



Workshop #47: Linking Product/Market & Technology Strategies

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Coral Gables, Florida

Notes and Reflections

Beebe Nelson, IAPD, with thanks to Julie Hammond, Caterpillar

The world of the product developer is growing more complex, swifter, more challenging and competitive every month. The past two IAPD workshops -- #45 and #46 – focused on the globalization of product development and the collaboration that is becoming increasingly important in our interlinked world.

Workshop #47 returned us to the questions of internal processes and practices that enable product developers to navigate this complexity. Product developers – often collaborating across companies and industries in venues like the IAPD and the PDMA – have designed and implemented standards to support innovation. These standards have been critical to NPD success because of the internal complexities – the functional agendas and the business imperatives that can often damage or even halt product development altogether.

Now, in this increasingly complex world, the standard processes become even more critical to success. The ability to link product/market and technology strategies is a core practice – success here harmonizes and focuses the corporation's efforts. Failure leaves the best efforts scattered, random, and unleveraged -- indeed too often in competition with each other for resources, markets, and other critical support.

To explore approaches, successes, and obstacles to this issue, some 50 participants from nearly 20 different organizations attended workshop #47. Jean-Philippe Deschamps, IMD, provided context for the workshop drawing on his research with 8 IAPD companies and a number of European companies. The research shows shifting priorities over the past several years, with “managing technology more strategically” staying in a place of “perennial importance.”

What are the internal practices that pull technology and product/market strategies together? Nestlé and Tetra Pak, both of whom have worked with JP, described their “link projects” in which the processes of product/market strategic planning and technology strategic planning are interwoven throughout. Tetra Pak presented an iconic slide: *before*, the processes were entirely separate, brought together only at the end; *after*, the processes “talked” to each other throughout. (I once asked a client how they connected their product/market and technology strategies. Their response was: “with a stapler.”)

Harley-Davidson's lean approach to product development provides another approach to linking. The discipline of Harley's product development process forces the strategic planners to work together so that their output can dovetail



with rather than confuse or subvert the development process. To this end, marketers and technologists have to be in close communication as they create plans for developing new products.

A linking practice that is a bit “over the horizon” is the management of decisions. Gary DeGregorio presented the work that is creating a new IEEE standard for decision management. Gary’s map of the corporate decision landscape looks a lot like the maps that JP draws to illustrate the flow of innovation work and information in a company. How would an explicit focus on decision management improve our innovation practices? One answer lies perhaps in the recognition of what decisions need to be made when, where, and by whom. The product development teams cannot, for example, make decisions about market or technology strategies. If the strategists at the upper levels of the hierarchy have left a blank, the product developers will be left to slat about with no wind in their sails.

Corning presented two views of its product/market and technology processes that showed how internal discipline can open the way for externally focused breakthrough innovation. Their Magellan project invites in experts from varied disciplines to challenge and educate Corning’s scientists. From this external focus, Corning is able to generate possibilities for new technologies, products, and above all, businesses. At the same time, Corning implements one of the most mature technology mapping practices of any corporation. Within the scope of “technology mapping” they include the market and the customer, and they include time frames for business development as well as radical technology development. The process enables people from many different areas within the company to create and work with combined maps which are regularly revisited and renewed. (Note: the results of Magellan are fed into a disciplined phase/review process, with clear stages and “decision diamonds”.)

The final presentation – from Medrad -- pulled together much of what we’d learned and added the explicit context of a global business. The company has a disciplined and well-implemented practice for understanding its customers. Customer understanding is gathered through a VOC process which is carried out by different teams throughout the world. Groups at the corporate strategic level, the business level, and the project level conduct their own VOC research. This research provides the groundwork for product/market strategy (who are our customers and what do they want?) and for their technology strategy (what can we do to meet customer needs?).

At the end of the workshop, JP challenged the participants to imagine that they had successfully implemented everything they’d learned in the past two and a half days so that they had fully mature processes for linking product/market and technology strategies. After allowing participants a moment of delight at the thought, he introduced two challenges – an external disruption, and a re-org. – and asked tables to anticipate how they would meet these challenges. The results of this exercise are included at the end of the workshop summary.

