

SCPD

News



*Integrated Product & Process Teams
Integrated Product Development
Concurrent Engineering*

*Formerly
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Fall 2001

The Society of Concurrent Product Development

Strategy, People, Process, Tools, Technology

Volume 10, Number 1

Dear fellow SCPD Members and Citizens of Our World,

The tragedy that struck America September 11, 2001 is unparalleled in American history and in most every country across the world. This event negatively impacted families in over sixty countries, one-third of the countries on Earth. The WW BOD extends our prayers and best wishes to all those that have been affected by this act of terror.

As fellow SCPD Members and world citizens, we ask you to do your part to support any and all ethical morally-based initiatives to restore the daily safety of our world for our current citizens and for the future generations of the people of our world.

Sincerely,

Bradford L. Goldense

SCPD, WW President

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SCPD 2001 Conference Report

by Bob Neel, VP Membership

SCPD held its annual conference, pre-conference workshops, and face-to-face Board of Directors meeting June 6 and 7, 2001, at Tyngsboro, MA. We are pleased to devote this issue of SCPD news to coverage of these important events in the life of your society, with appreciation to Bob Neel, VP Membership, for the article and photographs which follow.

Bob Neel, SCPD Officer and a speaker at the annual conference in Tyngsboro, MA, on June 6 & 7, offers this report of the proceedings. Look for the Boston Chapter Newsletter (on our website) for additional commentary and reviews.

“this has been a very dynamic period for SOCE and its leadership, perhaps best signaled by our name change”

WORLDWIDE BOARD MEETING

Prior to the Conference, the Worldwide Board of Directors (WWBOD) held a half-day, face-to-face meeting the morning of June 6. Nine of the twelve then-active members attended. This was only the second such meeting in more than six years (WWBOD meetings are normally held by conference call). We met the night before for a very memorable, no-host dinner at the



L-R: Susan Neel, Brad Goldense (President), Don Stewart (VP, Conferences, and Chair of SCPD 2001) and Elizabeth, Trisha [partially hidden] and Dick Mason (VP, Internet), Dick Power (VP, Chapter Development), Stephen Armstrong (President, Toronto Chapter [provisional]), Jon Gilmore (VP, Communications), Christina and Hans Ludi (President, Boston Chapter), and Bob Neel (VP, Membership). [Alex Cooper, Treasurer, could not attend the dinner.]

elegant Stonehedge Inn in Tyngsboro.

This was the first opportunity for several of the Board members to put a face with a name-and-voice. The Chapters and Officers each reported on significant activities and accomplishments from the past year, and set goals and metrics for the coming one. All agreed this has been a very dynamic period for SOCE and its leadership, perhaps best signaled by our name change.

David Meeker was announced as our new VP, Research Publications (Refereed Journal Editor). David's initial goal is to produce two annual issues with three to six articles each. Note: Since the meeting Chris Hawver has accepted the role of VP,

“The Worldwide Advisory Board contains six distinguished, world-class leaders in the field of product development.”

Marketing; Kumar Vaidyanathan will serve as VP of Alliance Conferences; and the Worldwide Advisory Board contains six distinguished, world-class leaders in the field of product development. All this growth has come from the dedicated efforts of our new President. Bravo, Brad.

Despite these positive indications, the Society still has challenges. The Board focused its attention on building up the benefits of membership, particularly for those not affiliated with an active chapter. The web site, Body of Knowledge, Research Journal, and strategic partnerships are key elements of this strategy.

THE CONFERENCE – SCPD 2001

Three half-day, pre-conference workshops filled the afternoon of June 6th. The main conference consisted of two keynote presentations in the plenary session, followed by three separate tracks. There were many opportunities during extended breaks to visit with the various exhibitors and network



BU Corporate Education Center

with fellow attendees. Overall, it was a tightly packed day.

This observer came away with one overwhelming distillation from most of the presentations I heard: cultural resistance (“psychology”) is the single biggest obstacle to implementing CPD. The Body of Knowledge is stable and essentially complete – we mostly know “what to do.” The challenge is getting different groups and types of people to do it. As Don Stewart observed in his opening

remarks, “We’ve been trying concurrent engineering for twenty years.” This leads the author to think that, rather than partnering with other engineering and/or management professional associations, we might consider aligning with those ‘outside the box’ like educators, psychologists, or – heaven forbid – even social scientists!

