The Society of
Concurrent
Product Development

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Concurrency

www.scpdnet.org

SCPD: Integrating Strategy, People, Process, Tools, and Technology

SCPD Mission

To further the development of and promote the application of concurrent product development

Intellectual Property Practices Lag Product Development Practices

Product development is one of the prime sources of innovation, invention, and the generation of IP that should be considered for registration. While the markets for IP are clearly on the move, the underlying processes of IP have remained essentially the same. Look for this to change.

See article by Brad Goldense beginning on page 3

Peter Fritz,
President, SCPD

To learn more about how concurrent product development can benefit your organization, visit:

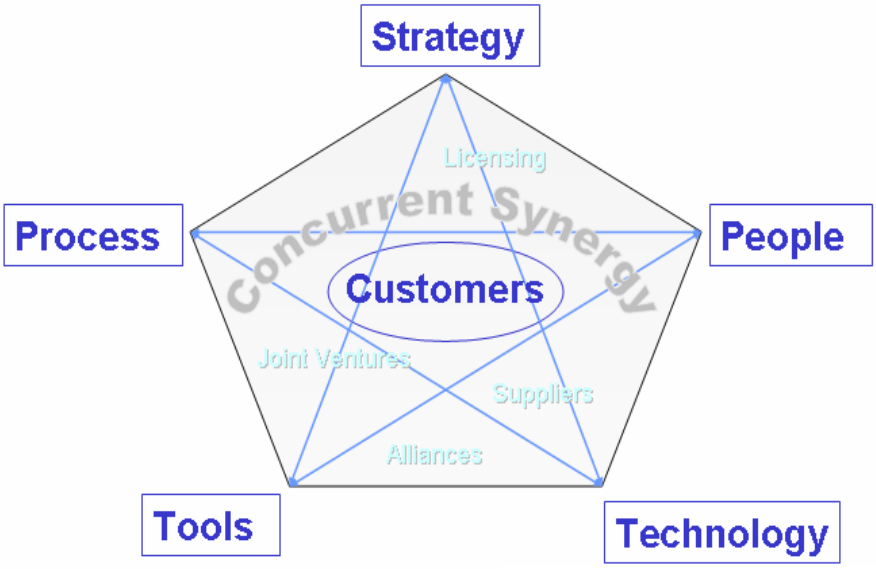
www.scpdnet.org

Thoughts on Concurrency

During several recent presentations on Concurrent Product Development, I have been struck by the interest and questions that were raised. There is a general acceptance that the structure of the Pillars makes total sense and that the content supporting those Pillars is equally accessible. As a matter of fact, some have even suggested that there is nothing really special about the content other than we typically do not pay attention to the very simple, high-level principle that keep us moving forward with that content. Concurrency is the principle that maintains the proper balance of a new product venture and assures a more robust result.

Concurrency also impacts our mutual survival from the perspective of broadening how we think about our businesses as symbiotic entities as opposed to separate entities. Understanding the practical benefits of idea-sharing and process-sharing in order to accelerate mutual growth is not an easily accepted concept, but one that is becoming imperative in today's information age. Fastest to market gives you an edge and sustaining that effort requires a lot more than it ever has; strong mutual partnerships are the only practical way to sustain that edge over the long term. Merging strengths assures long term survival.

I encourage you to explore again the Pillars and understand areas where you can improve on what you are already doing well. Stay Concurrent!



Intellectual Property Practices Lag Product Development Practices

By
Bradford L. Goldense, NPDP, CMfgE, CPIM, CCP
President
Goldense Group, Inc. [GGI]
Needham, MA
www.goldensegroupinc.com

The emphasis of the product development community since 1990 to improve the capabilities of product development processes has resulted in meaningful advances of known best practices. The management science behind front-end processes such as Voice-Of-The-Customer, Product Definition, Product Selection Decisions, Pipeline Management, and Portfolio Management are all significantly advanced versus historic practices. In-line processes such as Alpha and Beta Testing and Turnover-To-Production as well as back-end processes such as Post-Launch Reviews, and Product Commercialization have all moved forward. Clearly, companies have significantly more understanding and control of their product development processes today.

At the same time, the importance of intellectual property [IP] management has increased. What is new and novel generally has the most current value. Industry is becoming aware of this at an increasing rate every day. There were many examples of inappropriate usage of other's intellectual property by a number of emerging Asian economies during the last decade. In the past few years, basic laws governing IP are now in place in most significant economies as a result of Western pressures to do so. There is now an active "WIPO," World Intellectual Property Organization that deals with IP on a global basis. There is now an emerging "eBay of IP," through Ocean Tomo's efforts to create a market place for the trading and exchange of IP. There is now a new-to-the-world IP fund that is actively traded on Wall Street. All of these developments reinforce the current importance of IP and portend its increasing importance in the years ahead.

