Preliminary Report on Engineering Workforce Development Strategy Implementation
Strategy Statement – Engineering Workforce Development

Short Version
- ASME will foster a broader, competent, vibrant and more diverse engineering workforce with improved retention in both the profession and ASME over all career stages.

Statement
- ASME will foster a broader, competent, vibrant and more diverse engineering workforce with improved retention in both the profession and ASME over all career stages. ASME will expand the capacity and effectiveness of the engineering workforce, promote the public good and increase public awareness of the value of the engineering profession. We will achieve this by outreach to pre-college students, delivering project and team-based learning, developing methods to help students bridge to early career engineers, providing leadership opportunities and training and delivering continuing professional development and training for prospective, active and retired engineers; and by leveraging our world class technical programs, intellectual property, and collaborations with other organizations.
Engineering Workforce Development Charge

- Expand the engineering workforce pipeline
- Improve retention in the profession
- Improve retention in ASME
SEQUENCE OF EFFORT OF THE ENGINEERING WORKFORCE DEVELOPMENT TEAM

THE TEAM WILL FULFILL THE STRATEGY STATEMENT BY FILLING GAPS THROUGH THE

• DEVELOPMENT OF NEW PROGRAMS
• ENHANCEMENT OF EXISTING PROGRAMS
• SUNSET OF OBSOLETE PROGRAMS
• ESTABLISHMENT OF BETTER LINKS BETWEEN EXISTING PROGRAMS
Engineering Workforce Development-Strategy Execution Team Organization

We have added task forces to address gaps and will sunset them as they complete their projects.

* Indicates the four major portfolio areas
Engineering Workforce Development Strategy
Execution Team Core Team

Clark McCarrell and Dave Soukup, co-chairs
Amy Bentow
Betty Bowersox
Rick Dellinger
Jen Jewers
Bill Nott
Jackie Oppenheim
Rob Pangborn, Board of Governors Liaison
Value Chain

Engaging K-12 stakeholders to get new students interested in engineering

Delivering project and team-based learning to students

Bridging students to early career engineers

Providing technical training and leadership opportunities

Advocacy & Public Policy
Philanthropic fundraising
Collaborations with other organizations

Growing Educated & Creative Workforce
ASME’s Lifelong Relationship Map with ME’s

- K-12
- College
- Entry Level
- Entry Level + 5
- Mid-Career
- Prof or Exec
- Retirees

**Technical Content and Information**
- Workshops for Teachers
- Student Competitions
- ASME Journals and Books
- Live Training Courses
- eLearning
- engineeringforchange.org

**Community: Membership, Leadership and Volunteering**
- Outreach with Partner Organizations’ Competitions
- Student Professional Development Conferences
- Participation in Code Committees

**Career Resources and Job Search**
- Partner with Universities to recruit ME students
- Financial Aid
- Certifications
- E-mentoring

A sample of ASME’s Engineering Workforce Development Programs Entire portfolios shown in Appendix
We need to have better connections among our programs

**OBJECTIVE** – To link programs to keep flow through the pipeline. Arrows show a sample of potential links.

**K-12**
- Workshops for Teachers

**College**
- Student Competitions

**Entry Level**
- ASME Journals and Books
- Live Training Courses

**Entry Level + 5**
- eLearning

**Mid-Career**
- engineeringforchange.org

**Prof or Exec**
- Participation in Code Committees

**Retirees**
- Professional Practice Curriculum

**Technical Content and Information**
- Technical Seminars and Conferences

**Community: Membership, Leadership and Volunteering**
- Outreach with Partner Organizations’ Competitions

**Career Resources and Job Search**
- Partner with Universities to recruit ME students

**Certifications**
- E-mentoring
- Financial Aid
Program Linkages – SAMPLE POSSIBILITIES

Eliminate mindset that programs are discrete in favor of a cohesive portfolio of linked programs

<table>
<thead>
<tr>
<th>Program Name</th>
<th>People Impacted</th>
<th>Pull from Previous Programs</th>
<th>Push to Future Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Design Competitions</td>
<td>500 student participants</td>
<td>Students who participated in FIRST and JETS competitions</td>
<td>Invitations to participate in I-Show, be mentors for FIRST teams</td>
</tr>
<tr>
<td>Scholarships</td>
<td>50 student recipients</td>
<td>Only those who have been active in ASME Student Section or competition participants invited to apply</td>
<td>Scholarship recipients get special dues renewal notices reminding them of financial aid received</td>
</tr>
</tbody>
</table>
Organizational approach to work force development