The Boston Chapter Newsletter gives excellent reviews of several of the presentations. I will not repeat them here, but refer you to their publication. Instead, let me offer other, perhaps different impressions and highlights as I saw them.

Opening remarks – Brad Goldense, SCPD President and President, Goldense Group, Inc.

We’re now in the third generation of industry practices. First, everything was a cottage industry, through the late 1800’s. Then, Frederick Winslow Taylor looked at the assembly line concept and aligned the whole company management structure accordingly – rapid, sequential, functional, step-by-step:

“It is striking how well these points support Marv Patterson’s “Four Factors that Drive Change,” which this author used in one of the pre-conference workshops. Marv, former VP of Corporate Engineering at HP, showed that in order to drive process change you should have high-level endorsement (importance), grass-roots involvement (creativity & ownership), success stories (motivation), and metrics (visibility).”

Marketing † <specification> ,
 † Engineering † <design> ,
 † Manufacturing † <build> ,
 † Test † <certification> ,
 † Distribution † <sale> ,
 ...
 ... And loaded with rework loops.

Since the early 1980’s there has been a steady acceleration of product development activities, and its associated time crunch. We need to rethink; “parallelism will dominate.” But only about 5% of companies are actually practicing concurrency (the bleeding edge). The fast followers are just getting into it now. And for the back half of the pack it is just buzz words.

Keynote: Beyond Faster-Better-Cheaper – Jay Mastaj, Vice President, EMC Corporation, EDM Software Engineering Group

In describing EMC’s “Road to Growth” – from ‘chaotic’ to ‘relatively predictable’ [their current state] to ‘scalable’ – Jay listed the following elements:

- Senior-level drive, sponsorship, and participation.
- Assign process ownership to oversight bodies and individuals.
- Define processes – write them down; baseline. Broadly capture all, even ones you might think less consequential.
- Charter improvement teams. Keep them focused; less than one quarter duration.
- Reward performance with peer-nominated awards.
- Align the department [process outcomes] with quarterly organizational goals (measures) for all individual contributors. Accountability.
- Drive early defect detection.

Jay noted that chaos is characterized by incomplete communication, incomplete responsibility, nothing written down (hence, no one is accountable), no history (metrics), and limited teamwork. It is an environment where we depend on – and reward – heroism. Some of those heroes, however, become roadblocks to breaking through to the next level [of maturity] and may not stay around when you start rewarding preventers instead of saviors. Change will push people outside their comfort zones (which are called that for a reason) and you must deal with the resultant stress. His prescriptions: give them “space” to wrestle through it; persevere; invest in change – commit resources to it [not just lip service]; and communicate – “spill your guts” more than you normally would.

The next challenge facing EMC is moving beyond these first-level improvements to ‘scalable’ product development processes. This will require new approaches and new “thinking in multiples.” It is a learning problem, and to demonstrate this Jay used a very entertaining demonstration of learning to juggle, first with the “obvious” approach [unsuccessfully] and then with a “breakthrough” approach. He maintains it is smarter to find the approach that leads to breakthrough, rather than

“The ability of an organization to learn faster is the key to changing and adapting faster.”

“Co-location, proper priority setting, clear responsibilities and good accountability are some of the critical success factors”

employing any specific method or tool. Conclusion: “The ability of an organization to learn faster is the key to changing and adapting faster.”

Commitment: EMC have “put their money where their mouth is.” They have a full-time person managing the productivity initiatives, plus one support person. At any one time they have 2—3 process-improvement teams consisting of 5—10 people that meet 2—3 times per week for about an hour. With a total development staff of roughly 200, this equates to investing about 1% of their resources to achieve increased productivity. While not at the “world class” level of 5—10%, this is nonetheless a substantial commitment.

Keynote: Concurrent Engineering Maturity – Joan Cullinane, Sr. Concurrent Engineering Manager, Sun Microsystems, Volume Products Engineering

Joan gave a tour de force on the status of concurrent engineering at Sun – and perhaps in the world at large... She shared her experiences regarding the deep, entrenched cultural and psychological roadblocks that can derail any C-E effort. One measure of success: an organization that “doesn’t need prompting to get everyone there [full participation] at Day Zero.”

Co-location, proper priority setting, clear responsibilities and good accountability are some of the critical success factors in achieving the cultural shifts needed for CPD. It should be noted that the Sun implementation of CPD, as described by Joan, is heavily focused on the new-product introduction role: DFX, design to cost, supply-chain, and robust design. This is broadly managed with “Design for Performance” indicators: 8 DFT (test), 10 DFM, and 10 DFLeadtme.

