



I M V P

International Motor Vehicle Program: <http://imvp.mit.edu/>

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Overview of the International Motor Vehicle Program

***Auto Industry Symposium:
The 2003 RIETI – Hosei – MIT IMVP Meeting
Tokyo, Japan
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Purpose of This Meeting

- Describe IMVP's history and business model
- Highlight themes of IMVP's Phase IV agenda
- Summarize IMVP's current and future research
- Describe and display IMVP's capabilities

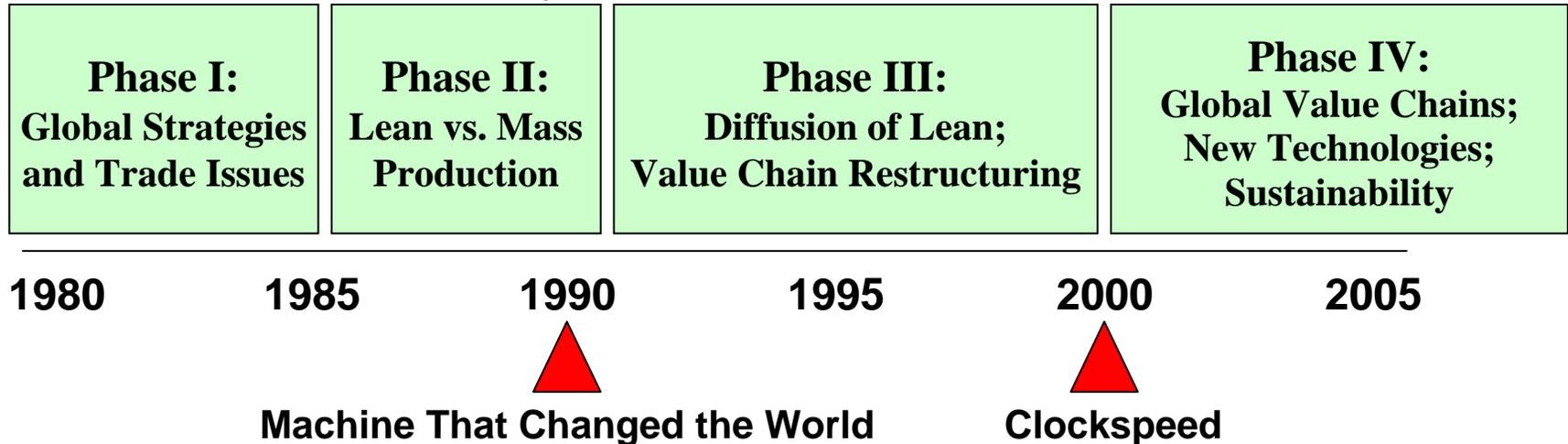


What is the International Motor Vehicle Program?

- IMVP is an established network of universities centered at MIT that conducts research for the global automotive industry.
- Since 1980, IMVP has carried out four major phases of research on “what comes next” for autos and developed a strong community of individual researchers and industry supporters.
- In 2001, IMVP started “Phase IV” research program to study:
 - Innovative extensions to the “basics” of lean production
 - Influence of new technologies on product architecture, supply chain dynamics, and new market opportunities.
 - Sustainability: both competitive and environmental.



