A crucial harvest: Cultivating product-development talent

McKinsey&Company
Operations Extranet

August 2017

Product-development leaders know how critical high-performing engineers and designers are. But are their skill ecosystems growing the talent they need?

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Companies often struggle to keep their capabilities current with the speed of the changing technology landscape and evolving consumer demands. Consider that in the automotive industry, the share of innovation tied to software went from 30 percent in 2000 to 80 percent in 2010. More recently, the advent of electric vehicles and connected cars has caught many in the automotive industry flat-footed, with insufficient talent in systems integration and electric propulsion systems. With increasing success of these vehicles, head count will have to be adapted accordingly.

To get ready to face such challenges, companies across many industries must improve the way they manage their product development skill ecosystems. The approach to ensure adaptability and agility has three steps. First, a company should assess its starting point by cataloging the skills available within the organization; second, it should determine the skills and capabilities the company requires, based on technology and product road maps; finally, it should develop a strategy to close whatever capability gaps the first two steps reveal.

Understand the starting position

To understand where skill gaps exist, the first step is to undertake a capability assessment. That might sound relatively straightforward, but finding the right level of detail and the right dimensions to map the capabilities of an entire product development organization can be tricky. To run this assessment, companies should ask the following four questions.

Which skills should be assessed?

We typically look at two types of skills: managerial and technical. HR can usually define managerial skills fairly well; however, technical skills are more challenging to define because these skills go beyond university degrees and the number of years of job experience—they need to represent the true core skills of the current business but also need to look into the future to determine skills which are not relevant today but will be in five to ten years.

The best way to describe technical skills is in terms of process steps along the product development value chain (such as specification and concept, detailed design, validation and testing) and along engineering disciplines (such as mechanical engineering, electrical engineering, and software development). Obviously, the assessment needs to be more granular, i.e., in mechanical engineering for the automotive industry, one would go for the level of teams being able to simulate body stress behavior and derive wall thickness of the car. For gas turbines, it goes to the level of simulating fluid dynamics in the rotor or at the blades. This approach helps to ensure that the entire product development

organization defines technical skills similarly, thus making comparisons across departments easier.

How granular should the assessment be?

The level of granularity depends on the purpose of the capability assessment. Long-term strategic planning for the entire product development organization is more high level and should focus on the capabilities of teams and the number of people with certain capabilities.

If the assessment is focusing on specific departments, teams, or individuals, a more granular study is appropriate. But be careful. Engineering organizations have a tendency to become too granular. This might be due to engineers' intrinsic desire to get precise specifications, but this level of detail is resource intensive and can be misleading. We suggest limiting the skill assessment to 15 or 20 per department and a maximum of 50 to 70 across the entire product development organization.

How should skill levels be rated?

Skill ratings should not be too complex. It is sufficient to have three to five qualitative levels that describe how well an engineer can perform a certain task. Exhibit 1 gives an overview of an assessment that we often use in client engagements.

Exhibit 1

Capability levels for assessment should be kept simple.

Each capability dimension can further be assessed along 4 capability levels focusing on value

Capability levels		Competence	Description
	3	Full capabilities	**Can train others in performing this activity;** has multiple years of experience in performing this activity and actively drives improvement of processes and tools
	2	Advanced capabilities	**Can fully perform activity independently;** has sound knowledge of all required processes and tools
	1	Basic capabilities	**Can perform activity with help;** has initial experience in performing this activity and basic know-how in required processes and tools
	0	No/low capabilities	**Cannot perform activity on his/her own;** has only basic university know-how; little or almost no experience in performing this activity

What is the right format to assess capabilities?

Assessments can be conducted through individual surveys, in group workshops, or through interviews with responsible managers. In our experience, small group discussions among team members or within

departments are most productive. Inter- action in a group often leads to interesting insights and raises awareness about critical skills, balancing too optimistic or too pessimistic assessments an individual may provide.

Derive future capability requirements

Future capability requirements must be derived from a technology road map that describes what technologies are expected to emerge, and a product road map that describes the most promising products based on these new technologies. Together, these road maps show what capabilities a product development organization should develop and the engineering skill sets needed. They also give insight into future capacity and resource requirements, such as the number of engineers with a specific skill set.