While IP is created in many places in the organization, product development is one of the prime sources of innovation, invention, and the generation of IP that should be considered for registration. Most of this IP is conceived during the fuzzy-front end processes and early into the product design activity. It is therefore reasonable to assume that the processes of Product Definition and Product Selection Decisions should be coupled, if not closely coupled, with the processes associated with IP Definition, IP Selection Decisions. At the present time, this is not the case. While the markets for IP are clearly on the move, the underlying processes of IP have remained essentially the same. Look for this to change in the coming years.

Product Processes

At the present time, industry has evolved to view a "2.5-Step" [3-Step] Product Selection Process as the best practice to assure proper VOC and product definition activities that would lead to a best possible product selection decision. These multi-step practices have now penetrated more than 80% of industry. Almost half now use

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Bradford L. Goldense , *NPDP, CMfgE, CPIM, CCP , is the Founder and President of Goldense Group, Inc. [GGI] in Needham, Massachusetts, a twenty-two year old consulting, research, and education firm. He holds a BS in Civil Engineering from Brown University and an MBA in Cost Accounting an Operations from Cornell University.*

He is a past faculty member of the graduate engineering school at Tufts University, and a founding member and past president of the Society of Concurrent Product Development.

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the full 2.5-Step process, and about a third use at least "2-Step" [Figure 1].

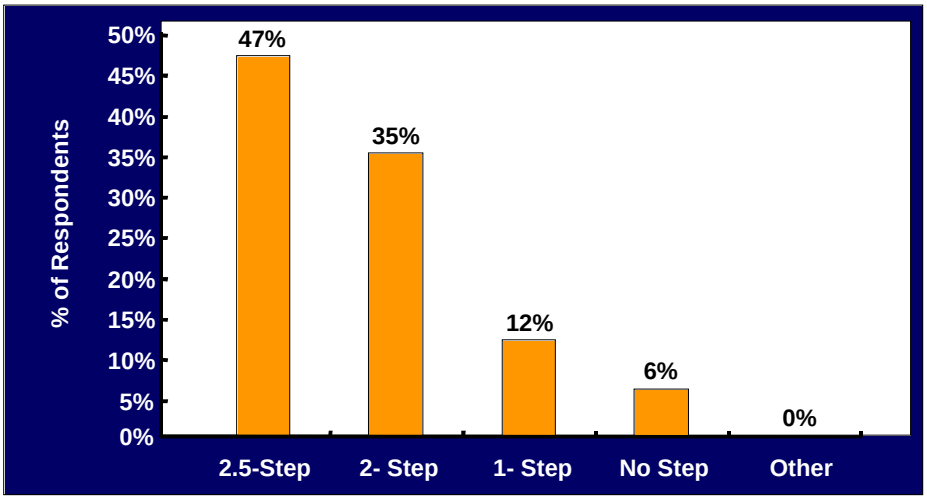

Figure 1: Number of Product Decision Steps

The number of players involved in decision making has increased and become more cross functional to now include the majority of the stakeholders in new product success. On average today, six people are involved in the go-no go decisions associated with new products [Figure 2 – Combined data for both 2.5-Step and 2-Step processes showing involvement for last two steps, not including the initial ".5" first step].

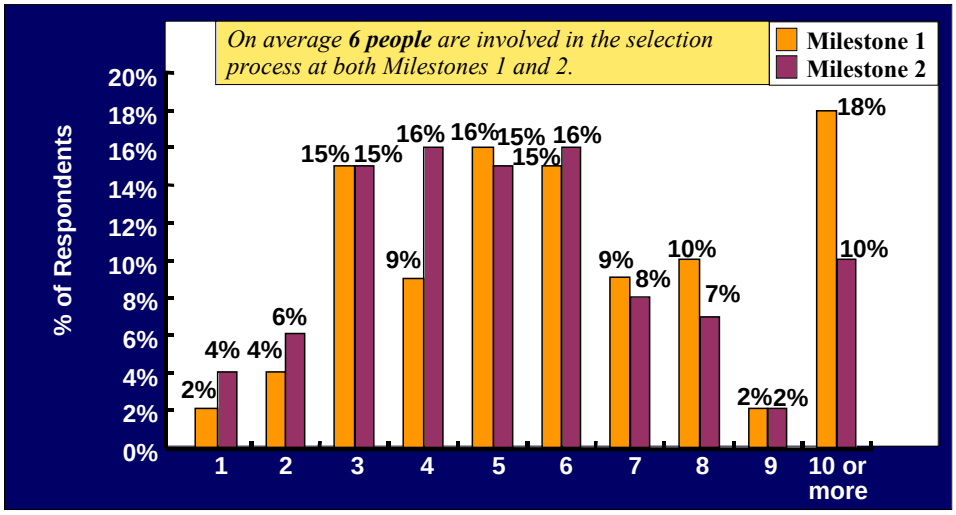

Figure 2: Number Of Product Decision Makers

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Product definition and selection decisions should be coupled with IP definition and selection decisions.