Joan’s emphasis clearly is on early involvement of their C-E team members in order to impact the design “before it is a 3D model.”

From Track 1, “Managing the Concurrent Product Development Process”

Engineering from the Right Side of the Brain –J. Douglas Field, VP Product Development, DEKA Research & Development Corporation

Doug Field delivered one of the best two or three presentations this reviewer has seen in the last two decades. It was not so much directed at concurrent product development as at ‘managing’ creativity in general, but... Chocked full of challenging perspectives and compelling insights, it used humor and great quotations to make the many points.

The stage was set by Doug’s dramatic entrance riding the iBOT™, a motorized mobility vehicle for the handicapped capable of balancing on two wheels, climbing stairs, cruising the beach, etc. (calling it a “wheel chair” doesn’t begin to do it justice). He also showed a clip from Nightline featuring the invention. An excellent write-up is given in the Boston Chapter newsletter.

The main points of Doug’s talk:

- Highlighted the differences between ideation people (right brain)

“To lead creativity you must build an environment that celebrates risk”

and execution people (left brain): “get them to work together and you will change the world”

- Discussed the comfort zones for each type, and the very narrow zone of overlap between them. This narrow range is where creativity is maximized, but is very unstable: “like balancing a marble on the hood of your car while driving.”
- Specifications have a dark side: “Many execution organizations become very good at getting what they want, but then don’t want what they get at the end.”
- You need to kiss many frogs to find the prince: “Fail faster to succeed sooner.”
- To lead creativity you must build an environment that celebrates risk, keep out of the way of inventors, focus the creative energy, and let the ‘pigs’ make decisions: “in a ham-and-eggs breakfast, the chickens are involved but the pigs are committed.”
- Make decisions at the right time (based on risk), drive for speed (“If things seem under control, you’re not going fast enough”—Mario Andretti), and focus on completion (“Real artists ship”—Steve Jobs).



We will try to get permission to have Doug’s fantastic presentation available to members on the web site.

The Economic Value of Emotional Intelligence—Jeffrey Davis, CEO and Founder, MAGE, LLC

Jeff compares and contrasts emotional intelligence—“EQ”—with IQ. Considering that an overwhelming proportion of the conference presentations listed the company’s culture and the ability of people to adapt to change as major impediments to implementing CPD, this subject seemed very much to the point. IQ is not a good predictor of life success, but EQ is. It’s components: Self Awareness—Self Discipline—Empathy—Effective Interpersonal Skills—Effective Problem-Solving and Decision-Making Skills

And its economic value, or its effect:

Organizational EQ Low
 Poor leadership
 High turnover
 Low productivity & quality
 Rigidity & bureaucracy
 Waste
 “I/me”
 Poor customer satisfaction

Organizational EQ High
 Motivational leadership
 Low turnover
 High productivity & quality
 Flexibility, creativity, & ingenuity
 Efficiency
 Teamwork
 High customer satisfaction

Finger pointing

Accountability

While IQ is a measure of internal understanding, EQ is a measure of external understanding. What is more, EQ can be coached, and can be learned at almost any age.

[Further discussion in the Boston Chapter newsletter.]

Axiomatic Design Theory and Software Tools for Concurrent Engineering—Derrick Tate, Ph.D., Axion Design Software

Derrick's paper was highly technical but nonetheless fascinating. I kept telling myself, "there's something really great here, but I'm not sure I'm smart enough to get it." Axiomatic Design is a discipline-independent representation or mapping of designs and the design process. Designs are structured between domains: the customer domain, function domain, physical domain, and the process domain. There are hierarchies within the domains, and causalities between & amongst the elements of the domains.

Coupled designs are totally constrained and inflexible [undesireable]. Uncoupled designs are acceptable, and decoupled ones are desired. Axiomatic design provides a schema and tools for resting and then uncoupling designs (creating independence between elements) to maximize flexibility.

Functions are decoupled from physical features, requirements from specifications. An elaborate "zig-zag" mapping process shows these interdependencies and hierarchies. In a matrix structure not-unlike QFD houses, the dependencies are assessed and optimized. There's a lot here, folks...

[Author's note: Derrick's contact details were insufficient. I have tried to contact him without success, to follow up on some of the concepts. If any reader can help locate him or provide an email address, please send to bobneel@aol.com.]

