



**Millennium
Chemicals Inc.**

**THE IMPACT OF TECHNOLOGY IN THE
PROCESS INDUSTRIES**

2002 OSIsoft User's Conference

March 13, 2002 Monterey, California

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Vice President - IT & CIO**

MILLENNIUM CHEMICALS IN BRIEF



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	Position	Share
TiO₂	2 in the world 2 in the US	16% 23%
Acetyls	2 in the US	19%
Terpene-based fragrance chemicals	1 in the world	n/a
Equistar*		
Ethylene	1 in the US	17%
Polyethylene	2 in the US	15%

* 29.5% owned

A GLOBAL COMPANY



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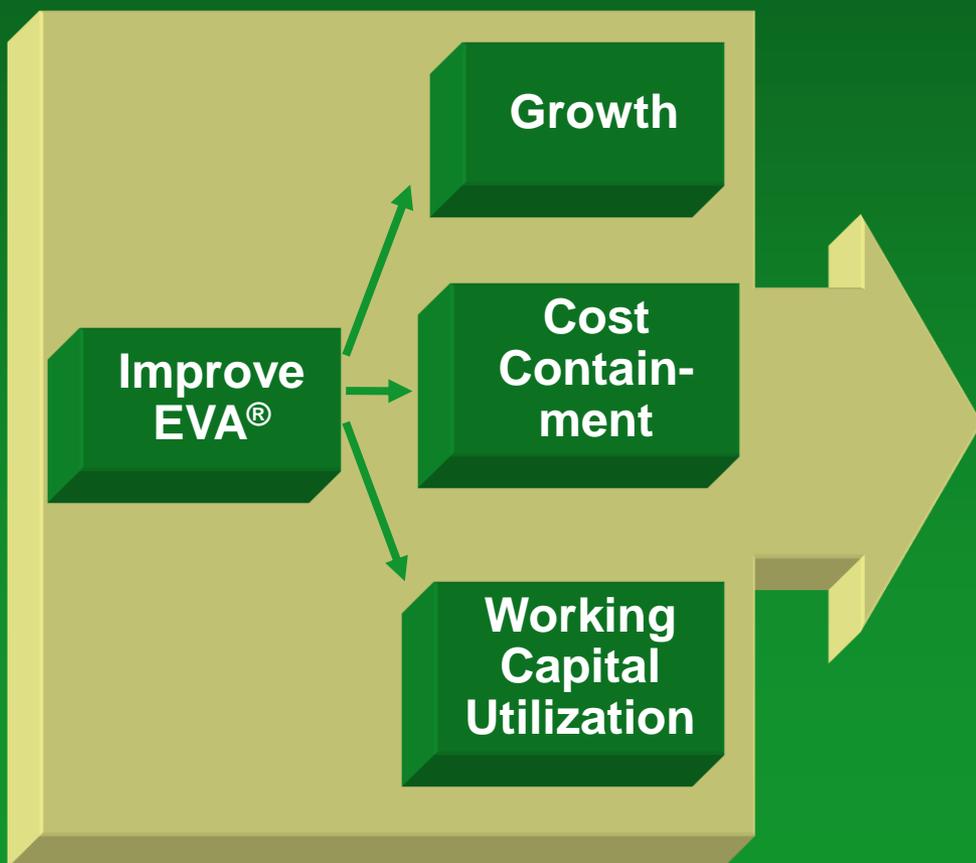


