



Dow Transformation & Experiences in Open Innovation

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“Innovation is not the product of logical thought, although the result is tied to logical structure.”

- Albert Einstein





Outline

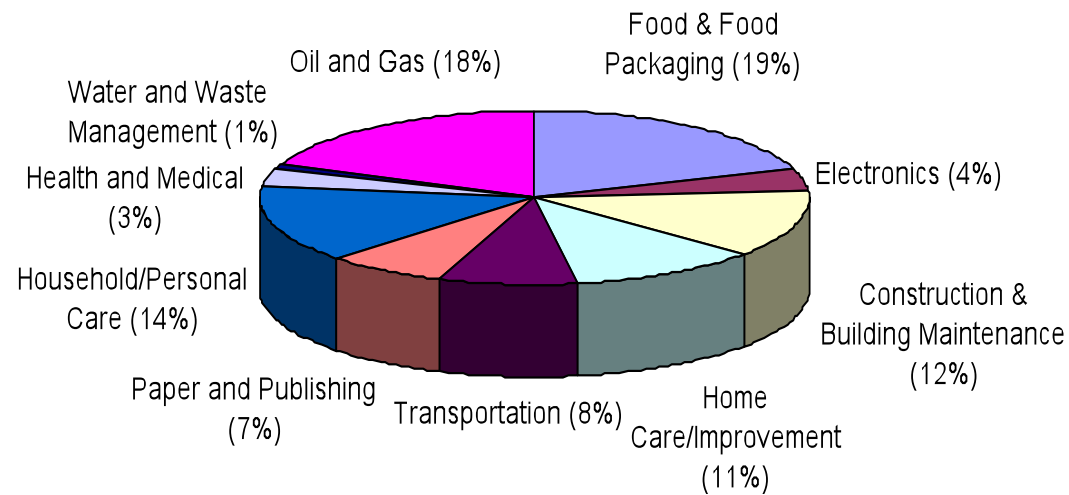
- **About Dow**
- **Company in Transformation**
- **Learning Experiences in Open Innovation**
 - SiLKnet
 - High Throughput Research
 - Dow Automotive
- **Summary**





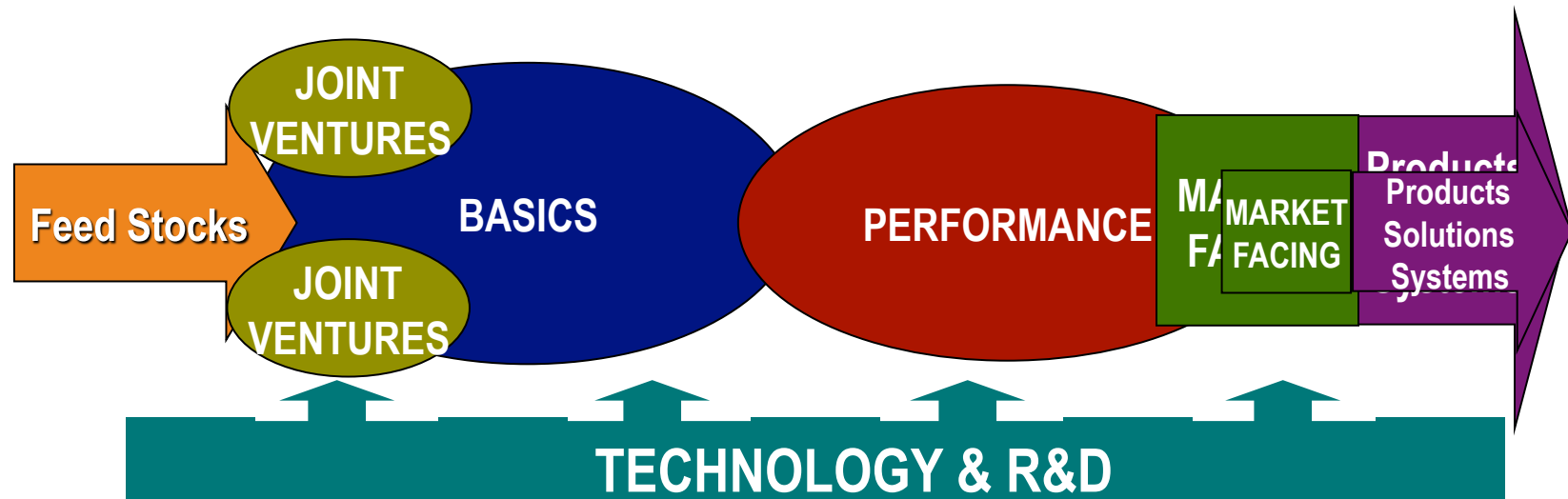
About Dow

Annual Sales (2007): \$54B
Employees: 46,000 globally
History: Founded in 1897 by Herbert H. Dow
Locations: Headquarters in Midland, MI. with 150 manufacturing sites in 35 countries. Customers in 160 countries