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Wednesday, January 17, 2007

Module I: Challenges, Obstacles, and Solutions

Linking Product / Market & Technology Strategies – Jean-Philippe Deschamps, IMD

Jean-Philippe opened the workshop with an overview of the challenges and obstacles companies face in linking their product/market strategies and their technology strategies. His research with CTO's in 37 top European companies shows the perennial importance of managing technology strategically, as well as intriguing progress in some areas.

These two issues seem to be of perennial importance.

- The CTO knows that half of the R&D budget is wasted, but doesn't know which half.
- R&D portfolios are typically scattered, and the bulk of resources are spent on short-term, small impact line extensions. Long-term ambitions are seldom translated into programs that are serious candidates for funding.

The importance of the following issues is increasing.

- Leveraging corporate technology resources by bringing more of the outside world in.
- Expecting R&D people to understand the market and be more business oriented.
- Moving from "market-driven" to "market-driving" as the pace of innovation and technology keeps increasing.

8 of the companies attending the workshop returned the questionnaire which JP had distributed beforehand. All of them perceived the "challenges" as real, and 75% believed that new technology will shape the competitive environment. There was no dramatic difference in perceived challenges between the European survey and the IAPD survey. The critical challenges identified in both surveys included:

- Identifying the key technologies that drive an industry.
- Deciding what needs to be done now.
- Building a vision of how technology will shape the competitive arena.

Obstacles facing IAPD companies include translating a business vision into implementable things, and the misfit in the time horizon between marketing, R&D, and finance. In addition, organizations often do not value the ability to translate between market needs and measurable development elements. They reward those that can invent or innovate and those that understand the market, but overlook the skills needed to translate from vision to operational parameters.



Groups worked at tables to uncover root causes of key obstacles. These key obstacles included:

- Time pressure to solve “urgent” operational issues. The short term needs suck energy and resources (because short term stuff seems more “real” – “you can poke at it”). These needs often seem like survival and crisis, while long term needs can seem more like a “nice to have.” Time to market is shrinking – from years to months to even shorter times – and this puts more pressure on the urgent and short term. Companies lack good processes for setting priorities in the “sea” of decisions. In the words of Gary DeGregorio from Motorola, they lack good decision management. In addition there is pressure to grow and pressure from regulations – dates are set by these pressures. In Japanese companies the job of the planner is respected. In many of our companies people hate the title of planner. JP tells us: “plan superbly and only then run like hell.”

JP introduced the solutions. The table groups discussed these aspects:

- Pay more attention to getting people face-to-face to work through confrontations and disagreements so that remote work can go smoother. Don’t do “benchmarking.” Instead, lock people up in an offsite meeting. Don’t avoid actual confrontation. Remember Rebecca Henderson’s mantra that high conflict creates high respect in teams.
- Long-term research projects need a business sponsor/partner, and really new technology may require an external partner. The business partner needs to have vision enough to continue to fund the new opportunity, which can be a problem if the business tries to limit research to its own growth pace. BP differentiates R&D platforms, “step out” and next generations projects, and business focused projects. These differ in range of time horizons and secure funding from different sources.

To increase the ability of R&D and Marketing to respect each other and work together, IAPD companies have tried different approaches.

- Plantronics has hired a psychologist!
- Harley works with an ethnographer to create a consumer-oriented mentality.
- Lilly has idea coaches. They go where the energy is, help to make matches among potential innovations, and only after the idea has some shape do they go to management. This role has been institutionalized as “Innov-actors.”

Learning from Japanese Best Practices in Technology Strategy – Kemp Dwenger

Kemp shared the Japanese best practices he researched in 1993 – the research project that started the IAPD. The Japanese technology development paradigm



is multi-gated, with direct access to the customer at all levels; market driven; and characterized by iterative and “cut and try” approaches to technology.

