

The Emerging Model of Co-Development

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Instances of companies working across corporate boundaries to co-develop new products and customer solutions are now fairly common. For the most part, however, collaborative development remains an occasional activity, spurred by special circumstances and confined to specific projects. Only a handful of companies have developed and activated a strategy for unleashing the potential of co-development on an ongoing basis. The article describes the collaborative development approaches of three such companies: Flextronics, Cisco Systems, and Millennium Pharmaceuticals. It goes on to describe a three-level model (development chain design, process and governance structures, and IT facilitation) that captures co-development in its most advanced form to date.

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The Emerging Model of Co-Development

Executives at Flextronics, Cisco Systems, and Millennium Pharmaceuticals illuminate key practices for successful collaborative development

Working across corporate boundaries to co-develop products and customer solutions is steadily becoming the operative model for R&D in a wide range of industries. Increased disaggregation of value chains and the growing need to develop innovative, complete solutions across multiple products combine to drive companies toward this collaborative approach to development. In other words, when a company pares down to focus on its core competencies it can't, by definition, "do it all" and must concurrently increase its ability to collaborate to bring complete solutions to market.

For many companies the pull to collaborate has come sporadically, driven by a particular project need or specific market circumstances. As a result, a fair number of companies are building co-development skills at the project level. A few companies, however, are now pushing beyond that point, making co-development an integral element of their business model and realizing significant gains in the effectiveness and efficiency of R&D.

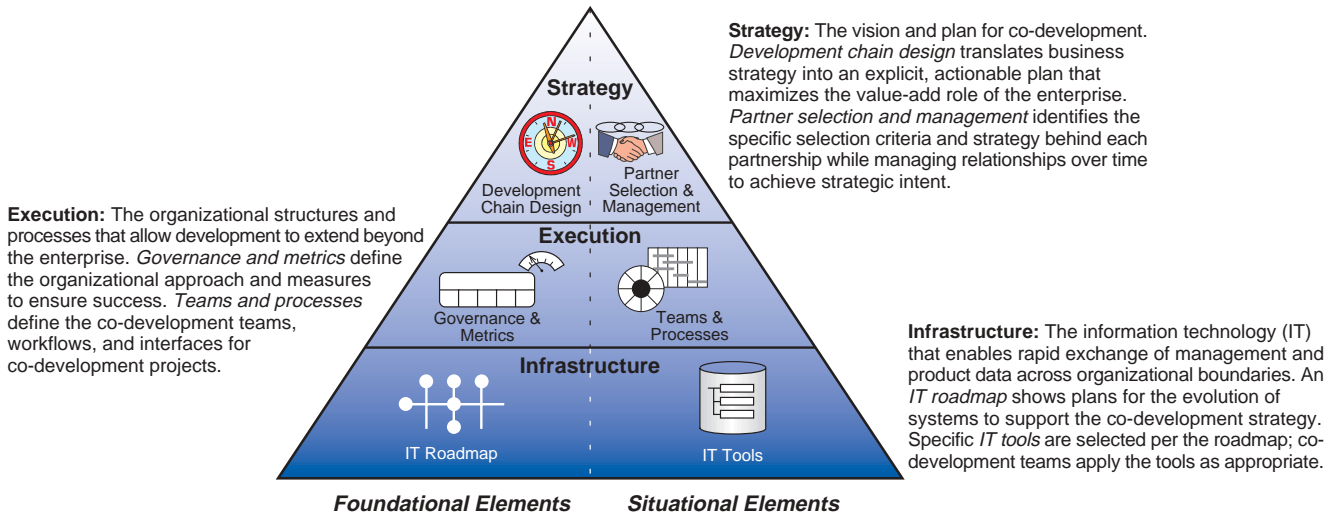
A decade ago, boosting the productivity of R&D was all about building cross-functional processes and structures to manage a full portfolio of projects within one company. Now the challenge shifts to building cross-enterprise processes to unleash the productivity gains that can come from co-development. In this article we highlight three companies that are at the leading edge of co-development: Flextronics, Cisco Systems, and Millennium Pharmaceuticals. From their experiences, and our work at PRTM with dozens of companies across a range of technology-based industries, we have identified a set of integrated practices that define the best co-development (or collaborative development) model now operating. This model has three levels: the strategy to design a development chain; the process and governance structures that define how companies work together; and the information technology (IT) that facilitates co-development efforts.

