

# Dynamic Systems and Control Division Strategic Planning Meeting

June 20, 2013

Summary by

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## Background

The first long-range planning workshop of the ASME Dynamic Systems and Control Division (DSCD) was conducted in 1993. After fifteen years, the Executive Committee of the Division held a Strategic Planning Meeting in 2008 to evaluate the critical issues facing the division and to identify strategic directions to be undertaken over a five-year period. At the end of this five-year period, in 2013, the Executive Committee organized another Strategic Planning Meeting to evaluate the progress made on the action items of the 2008 meeting and to chart future directions for further improvement of the division.

## Strategic Planning Meeting - Procedure

To obtain a wide range of perspectives from within the Division, the Executive Committee invited members of the Technical Committees, Editors and Associate Editors of JDSMC and TMeCh, future Chairs of DSCC, members of the Industrial Advisory Board, some senior members, several young and active members, and some of the women members of DSCD to participate in the Strategic Planning Meeting. The participants of the meeting are listed in [Appendix-A](#).

The 2008 Strategic Planning Meeting had identified seven strategic areas of importance to the Division and the invited participants were surveyed by email to select areas of importance from among those seven strategic areas. The survey indicated that (a) Research, (b) Organizational support, and (c) Education are the three most important areas and Industrial participation is a cross-cutting area of importance.

The Strategic Planning Meeting was held at the Renaissance Washington, DC Downtown Hotel in Washington DC on the evening of June 19 and the entire day on June 20, 2013. The meeting was held immediately after the conclusion of the American Control Conference (ACC), which was held from June 17-19 at the same venue.

## **Strategic Planning Meeting Discussion at ACC Division Meeting – June 17**

The Strategic Planning Meeting was held immediately after the conclusion of the ACC. Many members of the Division attended the ACC and an hour was devoted to soliciting input from members attending the Division meeting at the ACC on the evening of June 17. Members provided a variety of inputs such as the need for better industrial collaborations through workshops; making DSCD conference papers open source; broader announcement and communication of Technical Committee activities; improved accessibility to ASME digital library; shorter time frame for review of papers submitted to JDSMC; introducing tutorial sessions at DSCC and increasing participation of undergraduates in DSCC; and increasing involvement of student members by providing more travel grants to students, for example. A summary of the discussion at the Division meeting is provided in [Appendix-B](#).

## **Strategic Planning Meeting – June 19 and June 20**

During the evening of June 19 (after the conclusion of ACC), Huei Peng (Chair) summarized the highlights of the 2008 Strategic Planning Meeting and provided a summary of the progress made in the seven strategic areas of 1) industrial participation, 2) research, 3) education, 4) global presence, 5) membership diversity, 6) outreach, and 7) organizational support. This includes establishment of the Industrial Advisory Board for greater industry participation; launching of the DSC magazine to highlight research accomplishments of members in an international forum; organizing frontier session, plenary talk and panel discussion on engineering education at DSCCs; increasing global presence by holding joint conferences with other societies (Bath Symposium and MOVIC) and adding international associate editors to JDSMC; fostering the participation of women in DSC; and creation and maintaining the DSCD website. A summary of the accomplishments is provided in [Appendix-C](#).

On June 20, the participants were divided into three working groups and each of the groups were asked to focus their discussion on the three areas of (a) Research, (b) Organizational support, and (c) Education. They were also asked to generate one or two action items in each area and identify person(s) who could lead the effort in these areas. Summaries of the discussions of the three individual groups are provided in [Appendix-D](#). The combined summary of the group discussions together with action items and names of person(s) who could possibly lead the efforts are provided in [Appendix-E](#).

## Appendix-A

### Strategic Planning Meeting Attendees:

Huei Peng (Chair)	Jin-Oh Hahn
Dawn Tilbury	Jingang Yi
George Chiu	Andreas Malikopoulos
Kok-Meng Lee	Tulga Ersal
Ranjan Mukherjee (Secretary)	Gregory Shaver
Ardalan Vahidi	Qingze Zou
Robert Landers	Nejat Olgac
Manish Kumar	Satish Narayanan
Jiong Tang	Tsu-Chin Tsao
Dumitru Caruntu	Miroslav Krstic
Scott Moura	Tuhin Das
Marcelo Canova	Dongmei Chen
Nikhil Chopra	

## **Appendix-B**

Summary of discussion of the Strategic Planning Meeting at the ACC Division Meeting, June 17, 2013

# Summary of discussions

## Industrial Collaborations

- Create tracks for industry in conferences, with presentations only.
- Workshop for faculty working with industry already, presenting and inspire others on how to work on industrial relevant problems.
- Better communication
- Create a mechanism for industry to advertise their positions to students.