Opportunities for individuals from pre-college through end of career for enhancing professional growth and development

Build partnerships to increase effectiveness & impact of ASME’s initiatives
Leveraging ASME’s capabilities to deliver value to and promote professionalism among engineers

- Opportunities for individuals from pre-college through end of career for enhancing professional growth and development
- Build partnerships to increase effectiveness & impact of ASME’s initiatives

Knowledge Continuum

- Cultivate interest and recruit pre-college students
- Enhance student learning and provide academic support
- Engage early career engineers and deliver excellent experience
- Support continuing education and engagement in professional activities
Top Opportunities

1. Cultivate STEM education and recruit students to pursue mechanical engineering, including increased use of partnerships and promotion of diversity.
2. Work with university educators and advisors to broaden and deepen the relevance of the ASME student member experience through mentoring, internships, workforce readiness skills and project-based learning.
3. Strengthen linkages throughout one’s ASME experience and especially between one’s student member experience and relevance of ASME membership after graduation.
4. Strengthen ASME’s impact with Early Career Engineers (ECE) through developing relevant products and services and engaging them with the ASME engineering community.
5. Work with industry to understand and support their human resource needs (including providing workforce readiness skills, building a spirit of professionalism and filling engineering openings).
6. Build on the existing capabilities in the continuing education area, with emphasis on energy-related sectors.
7. Develop training material on relevant ASME Codes for inclusion within University Curricula.
8. Broaden opportunities for experienced engineers to mentor students and early career engineers.

One Sample Draft Action Plan Template for Top Opportunities follows. The complete set is shown in the Appendix.
## Activity 4: Strengthen ASME’s impact with Early Career Engineers (ECE) through developing relevant products and services and engaging them with the ASME engineering community

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<th>Key Challenges</th>
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<td>• Improve ECE’s Attitude and Usage score</td>
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### Tasks
- Create and improve access to industry relevant technical information
- Improve quality of and access to job search tools and resources
- Create a sustainable community engagement model
- Change internal ASME behavior to support the “ECE Experience”
- Enhance ASME.org to improve the “ECE Experience”
- Create and implement a Marketing & Membership plan to support the “ECE Experience”

### Deliverables
1. Expanded reach of Early Career Technical Seminars
2. Creation of industry, market-facing webpages with relevant content
3. Improved Career Center
4. Improved Job Board
5. Redesigned E-Mentoring
6. Redesigned Early Career Center
7. Marketing & Membership Plan and implementation of plan
8. ECE needs incorporated into the ASME.org redesign
9. Implemented community engagement model
10. Implemented change management plan to support “ECE Experience”

### Timeframe
- 1. FY11
- 2. Long-term
- 3. FY10
- 4. FY10
- 5. FY11
- 6. FY10
- 7. FY10
- 8. Long-term
- 9. Long-term
- 10. Long-term
Segments Served by Top Opportunities

<table>
<thead>
<tr>
<th>Top Opportunities</th>
<th>PRE-COLLEGE</th>
<th>COLLEGE</th>
<th>EARLY CAREER</th>
<th>PROFESSIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivate STEM</td>
<td>###</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work with Educators</td>
<td></td>
<td>###</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strengthen linkages</td>
<td></td>
<td></td>
<td>###</td>
<td></td>
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<tr>
<td>Strengthen Impact on Early Career</td>
<td></td>
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<tr>
<td>Work with industry</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Continuing Education</td>
<td></td>
<td></td>
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<tr>
<td>ASME Codes in Universities</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mentoring</td>
<td></td>
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**Strategy**

ASME will foster a broader, competent, vibrant and more diverse engineering workforce with improved retention in both the profession and ASME over all career stages.

