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3 Foundational Technology Roadmapping Decisions

Overview

Technology roadmapping can be a laborious and complex process even under the best conditions. R&D leaders who reflect on three critical decisions before roadmapping are more likely to save time and work, and produce higher-value analysis that resonates with leadership and business stakeholders.

Key Findings

- Anticipating future technology needs and accelerating the maturity of technologies under development are among R&D leader's top priorities in 2021. Yet, many organizations struggle to build a coherent technology roadmap for R&D.■
- R&D functions with a history of successful technology roadmapping practices prioritize three decisions before selecting the most appropriate roadmapping model, assembling the team or establishing the process.■
- These companies first confirm roadmapping goals, scope and time horizon. These inputs will dictate what roadmapping model is the best fit, which in turn will dictate the process, visuals, and team members or expertise needed to complete the work.

Recommendations

R&D leaders responsible for technology strategy development as part of new product development should:

- Assemble the key roadmapping stakeholders, for example, R&D or business unit (BU) leadership, and facilitate a discussion around the goals, scope and time horizon of the analysis and final deliverable(s).
- Use that guidance to determine if a market-pull, technology-push or hybrid roadmapping model will best deliver against stakeholder expectations.
- Align the roadmapping process and visual to the selected approach to ensure the team is efficient, yet thorough in their analysis.

Introduction

R&D leaders responsible for new product development and technology strategy report that anticipating future technology needs is one of their most critical, yet challenging activities. Many use technology roadmaps as the foundation of this analysis and as an essential tool for communicating the R&D technology strategy. However, technology roadmapping is a notoriously time-consuming process that for many organizations has produced variable results in the past. Companies that are most satisfied with their technology roadmapping approach and deliverables typically prioritize three key decisions before they begin the roadmapping efforts:

- What are our roadmapping goals?
- What is the scope of the roadmap(s)?
- And, what is the time horizon we should be evaluating?

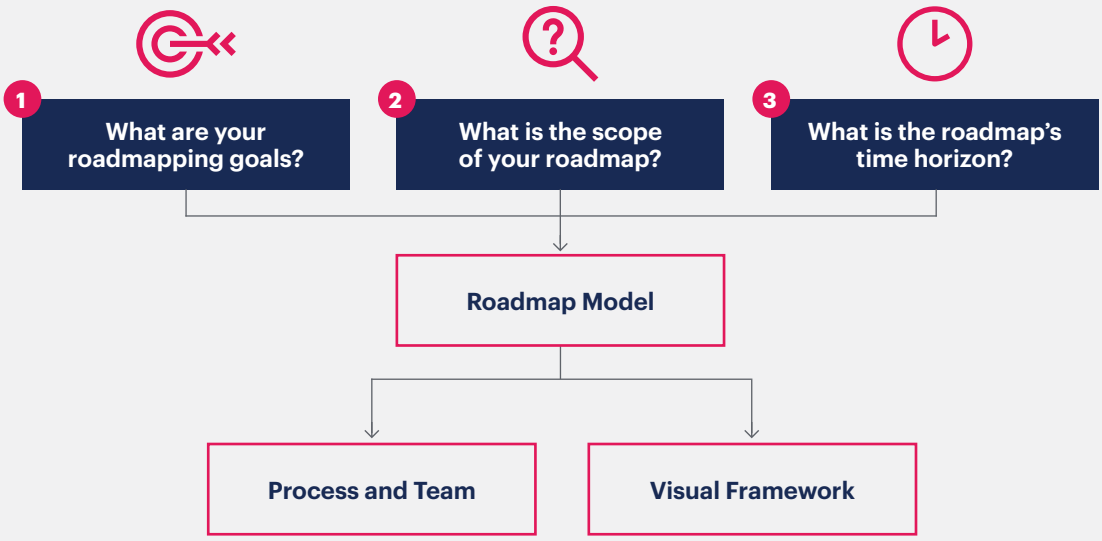
When these questions are answered early on by senior stakeholders (often R&D and business unit leaders), roadmapping teams tend to save time and build roadmaps that more effectively shape strategy and resourcing decisions.

