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Multiply Design-to-Value impact: Build core DtV capabilities at scale

Design to Value (DtV) expertise is in short supply, but assembling a dedicated core of DtV experts can help the entire organization build the right capabilities for broad impact.

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Many companies are already experiencing some of the extraordinary margin boost DtV can provide, as it strips out unnecessary costs while creating products and services that better match customer needs. The logical next step is to expand DtV wherever it can help. The challenge, however, is finding enough people with the skills to deliver the same impact for the whole enterprise.

Conventionally, companies build DtV capabilities by sending their existing pool of engineers on short courses to learn about the method and try out the tools. That approach has limitations. DtV requires intense cross-functional collaboration to identify optimal solutions and manage complex trade-offs. But busy engineering and purchasing teams often struggle to find the time to fully apply DtV methods. Without sufficient practice, their skills never fully develop. Furthermore, restricting training to engineers leaves personnel in adjacent functions that are crucial to DtV's success—including product management, marketing, manufacturing, and after-sales—unfamiliar with DtV's core concepts.

There's a more powerful alternative. Creating a dedicated team of DtV practitioners provides intensive, immediate support to projects at critical inflection points. And, over the long term, the team can also train colleagues throughout the company in DtV capabilities, strengthening DtV for the entire organization.

Why conventional capability building isn't enough

Standalone DtV training programs tend to produce unsatisfactory results for three reasons. First, one type of training won't fit all. Generic training programs must be broad and relatively shallow. That means they can't take account of the individual needs of trainees, their existing skills, or the challenges they face in their day-to-day roles, leading to frustration and poor staff engagement.

Second, few training programs build on the trainees' actual work, leaving participants little opportunity to apply and reinforce what they learn during the critical early period after the training ends. Moreover, even if participants do have a real project where they can immediately apply their skills, a lack of direct support and on-the-job coaching can make early difficulties seem insurmountable, leading to disenchantment with the approach.

Finally, companies that get the initial training support right may still struggle to sustain and develop their DtV capabilities over the longer term. After initial implementation of DtV, managers and leaders may see little evidence of further impact. Pockets of excellence may emerge, but at too small a scale even to be recognized, let alone developed. With

individual achievements largely invisible, the organization misses out on the chance to identify role models to motivate the wider business.

Our advice to companies facing these challenges is simple: establish a dedicated department of DtV practitioners with responsibility for capability building, project support, and implementation tracking.

Building a dedicated DtV department

The first, basic questions to address are where the DtV function should be located in the organization, and who should staff it.

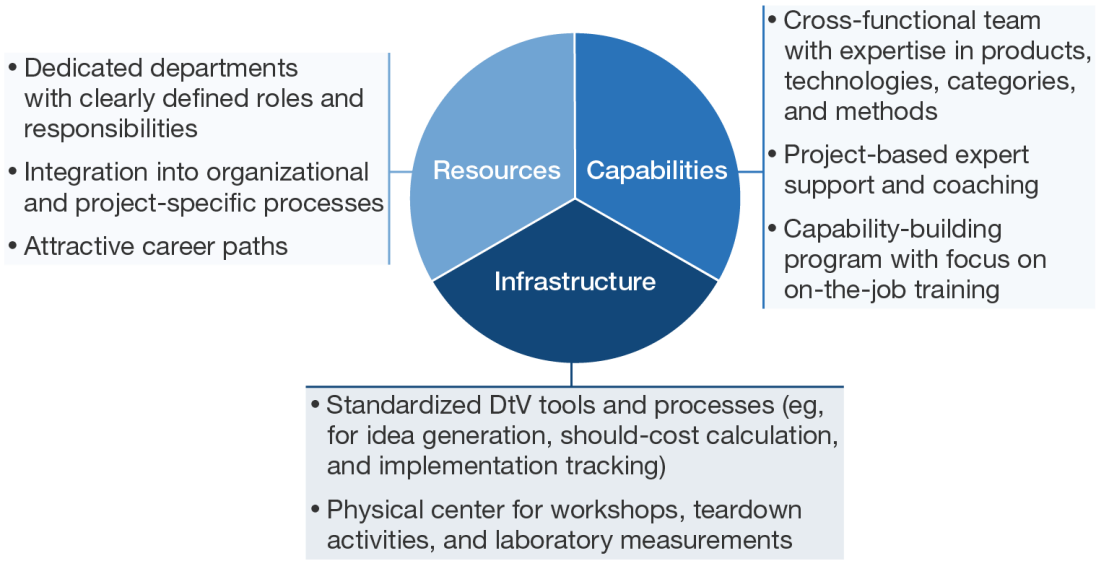
Separate, but not isolated

One of the most important reasons for a separate DtV department is independence. For DtV to achieve its promised impact, the DtV team must be able to promote measures—such as setting ambitious targets or challenging long-held assumptions about product specifications—that will benefit the company, regardless of whether they please individual functions. That's hard to do when DtV practitioners are still reporting to those same departments.

