White Paper

Got Lost With a Roadmap?

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A good plan is like a road map:
it shows the final destination and usually the best way to get there.

H. Stanley Judd, American author

Business and technology roadmapping is nowadays a widely adopted practise in business. The purpose, principles and practises related to roadmapping are often loosely defined or lacking in the literature. It could be claimed that a clear definition is not so necessary. In fact, it is absolutely essential for a simple reason: why should someone do something if he or she does not know or understand why! Worse still, the very reason for roadmapping is sometimes misunderstood. Some literature is misleading in declaring that a roadmap is about where a company is going. That is completely wrong and we will demonstrate why.

There are common company-wide strategies that are shared over departmental and functional boundaries. In recent years the widely adopted practise of business and technology roadmapping has been a crucial tool in linking them together, transforming them into actions and making them operational.

 Roadmaps come in many forms and shapes, but usually there is a visual illustration with a time dimension. A generic roadmap proposed by EIRMA is shown in *Figure 1*. It has different layers, presenting the developments and evolution in competition, markets, products, technologies, etc., and the relationships between them.

It is easy to understand intuitively the benefits of roadmapping in communication, sharing information, and creating a mutual understanding. However, one cannot exploit its real business benefits without really understanding the role and purpose of roadmapping – and knowing what, why and how to do in practise.
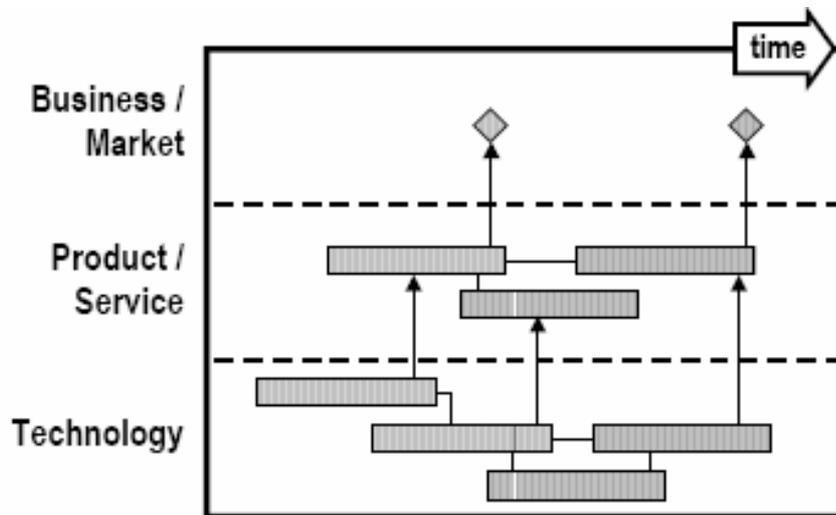
Figure 1. Schematic technology roadmap, showing how technology can be aligned to product and service developments, business strategy, and market opportunities. Adapted from (1).

The principles and practises are often loosely defined or missing in literature. What is the input information, what are the processes, what are the outputs, and most important, how does roadmapping link to the rest of technology management? In fact, the very original paper by Willyard & McClees (2) is still one of the best and conceptually most coherent. As Phaal et al. (3) rightly state: *"One of the reasons why companies struggle with the application of roadmapping… is that there is little practical support available and companies typically re-invent the process."*

Most strikingly, even as essential an aspect as the purpose of roadmapping is not defined; or worse, is misunderstood. Of course it is for communication and mutual decision-making, but what is its *raison d' être*? What is its fundamental

motivation and justification? Even Phaal et al., in their otherwise creditable article (1), trip up by stating: "*A key benefit of roadmapping is the sharing of knowledge and the development of a common vision of **where** the company is going.*"

That is not right and it is easy to demonstrate so with the following narrative of roadmapping and its processes by drawing an analogy to orienteering. In our orienteering team there is a group of people with individual skills supporting and complementing each other in moving ahead towards a mutual destination; similarly in roadmapping there is a group of business and process owners working towards a mutual goal.

The author examines strategic level (master) business-technology roadmapping, but the principles and procedures are also valid to other types of roadmaps. The focus is on creating, updating and using a roadmap in business planning.

Preparation

When orienteering, one can buy a map. A business roadmap one cannot buy, but must prepare oneself. Basically it illustrates the competitive situation and its anticipated development; competitors' actions and our counter-measures. A simplified illustration of the master business-technology roadmap is shown in *Figure 2.*

We start by defining the viewpoint.