Analysis

Establish Roadmapping Goals, Scope and Time Horizon

When starting a new roadmapping exercise, the first steps roadmapping leaders should focus on are clarifying the goals, scope and time horizon of the effort with senior stakeholders (see Figure 1). Misalignment around these key inputs is one of the most common reasons for wasted effort or poorly received final roadmaps. Stakeholders should provide their guidance on these three questions, ideally before the core team begins deep analysis of emerging technologies or product plans. These decisions will dictate what work will be most useful and how deep the analysis needs to be.

Figure 1: Three Critical Technology Roadmapping Decisions



Source: Gartner

R&D leaders should use the guidance below to facilitate these conversations with leadership.

What Are the Goals of the Technology Roadmap?

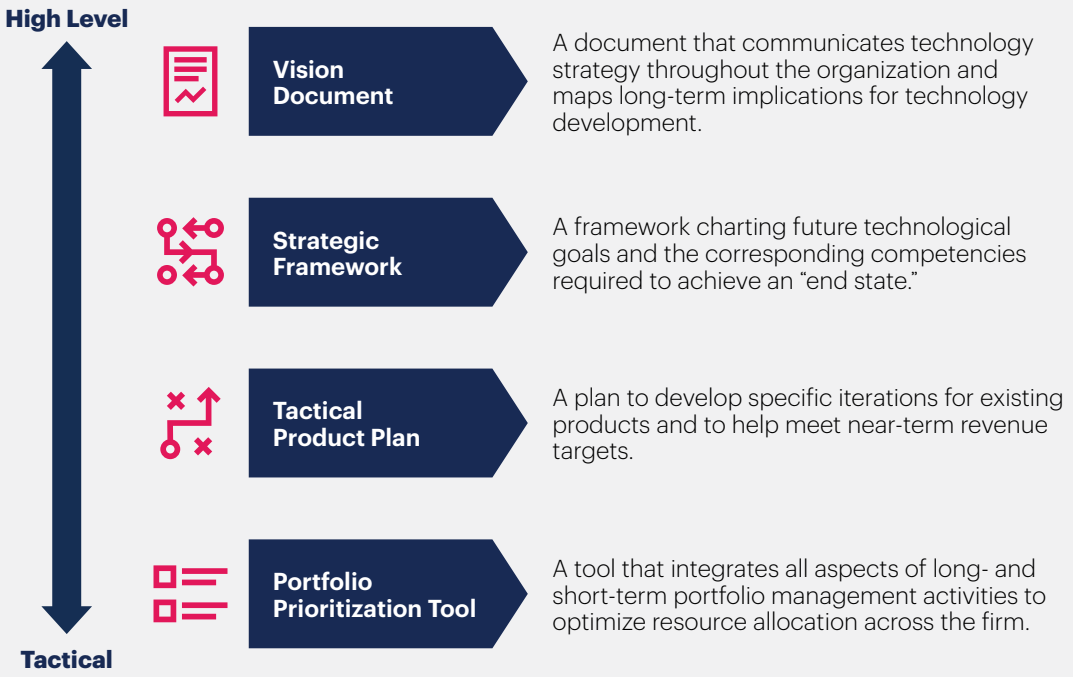
This is the most fundamental, yet often opaque, prerequisite for roadmapping. The team cannot produce a powerful strategy without first understanding why they have been asked to build a roadmap in the first place. Do senior leaders need a high-level vision that describes what might be possible in an emerging technology space? Do senior leaders need a tactical plan for the technology investments required to deliver technology to an approved product plan?

There's a wide spectrum of possible goals companies have when they initiate a roadmapping effort. It's essential the team understands what they're trying to deliver before they begin.

Assemble the senior roadmapping stakeholders and pose questions that will clarify their expectations. For example, is this roadmap going to be used as a planning tool or an initial vision for the future? Should it include precise estimates of effort needed to build specific technology capabilities? Or is it more strategic and the aim is to understand how certain technologies might evolve over time?

This conversation will help the roadmapping team clarify the altitude and direction the roadmap needs to take (see Figure 2).