The Japanese distrust what they call “hierarchical” communication, which Kemp likened to the child’s game of “telephone” – the message gets garbled and changed as it is passed along. For that reason, workers at all levels have direct access to customers. We saw later in the workshop how Medrad’s customer learning process includes horizontal and vertical layers of access to the customer.

Kemp provided examples of the Japanese paradigm by referring to his experience with both NEC and Toshiba. One key learning is how the Japanese companies use a clear prioritization process to understand where technology development is imperative, and how they use “bottleneck engineering” to establish their mid-term technology goals.

Module II: Formulating a Product/Market Strategy

Case Presentation: Harley-Davidson’s Product Development System: Linking Product & Marketing Strategies through a Lean Methodology – Mahmood Rad

Harley’s application of lean principles to product development, which led to shortening the product development cycles, has placed more emphasis on product strategy. Making the optimal use of resources in the product development process compels Harley to find the right balance between long and short term before sending projects into the design, development, and execution phases.

Harley accomplishes a balance between a customer driven product strategy and the longer term technology strategies by using the strong supporting structure of the lean development process. In this process, leadership’s role as teachers and coaches is critical. Programs that enter the PD process are put into various “bins” depending on their complexity and “fuzziness.” The length of the program depends in part on the fuzziness of the program scope because fuzziness creates more learning cycles in each phase.

The guiding principle for Harley’s lean PD is that product development is knowledge work, and the critical success factors are speed of learning and knowledge capture and reuse. By using the basic LAMDA (like PDCA) cycles, Harley has been able to streamline its PD process, cut cycle time, and is now on its 8th version of the process.

“Could you have gone straight to 8 without the intervening processes?” someone asked. Mahmood’s clear response was no. The knowledge and learning cycles are critical to enable the company to continuously improve its process.



Case Presentation: Early Stage Opportunity Identification and Development at Corning -- Using Teams to Link Market and Technology – Deb Mills

Corning's experience with photonics motivated it to reenergize its commitment to radical growth through innovation. In reflecting on past cycles of innovation, leadership recognized the DNA, or the recipe, of the company's culture of innovation.

The recipe includes deep understanding of a specific technology combined with identification of customers' difficult systems problems. In the past, Corning has partnered with other companies that approached them with problems. Now, they have a process for identifying such customer problems. Their objective is to increase the number of large new business they initiate each decade.

Corning's approach is "outside-in." Teams of marketing and technology professionals work together to uncover long-term trends that might have clear business impact. Deb describes their process as "far from linear." It includes "creative collision" between outside thought leaders and internal Corning technologists, scientists, strategists, and business people. To help in the process, Corning has designed Project Magellan and has run several workshops to date that bring outside and inside experts together. The outside experts provide specific market or technology knowledge, or informed points of view on social or technology trends. The format of the Magellan workshops gives inside and outside experts a chance to discuss together.

"Some of the best parts of the workshop are the dialogue and debate among our external experts, who come from such widely different fields and often have different points of view," Deb remarked.

Strategic Growth teams sort through and choose the ideas and opportunities that they will work on further. A team of two – marketing and technology -- spends 4-5 weeks developing position papers (white papers) to characterize the market, the problem to be solved, and the fit with Corning's existing technologies. These white papers are prioritized; cross-functional teams are assigned to perform a full assessment of the most promising opportunities. The teams spend another 6 months making a full assessment of the opportunity, which allows them to provide a clear articulation of requirements for the scientific team. Corning has introduced a number of tools and frameworks to support the teams' assessments of strategic fit, the IP landscape, the industry landscape, and so on.

As the cross-functional teams develop an understanding of the opportunity, they are responsible to the Corporate Technology Council. Working in the context of Corning's stage-gate process, they recommend to the CTO and his staff whether to take an opportunity to the first stage, not pursue it further, or redirect it. If the project passes into Stage 1, the team continues as advocates for the projects. At the "Decision Diamond" before Stage II the projects that succeed are transitioned to the Business Development Group. At this point, Corning often brings in



domain expertise – someone who has deep experience and knowledge from outside of Corning.

The group's funding is not dependent on their ability to produce financial or market results. The CEO is heavily involved, and the group's work is also discussed at the Board level.

