


E. Integrated Solution From Floor to e-Commerce in Process Industries

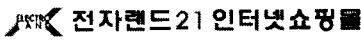
**(주)에이드
박 일 재**

Integrated Solution From Floor to e-Commerce in Process Industries

Il Jae Park
Vice President
AID Corporation, Korea

Korean e-Commerce Sites

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뉴스 처음 - 아후! 세계2000년 3월6일 오후 7:01

[WP전자상거래 쇠락]美 新경제 "적자 악몽" 흥은락기자 - 계속

백류아메리카가 취급한 품목은 2000여 개가 넘었다. 주문한 물건을 생산자가소비자에게 제대로 배달하고 있는지 중간에서 확인할 길이 없었고 실제로 많은 물건이 제 때 배달되지 않았다. 소비자들이 반쯤만 물건을 생산회사가 아니라 백류 아메리카의 창고에 쌓였다. 신용카드로 판매한 물품대금을 회수하는 데는 최소 45일이 걸려 자금 흐름도 원활하지 않았다. 이결과 지난해 들어 9개월 동안 1억2980억 달러의 손실이 발생했다

비슷한 이유로 여성용 물건을 취급하는 위민닷컴(Women.com)이나 시 게츠 드레스트(She Gets Dressed)는 아예 문을 닫았다. 장난감 전문인 이토이스(Etoys)는 지난해 4-4분기 손실액 증가 폭이 판매성장률을 넘어섰다. 최대 인터넷 서점이자 소매점인 아마존닷컴(Amazon.com)조차 최근 3개월 여 동안 주가가 40%나 하락했다. 경쟁 인터넷 서점인 반스앤노블(Barnesandnoble.com)은 지난해 10월 23.25 달러였던 주가가 3일 현재 8.93달러로 폭락했다. 6년째 전자상거래에 종사해 이 분야에서는 건실한 회사로 평가 받던 사이버숍(Cybershop)사는 지난해 3-4분기 판매량이 감소한 사실을 감춰 투자자들로부터 거센 항의를 받고 있다.

이 최대 증권사인 메릴린치의 분석가 헨리 블로제트는 워싱턴포스트와의 회견에서 "인터넷 소매는 가장 성공하기 힘든 모델인데 기업인 들이 그 동안 인터넷 광풍에 휩싸여 제대로 현실을 보지 못했다"고 지적했다. 전자상거래 전문가인 앤디 할리데이는 "아직도 전자상거래의 성장가능성을 믿지만 브랜드 파워를 갖고 있으면서 효율적인 배달시스템을 구축하고 있는 몇 개의 회사만이 살아남을 수 있을 것"이라고 내다봤다.

**DJ Asian Petrochemical Cos Invest In On-Line Trading Company
Seoul(Dow Jones) – 22 Feb, 2000 SEOUL (Dow Jones)—
Petrochemical companies from six Asian countries signed an
agreement Tuesday in Seoul to invest \$700 million in the creation of
on-line chemical trading company ChemCross.com.**

**South Korean companies investing in the on-line venture are
Aekyong Petrochemical Co. Ltd. , Dongbu Han Nong Chemical Co.,
Hansol Chemical Co., Hanwha Chemical Corp., Hanwha Corp.,
Kohap Ltd., Korea Petrochemical Industrial Co. Ltd., LG-Caltex Oil
Corp., Samsung Corp., Kumho Chemicals Inc. and Honam
Petrochemical Corp.**

**Taiwanese companies Tuntex Petrochemicals Inc. and Chi Mei Corp.
have also invested in the on-line venture.**

Thai company Cementhai Chemicals is also a ChemCross.com investor.

Indonesian investors include Polytama, the Sinar Mas group and GT Petrochem Industries.

Japanese chemical companies, including Nippon Steel Chemical Co. (J.NSL), Nihon Zeon, Mitsubishi Gas Chemical Co. (J.MGC) and Maruzen Petrochemical Co. (J.MRZ), have also invested in ChemCross.com.

Chinese investors include Shanghai Petrochemical Co. Ltd. (Q.PET), Sinopec Yangzi Petrochemical Corp., and Sinochem Pudong Trading Co. Ltd.