Figure 2: Technology Roadmapping Goals

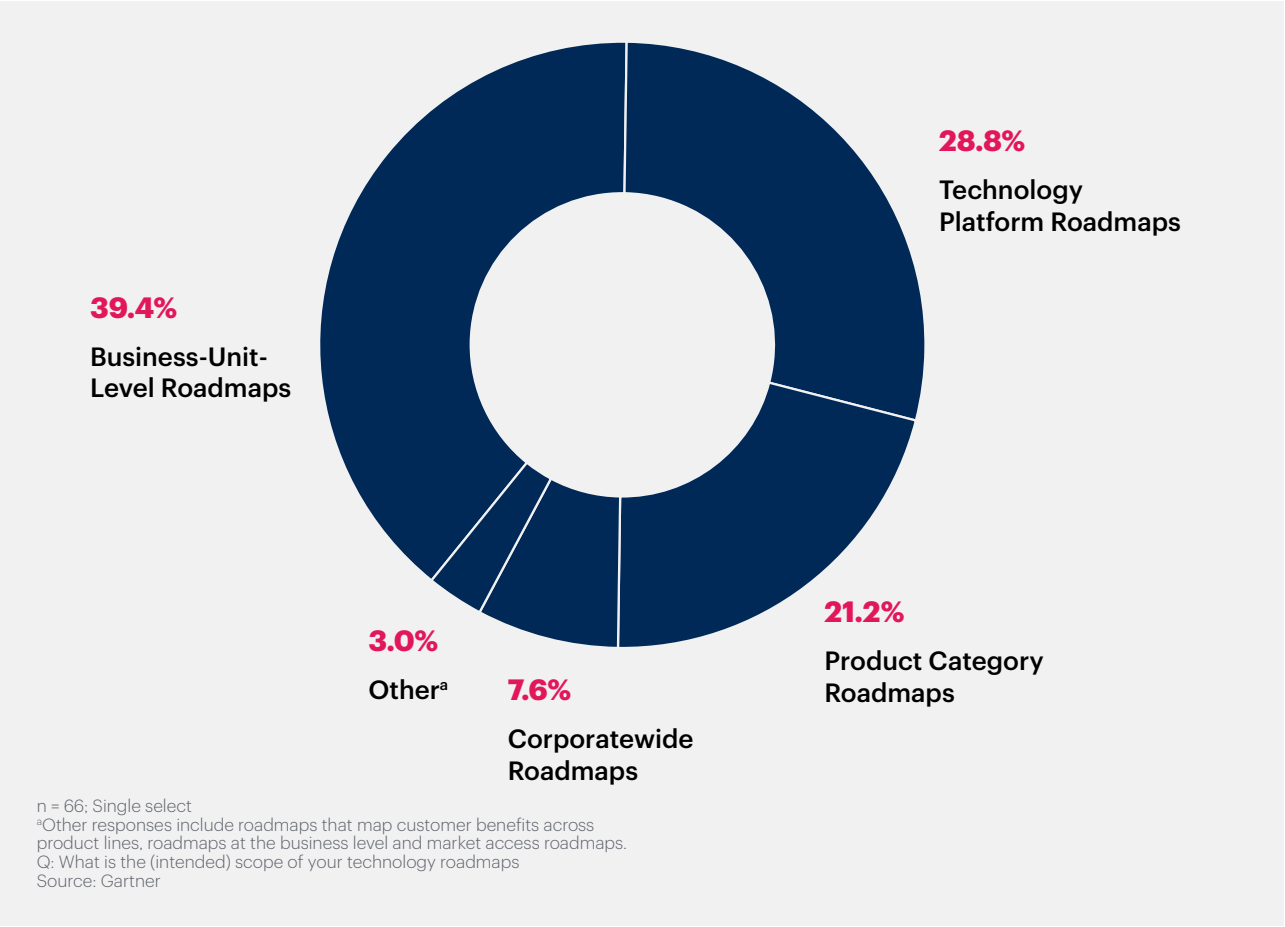


Source: Gartner

What Is the Scope of the Technology Roadmap?

Senior stakeholders also need to provide guidance on what is in-scope for the analysis and final deliverable(s). Roadmaps are most commonly organized by business, but it is also quite common for roadmaps to focus on technology platform(s) or specific product category(ies) (see Figure 3). Companies rarely create a single corporatewide roadmap; this option is most typically reserved for strategic views of new or disruptive technology spaces the organization is considering. (For example, how should Internet of Things [IoT] platform investments link across the enterprise's silos?)

