Creating a Culture of Productivity and Collaborative Innovation

Orion's R&D Transformation

Faced with the need to improve productivity, Orion's R&D group built a new culture of productivity and collaborative innovation through incremental initiatives and a comprehensive reorganization.

Robert Thong and Timo Lotta

OVERVIEW: Faced with a weak new-product pipeline, functional silos, a hierarchical management style, and an inward-looking mindset, Orion's R&D organization needed to dramatically improve its productivity and adapt to a new R&D paradigm sweeping across the pharmaceutical industry. In response, its R&D management team designed and implemented an organizational transformation process based on proactive culture change. Through incremental initiatives and a comprehensive reorganization, the company built a more open, collaborative, and results-oriented R&D organization able to thrive in the evolving pharmaceutical industry.

KEYWORDS: Culture change, Open innovation, Pharmaceutical industry

In 2007, the pharmaceutical R&D group at Finland's Orion Corporation had reached a crossroads. Its product pipeline was almost bare despite significant investment over the past decade. To make matters worse, a fundamental shift was taking place in its industry's R&D paradigm; Orion was being left behind, but could not afford to replicate the approach being adopted by the major multinational pharmaceutical corporations. Major change was needed to avoid drastic consequences down the line.

Fast forward to 2012: Orion's proprietary R&D pipeline had grown to 19 research-stage and 8 clinical-stage projects—triple the number in 2007—with an even greater increase in value, as validated by partnering agreements with Johnson & Johnson's Janssen Pharmaceuticals division in 2013 and Bayer's HealthCare division in 2014. More importantly, the company's ability to generate future new medicines had been greatly enhanced by a flexible and globally networked operating model. At the same time, internal R&D headcount had been reduced by 25 percent, sharpening the R&D focus on those competencies where Orion had a competitive advantage. The financial resources freed up by this reduction were deployed to access new ideas, leading-edge technologies, and flexible resources via a global network of scientific collaborations and outsourcing arrangements.

This turnaround was the result of concerted work on the part of Orion's R&D management team to diagnose the situation, develop a new strategic direction, and implement culture changes to support a new approach to pharmaceutical R&D for the company. Those culture changes supported the implementation of best-practice structures and processes that allowed Orion to catch up with its peers and to subsequently develop a sustainable competitive advantage. The result: a new culture of productivity and collaborative innovation that has transformed Orion's fortunes.

Diagnosis and a New Strategic Direction for R&D

Orion Corporation is a listed Finnish company operating in the global pharmaceutical and medical diagnostics industry; in 2013, the company had 3,500 employees and over €1 billion in sales. In 2007, at the beginning of its change journey,

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Orion's pharmaceutical R&D group comprised 700 people across three sites in Finland (Espoo, Turku, Kuopio) and one in the United Kingdom (Nottingham). Although this makes it a major business by Finnish standards, Orion is dwarfed by the multinational pharmaceutical and medical device corporations (colloquially referred to as "big pharma") that dominate the global marketplace—in 2013 the largest big pharma company, Johnson & Johnson, had over $70 billion in sales. A typical big pharma spends 30–70 times more on R&D than Orion.

In 2007, led by incoming senior vice president for R&D Reijo Salonen, the R&D management team initiated a self-assessment, gathering and assessing inputs from within the R&D organization, throughout the parent corporation, and wider industry contacts. A native Finn initially trained as a physician, Salonen had spent the past dozen years in senior-level global roles with GSK and Pfizer, two of the largest big pharma companies. On his arrival at Orion, as he recalled, "We had many pockets of world-class scientific expertise, and people were committed and loyal. But output of new medicines had been poor for some years, and our parent corporation saw us as a black box producing nothing."

Two key root causes for this lack of productivity and the corresponding solutions emerged from the self-assessment exercise. First, R&D operated with, in Salonen's words, "a hierarchical management style, in entrenched functional silos, with an inward-looking mindset," with many functions exhibiting their own classic scientific subcultures. (See White 2005 for an explanation of the scientific "tribe" phenomenon in pharmaceutical R&D.) In contrast, project-based cross-functional problem solving and the integration of an increasing number of scientific subdisciplines had become critical success factors across the industry over the preceding decade; most companies had implemented matrix organizations in response.

Second, R&D's mix of technical competencies was suboptimal—the organization was competitive in only some key competencies and it had not taken sufficient advantage of the expanding outsourcing opportunities available across the industry. Furthermore, Orion lacked sufficient access to the emerging bioscience technologies and newer scientific disciplines that would enable a reliable stream of new projects. As Salonen recalls, "The extent of outsourcing and external scientific collaborations was one of the lowest amongst our peers."

These findings led to two conclusions. First, the organization clearly needed to implement a matrix organization. But in Salonen's experience, many matrix implementations had struggled because most people continued to see themselves first and foremost as functional specialists. Since the center of gravity for decision-making needed to be the project rather than the function, the management team felt that in parallel to implementing a formal matrix organization, they also needed to embed a project-centric mindset.