IMVP's History Spans 20+ Years



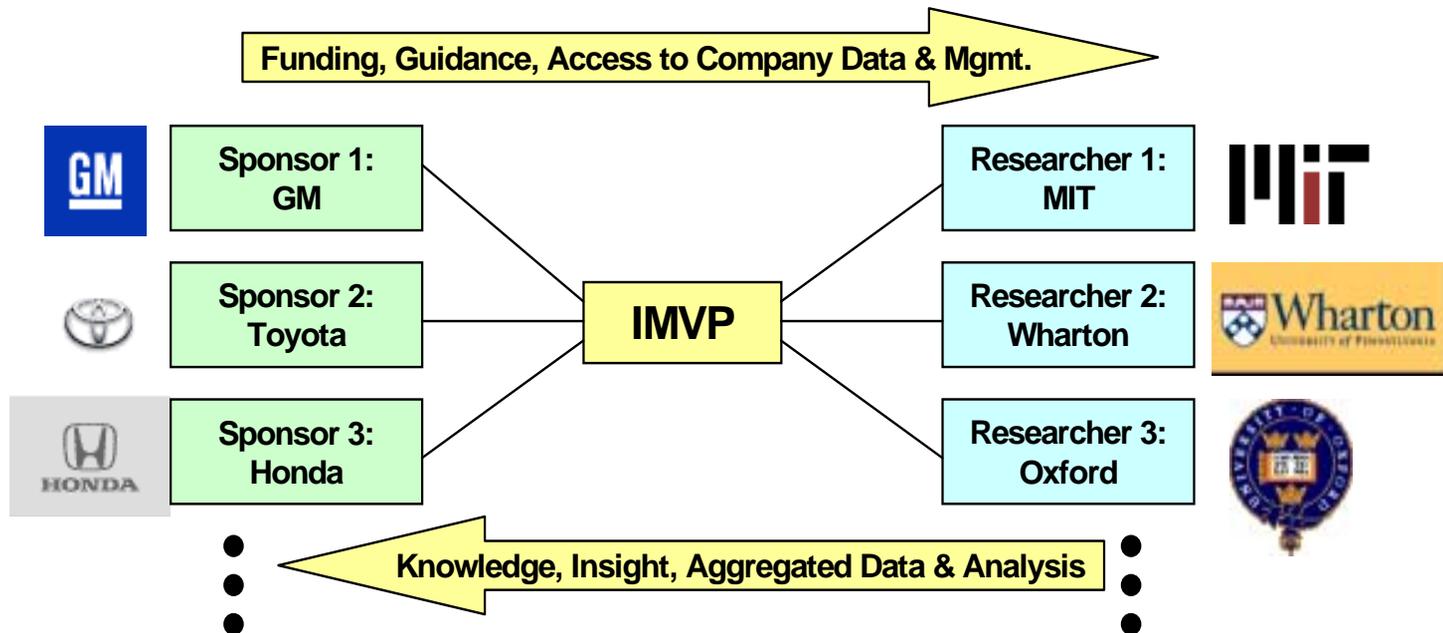
Books from IMVP and Its Researchers:

- Phase I: *The Future of the Automobile* (1984).
- Phase II: *The Machine That Changed the World* (1990).
- Phase III: *Prices, Quality, & Trust: Inter-firm Relations in Japan and U.K.* (1992);
Thinking Beyond Lean: Multi-project Product Development (1996);
After Lean Production: Evolving Employment Practices (1997);
Clockspeed: Winning Industry Control (2000).
- Phase IV: *The Second Century: Reconnecting Customer and Value Chain* (2004).



IMVP Business Model

Sponsors contribute funds to IMVP, which in turn allocates the funds to a network of IMVP researchers at leading universities around the world. Researchers present research findings and conclusions to sponsors at international and regional meetings. Access to intellectual property is restricted to the sponsors for six months.





IMVP's Phase IV: Navigating Auto's Next Economy

ALLIANCES



Managing the Extended Enterprise

- Benchmarking the Value Chain
- Modularity and Outsourcing
- R&D and Product Dvlpmt. Strategies
- Building Skills and Capabilities Across Boundaries

eAutomotive

- E-Supply Chains and Hubs
- E-Powered Consumers
- Telematics

Visions of a Sustainable Future

- Green Drive Trains
- New Materials, Recycling, and Environmental Management
- Mobility Solutions

ORGANIZATIONAL LEARNING AND KNOWLEDGE MANAGEMENT

ENABLING AND DISRUPTIVE TECHNOLOGIES

GLOBAL REACH



IMVP's Perspective on Auto Industry Evolution

- Diffusion of lean production speeds up in 1990s, though still incomplete.
- Before 2000, some proclaim revolutionary changes for post-lean industry.
- Since 2000, “back to basics”, but can’t ignore recent developments.
- Mastery of basics **plus** innovations that are adapted and added to lean production are required.
- Lean production isn’t rigid, can accommodate regional variation and mixed strategies (*e.g. long-term supplier relations and market-based transactions*).
- Performance levels possible under lean production are expanding, along multiple dimensions (*speed and flexibility and synchronization as well as cost, quality, and variety*).