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At the same time, the formality of the decision-making meetings has increased. Historically, one to three people met and discussed some basic financial information projections that were provided to them and made a go-no go decision. Today, the formality of these meeting venues is much greater [Figure 3 -- Combined data for both 2.5-Step and 2-Step processes showing involvement for last two steps, not including the initial ".5" first step].

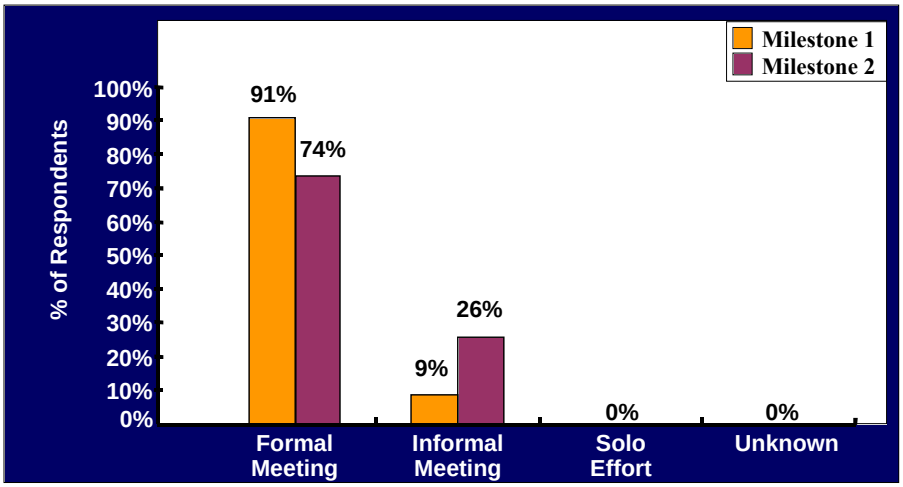

Figure 3: Product Decision Meeting Formality

Worth noting is that these data refer to product development and not to "research" or to "applied research" or to "advanced development" processes. These earlier phase processes have become more mature than they were years ago, but they do not (yet) have the structure and rigor that is now present in most companies for the "nearer at hand" product development processes.

IP Processes

While fuzzy front-end product development processes have evolved and are significantly more mature and prescribed versus historic practices, alas IP front-end processes have remained largely the same. To be sure, there are some clear differences in IP processes versus product development processes and one does not expect them to be congruent with product development processes but one should expect them to be more closely coupled at this point in time.

The money involved is not small either. While IP investments are generally not the same financial magnitude of product investments, a US patent often costs over $100K and a global patent often costs over $1000K. And then, there are annual maintenance fees and the cost of staff to support and manage IP that is registered. As the importance of IP rises in the coming years, the fees and overhead to support IP will increase as well. Then there are a number of companies, especially start-ups, where the IP costs are greater than the product development costs.

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Based on research conducted by GGI in late 2004, approximately half of IP decisions are still made in a single meeting or without meeting at all. Approximately half of industry uses a multi-step IP process [Figure 4], but this is clearly less than the some eighty percent using a multi-step product process.