Figure 3: R&D Technology Roadmapping Scope



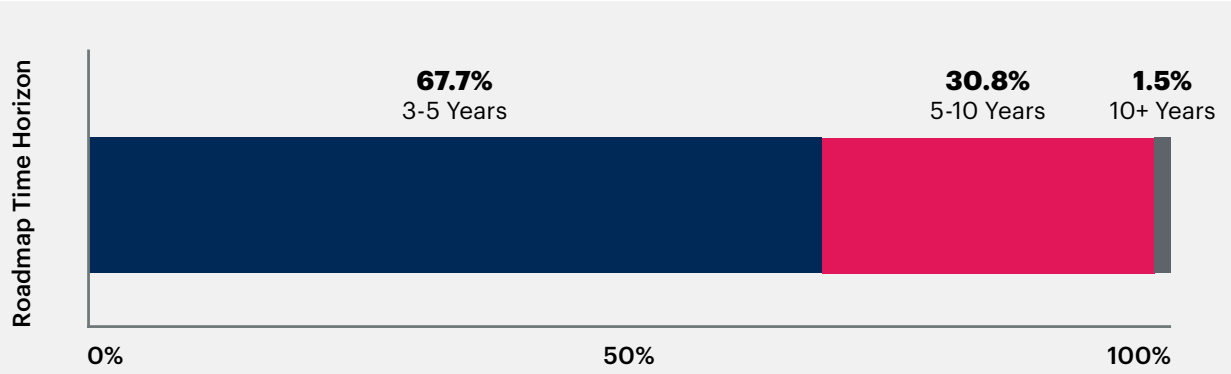
n = 66; Single select
[a]Other responses include roadmaps that map customer benefits across product lines, roadmaps at the business level and market access roadmaps.
Q: What is the (intended) scope of your technology roadmaps
Source: Gartner

How Far Out Should Our Technology Roadmap Look?

As a general rule, market-pull roadmaps tend to be shorter term in nature, typically in the three- to five-year range depending on the industry and product/business vision. Technology-push analysis tends to go out further, often in the five- to 10-year range.

Companies typically do not develop roadmaps beyond 10 years as that time frame is often so uncertain, companies don't actively make investments in those areas (see Figure 4). Exceptions tend to be in industries with very long R&D cycle times. If your organization is considering a longer-term roadmap, pressure-test whether you need a roadmap to communicate the path of technology evolution over time or if the organization would be better served by building a long-range technology radar of emerging technologies. (See an example of a radar in Organizational Readiness Response Radar (Panduit).)

Figure 4: Roadmap Time Horizon



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Q: What time horizon do you consider (or are planning to consider) when building the roadmap?
Source: Gartner

Use These Three Decisions to Determine the Optimal Technology Roadmapping Model

The technology roadmapping goal, scope and time horizon will help your R&D organization understand the most appropriate roadmap model to match your needs. At their most basic level, all technology roadmaps fall into one of three categories:

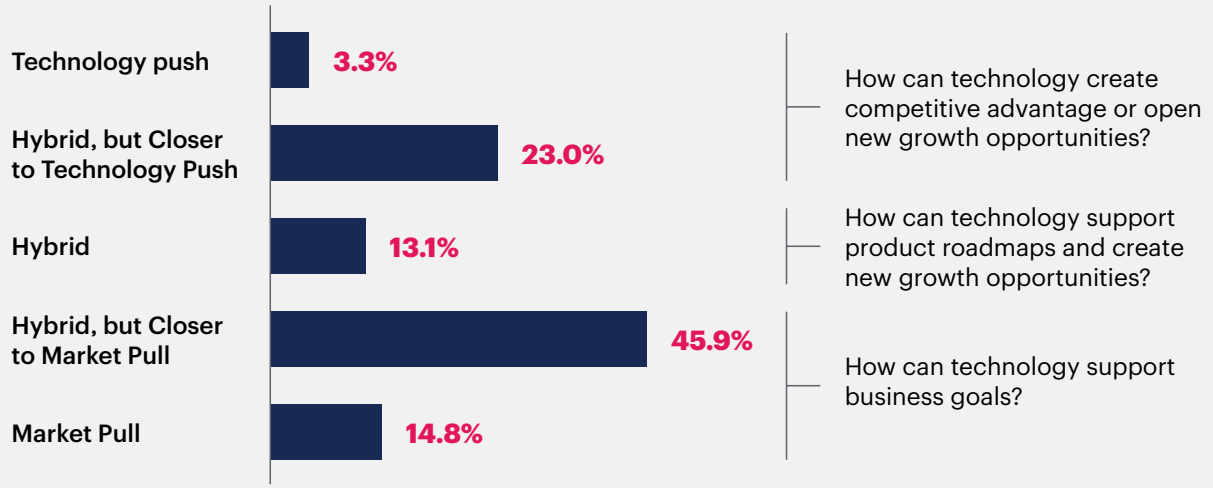
- **Market-pull roadmaps** depict technology competencies required to support product roadmaps or launch plans. These roadmaps are most effective for communicating how technologies support business objectives and, consequently, help teams in prioritizing technology project goals based on business partner needs.
- **Technology-push roadmaps** depict product and market growth opportunities driven by differentiated technologies or emerging technologies. These tend to be longer term, often including analysis that recommends investments over the next five to 10 years.
- **Hybrid roadmaps** act as a bridge between the market-pull and technology-push models. These depict technology competencies required for product launches and a prioritized set of technologies with a potential to create a long-term competitive advantage.

