

# **Dynamic Systems and Control Division Strategic Planning Meeting**

April 19-20, 2008  
St. Louis, MO

Summary by

Eduardo Misawa  
George Chiu  
Matt Franchek  
Roberto Horowitz  
Satish Nair

## **Background**

The first long-range planning workshop of the ASME Dynamic Systems and Control Division (DSCD) was conducted in 1993 to identify critical needs, and define future directions and goals of the division. The resulting strategic direction, together with the ongoing effort of many of its active members have transform the division into one of the most active and resourceful divisions within the ASME. Almost fifteen years after the first long-range planning workshop; the Executive Committee of the division organized a Strategic Planning Meeting, in order to re-evaluate the critical issues that currently face the division, assess the division's strength and weakness, and identify strategic directions and action items for the next 5 years.

## **Strategic Planning Meeting**

Executive Committee undertook a two-phase process to recruit the participants of the Strategic Planning Meeting, in order to draw upon a wide range of perspectives within the division, while forming an effective planning group with a manageable size. During phase one, the following active division members were invited: members of the Executive Committee, Chairs of Technical Committees and standing committees, members of the Systems and Design Group operating board, Technical Editors of the JDSMC and the TMECH, Editor of the newsletter, current and future General Chair of the DSCC, and active members (junior, senior and industry) nominated by the Executive Committee. Out of the initial thirty-three invitees, seventeen agreed to participate. During the second phase, an open invitation was sent to the general membership to seek either volunteers or nominations of potential participants in the planning exercise, as well as to solicit comments, inputs and potential topics for discussion at the meeting. This second recruitment phases yielded nine written comments and five member volunteers, who were also invited to serve on the planning team. As a result, a twenty-two member working group was formed. A list of the working group members is included in the appendix.

The strategic planning meeting was held at the St. Louis Airport Hilton Hotel in St. Louis, Missouri from 19-20 April 2008. Each working group member was given a set of homework (see appendix) to complete before attending the planning meeting. The meeting was chaired by DSCD Chair Eduardo Misawa. During the morning of the 19<sup>th</sup> of April, the participants were divided into 4 smaller groups and each was given the charge to review the current DSCD vision and mission statements, consider the nine submitted written comments, and identify critical issues and opportunities that may be faced by the division within the next five years. During the subsequent

large group discussion, results from the breakout session were discussed and consolidate into three general areas: environment (membership, industry, and globalization), research, and education and outreach. In the afternoon the 19<sup>th</sup> of April, the participants were now divided into three working teams, with each team respectively charged to develop a set of goals and corresponding action items to address issues and opportunities in each of the three general areas identified above, and to subsequently present their findings to the large workgroup. During the subsequent large group discussion, the results from this second breakout session were discussed and consolidated into seven strategic areas: 1) global presence; 2) industrial participation; 3) membership diversity; 4) outreach; 5) education; 6) research; 7) organizational support. In the morning of the 20<sup>th</sup> of April, after reviewing summaries from the previous day, the participants were again divided into teams, each charged with identifying critical issues, goals and action items to take in their respectively assigned strategic areas, as well as to review and possibly update the division's vision and mission statements. Subsequently, a large group discussion was conducted and consensuses were reached on a draft vision and mission statement, as well as action items for each of the seven strategic areas. Champions for each the action items were identified, as well as a proposed execution timeframe.

### **Outcome**

Based on the results of the strategic planning meeting and after considering the comments received from the membership, a draft division strategic plan was written (attached) by the executive committee. At the division executive committee meeting in the 2008 American Control Conference, a summary of the strategic planning meeting was presented. A survey of the attendees to prioritize the seven strategic areas was conducted. From forty-six responses, the top three priority areas of the division were identified as: Industrial participation, Research and Education.

# ASME DSCD Strategic Plan

## Vision and Mission Statements

### Vision Statement

The vision of the division is to serve society by fostering innovation and education in the art, science, engineering and practice of Dynamic Systems and Control.