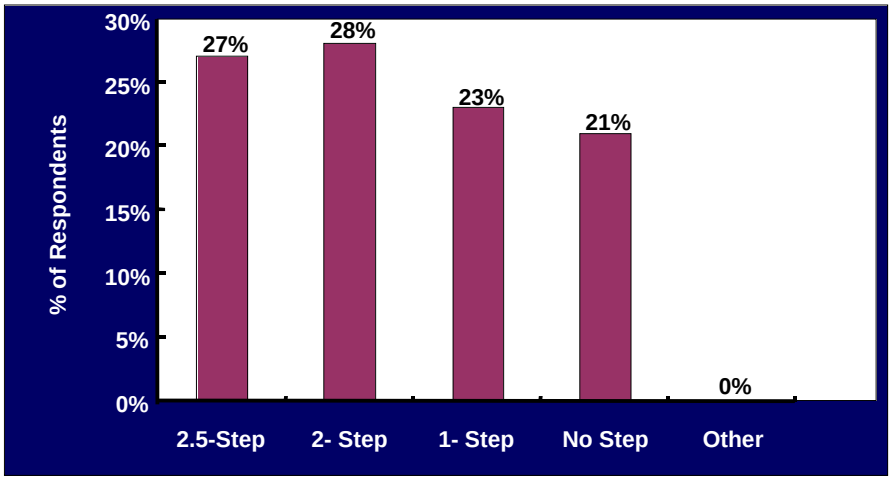

Figure 4: Number of IP Decision Steps

The number of people involved in decision making, while greater for many companies in the past, is still less on average and is more widely dispersed. A common or best practice has not yet emerged. And, many decision makers are only involved in one of the decision meetings [Figure 5 -- Combined data for both 2.5-Step and 2-Step processes showing involvement for last two steps, not including the initial ".5" first step].

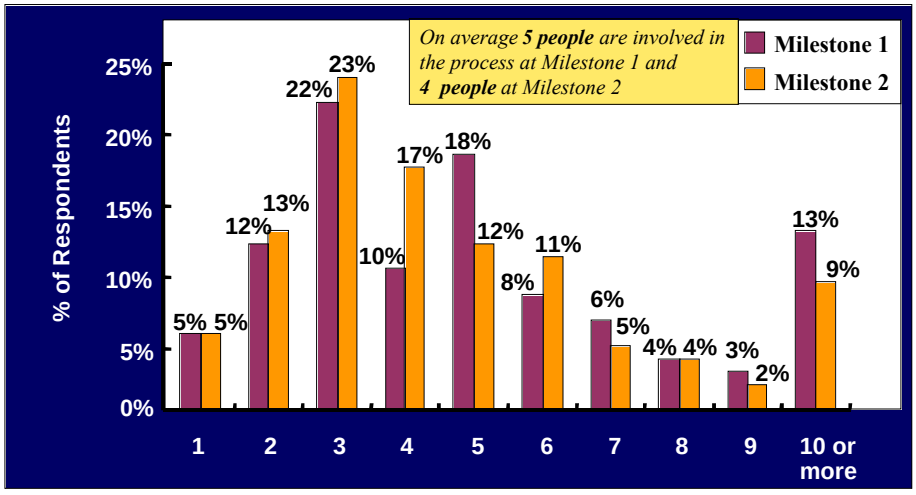

Figure 5: Number of Multi-Step IP Decision Makers

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For those companies that use a "1-Step" or "No Step" process, which is still about half of industry, the number of people involved is about half of those using multi-step processes [Figure 6 -- Combined data for both 1-Step and No-Step processes]. The product development community learned the hard way that if one wants the support of the stakeholder organizations over time, that one had better involve them in the initial selection and decision processes. It is important to remember that the value-equation for successful products will become increasingly coupled with the ability to protect the IP in the products over time.

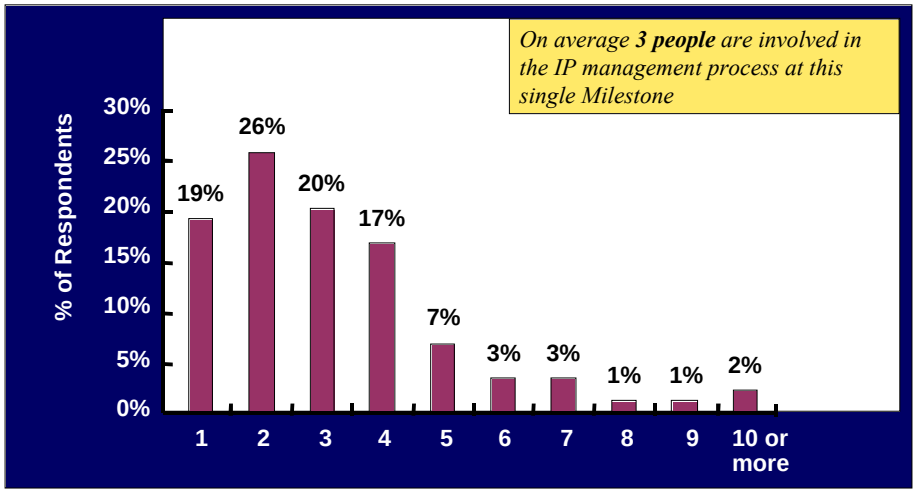

Figure 6: Number of Single-Step IP Decision Makers

Of the three parameters presented herein to compare product processes versus IP processes, the parameter that is in the best shape is the formality of the decision-making meetings. While still lagging product process meeting formality, IP meeting process formality is mostly formal for multi-step companies [Figure 7 -- Combined data for both 2.5-Step and 2-Step processes showing involvement for last two steps, not including the initial ".5" first step].