Second, to increase its flexibility and gain access to more cutting-edge technologies, the management team resolved to move to an "open R&D" approach—focusing internal resources where Orion could be competitive, adopting a more strategic approaching to outsourcing non-core activities, and freeing up resources to fund more external scientific collaborations. To make it work, the management team also needed to change its organization's mindset about external collaborations.

There remained the important question of Orion's future R&D business model in the context of a shift in the pharmaceutical R&D paradigm (see "The New Pharmaceutical R&D Paradigm," p. 43). As a smaller company, Orion was caught in a difficult position: It lacked the new technologies and ideas being generated in academia and startup bioscience firms. But, in the words of one R&D executive, "We can't afford, like the big pharmas, to buy these in and fund the resulting projects all the way to market; the cost of doing so and the low single-digit success rates just do not make sense for a company our size."

After internal deliberation and discussions with external industry observers, the R&D management team arrived at the conclusion that Orion could sustain a value-adding role in the middle—generating new projects from collaborations with smaller bioscience firms and academia, that could then be sold or licensed to the big pharma companies that could take them to market. Although these smaller players had the ideas and technologies, they lacked the know-how and money to turn these starting points into clinically validated assets, that is, projects that had been validated in affordable, smaller-scale Phase II clinical trials. Orion would bring these projects through Phase II trials, then partner with bigger pharmaceutical companies for final-stage development and commercialization, thus taking advantage of a well-known value inflection point in pharmaceutical R&D, at the clinical proof-of-concept stage (see "The Proof-of-Concept Business Model," p. 44).

The management team felt confident that if it could successfully implement a project-centric matrix organization with an open R&D approach while embedding the corresponding mindset changes into the fabric of the organization, then Orion could exploit its nimbleness to achieve a better return on its invested resources through the proof-of-concept stage than the big pharmas could. The team announced an ambitious goal: to build, by 2017, the pharmaceutical world's "best R&D organization," which it defined as one achieving "superior return on R&D investment—higher value R&D assets and more drugs generated, faster, and at lower cost per unit of funding, than any other pharmaceutical R&D organization."

The management team resolved to move to an "open R&D" approach.

Starting with Culture Change

Previous attempts at major change in R&D at Orion (and at Salonen's previous employers) had always started by defining tangible solutions, only dealing with the more intangible people and culture aspects during implementation. Such an approach invariably failed to address the very strong cultural barriers to change (Weeks 2006). Given this experience, the

The New Pharmaceutical R&D Paradigm

R&D productivity across the pharmaceutical industry has been falling for two decades (Munos 2009; Scannell et al. 2012; Cook et al. 2014); the probability of a newly invented molecule reaching the market is currently in the low single digits, with successful projects costing hundreds of millions of dollars over 10 to 15 years. Four factors are driving this industrywide decline in productivity:

1. Increasingly tough scientific barriers have emerged as more difficult diseases have been tackled. The low-hanging fruit has been plucked, and the industry now must bet on new bioscience technologies to find better medicines.
2. Innovation in big pharma R&D organizations has declined as their scale, complexity, and consequent bureaucracy have increased.
3. Regulatory agencies are imposing higher hurdles for efficacy, safety, and quality—new technologies and innovative treatment approaches also mean many unknowns and new risks.
4. Healthcare payers have set higher requirements for cost-effectiveness—a new medicine selling at a high, patent-protected price will not be reimbursed if it is only marginally better than an old, off-patent medicine selling at a much lower price.

The innovation challenges represented by the first two factors mean that viable concepts for potential new medicines are more likely to emerge from small bioscience companies and academic research groups working at the leading edge of science in more creative and entrepreneurial environments. On the other hand, the higher hurdles represented by the second two factors, and the consequent need to demonstrate statistically the requisite level of performance, have made late-stage Phase III clinical trial programs extremely expensive for most diseases; only the big pharmas can now afford to fund such programs and absorb the risk of failure. Furthermore, high costs have led to increased outsourcing of the more commoditized R&D tasks to contract research organizations (CROs) conducting operations in lower-cost locations.

In response to these pressures, the big pharmas have overhauled their R&D models, partnering with smaller bioscience companies and academia worldwide at the research and early development stages to feed their late-stage new product pipelines, while simultaneously outsourcing more of their operations to CROs. By one recent estimate, 64 percent of the late-stage pipeline value of the biggest companies in 2010–2013 had been sourced externally (Deloitte 2013). Some industry commentators went as far as to postulate that completely outsourcing earlier-stage research might make economic sense for some pharmaceutical companies (Morgan Stanley 2010). Nevertheless, most big pharmas continue to conduct a portion of their research in-house, both to hedge their bets and to maintain the know-how to select and work with the best external ideas and technologies.

The new pharmaceutical R&D paradigm is thus highly collaborative and externalized. Big pharmas concentrate the bulk of their resources on later-stage development and commercialization, buying in a large proportion of earlier-stage projects from smaller, more creative players. Smaller bioscience firms and academic research laboratories provide new technologies and new projects to these big companies. And, a rapidly expanding global CRO sector provides outsourced services to the whole industry.