# Summary of discussions Research

- Make DSCD conference papers open source.

# Summary of discussions

## Organization support

- Broader announcement and communication of Division/TC activities (e.g., call for papers, TC activities), using website or newsletter.
- Journal review is sometimes too long. Some delays caused by communications (e.g., waiting for copyright forms)
- Good DSCC papers can be accepted in JDSMC
- ASME support is poor, including time to appearance in google search; and accessibility to ASME digital library
- Student travel reimbursement should be quick.

# Summary of discussions

## Global Presence

- Global presence should be considered more important



# Summary of discussions

## Education

- Participation of undergrad/local participation in DSCC is low, and should be encouraged
- We have too few tutorial sessions in DSCC

# Summary of discussions

## Miscellaneous

- Involvement of funding organizations. We involve NSF but we should involve others such as DOE, involve their program directors in our activities. Can hold workshop within the window of DSCC (not in extra day)
- Student involvements: Make them feel this is their home organization
  - More travel grants to students, and for larger amounts
  - Events at conferences for ice breaking
  - They may help future industrial participation
  - ASME membership should be given to students that register for a conference
- Extend support to new faculty members with low funding

## **Appendix-C**

Summary of accomplishments in the seven strategic areas identified in the 2008 Strategic Planning Meeting

# 2008 Strategic Plan Highlight

- **Strategic Areas**

1. Industrial participation
2. Research
3. Education
4. Global presence
5. Membership diversity
6. Outreach
7. Organizational support

# Industrial Participation (Dawn)

- **Critical Issues**

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

- **Goal**

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

- **Accomplishments**

- Industrial Advisory Board (IAB) established in 2011
- List of action items to increase industrial relevance & participation, rank-ordered
  - Add industry members to Honors & Award Committee (done)
  - Organize conference sessions according to application area instead of theoretical basis (ongoing)
  - Technical committees organized around application area (new: Energy & Biosystems)

# Research (Andrew)

- **Critical Issues**

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

- **Goal**

- 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..

- **Accomplishments**

- By launching the DSC magazine, the division has aspired to highlight and position member research accomplishments in an international forum
- Sponsored workshops have been planned for key topics ,of high societal relevance, in which divisional members will be able to take a lead role

# Education (Huei)

- **Critical Issues**

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

- **Goal**

- To address the above three issues.

- **Accomplishments**

- 2009 DSCC: Tutorials all cancelled.
- 2010 DSCC: One Education/frontier session held.
- 2011 DSCC: Engineering Education plenary talk in, panel discussion on “**Transforming Engineering Education**”, industrial sessions (Mathworks, NI).

# Global Presence (Kok-Meng)

- **Critical Issues**

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

- **Goal**

- 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.

- **Accomplishments**

- Hold TC-Mech meetings at DSCD cosponsored IEEE/ASME AIM conferences: AIM 2008 (China); AIM 2009 (Singapore); AIM 2010 (Canada); AIM 2011 (Hungary); AIM2012 (Taiwan); AIM 2013 (Australia); AIM 2014 (France); AIM 2015 (Korea)
- DSCC brings in international participation: DSCC 2009/2011 Bath/ASME Symposium on Fluid Power and Motion Control; DSCC2010 (IFAC Sym. on Mechatronic Systems); DSCC/MOVIC 2012
- JDSMC/TMECH International Editors/Authors become DSCD members



# Membership Diversity (George)

- **Critical Issues**
  - The leadership and membership of the division does not have a sufficiently diverse composition.
- **Goal**
  - To increase the diversity of the division's membership and governing body.
- **Accomplishments**
  - Continuing support and fostering of the Women in DSC group, such as luncheons at DSCC
  - Seek diversity in leadership and volunteer positions