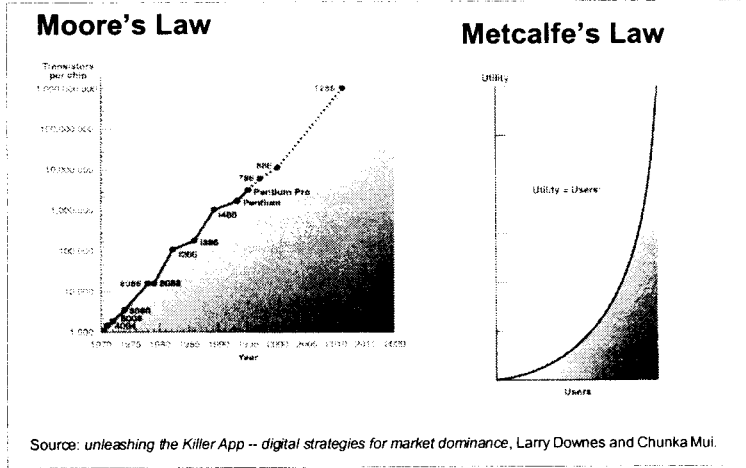
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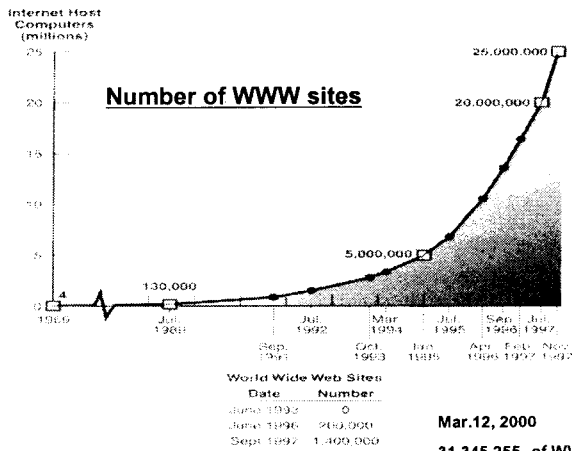
e-Commerce



Change Speed of Technology



e-Commerce



Source: *unleashing the Killer App -- digital strategies for market dominance*, Larry Downes and Chunka Mui.

e-Commerce



B2C : Business to Consumer

Amazon.com, PriceLine.com, ValueAmerica.com,
CyberShop.com, Women.com, myKims.com, imall.com,
csclub.com, 39Shopping.com, eToys.com etc.

B2B : Business to Business (Process Industries)

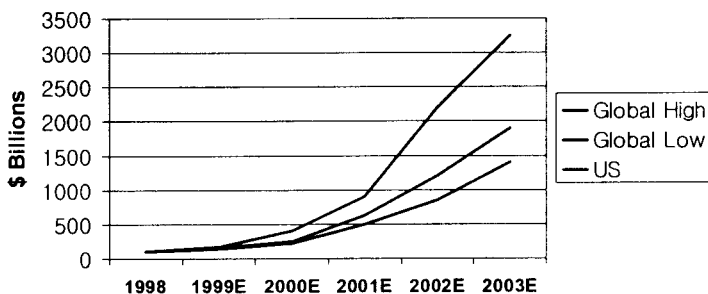
ChemConnect.com, CheMatch.com, Chemdex.com,
ChemCross.com, PlasticsNet.com, PetroCosm.com,
EnergyNet.com, e-Steel.com etc.

e-Commerce



Global e-Commerce is on Explosive Growth

Total eCommerce Revenues 1998-2003E



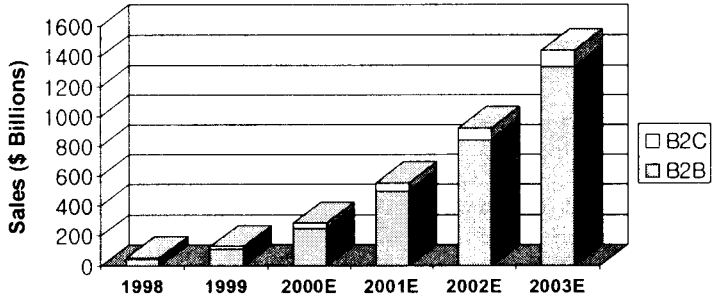
Source: Forrester Research, Cambridge, MA, USA