The vertical dimension, i.e. rows or layers, represents markets, competition, product platforms, technology, processes and other aspects important to business.

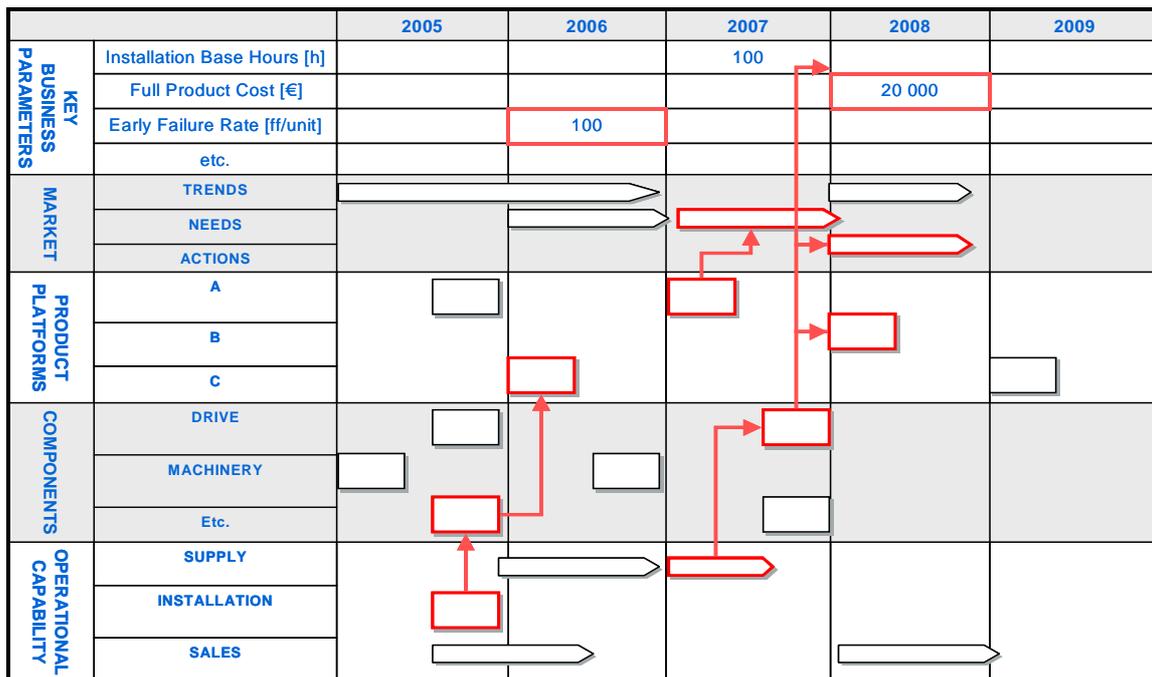|		2005	2006	2007	2008	2009
KEY BUSINESS PARAMETERS	Installation Base Hours [h]			100		
	Full Product Cost [€]				20 000	
	Early Failure Rate [ff/unit]		100			
	etc.					
MARKET	TRENDS					
	NEEDS					
	ACTIONS					
PRODUCT PLATFORMS	A					
	B					
	C					
COMPONENTS	DRIVE					
	MACHINERY					
	Etc.					
OPERATIONAL CAPABILITY	SUPPLY					
	INSTALLATION					
	SALES					

Figure 2. A simplified example of a master business-technology roadmap.

The layers may vary according to the viewpoint. The viewpoint of a master business-technology roadmap can be based on the entire business, a business segment, market area, or product platform depending on the purpose and need.

The horizontal dimension represents time. The time span varies, but for a master roadmap it is typically around five years.

On a roadmap one needs a coordinate to be able to orienteer. One coordinate is time, and the other is comprised of key business parameters. In the manufacturing equipment business, for example, the key business parameters could be production costs, product performance, installation time, set-up and ramp-up time, and so on.

With key business parameters we mean the product and company performance attributes that enable business. They address the most essential priorities in technology and product development in the long-term, and indicate technological progress. Note that in this definition parameters such as sales volumes or market share are not key business parameters, but the results of achieving them. Key business parameters should not be too numerous, but a handful that determines success in business.