### Mission Statements

1. Highlight and promote technical innovations in the field of Dynamic Systems and Control, particularly those with direct positive impact to society.
2. Promote multidisciplinary and industrial collaborations.
3. Provide effective, high quality forums for communicating and archiving technical advances, and assessment of societal needs in Dynamic Systems and Control.
4. Promote the development of professionals in Dynamic Systems and Control.
5. Develop and sustain an active, diverse and global membership.
6. Foster the development and promotion of leadership in industry, academia, and government with dynamic systems and control expertise
7. Enhance public and governmental awareness of the societal relevance of the Division's activities.

### Strategic Areas:

- I. Industrial participation
- II. Research
- III. Education
- IV. Global presence
- V. Membership diversity
- VI. Outreach
- VII. Organizational support

## **Industrial Participation**

### Critical Issues:

- 1) The division does not have adequate industrial participation in its membership and activities.
- 2) The division may not be promoting sufficient multidisciplinary and industrial collaboration activities.
- 3) The division may not be fulfilling the needs of its industrial membership.

Goals: To increase the division's industrial membership participation in the planning and attendance of its activities, as well as in its governance.

### Priority action items:

- 1) ASME membership fee included in DSCC reg. fee
- 2) Identify Industrial member in ExCom (Technical Committees to nominate candidate to the ExCom in one year)
- 3) Organize entrepreneurship activities – see appendix for details.

### Other action items:

- 1) Identify/nominate industrial fellow grade (in x years) candidates (5)
- 2) Establish industrial advisory board (4)
- 3) facilitate industry recruiting activities (2-5)
- 4) DSCC, resume database, ...
- 5) Presentation only industry track in DSCC (2)
- 6) Understand industry problems
- 7) Theme (local industry or collocate with trade show) focused DSCC (5)
- 8) Continuing education (both ways) (2-5)
- 9) Industry sponsored tutorial activity at DSCC (2-5)

## **Research**

### Critical Issues:

- 1) The division needs to assert a more prominent leadership position in postulating and advancing new and emerging research areas.
- 2) The division should embrace and encourage research and development of technologies that will have direct beneficial impact on society.

Goals: Leverage membership expertise, excellence and connections with other industrial or professional organizations to identify emerging high-impact research areas with positive societal impact, where DSC can have a significant role. Promote the continuing education and research development of the division membership in these emerging areas.

### Priority action items:

- 1) A survey of membership to identify key research issues for the DSC community
- 2) A series of workshops to identify key research issues to the DSC community, particularly those with global impact

### Other action items:

- 1) Proactively develop tutorials related to non-traditional emerging and multidisciplinary areas. Activities should distinguish between learning the fundamentals and identifying the research issues.

## **Education**

### Critical Issues:

- 1) The division needs to keep pace with changes in the engineering curricula and innovations in pedagogy.
- 2) The division needs to encourage and enable early exposure of dynamic systems and control concepts both within and outside of its core discipline.
- 3) The division should instill a strong sense of service and ethics within the next generation of professionals and foster activities that meet societal needs.

Goals: To address the above three issues.

### Priority action items:

- 1) Develop learning material for introducing DSC for freshman engineering with focus on the positive societal impact of the area – see appendix for details
- 2) Establish DSC problem/exam repository website
- 3) One semester/quarter crash course on dynamic systems and control for professionals outside of our discipline
- 4) Encourage the establishment of an Education Technical Committee

### Other action items:

- 1) Undergraduate student research track in DSCC
- 2) Influence ASME and ABET curriculum criteria to include DSC
- 3) Short course on DSC teaching fundamentals

## **Global Presence**

### Critical Issues:

- 1) The division is not well-recognized at the international level and does not have adequate international participation in its membership and activities.

Goals: To increase the division's international standing and recognition of its members by expanding its international membership, creating international chapters, and increasing the participation of its membership in international activities and organizations.

### Priority action items:

- 1) ASME membership fee included in DSCC reg. fee
- 2) Hold DSCC in a foreign country every fourth year
- 3) Create international chapters/affiliations
- 4) Identify/nominate int'l fellow grade candidates
- 5) Honors Committee to create an International leadership award
- 6) Establish international alumni database (action by the webmaster (see organization support))
- 7) International simulcast of select DSCC activities

### Other action items:

- 1) Encourage JDSCMC/TMECH international authors to become DSCD member.
- 2) Encourage student to apply for NSF Pacific-Asia summer fellowship.

