we want to arrive, so does our business roadmap. It shows us the different routes we can take, where there are choices, and where there are not. It helps us understand where there are roadblocks ahead or construction needed for us to achieve our technology or services destination. The definition of strategic roadmaps is the following:

Roadmaps are mechanisms enabling organizations to visualize their critical assets; the relationships between these; and the skills, technologies, and competencies required to meet future market demands.

A roadmap process is a means to connect vision, values, and objectives with strategic actions that are required to achieve those objectives.

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<sup>1</sup> *Webster’s New World Dictionary* (Third College Edition).

The overall process for creating strategic roadmaps has these key elements:

- Process that contributes to the integration of business and technology and to a definition of technology strategy by displaying the interaction between products and technologies over time, taking into account both short- and long-term product/technology aspects.
- A roadmap is a dynamic and responsive *plan*.

Roadmaps describe a “destination” at a moment in time (the goals and timelines), as well as intermediate stops along the way that connects those paths with the following pathways:

- Actionable steps necessary to get to destinations.
- Interdependencies among steps.
- Alternate routes need to pick paths that optimizes resources or risk.

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### **Custom to Each Unique Situation**

What has inhibited the effective use of roadmaps is the lack of understanding that there are multiple types, levels, and styles of roadmaps. Just as there are different types of maps for a motorist to use, so are there different types of roadmaps for us to use in our business and industry. That is why Technology Futures, Inc. (TFI) uses a custom framework that seeks to develop, for each organization, the appropriate type and levels of the roadmap products.

There are numerous types, levels, and styles of roadmaps for business use as well as everyday use. This paper will focus on strategic roadmaps. Strategy is a perspective, a way of thinking about the future that transcends a focus on the immediate. This is the transformation process that many governmental agencies and companies are going through now. They are charting a strategic map from the old way of doing business to a new, converged, collaborative, global approach. Organizations need to transform themselves into a more focused agency or company by developing an organizational structure that recognizes the need for a more integrated approach to science requirements, management, and implementation of systems development and products, and a more agile vehicle for accommodating change.

Bob Galvin, past Chairman of the Board of Motorola, said the following about strategic roadmapping efforts:

The fundamental purpose of the Technology Reviews and Technology Roadmaps is to assure that we put in motion today

what is necessary in order to have the right technology, processes, components, and experience in place to meet the future needs for products and services.

The variety, scope, and focus of these maps offer their own distinct advantages and disadvantages. The key element of a strategic roadmap, however, is that it focuses resources on critical elements needed to meet the strategic objectives of the organization.

The following analogies are useful in helping set this in context.

Let's first look at maps offered by rental car companies such as Hertz and Avis. This map is very general, providing an overall view of your location. But it is very difficult to actually find a specific address or destination because the map is so general. The map does not offer any points of interest, warnings of construction delays, or expected traffic delays due to congestion. If a specific address is not supplied, a general area map is displayed. This is the most common commercial and government roadmap we see: it offers a general direction but few details or options.

MapQuest is a popular mapping service that provides online directions, and it is a good comparison for many of the software roadmapping tools. MapQuest offers many initial advantages. It has very good map detail with fair readability. The initial map scale can be specified. The Website offers driving directions to or from the mapped location. Some of the disadvantages of using this site are that only one location per map can be specified, and that must be done by street address. The ability to map outside the base historic data is not possible. The map size cannot be controlled.

In terms of usefulness to a driver, MapQuest driving instructions are overly detailed and can contain much information that is out of date. MapQuest always directs the driver to a major highway even if that specific route is not the most efficient. The directions are often confusing even if the user is familiar with the area. Often, MapQuest is not updated enough with new routes and changes in road names or highways. MapQuest offers no information about highway closures, construction, or traffic congestion trends. For example, the map will direct the user to a specific highway that is closed due to construction so the driver must follow a highly congested detour route. This type of approach must be supplemented when applied to commercial and government roadmaps.

Rand McNally also offers mapping services, both print and online. Their maps are more accurate than those of MapQuest. The "Plan a Trip" section of their online maps has an ability to search out what travelers want on their trips. For example, the site can answer such questions as "name art museums within 25 miles of the trip." The site does supply continuously updated weather information and twice monthly updates on road construction projects that might interfere with travel. If the user does not know a specific destination address, the general maps of an area are much more current but, again, it can be difficult to find areas of interest unless using the "Plan a Trip" option. The paper maps do a good job of showing a broad area and, when combined with the online features, can

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create a map that can be used in many instances. This is as close to a hybrid roadmap as the analogy gets.