(For more on technology roadmaps, see 3 Models of Technology Roadmaps.)

Seeking stakeholder guidance around roadmapping goals, scope and time horizon will often clearly point the roadmapping team to the model that's most suitable.

Our data shows that the most common technology roadmapping model tends to be hybrid, leaning closer to the market-pull roadmap (see Figure 5).

Figure 5: Technology Roadmapping Model



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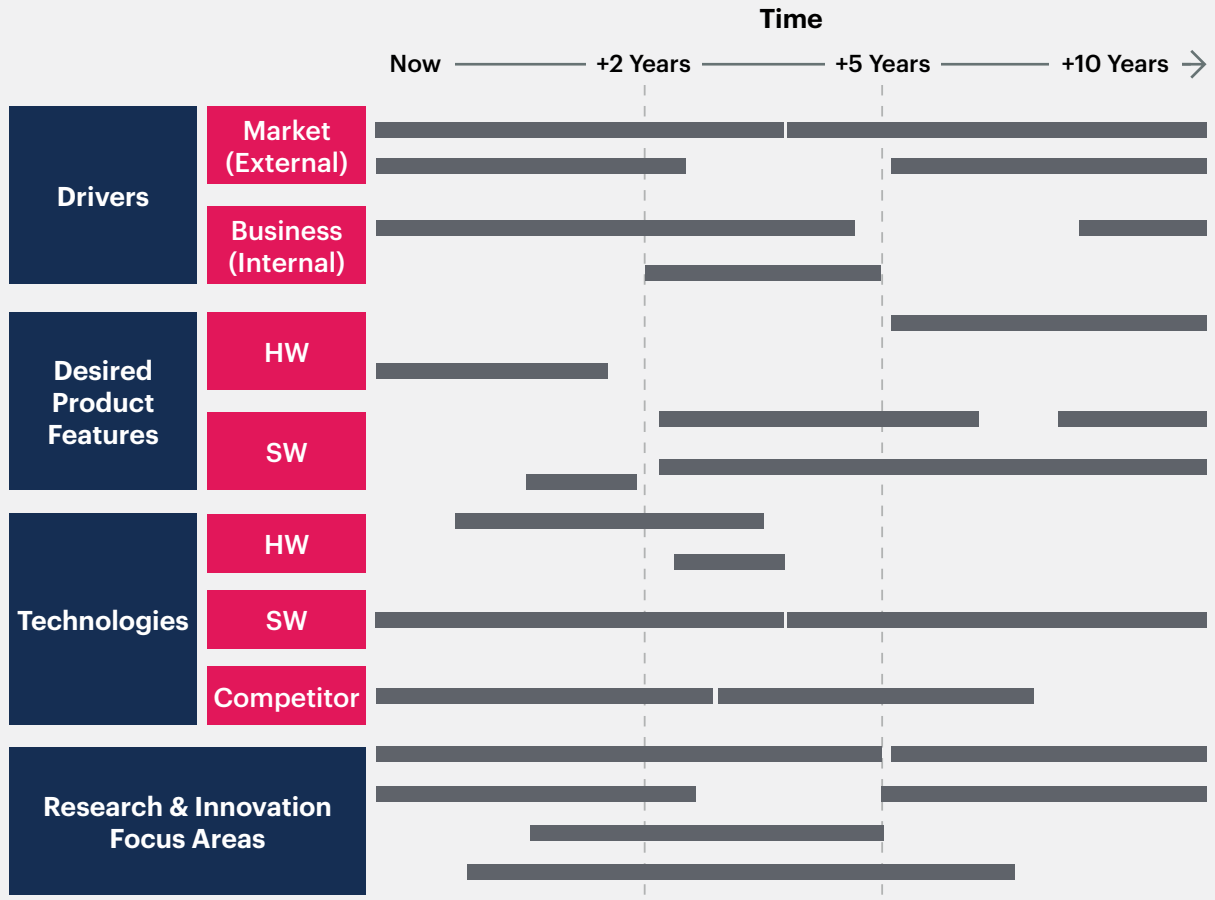
Q: What model of roadmap do you use or are planning to build?
Source: Gartner