Current IMVP Research Projects

- **Build-to-Order** -- what OEM and supplier capabilities needed; impact of information visibility; expanding to U.S. and Japan (*Matthias Holweg*)
- **Product Architecture and Supplier Involvement in Design** -- how to define/measure product architecture; modularity trends in design/production; what division of design tasks and knowledge between OEMs and suppliers (*Sebastian Fixson; Mari Sako; Taka Fujimoto; Frits Pil; Susan Helper*)
- **Supplier Parks** -- evaluating international drivers of S.P; what impact on performance, skill development and jobs (*Mari Sako*)
- **B2B** -- how will firms mix modes of exchange, e.g. industry consortium, partnerships, public + private (*Susan Helper; JP MacDuffie*)
- **Telematics** -- where clocks speeds collide understanding communications value chain; should module boundaries align with clock speed? (*Charlie Fine*)
- **Dealer “20” Groups** -- collaborative *kaizen* among non-competing dealers (*Ezra Zuckerman*)
- **Round 3 of Int’l. Ass’y. Plant Survey** -- productivity/quality/variety trends; relationship between flexibility and costs; outsourcing (*Frits Pil*)



Future IMVP Research Projects

- **Helping Customers Find What They Need** -- configurator-based guidance through a product world of too many choices; educating customers about the design space while refining understanding of “need” (*Christian Terwiesch*)
- **Drive Train Futures: Scenario-Building for a Hydrogen Infrastructure** – workshop with IMVP sponsors to develop future scenarios and chart alternative paths towards them (*Sandra Rothenberg/James Winebrake*)
- **Auto Investments in Latin America** -- future consequences of current situation of over-capacity, yet enhanced capabilities (*Gerry McDermott*)
- **Modular/Shared Platform Strategies: Assessing the Risk** -- impact of reduced differentiation for brand image of European producers (*Heike Proff*)
- **Product Design Through Alliance** -- how automakers work together to produce products from shared platforms, e.g. Renault/Nissan/ Samsung (*Nam Lee*); Ford/Mazda (*Daniel Heller*); GM-Fiat (*Arnaldo Camuffo*)
- **Process Management and Performance: The Case of ISO 9000** – when does process management lead to performance advantage vs. merely defining a new minimal threshold? (*Francisco Veloso and Mary Benner*)



IMVP's Capabilities

- Historical knowledge of auto industry shared among long-time collaborators
- Deep and rigorous analysis
- Global, multi-company, longitudinal data
- Systems perspective, value chain analysis
- Metric development
- Scenario development for future issues



IMVP's Network Taps Researcher Talent at Top Universities

- MIT
- Wharton School, University of Pennsylvania
- University of Pittsburgh
- Carnegie-Mellon
- Case-Western Reserve
- University of Michigan
- Rochester Institute of Technology
- Northwestern University
- Tokyo University
- Hitotsubashi University
- Kobe University
- Hosei University
- Oxford University
- Cambridge University
- INSEAD
- University of Mannheim
- University of Padua



What IMVP Offers the Global Auto Industry

- IMVP's deep knowledge of industry dynamics and firm trajectories, past and present, puts it in a pivotal position to point to “what comes next”
- IMVP studies fundamental questions and critically assesses fads
- IMVP is a magnet for research talent, with growing network of researchers at top universities worldwide
- IMVP is expanding and differentiating its product line, e.g. scenario planning workshops, decision tools