**Value Chain**

- Engaging K-12 stakeholders to get new students interested in engineering
- Delivering project and team-based learning to students
- Bridging students to early career engineers
- Providing technical training and leadership opportunities

**Growing Educated & Creative Workforce**

**Advocacy & Public Policy**
- Philanthropic fundraising
- Collaborations with other organizations

**Knowledge Continuum**

- Cultivate interest and recruit pre-college students
- Enhance student learning and provide academic support
- Engage early career engineers and deliver excellent experience
- Support continuing education and engagement in professional activities

**Top opportunities**

1. Cultivate STEM education and recruit students to pursue mechanical engineering, including increased use of partnerships and promotion of diversity.
2. Work with university educators and advisors to broaden and deepen the relevance of the ASME student member experience through mentoring, internships, workforce readiness skills and project-based learning.
3. Strengthen linkages throughout one’s ASME experience and especially between one’s student member experience and relevance of ASME membership after graduation.
4. Strengthen ASME’s impact with Early Career Engineers (ECE) through developing relevant products and services and engaging them with the ASME engineering community.
5. Work with industry to understand and support their human resource needs (including providing workforce readiness skills, building a spirit of professionalism and filling engineering openings).
6. Build on the existing capabilities in the continuing education area, with emphasis on energy-related sectors.
7. Develop training material on relevant ASME Codes for inclusion within University Curricula
8. Broaden opportunities for experienced engineers to mentor students and early career engineers.
Top Deliverables Currently Being Worked in FY10

- Engineers Without Borders and engineeringforchange.org
- Innovation Showcase
- Design Expositions for Students
- Linkages among student competitions
- Re-design of Early Career Center on asme.org
- Continuing Education programs emphasizing energy-related sectors
Measures of Success

• For ASME
  – Increased number of ASME student and early career members
  – More participation in ASME programs
  – Greater enrollments in ASME courses and conferences

• For the Profession
  – Larger number of pre-college students, parents, teachers and counselors reached
  – Increased enrollment in mechanical engineering schools
  – Greater number of engineers to meet workplace demands
NEXT STEPS

• Act on near-term opportunities
• Continue dialogue with Sectors
• Prioritize Top Opportunities
• Build linkages among programs
• Final proposed plan to BOG in February
Conclusion:
Make the pipeline bigger and fix its leaks!
Appendix:

1. Portfolios of Existing ASME Programs

2. Action Plan Templates

3. Data on Engineering Enrollments and ASME Student, Early Career Participation, and Training and Development

4. Bullet Points from Voice of the Customer survey
## The ASME Pre-College Student Experience Portfolio

<table>
<thead>
<tr>
<th>Career Resources and Job Search</th>
<th>Community: Networking, Leadership and Volunteering</th>
<th>Technical Content and Information</th>
<th>ASME Content Vehicles and Other Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversity Action Grants for ASME Student Sections</td>
<td>Direct Outreach to schools, science fairs, competitions run by ASME partners such as:</td>
<td>Inspire Innovation Workshops for teachers and engineers</td>
<td>Pre-College Website</td>
</tr>
<tr>
<td>Subcontract with Michigan Tech on High School Enterprise Research</td>
<td>Boy Scouts</td>
<td>Lesson plans</td>
<td>Career Guidance Brochures</td>
</tr>
<tr>
<td>Partnership with Penn State on Project to Recruit Females for ME degrees</td>
<td>Engineer Your Life</td>
<td>Training sessions and exhibits at teacher and counselor conventions</td>
<td>Design Squad Television Show</td>
</tr>
<tr>
<td></td>
<td>Engineers Without Borders</td>
<td>Position statements</td>
<td>Heroes of Engineering Comic Book</td>
</tr>
<tr>
<td></td>
<td>FIRST Robotics</td>
<td></td>
<td>Listing of engineering camps on asme.org</td>
</tr>
<tr>
<td></td>
<td>JETS (Junior Engineering and Technical Society)</td>
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<tr>
<td></td>
<td>Girl Scouts</td>
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<td>National Engineers Week</td>
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<td>Project Lead the Way</td>
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<td></td>
<td>STEM Education Coalition</td>
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<td></td>
<td>United Engineering Foundation</td>
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</tr>
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</table>

ASME Setting the Standard
# The Student Experience Portfolio

## Career Resources and Job Search
- **Job Search**
  - Job Board and Database
  - Career Center on asme.org

- **Career Awareness**
  - Early Career Forums
  - Company Internships
  - Washington Internships for Students of Engineering
  - Division and Institute Internships
  - Professional Practice Curriculum

- **Financial Aid**
  - Scholarships
  - Loans
  - Graduate Teaching Fellowships

- **Recognition**
  - Charles T. Main Award
  - Arthur L. Williston Award

## Community: Networking, Leadership and Volunteering
### Geographic
- Student Section Activities
- Professional Section Activities

### Professional
- Technical Division and Institute Activities
- Student Professional Development Conferences
- Society-level events
- Partnership with Engineers Without Borders