## **Membership Diversity**

### Critical Issues:

- 1) The leadership and membership of the division does not have a sufficiently diverse composition.

Goals: To increase the diversity of the division's membership and governing body.

### Priority action items:

- 1) Continuing support and fostering of the Women in DSC group (currently implemented)
- 2) Collect demographic data of our graduate student population
- 3) Create a diversity action committee (DAC)

### Other action items:

- 1) Connection to minority organizations
- 2) Leverage resources and connections
- 3) Co-sponsoring activities
- 4) Organize daycare and spouse program at DSCC
- 5) Advertise division societal impact



## Outreach

Critical Issues:

- 1) The division presently lacks a cohesive and effective marketing strategy.

Goals: To develop an effective web presence and successful marketing and recruitment strategies, as well as to enhance the division's interactions with other ASME divisions and other professional societies.

Priority action items:

- Advertise the division's societal impact and enhance its visibility through the production of an "elevator speech" and video
- Allocate resources to maintain an external division website that contains:
  - Expanded division newsletter
  - DSC related wikipedia
  - Provide value-added information
  - DSCD multimedia presentation
- Establish DSC Lecture series
- Interacting with other societies and ASME divisions – see appendix for details.

Other action items:

- 1) Sponsorship of existing student competition (e.g. robotics competition)
- 2) Recruit former students to DSCD
- 3) Publish a DSC magazine

## **Organizational Support**

The following committees are to be established in order to enable the execution of the strategic action items:

- 1) DSCD Webmaster
  - Establish a budget to support development and maintenance
- 2) Ad Hoc Committee for globalization
- 3) Ad Hoc Committee on DSCD Lecture Series
- 4) Education (Technical) Committee
- 5) Diversity Action Committee
- 6) Industrial Advisory Committee

### **Invitation for comments, suggestions, and or help in following through with identified initiatives:**

Please contact any member of the executive committee or the working groups listed in the attached appendices if you have any comments or suggestions. We also welcome your help in following through with any of the initiatives defined above. The work of long range planning is ongoing, and all are welcome and encouraged to participate.

# Appendices

## Appendix A

### Working Group Participants

**Meeting Chair:** Eduardo Misawa

**Members:**

Harry Asada  
George Chiu  
Hosam Fathy  
Matt Franchek  
Roberto Horowitz  
Nadar Jalili  
Suhada Jayasuriya  
Venkat Krovi

Kok-Meng Lee  
Alexander Leonessa  
Eduardo Misawa  
Ranjan Mukherjee  
Satish Nair  
Brad Paden  
Huei Peng  
Marco Schon

Rahmat Shoureshi  
Bill Singhose  
Alok Sinha  
Tsu-Chin Tsao  
Rama Yedavalli  
Qingze Zou

## Appendix B

### Homework for the Strategic Plan Working Group

1. Please rank the break out groups that you would like to join (1= highest, 3 = lowest preference):
  - \_ Technical Activities
  - \_ Membership Activities
  - \_ Governance
  - \_ Other breakout group (Specify your suggestion)

**\*\*\* Please send your preference as soon as possible, and no later than Wednesday, April 16, 5 PM EDT.**
2. Read the current division By-Laws, available at:  
<http://divisions.asme.org/dscd/divisionadmin/dscdBy-Laws200305b.pdf>
3. Read the 1993 strategic planning document, available at:  
[http://acl.okstate.edu/dscd/StratPlan\\_Dec\\_01\\_1993.pdf](http://acl.okstate.edu/dscd/StratPlan_Dec_01_1993.pdf)
4. Reflect on whether these documents reflect the vision, mission, goals and needs of the division as it stands today. Please bring your thoughts to the meeting. Feel free to send your comments to "comment collection e-mail address:" [dscd\\_sp@acl.okstate.edu](mailto:dscd_sp@acl.okstate.edu). If you are sending your comments as member of the strategic planning team with your thoughts, especially in regard to vision, mission and goals, please begin the subject field with "SPT: ..." (SPT = strategic planning team)
5. Consider three important issues in DSCD:
  - Technical Activities (e.g., conference, journals, workshops, scientific and technical leadership)
  - Membership Activities (e.g. new member recruitment, awards, fellow grades, industrial participation, students and young member issues)
  - Governance (e.g. decision making process)
  - Other issues? -- please specify