# Outreach (Ardalan)

- **Critical Issues**
  - The division presently lacks a cohesive and effective marketing strategy.
- **Goal**
  - 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.
- **Accomplishments**
  - The DSC Magazine: The idea was conceived and the first issue was published in March 2013 as part of the ASME Mechanical Engineering Magazine which has a wide circulation. The plan is to publish DSC Magazine quarterly during 2013 and 2014 as part of ASME Mechanical Engineering Magazine, and perhaps stand along there after.
  - We have an up-to-date organized website and a newsletter.
  - We have worked with IFAC and Division of Fluid Power Systems in organizing joint conferences.

# Organizational Support

- The following committees are to be established in order to enable the execution of the strategic action items:
  - DSCD Webmaster
  - Ad Hoc Committee for globalization
  - Ad Hoc Committee on DSCD Lecture Series
  - Education (Technical) Committee
  - Diversity Action Committee
  - Industrial Advisory Committee
- **Accomplishments**
  - Creation and maintaining the DSCD website  
<http://www.asme-dscd.org/>  
Current webmaster is Melih Cakmakci
  - Formation of the Industrial Advisory Board (IAB)  
4 members from industry and Chair of Executive-Committee  
Current chair of IAB is Tony Phillips (Ford)

## **Appendix-D**

Summaries of the discussions of the three individual groups (June 20) at the Strategic Planning Meeting

# **DSCD Strategic Planning Meeting, June 20, 2013**

## **Group Discussion at Table 1**

### **PARTICIPANTS AT OUR TABLE**

Satish Narayanan, United Technologies  
Dawn Tilbury, University of Michigan  
Robert Landers, Missouri University of Science and Technology  
Maggie Chen, University of Texas Austin  
Dumitru Caruntu, University of Texas Pan American  
Marcello Canova, Ohio State University  
Qingze Zou, Rutgers University  
Jin-Oh Hahn, University of Maryland

### **SWOT ANALYSIS**

#### **Strength**

- DSCC has a solid review process
- student competitions at DSCC and ACC

#### **Weaknesses**

- little knowledge of DSCC from industrial participant in our group, he was recruited to do a review, which was good
- some AEs have too many papers to handle, journal papers that clearly violate requirements should be sent back to authors, AE should be unknown to authors, hard to site journal papers

#### **Opportunities**

- manufacturing technical committee (bio, nano, additive)
- ask more industry people to review papers
- raise our image and promote ourselves: go to application conferences, get into proposal review of applications, invite people from other communities to review papers
- 2000 primary members but only 400 people on mailing list: some may want to review and we can email them information about our activities
- automatically reject clearly bad journal articles
- qualities in a chief editor: established person, fix review process and improve impact factor, be previous AE and have this type of experience
- may want to get previous IEEE TCST editor
- good DSCC papers can be selected for consideration for the journal after the paper has been updated

- TC organizes invited sessions at conferences such as ACC to get papers into good (instead of random) sessions, can coordinate with IEEE TC

### **Threats**

- the controls community gets sidelined when working in an area where we are supportive (like in energy, wind turbines are the system, we just model and control)

## **RESEARCH**

### **What have we done right?**

- We report our research in conference papers and journal articles
- 3 Frontier Sessions to identify new areas in control in 2008, 3 in 2009, 1 in 2010, 2 in 2011, 1 in 2012, none in 2013; these are very open
- Biological technical committee formed
- After 2010 the energy technical committee formed

### **How can we improve?**

- We need to become the leaders in different areas
- We need to set and promote future research directions
- Frontier Sessions can spawn workshops and tutorials in specialized areas
- Frontier Sessions are very open now; outcomes should be more deliberate: have specific recommendations, some documentations of what was talked about (e.g., article for newsletter), make it more visible
- Can do a Frontier Session in manufacturing; other emerging areas; can be application driven or science driven
- Need to involve more government agency program managers/directors to become involved; the program managers can meet with new faculty members
- Many people have broad reaching research that can present in plenary lectures
- Industry views our conference as mostly university research papers
- Can have industry lunch sessions where industry talks about their activities and faculty working with them talk about how they work with the industry,
- Industry and academia should not be viewed separately
- Industry sessions should be more specific and not too broad
- Good balance between broad theory and specific applications will attract more industry
- Need to lower barriers for industry people to submit papers
- Tutorial sessions should be at DSCC
- Day long workshops with some sort of DSC tool where someone discusses about it and then several people talk about how they use it