Company in Transformation (Today)



Strategic agenda

- Retain synergies of integration and diversification
- Joint ventures for Feed stocks & Basics
- Strengthen Market-Facing and Performance businesses
- New R&D Centers in China and IMEA
- Drive financial discipline

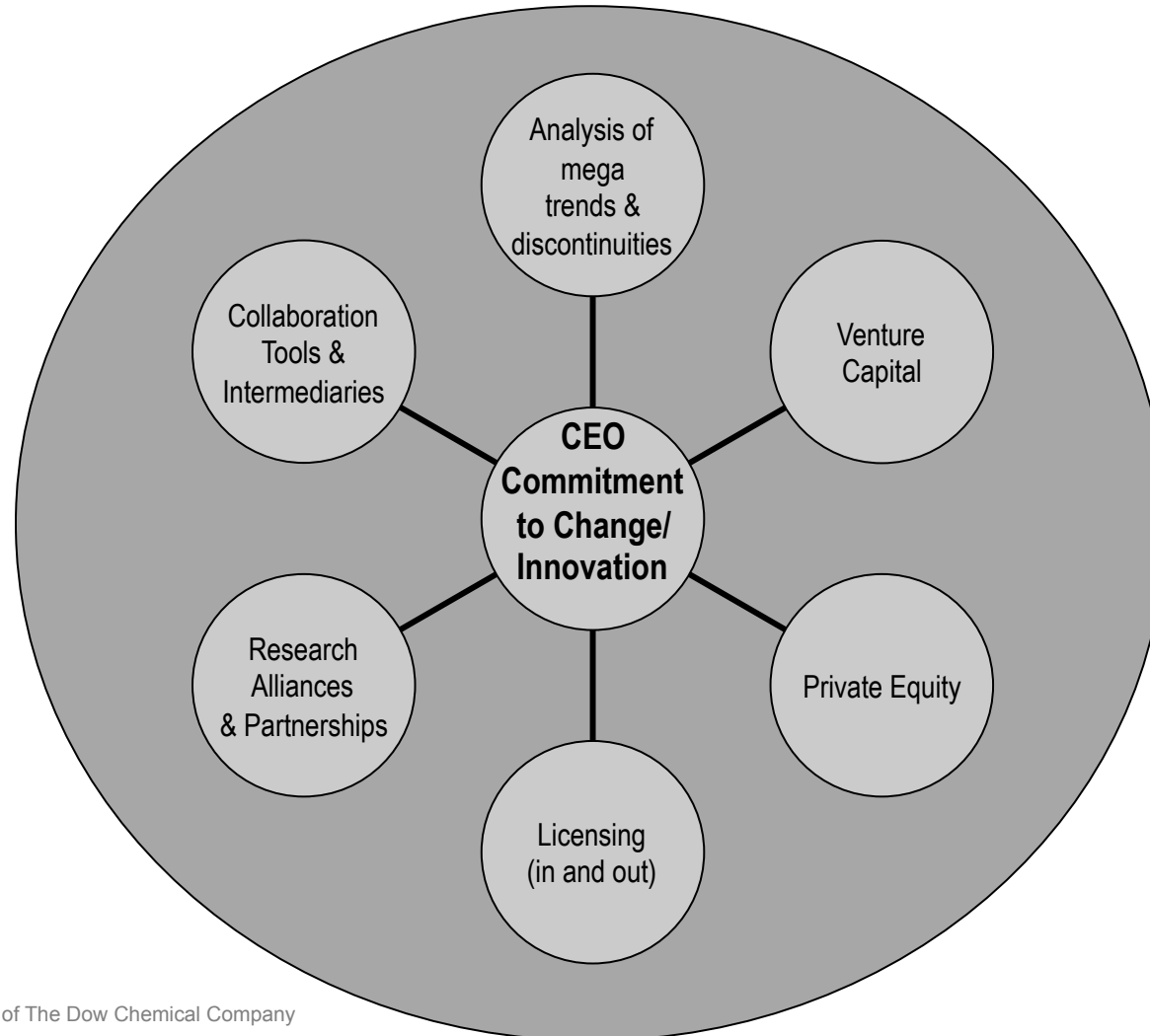
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Culture of Innovation