R&D management team firmly believed that lasting change could only come from addressing culture proactively. Thus, as Chemistry & Safety Sciences Platform Director Timo Lotta recalls, "We made a conscious choice to tackle culture from the outset and throughout the journey."

For the desired approach to be successful, the management team concluded from their earlier diagnosis that the new culture had to be more open, collaborative, and results oriented. In Salonen's words, the new culture would "emphasize openness, transparency, and enthusiasm in all R&D activities, create seamless links and alignment with the wider company and external collaborators, and engender a focus on project productivity and results."

Hence, the team launched its "Best R&D" change process in 2007 and early 2008 with a series of high-visibility initiatives to engage people via surveys, interviews, group discussions, and other activities. Although each initiative was directly linked to a specific business topic, the common thread was the aim to encourage the emergence of a new culture along the desired lines. For example, one team looked at internal innovativeness and collaborative behaviors, another team surveyed external service providers about how Orion could be their ideal partner, and yet another team worked on branding R&D as "the voice of science and the patient." Other initiatives reviewed the project portfolio, examined project efficiency, and benchmarked performance against other mid-sized pharmaceutical firms via participation in an external multicompany experience-sharing initiative.

In addition to these indirect efforts, Orion also launched an initiative to define its desired R&D culture. A cross-functional team, with members drawn from multiple organizational levels, conducted interviews and focus groups across R&D to synthesize 10 guiding principles, derived bottom up and approved by the R&D management team in 2008:

1. Results orientation and happy enthusiasm
2. R&D fostering discussion and change
3. Relaxed R&D
4. Inspiring and encouraging R&D
5. Effective two-way communication
6. Professional and fair supervisors
7. Appropriate challenges, professionalism, and possibilities to influence
8. Active feedback

The Proof-of-Concept Business Model

The pharmaceutical R&D value chain comprises five stages:

1. Biological research on diseases and bioscience technologies is conducted to generate new ideas for treating diseases.
2. These new ideas spawn research-stage drug discovery projects that, if successful, produce specific molecules that could have a therapeutic use (candidate drugs). Failure rates at this stage are very high.
3. Exploratory development is conducted on candidate drugs to profile their characteristics and test their safety and efficacy, leading to early clinical-stage human trials that assess safety (Phase I trials) and subsequent application in small, idealized samples of patients (Phase II trials). If the data from these two sets of trials is sufficiently positive, the candidate drug is said to have achieved clinical proof-of-concept. Again, the failure rate at this stage is high.
4. A very expensive confirmatory testing program is then conducted in a wider sample of patients, under more realistic field conditions and over a longer time period (Phase III trials). This testing continues until there is sufficient statistically robust data to support approval by regulatory authorities. While projects do fail at this stage, in general, confirmatory programs are expected to deliver new drug approvals.
5. Even after regulatory approval is granted, expensive clinical trial programs often continue in order to document long-term safety (Phase IV trials, often mandated by regulators) and to generate comparative data against other currently prescribed drugs to support pricing negotiations with healthcare payers.

Stage 1 is the typical domain of academia and startup bioscience companies. The investment required for Stages 2 and 3 is usually too high for a startup or university to afford on its own—they need to collaborate with bigger companies. However, the total cost to achieve clinical proof-of-concept at the end of Stage 3 is well within the reach of mid-sized companies, such as Orion, that can afford to maintain a portfolio of such projects running in parallel. The value of a project that has achieved clinical proof-of-concept is immense, as the molecule has passed the stages with the highest failure rates and there is now solid evidence that it works. Hence, the price of a clinically validated project when sold or partnered to a big pharma company can be very high, often dwarfing the investment that has gone into it.

Although the big pharma companies conduct projects of their own in Stages 2 and 3, there is significantly less advantage to be gained from sheer scale. At these stages, mid-sized companies are on a level playing field and arguably have the advantage of being more creative, nimble, and entrepreneurial (Booth 2012). Conversely, startup bioscience firms do not have the resources to maintain a large enough portfolio of Stage 2 and 3 projects to spread risk sufficiently, since they do not have the benefit of revenue from products already on the market. Neither do they typically have the experience or expertise to turn raw ideas and new technologies into viable real-world drugs. These dynamics have led Orion, along with many other mid-sized pharmaceutical and bioscience companies, to concentrate their efforts and investments on Stages 2 and 3, with the goal of selling or partnering out their projects when clinical proof-of-concept is achieved.

9. Trust and taking responsibility
10. Internationality and diversity

These principles have continued to be a touchstone for many subsequent initiatives, even as Orion's view of organizational culture has broadened over time.

In 2009, the management team set up the CrossFun team to initiate and coordinate activities that would enhance the cultural traits captured in the 10 principles; the aim was to create a supportive environment for the structure and process changes that were to come and to encourage people into the new ways of thinking and doing that would form the basis of Orion's new culture. CrossFun continues to the present day, overseeing a continually updated portfolio of initiatives conducted by people from all levels and organizational units (see "The CrossFun Team," p. 45).