e-Commerce



B2C is being and will be changed to B2B

Total US Internet-Based Commerce



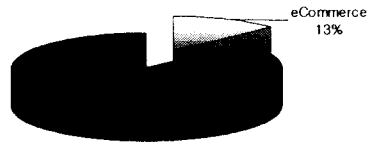
Source: Forrester Research, Cambridge, MA, USA

e-Commerce



e-Commerce in Petrochemical Business

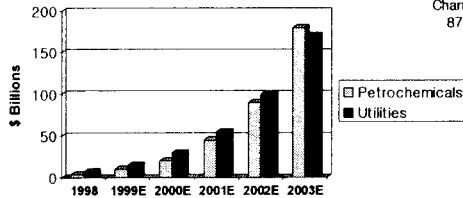
2003E US B2B Revenues In Petrochemicals



Other Sales Channels
87%

Source: Deutsche Bank Alex. Brown

U.S. Energy Internet Commerce Revenue



Source: Forrester Research, Cambridge, MA, USA

e-Commerce (Ex. B2B)



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About CheMatch.com

CheMatch.com offers participants quick and easy access to large commercial quantities of standard base commodity chemicals, plastics and fuel products. Current products include 1,3-Butadiene, Acetone, Ammonia, Benzene, Caustic Soda, Cumene, Cyclohexane, DAP, Diethylene Glycol, Ethylbenzene, MAP, Methanol, Mixed xylenes, Monoethylene Glycol, MTBE, Naphtha, Orthoxylene, Paraxylene, Phenol, Polyethylene, Polypropylene, Polystyrene, Polyvinyl chloride(PVC), Potash, Propylene, PTA, Styrene monomer, Toluene, Triethylene Glycol and Urea. Expansion into other chemicals, plastics and fuel products is ongoing.

e-Commerce (Ex. B2B)



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- BAMBERGER POLYMERS
- BASF AG
- BAYER AG
- BAYER CORPORATION (U.S.)
- BEAUMONT METHANOL LP
- BP AMOCO CHEMICALS
- BP CHEMICALS TRADING LTD
- CELANESE LTD.
- CHEMICAL TRADING S.L
- CHEVRON CHEMICAL - GENEVA
- CHEVRON CHEMICAL - SINGAPORE
- CHEVRON CHEMICAL LLC (U.S.)
- CLARK REFINING & MARKETING, INC.
- COASTAL CATALYST & CHEMICAL COMPANY
- COPENE PETROQUIMICA S.A.
- DEL TECH CORPORATION
- DOW EUROPE S.A.
- DOW HYDROCARBONS & RESOURCES
- DSM
- DURAVIN CHEMICALS
- E.I. DUPONT
- EASTMAN CHEMICAL COMPANY
- EC ERDOELCHEMIE GMBH
- ENRON PETROCHEMICALS (EUROPE) COMPANY
- ENRON PETROCHEMICALS COMPANY (U.S.)
- EPSILON PRODUCTS COMPANY

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- EXXON MOBIL CHEMICAL
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- FERNZ SPECIALITY CHEMICALS
- FMC CORPORATION
- GADIV PETROCHEMICAL INDUSTRIES, LTD
- GANTRADE CORPORATION
- GENERAL ELECTRIC COMPANY
- GEORGIA GULF CORPORATION
- GRUPO IDESA
- GUJARAT ALKALIES AND CHEMICALS LTD.
- H. MUEHLSTEIN & CO., INC
- HEDCO PAKISTAN
- HERDILLIA CHEMICALS LIMITED
- HUNTSMAN PETROCHEMICAL CORP.
- HYUNDAI CORPORATIONKOREA
- INFINEUM USA LP
- INTERCHEM 2000 LTD (EUROPE)
- INTERCHEM AMERICAS, INC
- JLM CHEMICALS ASIA PTE LTD
- JLM INDUSTRIES HOLLAND B.V
- JLM INTERNATIONAL (US)
- KOCH CHEMICAL INTERNATIONAL (US)
- KOCH REFINING INTL. PTE LTD (EUROPE)
- KOCH REFINING INTL. PTE LTD (SINGAPORE)
- KOLMAR PETROCHEMICALS AMERICAS, INC
- LANDMARK CHEMICALS (FAR EAST) PTE LTD
- LANDMARK CHEMICALS S.A
- LG INTERNATIONAL CORP.KOREA
- LYONDELL
- LYONDELL CITGO-REFINING LP
- M HOLLAND COMPANY
- MAGNUM SOLVENTS