Designing a Development Chain

The conceptual leap made by those at the forefront of co-development is that they see collaboration as fundamental to their business model. Then, to support that vision, companies archi-

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Co-Development Framework



Companies are just beginning to manage co-development in a consistent, structured manner. While best practices are still emerging, PRTM has documented a useful model from the experiences of industry leaders. This co-development framework consists of six essential elements organized in three layers: strategy, execution, and infrastructure. The foundational elements (left side) are consistent across co-development efforts, while the situational elements (right side) are put in place and then adapted to best fit specific relationships and projects.

tect a strategy and set of relationships for continuous cross-enterprise development. In this way companies design a “development chain” to leverage their internal strengths with the core competencies of development partners. Companies analyze the value chains they operate in, target those elements of the chain where they can add the most value, then seek to partner with others to collaboratively create complete solutions.

Millennium Pharmaceuticals offers an example of this approach. Through its proprietary technology and R&D platform, Millennium has identified an unprecedented number of new drug targets. Its early stage development pipeline is chock full of promising projects aimed at those targets, both for therapeutic and predictive medicines. But taking a project from inception to approved drug is a long and extremely expensive proposition. If Millennium, which was founded in 1993, tried to build its own capability to develop its pipeline, it could afford to send only a small fraction of its projects on to the later stages of development. So the company chose from the start to focus on its abilities in drug discovery and to partner with established pharmaceutical companies that already had the assets in place to help with the balance of the development process.

“Collaboration is essential for us to be able to unleash our early stage pipeline,” said Keith Dionne, Vice President/General Manager of Technology Business at Millennium Pharmaceuticals.

Cisco Systems offers another classic example of a company that has embedded collaboration into nearly every element of its operations. Their strategy, the company says, is to maximize the leverage partners bring to expand and accelerate the markets for Cisco’s products.

“The ultimate benefit of collaboration is that we make the pie bigger, faster,” said Michael Frendo,

Vice President of Cisco's Technology Center. "By working with other folks we can accelerate the development of a new technology, or a new service, and, if we get to market sooner, we always get more of the market."

Picking Partners

Once companies adopt a co-development strategy, they must examine the differing nature of the relationships among companies in the development chain. There is no need to forge deep collaborative relationships in every case. Doing business with a supplier of commodities, for example, doesn't warrant the same co-development relationship as would a strategic partner intimately involved in the conceptual design of a product or solution. Segmenting these relationships along a spectrum of limited to deep collaboration helps target the co-development investments to only those most strategic relationships.

For this article, we will focus on those deep collaborative relationships that are the most crucial in the co-development model. In that area, companies need a strategy for picking the right companies to partner with, and for managing those relationships to ensure ongoing alignment of the development chain. At Cisco, whether it's a major channel partnership with IBM, an integrated relationship with a contract manufacturer, or an alliance with a small software house that provides advanced code for chip design, the company uses a basic framework for deciding with whom it should embark on a significant collaborative effort. Cisco's approach incorporates key high-level parameters we've seen in use at several companies that practice effective partner selection. Cisco's four criteria for picking partners are:

1. Short-term returns for both companies
2. Clearly defined long-term potential for both companies
3. Shared vision of technology and market developments
4. Shared destiny of cooperation, not competition

Frendo says Cisco walks each potential collaborator through this list, and all elements must be satisfied for a successful co-development project to be launched.

"First, we look to go out and win something together and get more tightly bound as companies within the first six to nine months—even sooner if possible," Frendo says. "That early win is essential. If we start out trying to do the 'boil the ocean' solution—something that's many, many years out—somewhere along the line both companies will stray from the original goal and lose interest."