### **What are the action items?**

- Need to revive Frontier and Tutorial Sessions, someone on conference committee should be in charge of this; someone can review what are done in other conferences; call for tutorial session should be put back in DSCC call
- Improve the journal. Decrease time delay in journal review process, more AEs, short rejection for clearly unsuitable papers; AE is anonymous during review process; recruit top papers from DSCC

## **ORGANIZATIONAL SUPPORT**

### **What have we done right?**

- We have a DCDC webmaster that can directly make changes
- We have an industrial advisory committee
- Periodically information on website is archived and updated

### **How can we improve?**

- We wanted ad hoc committees for globalization, lecture series, education, and diversity, but did not do this
- Website can be improved: e.g., information is siloed in website, have to go deep to get specific information
- Each year the executive committee can report on the different areas in the strategic planning, a committee discusses each year
- During conference have a workshop for junior faculty on how to start their careers and gain tenure and a workshop for students that want to join industry, professional workshop; could get funding from NSF to support these workshops; someone is designated to support this (the organizational support comes from exec comm, conference committee, ad hoc committee)
- Abstracts or short papers so that people that submit conference papers can turn around and send larger paper to journal; help with emerging areas and industry participation; a question is should these be published; start with only invited sessions (maybe frontier sessions) instead of having abstracts/short papers that can be generally submitted
- Industry is interested in creating a challenge problem for young faculty
- Industry is interested in having workshop with academia and government together so they can drive funding decisions via the creation of white papers; industry can help recruit government program managers; these workshops can be connected with a conference or as a separate meeting
- Industry people in technical committees are not active, they are sounding boards
- Need to have a pipeline of undergraduates
- Technical committees should have a certain number of industry people
- White paper could be an outcome of a workshop that turns into a baa
- Diversity in the workforce, there are women in DSC that have a lunch at DSCC but not every year; will attract people from industry to come to DSCC if we are above average in terms of diversity; try to attract people at the undergraduate level with travel grants, involve local schools like through SWE chapters and give

them a talk on why to attend graduate school, technical committees can provide general information

### **What are the action items?**

- Create a structured way to make the industry, academia, government workshops happen
- Provide technical committees with a list of expectations e.g., organize a workshops, frontier sessions, tutorial, etc. every X years; also organize things outside of the conference like an industrial focused meeting; they can ask for funding from the executive committee; Communicate benefits to people that are spending time doing these activities

## **EDUCATION**

### **What have we done right?**

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### **How can we improve?**

- Can form an educational technical committee
- Share course content, examples, and assignments.
- Have Mathworks or others in industry to have a session focused on using their tools
- Archive of old exam problems, password protected or not
- Education sessions at conferences, panel sessions that discusses what should be taught in our courses
- Lecture session (tutorial session) by a prominent person in a specific area such as Kahlil's nonlinear control; Astrom did a more industry-based one for UTC in three days; UTC had a one day workshop on POD by Phil Homes
- What should the division do regarding massive online open courses? We need to understand what is being done and what the division can do
- Session on what we should teach freshman in regards to control
- Organize educational workshop for high school students
- Student video competition on some topic in dynamic systems and control
- Industry needs to educate faculty on what the issues are and faculty need to educate industry on what the latest analysis and control techniques are available
- Links to where short courses are being given at different university
- Have a list of what is being taught at what universities
- Put workshop and tutorial information on line for students and faculty to use
- Engage faculty from education departments to become focused in dynamic systems and control
- Invite someone from Department of Education to say what is available
- The division can be a resource on how to find materials on dynamic systems and control. This can be done with a section of the DSCD website



**What are the action items?**

- Establish on line repository of educational materials, links, and events
- Establish an educational technical committee
- Show faculty the benefits of doing these activities such as funding opportunities, visibilities

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# GROUP DISCUSSION AT TABLE 2