Playing Catch-Up: Implementing Best-Practice Structures and Processes

With the first set of initiatives under way, the management team began planning how to implement the main components of the new strategic direction. Recognizing that Orion first needed to play catch-up with the rest of the industry in many areas, the team prioritized a small number of initiatives targeted to areas where the need for improvement was obvious and the relevant best practices already widely implemented in other companies.

What Was Implemented

Four specific actions were taken to enable the open R&D approach and drive a project-centric mindset:

1. Outsourcing was professionalized with the introduction of industry-standard processes, practices, roles, and training.
2. A structured process was created to drive the flow of high-quality new projects, emphasizing scientific collaborations with academia and smaller bioscience companies.
3. Therapy area teams were established to actively manage the project portfolio.
4. Scientific project leaders were introduced, working in parallel with existing task-oriented project managers.

In implementing these commonly accepted, industrywide practices, the management team took care to avoid well-documented pitfalls such as, in Salonen's words, "top-down

The CrossFun Team

Orion's CrossFun team has driven scores of different events and activities permeating almost all aspects of R&D. CrossFun programs are designed to encourage openness, collaboration, and enthusiasm with activities like the Be Positive Week and the Cross-Training program, in which two people from different functional areas "shadow" each other to learn about each other's area of expertise. In the annual SupeRDay meeting, all managers with supervisory responsibilities were encouraged to share practices for motivating people; such knowledge sharing was further reinforced by a 360-degree feedback program.

Examples of CrossFun initiatives include:

- Training meeting facilitators
- Tools for brainstorming and lessons learned sessions
- Sharing practices for motivating, rewarding and appraisal
- SupeRDays
- 360-degree feedback/training
- Titles vs. roles and career path
- "Be Positive" week
- Project leader training and development
- Cross-functional R&D training days
- Culture survey
- Discouraging fear of failure
- Cross-Training program
- Diversity in recruiting
- Celebratory events for R&D successes

The CrossFun team itself is compact, made up of 6–8 individuals from across different functions and levels, and acts as a coordinator; at any given time, scores of other Orion people may be involved in driving these initiatives in addition to their daily work.

industrialized management by the numbers and project decision making biased by wishful business goals over hard scientific realities" (see Garnier 2008 and Thong 2013 for expositions of these pitfalls and their consequences). To act as a counterweight to these tendencies, the management team deliberately chose to include a wider set of stakeholders (including relevant non-R&D functions) in its project governance forums. It also encouraged openness and transparency in project team deliberations, giving equal weight to both scientific and commercial considerations.

Initially, the team felt that the matrix organization could be implemented gradually, with natural attrition slimming internal headcount over time. But in mid-2008, an unexpected complication emerged. With the loss of patent protection for the company's largest product looming, corporate leadership (including Salonen) realized that natural attrition was not moving fast enough. An aggressive reduction in fixed costs was needed to ensure future financial flexibility; although the R&D budget would remain broadly unchanged for the time being, a higher proportion of external spending needed to be available for rapid reduction if product revenues shrank quickly due to generic competition. A painful downsizing ensued in early 2009, reducing the organization by 25 percent in one fell swoop.

The R&D management team took the opportunity presented by the downsizing to implement the matrix organization. A project dimension was established by creating three Processes—groups with dedicated specialists and budgets