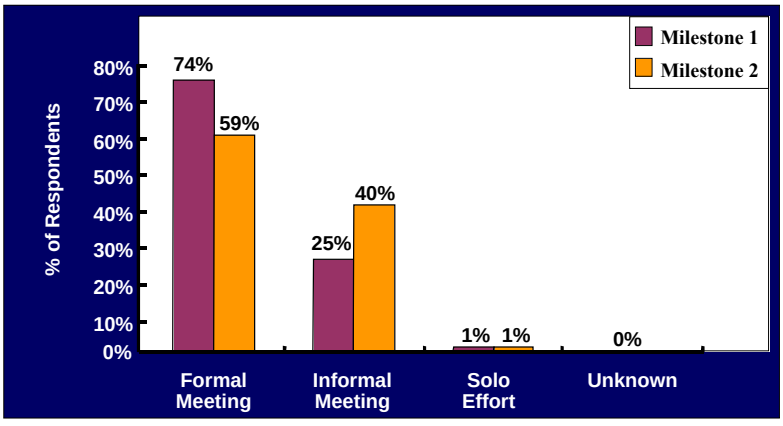

Figure 7: Multi-Step IP Decision Meeting Formality

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In contrast, for the half of industry that still utilizes a historic 1-Step or No-Step processes, the formality of the meeting remains largely informal [Figure 8 -- Combined data for both 1-Step and No-Step processes].

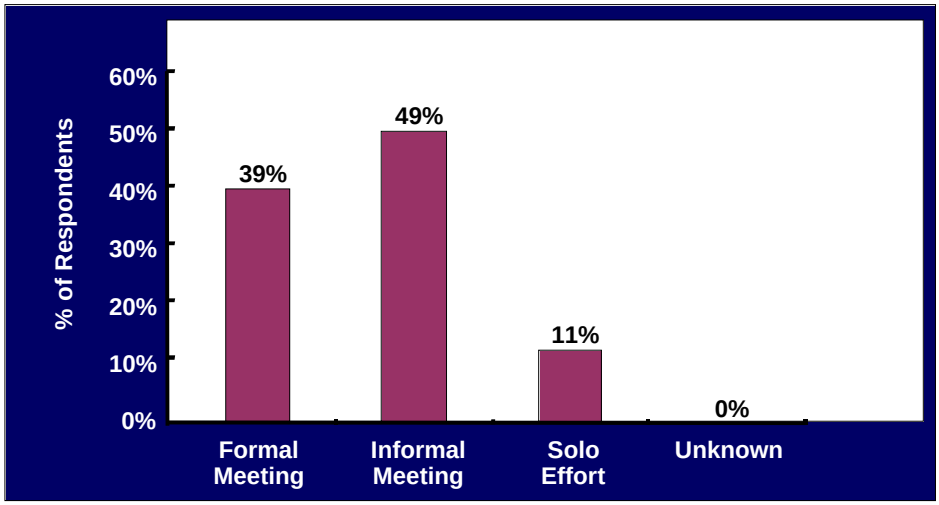

Figure 8: Single-Step IP Decision Meeting Formality

Conclusions

While product processes and IP processes will always retain unique mutually independent attributes, the commonality of these processes will need to increase for those companies whose product success is partially or significantly dependent on the IP in their products. The train is on the tracks. There are active committees in the Securities and Exchange Commission, Financial Accounting Standards Board, and the National Association of Accountants among others that are working on IP valuation rules and methods. The goal is to be able to value IP in an equivalently accurate manner to the way that physical property and plant equipment assets are valued on the balance sheet of companies today.

In a few years, a method of IP valuation will emerge that will be generally acceptable to regulatory and accounting agencies. At that time, financial statements will begin to represent IP assets just as physical assets are represented today. IP will have finally become a "tangible asset." A whole new "book value" of a corporation will result. IP asset values, for many companies, will dwarf the value of traditional physical assets. If IP is a significant asset to your company and/or is part of your company's new product success equation, your company should strive to bring its product processes in closer alignment with its IP processes before this train arrives into its next station.

IP asset values, for many companies, will dwarf the value of traditional physical assets.

Conference Report

Capturing the VoC Throughout the Value Chain

By
Joe Bellefeuille, PhD,
Vice President of Conferences for SCPD
bellej@verizon.net.

This past spring on March 12 the *Society of Concurrent Product Development* and *Strategy Research Group* co-sponsored a one-day conference and workshop, ***Capturing Voice of the Customer (VoC) throughout the Value Chain.*** An invitation was extended to companies that wanted to be more innovative, or felt challenged to find growth through developing innovative new products and services.