The two coordinates span our sphere of operations. Using them we can fix our location on the roadmap, and thus define the distance and direction from the destination and departure.

The next step is to map the terrain. This is done by placing significant developments, milestones, objectives, and other essential events on the corresponding rows. It is important to draft the developments in markets, and competitors' actions as far as they can be anticipated. Critical or otherwise important relationships between items should be marked on the roadmap. The items and their relationships constitute the possible routes on the terrain.

The values of the key business parameters over time define the intermediate goals. The objectives of independent developments should contribute to those, and only those. One must remember that the master roadmap is a summary and generalization, and that more detailed roadmaps exist with related sub-objectives for separate processes, functions and developments. Generalization also means that the master roadmap should consist only of items that are important at that level. Importance here means that they directly contribute to the key business parameters, or have significant relationships with other items on the roadmap.

It is very important to illustrate alternative developments. How otherwise one can take another route when changes occur or one encounters surprises? One must also map the terrain more widely than just the tentative route. If we draft only the route, how can one fix the position? We need to include internal and external events; they are our points of reference.

Now we have a map of the terrain, our destination defined, and potential routes outlined, it is time to select a favorable route. It may be the shortest, fastest, least risky or most energy-saving, depending on the objectives and circumstances.

There are a couple of principles to apply to roadmapping session practises worth mentioning here.

First, homework. The roadmap has been compiled, or a previous version modified, in advance of the input from the business and process owners. This frees the participants to concentrate on the essential during the session. It requires preparatory homework, which is also good preparation for the participants.

Second, participants. One should not allocate roadmap creation to a dedicated "roadmapping department". The process owners are themselves the best experts on the subject matter, and they commit to the plans during the process. As Mintzberg (4) points out, strategy creation in general cannot be institutionalized. It tends to become formalized, paralyzed and isolated from the organization.

Third, the nature of the session. The main purposes of the roadmapping session are communication, creating a mutual understanding, and obtaining commitment. The most important of these is mutual understanding, and without it, it is impossible to obtain commitment. The primary objective of our sessions is to create a mutual understanding, all the way to the extreme that the team does not share a common opinion (which naturally must be worked out in due course).

Roadmapping sessions are not for resolving conflicting objectives. For that reason, one sets up specific task forces to work out those that do appear. Usually the task force consists of the process owners involved in the conflict. They work out a solution, which is presented in the next session or communicated otherwise as needed.

En Route

Let us get to our orienteering analogy. There is a team of people with individual skills. Some are specialists in crossing waters, some in building bridges, some in climbing, and so on. They complement each other in striving towards a mutual destination; in a similar way the process owners do in business.

The team is ready to go. They have a mutually agreed common objective, a destination. They have an orienteering map, on which they plan their route from departure to destination. With this analogy it is easy to understand that a map with a planned route does not represent where to go, but **how to get there**.

One can quibble that a roadmap shows the destination, but that is not the *purpose* of it. If a map were about *where* to go, a picture of the destination, its coordinates, or a map of its close vicinity would be sufficient. There would not be any need for a map between the departure and destination.

Once en route, the team observes things that are not on the map. At best, a map is a generalization of reality and does not have all the details. It may contain erroneous information, and in any case a map, for orienteering or a business roadmap, is outdated the very instant it is published. The environment changes. The team may observe things that affect the route selection, points of reference that help orienteering, maybe even something about the destination. When should a roadmap be updated?

Most commonly it is proposed that roadmaps are updated on a periodic basis, at least once a year. This has serious shortcomings. The information is inevitably old. New, important information may surface right after the update, and in the worst case may have to wait a whole year to be taken into account.

There is also a fallacy of prediction. Mintzberg states (4): "… *the world is supposed to hold still while a plan is being developed and then stay on the predicted course while that plan is being implemented*." How can our orienteering team know that a bridge on the map has not possibly become impassable? Maybe one realizes only on the spot that an alternative route would be more favorable. In fact, no military force would send troops into unfamiliar territory without sending a scout to clear the way up front.