Business Classics: The Role of Outstanding Models in Managing Product Families—Susan Sanderson, Associate Professor, Lally School of Management, RPI

The Sony Walkman, the Reach toothbrush, the VW beetle, HP's 12C financial calculator, the Macintosh—what company wouldn't want 'business classics' such as these? Classics establish platforms for further extension products and therefore maintain a longer competitive advantage. This extends the market window for the product family, thereby increasing the product's contribution (the "Profit Zone").

Example: Compared with competitors Aiwa, Panasonic, and Toshiba in the personal stereo marketplace, Sony [the market innovator] is able to get about 60% greater market longevity from their products (on average 1.97 yrs. vs. 1.18 yrs).

New-product families evolve through three stages of refinement: generational (major engineering and manufacturing improvement), incremental (logical extensions), and topological (industrial design &

“The problem: how to create business classics? They're far easier to recognize in hindsight than they are to establish with foresight!”

“Companies that emphasize new platform products, over extension products or customer specials, experience higher long-term growth and greater profitability”

marketing). The problem: how to create business classics? They're far easier to recognize in hindsight than they are to establish with foresight!

Suggested approaches for creating business classics: Pursue continuous technical improvement (with stretch goals); Make strong design statements informed by understanding customer needs; and study other classics.

Professor Sanderson's message strongly supports the research that shows that companies who emphasize new platform products over extension products or customer specials, experience higher long-term growth and greater profitability. It also reinforces the principle that the first-to-market establishes a more sustainable competitive advantage and therefore enjoys a longer, more profitable market life.

Other tracks and presentations

Regrettably, the author did not review any other presentations. I believe there were some terrific talks in the Biotechnology and Emerging Technologies tracks. Some of them are reviewed in the Boston Newsletter.

Presentations

The Society elected **Don Stewart**, VP of Conferences, to Lifetime Membership for his outstanding service to both Boston Chapter and to the Worldwide Board. The Boston Chapter also gave Don their Eagle Award for his Herculean efforts in organizing the conference.

The Worldwide Board and the Boston Chapter together awarded a Certificate of Appreciation to **Barbara Power** (Dick's wife) for her many years of selfless support of the membership database and conference & meeting registrations. If he plays his cards right, Dick may get invited to join her in redeeming the dinner-for-two gift certificate that was included...

Boston awarded **Rich Thall** their Falcon Award for his work on the fantastic improvements he single-handedly made to the Chapter's web site design. Rich's work is so universally endorsed that we intend to apply his design structure and templates to the whole SCPD site. Thanks, Rich!

Wrap-up

During lunch Dick Power presented the "state of" the Body of Knowledge and put forth a plea to anyone interested in furthering its development and



Dick Power accepting Barbara's certificate of appreciation from Hans Ludi

SCPD 2001:
**“It was a good
 time...”**



planned programs. Apart from the periods spent networking and socializing over the delicious catering, we were able to visit with the exhibitors and share war stories among other participants during the several extended breaks. It was a good time...

—Bob Neel

refinement. If you want to contribute your talent, experience, and wisdom to this effort, let Dick know at powerpl@gte.net.

We announced the formation of the Toronto Chapter, with Stephen Armstrong as provisional Chapter President. Toronto will be getting underway this autumn with their board and a series of



Let us hear from you!

Share your Knowledge • Experience • Success stories • Lessons learned
 Suggestions and opinions.

SCPD News welcomes articles, letters, news items, event notices, book reviews, and other information of interest to product development professionals of all disciplines. For more information or to submit an item for publication, contact Editor, SCPD News, at: jjcush@ix.netcom.com

Don't miss SCPD member communications! We need to have your current email address. If it changes, please notify the V.P. Membership immediately

Add Value to your SCPD membership! Subscribe to the Engineering Management Journal

Your SCPD Board of Directors earlier this year announced a significant new benefit for SCPD members. Through a cooperative arrangement with the American Society for Engineering Management (ASEM), SCPD members may now subscribe, at a special low rate, to ASEM's quarterly Engineering Management Journal (EMJ).

Information You Can Use!

Now in its twelfth year of publication, EMJ provides articles and features related to the management of engineering and technical professionals and of the organizations that rely on them. Practical and pertinent articles and reviews help readers gain insight to and meet the challenges of coordinating the design, integration, and use of new technology in the workplace.