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- MARUBENI AMERICA CORPORATION
- METHANEX METHANOL COMPANY
- MIDLAND PETROCHEMICALS LTD
- MILLENNIUM INORGANIC CHEMICALS
- MILLENNIUM PETROCHEMICALS, INC.
- MULTICHEM INC.
- NESTE OXO AB
- NESTE RESINS
- NOBLE AMERICAS CORP
- OCCIDENTAL CHEMICAL CORPORATION
- OCEANA PETROCHEMICALS AG
- OSTERMAN & COMPANY, INC.
- PENINSULA TRADING
- PERFORMANCE POLYMERS
- PETROCHEM UK LTD.
- PHENOLCHEMIE ASIA PTE LTD
- PHENOLCHEMIE GMBH & CO KG
- PHENOLCHEMIE, INC (US)
- PHILLIPS CHEMICAL CO.
- PLAZA GROUP (THE)
- PPG INDUSTRIES, INC
- PROPPET
- RAPID INDUSTRIAL PLASTICS CO., INC
- REICHOLD
- RHODIA-STER S/A
- SAMSUNG AMERICA, INC.KOREA
- SAMSUNG CORPORATION (KOREA)KOREA
- SHELL CHEMICAL COMPANY
- SHELL CHEMICALS LTD. (EUROPE)
- SIAM CHEMICALS TRADING CO., LTD

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-SK CORPORATION (KOREA)KOREA
-SK GLOBAL AMERICA, INC. (USA)KOREA
-SK GLOBAL CO., LTD. (KOREA)KOREA
-SOUTHERN CHEMICAL CORP.
-SPP AGAPRINT
-STERLING CHEMICALS, INC.
-SUDAMERICANA DE FIBRAS S.A
-SUN COMPANY, INC
-TALICHEM S.A
-TAUBER PETROCHEMICALS CO
-TEXAS PETROCHEMICALS CORPORATION
-THORNTON AND COMPANY, INC
-TRADEMARK PLASTICS CORPORATION
-TRADEPAINTS
-TRAMMOCHEM (US)
-TRAMMOCHEM AG
-TRICON ENERGY LTD
-TUNTEX PETROCHEMICAL
-U-JIN CHEMICAL CO.
-ULTRAMAR DIAMOND SHAMROCK
-UNION CARBIDE CORPORATION
-VA SINGAPORE PTE LTD
-VALERO MARKETING & SUPPLY
-VEBA OEL A.G.
-VENRO CHEMICAL CORPORATION
-VINMAR INTERNATIONAL LTD
-VOEST ALPINE INTERTRADING A.G.
-VOEST ALPINE INTERTRADING USA, INC.
-WESTWAY TERMINAL COMPANY, INC.
-WILSONART
-WINDSOR CHEMICALS, INC
-WINSWAY (GROUP) ENTERPRISES LTD **About 150Companies**

e-Commerce



e-Commerce has provided the following benefits;

- **Make Gap between Supplier and Consumer Closer**
- **Make Cost/Price Cheaper by eliminating the Physical Shop or mid-Merchandisers**
- **Make Customer have More and Easier Information on Product through Web**
- **Auction Market is prevailed for Customers**
- **Buyers have More Choices**
- **Suppliers have More Potential Customers**

Limitation of e-Commerce

Retail Based e-Commerce needs Brand Name Power and Efficient Delivery System

Manufacturers' e-Commerce will need the integration with ERP, SCM and MES all together. Why?