Deb discussed a number of key learnings from the Strategic Growth Initiative:

- Most of Corning's scientists are introverts and want quiet time to develop and refine hypotheses without a lot of dialogue. Give them time to work on their own and then gather up their insights for further work.
- Evaluate projects for learning, not financials, in the early stages. Deb's group forces learning with frequent required reviews.
- Require a 3-year tenure for joining this group. The first year is a total learning curve. Some organizational pillars will spend the remainder of their career there, and there are incentives to make that happen.
- Pair up technology and business expertise throughout the process.

The Strategic Growth Initiative has so far produced 12 Magellan workshops involving over 150 Corning scientists and business experts and over 50 external experts; more than 350 white papers topics, 44 white papers, and 16 deep opportunity assessments; and 7 major research projects launched or redirected.

Formulating a Product Strategy – Deschamps

A company's product strategy always shows up in what products the company actually develops – the structure and evolution of its product portfolio. A product strategy is an explicit, precise, and concise statement outlining how the business intends to compete through its products. Such strategies form the starting point for a rational program of product development, and one that can be linked to the firm's technology and other strategies.

Product strategy is built on a base of market, customer, and competitor data and addresses key issues, including product and process architecture, the competitive thrust (where, how, when, and against whom to compete?), and the shape of the product portfolio.

A product strategy defines the main way the company will compete. It is critical to choose, but you will very often face resistance from marketing, who wants EVERYTHING that might provide yet another way to sell to another market. The product strategy gives you a basis to CHOOSE, and that is its critical role.

Thursday, January 18, 2007

Module III: Linking Product/Market & Technology Strategies: Practical Approaches

Making the Linkage Explicit -- A Practical Approach: Presentation and Discussion

Jean-Philippe asked the table groups to deliberate on the headings of a technology strategy, and the whole group came up with this list. JP suggests that these will be the headings in a 3-5 page technology strategy document.

HEADINGS FOR A TECHNOLOGY STRATEGY
From table discussions

- Goal statement
 - What do we want technology to do?
 - What is the fit with business/corporate strategy
- =>a framework/link to corporate strategy
- Situation statement
 - Where are we now?
- =>core technologies/important technologies
- What product technologies might damage our business position?
- What are the key drivers of our industry, and how do they relate to technology?
- What are we trying to achieve in the market? How will technology help us?
- What options will we choose to source technologies we don't have?
- Risk ranking of our technologies
- What are the demarcations between businesses w/ respect to technologies?
- Scoping: which technologies are in/out?
 - How will we pursue technologies?
 - What is the level to be mastered?
 - What skill sets are needed?
- What are our competitors' technologies?
- Time horizon -- % short term, % long term, etc.
- What is our IP strategy?
- What is the expected life of strategy, when do we refresh, what events should trigger a refresh?
- Vision of what is possible from technology perspective – way knowledge is shared and how people are managed
- Technology values

JP showed a number of frameworks that can help companies decide, for example, which technologies are most important to develop inside and which can more safely be outsourced. When companies have an explicit product strategy and an explicit technology strategy, then they can link these two strategies explicitly. It is an inherently cross-functional exercise which should be carried out jointly by Technology/R&D and Business/Marketing. JP outlined the process steps and suggested which function would take the lead in each. Basically, marketing must be educated about technology, and at the same time marketing must provide the product/market context for technology. JP recommended four steps:

- Unbundle and map your own and competitive technologies. Then determine which are relevant to business and to future.
- Understand technology dynamics in terms of maturity and drivers. Determine what the technologies do for the business, i.e., the competitive impact.
- Understand how the company is positioned regarding technologies.
- Prioritize investments, including understanding sourcing choices.

The marketing/technology conversation should not go to the “twig level.” Find the right resolution – where you can see the forest of trees. And at the executive level, stop at the top 30 trunks!

Using a technology mapping process as part of developing the strategy, and plotting technologies along the standard ‘S’ curve, focuses investments on critical technologies and help cut waste from overspending on technologies that are not critical or that are widely available.