Lockstep schedules also bring an accompanying problem. Mintzberg continues: *"How else … have strategies appearing on the first of June, to be approved by the board of directors on the fifteenth? One can just picture competitors waiting for the board's approval…"*

Mintzberg (4) brings up still one more problem with periodic, scheduled processes: they tend to become formalized and thus paralyzed, as many have witnessed in their work. They may even be carnivalized, as a senior manager confessed in his hilarious comment (5): *"Our planning process is like some primitive tribal ritual: There is a lot of noise, dancing, waving of feathers, beating of drums, and no-one is sure exactly why we do it, but still there is an almost mythical hope that something good will eventually come of it, and it never does."*

Another school of though, popular with providers of roadmapping tools, suggests continuous updating. The problem here is that the roadmap changes constantly, it oscillates. It does not freeze. Naturally one has to collect and store new information, but not to change the route unless it is imperative. Replanning needs extra effort, takes time, and adds risks. And moving ahead is suspended in the meantime.

The situation is still worse if the updates are done with collaborative software tools where individuals may add to the roadmap on their own initiative. How to prevent adding items that conflict with existing developments or developments planned elsewhere? Defining and altering the route, or parts of it, is a mutual agreement and should be done as a team.

Further, when using collaborative tools, how to guarantee that all the team members have the same information? Of course the tools have workflow support, signaling for new updates, and so on. But in a real-life business environment people have several other challenges to take care of, and do not thus necessarily have the time or opportunity to check every change at the due time. This leads to a situation where different parties have different conceptions of a roadmap.

The providers of roadmapping software tools justify – and market – their collaborative products by arguing that this is the only way to have up-to-date, real-time information available for all the stakeholders in a fast-changing business environment. In reality, no business is so hectic that the plans need continuous updating on a daily basis. If so, there is something seriously wrong! It is strategy and the corresponding planning horizon that we are dealing with.

The third possibility for updating, and the most important one, is at the end of each intermediate leg. This is virtually overlooked in business roadmapping literature. Once completing a leg, the team verifies its position in the coordinate system, i.e. with relation to time and the key business parameters. The aim is to check that the direction is right, and that the progress is as planned. And then to plan the route for the next leg.

This is in fact what athletes do. The author asked an orienteer competing at international level when and how he selects the route. His answer was clear: *"Leg by leg. Never the entire route. One selects a route for the next leg, and once completing it, for the following one."* And he added: *"Never change the route in-between. One must focus the concentration on following the selected route and move ahead as fast as possible. Nothing may disturb it."*

And he continued on his own initiative: "*The most important thing in selecting the route is to approach a control point from the right direction.*" One should approach from a direction where there are clear points of reference close to the control point. One selects the route so that the control point can be noticed easily from the selected direction of approach. And there should be inevitably identifiable topographic formations behind the control point, in case one misses it in the first place.

Approaching from the right direction is the most important thing, because missing a control point, and later trying to locate it, is too time consuming. It is extremely difficult to do this later. There is a moral also for business here: It does not pay to be the fastest if one ends being the first – but in the wrong place!

Phaal et al. (3) propose linking periodic roadmap updating to the company's budget or strategy cycles. Our principle is that the roadmaps are always up-to-date. They should be validated constantly when moving ahead, and new information included as needed. Only relevant information should be considered, and insignificant details may not blur the general picture. When, and if, needed for communication at a company's planning cycles, one simply takes a snapshot of the current state.

The route may be changed along the way only when imperative. The most important, and natural, point for revising the route is when completing an intermediate leg. Updating roadmaps on a periodic basis *only* has serious shortcomings, but it might nevertheless be beneficial.

There might be unnoticed internal or external developments, there might be longer-term initiatives beyond the horizon of a roadmap, and there might be needs to synchronize with other roadmaps. With this justification, the author proposes revising the roadmap and the path

- when completing an intermediate leg,
- periodically, and
- when imperative.

Once There

Phaal et al. (1) raise a natural question: "*How to keep a roadmap alive?*" As is the case with so many good business processes and practises, they easily tend to become corrupted or even forgotten over the course of time once the initial enthusiasm fades.

The answer is simple. Once the team has reached the destination, it has two possibilities. To stay there, or to trek familiar territory; the routes one has taken and places one has been. None of the two alternatives makes sense in business.

The third alternative is to define a new goal, create a roadmap with a route on it, and head for the new destination.

In Conclusion

It is easy to realize intuitively the benefits of roadmapping, but one cannot achieve its real business benefits without understanding its essential purpose and how to exploit it.

Afterthought:

Oh yes.

There is one situation when you need a roadmap to tell you <u>where</u> to go.

When you are completely lost!

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