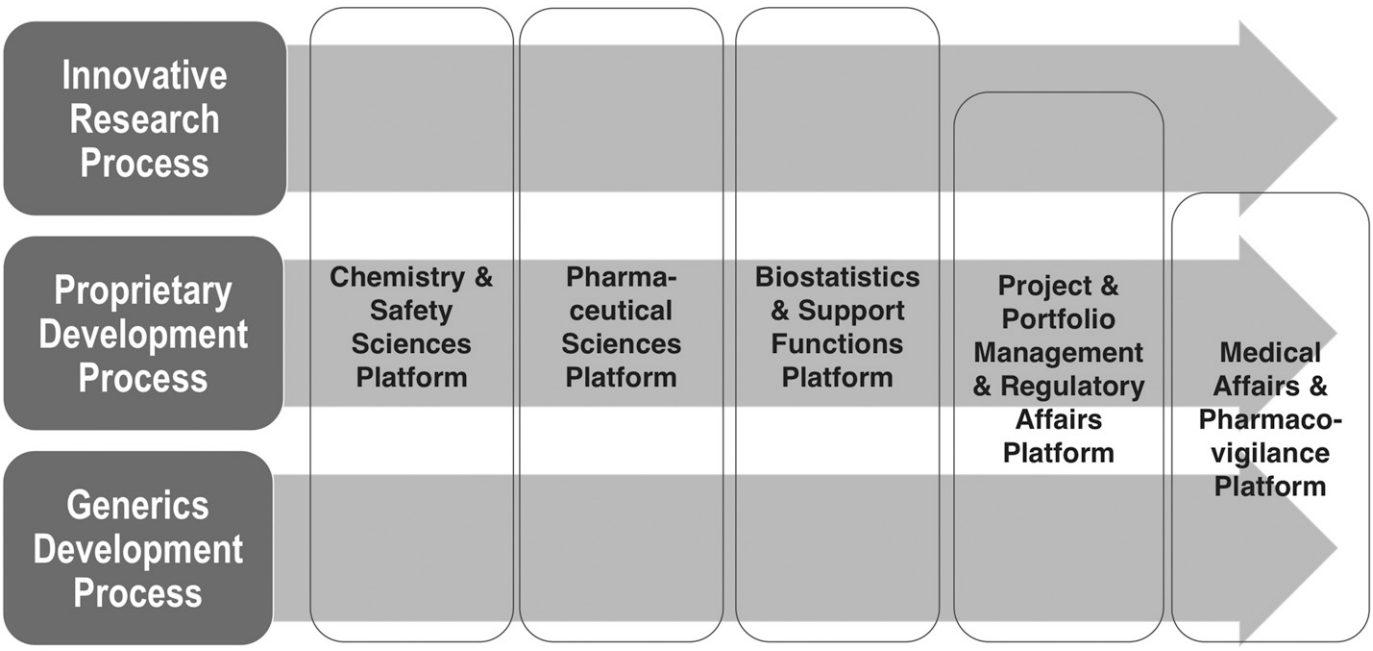

FIGURE 1. Orion's project-centric matrix organization

Although the structures and processes introduced at this stage were commonplace across the industry, implementation required overcoming significant emotional concerns.

that managed distinct types of projects (Figure 1). Everyone else was organized into Platforms, grouped by specific expertise to support projects across all Processes.

Orion has adapted the way Platforms operate to reinforce their role as providers of expertise and services for the projects, rather than principal drivers of project activity. Platforms have two subtle but important differences compared to traditional line functions. First, they group people by operational context and technologies, rather than by scientific training and the type of scientific problem being addressed, as other pharmaceutical R&D organizations do. For example, the Analytics section in the Pharmaceutical Sciences Platform comprises everyone who uses analytical technologies to support projects, regardless of their initial scientific training (biology, chemistry, pharmacy) or the problems being addressed. This approach has several advantages, as the head of the Analytics section noted: "The cross-training of our people (vis-à-vis the problems to which their skills are applied) motivates them, stimulates thinking and awareness of the broader picture, and increases our flexibility. We also achieve synergies in equipment utilization and outsourcing." Second, the Platforms' line managers do not oversee work in the traditional sense; as Pharmaceutical Sciences Platform Director Tero Närvänen commented, "Line management in the Platforms concentrates on growing individual skills, building technical capabilities, and developing people."

Transferable Lessons

Although the structures and processes introduced at this stage were commonplace across the industry, implementation required overcoming significant emotional concerns. It did not help that the matrix approach can be confusing for people new to working this way (Bartlett and Ghoshal 1990; Rogers and Davis-Peccoud 2011). With the reorganization coming together with the emotional impact of the downsizing, this was a very stressful period. Only a few months earlier, the message had been about creating something new and exciting, but now the change came with a 25 percent headcount reduction that had to be implemented rapidly. Individual executives worked all hours to engage people across the board. Salonen reflected, "This was where our new leadership proved its strength. We proactively communicated and negotiated all through the downsizing process, engaging people in why this had to be done and the bigger picture of what we wanted to achieve longer term." And the effort paid off. Salonen noted, "Within a year, our surveys indicated our people felt better than before the change."

For another organization contemplating a similar journey, this represents a key learning: the sheer amount of time the management team must spend on communication to get change rolling and maintain the momentum. Salonen recalls, "In the early days, the time we spent on communication was five to ten times our previous norms. And even today, that ratio is two to three [times]."

The importance of maintaining aligned leadership is another key lesson. While there was often debate within the management team, once a path forward had been agreed upon, everyone was committed to making it happen. As one executive commented, "There were a lot of opinions, it wasn't easy, but by the end of the talking, we had the same voice. At first, we the leaders communicated as individuals, but within a short time we began communicating as a team with aligned messages." Aligned leadership ensured that once decisions were made, they were implemented quickly and effectively without any backsliding.

Pulling Ahead: Innovating New Structures and Processes

By the beginning of 2010, the management team felt it was time to go beyond current industry practices to reach its goal of building the best R&D organization. Three executives (Lotta, Närvänen, and Project Portfolio Management & Regulatory Affairs Platform Director Minna Ruotsalainen) were nominated to initiate the Smart-to-PoC (for proof-of-concept) program. With the primary goal—return on investment—in mind, this program sought to enable more agile and resource-efficient project execution to the proof-of-concept stage and more effective exploitation of internal know-how and external capabilities. If Orion could achieve these dual aims, a competitive advantage would result, as—despite widespread adoption of the new pharmaceutical R&D paradigm—Salonen and his colleagues knew that other companies were struggling to adapt their organizations and the mindsets of their people to the new paradigm.