The Commodities Will Be Sold on a Web Auction and Your Business Needs to Know :

- ✓ Real-time Margins
- ✓ Ability to Deliver
- ✓ Flexibility of Manufacturing Assets

for the Ability to Promise

- The majority of Revenue will continue to be based on long-term contracts
- The majority of Profit (Opportunity) will be based on volatile demand and response
 - Supply/Demand will be "auctioned" in an electronic environment
 - Companies that anticipate and meet demand will thrive

Real Time Margins

- *The quick response must know Real Time Margin (Price – Cost)*
- If it is as follows, No Possibility to Sell tomorrow;
 - ✓ Salesman takes order, e.g. for 100 tons of polymers with specific properties Y to be delivered in 1 months.
 - ✓ Costs/Margins are calculated on averages over months of data.
 - ✓ Sales and Production Systems Communicate/Coordinate only periodically (usually once/month)

Ability to Deliver

- Do you know;
 - ✓ your Current Product Inventory of all products?
 - ✓ your Current Production Status of all?
 - ✓ Your Future Production Schedule of all?
 - ✓ Your Fixed Schedule of Sales of all?
 - ✓ Your Minimum Transportation Cost of all?

- If it is as follows, No Possibility to Sell tomorrow;
 - ✓ You need to ask and or discuss of any of the above matters with you people

Flexibility of Manufacturing Assets

- Can you do
 - ✓ Change your Product Grade with Little Off-Spec Grade Product?
 - ✓ Arrange the Raw Material for New Product

- If you can not, No Possibility to Sell tomorrow;

Solutions required for Real Time Margins

- ERP (Enterprise Resource Planning) for Real Time Cost Accounting
- Data Reconciliation for Correct Mass Balance
- Product, Production and Logistic Management System
- Real Time Data Base and DCS/PLC/SCADA

Solutions for Ability to Deliver

- ERP for CRM (Customer Relation Management)
- SCM (Supply Chain Management) for Planning and Scheduling
- SCM (Supply Chain Management) for Inventory and Transportation
- Product, Production and Logistic Management System
- Real Time Data Base and DCS/PLC/SCADA

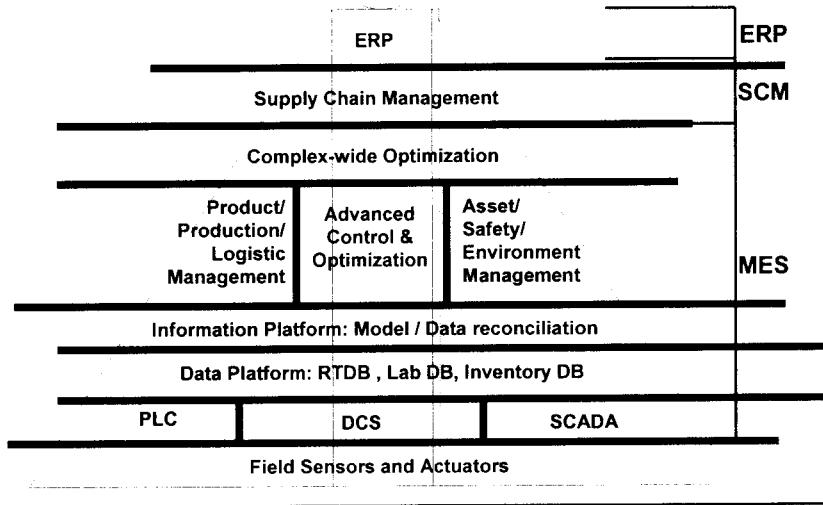
Solutions required for Flexibility of Manufacturing Assets

- Advanced Process Control and Optimization
- Recipe Management
- In-Line Blending System
- Asset Management System
- Product, Production and Logistic Management System
- Real Time Data Base and DCS/PLC/SCADA