## Technical Content and Information
### Events
- Early Career Technical Seminars and Conferences
- Technical Conferences
- Innovation Showcase
- Short Courses

### Leadership & Non-technical Skills
- Student Section Volunteer Leadership Positions
- Student Sections Committee Volunteer Leadership Positions
- Student District Operating Board Volunteer Leadership Positions
- Student Leadership Seminars

### Technical and Business Skills
- Professional Practice Curriculum
- Old Guard Oral, Poster & Web Design Competitions
- Student Design Competition
- Human Powered Vehicle Competition
- Human Powered Submarine Competition
- Division Design and Paper Competitions

## ASME Content Vehicles and Other Resources
- ME Today e-newsletter
- Student Center webpage
- ME magazine
- E-library
- ASME Journals
- Conference Proceedings
- Technical Books and Manuals
- Codes and Standards
- Membership Benefits and Discounts

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### The Early Career Engineer Experience Portfolio

<table>
<thead>
<tr>
<th>Career Resources and Job Search</th>
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<tbody>
<tr>
<td>- Job Board</td>
<td>- Local Section Activities and Programs</td>
<td>- Early Career Technical Seminars and Conferences (ECE targeted, industry specific)</td>
<td>- ME Today e-newsletter</td>
</tr>
<tr>
<td>- Career Center</td>
<td>- Technical Divisions Activities and Programs</td>
<td>- Technical Conferences (non-ECE targeted, discipline specific)</td>
<td>- Early Career Center webpage</td>
</tr>
<tr>
<td>- Professional Practice Curriculum</td>
<td>- Training Courses on Management and Leadership</td>
<td>- Training Courses on Technical Topics</td>
<td>- ME Magazine</td>
</tr>
<tr>
<td>- E-Mentoring</td>
<td>- ECLIPSE Internship</td>
<td>- E-Library</td>
<td>- ASME News</td>
</tr>
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- ME Magazine
- ASME News
- Membership Benefits and Discounts
## The Professional Engineer Experience Portfolio

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<th>Career Resources and Job Search</th>
<th>Community: Networking, Leadership and Volunteering</th>
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<th>ASME Content Vehicles and Other Resources</th>
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<tbody>
<tr>
<td>Job Board</td>
<td>Participation in ASME Code Committees</td>
<td>Live Training Courses on Technical Topics</td>
<td></td>
</tr>
<tr>
<td>Career Center</td>
<td>Local Section Activities and Programs</td>
<td>eLearning Courses on Technical Topics, Management, and Leadership</td>
<td></td>
</tr>
<tr>
<td>Professional Practice Curriculum</td>
<td>Technical Divisions Activities and Programs</td>
<td>E-Library</td>
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<td>ASME Journals and Books</td>
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<tr>
<td>Certifications</td>
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<td>Codes &amp; Standards</td>
<td></td>
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<td></td>
<td></td>
<td>Technical Seminars and Conferences</td>
<td></td>
</tr>
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<td></td>
<td>Technical, Managerial and Ethical Topics related to licensure</td>
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<td>ME Magazine</td>
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<td>Membership Benefits and Discounts</td>
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</tr>
</tbody>
</table>
## Activity 1: Cultivate STEM education and recruit students to pursue mechanical engineering, including increased use of partnerships and promotion of diversity.

### Key Challenges
- Ensure that there are enough mechanical engineers to satisfy workforce demands

### Desired Outcomes
- Increase number impacted by Diversity Action Grants by 3%
- Increase number of students, parents, teachers, and counselors reached through pre-college activities by 10%
- Increase ASME student membership by 5%

### Tasks
- Determine best mix of resources contributed toward collaborations with other societies and other organizations interested in STEM vs. resources ASME dedicates to programs unique to ME
- For programs unique to ME, determine the best mix of resources dedicated to K-5, middle schools, and high schools
- Collaborate with ME academic departments to attract students (high school, community college students, undeclared engineering majors) into their programs
- Address the need to bring more women and under-represented minorities into ME
- Seek outside grant funding for education initiatives
- Share industry trends with students to help guide them on educational pathways
- Determine ways to give input to social media sites on college and career choices