The value proposition was that the speakers would familiarize attendees with companies that had successfully overcome barriers to grow sales through innovative new products by better capturing VOC. Furthermore, attendees could network with others who are experiencing the same journey of continuous improvement of product creation systems. Hands-on sessions were designed to help identify practices to help companies grow sales and profits. During the work sessions attendees were encouraged to develop specific plans for their organizations to be more innovative.

Presentation Summary

Peter Fritz, president of the Society for Concurrent Product Development, led off with a brief discussion of **SCPD's "[Five] Pillars of Concurrency,"** and how he relates these concepts to his "day job" at 3M. Mr. Fritz posed the question: "Why the emphasis on the Customer?" Great question! The reason this is such a powerful question because when one considers the five pillars (strategy, people, process, tools, and technology) in the context of one's own organization there is a natural tendency to limit the people scope to one's own employees. As I listened to Peter explain his experience with engaging his customers, I began to realize that perhaps his message

According to Wikipedia: Voice of the Customer or VOC is a term used in business to describe the process of capturing a customer's requirements. There are many possible ways to gather the information – focus groups, individual interviews, contextual inquiry, ethnographic techniques, etc. All involve a series of structured in-depth interviews, which focus on the customers' experiences with current products or perceived wants and needs for a new product. It is critical that the product development core team own and be highly involved in this process. They must be the ones who take the lead in defining the topic, designing the sample (i.e. the types of customers to include), generating the questions for the discussion guide, either conducting or observing and analyzing the interviews, and extracting and processing the needs statements.

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Joe is interested in receiving feedback on this article. As always if you have ideas or themes that you would like to see discussed at a conference or thoughts about an interesting conference venue, please contact Dr. Bellefeuille at bellej@verizon.net.

Frank Hull of SRG did the "lion's share" of the work in pulling this conference together.

Thank you, Frank!

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was, **"Get the customer's people on the team."** He went on to tell his audience, **"Watch and listen carefully to what they do and say."** It is through these nuanced interactions that we learn how to differentiate ourselves in the marketplace. Furthermore, for the financial people in our organizations, customer presence on the team can help reduce the new product introduction cost as well as the ongoing product costs because it is the customer who can answer the question: Is this feature a "must have" or "nice to have?"

OK, you say, get the customers' people on the team, I got that; however, you have to be kidding. I have hundreds of customers. Given just one person from each of even a reasonable sample of customers, my NPI team would become totally overloaded. Fritz would counter with, "Pick a lead user, build a partnership, cover your employer with an appropriate CDA (confidential disclosure agreement), and in this way integrate that lead user into the team."

Skip March of J.D. Power and Associates emphasized that ***customer satisfaction is an imperative for survival*,** and it can be achieved in large part through voice of the customer proficiency. Well what did he mean by VOC proficiency? An organization that is proficient in VOC is guided by three organizing principles:

- *Principle #1*: Intimately understand the consumer's voice: needs, perceptions, behaviors and attributes.
- *Principle #2*: Possess the knowledge, tools and processes for timely and actionable internalization of information: a continuous process ensuring "closed loop" customer feedback.
- *Principle #3*: Integrate the use of this consumer intelligence throughout the business systems: its processes, organization & culture, and enabling technologies.

He went on to suggest how organizations might employ these principles.

Organizations need to pose the following questions as they seek continuous improvement:

- How well do we gather VOC information?
- How well are our actions correlated with VOC information?
- How well do we measure VOC information?
- How well do we integrate VOC information into strategy, process, organization, and tools?

Wow, where does one start? Skip suggests organizations fall along a spectrum ranging from discovery to emerging to mastering to excelling and innovating. You might want to assess your organization's standing.

William (Will) Hill of Strategy Research Group used a ten-year history at Stanley as a vehicle to very effectively put his point across that, **"understanding the customer goes beyond VOC to identify unarticulated [customer] needs."** In the mid 90's, Stanley operated as a holding company, and the product line that he used as an example for all practical purposes did not exist. There was "no cross business synergy or leverage." By 2004 a product-line known as "Access Technologies" was

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grossing $200 million. Furthermore, it was part of a broader business referred to as "Security Solutions" that grossed $600 million.

Ok, ok how did this come about? You guessed it! By working with customers – primarily Home Depot – and studying automatic door usage, the Stanley team developed a couple of breakthroughs to energize their innovation efforts. They not only observed the customer's customers beating the hell out of the doors with shopping carts and lumber dollies, they conducted in-depth interviews with maintenance supervisors and much more. Ultimately, they were able to design a slightly more expensive door and reduce the life-cycle cost of the door for their customer. New doors opened much faster while still closing slowly enough to meet government regulations.