Yet another option is the AAA TripTik, which is a customized map/itinerary of a trip that a member is taking. It outlines the beginning and ending points, and all the spots in-between. Rest stops, restaurants, tourist attractions, and the important items one needs when going through unfamiliar territory are adequately described. It is a good detailed approach, but lacks the wider view that is necessary when we produce business strategic roadmaps.

AAA's online Map 'n Go has many features that make it a good option for getting maps, and it is not a bad analogy for starting strategic roadmaps. A user enters a starting point, an ending point, and decides which route is desired: the shortest, the quickest, the most scenic, and the preferred. The beginning and ending points can be selected by zip code, city/state, or telephone area code. For review purposes, look at Portland, Oregon as a starting point, and Carson City as an ending point. The quickest route gave a driving



distance of 604 miles, with a driving time of just over 11 hours. The shortest route had a distance of 555 miles, but a driving time of over 13 hours. The routes taken were not always interstate freeways or highways, but were a mixture, including some locally traveled roads that *may or may not* be affected by seasonal weather conditions. There is the ability to add details to the map. You can have anything from restaurants to historical sites to your local (or any local) AAA office listed on the map. Another feature is the exit services database, which includes food, gas, lodging, rest areas, auto service, and many other types of services. The AAA TripTik is a good analogy to a very detailed technology roadmap such as the Semiconductor Industry Association technology roadmap.

Atlas maps are a suitable option especially for those traveling long distances, like cross-country. They provide information about a wide variety of subjects such as population information, demographic information, points of interest, and very great detail of specific areas like big cities. For example, most atlas maps of California provide a great map of the state, major and minor highways, back roads and even private roads, national parks, universities, museums, etc. The detail a driver will get from an atlas is good but, to keep the information current, you have to buy new ones fairly often. And most atlas maps will not provide you with information concerning traffic or weather hazards. However, some do provide local radio station frequencies in order to tune into this information during your trip.

Gas station maps and city address maps have the same disadvantages as atlas maps. You have to make sure they are current. The detail of these map types is very useful but, again, it will not help a driver with decision making for the best or most efficient route.

So, why are there so many types of maps? Maps are always going to be used. Some people prefer more technological options such as online mapping services or GPS devices. Others prefer the more organic maps that you can fold or flip through. Each of these different types of maps addresses a different need. So, each one addresses the specific needs of a specific situation. This is also the way business and government need to view roadmaps. The different types and levels should be chosen based on the needs, timelines, culture, and requirements of the organization.

At the highest level the choices are: is it an industry, cross industry, company, product, or combination roadmap? Does it need elements of several to meet the needs, or does it use elements of the different types to provide maximum leverage?

Below this level, you have to begin to decide the types of roadmaps. Some of the choices include:

- Technology.
- Services.
- Market.
- Knowledge asset.
- Capability.
- Science/research.
- Project/issue.
- Product/technology.
- Technology opportunities.
- Cross-industry roadmaps.
- Product/portfolio management.
- Hybrid.

You can see that these can be applied at many different levels and in several different ways, much as the travel roadmap analogies we showed above. Some of the drivers that are typically used for developing roadmaps include:

- More effective capture and use of business knowledge.
- More effective product innovation.

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- A more efficient research process.
- Technology planning.
- Objectives relating to new products or services.
- To assist with science and technology marketing.
- For R&D, science, and technology management including planning, executing, reviewing, and transitioning.
- Business and value planning.
- For enhancing communications among researchers, technologists, managers, users, and stakeholders.
- For identifying gaps and opportunities in R&D, science, and technology programs.
- For identifying obstacles to rapid and low-cost product development. The organizational impact can be large. The drivers addressed above impact most areas of any commercial or governmental organization. The usefulness for the producers can include the following functions:
  - Aligns goals of the organization.
  - Provides focus and direction for employees.
  - Presents a direction to suppliers, partners, and customers.
  - Delineates a clear set of objectives for managers.
  - Identifies issues and interdependencies.
  - Improves communication.
  - Provides management control.
  - Leads to a portfolio management approach.
  - Helps to develop strategic goals, objectives, and milestones.
  - Projects a common vision about a set of needs and technology requirements to meet those targets.
  - Promotes a cross-functional understanding of strategic issues.