On these issues, please answer these questions:

  - a. What do you like best about the DSCD?
  - b. What do you like least about the DSCD?
  - c. What could be improved about the DSCD? How to do it??

Please provide additional comments

**\*\*\* send your comments and answers to the e-mail address [dscd\\_sp@acl.okstate.edu](mailto:dscd_sp@acl.okstate.edu), with subject field "STP:..." as stated earlier, no later than 5 PM EDT on Wednesday, April 16th.**
6. We expect to generate a 5-year strategic planning with specific goals and action items for our division to follow. Please come prepared to the meeting with your own thoughts about what we need to do with our division to make it a better professional society for all our members.

**Appendix C**  
**DSCD Strategic Planning Meeting Agenda**

**April 19-20, 2008**  
**Saint Louis Airport Hilton Hotel**  
**Saint Louis, Missouri**

**Friday, April 18**

Strategic planning team arrival

**Saturday, April 19**

7:30	8:30	Continental Breakfast and exchange of thoughts from homework by segments of the division (general membership, technical committees, young members and students, standing committees, executive committee)
8:30	9:00	Welcoming remarks and charge for the weekend; charge for first breakout
9:00	10:30	<b>BREAKOUT NO. 1:</b> <i>Mission and goals:</i> How do we better realize our vision and meet the needs of our members?
10:30	11:00	Break and preparation for report back
11:00	12:00	Report back and large group discussion
12:00	13:00	Lunch and small group discussions; organization of breakout no. 2
13:00	13:30	Charge for second breakout
13:30	15:00	<b>BREAKOUT NO. 2:</b> <i>Goals and action plan:</i> develop plan based on key goals chosen from the morning session
15:00	15:30	Break and preparation for report back
15:30	16:30	Report back and large group discussion
16:30	18:00	Formulation of overarching action plan and specific action items (large group discussion)
18:00	19:00	Discussion on follow-up activities. Should we have such meetings more often? How often? What format?
19:00	20:30	Dinner
20:30	21:30	Review of outcomes by segments of the division; writing of outline of the day's outcomes by the by-laws committee and executive committee.

**Sunday, April 20**

7:30	8:30	Continental Breakfast and exchange of thoughts about outcomes from previous day, by segments of the division
8:30	9:30	Review of outcomes from previous day in a large group & review of future plans & charge for breakout
9:30	11:00	<b>BREAKOUT NO. 3</b> <i>Draft of vision, mission, goals and action items by breakout groups</i>
11:00	12:00	Report back & Meeting assessment: was this meeting useful? What worked well? What could be improved?
12:00 noon		Box lunches and meeting adjourn
12:00	13:00	Lunch & discussion of meeting outcomes (* invite anyone to stay for discussions)
13:00	15:00	Executive committee meeting (closed session)

## Appendix D

### Details Regarding Some of the Priority Action Items

#### **Industrial Participation priority action item 3 - Organize entrepreneurship activities (B. Paden to organize in 2-5 year)**

Goal: Organize an SBIR session at DSC 2009 including program managers, recipients, and investors

Critical Issues: recipients of funds will likely need travel support as they don't have need to advertise their work,  
investors may be too busy

Action Items: Contact potential participants in Jan 2009, based on responses propose to ExComm for any needed support

Implementation Plan:

1/09 contact participants (together with Rama Yedavalli)

2/09 report/propose to ExComm

3/09 propose session to DSCC

10/09 chair session

## Membership Diversity

Volunteer to help in this activity: Prof. Rama K. Yedavalli (Ohio State University)

### Critical Issues and Motivation:

1. To enable DSCD engage professionals from minority and underrepresented communities, especially women, in its activities
2. Aligning DSCD activities to accommodate the specific needs and constraints of women and other minority professionals is important and critical to attract them to contribute to the professional growth and usefulness of DSCD to society.