### Deliverables
1. Initiate a program for students to pursue degrees in ME who cannot enroll in ME at their universities because of enrollment caps or other restrictions
2. Increase networking/partnership opportunities with the Society of Women Engineers, National Society of Black Engineers, Society of Hispanic Professional Engineers, etc., to address workforce issues, such as having the ASME President speak to their Boards
3. Fulfill grants related to pre-college education.
4. Create career guidance material targeted at incoming freshmen, undeclared engineering majors, and community college students
5. Investigate ASME memberships for high school seniors and STEM high school Teachers
6. Evaluate the best use of ASME Affinity Groups, such as Women in Engineering, to increase inclusiveness

### Timeframe
- 1. FY11
- 2. FY10
- 3. FY10
- 4. FY11
- 5. FY11
- 6. FY10
### Activity 2: Work with university educators and advisors to broaden and deepen the relevance of the ASME student member experience through mentoring, internships, workforce readiness skills and project-based learning

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<thead>
<tr>
<th>Key Challenges</th>
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<tbody>
<tr>
<td>• Convince educators of the relevancy of ASME’s initiatives for their students</td>
<td>• Increase number of students participating in ASME project based learning by 5%</td>
</tr>
</tbody>
</table>

### Tasks
- Expand number of internal/external partners in promoting project-based learning
- Determine the best mix of resources to promote ASME student activities in North America vs. other parts of the world
- Optimize effectiveness of partnership with Engineers Without Borders
- Maintain stance on having the bachelor’s degree be the first professional degree that establishes the minimum requirements for the practice of engineering
- Determine how we serve students whose interests are not served by participation in an ASME student section

### Deliverables
1. Investigate the feasibility of a partnership with CDIO
2. Evaluate the future of Design Expos for Students
3. Implement recommendations of ME Vision 2030 report
4. Develop ways for students to participate in engineeringforchange.org
5. Ensure that no state or territory enacts the Master’s or Equivalent education requirement for licensure
6. Conduct Section Revitalization project
7. Implement recommendations of Student Project Experience Task Force
8. Implement recommendations of Student Professional Development Conference Task Force
9. Support Engineers Without Borders Education Initiative
10. Fulfill United Engineering Foundation grant on service learning by engineering faculty

### Timeframe
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<tbody>
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<td>1. FY10</td>
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### Activity 3: Strengthen linkages throughout one’s ASME experience and especially between one’s student member experience and relevance of ASME membership after graduation

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<tr>
<td>• Students are not upgrading to senior membership following graduation</td>
<td>• Increase percentage of student members converting to senior membership by 5% per year</td>
</tr>
<tr>
<td>• Participation in ASME programs could be improved with cross-program collaboration</td>
<td>• Increase active sections by 10% from FY09 and student sections by 5% from FY09</td>
</tr>
<tr>
<td>• Participation in ASME programs could be improved with cross-program collaboration</td>
<td>• Increase ASME awareness of potential linkages and increase cross-program collaboration</td>
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### Tasks

- Have leaders of each of the major workforce-related programs in ASME submit recommendations on how users of programs can be “pushed” into and “pulled” from other programs
- Improve impact of financial aid programs of the ASME Foundation and of the ASME Auxiliary
- Determine the most appropriate role of the Old Guard in student and early career programs
- Evaluate how participation in informal learning platforms, such as ASME’s Professional Practice Curriculum, could be recognized for educational credits

### Deliverables

1. Plan for connecting major workforce-related programs throughout ASME, including the design of “push” and “pull” among programs.
2. Report by leaders of ASME Foundation, Old Guard and ASME Auxiliary to improve ASME financial aid by making programs more cohesive, minimizing duplication of efforts, and increasing impact back to ASME
3. Report on how to effectively utilize Old Guard knowledge, collaboration and resources to enhance student and early career programs
4. Promote participation in Innovation Showcase
5. One-on-one marketing for producing dues bill renewal personalized for each recipient highlighting the value of his or her past participation in specific programs (e.g. being the recipient of an award or scholarship)
6. Implement the Section and Student Section Revitalization Project

### Timeframe

1. FY11
2. FY11
3. FY11
4. FY10
5. FY11
6. FY10
## Activity 4: Strengthen ASME’s impact with Early Career Engineers (ECE) through developing relevant products and services and engaging them with the ASME engineering community

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### Tasks
- Create and improve access to industry relevant technical information
- Improve quality of and access to job search tools and resources
- Create a sustainable community engagement model
- Change internal ASME behavior to support the “ECE Experience”
- Enhance ASME.org to improve the “ECE Experience”
- Create and implement a Marketing & Membership plan to support the “ECE Experience”