## PARALLEL DISCUSSION 0: CONCERNS

The main concern was visibility:

- Conference papers are not indexed fast enough and the review time for journals is too long. This hurts the visibility of our community.
- JDSMC's impact factor is very low. We need to build a community and encourage publishing in JDSMC and citing papers from JDSMC.
  - Strategies such as enforcing the submissions to JDSMC to cite recent papers from JDSMC were discussed. Even though such strategies have been successfully employed in other journals to increase the impact factor, there were also ethical hesitations.
  - Special issues were mentioned as another mechanism to attract interest from both the authors and the readers.
- Technical Committees (TCs) could play a more major role to help with promoting the members of our community.
  - TCs could help promote researchers as ASME Fellows.
  - TCs could provide mentoring for junior members early on in their career. TC meetings could provide young members with an opportunity to talk about their research and get feedback on their tenure track. TCs can help with the tenure process by helping obtain reference letters especially from more senior members.

## PARALLEL DISCUSSION 1: RESEARCH

Discussions focused on two main topics:

- Connection with funding agencies: Our connection with the NSF Dynamical Systems and Control Systems Program Managers were mentioned as a strength. Establishing such connections with other funding agencies would provide additional opportunities. This requires establishing mutual interest; i.e., we need to understand and meet the goals of the program managers.
- Dissemination: Workshops, tutorial sessions, highlights (semi-plenary papers), frontier sessions were all found to be important and should continue. DSC Magazine will hopefully also help disseminate our community's results more broadly. Special issues in journals were mentioned again to help with better dissemination. Documenting best practices was identified as a weakness. Proper documentation could help ensure the continuation of best practices.

## PARALLEL DISCUSSION 2: ORGANIZATIONAL SUPPORT

- Conference financial support for students was mentioned as a strength. The "speed dating" session with industry was also mentioned as a potential strength, but at the moment of the discussion the participants did not have access to any metric to say whether the session was indeed successful. Nevertheless, it was agreed that we can continue to improve our conferences to be more welcoming for the students.

- Social events for students could be organized. These events could include industry, too, for an interaction between students and industry and could include posters. Votes on posters could be a mechanism to create a pool for best paper awards.
- Similar to the “speed dating” with industry session, students could be provided with the opportunity to have a “speed date” with senior members of the community.
- The TC-centric organizational structure is mentioned as a strength, but it could be strengthened further.
  - A formal mechanism could be established for each TC to send a member to the Program Committee. This would ensure that all TCs are represented in a balanced way in the Program Committee and the sessions can be better organized.
  - The number of keywords was found to be too much. TCs could be asked to reduce the number of keywords to help with better organization of the sessions. For example, each TC could be asked to come up with 10-15 keywords, instead of the 800+ keywords in our current list. Fewer keywords could help identify reviewers more efficiently.

### PARALLEL DISCUSSION 3: EDUCATION

- Creating a common web space where we can share homework problems, problem sets, lecture notes, lecture videos and maybe even automatically create exams was mentioned as an opportunity.
- “Flipping the classroom” was mentioned as a potential way to improve education, where the students are asked to study the material from lecture videos before coming to class and the class time is used for discussion instead of delivery of materials.
- Tutorial sessions, workshops, etc., could be taped and made available online.
- Video clips with industry people talking about how they are using system dynamics and control in their work could help especially undergraduate students struggling with questions such as “Why do I need to learn this material?” or “Why is this useful?”. These video clips could also serve as recruiting tools for industry people.
- The video clips or the industrial sessions could also be used to help communicate the grand controls challenges the industry is facing.

## **DSCD Strategic Planning Meeting, June 20, 2013**

### **Group Discussion at Table 3**

#### General Discussion:

The main concern was related to ASME publications and specifically related to JDSMC. A summary of the points discussed are provided below:

- Bring IEEE experience to ASME
- Press AEs to move quickly; remove AEs who are not effective; perhaps we should not have tenure requirement on AEs
- Develop a shared database for reviewer information
- Many papers coming from Asia; we need AEs from these countries
- AEs are not anonymous – this can be an issue. AEs should be able to reject poor quality papers for efficiency
- Faster turnaround will prompt our own members to submit papers to JDSMC
- Oversight on publications – should have someone to hear grievances
- Journal health can be best determined from two statistics: (a) how many papers were submitted and accepted in a 1 year period, (b) how many papers were withdrawn by the authors
- Journal should consider having a small number of area editors.

