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**Strategic Initiatives & Innovation Committee Retreat
ASME Office of Breakthrough Innovation**

Report of Retreat Outcome & Next Steps

**September 10-11, 2008
Old Town Alexandria Hilton – Virginia**

Executive Summary

Organizations have always sought to develop and sustain a culture of innovation to remain competitive in the marketplace. One of ASME's preliminary steps to adapt to the changing market was to contract with the George Group which provided recommendations on fostering innovation. The "George Report" helped identify current entrepreneurial practices both internal and external to ASME which determined innovation gaps and opportunities, while recommending approaches to meet ASME's strategic objectives.

Key recommendations from the George Report included the following:

- Develop core internal expertise in formal process improvement methods;
- Implement a platform team approach to align with "customer" segments;
- Put in place a formal voice of the customer and idea generation process;
- Invigorate the portfolio planning and lifecycle management process; and
- Define/clarify internal responsibility for breakthrough innovation.

To respond to these recommendations, a volunteer and staff task force was formed to address the establishment of an ASME Innovation System. This system will enhance ASME's leadership and value creation for engineering, members and customers by:

- Ensuring ASME keeps pace with the rapidly changing global technology economy;
- Encouraging individuals, sectors, and units to be more innovative;
- Providing a structure, process and funding to support sustaining and breakthrough innovation;
- Providing an open and transparent process to develop resources for consideration and enhance action on ideas; and
- Monitoring and tracking progress.

The complete task force report was presented to and approved by the Board of Governors (BOG) at their June 2008 meeting. The key proposal from the task force was to redirect the Strategic Priorities Grant Fund (SPGF) so allocation of total funds would be made available to support both Sustaining Innovation (SI) and Breakthrough Innovation (BI) projects. Additionally, the task force recommended to:

- Refer the report to Strategic Management, which will be responsible for coordinating implementation and progress reports to the BOG at least annually;
- Refer the report to the Sector Management Committee for monitoring and to ensure cross-sector collaboration; and
- Direct the SI and BI Committees to report on their plans for initial idea evaluation criteria and metrics at the September 2008 BOG meeting.

Based on the volunteer expertise of the committee, the Board on Strategic Management directed the Strategic Initiatives and Innovation (SII) Committee to take the lead in establishing the Office of Breakthrough Innovation. Throughout the summer of 2008, SII volunteers and staff conducted research and held several conference calls to review and discuss benchmark material and important lessons learned on corporate offices of BI as well as university and state sponsored incubators.

On September 10-11, 2008, the committee held a facilitated retreat to discuss and gain general consensus on a path forward regarding the following:

- Definition of "breakthrough innovation";

- Phases of the BI process;
- Criteria to evaluate BI;
- Metrics for evaluating short and long term success of Innovation Office;
- Understanding legal implications; and
- Gather feedback on the ASME IdeaPort process.

This report reflects the outcome of this two-day event and next steps in preparation for the Breakthrough Innovation Office to launch in January 2009.

I. Definition: Breakthrough Innovation

Prior to the retreat, committee members had agreed to use the following as a working definition of Breakthrough Innovation:

The creation of a new business platform that has high impact on ASME and its customers by offering new benefits which enhance the perceived value-proposition by customers and increase revenues for ASME and its stakeholders.

During retreat discussions, attendees felt that it was critical that the definition be succinct and unambiguous to an external audience. Additionally, there was agreement that there was a nuance to how BI will be applied and used within ASME that should be conveyed.

Consensus

Retreat attendees came to agreement on the following general definition for breakthrough innovation:

Opportunities that offer the promise of new growth platforms.

As applied to ASME:

The creation of a new growth platform that offers new benefits and has high impact for ASME and its customers.

Definition of New Growth Platform:

New Growth Platforms (NGP) are products, services and businesses that extend their capabilities into one or more domains. NGPs are longer term and higher risk initiatives that usually span 3 to 6 years.

II. Process: Breakthrough Innovation

Initially for discussion purposes, the BI Process had been presented as four steps:

- 1) Idea Enhancement
- 2) Incubation
- 3) Acceleration
- 4) Launch

To spark discussion, retreat participants were asked to consider the following for each phase:

- What are the critical characteristics of this phase?
- What criteria might be used to assess readiness for next phase?
- What level of funding is appropriate for this phase?
- What are the most important questions to address regarding this phase?

Retreat attendees agreed that “Idea Enhancement” did not properly convey the purpose or activity during this initial step and instead, adopted the term “Concept Exploration.” Additionally, the nuance between steps three and four – Acceleration and Launch – and the role of the BI Committee in managing a project

through each phase was addressed. Overall, participants agreed that their oversight role was complete after Acceleration and that by step four, Launch, a project was in full operation with its ultimate owner.

The unique nature of a BI Office poses financial challenges. Depending on the scale of the project, meeting the requirements of Concept Exploration and Incubation through external market research and consulting firms as well as legal services – only to see a project terminate during Incubation – could go well beyond the tolerance level of ASME volunteer leaders. Retreat attendees agreed that creating an entrepreneurial culture systemically within ASME will be one of the bigger challenges throughout the establishment of the office. The goal is to create a culture where ASME can “fail quickly and proudly” and not feel compelled to push projects through simply based on financial investment.