Linking Strategies in a Single-Business Corporation: Tetra Pak’s ‘Link’ Project Learnings – Peter Mott

Tetra Pak’s R&D spending was heavily weighted towards short term needs. But as the market changed, and competitors became better at delivering substitute solutions in Tetra Pak’s markets, they realized the need to take a longer view of technology needs and to integrate that with the changing market. In implementing “Project Link” to accomplish this, their first step was to do a better job of articulating the product strategy. Instead of working technology strategy in one process and product/market strategy in another, Project Link related technology, product, and market information across all the dimensions as they worked towards a consolidated R&D plan for the company.

Global marketing led the multi-functional team effort. There was great value in getting everyone around the table for meetings and discussions. Tetra Pak now holds annual reviews of its portfolio, and takes a long term view. The product strategy is based on attributes that Tetra Pak needs to deliver; in building an understanding of the attributes they take into account the whole value chain into which they sell their solutions.

Mapping technologies, and mapping competencies, enables them to focus on a range of needed technologies. In addition, they have realized the need for, and begun to implement, adjacent competencies such as world class engineering and project management.

In summary, Peter tells us, “the balance has shifted, but the journey continues.”



Linking Strategies in a Multi-Business Corporation: Nestlé's Apollo Project Learnings -- – Rémy Béguin

Nestlé's global food strategy is to adapt brands to suit local cuisines. Teams in local markets develop understanding of these cuisines, and technology application groups deploy needed technologies. At the same time, corporate technology and Nestlé's research center go after proprietary technology platforms that apply across local tastes and needs.

However, technology development was not always well aligned with business needs, and too much technology ended up under-used or shelved. When Nestlé introduced Project Link, they implemented cross-functional alignment at three levels: strategy/portfolio/product. In addition, they created transparency to customer requirements and relevant technologies in order to set priorities in each market. Those relevant technologies were evaluated regarding current position and gaps to develop strategy for focus and partnerships. The result of this was an implementation plan.

The long-term plan, in conjunction with consumer requirements, is translated into product attributes and used to prioritize a technology development map. Brand platforms emerged from this work, as well as platforms based on similar benefits, products, and positioning. The planning process allows centralized research projects that will provide positive benefits for multiple product families.

Nestlé measures success in effectiveness, efficiency, and impact. Effectiveness includes quality and portfolio impact on multiple markets. Efficiency looks at resource application and timeliness.

Where before Nestlé equated "innovation" with technology, they have now redefined their terms. Transforming product weakness is called renovation. Transforming taste and nutritional value into competitive advantage is communication. Transforming consumer insight and science into new products is innovation.

Module IV: Working Session: Implementation Practices

Roadmapping to Link Business Strategy, Market Opportunity, and Product Evolution – Bruce Kirk, Corning

Corning divides its time horizons into *today*, *tomorrow*, and *beyond*. *Today* focuses on expanding existing businesses; *tomorrow* anticipates business needs; in *beyond* the research community is trying to expand core competencies for breakout businesses. Each is funded independently in order to maintain development of the longer-term areas.

Different time horizons identify the business technology roadmaps (1 – 3 years, and migrating into the 3 – 5 year "tomorrow" horizon) and the core technology roadmaps (5+ years, but now also migrating to the 3 – 5 year horizon). Corning



is looking for increased participation on the part of the business units even in the core technology roadmaps.

Corning uses roadmaps to depict what is needed, when, and why. The roadmapping process is based on an understanding of events, needs, products, attribute performance, technologies, projects, and resources. Maps can be made at any level and drawn into a coordinated map that shows how the separate maps relate. Corning has identified a software tool (Ali-Net from Vision Strategy) to assemble separate roadmaps into a composite roadmap.

Bruce discussed a number of learnings and perspectives from Corning's experience with technology mapping.