The editorial mission of EMJ is to provide practical, pertinent information on the management of technology, technical professionals, and technical organizations.

EMJ focuses on providing new theories and tools, insightful and innovative applications, and clear descriptions of well-known engineering management principles. Articles are classified as research manuscripts, applied engineering management manuscripts such as case studies and overviews of practice, and management tools such as tutorials, critiques, and opinions. Articles encompass all engineering disciplines.

Several **special issues** have dealt with themes such as TQM, Systems Engineering, and Concurrent Engineering. Article titles in a recent issue on Teams included Project Goals, Team Performance, and Shared Understanding; Support and Commitment Factors of Project Teams; Self-Managing Teams in Manufacturing Companies: Implications for the Engineering Function; Establishing a Change Infrastructure Through Teams; and Teams Alone Are Not Enough.

ASEM, publisher of EMJ, was founded in 1979 and today is a major professional organization dedicated to the science and art of engineering management. Like SCPD, ASEM transcends many engineering disciplines, supporting specialties, professional affiliations, and sectors of the engineering and technical community in industry, government, private practice, and education in strategic and important roles that advance engineering management.

The editorial mission of EMJ is to provide practical, pertinent information on the management of technology, technical professionals, and technical organizations. EMJ publishes useful information from all engineering disciplines and is proud to have other engineering societies represented by members of its editorial board. EMJ's mission is consistent with SCPD's multidisciplinary approach as expressed in our Vision, Mission, Values, and Objectives.

EMJ is edited by Ted Eschenbach, Ph.D., P. E., of the University of Alaska Anchorage. Cooperating Society Editors, Associate Editors, and Editorial Board Members represent professional societies, universities and companies from many parts of the world including the Society for Engineering Management (Australia), the International Association for the Management of Technology, the Canadian Society for Engineering Management, Stevens Institute of Technology, Stanford University, the University of Alabama, Washington State University, Rockwell International, and others.

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1. Determine your renewal (“anniversary”) date, shown on your membership card (Send an email if you are unable to find it.). Then find your prorated subscription fee according to the following table:

Membership renewal month	EMJ subscription fee	Number of issues
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December 2001, January or February 2002	\$27.00	three
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April 2001 or earlier (see note below)	\$36.00	four

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2. By email: send a message to bobneel@aol.com, copying [Brad Goldense](mailto:bradgoldense@goldensgroupinc.com) at bradgoldense@goldensgroupinc.com. Indicate your full name, your renewal date, the amount (or number of issues), and the Visa, MC, or Amex card number with expiration date.

3. Or, by mail: Print and fill out the form on the following page and send your check or credit card authorization to **the following address.**

Bob Neel, VP of Membership
The Society of Concurrent Product Development
7533 - 34th Avenue SW
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Continued on page 13

Name (please print clearly)

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Rates range from a low, low single-issue rate of \$135 for an eighth page to \$240 for a full page, with quantity discounts for multiple issues.

For more details on rates and how to arrange for advertising in SCPD News and chapter newsletters, please consult the SCPD website www.scpdnet.org

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 Engineering (CE) and Integrated Product Development (IPD) in companies and organizations worldwide.

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 as a professionally rewarding yet enjoyable "time out" from the pace of daily work.

SCPD Objectives

- Disseminate knowledge to promote understanding of Concurrent Engineering (CE) and Integrated Product Development (IPD) 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 CE/IPD Body of Knowledge by emphasizing the implementation of practical approaches in industry.
- Participate in the origination and/or refinement of the Concurrent Engineering body of knowledge using both internal capabilities and collaborative relationships.
- Foster a continuous learning organization by maintaining an SCPD 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.



Society of Concurrent Product Development

Formerly the Society of Concurrent Engineering

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Yes, please start my SCPD membership for

- 12 months for \$50
- 24 months for \$90
- 12 months Student for \$20 (\$56 with EMJ) — please supply proof of enrollment
- 12 months with EMJ (see below) for \$86
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Please note: make checks payable to “SCPD”. Mail to Bob Neel at the address below.

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M¹: _____ First: _____ M.I.: _____ Last Name: _____ Suffix: _____

1. Please indicate: Mr. / Ms. / Mrs. / Dr. (or other) 2. Name you go by if different from First Name (e.g., name you'd like on a name tag)

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Please note: Your e-mail address is mandatory. We use electronic means for all communication.

Speaker? _____ Speaking Subjects: _____

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