

Executive Summary

Over 40 representatives of the chemical industry gathered in Baltimore on September 25-27 to update and reinvigorate *Technology Vision 2020*—a collaborative partnership initiated in 1994 to pursue the industry’s long-term goals. This innovative partnership has helped to realign the resources of industry, government, and academia to tackle some of the industry’s toughest technological challenges. Nine technology roadmaps (prioritized research agendas) have been developed to address priority needs. Over 600 individuals contributed to these roadmaps, which have led to over a hundred R&D projects funded by various federal agencies and collaborative teams. The partnership has effectively accelerated progress on areas of pre-competitive research that are beyond the means of individual companies, yet are necessary to the industry’s long-term competitiveness and sustainability. At the ***Vision 2020: Next Steps*** workshop, four working groups reassessed the direction of *Vision 2020* to focus efforts on R&D priorities and expand participation and support. The results are summarized below.

Working Group A: New Chemical Science and Engineering Technology suggests that the scope of existing roadmaps be expanded to address engineering and process design of bioprocessing and the application of combinatorial methods to the design of catalysts. *Vision 2020* should be expanded to include three new technical topics: new materials for the electronics industry, nanoscience, and inorganic chemicals. The industry needs to develop a brief summary document that presents a unified set of research priorities that the entire industry can stand behind. This document should also identify R&D needs that span multiple roadmaps. *Vision 2020* should develop methods to encourage action in response to the roadmaps and foster interdisciplinary team approaches to research. The group also discussed other issues including involvement of small- and medium-size businesses; non-technical issues such as availability of a skilled workforce; and environmental and regulatory issues.

Working Group B: Supply Chain Management, Information Systems, and Manufacturing and Operations combined these three interrelated *Vision 2020* topics and called it *Chemical Industry Operations*. *Vision 2020* needs to be expanded to include the role of e-commerce, inter-company coordination of energy systems, small and mid-sized company needs, distributed processing, and entropic energy utilization for vastly higher efficiency. Roadmapping efforts should focus on advanced process automation, control, and optimization; process intensification and miniaturization; improved energy delivery systems with greater than 85 percent entropic energy efficiency; enhance value-added from Enterprise Resource Plans (ERP); and special needs of small- and medium-sized companies. For each effort, metrics, responsible parties, and strategies for collaboration were identified.

Working Group C: Communication Plan (Consensus Statement) identified 20 distinct audiences with a clear stake in the future of the chemical industry. Six key messages were identified to communicate how *Vision 2020* can improve the industry’s competitiveness, increase the efficiency of public investments in technology R&D, help achieve sustainable growth, reduce the time between technology development and commercialization, leverage technical resources, and improve profitability and growth. The message needs to articulate the link between the vision, roadmaps, new technology, and to subsequent productivity and growth, and explain how the benefits are achieved, what makes this partnership unique, and how progress is measured. *Vision 2020* goals need to relate to business objectives and efforts are needed to change the perception that *Vision 2020* is a government program.

Working Group D: Organizational Issues proposed a new organizational structure to coordinate and guide implementation of *Vision 2020*. The guiding body will be a 13-member group with corporate representation from key industry organizations, major chemical companies, and small companies. Funding provided by represented organizations and companies will be used to cover the expenses of a director, secretarial support, key activities to build support for *Vision 2020*, and logistical expenses of roadmapping. Informal industry groups with common pre-competitive needs will carry out activities (e.g., organic, inorganic, pharmaceuticals, materials of construction, etc.). The new structure involves a broader representation of the chemical industry and small companies, establishes a formal way to choose the executive board, and involves more funding agencies. Activities include the periodic re-evaluation of progress, reassessment of goals, and development of alternative funding sources.

Next Steps: The Chemical Industry Executive Steering Group (CIESG)—the informal group that organized the workshop to bring the chemical industry together to plan for *Vision 2020's* future—will take the lead in implementing the workshop results. Specifically, the CIESG will:

- Prepare a press release and article for publication on the workshop results
- Refine *Vision 2020's* message and develop a marketing plan
- Finalize and implement the guiding body structure
- Meet in October to integrate and implement other workshop recommendations
- Refine the *challenge concept* to encourage innovative problem-solving to address important industry needs through open funded competitions
- Plan a “Big Event” to bolster *Vision 2020* at the OIT EXPO IV in February 19-22, 2001