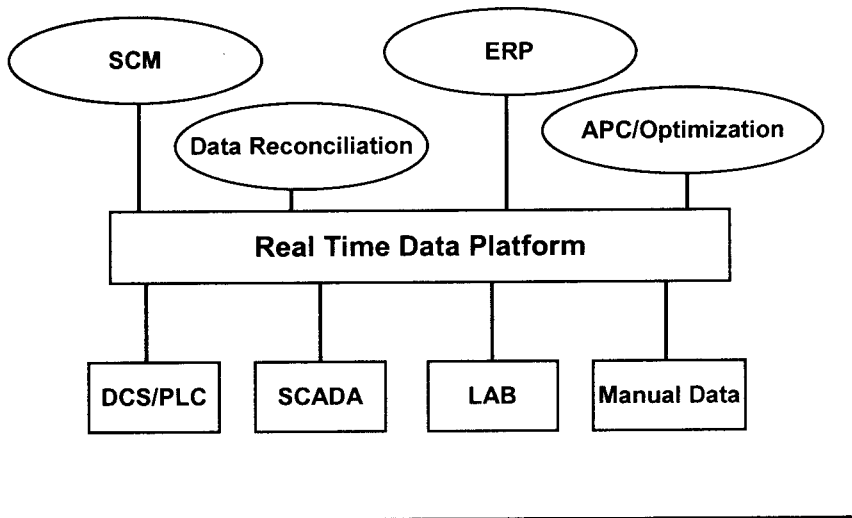
Integrated Solution from Floor to e-Commerce



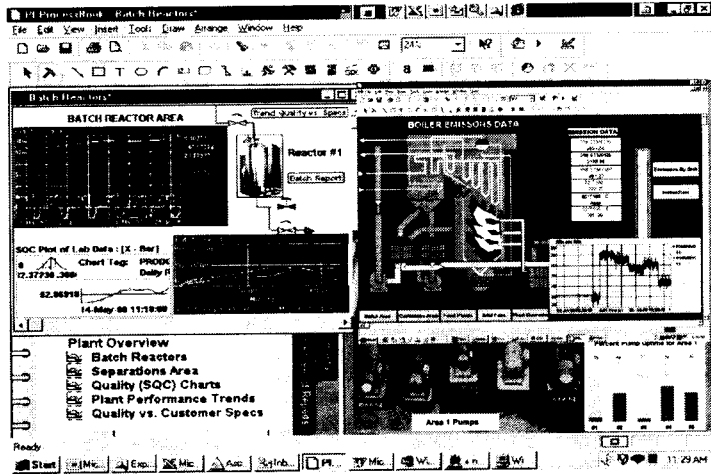
E-COM



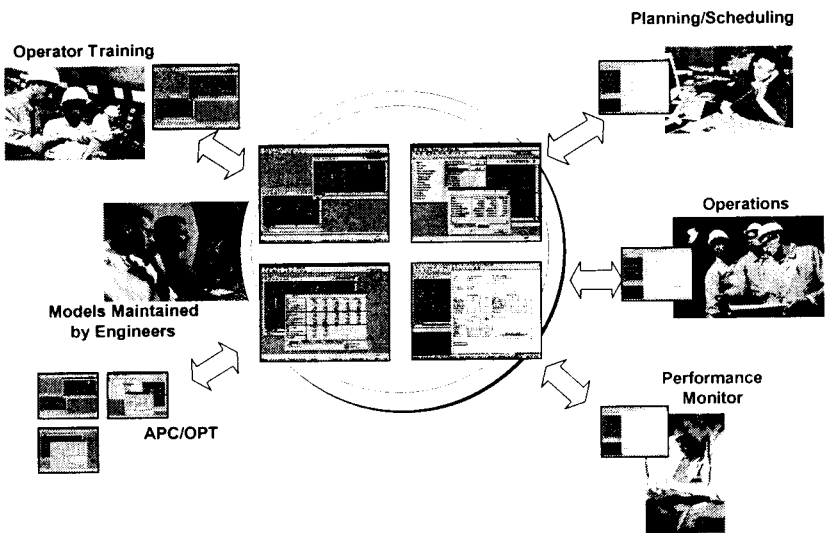
MES : Where Does Data Platform Fit ?



MES : Ex. of Data Platform



MES : Who uses Information Platform Model?



