Arthur D Little

Technology and Innovation
Management Viewpoint

Creating the Optimal R&D Organization

Designing R&D Organizational Structures, Processes and Governance to Enhance Business Value

Driven by the need to respond to global hyper-competition and the increasing clock speed of technological change, companies are relying heavily on their R&D functions to accelerate innovation while maintaining tight budgets. However, organizational structures for R&D in large international companies are often sub-optimal and act as a major barrier to performance improvement. In order to successfully optimize R&D's contribution to business value, companies need to address the three key dimensions of structure, governance and process. From our extensive work with the R&D functions of leading global companies, we have identified eight imperatives to ensure a successful transformation across these dimensions.

The challenges of organizing global R&D

The complexity of global R&D organizations poses an increasing management challenge as companies continue to grow through acquisition and expansion into new markets. Coordinating global R&D projects across time zones, harmonizing systems and processes, supporting new markets, leveraging decentralized capabilities, managing knowledge, and avoiding duplications and inefficiencies are all important priorities. At the same time, R&D functions are increasingly expected to accelerate the pace of innovation in response to global competitive pressures while maintaining tight control of costs.

R&D leaders need to balance many conflicting priorities: short-term responsiveness versus long-term strategic focus; product or global business unit alignment versus regional support; customer pull versus technology push; outsourcing and partnering versus developing key internal capabilities; and radical versus incremental innovation focus.

Existing global R&D organizational structures – often sub-optimal as a result of history and ongoing evolution of the business – may need to be changed significantly to address these issues. Most companies operate in a series of "multi-domestic" markets, each with its own characteristics, so simple consolidation or centralization may not offer the solution, especially as intimate customer partnership is increasingly a key success factor. Making a lasting change that is sustainable for the future as well as the present is also important.

A caveat for any R&D reorganization is that future flexibility and responsiveness to change has to be ensured.

So how should R&D leaders go about creating the optimal R&D organization?

Eight imperatives to master organizational change

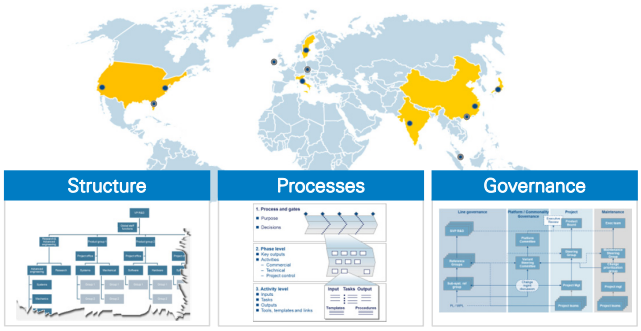
Arthur D. Little's approach to R&D reorganization is business strategy led but also people focused. Through our extensive work with the R&D and Innovation functions of leading global companies, we have identified eight imperatives that need to be mastered to successfully navigate through organizational change:

1. Focus on process and governance as well as structure
2. Make the links to business strategy explicit
3. Clarify the role of R&D and interfaces with other functions
4. Establish a cross-functional steering team
5. Use a transparent process to evaluate options
6. Deconstruct the whole to manage complexity
7. Pressure test using realistic situations
8. Manage hearts and minds carefully

1. Focus on process and governance as well as structure

There is a tendency in reorganizations to become overly fixated on organizational charts – but changing these alone will have limited effect. It is also vital to focus at an early stage on processes (how will R&D work differently in practice?) and governance (how will decisions be made, who will have authority and which functions will be involved?). Designing effective processes and governance approaches means that involvement of business units and other functions beyond R&D, such as Marketing and Manufacturing, is essential.

Figure 1. Global & organizational complexity in 3 dimensions



Source: Arthur D. Little

2. Make the links to business strategy explicit

Aligning the R&D function with business needs is the primary goal of any R&D or innovation leader, so business strategy is the starting point for reorganization. A key early task is to agree, as explicitly as possible, what the business strategy means for R&D – for example, by setting quantified targets for growth from incremental versus radical innovation, or for manufacturing efficiencies. Qualitative objectives and requirements may also be set for what the R&D function should deliver to the business. These can then be translated into criteria to help assess restructuring options.