What Was Implemented

Over the next few years, the Smart-to-PoC program established a new way of working. Projects are now conceptually situated at the center of a project ecosystem, which provides greater transparency with regard to relevant internal and external resources (Figure 2). This contrasts with the historical situation, where each project core team would have relied only on its team members and the resources those few individuals could access via their functional department heads. The thinking behind the ecosystem's design was inspired by the literature on innovation ecosystems (Iansiti and Levien 2004; Karhiniemi 2009; Adner 2012) and adapted by Orion for the pharmaceutical R&D environment.

Organizationwide cross-functional strategic expert networks support all the projects. These networks, which function as communities of practice (Wenger 1998; Wenger,

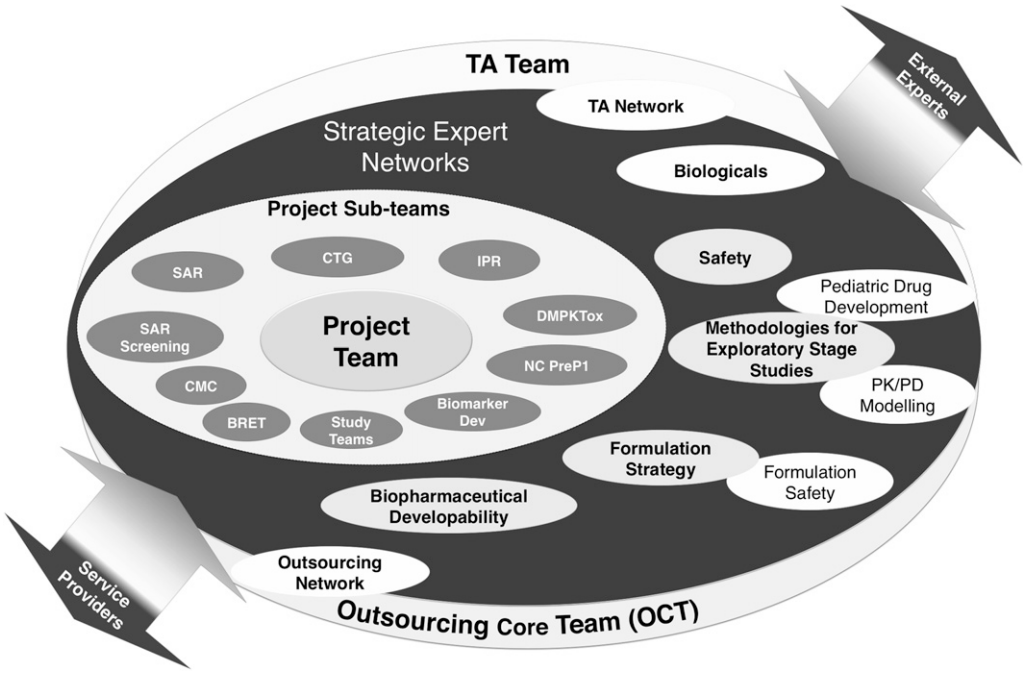

FIGURE 2. Conceptual ecosystem of a typical project

McDermott, and Snyder 2002), capture, integrate, and extend learning from both in-house and external sources, transferring this know-how to the projects that need it. Each network focuses on a particular set of strategic issues, such as drug bioavailability or formulation challenges. Networks have the freedom to establish their own focus and working styles (Table 1); each one is supported by two part-time coordinators, chosen for their networking skills and motivational energy, and comprised of volunteers from across the organization. Networks advise project teams and decision-making bodies but, while they will provide recommendations if asked, they do not make formal decisions regarding projects.

Every project is driven by a small core team coordinating the work of many sub-teams, each executing a clearly defined part of the project. For example, a sub-team might conduct certain studies or address frequently occurring problems. Project sub-teams are comparatively small and comprise members from multiple disciplines. In contrast, project sub-teams in most other pharmaceutical R&D organizations are single discipline, larger but fewer in number, and exist over a much longer period of time. Orion's project sub-teams have significant autonomy with regard to resources, process, and methodology, so that they can take care of day-to-day project operations, allowing the core team to focus

TABLE 1. Strategic expert networks in action

Network	Membership	Structure	How It Operates
Methodologies for Exploratory Stage Studies	~20 core members, including a few external experts	Peer-to-peer forum	The network holds regular meetings to challenge each other's study designs, discuss the logic behind those designs, and introduce new ideas. It also conducts specific initiatives, such as collating lessons learned from historical study designs, facilitating cross-functional knowledge management of relevant methodologies, gathering data on placebos for potential reuse across all projects, and supporting the development of data visualization tools.
Formulation Strategy	No regular members; coordinators identify relevant experts (including external) when help is requested	Supports projects that request help; focus is on connecting problem owners with problem helpers	Teams needing help make a request to the network. For example, one project asked for help to design a formulation alternative for a potential drug molecule with poor ADME (absorption, distribution, metabolism, excretion) characteristics. The network coordinator convened a series of problem-solving meetings with network members and other internal experts; network members also reached out to external universities and CROs. Once a solution was found, insights from this series of discussions were documented for future reuse.
Biopharmaceutical Developability	Core team of ~6 members, plus ad hoc participants drawn in as needed	Drives specific initiatives across the organization and supports projects that request help	For every prospective new compound reaching a certain stage, the network helps the project team gather biopharmaceutical data across disciplines to holistically evaluate to what extent the compound's characteristics could hinder its application as a medicine. The network has also encouraged greater use of modeling and simulation within Orion, and it delivers Orion's contribution to the ORBITO project funded by the EU's Innovative Medicines Initiative to develop new oral biopharmaceutics tools for the industry.

on direction setting and decision making. As an additional benefit, the number and fluidity of sub-teams means that many more people are directly connected to projects, reinforcing the project-centric mindset across the organization.