Consensus

Retreat attendees agreed that for purposes of the ASME Breakthrough Innovation Office, the process was best reflected in three phases:

- 1) Concept Exploration
- 2) Incubation
- 3) Acceleration

1) **Concept Exploration**

Concept Exploration will research overall feasibility of the product or idea. This phase will entail initial market research, identification of potential customers/partners and what they can contribute. Identifying stakeholders can help clarify direction and ownership of the concept.

Phase 1 level of funding: \$10-20K (anticipated)
Governance: Breakthrough Innovation Committee
Project Management: Project Manager, ASME SII Staff, idea generator

Graduation criteria to phase two (Incubation):

- Validate concepts through a business model/plan with a viable value proposition.
- Overall proof of concept required.

2) **Incubation**

Incubation will require a significant financial investment to fully prepare a concept for market test. During this phase, business plan protections are identified, finite plans for acceleration are developed, funding requirements are solidified, prototypes are developed, and ownership is further defined. If the product does not develop a defensible business plan during Incubation, funding will cease.

Ownership is a critical part of the Incubation phase. For projects that are solely internal to ASME, two options exist: a) identify a logical owner within an existing sector, or b) if the project warrants appropriate consideration, explore the option of establishing a new “home” within ASME, whether it is a new business unit, an LLC, etc. For projects with external partners (joint ventures), ASME might need to become a broker to establish a relationship with the idea generator and a company/investor with the means to commercialize.

Phase 2 level of funding: \$50-150K
Governance: Breakthrough Innovation Committee, external expertise/advisory board
Project Management: Project Manager, ASME SII Staff, idea generator

Graduation criteria to phase three (Acceleration):

- Project team identified.
- Final business plan developed and success in market tests.
- Clear ownership identified and transition plan developed.
- Funding sources secured.

3) Acceleration

Acceleration will build on the foundation established during Incubation and expand it by fully implementing the business plan. The goal during this phase is to reduce risk, secure external funding (as appropriate), mature the operating process, and position the project for implementation of transition plan.

Phase 3 level of funding: \$XXXX
Governance: *Breakthrough Innovation Committee, external expertise/advisory board*
Project Management: *Project Manager, ASME SII Staff (transition plan); idea generator*

III. Criteria: Breakthrough Innovation

In work accomplished prior to the retreat, the committee had discussed the following as potential criteria for projects accepted by the BI Office:

- Does it fit with ASME's current strategic priorities as defined by the BOG – energy, workforce development, and globalization of organization – and/or is it aligned with strategic objectives in the enterprise-wide balanced scorecard (does it help ASME fulfill our vision of where we want to be in 10 years)?
- Does it meet ASME's BI definition?
- Can we demonstrate technological feasibility with a planned path forward for further development (articulate “over the horizon” of future view)?
- Is the opportunity robust enough (i.e., having multiple business options)?
 - Could it be a line of business with multiple product or service lines or market segments?
 - Can a near-term and then follow-on application(s) be envisioned?
- Does idea originator agree to ASME's intellectual property policy?
- Does idea originator bring resources (funding) to the table?

In reviewing the above, participants felt that overall the criteria met the initial challenge of “putting a stake in the ground.” However there was concern that given the nature of potential projects being screened as BI, it was highly likely that they may not meet all outlined criteria successfully. There was universal agreement that a single criterion would not be measured on a pass/fail basis.

Consensus

Attendees agreed on the following criteria for BI as a basis for additional discussion after the retreat:

- Does it support ASME's vision, mission, and strategic priorities?
- Does it meet the ASME definition of BI?
- Can feasibility of technology be demonstrated with a path forward for future development?
- Is the opportunity robust, offering many business platforms?
- Does the idea generator bring funding sources to the table?

IV. Metrics: Breakthrough Innovation

Prior to the retreat, the committee had developed the following set of metrics:

- Demonstrate portfolio health and balance (need to define health and balance goals).
- Connection to ASME strategic priorities as defined by the BOG – energy, workforce development, and globalization of organization – and/or aligned with strategic objectives in the enterprise-wide balanced scorecard. Does it make an impact?
- Resources garnered, both external (ex. grants, partnerships) and internal.
- New platforms identified/proposed, including robustness.
- New domains accessed (areas outside of our expertise/comfort zone).

During retreat discussions, it was decided that two sets of metrics would be established: a short-term, 18-month set of measurements to gauge success of office launch, and long-term metrics that check the overall health and success of the program.

Attendees felt that establishing defined long-term metrics at this stage was challenging, in that many of the parameters of the office are still developing. They agreed to revisit defining additional milestones after 18-months.

Consensus

Attendees agreed on the following metrics for the BI Office:

Short-term (18 months)

- ASME Intellectual Property policy established and legal disclaimers, terms and conditions complete.
- Elements of Business Model established.
- ASME IdeaPort operational and online with forms, resources available.
- Staff/resources identified and secured.
- Internal communication/education plan developed and initiated.
- Number of proposed ideas submitted overall (establish baseline, CY09).