Will listed the learning from these experiences as follows:

- Breakthroughs come from changing your value proposition
- Reduced life cycle cost of Double Diamond Door
- Reduced product liability cost
- High value innovation is often found in unarticulated needs

Understanding the customer to uncover unarticulated needs requires a fertile internal environment that fosters both internal and external cooperation.

Select a small number of customers/customer sites that reflect the critical "voices."

Dr. Bebe Nelson of Working Forums, LLC, titled her presentation: *VOC Methods and Tools for Dummies*. She must have borrowed these slides from another presentation. I say that because she autographed my "New Product Development for Dummies" with: To Joe – Thanks for giving me the opportunity to work with all these smart people!

Bebe talked about **"product development – from opportunity to profits."** She depicted an ocean of ideas flowing into the river of development characterized by a gated decision process on into the market. (We will give Ms. Nelson the benefit of the doubt because rivers usually flow into oceans, not the other way around.)

Bebe's talk primarily focused on the "ocean of ideas" throughout which she suggested and explained tools for garnering information from customer environments. Reflecting ideas we heard earlier from Fritz and Hill, she emphasized segmenting the market and selecting customers to visit. Select a small number of customers/ customer sites that reflect the critical "voices." Using a methodology called mapping the value network will provide a record of what you have and haven't researched. She placed further emphasis on the need to be patient. "You are building a corporate knowledge base – it won't all happen at once!"

Jerry Kardas of Strategy Research Group provided an overview of Stanley's use of **"discovery teams."** These teams' over-all mission is to translate qualitative and quantitative data and insights into actionable strategies. Drawing on the fields of cultural sociology, industrial psychology, and market research methodology, these teams listen to customers and watch how they function in their own environment. The first group was established in 1997, and it showed such good success that further teams where established literally around the globe.

Following a theme that we heard throughout the day, Jerry stated, "The market-

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ing power generated from truly understanding your customer is a true differentiator and a significant competitive advantage in business." Furthermore, Jerry pointed out that it is important not to impose your own perspective on interpretation of the VOC data. The discovery teams at Stanley guide individuals and cross-functional groups from marketing, design, and engineering to develop more complete end-user understanding. They are problem finders, not problem solvers. They are not technical, but they understand the products and see things in [the user] context.

Peter Flentov, founder of 20/20 Innovation, presented: **"From Voice of the Customer to Mind of the Customer."** He talked about the role of VOC in innovation maturity. Mr. Flentov made the point that while globalization opens up new markets for US companies, it also increases competition here and abroad.

Companies increasingly realize that innovation is essential to sustaining long-term competitive advantage. Flentov pointed out that as they become increasingly aware of this globalization dilemma, they can map their innovation capability into one of five levels of maturity:

- *Initial*: Every company has the ability to innovate - it is just a matter of being at the right place and the right time. This level is the baseline starting point for the organization.
- *Repeatable*: Companies that have attained this level are able to innovate more than once. The company innovates by throwing enough resources at opportunities. Many efforts fail, but through sheer volume of efforts the company is able to succeed more than once.
- *Managed*: At this level companies have a defined process for innovation. Varieties of methods are deployed and are used. An environment for innovation promotes experimenting and lessons learned. The emphasis is still on innovating specific solutions.
- *Optimized*: Methods that actively control and maximize the outcomes of the innovation process are widely deployed and used. The organization is forward looking and actively strives to create the future rather than react to changes. The emphasis is on innovating in order to own specific spaces in the market.
- *Dispersed*: Innovation has ceased to be the responsibility of a central marketing, development or IT; **everyone within the organization contributes** to identifying and realizing innovative new solutions. Organizations at this maturity level manage innovation value chains that extend the innovation capability well beyond the organization itself.

Experience has shown that approximately 70% of all organizations are currently at the Levels 1 and 2 (Initial or Repeatable). Organizations will need to be able to reliably operate at levels 4 or 5 (Optimized and Dispersed) to succeed in the future.

SCPD: Integrating Strategy, People, Process, Tools, and Technology

SCPD VISION

To be recognized by industry, academia, and by other professional societies as the best value source to attain the knowledge necessary to achieve advanced product development capabilities and practices

SCPD MISSION

To further the development of and to promote the application of Concurrent Product Development (CPD) in companies and organizations worldwide.

- **CPD is a systematic team-driven approach** to simultaneously accomplish the product and process engineering design activities, and the product and project management activities, that are directly and indirectly required to define, rapidly develop, produce, test, service, and document new products.
- **CPD encompasses but is not limited to concepts such as Concurrent Engineering**, Integrated Product Development, Integrated Product and Process Development, Simultaneous Engineering, Concurrent Design, Concurrent Product and Process Development, Collaborative Engineering, Cross Functional Teams, and other similar or related concepts.