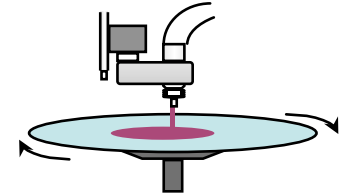
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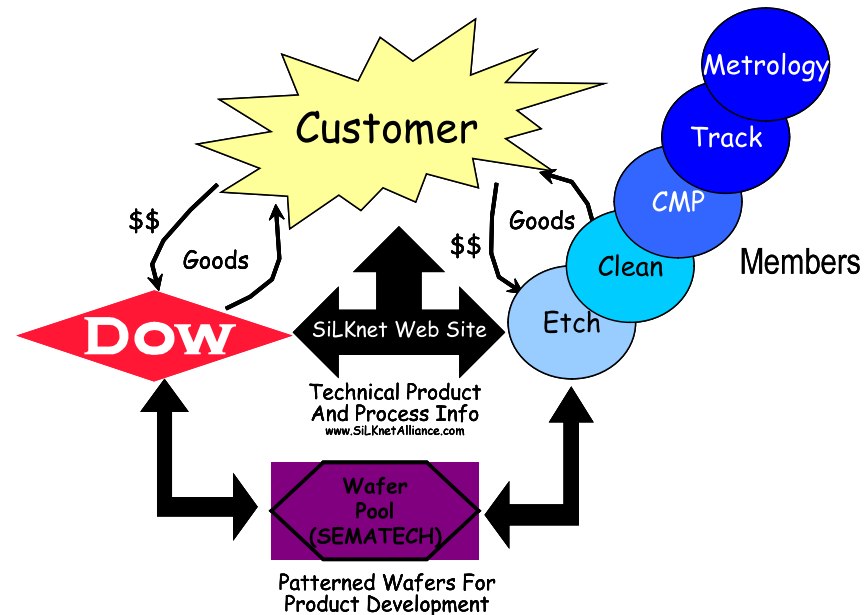


SiLKnet AllianceSM



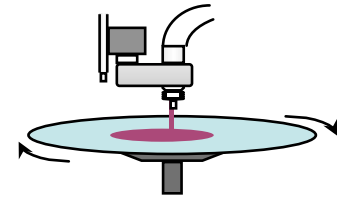
- **Background:**

- Late 1990's, Dow introduced SiLK™ to Semiconductor Industry. New product – no equipment, no processes developed for integration and limited channel.
- Competitors were incumbent, had product, equipment, and process know-how.





SiLKnet AllianceSM



- **Results:**

- Processes were developed for SiLKTM. Member companies demonstrated skills to IC producers. IC producers now had recipes to use.
- In 2001, SiLKTM won *Semiconductor International* “product of the year”
- Alliance helped Dow establish a product, process know-how and a channel.
- SiLKTM not adopted by main IC producer/partner or as broadly as desired. SiLKnet was sunset.

- **Learnings:**

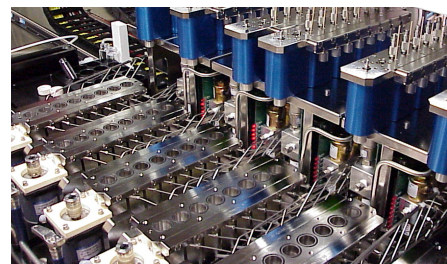
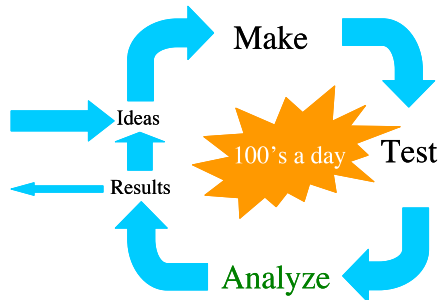
- New-new is risky! Having “partnerships” to mitigate risk is key.
- Alliance partners need to have grounded view of risk vs. reward.
- Defining how IP will be handled within an Alliance is critical.





High Throughput Research

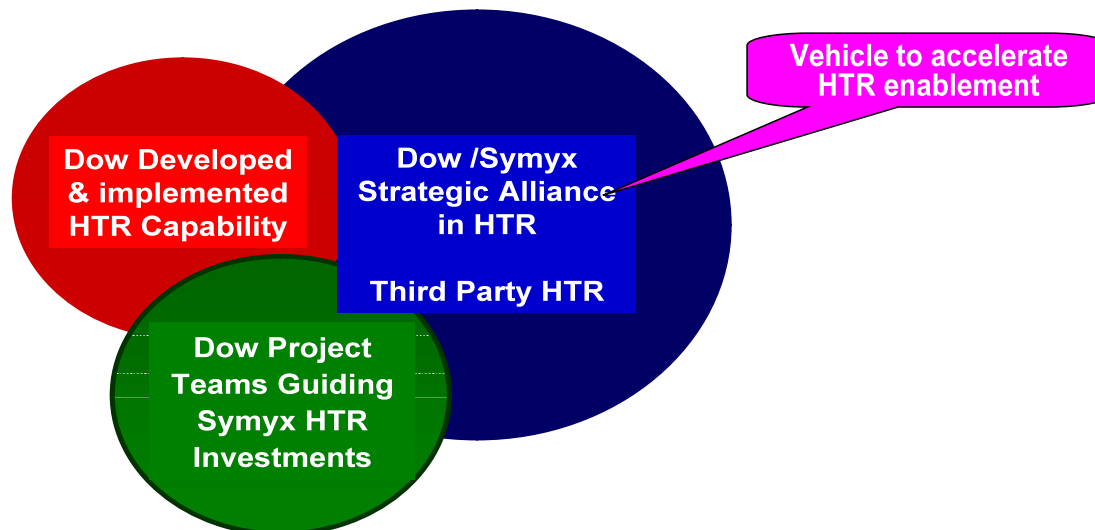
- HTR has been used extensively in Ag and Pharma for >15 years.