- Products are generally developed at the intersections of business needs and technology vision. New technology is being developed for existing businesses, and new businesses are being identified for existing technology. Where new business opportunities are identified for with there is no technology, or vice versa, is where Corning's Strategic Growth Initiative comes into play.
- The biggest benefit of roadmapping is making things visible, which brings forth meaningful debate and leads to more success.
- Cross-functional perspective and participation is necessary both in order to get the most accurate vision AND to make implementation more successful.
- The key to effective portfolios is their linkage to ongoing business practices. For example, macro allocation of funds at high levels will circumvent reallocation between buckets. Note: Robert Cooper has series of helpful working papers on portfolio management.
- Maps must be kept updated or it is like starting fresh. "Any plan you develop is good for the day you make it and then things happen."
- Mapping develops a COMMON cross-functional view. There's lots of detail behind first 12 months, but further out times contain guesses. Corning has used maps as tool to help with skill building and resource development. Once HR sees this as way to get job done, they are very supportive.

Managing Decisions: an Essential Business Process – Gary DeGregorio, Motorola

Gary's project is about "managing the sea of decisions you need to make to be successful." What he felt was missing was a unifying knowledge structure that would bring decision, requirements, and mapping "silos" together. This is all, Gary tells us, "about knowledge capture and reuse." The problem is, we treat processes like stage/gate as document-based. In fact, they need to be moved



into the knowledge space so that decisions and agreements are explicitly captured.

Once you appreciate the system level of decisions, you can recognize that most of the time we are working on the least critical decisions. But until you actually map the “decision landscape,” it is hard to tell which are critical. It is also hard to tell which decisions need to be made at which “level” in the company. And, a lot of effort is wasted because decisions at a higher contextual level are not communicated clearly. An example of this might be the relationship of a project to the overall portfolio, or the impact of the company’s platform strategy on a particular project.

It’s a matter of knowing what is critical, what should be worked on first, and creating an effective system within which decisions can be communicated.

Birds of a Feather Session: Identifying Gaps and Opportunities for Improvement in Members’ Decision Management Practices – Table Groups

Gary tee’d the session off by asking participants to identify an area of decisions in their company that they would like to work on. Each table selected one area and discussed the current state, a desired future state, and the steps they could take in the near future to move themselves closer to a desired state. The summary of table discussions is attached as Appendix 1.

Friday, January 19, 2007

Module V: Linking Strategies in the Global Environment

Overview of Issues in distributed NPD – Beebe Nelson

As a preface to Joe Havrilla’s presentation on Medrad, Beebe reminded participants of some of the key learnings from Workshop #45, Globally Distributed Product Development (GDPD) and asked participants to place themselves in the GDPD world. In Workshop #45 we discovered that early adopters of GDPD tended to be opportunistic, following market opportunity and lower costs to various places in the world without a lot of strategy behind it. Later entrants were more strategic about where to locate and why, and so may have less to ‘clean up’. Finally, there is a group of companies that are still very home-based and are waking up to the opportunities of global distribution.

Another group of companies – Medrad may be one – do not define themselves by location. Sometimes called “metanational,” they may choose English as the official language, but just because that’s the easiest one for everyone to work together in.

In Workshop #47, Professor Steven Eppinger introduced a list of GDPD “principles” which companies need to keep in mind to succeed at GDPD. Some of these are: saving PD costs, using digital processes, understanding global vs.



regional products, having a modular product architecture strategy, and remembering that DFM still matters. Another of Eppinger's "principles" is "offshoring vs. outsourcing." Anil Chitkara of PTC elaborated on this distinction by separating ownership of resources ("insource" vs. "outsource") and location of resources (onshore vs offshore).

With this set of distinctions called to mind, we were ready to listen to Joe's talk.

Case Presentation: Strategies for Global Products/Markets and Distributed Development – Joe Havrilla

Joe Havrilla is Senior Vice President and CTO of Medrad, a company that develops and markets medical imaging and therapeutic products. Joe presented a simple message: Understand your customers (know what's needed); understand technology (know what's possible); know yourself and your competitors; use a structured planning process and global planning teams; and use a portfolio basis to assess.