SCPD VALUES

- **Leadership:** To embrace rapid product realization techniques and to advance our nation's economy, driven by ourselves, our companies and our Sponsors.
- **Member Recognition:** To individuals in our organizations as facilitators of improvement, to our companies and to Sponsors for foresight in fostering environments that lead to the adoption of improved design practices.
- **Learning:** To satisfy our thirst for continuing personal development and renewal and to provide an accessible resource for industry as a whole, bringing new knowledge and skills to the workplace.
- **Networking:** To stay abreast of industry trends, to interact with like-minded professionals and to identify opportunities for business relationships.
- **Friendship:** To make professional acquaintances and to solidify old relationships; taking the SCPD meeting or conference as a professionally rewarding yet enjoyable "time out" from the pace of daily work.

SCPD OBJECTIVES

- Disseminate knowledge to promote **understanding** of CPD concepts and processes.
- Provide a continuous **forum** for networking and sharing of ideas among professionals in all disciplines involved in product development.
- Improve **enterprise effectiveness** by expanding the CPD Body of Knowledge by emphasizing the implementation of practical approaches in industry.
- Participate in the origination and/or refinement of CPD knowledge using both internal capabilities and **collaborative relationships**.
- Foster a continuous learning organization by maintaining a CPD **Body of Knowledge** that remains comprehensive while focusing resources and activities on emerging and leading edge techniques.
- Operate to achieve **multi-national and multi-lingual** communications and text capabilities.

Why Is SCPD Named SCPD?

Brad Goldense, Past President

SCPD is an educational organization centered on the values, strategies, principles, processes, practices, tools, technologies and people capabilities related to the "Concurrent Engineering and Concurrent Product Development Body Of Knowledge." The common approach to product development, still used by most industrial and high-tech companies around the globe, is based on the Taylor assembly line principle. Sequential, evolving to rapid sequential, practices sustained this approach for nearly eight decades. Corporations that achieved "rapid sequential" found that they were now approaching concurrent, at least in certain design and/or development functions. Additional research in the management science of product development, from many independent sources, indicated that even higher results could be achieved if all the key people involved in the various sequential steps became even more involved in the earlier steps. Researchers and practitioners alike have not yet found the limits on the benefits of the various methods of early involvement.

Why is "Concurrent" the name of choice for the Society? Why not "Parallel," "Integrated," "Interfaced," "Networked," "Collaborative," or "Rapid?" Because none of these words captures the ongoing management science developments that clearly indicate that the key stakeholders of product development activities need to be involved early and, for the most part, continuously. Concurrent is the word that is truest in definition to what the management science has shown produces the best product development results, both for senior management and for product developers.

Why "Product Development" and not "Engineering?" Because the management science shows that to achieve the best results not only must the several engineering disciplines work concurrently but the key cross-functional stakeholders from marketing, product management, purchasing, manufacturing engineering, production, quality, and other functions must be concurrent as well. Perhaps more importantly, many companies and industries that develop products have no engineers. Biologists, nutritionists, chemists, physicists, and other technical disciplines perform the technical roles in cross-functional product development teams. Product Development better captures the reality of the management science and the disciplines of the companies that develop products. Therefore, we are the Society of Concurrent Product Development (SCPD).

SCPD Membership Information

12 months for $75 ($111 with EMJ)*

24 months for $90 ($162 with EMJ)*

12 months student for $20 ($56 with EMJ)*

* Subscribe to the Engineering Management Journal (EMJ)

Through a cooperative arrangement with the American Society for Engineering Management (ASEM), SCPD members may subscribe to ASEM's quarterly Engineering Management Journal (EMJ) for an additional $36 per year.

Information you can use!

EMJ provides articles and features related to the management of engineering and technical professionals and their organizations. Practical and pertinent articles and reviews help readers gain insights and meet the challenges of coordinating the design, integration, and use of new technology in the workplace.

To join SCPD, go to www.scpdnet.org

SCPD was founded in Los Angeles, CA in 1992 as the Society of Concurrent Engineering, SOCE.

Join SCPD's Publications Team

Product Development Professionals of all disciplines are invited to work with our editors and other Board Members to further SCPD's mission to promote Concurrent Product Development.

Interesting volunteer opportunities include:
Identifying content ... authoring, designing, editing, and reviewing content of all kinds for our periodicals and web site… participating in virtual meetings to help determine and implement editorial policy, etc.

Choose your area of interest and time commitment and join us.

For information contact Peter at pjfritz2005@mmm.com; or John at jjcush@ix.netcom.com