If the short-term win is in the mix, then the potential for a longer term relationship is evaluated. Cisco will not pursue a significant co-development effort on the basis of just a short-term win.

"Putting all this together, getting our cultures aligned, and doing the ramp-up of getting two teams to work together is just too expensive a process if you don't also have a longer term relationship in mind," Frendo says. "So we're looking for both the short and longer term win-win."

The element of "shared vision" is a compatible outlook on issues of competing technologies, horizon scanning, operational paradigms, and so on. Frendo thinks partners need to share a view of where the world is headed in order to collaborate successfully.

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The fourth element, the notion of a shared destiny, is vital, he says, because it allows for a level of openness with technical information and sharing of intellectual property that is required for a truly collaborative effort to function. “We want a destiny that is shared, not necessarily a destiny that is competitive,” he says. “If what really happens is that companies are trying to learn from each other, and a year down the road they’re really planning to compete, it dooms the relationship.”

Once Cisco and another company agree in principle to begin a co-development effort, a series of specific contracts and joint development agreements are executed that define every significant element of the relationship. Roles and responsibilities, statements of work, delivery dates, procedures and policies for supporting the joint product in the field, dispute resolution, protection of intellectual property—all these and other relevant items must be understood, codified, and promulgated, Frendo says.

As Cisco’s example illustrates, collaborative efforts can come in varying shapes and sizes. Partner selection and management criteria will be different for a customer-facing co-development effort, a strategic supplier alliance, or the collaboration between an OEM and its principal contract manufacturer. Over the years, Cisco developed a series of standard template contracts for all its various collaborative efforts. It posts those contracts on its intranet so that any Cisco manager or director can use a template to help evaluate a budding collaborative relationship.

“It’s a starting point. Something to send out to potential partners to let them know that these are the guidelines we’re willing to work under,” Frendo says. “And sometimes those boiler-plate contracts get us 80% of the way there. Then the lawyers get involved and work out the nitty-gritty.”

Integrating the Processes

Once the decision is made to collaborate, companies practiced in the art of co-development typically use a three-level joint structure to manage the effort. At the high level there is joint executive sponsorship, with a named individual from each company, responsible for the success of the relationship. One step down is a relationship management committee, with director level cross-functional representation from each company, which oversees the various project teams and monitors key metrics of the collaborative efforts. Below that committee are the project managers and core teams executing co-development projects.

Cisco, Flextronics, and Millennium Pharmaceuticals all use a variant of this three-level management structure for co-development.

“Executive sponsorship is vital,” Dionne said of Millennium’s approach to co-development. “No matter what we do, we will run into problems in an alliance. Issues will come up. And you’ve got to have that commitment from the top, up front, that says ‘because this is mission critical to both companies, we are going to work through them.’”

Once there is executive-level agreement on the strategic co-development relationship between the companies, Millennium begins what it calls a “due diligence” process to test the viability of the collaboration. “We pull big teams in and spend a couple of days going back and forth between the companies and expose 30, 40, 50 people to each other. We want to get to know each other, get a sense of the substructures people are using to work, and understand the way people are thinking about planning,” Dionne said. “We need to get some comfort across a broad level of people at the working

level who then can say ‘Hey, we can make this work.’”

Millennium is involved in several extended alliances with larger pharmaceutical companies. Some of these collaborations involve up to 200 staff and have run five years or more. The due diligence phase is critical, Dionne said, because collaborations don’t succeed or fail simply on the ability of two companies to link IT systems or phone systems and begin sharing projects. The key element is integrating the processes by which work gets done and decisions get made.

A variation on this process of due diligence has been baked into the co-development structures at Flextronics, the global electronics manufacturing services (EMS) provider. Flextronics has more than 1,000 engineers in its product development division who are increasingly functioning as R&D partners with OEM clients. Because of the nature of their business model, Flextronics needs to be prepared to collaborate with OEMs of varying size and process maturity. That has spawned a “concept phase” evaluation period, tacked onto the front end of the typical phases of development in the traditional captive R&D model.