#### Discussion 1: Research

Discussions were focused mainly on conference activities. A summary of the points discussed are provided below:

- Should have tutorial sessions and workshops as part of the conference, not on separate days. Each year, the TCs should propose two topics for tutorials and/or workshops. TCs should have a long-term plan.
- Should organize sessions with presentations only – no paper requirement. This will encourage industry participation. Industry can present problems they are facing and this can provide new directions to young faculty. Members can also propose new directions of research at these sessions.
- Each year, industries could solicit proposals for solving specific problems. Proposals would be due in 6 months and evaluated by the industry participants prior to the next conference. The winners of the proposals would be announced at the next conference the following year.

There was some additional discussion on best paper awards handed out by the TCs and selection of awardees for Society and Division awards.

## Discussion 2: Organizational Support

Discussions were primarily focused on inadequate ASME support. A summary of the points discussed are provided below:

- All conference and journal papers should appear on google search in a short time period from the date of publication. It takes a long time for ASME to place its papers on the ASME digital library.
- ASME has not been responsive to society member requests to expedite the process.
- There was a lot of discussion on how the membership could migrate from ASME to IEEE

## Discussion 3: Education

A summary of the points discussed are provided below:

- Similar to the IEEE Distinguished Lecture Series, we should consider a lecture series or short courses
- ABET is changing its design requirement from “Mechanical and Thermal Systems” to “Mechanical or Thermal Systems”. This is a good opportunity to introduce mechatronics into ME curriculum and meet ABET design requirements.
- Mechatronics course could be developed on Coursera. Several faculty across different universities could collaborate to develop the course.
- Students routinely review papers and DSCC could organize a formal panel discussion (during lunch hour, for example) on how to review papers and proposals. A broader topic of discussion could be related to ethics.
- Undergraduate student design competition could be held at each DSCC. Alternately, it could be held at ACC for greater exposure.

## **Appendix-E**

Combined summary of the group discussions at the Strategic Planning Meeting

# Research

- Need to revive frontier and tutorial sessions in DSCC—need to set up mechanism to ensure this is done each year. (E-M, Suhada, Alleyne to put in OG)
- Improve JDSMC—more and anonymous AEs (on average 1 paper per AE per month) (M-H, next Editor-in-Chief)
- Implement 90/90 policy for JDSMC (M, next Editor-in-Chief)
- Larger proportion of sessions allocated for workshop, tutorial and presentation only. (M, Suhada, Alleyne to put in OG)
- Implement mechanisms for regular special issues and/or survey papers in JDSMC/TMech (e.g., organized by TC or collection of selected DSCC papers) (M, next Editor-in-Chief)

# Organization Support

- Structured way to make academic/industrial/government workshop happen (M, EXCOM, Caruntu, Maggie Chen)
- Revise the OG to provide TC with a list of expectations such as for organizing workshops, frontier sessions, tutorials, etc. (M, EXCOM and TC chairs, Tang, Yi and Ersal)
- Create a list of expectations related to conference and publication support from ASME (M-H, Olgac)
- Structured community building activities for students at DSCC. (E, DSCC chairs, add to OG)
- Make the TCs the center of Division activities (e.g., in DSCC, JDSMC/TMech) (M, DSCC chairs and Editors)
- Annual review of execution of key Division activities (E, EXCOM)



# Education

- Establish an education TC, to lead the activities such as to establish online repository of education materials, links and events at the DSCD web site. (H, Messner?, Caruntu)
- Hold DSCD sponsored undergraduate student design competition at ACC (H, T-C Tsao)
- Online industry sessions that provide perspectives of control engineering practices and challenges (H, Ersal)
- Implement the certification process for “control badges” (H, Chiu)

# Industry Participation—Self Interest

- Student placement
- Inform us about current open challenges
- Funding opportunities (direct or teaming for government funding)
- Pose challenging problems followed by proposal solicitation and selection