E-BUSINESS

Helps Drive The Vision



Millennium Chemicals' Vision



E-Business Vision

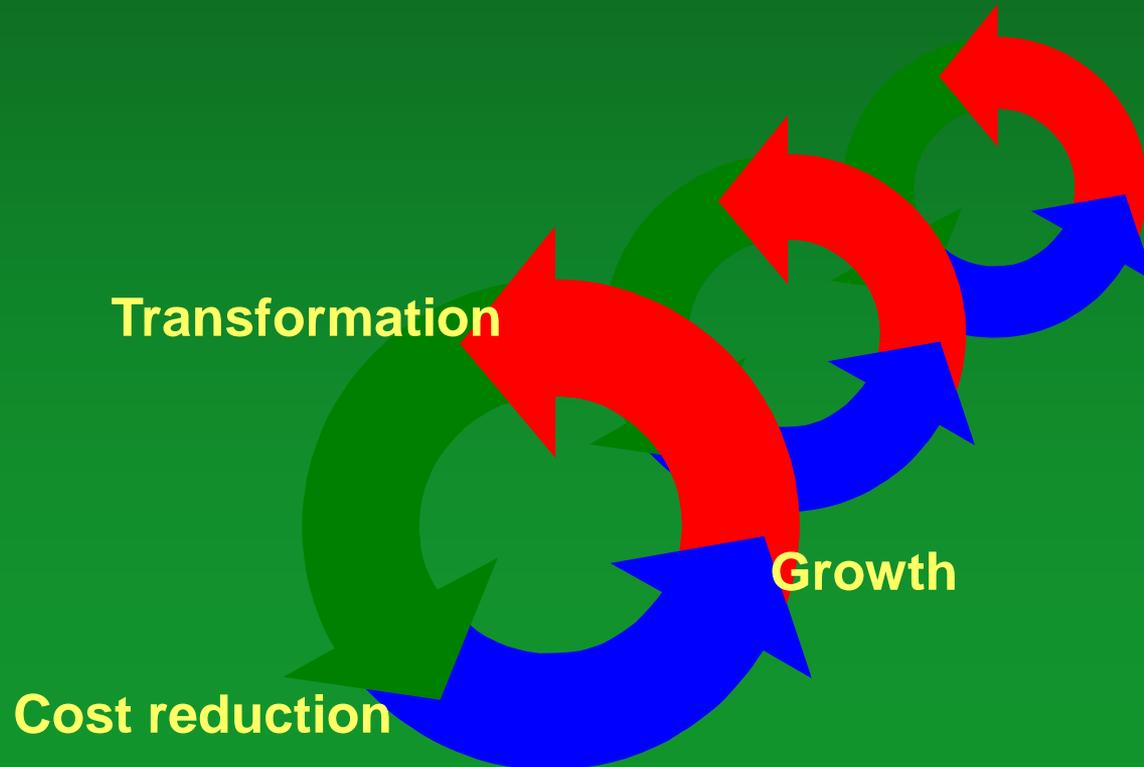
Create value by linking enterprises and supply chains in a new collaborative business model that adds value to our customers and ourselves

E-BUSINESS VISION



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To create value by linking enterprises and supply chains in a new collaborative business model that adds value to our customers and ourselves



TRANSFORMATION LED BY IT



- **Let's look at where we came from to see where we are going**
 - **evolution of IT**
 - **old business model**
 - **new business model**
 - **characteristics of virtual enterprises**
 - **infrastructure issues**

USE OF IT IN BUSINESS



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- **1960's to 1970's:**
 - **emphasis on data processing**
 - **operating on mainframes**
 - **aimed at functional requirements**
 - **Material Requirements Planning (MRP)**
 - **linear, batch processing**
 - **user written**

USE OF IT IN BUSINESS (cont'd)



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- **1980's:**
 - **MRP II considered capacity and resource constrains**
 - **manufacturing centric**
 - **purchased specialized programs**
 - **online aimed at functional requirements**
 - **still mainframe based, w/ network PC's**
 - **emphasis on business applications**

USE OF IT IN BUSINESS (cont'd)

- **1990's:**
 - **Enterprise Resource Planning (ERP) packaged systems**
 - **single, real-time interface**
 - **integrated systems with reengineered processes**
 - **driven by globalization**
 - **client/server architecture**
 - **with point-to-point EDI**

