How Multigenerational Technology Planning Can Grow Your Business

As the business environment continues to evolve and as national borders of business increasingly soften, companies will face increased competition. Though Silicon Valley holds a certain amount of prestige, technology hubs are forming in places like Bangalore, Shanghai and Tel Aviv. Advanced technologies coming out of Germany are now going up against products designed in South Korea. With competition for fresh ideas and innovation accelerating, businesses need to dedicate resources and map out detailed plans for their technological growth. One of the most effective ways of defining technology growth strategy is through Multigenerational Technology Planning (MTP).

What is Multigenerational Technology Planning?

In order to define MTP, we must first define technology planning. Technology planning is the process by which firms map out their product growth plans for the business. It is the forward-looking, strategic exercise of evaluating current product offerings, the competition, and market trends. Technology planning seeks to provide the very complex answer to the very simple question: “Where should I invest today in order to create profitable products tomorrow?”

Technology planning is an activity that any producer of technology should undertake. Examples can include software firms, consumer product companies and industrial equipment manufacturers. Technology planning requires firms set long term strategic goals for their product offering based on their knowledge of what is to come.

*Multigenerational* technology planning takes this basic concept one step further and implements a deliberate sequence in which technology is developed. MTP outlines a series of technological iterations over time. The multigenerational aspect of a technology plan helps bridge the gaps between the end desired technology and the present data technology.

Take for example, the mobile phone. The mobile phone is a great example generational technology. The first device was demonstrated in 1973 and weighed in at 2.2 pounds, with the first commercially available phone coming to market about a decade later. Over time, the mobile phone grew increasingly smaller. As they continued to be put into smaller and smaller packaging, mobile phones then received color screens. The long antenna was then embedded into the phone body. There was the flip phone. Phones got smaller and thinner. Then there was the keypad. Today, the smartphone enables you to control the lights in your home while you are on vacation. Each of these improvements represents a technological generation.

Granted, in 1973 it was not possible to see such a dramatic progression, but the point is that technology evolves. Technology firms need to recognize this evolution and need to establish long-term plans to
Introduce new technology. Multigenerational technology planning defines the evolutionary steps of technology to a plausible end product at some time in the future.

**Technology Planning is Good. Multigenerational Technology Planning is Better**

Technology planning is important because it creates a central objective towards which a business can align its investment and resources. It helps establish a basis for research and development funding as well as define the technological hurdles that need to be overcome in order to reach the desired goal.

Using the mobile phone example, basic technology planning in the 1980s may have led a firm to strive for a smaller, more sophisticated phone that would become common place in society. While setting a general direction, such a plan would not have yielded specific activities to be pursued. How much smaller? By when? (See Figure 1a.)

A multigenerational technology plan breaks down longer term goals that may be too abstract or advanced into smaller problems to solve. MTP should be viewed as building a staircase. An MTP will outline short term, incremental steps and identify how those plans will be used to feed the next iteration in technology. These steps should lead towards and end goal or desired product with certain functionality.

Using the mobile phone example, a phone manufacturer’s MTP from the early 1990s might have stated that phones were to become 10% lighter every year for the next 5 years (See Figure 1b.). This MTP may have also stated that the large fixed antenna should be made shorter, then retractable by the end of the same 5 year period. A phone that was about half the original weight and that had a retractable antenna would have been the 5 year goal. Of course, additional design improvements and iterations could be conceived and introduced to the MTP over time such that the MTP contains a perpetual 5 year outlook.

It should be noted the time period of a multigenerational technology plan should be reflect the market. In slower market segments such as the aerospace industry, the technology plan may identify progressive steps over a 10 years for technological evolution. In fast paced industries such as the computer manufacturing, the technology plan may last only 2 years and include several technical iterations on a quarterly basis.
A Simple Example of MTP

Consider a company that manufactures a variety of products for the fitness and exercise equipment market. Their product portfolio includes items such as weight machines, exercise bikes and treadmills. Figure 2 provides an example of what their treadmill MTP may have looked like around the year 2000. On the left side are market drivers and consumer trend, to which the company’s technology planning is aligned. On the right side are the various projects, initiatives and incremental technologies that the firm plans to develop.