Examples of Technology Roadmaps

Company A needed an integrated strategy for embedding IoT functionality across all of its products over the next five to 10 years. Company A chose to pursue a hybrid-model roadmapping approach (see Figure 6) that allowed it to identify internal and external factors that drive the need for desired product features and technology investments.

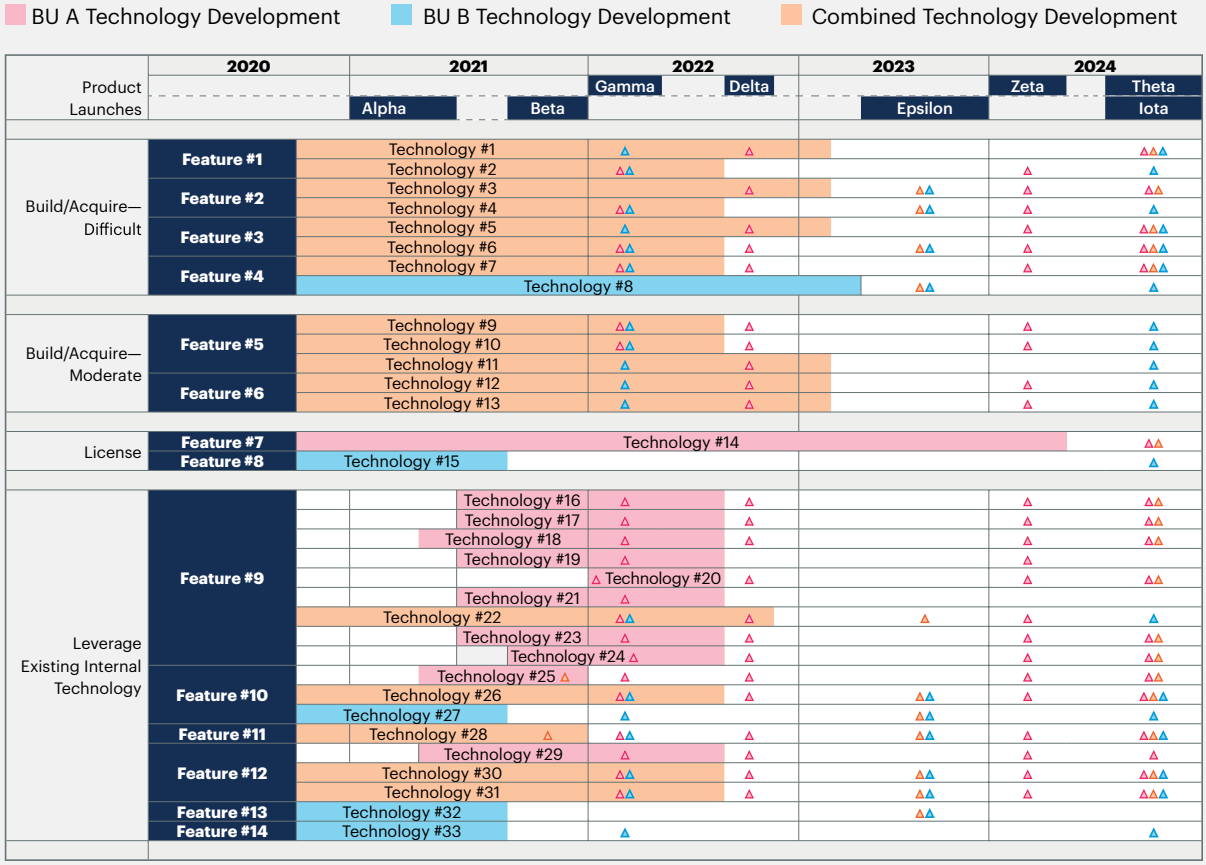
Figure 6: Tactical Hybrid Roadmap: Technologies and Product Features