USE OF IT IN BUSINESS



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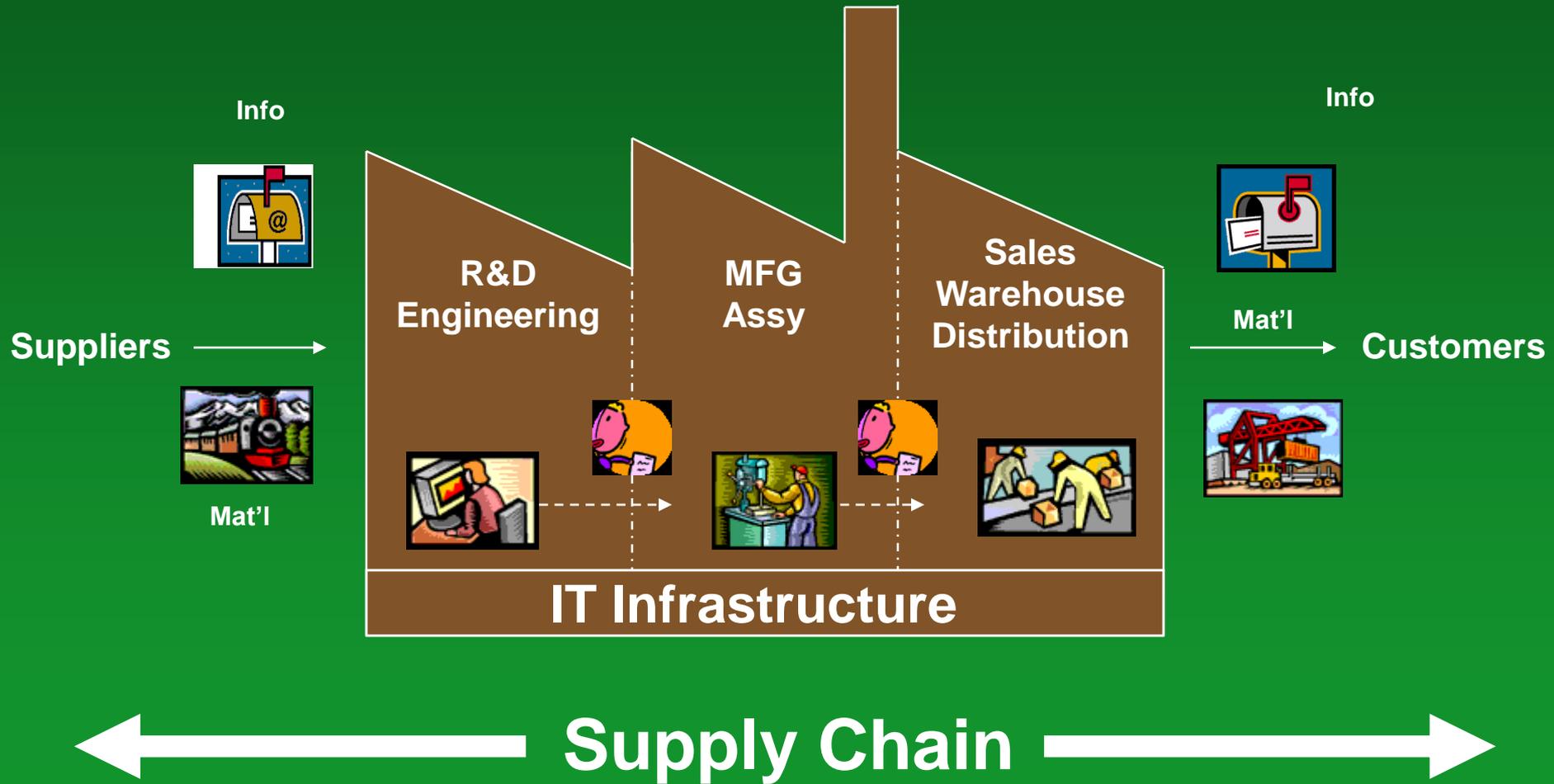
- **2000's:**
 - **ERP Adv Planning Supply Chain integration**
 - **real-time web-enabled interface to transactional and plant systems (OSIsoft PI)**
 - **enterprise linking and collaboration**
 - **driven by need for speed and agility**
 - **connect one-to-many and many-to-one**
 - **arrival of e-commerce and the virtual enterprise**