He then showed how Medrad operationalizes these steps, starting by focusing on the customer (which, Joe tells us, is the one that gives you money for your product!). Medrad "listens" to the customer at the corporate strategy level ("Strategic VOC"), and at the business unit level ("tactical portfolio VOC," "tactical product strategy VOC," and targeted feedback for lifecycle management). This use of VOC at different layers of the corporation mirror Kemp's mention of how the Japanese collect their own customer information at different layers in order to avoid what they call "hierarchical communication" – the distortion that usually happens when the message is passed from one group to another.

Medrad's product development cross-functional teams visit 10-20 sites on 'world tours' in order to get customer input. They use ethnographic research to 'tease out' exciter attributes in order to achieve high margin products, and once these "exciter attributes" are understood, they look to see how technology can achieve them.

Their technology strategy is "product driven." VOC helps to identify the requirements of the product pipeline; research in technology allows them to identify relevant technologies. This information is blended into a defined technology plan. Medrad integrates its product and technology strategies annually into a 5-yr product line plan.

In the discussion following his talk, Joe told us that they do not have a structured knowledge capture process, but that regionally focused teams accomplish knowledge generation and use. "We're not really good at cross learning or sharing."

Medrad has a standard global product development process with documentation that must be met at stage gates.

Module VI: Reflections and Future Plans

Envisioning a New Frontier ... and the Capabilities Needed to Reach It

JP introduced the objectives of this session: to test the robustness of a well developed process for linking product/market/technology strategy. JP asked participants to position themselves in 2010. "You have been successful in defining/refining the product technology strategy and everyone is happy with the process." I.e., all the things we've been working on here and learning about, you've implemented them, it worked, you're happy. JP gave half the tables variation #1 and half variation #2:

1. Think about the unplanned events that would make your process less effective in the future. Think also about where in the process are changes needed? Be specific.
2. Your executives have mandated a major change program to achieve quantum leaps in customer orientation, getting the customers more involved in process. R&D spend will now have 50% from outside. What changes are needed in the process? What new org capabilities are needed? What is impact on culture? Again, be specific.

Here are the table groups' responses to JP's challenge:

FUTURE EXERCISE DAY 3, MODULE VI

1. Events that require process changes

#1

Events

- Political: energy costs, climate change, Katrina, War (nukes?), isolationism, protectionism, pandemic, life discovered on Mars
- Corporate: demanding more profitability → impact on R&D/overhead
- Markets/industry: competitor has breakthrough

All events show potential opportunity: rescue effort during Katrina, new technologies, new products/solutions to fit new events.

Needs

- How to scout
- How to select
- Applied tech skill set
- Rapid development
- Risk mitigation
- Contingency planning
- Portfolio mgmt



- Futurists
- Don't think SURVIVAL – think WIN!

#2

Disruption in China

- Trade barriers (US)
- Industry nationalization (China)
- SARS epidemic
- Labor strife (China)

Actions:

- Scenario planning (add to existing process)
 - Events
 - Probability/impact
 - Contingency plans – define
 - Alternative sourcing
 - Organizational structure
 - Process adjustment
 - Rethink basic business models (what assumptions are buried in existing models?)

#3

Loss of Global IP Protection

- Impact on current strategies
 - Business and product strategies
 - Competition
 - Mfg locations
 - Limiting growth
 - Cost increase
 - More or less JV's
- Impact on our current processes
 - How flexible are they?
 - Adaptable roadmaps
 - Risk mitigation plans
 - Importance of linked strategies
 - Relying more on trademarks and trust relationships

2. Increase customer focus/outsource 50% of R&D

#1

Early 90's GameChanger Innovation Funnel

Internal R&D, internal consumption, operating units dependent

Event: late 90's oil crash & globalization



Shrink internal R&D; invite external inputs; narrow band of proprietary innovation; much licensing, OU's, independent; Shell tech ventures. Gets needed tech into hands of customers; doesn't cost Shell as much; brings in revenue

#2

Org capabilities needed:

Cultural awareness/training

Lower headcount in your org?

Downsize

Choice – what core, what source?

Move geographical “representatives”? =>alliance mgrs?