### Deliverables
1. Expanded reach of Early Career Technical Seminars
2. Creation of industry, market-facing webpages with relevant content
3. Improved Career Center
4. Improved Job Board
5. Redesigned E-Mentoring
6. Redesigned Early Career Center
7. Marketing & Membership Plan and implementation of plan
8. ECE needs incorporated into the ASME.org redesign
9. Implemented community engagement model
10. Implemented change management plan to support “ECE Experience”

### Timeframe
1. FY11
2. Long-term
3. FY10
4. FY10
5. FY11
6. FY10
7. FY10
8. Long-term
9. Long-term
10. Long-term
### Activity 5: Work with industry to understand and support their human resource needs (including providing workforce readiness skills, building a spirit of professionalism and filling engineering openings)

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<th>Key Challenges</th>
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</thead>
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<tr>
<td>• Convincing industry that ASME plays a key role in solving the workforce challenges that industry faces</td>
<td>• Obtain annual contributions in support of workforce initiatives</td>
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<table>
<thead>
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<th>Tasks</th>
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<tr>
<td>• Develop contacts with human resources, marketing, engineering, and philanthropic departments in industry to find out how ASME can best serve industry needs</td>
</tr>
<tr>
<td>• Build an appreciation for the scope of engineers' contributions to public safety, public welfare and sustainable development that benefit humankind</td>
</tr>
<tr>
<td>• Facilitate real world project-based experiences for students</td>
</tr>
<tr>
<td>• Secure financial support from industry</td>
</tr>
<tr>
<td>• Enhance relevance to industry by disseminating industry segmented content to members and member prospects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Marketing plan for outreach to industry.</td>
<td>1. FY11</td>
</tr>
<tr>
<td>2. Evaluate feasibility of corporate affiliate program</td>
<td>2. Long-term</td>
</tr>
<tr>
<td>3. Link Industry Advisory Board with ME Department Heads Committee</td>
<td>3. FY10</td>
</tr>
<tr>
<td>4. Develop plan to disseminate industry segmented content to the engineering professional community</td>
<td>4. FY11</td>
</tr>
</tbody>
</table>
### Activity 6: Build on the existing capabilities in the continuing education area with emphasis on energy related sectors. (ASME Training Task Force)

<table>
<thead>
<tr>
<th>Key Challenges</th>
<th>Desired Outcomes</th>
</tr>
</thead>
</table>
| • Identifying appropriate and available subject matter experts  
  • Reduction in US training budgets  
  • Identifying appropriate global partners | • Increase the baseline FY09 registrants number of 7,008 by >5% |

### Tasks
- Identify additional courses both online and live that can be added to the training portfolio
- Market to corporate purchasers to promote In-Company and Bulk sales of online courses
- Increase number of Global Training Partners and Global Training Instructors to deliver ASME content regionally
- Develop and promote technical sessions and exhibits at Boiler Code Weeks

### Deliverables
1. At least 7,358 training participants in FY10
2. At least 10 new training courses added to the ASME Training portfolio
3. Four new global training partners
4. Run technical sessions and exhibits at Boiler Code Weeks

### Timeframe
1. FY10
2. FY10
3. FY10
4. FY10/FY11
## Activity 7: Develop training material on relevant ASME Codes for inclusion within University Curricula. (Standards Content Development Task Force)

### Key Challenges
- Identifying appropriate topic areas of content
- Establishing effective promotional vehicle
- Measuring number of students reached/taught

### Desired Outcomes
- ASME Code related training content incorporated into University Curricula

### Tasks
- Identify and rank ASME Codes and topic areas for content development
- Create project plan and budget for this activity
- Identify appropriate Subject Matter Experts available for content development and peer review
- Identify specific criteria needed within University Curricula and create content development guidelines
- Build and peer review the content
- Promote to Universities for incorporation into curricula and set in place measurement tools, if possible

### Deliverables
1. Target content and modules with projected development timeline and costs
2. Presentation and case studies
3. Promote content within Universities

### Timeframe
1. FY11
2. FY11
3. FY11
### Action Plan Template - DRAFT

**Activity 8: Broaden opportunities for experienced engineers to share their technical knowledge and to mentor students and early career engineers**