BUSINESS TRANSFORMATION: Old model

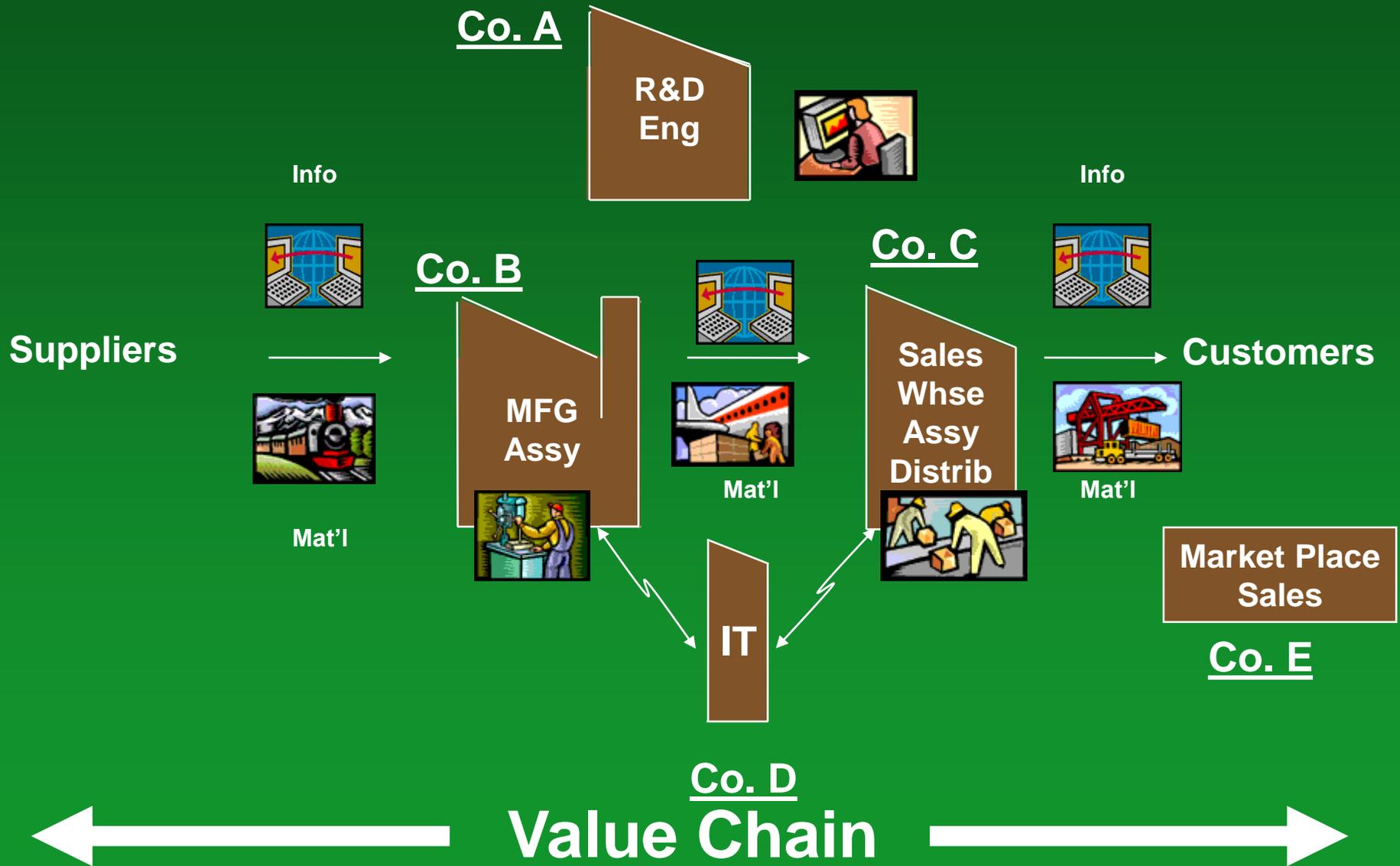


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Company A



BUSINESS TRANSFORMATION: New model for Virtual Enterprise



VIRTUAL ENTERPRISE



- Partner companies behave as one
- Information flows through Internet
- Driven by need for speed, cost reduction
- Give up competencies, people, assets, infrastructure
- From inter-enterprise to inter-value connections
- Information flows seamlessly between companies

WHAT'S NEEDED FOR VIRTUAL ENTERPRISES TO SUCCEED?



- **Enabling infrastructure**
- **Agile, robust, e-business architecture**
- **Service level agreements**

ENABLING INFRASTRUCTURE



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- **Be open for business 24x7x365**
- **Rapid response to any and all**
- **Provide secure environment for transactions and data transfer**
- **Link to extended enterprise**
- **Protect customer privacy**
- **Make it scalable to be cost effective**

AGILE, ROBUST E-COMMERCE ARCHITECTURE



- Access to workflow depends on user profile
- Tasks and workflow configured dynamically
- Governed by business rules
- Need multiple player access to corporate ERP and plant systems (*OSIsoft PI is our standard*)
- Framework must allow fast upgrades

SERVICE LEVEL AGREEMENTS



- **Needed to define business network performance**
 - **communications protocols**
 - **data exchange formats**
 - **response times**
 - **management of change**
 - **problem resolution**
 - **measurement**

TWO BIG QUESTIONS



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- **Who “owns” the extended business process?
(i.e who will keep it all together?)**
- **How to share gains when one part of the chain incurs the costs and the other reaps the benefits?**



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