OD/people change

Impact on culture? HUGE! E.g., NIH. Need new leadership to pull this off?

Changes to process:

- Insert make/source decision points w/ appropriate criteria
- Adjust timing expectations – understand gaps – plan to close gaps
- Use of video/audio/netmeeting
- “logistics” adjustments to process
- Build in additional travel?
- Increase coordination
- Team building/cultural dynamics training
- Redefine roles to assure clarity

- Increase VOC capability/effectiveness
- Local “global reps”
- External “eyes” to do this global VOC

Considerations:

- What technologies needed? Keep/source? Who are the potential partners, and how to evaluate them? Criteria? Best way to negotiate. How to handle IP – ind or joint? Global differences. Need for common NPD process
- What processes to outsource, e.g. drafting. “Technology neutral”
- Cultural considerations
- Communication/cultural/location/time zone

#3

Customer Orientation

- ^ customer insights (all employees do walk-about)
- Document/collect customer requirements
- Segment customers and develop products that target these specific needs
- Incorporate into stage-gate requirements

50% outsource R&D



- Different skill base: leadership, contracting, legal, proj mgmt, scouting/id of targets for outsourcing
- Implementing both creates new tensions
- Need to truly understand the companies core competencies

A discussion among the tables followed these exercises. Some highlights:

- Need new or more people that can translate from the customer perspective into technical speak.
- Culture change to more openness with customers and supplier during development process. Robust knowledge management for the insights that will come from openness.
- More noise in the communication channels due to more diverse inputs, so need effective processes to turn data into information.
- Must have more robust IP processes since more entities have access.
- Operating units will likely become more independent as the inputs are more distributed and velocity will prohibit centralized decision-making.
- Must deeply understand core asset base and have robust management strategies to protect. The increased customer focus will help to identify the core and the trends that will impact that core.
- Integration process does not need to change if it can handle additional and more diversity of inputs.

Appendix

DECISION MANAGEMENT EXERCISE DAY 2, MODULE IV

DECISION CATEGORY: CAPABILITY MGMT.

DECISION: R&D STRATEGY

How do we acquire the skills to align R&D strategy with future market needs?

Current state	Next steps (near future)	+ 5 years
Not good at predicting future market conditions Centralized R Centralized D (Linear model) Slow to respond	“Select Groups” formed w/in SBU’s Hire skills or buy training Area specialization Customer channels Quick response	Platform thinking Widely applicable Deploy to SBUs Continue building strategy alignment competency Performance metrics based on deployment to SBUs

CATEGORY: PRODUCT STRATEGY



DECISION: TARGET MARKET SEGMENTS AND OPPORTUNITIES (OFFICE PRODUCTS)

Current state	Next steps (near future)	+ 5 years
Office profs at work place (10% wear headsets, company paid, size of mkt = 8M Home office Warehouse workers Retail workers Clerical Corporate hoteling Mobile office – 0% penetration	50% 16M	80% Mobile office Home office -- dedicated

**DECISION CATEGORY: SYSTEMS X
DECISION: (OFFICE CHAIR) FEATURE SET**

Current state	Next steps (near future)	+ 5 years
Recline Height adjustable Swivel Tilt lock Manually adj Pre-defined ergonomics Rolls No power/power cords in way	Adj foot rest Auto adj (w/memory) Adapts to user (conf. foam) Rolls over power cords	User recognized auto adjust (RFID) Temp control Levitate Wireless power supply Desktop moves w/ chair, e.g. tilt

**DECISION CATEGORY: LIFE CYCLE MANAGEMENT
DECISION: SUPPORT (UTC Otis)**

Current state	Next steps (near future)	+ 5 years
Field support techs Embryonic remote monitoring systems 24 hour service hotline Support for competitor systems	100% remote monitoring 100% remote diagnostics Support for competitor systems	100% remote service Customer “do-it-yourself” Retrofit into competitors’ elevators

COMMENTS

Value

- Develop common language
- Build on ideas
- Cross-functional
- Focus on the function

Hard

- Missing common background (e.g. customer reqs)