3. Clarify the role of R&D and interfaces with other functions

One of the most common R&D reorganization problems is lack of clarity about R&D's role as part of the broader innovation effort. In some companies the corporate R&D leader is the de facto innovation leader – while in other companies there may be a separate corporate innovation team or chief technology officer, or innovation may be led by marketing or another business function. Also, R&D often includes technical support and/or quality functions that have different dynamics and processes. It is therefore vital to be very clear about what R&D should and should not do, its role within innovation, and its strategic and operational interfaces with other parts of the business. These interfaces need to be designed and agreed with the full involvement of the other functions concerned.

"We did not understand the need for change until we saw where the company was heading."

A world-leading industrial company had initiated a global initiative to reorganize R&D across its five sites. There were mixed feelings about the project and direct opposition from some influential stakeholders. Historically, the business strategy had been kept within a closed top management group, but some weeks into the project a workshop was held illustrating exactly how the R&D reorganization linked to strategic goals and what part each stakeholder had to play. This turned negative feelings into positive understanding and recognition, and led to shared commitment to deliver the changes required.

4. Establish a cross-functional steering team

R&D reorganization cannot be accomplished by the R&D function alone. R&D is part of a cross-functional innovation engine, and it has many strategic and operational interfaces with business units, regions, and other functions. It is essential therefore to establish a steering team of influential individuals to represent these other parts of the business as well as R&D. This has many advantages: better cross-functional process redesign, smoother interfaces, broader stakeholder buy-in and better strategic alignment. Moreover, the cross-functional senior team can help to identify any pockets of resistance to change within R&D's internal customers and build in effective mitigation measures. Top leadership support is important, both to encourage participation and to ensure that issues are resolved decisively and without excessive compromise.

"Now everyone knows the responsibility and mandate of their functions, and it all fits together."

With a history of M&A, the addition of new product lines and a recently established shared-services model at group level, a leading manufacturing group realized that its R&D organizational model needed to be realigned. By setting up a broad cross-functional steering team, it was able to agree on the explicit boundaries of R&D's focus and mandate. In doing so, other functions were also required to review their boundaries and interfaces to ensure a seamless fit. Finally, responsibilities to drive cross-functional work and communications could be clearly allocated, both within and outside R&D. This helped to drive ownership and accountability to keep the organizational interfaces "alive" and avoid functional silos.

Figure 2. Use of scenarios and evaluation criteria

		1. "Centralize"	2. "Product hubs"	3. "Functional centers"	4. "Manufacturing co-location"
Criterion	Weight	Score	Score	Score	Score
Market responsiveness	20%	Much worse	Much better	Worse	Better
Easy to understand interfaces	10%	Much better	Better	Worse	Worse
Development efficiency & speed	25%	Much better	Better	Same	Much worse
Access core competencies	40%	Much better	Much better	Much better	Worse
Enable PMI of acquisitions	5%	Worse	Better	Worse	Worse
	Weighted score:	14	21	9	4

Source: Arthur D. Little

5. Use a transparent process to evaluate options

R&D reorganization often involves difficult decisions around major investments, closures, relocations and so on, and there may be some strong vested interests. It is therefore essential to take the heat out of the redesign by using a transparent and systematic process that identifies plausible options and evaluates how each option performs against an agreed set of criteria based on some credible scenarios. These criteria can be derived directly from strategic objectives and operational requirements. Weightings can be agreed and options scored in real time by the steering team or other stakeholder group, as shown above. This takes the argument away from preconceived notions and prejudices and ensures a rational basis for decision-making.

6. Deconstruct the whole to manage complexity

Although successful R&D reorganization requires a holistic approach across structure, process and governance, for review and evaluation purposes the options for redesign need to be broken down into design "building blocks" – otherwise the complexity becomes unmanageable.

Breaking options down into building blocks also enables direct comparisons to be made with good practices used in other companies – something that can be important to support the business case for change. Once the building-block options have been evaluated, they can be built back up to form a small number of overall solutions for final evaluation. This is often an