Source: Gartner

In another example, Company B recently refined its product roadmaps and was looking to create a detailed plan communicating the R&D investments needed to support the plan in the near term. Company B chose to pursue a tactical market-pull roadmapping model organized by product launches (see Figure 7). This model also helped Company B communicate whether to build these technologies internally, acquire externally or license.

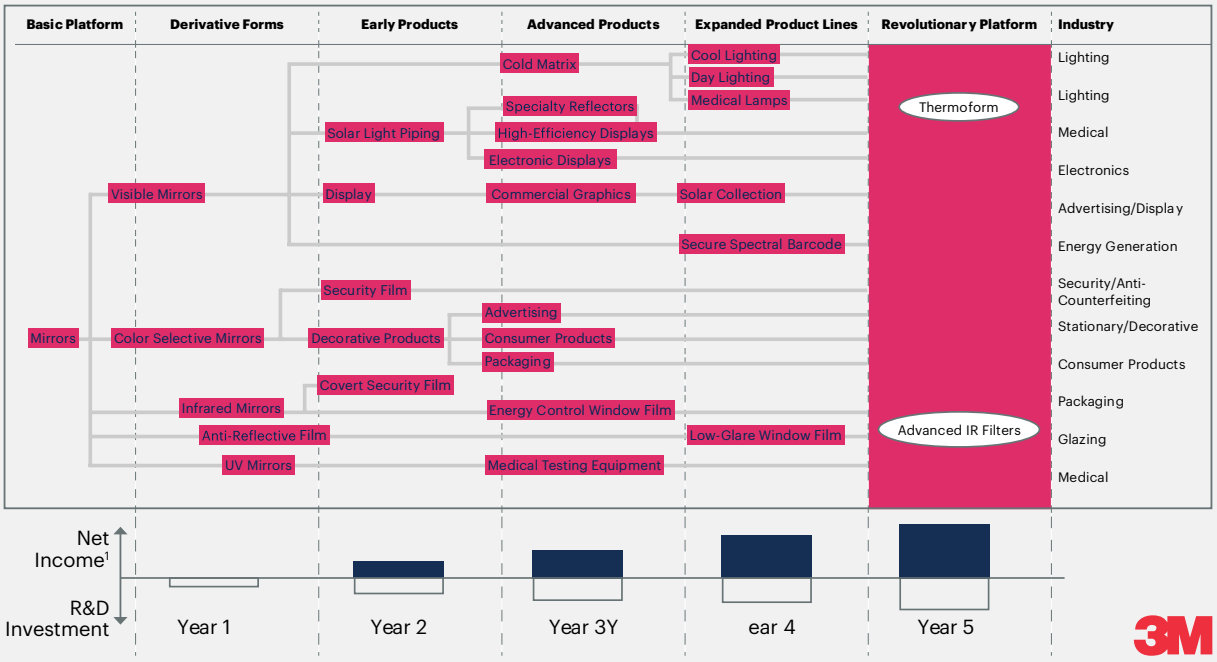
Figure 7: Tactical Market-Pull Roadmap: Product Launches



Source: Gartner

In another scenario, Company C wanted to explore the long-term potential of one emerging, potentially disruptive technology. R&D leaders at Company C used the 3M strategic technology-push roadmapping approach (see Figure 8) to hypothesize technical advances from the original technology platform.

Figure 8: Strategic Technology-Push Roadmap: 3M's Product Migration Maps



[1]Net income without accounting for ongoing R&D investment.
Source: Adapted from 3M

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