### Goals:

1. Our goal is to increase the proportion of women and other minority professionals in the Division's activities to a significant level in the next 2-5 year time frame.
2. Another goal is to improve the interaction with other minority organizations and increase their participation in DSCD activities
3. Leverage resources and connections to engage these minority professionals in co-sponsorship of various DSCD activities
4. Disseminate information about DSCD activities with minority group involvement and publicize its societal impact to the general public.

### Action Items:

1. To collect demographic data on the number of current women professionals in universities (including graduate students in engineering) , industries and government organizations and maintain an active data base
2. Similarly gather data and maintain a data base for other minority and underrepresented groups
3. Organize day care and spouse programs at DSCC and other professional meetings

### Implementation Plan:

1. Within the next one year, a *Diversity Action Committee* will be established whose membership will be identified with the help and guidance of Prof. Yedavalli. This committee will then set up an action plan and execute actions to achieve the above mentioned goals.

**Outreach priority action item 4 - Interacting with other societies and ASME divisions  
(Action by N. Jalili, V. Krovi, and R. Yedavalli in 2 years)**

**Critical Issues and Motivation:**

1. In order to better align with the Division mission in serving the society through fostering innovation in DSC, there is a need for active interaction with other ASME Divisions and non-ASME societies.
2. This interaction is a key element in disseminating the various DSCD activities performed at different levels (e.g., co-sponsoring conferences, promoting outreach activities and diversity).

**Goals:**

1. Our goal is to actively interact with other ASME Divisions to expose them to our DSC Divisional activities.
2. Moreover, an active membership in other societies (e.g., IEEE CSS, IFAC, etc.) will be invaluable in achieving our Division mission in promoting the development of professionals in DSC.

**Action Items:**

1. Existing DSCD members active in other ASME Divisions and societies will be searched and contacted in order to create a database.
2. An extensive search on other ASME Divisions and societies closely related to research and education missions of DSCD will be performed to identify these organizations.
3. Using these identified members and the leaders of this task, an active interaction plan will be developed for effective communications , exchange of information and joint sponsorship of technical activities between identified organizations.

**Implementation Plan:**

1. Within the next year, an active DSCD member will be identified to act as a liaison in some of the identified divisions and organizations.
2. By DSCC 2009, the leaders of this subcommittee each will identify at least one society (within ASME or outside ASME) whose interaction will be valuable to DSCD.
3. An ad-hoc committee consisting the leaders of this task will be formed to actively oversee these activities and report to DSCD.



**Education priority action item 1 - Develop learning material for introducing DSC for freshman engineering (Action by A. Leonessa and N. Jalili in 2 years )**

**Critical Issues and Motivation:**

1. System Dynamics and Control topics are generally taught after differential equations courses and the contents have several theoretical aspects which are not well suited to freshman students.
2. In order to better align with the Division mission in serving the society through fostering education in DSC, there is a need for early traineeship in these areas within the mechanical engineering curriculum.

**Goals:**

1. Our goal is to expose freshman students to DSC topics through real-life examples (e.g., cruise control), without relying heavily on the use of mathematics especially the differential equations.
2. More specifically, simple robotics experiments such as those provided by the LEGO MindStorms kits, simple Mechatronics kits and other similar platforms will be investigated to be integrated with the course contents.

**Action Items:**

1. Existing curricula in other universities and schools will be investigated and a set of lectures and labs will be developed to introduce DSC to freshman students.

**Implementation Plan:**

1. The developed curriculum under this task will be deployed, first, to students in the Introduction to Engineering courses at both Virginia Tech and Clemson University.
2. Frequent course evaluations and feedbacks will be collected throughout and at the conclusion of the course in order to revise and improve the curriculum accordingly.
3. If possible, this exercise will be repeated for a second time before making the curriculum available to the community using the NSDL as a dissemination tool.