> **"Iterating between the details and the full picture was imperative to get to the optimal end result."**
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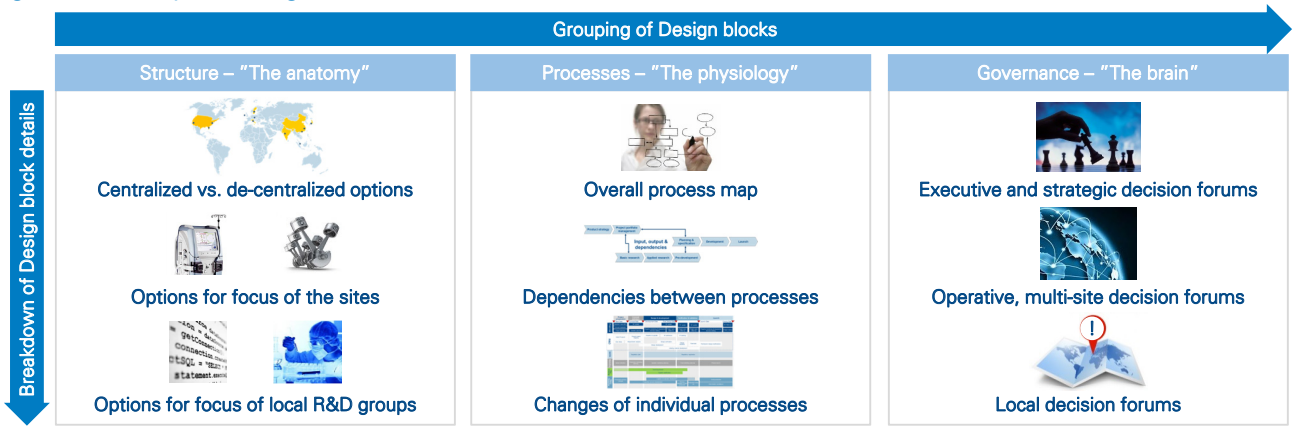
> A major industrial equipment company was in the process of restructuring its global R&D. Having been heavily influenced by an analysis-driven engineering mindset, the company initially struggled with the complexity of its range of options, as the highest-scoring design building blocks did not naturally aggregate to give an optimal overall result. However, by iterating back to revisit the previous assumptions and make further modifications, the team was ultimately able to reach full consensus – including sites with very large cultural differences. In retrospect, the team found that the general direction remained intact but the iterative process had introduced some key refinements, including a shift in focus from treating R&D and other functions separately to optimizing the complete "innovation engine".

Figure 3. Example of design block breakdown for evaluation



Source: Arthur D. Little

iterative process, and attention should be given throughout to maximizing business value contribution.

7. Pressure test using realistic situations

An important component to ensuring the feasibility of the proposed changes is to conduct a series of pressure tests with real-life situations. How would current programs and projects run with the new processes, how would they flow through the new organization, and how effective would new governance and decision-making approaches be? How would conflicts be resolved and decisions escalated? These pressure tests can be conducted as desk exercises, and can provide invaluable input for fine-tuning of the design and identification of issues to be managed during implementation.

8. Manage hearts and minds carefully

Major reorganizations are often sources of great anxiety and unrest for those affected, and R&D is no exception. Indeed, scientists and engineers can be especially sensitive, as their motivations are often closely connected with advancing their fields of work, rather than financial gain or power. Prioritizing between different lines of research can be highly emotive, and any R&D reorganization needs to manage these issues carefully. This means that, for example, ensuring absolute confidentiality within the core team about emerging options is important, until those options are final and can be properly communicated. Newly developed organizations also require realignment of personal incentives with new "ways of working": for example, recognition for cross-functional innovation efforts, new bonus mechanisms to reflect changing roles, and new career development paths to reward both technical excellence and management excellence.

In conclusion

R&D reorganization can deliver immense value to any large company for which innovation is important – and in today's era, in which creativity is essential for growth and even survival, this means virtually every company.

However, R&D reorganization can also be costly, time-consuming and risky. If done badly, it can destroy a huge amount of value and in-house capability that is essential for future competitiveness. By taking a careful, systematic approach that considers structure, process and governance, and by paying attention to the eight imperatives outlined above, leaders can greatly increase the likelihood of sustainable success and optimal delivery of business value.

If you would like to hear more about how Arthur D. Little works with companies in this area, please contact one of our experts.

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Arthur D. Little

As the world's first consultancy, Arthur D. Little has been at the forefront of innovation for more than 125 years. We are acknowledged as a thought leader in linking strategy, technology and innovation. Our consultants consistently develop enduring next generation solutions to master our clients' business complexity and to deliver sustainable results suited to the economic reality of each of our clients.

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