Instead, the DtV department should be separate while remaining closely integrated with product life cycles. That way, DtV expertise is applied when it has the greatest impact, and best practices and new insights can be captured and integrated into the training curriculum (Exhibit 1).

Exhibit 1

A dedicated DtV department needs resources, capabilities, and infrastructure.



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A cross section of capable people

A DtV function needs capable people, and should offer an appealing career path to attract talent. This can be achieved by designing new career-advancement options, both within the department and through

lateral moves that let DtV personnel bring their skills and network to other operations functions.

Indeed, because DtV is inherently cross-functional, the backgrounds of the department's staff should reflect a broad range of experience. Bringing together people with product-management, marketing, engineering, purchasing, manufacturing, supply-chain, and after-sales backgrounds allows people to learn from each other. Together, they can take an integrated perspective on improvement measures, while increasing the DtV function's credibility in dealings with peer units throughout the wider company.

At the same time, department staff should be encouraged to specialize. Working again and again with the same products types or commodity categories deepens knowledge while familiarizing people with best practices and performance benchmarks. This specialization should take place across multiple dimensions, including by product, technology, commodity group, and DtV method. Typically, staff begin by specializing in particular products so that they can support business units across complete projects. Over time, they develop deep expertise in particular commodity groups (e.g., metal or plastic components, electronic circuit boards, or sensors).

Aligning capability building with projects

Another important role for DtV specialists will be to help their colleagues in other functions build their own DtV skills—through a structured training program whose content and timing align with the company's usual product-development cycle. Working this way allows the DtV department to apply its expertise directly to actual work, and ensures that staff in the wider organization can use their new skills directly on the projects that matter to them most. And by supporting teams across project phases, DtV practitioners learn more about the factors that influence a project's cost, and can tailor their input accordingly.

The training will include modules applicable to the whole organization—customer-insights tools, specification review, idea-generation methodologies, target costing—as well as modules specific to the individual project, such as modularization or user-interface design. Each module is timed to a critical stage in the development process: concept development, concept freeze, target costing, supplier selection, and continuous improvement.

To ensure continuity, each project should be linked to one DtV practitioner, giving that person more incentive to ensure success. He or she then acts as a conduit to the rest of the department, pulling in expert colleagues as required for everything from comparative teardowns for benchmarking through to calculating target costs for features. The dedicated DtV practitioner will also own the pipeline of improvement ideas associated with the project, and will be responsible for tracking their implementation.

Growing the DtV department

As a company becomes more familiar with DtV techniques, demand for specialist support will grow: it may soon discover it needs an expert hotline for project teams seeking help for emerging DtV challenges.

And growing the dedicated DtV department may require more than just new hires. A proven way to build the required expertise is through a train-the-trainer approach, using pilot projects as a learning environment for new recruits. Many organizations also find it useful to draw upon external expertise during the early evolution of their DtV capabilities, although this requirement should naturally taper away as in-house expertise increases.

Assembling the team

An initial team of three to ten people, with backgrounds in engineering, customer insights, and purchasing, provides a start. The ten-member maximum allows the group to work together efficiently as a unit. Companies seeking to start with a larger department may establish two or more initial subgroups.

Training for the initial group will inevitably come from an external source: someone transferred from a business unit with an existing DtV capability, or an outside coach. Once the team has an initial set of skills and a curriculum to support the wider organization, the next step is a pilot project.

Designing the pilot

The choice of the pilot project is important. Ideally, it should span the development period of a real project from customer idea generation through specification to concept freeze (typically three to six months). That way it covers all the key DtV activities: gathering customer insights, generating ideas, creating the design, considering make/buy decisions, generating bills-of-materials, and finalizing the implementation plan.