- Number of ideas accepted into Breakthrough Innovation office, Phase 1 (establish baseline, CY09).

Long-term (FY10 and beyond)

- Demonstrate portfolio health and balance.
- Resources garnered, both internal and external (grants, partnerships).
- Number of new domains accessed (areas outside ASME expertise/comfort zone).
- Number of new platforms initiated successfully.
- ASME mission and financial ROI tracked.

V. Legal & Organizational Implications

Committee member Steve Nichols briefed the retreat participants on the legal requirements and challenges related to intellectual property (IP) that must be met to effectively establish the ASME Breakthrough Innovation Office. Among Dr. Nichols critical points:

- ASME must not proceed with any project until IP is defined.
- The IP terms and conditions need to be clearly defined at the very beginning.
- IP at initial phases will be drastically different from the IP as the process moves forward.
- One of ASME's strengths is the power to convene. There are certain things companies like Westinghouse, for example, will not want to do without our guidance or expertise. Where the IP is added and who has the rights to it must be determined early.
- One of the key reasons for failure from the IP perspective is differing expectations. It must be clear that if the idea generator wants full IP ownership, they'll have to do it alone.
- Using ASME resources, funding, etc., will limit IP rights to the user.
- Clear communication is important. People who develop these breakthrough ideas have a difficult time letting go. If they think their ownership rights are higher, it can become extremely difficult to resolve IP issues.

Given the above, the participants thought it important to establish categories of projects that would likely be developed by the BI Office:

- Collaborative research project with multiple stakeholders.
- Convening of experts to explore a particular issue on request.
- Develop a commercial product.
- Commercialize software.
- Workshops for idea generation and brainstorming to determine what innovative ideas are out there.
- Development of membership service.
- An internal development for a membership community.

Consensus

Attendees agreed IP issues – who owns the rights – need to be clearly defined at the initial stage and that the terms and conditions drafted by ASME's legal firm are critical. Additionally, the need to develop ASME's own IP strategy was identified. Dr. Nichols agreed to take a "straw man" cut at an IP strategy for review at the November 2008 SII Committee Meeting.

VI. ASME IdeaPort – Discussion and Feedback

In reviewing the ASME IdeaPort concept, attendees discussed the overall management of ideas submitted. Since the IdeaPort is open to everyone – internal ASME staff and volunteers as well as external/public stakeholders – communication with the idea generator is critical. After viewing the IdeaPort slide, it was suggested that “bad ideas” be put into a “holding area” or a “watch list” rather than be discarded. Some of these ideas can become good or actionable ideas over time. Attendees noted that investors will often watch people/companies for years to observe progress. Having a second group to vet those declined ideas could be an alternative.

Some ideas could have major societal benefits but might not necessarily adhere to the ASME strategic plan. Attendees felt that a “broker function” be applied to the portal for these types of ideas. The committee acknowledged that some ideas considered a “maybe” may have to be nurtured.

Retreat participants agreed that the criteria for determining breakthrough or sustaining innovation must be clearly defined and that ASME must ask the appropriate questions in the initial questionnaire idea generators will complete as they enter the IdeaPort. The question of “weighted criteria” was also raised. Attendees felt that not meeting certain criteria could be considered a deal-breaker whereas other criteria might not have as much impact on a potential project’s success.

Consensus

One of the major challenges discussed was identifying what incentive idea generators would have to submit proposals into IdeaPort. Attendees agreed that parties bringing their own funds/investment to the table most likely will not be inclined to part with the IP behind their idea. Attendees asked staff to develop an initial communications plan to drive ideas to the IdeaPort.

VII. Next Steps

- Schedule a webinar and at least one conference call to continue work prior to SII Committee meeting in Boston, MA. (Saturday, 11/1/08)
- Rob Pangborn, Vice President, Strategic Management, to provide Activity Update/Report to ASME Board of Governors at September Meeting. (Thursday, 9/25/08)
- SII Committee to meet at IMECE to continue further development and enhancement of Breakthrough Innovation process in preparation for third quarter FY09 launch. (Saturday, 11/1/08)

VIII. Retreat Participants

ASME Strategic Initiatives & Innovation (SII) Committee

Chris Prziembel, SII chair, Clemson University
John Ahlen, Arkansas State Science & Technology Authority
Lydia Carson, Balm Innovations
John Goossen, Westinghouse Electric Company
Steve Nichols, University of Texas at Austin
Reese Meisinger, ASME

Guests

Rob Pangborn, Senior Vice President, ASME Strategic Management, Penn State University

Mel Baiada, Base Camp Ventures

ASME Staff

Phil Hamilton
Shekhar Chandrashekhar
Gemma Tansey
James Creel
Patti Jo Snyder

Facilitator

David Scruggs, Organization Insight

IX. Appendices (To be provided at a later date.)

- A. ASME Innovation Study Implementation Task Force Report to ASME BOG, June 2008
- B. Strategic Initiatives & Innovation Committee Retreat Agenda, September 10-11, 2008
- C. Strategic Management Report to ASME BOG, September 2008
- D. ASME IdeaPort Concept Paper
- E. Glossary of Terms