Projects operate with an agile smart planning process that:

- Uses a resource-lean philosophy to focus attention on what the next set of actions should be and the incremental value of the data those actions generate.
- Considers multiple, potentially parallel paths to maximize project value rather than sticking to a single linear path.
- Adapts activity plans according to emerging data, rather than managing adherence to standardized plans and timelines.
- Aligns all relevant stakeholders (including those outside R&D) by getting them to jointly maintain a set of living planning documents.

This process is the glue that connects the small core team, the many sub-teams, and the expert networks. The smart planning process and the project teams drive agile, resource-efficient project execution, while the expert networks and the project sub-teams enable faster and more effective exploitation of both internal and external know-how.

By the end of 2011, the cumulative results of all the change efforts since 2007 could be observed. The R&D management team and corporate management noted that several projects had made faster progress and made more value-creating decisions than would have been the case under the old approach.

An unexpected side benefit also emerged—improved project meetings. Under the new, more agile system, traditional monolithic face-to-face project meetings (long agendas, many invitees, huge PowerPoint decks) were replaced by shorter, more focused discussions within the various sub-teams and expert networks supporting the project, many of these conducted over web-conferencing systems. This led to:

- Fewer people in each meeting, leading to better discussions
- Less time spent in face-to-face meetings and increased efficiency, as participants in web-conference meetings could multitask when their full participation was not required
- More people involved and contributing, leading to a wider range of ideas that improved the chances of better solutions emerging

Decision quality had not declined, and involving a wider range of people greatly enhanced the buy-in and speed of implementation for decisions.

Many project leaders initially found it difficult to adapt to this more fluid and distributed approach. Their initial reaction was to try to keep tabs on everything by participating in every meeting. But there were simply not enough hours in the day for that approach to work, and with positive encouragement from management, project leaders began to delegate more and trust others to make the right choices—which had the additional benefit of increasing empowerment and engagement.

Transferable Lessons

The most important transferable lessons from this experience are not the particular structures and processes developed but the tactics enabling their creation. It had proven very challenging to implement practices top down, even when they were already widely adopted across the industry. So in the Smart-to-PoC program, which needed to create altogether new ways of working, the management team adopted a participative, bottom-up approach to ensure widespread ownership.

Teams of in-house Orion people designed and implemented all the changes, with over 20 percent of the R&D workforce (plus others from the wider company) participating directly. External consultants were used only to train the in-house change agents and to "keep everyone honest," rather than to design the solutions. As Närvänen explained, "We created possibilities for the people to change their own work." And Salonen added, "We needed to involve as many people as we could without seriously impacting our day-to-day business. This led to instant buy-in by those involved, sticking a hundred times more effectively than a top-down solution."

The positive energy emanating from R&D spread to the parent corporation, and helped the R&D management team win the freedom they needed to experiment. Salonen noted, "They [Orion's Board and corporate leadership] began to understand what we were doing, allowing us to change without interference; this trust was a major enabler for our success." That freedom, corporate leadership recognized, produced results for the company as a whole. As Corporate Senior Vice President Liisa Hurme noted, "Today, as a result of Best R&D, the business divisions and R&D have common language and goals; we set targets and prioritize together."

While participative design engendered ownership, Orion also needed to ensure the outputs of the process would deliver the intended outcome. This was accomplished by ensuring diversity and rigor in the design process, from including very diverse people (vis-à-vis scientific training, functional discipline, experience and age, organizational level, personality) in the design teams and managing these teams through a deliberately challenging action learning process in which they were encouraged to push each other's thinking so as to co-create new solutions (Kinal and Hypponen 2013). Training and coaching were provided to the leaders of design teams to help this process along. Although the participants experienced emotional highs and lows, with persistence, the process generated superior ways of working that, in the view of Salonen and his management team colleagues, were more effective, efficient, and fit for Orion's purpose than existing industry practices.

Driving Change by Continuously Shaping a New Culture

The R&D management team has achieved its aim of creating a significantly more open, collaborative, and results-oriented organization. The head of project management has noted "a huge attitude change; people across the board take responsibility." As more of the organization now understands the

business requirements for success and the project-centric focus has pushed people out of their silos, more of the organization feels directly engaged in projects.

Projects are now the center of gravity for how people perceive their work, and the organization now operates from an ecosystem mindset. As Lotta explains, "Everyone is expected to operate through their project's ecosystem to get things done, rather than relying on their line organization to be the primary driver. We'd prefer our people to feel their line unit is a home for their scientific and technical competencies rather than something that manages their work." The ecosystem approach means that help can be sought from the whole ecosystem of project sub-teams and expert networks, and even external resources. As one manager noted, "We can get help from the whole world for our projects."