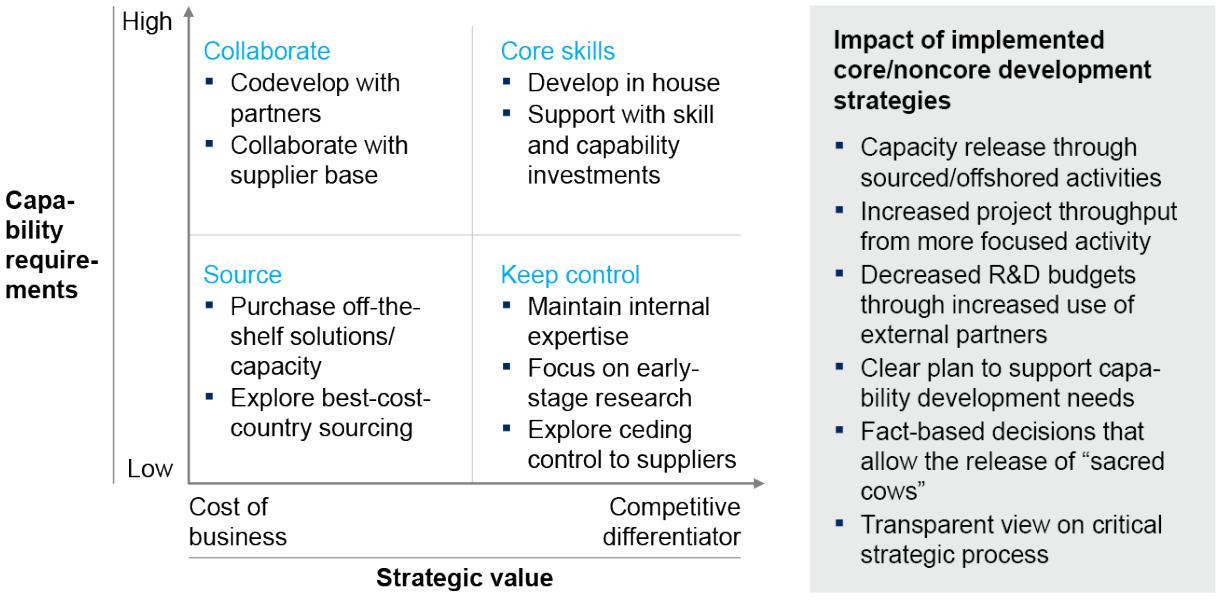
Close the gap

Comparing the status quo with future capability requirements in terms of skill sets and resource requirements reveals the skill gaps. But before deciding whether to recruit or develop talent to close any skill gap, an organization must decide if they want to build the capabilities internally—if they are core to the business—or if the connected activities can be outsourced—if they are noncore activities (Exhibit 2).

Exhibit 2

A core-noncore decision matrix helps to categorize capabilities and to follow respective strategies.

Top-down strategies based on core-noncore decision matrix



Attract, develop, and retain talent

Specially for the competitive differentiation areas, the focus of a company must be on attracting, developing, and retaining talent across a broad range of topics.

Therefore, product development organizations need a strong collaborative relation-ship with HR, which is lacking at many

companies. HR personnel often struggle to define different engineering disciplines, while engineering managers often seem reluctant to ask HR for help. We often observe that HR can help engineering organizations to manage talent in the following three ways.

- **Training and individual development.** Employees generally consider training and capability building rewarding activities. By combining clear career paths with individual development plans and learning goals, companies can motivate people to perform to the best of their abilities. Individual development plans should be tailored to the needs of each individual, both on managerial and technical elements. Learning goals should be in line with the targeted role and the required skill set to fulfil the related job profile.
- **Succession planning.** Few organizations pay adequate attention to succession planning and training people for new roles. Without a plan in place, organizations sometimes scramble to fill a post with someone who is available, rather than the right person, or a successor has been nominated too soon, before other potential candidates have had a chance to prove themselves. This can seriously frustrate employees with high ambitions which you often find in engineering organizations.
- **Create career tracks.** Most organizations have learned that the best engineers are not necessarily the best managers.

Institutionalize the management of product development skills

Managing the product development skill ecosystem is critical to a company's competitive positioning, especially given the rapid technology development remaking so many industries and changing the types of skills a company needs to compete. Although many organizations struggle to manage this ecosystem, we believe that by a systematic and continuous review of present skills and future needs, a company can identify gaps and design a strategy to acquire those capabilities through hiring, training, or outsourcing. However, to institutionalize this approach and manage the skill ecosystem consistently over time, product development organizations cannot work independently. They need to collaborate with HR■

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This article was originally published in Development Excellence: The engine to drive product success *(McKinsey & Co., 2016), under the title, "Managing the product development skill ecosystem."*