![Treadmill Product Multigenerational Technology Plan](image)

**Figure 2. MTP for a Treadmill**

In this example, a series of new technologies are introduced to their treadmill product line. For instance, in the early part of Year 2, this company plans to introduce a built-in speaker so that users can listen to the radio while exercising.

The cooling fan evolution illustrates the multigenerational aspect of technology planning. In this case, the company plans to introduce a fan for user comfort in Year 2. Later, in Year 3 and Year 5, the firm plans to upgrade the fan technology to reduced noise and ultra-quiet versions, respectively. From an MTP perspective, the end goal is a quiet but effective cooling fan. The company works towards this objective by introducing gradual improvements that build upon existing technology.
Other elements of this MTP include identification of technology category (Audio/Visual, Cooling, Connectivity and Mechanical Systems) under which each activity falls. This can help businesses recognize resource bottlenecks within certain departments as well as visualize the alignment of the systematic improvements for a given technology space. Additional data included in this MTP example are notional investment value and timeframe required for development, which are useful in communicating a project’s size.

While the left side highlights complimenting technology to treadmills, Year 3 of the MTP also identifies that the National Gym Company plans a large expansion of their business. Because of this, the treadmill manufacturing company plans several upgrades in Year 2 to enhance the sophistication of their products. In doing so, the treadmill manufacturer positions itself to win a large sales order with National Gym which will need to fill its new facilities with the cutting edge fitness equipment.

While simple, this example shows how an MTP can be used to align product development with market trends. Further, the MTP shows a clear link between related technologies that are planned for incremental development over time.

**The Benefits of Multigenerational Technology Planning**

There are numerous benefits to using MTP to develop a growth strategy. MTPs serve as communication tool and a roadmap that helps a business leverage existing technological skill and product design to create new designs. Here are some specific benefits to adopting an MTP strategy:

**Creating a Vision** – Perhaps the single most important aspect of MTP is the creation of a strategic vision and the incremental means by which a firm plans to obtain its long term technology goals. MTP establishes a foreseeable objective as well as the stepping stones to get there. When a technology company’s strategic vision is shared with employees, it communicates to various stakeholders the expectations and goals of their effort. This communication then aligns energy within the organization around various projects and initiatives. Having a strategic vision alone is not enough. It must be well publicized within the company and its various departments.

**Market Leading Technology** – Classic strategic theory suggests that businesses need to decouple basic execution activities from strategic activities. Multigenerational technology planning enables the research and development arms of a given firm to work in parallel to the more visible day to day and customer-focused activities. It also allows firms to map out and execute long term plans while gathering market trends and customer trends along the way.

By segregating more routine work from the research and development work, firms can consistently churn out new product ideas. Using the auto industry as an example, each
year a given vehicle style will change with small improvements and updates. This could be seen as the day-to-day short term technology evolution. The day-to-day also allows firm to feed the MTP based on new data or customer feedback (See Figure 3). Every 3 to 5 years, though, a completely overhauled vehicle is introduced based on new stylistic preferences and technological advancements. The new overhauled design represents the long term technology strategy.

**Financial Planning** – One of the most difficult aspects of managing technology is securing financial commitment to activities that may not return revenue back to the firm for several years. Many businesses are becoming increasingly short-term focused, which often comes at the expense of long-term planning.

By leveraging a multigenerational design philosophy, firms can improve their financial planning ability and investment strategies. Since MTPs outline a series of technological steps to reach a given end product, say five years away, the investment can be deconstructed into annual objectives and smaller increments. The increments will help define more specific spending needs. Requesting €5 Million for a new project is very different than asking for €1 Million a year for the next 5 years for the very same project.

**Customer Relationships** – Customers are a great source of information that can help align and develop Depending on the industry, multigenerational technology planning can help forge relationships with customers.

Consider the auto industry, which has an extensive supply chain network. The automakers are routinely working on the next generation of vehicles. Imagine that an injection-molded plastics company develops an MTP to that will introduce lighter and stronger polymers. These lighter weight materials can result in improved fuel economy. Working with the automaker, the plastic company can obtain direct feedback on improvements to their technology growth plans, as well as forge a relationship with the automaker for partnerships in future designs.

**Sustainability** – The most successful businesses are those that find the ability to adapt. Adapting is far easier when there is an alternative plan in place or there are behind-the-scenes activities that can be called upon to reposition a business in short order.