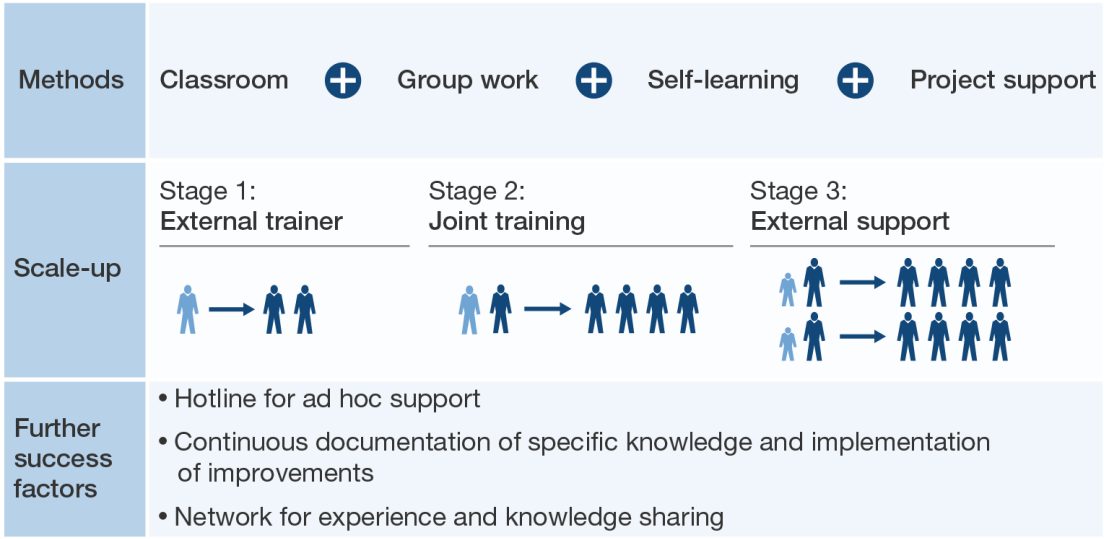
The pilot project should be a two-way process. The DtV team members will gather feedback from the product team at every stage, and use what they learn to refine their curriculum and training materials for later stages and subsequent projects. After the pilot phase, the DtV department will continue to provide ongoing support as ideas are implemented and project moves on towards production.

Filling the expert pool

The first pilot project is led by the outside DtV expert, with the team members as trainees. In the second project, leadership responsibilities are shared between the expert and those team members. By the third project, the original team members are ready to lead the project with coaching and support from the outside, training new team members as they do (Exhibit 2).

Exhibit 2

Careful design brings DtV to scale.



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Using this phased approach, the original DtV cohort will achieve expert status after three projects. By the end of the fourth iteration, the department will have established a stable team of DtV generalists, team who can then start to specialize for particular products, technologies, commodities, and design methods.

As the department expands (see sidebar, p. 6, "How big should the DTV department be?"), it must also begin to codify and disseminate knowledge and best practices. This can be done via a variety of means, including checklists, databases, Wiki pages on the corporate intranet, and the appointment of go-to experts with specific skills. To keep the training curriculum fresh, knowledge acquired during projects should be folded into it in a continuous-improvement cycle.

From DtV to DNA: Transforming the organization

For many leading companies, the establishment of a dedicated DtV department is the first stage in a much wider transformation, one that enables them to integrate customer value and cost reduction into the DNA of the organization—from new-product development to product updates and production changes.

We've seen such transformations firsthand, notably at a major global consumer-packaged-goods player and a leading industrial company.

How big should the DtV department be?

An organization can use two approaches to determine the ideal size of its dedicated DtV department.

1. By coverage. In this approach, the team size is determined by the average number of ongoing DtV projects. Each project will typically require one DtV practitioner, who will spend half their time dedicated to the project, and the other half providing specialist support to other ongoing projects. Most departments require one or two additional specialist staff to support particular stages in the project life cycles (e.g., concept development, benchmarking, target costing, supplier selection).

2. **By business case**. Each DtV team member will be expected to generate new ideas, refine existing ones, improve customer value, and reduce cost and time to market. During projects, the DtV department can measure (or at least estimate) the financial benefit of these actions. As long as the payback or the annual generated value exceeds the cost of employing DtV staff, the team size can, and probably should, be increased.

Even when the DtV team reaches its optimum size, it should not remain static. Personnel will regularly transfer out of the function into other parts of the business to ensure a flow of expertise, create space for internal promotions, and ensure the Department remains an attractive career option for capable new entrants.

Who does what DtV activities?

Such organizations still make use of **central DtV department,** which may report to the head of a particular function—perhaps procurement or controlling—or to the overall leader of the organization (Exhibit 3). This team is responsible for the institutionalization of DtV: ensuring consistency, best-practice sharing, and training delivery across all business units. Team members team have deep expertise in DtV tools, and can also facilitate workshops and moderate conflicts between individual functions such as R&D, procurement, manufacturing, or marketing and sales.

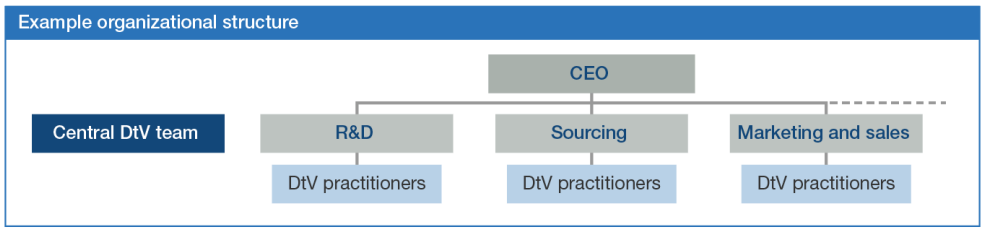
The central team also acts as a **pool of experts** when there is insufficient workload in individual business units to justify dedicated resources. Typical examples of such skills include specialized commodities, such as electronics, or specific manufacturing techniques. In addition, some companies include a group of DtV project managers in this team to lead optimization projects in their various business units.