“That concept phase gives us, and an OEM customer, a real chance to understand each other’s working environment,” says Malcolm Smith, Vice President of Design and Engineering at Flextronics Design.

During the concept phase, Flextronics will evaluate the capabilities and the development processes of its potential OEM partner. The OEM will, in turn, assess Flextronics’s strengths. The two companies will discuss what elements of the joint project will be handled by each company, and how the management of those efforts will take place.

If the OEM has a structured development process that incorporates many of the best practices honed over the past 10 years of R&D management, Smith says a co-development effort runs more smoothly. But there are times when a relatively small or young company seeks Flextronics’s services and comes to the collaboration with an informal R&D structure. Then, co-development becomes more challenging, Smith says. “Sometimes there are mismatches, and we either have to recalibrate on what the OEM’s expectation is, or try to educate the customer on what we think the best process would be to create the outcome they are looking for,” he says.

After two companies line up their management structures and agree on the processes of co-development, the day-to-day workings of a collaborative effort fall to the core teams. Those teams may have mixed membership, with staff from both partners focused on the same task, or teams that run independently at each company, working in parallel on elements of the overall solution.

While a co-development work plan should incorporate team structures and task assignments up front, Dionne said it’s important to build a certain level of flexibility into co-development resource planning to allow for efficient flow of work once the program is underway. For example, Millennium’s partnership with Aventis Pharma is a 50/50 arrangement. And as projects progress, if one company’s task gets completed faster than expected, the partners may shift more tasks to that company to both equalize resource time and accelerate progress of the program.

“We try to look at resource balancing on a quarter-by-quarter basis, and that might influence us to push a project to one company or the other if we need to keep that even effort. So we let there be a fair amount of flexibility over any given time period,” Dionne notes.

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At the project execution level these co-development efforts may span enterprises, but they often mirror the workings of an internal development project that is spread across multiple units of one corporation.

At Cisco, Frendo says, “We use the same sort of collaborative tools that you would use within a company. We have weekly status meetings. We have joint development plans. We will build a jointly accessible information server. We try to do everything as if we were one company.”

The similarity of working issues between internal and co-development efforts was validated at Millennium when the company surveyed staff working on co-development projects with Aventis Pharma. That survey turned up exactly the same concerns voiced in surveys of Millennium teams that were working solely on in-house projects. The top three concerns for all teams were: decision making, resource allocations, and communication of materials and decisions.

“In other words, we hadn’t created new issues through collaboration, but still had to deal with those same issues to make sure the relationship was working,” Dionne says. “A lot of this is just good old-fashioned project management and the communication channels being opened up between the two companies. Because we’re two separate companies, we have to make sure that if somebody’s throwing something over the fence, someone is there to catch it.”

The Enabling Infrastructure

With strategy and processes in place, the connections that allow for real-time communications, data sharing, and management review become the infrastructure that facilitates effective co-development. This infrastructure must incorporate means to exchange both product data and management data.

Currently, the level of IT-enablement of co-development relationships varies from company to company and industry to industry. Manual tools such as the telephone, fax, and email continue to dominate the exchange of information for many companies. Integrated applications that support collaborative development are relatively new and evolving rapidly.

When evaluating what co-development IT investments to make, companies need to craft an IT roadmap that leverages their existing capabilities and integrates the most relevant new tools, at the proper times, to add value to the collaborations. In some cases, these roadmaps favor incremental, modular steps, while for other companies there may be significant value in making larger, enterprise-wide investments early on. All IT roadmaps, however, should be updated regularly to ensure compatibility with emerging standards and technologies.

“This doesn’t require huge IT investments to move forward,” Smith said of Flextronics’ own IT roadmap. “It can be done in a very incremental way. And once you start going down that path, you realize the benefits right away, and it becomes a little easier to take on the next chunk of it.”

