

Chemical Industry VISION2020 Technology Partnership

What is Vision2020?

The Chemical Industry Vision2020 Technology Partnership (Vision2020) is an industry-led partnership/process among public and private sector stakeholders in the chemical and allied industries. Stakeholders identify common problems and leverage technical expertise and financial resources to develop the critical enabling technologies of the future. Through collaborative efforts among industry, national laboratories, and academia, the Vision2020 Partnership fosters step-change technology innovation, which may be beyond the risk threshold of individual companies. Vision2020 is helping to maintain U.S. leadership as the world's largest chemical producer.

Goal of Vision2020

**Leverage resources to
accelerate innovation and
technology development**

The Vision2020 process was launched in 1996. Company representatives created a vision for the future chemical industry and identified key technical challenges to realizing that vision. Detailed roadmaps have been developed to outline research needs addressing many of these challenges. The roadmaps are used to guide academic and government funding and research in directions that will benefit the industry. An ongoing process reviews the vision and updates priorities.

Vision2020 currently focuses on the technology needs in four areas:

- New chemical science and engineering technology
- Supply chain management
- Information systems
- Manufacturing and operations

Key Benefits of Vision2020

Enhance Competitiveness, Profitability and Proprietary Development. Vision2020 focuses resources on pre-competitive technology priorities, thereby providing a critical mass of funds and technical resources to solve common technical problems. The enabling technologies developed by partners enhance corporate profitability and growth, leading to new products and optimized production inputs. Companies in the business of chemistry become more competitive by building on technical synergies and accelerating private innovation and commercialization.

Achieve Sustainable Growth. Vision2020 addresses future societal and market needs such as biobased feedstocks and environmentally sound processing, which may be beyond the R&D horizon of individual companies. The public image of the business of chemistry is enhanced by proactively developing technology for long-term sustainability.

Achieve More Efficient Investment of Public Funds. The technology roadmaps of Vision2020 help align public funding with industry priorities and coordinate R&D among government agencies, thereby strengthening the effectiveness of government programs.

Facilitate Collaboration to Leverage Resources. The Vision2020 process provides a legitimate forum for company experts to come together and discuss common needs. These interactions can produce specific, directed collaborative efforts, shared financial and technical resources, and access to specialized capabilities. Vision2020 leverages resources to bolster the development of a robust and sustainable chemical enterprise, without hindering proprietary interests.



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Why Get Involved?

Innovative technology is one of the most effective investments to achieve long-term competitiveness in the business of chemistry, regardless of strategic focus. In today's competitive environment, no company can operate in isolation. The pressures of short-term financial expectations limit a company's ability to support the technology needed, while the technical solutions are becoming more complex. The U.S. chemical industry must move to a more sustainable long-term mode in order to protect the economic interests of shareholders and meet the environmental, health, and safety expectations of public stakeholders in a global market.

Through Vision2020, chemical companies are:

- ❑ **Strengthening linkages with customers and suppliers**
- ❑ **Understanding long-term technology needs and trends**
- ❑ **Forming collaborative technology relationships and teams to respond to government solicitations**
- ❑ **Reducing risks and costs of complex multidisciplinary R&D**
- ❑ **Gaining access to top scientific expertise and facilities**
- ❑ **Leveraging and redirecting public R&D investments**
- ❑ **Promoting sustainable growth**
- ❑ **Enhancing public perception of the chemical industry**

Tangible Successes are the Result of Leadership from Individual Companies

- ❑ Roadmapping workshops have been held on the following important topics. Roadmaps have been developed for 10 of these topics.
 - ▶ Catalysis
 - ▶ Biocatalysis
 - ▶ Alternative Reaction Conditions
 - ▶ Alternative Reaction Media
 - ▶ Alternative Raw Materials
 - ▶ Combinatorial Chemistry
 - ▶ Computational Chemistry
 - ▶ Materials (I,II)
 - ▶ Alternative Polymer Processing
 - ▶ Chemical Analysis
 - ▶ Separations (I,II,III, IV)
 - ▶ Process Control Measurements
 - ▶ Process Simulation
 - ▶ Computational Fluid Dynamics
 - ▶ New Process Engineering
 - ▶ Reaction Engineering
 - ▶ Manufacturing and Operations
 - ▶ Agile Manufacturing
 - ▶ Supply Chain Management
 - ▶ Materials of Construction
- ❑ Computational Fluid Dynamics (CFD) Roadmap led to a consortium partnering 9 companies, 7 universities, and 5 DOE national laboratories, with initial project funding of \$19.8 million.
- ❑ Materials of Construction Roadmap led to 5 industry partnerships with the Materials Technology Institute (MTI) to address roadmap priorities. Participating companies and MTI will contribute \$8.4 million, technical expertise, and test sites over the life of the project, while Oak Ridge National Laboratory, Argonne National Laboratory, and select participating companies conduct the R&D. An additional \$5.1 million is leveraged from DOE.
- ❑ Center for Waste Reduction Technologies (CWRT), AIChE's industry-sponsored alliance, is developing sustainability metrics and life cycle cost assessment tools that address priorities identified in several roadmaps. Companies are sharing manufacturing experience.
- ❑ DOE Office of Industrial Technologies (OIT)'s Chemical Industry of the Future (IOF) program now uses Vision2020 roadmaps to select projects for funding. As a result, the Chemical IOF has directed \$72 million to technology innovation for the chemical industry through industry-DOE cost sharing. 26 collaborative projects are now active. Other IOF industries are using a similar approach and realizing marketable results.
- ❑ As the roadmap recommendations are embedded in the planning of government-sponsored research, the results of Vision2020 will be more apparent. Some of these recommendations are taking root and are expected to pay dividends.

How to get involved?

Visit our web site at www.chemicalvision2020.org.