- In 1999, Dow began to invest in HTR capabilities.
 - Collaborative R&D with Symyx applied to polyolefin catalysis led to rapid identification of new catalysts & breakthrough discoveries (i.e., INFUSE™).
- Desire to expand HTR beyond synthesis and catalysis. Required entirely new tools and workflows.



High Throughput Research



- **Results:**

- New tools and software developed & work flows defined.
- Success in specialty liquids, extended to ETP blending, thermoset reactivity, adhesives, etc.

- **Learnings:**

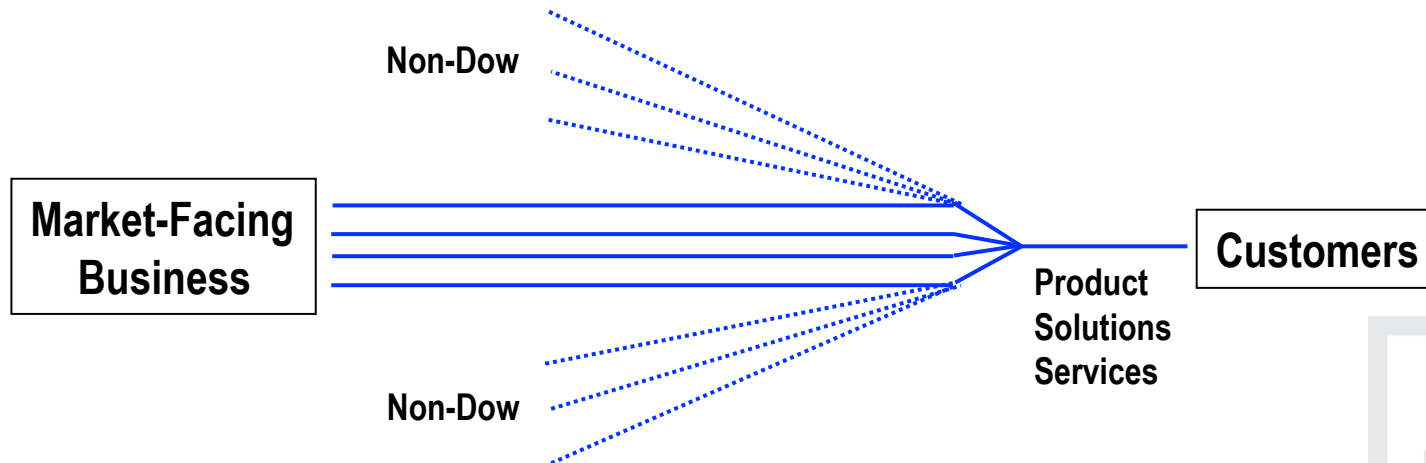
- Joint problem solving is essential to develop capability and manage cost.
- Having realistic value sharing expectations fosters good cooperation.
- IP rights and ownership principles must be understood up-front.





Dow Automotive

- Dow is a leading solutions provider to the global Automotive industry.
- Mid-1980's Dow Automotive was launched as one of Dow's first market-facing businesses. Started as channel for ABS, PC and ETPs.
- 1990s, channeled all appropriate Dow products to customers, offered design capabilities, and solutions (versus products only).





Dow Automotive

Results:

- Technologies from the outside to meet industry needs:
 - Early 2000, Crash Durable Adhesive: Essex M&A ('88), licensed tech ('97).
 - 2005, Low Energy Structural Adhesive: Identified at Russian University.
 - 2007, IMPAXX™ Structural Foam: Base technology from DBS.



CDA



LESA™



IMPAXX™

Learnings:

- Market-facing provides deeper understanding of trends and needs (validated MFB concept).
- Looking outside the company / business for solutions can accelerate development.

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Summary

- Einstein's statement has shown to be true! Innovation is not the product of logical thought, although the result is tied to logical structure :
 - Business model
 - Alliances
 - Agreements
- We continue to learn from our successes and failures, and apply the learnings.
- As we become more market focused, our approach to innovation is opening more too.





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