In fact, through its eDesign program, Flextronics is more advanced than many firms in its IT support for R&D. The company makes extensive use of web-based collaboration tools (e.g., CoCreate, Agile, eRoom) to facilitate not only their global contract manufacturing operations, but also their design and co-development efforts with OEMs. The company is also now building a global integrated system that links suppliers, manufacturing facilities, and product designers in real time. PRTM research indicates

that these integrated development chain management systems will become more prevalent as companies such as SAP, IDE, and PTC, continue to invest in those capabilities.

“To get the actual tool maker who is going to tool up the parts to contribute to the design work, while you have a chance to effect some change, not three weeks after the design is done, that’s powerful stuff,” Smith says. “We’ll actually put seats of these tools in the OEM’s office as a way to help facilitate all that communication. That way, the OEM’s designer’s decisions are influenced by the intelligence of our whole system.”

Smith said web-based tools are particularly helpful for the management review process of co-development efforts. Because all of the relevant project information is available in real time, from anywhere in the world, the senior managers on both sides of the co-development relationship can monitor progress at their convenience, and prepare themselves in advance of a phase or stage review meeting.

While the IT infrastructure is a valuable enabler of collaborative development, Smith cautions companies not to focus solely on the IT aspect when planning co-development projects. Trying to automate immature or incompatible processes will not yield the value co-development partners expect, he says. “There are a ton of web-based tools out there. The point is not which ones are great, the point is to use them effectively.”

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Looking Ahead

Based on the examples of Cisco, Millennium, and Flextronics, as well as PRTM’s extensive work with leading R&D divisions across many industries, it is clear that co-development and deep collaboration along emerging development chains will grow.

In some sectors, where companies are just now implementing the structured processes and best practices that have become prevalent over the past decade, co-development will come later rather than sooner because cross-functional processes are prerequisites for cross-enterprise development. Companies that now collaborate sporadically can migrate quickly to this new model for R&D by developing a strategy for co-development and partnering, codifying the necessary governance and processes, and crafting an IT roadmap to provide the tools that facilitate deep collaboration across the development chain.

Eventually, however, competitive forces will push most companies in technology-intensive businesses into the co-development model for R&D because it will define the landscape for productivity gains in the decade to come.

“We’re a clear believer that a lot of the things going on in the future will be done on a cross-company basis,” Dionne said. “Most people at Millennium have experience working both in internal structures and alliance structures. That, I think, becomes a competitive advantage for us.”

Frendo agrees. Co-development and other forms of collaboration will remain a core element of Cisco’s strategy, he said, because it helps grow Cisco’s business.

“Despite all the things that have happened, and all the talk of technology slowing down, this business is still about accelerating the development of technology,” Frenzo said. “Right now Cisco is a 40,000-person company. We’re never going to have another 200,000 people working for us developing applications. But if we collaborate with other companies those 200,000 people will develop things that create demand for our products. Collaboration opens the door for our equipment to be applied sooner and in ways that we probably didn’t even dream of ourselves.”

10 Steps to Co-Development Success

1. Examine your strengths, your position in the value chain, and develop a business-based strategy for co-development initiatives.
2. Identify the internal skill gaps relative to the resources needed for strong co-development relationships, then find or grow the talent.
3. Define a process and a set of criteria for evaluating and selecting development partners.
4. Assign an active executive sponsor for each strategic co-development relationship.
5. Invest the upfront time with each partner to fully align expectations, then codify how the relationship will actually work in a joint development agreement.
6. Ensure that each co-development deliverable has a clear, common definition across organizations.
7. Establish explicit, direct communication linkages between development teams within and across organizations.
8. Provide development teams with information tools to enable secure, real-time information flow between companies. Establish effective processes and organizational elements that facilitate the use of those tools.
9. Exercise discipline by stepping back at regular intervals to measure and assess the progress of each co-development relationship.
10. Start small, think big, and get some early wins that will help strategic relationships flourish.