MTP enables firms to improve their sustainability in a changing marketplace because the diligence, forced dialog and capturing of new ideas helps keeps technology plans fresh and relevant. Working towards technology objectives on an MTP allows a given company to accelerate the development of a given technology if needed. If acceleration in a given area is required, increased or redirected investment can help develop technology more quickly.

As a simple example, consider a television manufacturer which has plans to improve picture quality followed by plans to improve sound quality. If this firm gathers market data that suggest customers are far more interested in sound quality enhancements, the firm can accelerate pre-defined initiatives on their MTP and defer or slow down the picture improvements.
How Can You Create a Multigenerational Technology Plan?

Though outlining your firm’s staged growth requires effort, establishing an MTP is not difficult. A good way to go about creating an MTP is to arrange for a brainstorming and innovation summit. Participants should include technology leaders, such as engineers and scientists, people within the production domain, sales and marketing staff, and any other individuals who have direct feedback from customers. The key is to integrate the technical thinkers with production skill and customer and market feedback.

A good way to start the process is by reviewing not only the products the firm makes, but also the features of those products that formulate the user’s impression. From the example of the television manufacturer, the user’s interaction could be broken down into picture quality, sound quality, remote control use, size and shape of the screen and even installation and setup difficulty.

Here are some simple questions that can help one create an MTP for a given product:

- Can current technology and skill be combined to create new technology?
- What market needs are expected in the coming years?
- Are there market trends forming in areas where the portfolio is lacking?
- Are there holes in technology that can be filled to satisfy a given market trend or area of pain?
- Are there current products in the portfolio that could benefit from improvements?
- Are competitor products deficient and able to be displaced by a better product?
- What market and industry threats exist to the current portfolio?
- Has business been lost due to specific gaps in technology or offering?

Multigenerational Technology Plan Essentials

Here are some basic elements of a good multigenerational technology plan:

- Should be placed in a clear, simple, visual format that others can easily follow
- Can be understood by the technical and non-technical communities.
- Aligns timing of technology maturation with market needs or changes
- Is generalized and can communicate a sequence or flow of activity
- Can be easily modified and updated over time
- Should convey themes for your technology growth (faster, smarter, better)
- Length is established based on technological lifecycle of the products and industry
- Aligns to availability of new and complimenting technology
- Stretches the technological limits, but does not consist of unachievable end goals.

In general, an MTP should act as a communication and alignment tool within a firm.
Refresh and Revisit

A best practice in multigenerational design is to revisit the plan periodically. Reviewing an MTP with technology and business leaders with a firm quarterly or semiannually ensures that the MTP alignment remains fresh in people’s minds.

More importantly, frequent revisiting of the MTP enables a firm to modify and amend based on newly obtained information. Just as establishing a progressive series of steps is important to defining and planning future activities, revisiting and revising to adapt to market changes is equally as important.

For instance, the treadmill manufacturer in the earlier example was able to foresee that MP3 players were becoming popular and that they could adapt their treadmills to accommodate such products. However, early it would have been unlikely for the treadmill manufacturer to predict the dominance of the Apple iPod. Thus, by revisiting the MTP, the firm would have likely highlighted the iPod as a complimenting technology to which they wanted to curtail their own products.

Develop Successful Technology Strategies for Continued Growth

At its core, multigenerational technology planning is about alignment, planning and strategy. The key to long-term success is the continuous forecasting and prediction of market needs and changes. While accurate prediction may not be entirely possible, MTP drives businesses to continue examining their market and related technologies.

Moreover, MTP embodies the idea of incremental change and progress. Considering the pace at which technology changes and evolves, MTP offers a roadmap that serve as a technological compass to help firms remain competitive, innovative and relevant. Businesses that do not employ a long-term and strategic plan for their product run the risk of becoming uncompetitive and out of touch with their customers’ need.

It should be said that MTP will apply to businesses in different ways depending on the industry and the customer. However, the fundamental ideas that are generated through the creation of an MTP help a business better understand their market needs as well as plan for future changes to their portfolio. By leveraging an incremental growth strategy, technology companies can examine long-term trends and set the firm on course to continuously adapt to market needs.
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