<table>
<thead>
<tr>
<th>Key Challenges</th>
<th>Desired Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• In many areas, engineers are retiring at a faster rate than new engineers are entering the profession leading to a loss of working technical knowledge</td>
<td>• Enhanced and increased mentoring opportunities that ASME provides</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Broaden the role of student section advisors through training to provide students with a career development perspective in addition to a student section focus</td>
</tr>
<tr>
<td>• Re-design the E-Mentoring program (as mentioned in Activity 4 Action Plan Template)</td>
</tr>
<tr>
<td>• Leverage the ECLIPSE program to help develop networking and mentoring opportunities for early career engineers</td>
</tr>
<tr>
<td>• Determine the best way to capture and disseminate technical knowledge of recent (or soon-to-be) retirees</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Content developed and delivered to better train student section advisors</td>
</tr>
<tr>
<td>2. Redesigned E-Mentoring (as mentioned in Activity 4 Action Plan Template)</td>
</tr>
<tr>
<td>3. Increased participation of ECLIPSE interns on projects that will benefit students and early career engineers</td>
</tr>
<tr>
<td>4. Plan and implementation of technical knowledge acquisition from recent retirees and dissemination of that content</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1. FY11</td>
</tr>
<tr>
<td>2. FY10</td>
</tr>
<tr>
<td>3. FY11</td>
</tr>
<tr>
<td>4. Long-term</td>
</tr>
</tbody>
</table>
Bachelor's Degrees 1999-2008 in the U.S. (the total of all engineering degrees has levelled off)
Mechanical Engineering Degrees in the U.S. have increased as a % of all B.S. engineering degrees
Bachelor's Degrees 1999-2008 in the U.S. (ME is rising, the other major disciplines have been flat)
All Levels of ME Degrees in the U.S. Have Been Rising
Trends in International "First University" Engineering Degrees

<table>
<thead>
<tr>
<th>Year</th>
<th>China</th>
<th>Japan</th>
<th>South Korea</th>
<th>United Kingdom</th>
<th>Germany</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td></td>
<td>60,000</td>
<td></td>
<td>100,000</td>
<td>20,000</td>
<td>30,000</td>
</tr>
<tr>
<td>2000</td>
<td>100,000</td>
<td>70,000</td>
<td>150,000</td>
<td>120,000</td>
<td>25,000</td>
<td>35,000</td>
</tr>
<tr>
<td>2001</td>
<td>120,000</td>
<td>80,000</td>
<td>180,000</td>
<td>140,000</td>
<td>30,000</td>
<td>40,000</td>
</tr>
<tr>
<td>2002</td>
<td>140,000</td>
<td>90,000</td>
<td>200,000</td>
<td>160,000</td>
<td>35,000</td>
<td>45,000</td>
</tr>
<tr>
<td>2003</td>
<td>160,000</td>
<td>100,000</td>
<td>220,000</td>
<td>180,000</td>
<td>40,000</td>
<td>50,000</td>
</tr>
<tr>
<td>2004</td>
<td>180,000</td>
<td>110,000</td>
<td>240,000</td>
<td>200,000</td>
<td>45,000</td>
<td>55,000</td>
</tr>
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</table>
Participation in ASME Old Guard Competitions

Number of Competitions by Category:
- Old Guard Oral
- Old Guard Poster
- Old Guard Web
- Old Guard Total

Year:
- 2006
- 2007
- 2008
- 2009
Participation at ASME Student Professional Development Conferences
ASME Student Members

Number

Year

2003 2004 2005 2006 2007 2008 2009

28000
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0

All Students

Students Outside US

Students Inside US
ASME Members Under 35 Years Old

Number

Year

0 4000 8000 12000 16000

2003 2004 2005 2006 2007 2008 2009
ASME Training & Development
- breakdown of business units

We trained over 7,008 individuals in FY09
Approx. 50% ASME members
Global reach

Participants from over 100 individual countries
Changing Workplace – Voice of the Customer

- Employee Engagement
- Multiple, Overlapping Networks
- Skills Shortages
- Employability vs. Job Security
- Work/Life Balance
- Changing Expectations: Gen X, Y, 60+
- 24/7/365 Anytime, anywhere
- Diversity in the Workforce
- Global Competition

- Information Overload
- Behaviors of Gen “X”
- New Technology, New Energy
- Communication between age groups
- Knowledge Workers Valued
- New Retirement Options
- Global Supply Chain
- Sustainability
- Collaborative Decision Making
- Multiple, Self-Directed Careers
- New Leadership
- Distance Collaboration
- Global Social Responsibility
- Multiple, Overlapping Networks
- Youth Workers
- Knowledge Workers Valued
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