Another hugely important benefit has been the impact on individual employees' sense of their work. A 2013 employee survey found very strong indicators for results-oriented teamwork, personal leadership, and happiness at work (Table 2).[1] Recognition of individuality is an essential aspect of the new culture, as Lotta noted: "Everyone has their own style and how personal leadership is exhibited varies from one person to another. It is their attitude that is important." Salonen sees the benefits of this approach in his daily work: "People in the corridors tell me they now better understand where their piece fits into the overall big picture and how they focus on their own piece but nevertheless take responsibility for all their team's actions. They feel personal accountability for the goals of all the teams they belong to, as well as for the goals of the whole organization."

Transferable Lessons

It's important to note that Orion's transformation was built around an aspirational vision founded on industry-specific logic. Salonen in particular felt that fear—whether of "burning platforms," empty innovation pipelines, or personnel reductions—does not inspire fundamental change. So although the management team knew its organization's existence could be at risk, it did not use this threat to compel change.

A major component of Orion's proactive culture change was starting, and persisting with, a relentless stream of targeted culture-shaping initiatives.

Orion's approach to improving its R&D productivity and innovation focused on changing its culture, based on the argument, articulated by Atkins, Thanky, and Seale (2013), that culture needs to be the primary change driver in pharmaceutical R&D. A key to success was understanding how the culture needed to change to enable the vision. Great care was taken to derive some aspects of the new culture from the old, rather than having a complete break from the past. Many of the principles of the desired culture built on the best aspects of the company's existing culture and the values inherent in its Finnish roots. For example, the old functional silos reflected a deep pride in scientists' technical skills while the hierarchical style reflected an ingrained respect for experience and expertise. These traits were incorporated into the concept of professionalism, captured in the principles of "professional and fair supervisors" and "appropriate challenges, professionalism, and possibilities to influence."

One component of the approach that eased the cultural transition was the broad, bottom-up, participative approach to developing new structures and processes, which engaged a wide swath of the organization and encouraged those involved to push each other's thinking. As Salonen recalled, "The Smart-to-PoC program unleashed the personal leadership of our people, increased ownership, and enabled the emergence of some unique organizational innovations."

A major component of Orion's proactive culture change was starting, and persisting with, a relentless stream of targeted culture-shaping initiatives, many of them small but all directly engaging a large proportion of the organization. Training, mentoring, coaching, and experience-sharing activities supported the implementation of major structural and process changes. For example, the acceptance of the project-centric mindset in the Platforms owes a lot to how line managers have behaved as a result of their training and coaching. The same can be said for expert network coordinators, scientific project leaders, and project managers. Finally, communication was crucial, as Lotta noted: "We had to explain a lot, and often, why we were doing this. It's so easy to forget how much communication you need. It's a continuous effort, requiring different techniques and media." Salonen added, "Communication is everyday work. It's our job as leaders to drive productivity and innovation by continuously

[1] For more about the impact of happiness at work on productivity, see Gilbert (2012), Achor (2012), Spreitzer and Porath (2012), and Stearns (2012).

TABLE 2. R&D employee survey findings, 2013

Statement	Agree or Strongly Agree
Our guiding star is results orientation.	83%
I continually keep myself up-to-date in my work.	73%
I clarify issues with those who can influence or solve them.	91%
I actively make improvement suggestions that relate to my work.	65%
I do not get hurt if my suggestions do not get implemented.	80%
I do not give up if I make mistakes; instead I learn from them.	83%
I continuously want to educate myself.	88%
I ask if something is unclear.	91%
I am able to focus on the main priorities of my work.	76%

reminding and encouraging people why we work the way we do. Leaders at all levels in major change efforts should never underestimate how much management attention and quality time needs to be constantly invested in communicating downwards, sideways and upwards. Since R&D organizations are typically introverted, individual achievement-oriented and internally-focused, the energy and time to engage people and communicate the benefits of teamwork and external perspective are critical."

The management team of another R&D organization seeking to initiate a similar change journey might start by:

- Crafting an aspirational vision that incorporates both sound business logic and the desired cultural characteristics.
- Examining the existing culture to look for elements that could be built upon.
- Initiating a few targeted initiatives that both produce useful business outcomes and shape the desired culture by engaging a broad section of the organization.
- Engaging people in participative design of the new work system.

Conclusion

This was a story of an organization that transformed itself, achieving not just great organizational and business results, but also potentially huge benefits for mankind via new medicines for serious diseases. In many change programs, the initial focus is on tangible structural change. But Orion's R&D group took a different path. Although the ultimate goal (productivity) was very tangible, the principal driving force was a relentless emphasis on shaping the culture. Salonen concluded, "We put more resources and attention on culture change, leadership and communication practices, and unleashing personal leadership, than on any other part of the Best R&D program. Now, seven years on, fewer than 10 percent of our people don't fully get what this is about." As a result, Orion appears to be well on its way to achieving its goal of being the "best R&D organization."

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