There's also a role for DtV within business units, where members of the line organization take primary responsibility for DtV activities. **Technology experts** focus on the technologies and manufacturing techniques most relevant to the unit. They are able to design specific parts (such as castings) in the most efficient way, support suppliers in optimizing manufacturing, and calculate the most accurate should-cost for their commodity.

Exhibit 3

DtV must be integrated into the larger organization.

Overview of DtV activities by functional organization	Associated training activities
Central DtV team • Develop fact base for cost-of-goods-sold targets (eg, through teardowns, price forecasting) • Facilitate cross-functional trade-off decisions among R&D, sourcing, marketing, and product management • Act as center of excellence and build capabilities of entire organization • Own DtV process and get support from practitioners • Report directly to business owners	• Oversee internal skill-building activities to clearly defined competence levels • Development and delivery of — Functional/methodology trainings — Product- and process-specific trainings
R&D DtV practitioners • Identify improved designs (eg, through teardowns)	• Set up coaching sessions with practitioners and central team • Organize knowledge-exchange forum • Disseminate knowledge throughout the organization
Sourcing DtV practitioners • Perform cleansheet analysis to prepare negotiations • Govern the key-component list	
Marketing and sales DtV practitioners • Perform conjoint analysis on feature trade-offs	



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Product/module experts have a more holistic perspective. They are able to evaluate trade-offs—between manufacturing technologies, for example—and have a strong understanding of the technologies, design challenges, and trends affecting their area of responsibility. Finally, **line experts from procurement, marketing & sales** and other groups complete the cross-functional teams.

Expertise at every level

To build the required skills for DtV, top companies rely on three main sources: hiring external experts, bundling expertise that is already available within the organization, and investing in large-scale skill-building programs. Building DtV skills across an organization follows a similar pattern to that used within a dedicated DTV department, with a program that supports practitioners through three levels of expertise (Exhibit 4).

Exhibit 4

DtV practitioners develop three levels of expertise.

	Level 1: Engage with core tools	Level 2: Drive DtV work	Level 3: Shape DtV program
Work	• Classroom training and lectures • Work on multiple projects with guidance and supervision from level 2 experts	• Independent work on own projects with limited guidance from level 3 experts • Contribution to the knowledge database	• Shape the DtV projects from the setup phase on • Leadership on most complex projects • Coaching of junior colleagues
Goals	• Get familiar with tools, methodology, and approach • Start building network	• Become more and more independent and stand-alone • Drive the majority of DtV projects • Start building the program	• Be the backbone and shape the DtV program • Ensure all DtV programs are well scoped and set up • Develop the program further
Duration	• 3–6 months	• 9–12 months	• >2 years

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In developing **level 1**, companies rely on a mix of classroom training and on-the-job co-working with a functionally and pedagogically experienced DtV expert. The classroom training will include an introduction to the DtV approach, its methods, and the selection of appropriate tools for individual cases. It will also include a deep-dive on specific method—should-cost calculation, for example. The classroom training will be supported with hands-on experience as trainees support their trainer on current assignments. The typical time frame for this period is three to six months.

For **level 2**, trainees will work independently on actual business assignments, either alongside an expert or with significant supervision to ensure output quality and reinforce the development of their capabilities. As they gain experience, trainees also begin to develop specializations. After nine to twelve months, the trainee will complete a graduation project and technical evaluation, with “expert” status for those who succeed.

To achieve **level 3**, or “master” status, DtV experts work independently on their own assignments, train and coach more junior colleagues, and build and codify new knowledge. They learn to master the full DtV tool box while also building further knowledge on product systems, modules,

and corresponding manufacturing techniques. After several years, a DtV expert may move on to a managerial level, with responsibility for shaping the program and organization.

The best DtV curricula also include the development of general leadership skills, recognizing that even the most advanced functional expertise will have limited impact if the expert is not capable of facilitating large scale workshops, obtaining buy-in from project teams, or convincing key stakeholders.

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Ultimately, DtV is more than a collection of skills and tools: it is a change of mind-set about that way products should deliver value to customers. An essential role for the DtV expert, whether working in a dedicated department or in another function, is to facilitate that mind-set change. That calls for energy, enthusiasm, and expertise in equal measure■

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