- Sensitizes stakeholders to technology trends, gaps in technology in meeting needs, and competitive position for technology.
- Supplies an easily-understood process to communicate issues regarding allocation of human resources, infrastructure, and funding requirements for R&D to deliver the products and technologies required.
- Communicates a single company vision from top to bottom.
- Identifies gaps and focus areas.
- Identifies areas of common interest and synergy.
- Links tasks to program needs and milestones.
- Helps various investments to work together.
- Shares the knowledge across teams, programs, and sites.
- Continues to encourage innovation.
- Links strategic planning and coordinated R&D.
- Forms a basis for evaluating future technology opportunities.
- Provides a base map to assist in recommending projects to terminate or redirect to be consistent with established enablers and milestones.

It is important to remember that the roadmap is not an alternative to individual project plans and more detailed management aids. Rather, it is a high-level, visually oriented, overall coordination and communication aid that is very necessary in this time of global business with very short development and life-cycles.

A very important aspect of the roadmapping technique, as TFI practices it, is the multi-disciplinary, cross-functional effort that it requires in order to fulfill its objective of providing common guidance for the whole organization and, in most instances, for those outside.

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## A Four-Phase Process for Creating a Roadmap

The development of a roadmap consist of a four-phase process:

- 1) Preliminary design and background activities: setting the framework, vision, timing, and organizational goals.
- 2) Development of the roadmap itself.
- 3) Follow-up and implementation activities.
- 4) An update phase because the resulting roadmap is not just a static document.

The roadmapping process begins with an understanding of the roadmap process itself. Some of the key elements to consider are:

- Perceived need for roadmaps.
- Someone with a vision is needed: a high-level, respected sponsor.
- Key leadership group within the company, agency, or industry to develop the framework.
- A needs-based or capability-focused orientation.
- Selection of appropriate technologies, services, and/or industries.
- Specific boundaries defined.
- Involvement of key stakeholders such as industry, government, suppliers, customers, and academia.

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## Jumpstarting with a Roadmapping Workshop

Whether the organization is starting from scratch or consolidating divisional or department roadmaps, a workshop is the best way to get started. As a collaborative instrument, roadmapping needs to be a collaborative effort. To instill a spirit of inclusiveness, practicality, and out-of-the-box thinking, a workshop is the right organizing approach.

At TFI, we have found it useful to establish a high-level coordinating group to lead the roadmap process. This group has many functions both tactically and politically. Some of the main functions this coordinating group performs are to:

- Develop a consensus vision for the future.
- Identify timeframe for the vision.
- Identify expected outcomes for workshop.
- Create the macro design of the overall workshop.
- Market the workshop.
- Select technology areas for roadmaps.
- Establish a committee structure.
- Select chairs and co-chairs of working groups.
- Provide guidelines for selection of attendees to working group chairs.
- Make final selection of attendees.
- Approve overall technology roadmap framework areas.

### *Developing the Strategic Roadmap*

With the appropriate coordinating group in place, and the approach and participants selected, the development of the roadmap can proceed. It is beyond the scope of this white paper to describe the process that is used for each type of roadmap. In general, each one builds up from the base following the graphic.

The organization must start with the vision, mission, and strategic view of the area being roadmapped and then build upon the capabilities of the organization. If appropriate, a capability roadmap is developed. A capability roadmap is:

A description of the developments (including alternate paths and options) required to achieve the capability that is necessary for the organization to achieve its missions in the future.



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The programs, technology drivers, and the critical timelines for the organization are laid out. Some of these activities might include a technology or product roadmap that will take into account any portfolio management activities the organization has underway on a strategic or tactical level.

These first three steps provide the information to access the gaps, opportunities, and linkages that are necessary for success. The output is the outline of the plans, projects, and process that will drive the future.

### *Implementing the Strategic Roadmap*

The output from the development phase will drive the implementation phase of the roadmap. Many organizations believe the process is over at this point. However, just as a strategic plan is never finished and never static, so it is with the strategic roadmap.

### *Updating the Strategic Roadmap*

The strategic roadmap must be updated and communicated to be successful. The roadmap should contribute to answering questions that, in turn, form the basis of a recommendation for future action. Roadmaps that do not perform this function become an end in themselves, offer no insight, and provide no contribution to decision making.