MES : Benefit of Data Reconciliation



Accounting

- Improve Accuracy
- Available Daily Accounting

Scheduling

- Compare Actual vs Planned
- Improve Decision Making

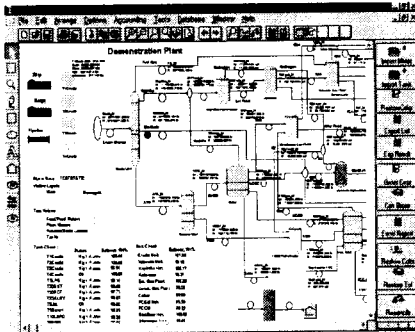
Performance Monitoring

- Measure Process Improvement
- Improve Process Design/Operation

Others

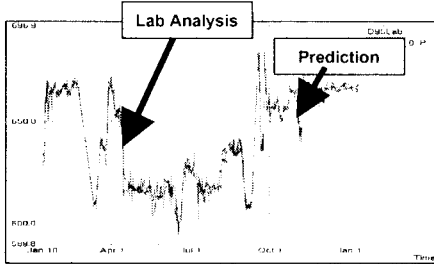
- Link to ERP
- Faulty Meter Maintenance

MES : Data Reconciliation

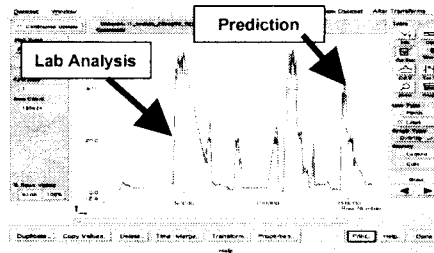


- Application platform for
 - Data Quality Improvement
 - Planning
 - Material Loss Monitoring
 - Instrument Stewardship
- Perform Plant Wide Material Balance & Yield Accounting
- Provide Various Balances such as Mass, Volume, Energy, and Component Balances

MES : Advanced Control (Model ID by ANN)



Refinery property prediction
: Diesel 95% Cut Point



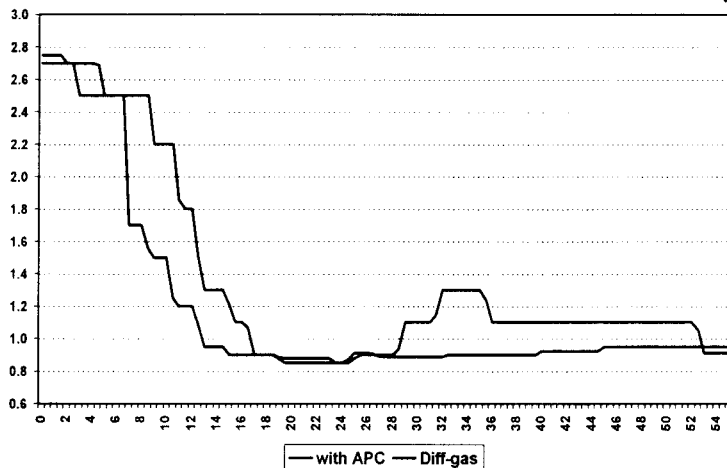
Polymer property prediction
: Unipol PP process, MI



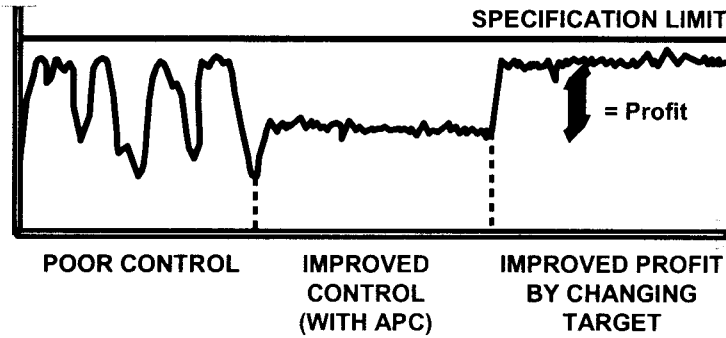
MES : Benefit of Advanced Control



Reduced Transition Loss and increased Product Consistency



MES : Benefit of Advanced Control



MES : In-Line Blending



Gasoline Blending control with NIR More

41RSPMEL01	RON Current Raw Measure	92.28 O.N.	91.500	93.000
41USPCON01	RON Target	92.50 O.N.	91.500	93.000
41USPCHL01	RON Cumulative In E.U.	0.00 O.N.	91.500	93.000
41RSPMEL02	RUP Current Raw Measure	1.50 Kg/Ca2	.50000	.80000

Update
 Fetch
 Save
 Default
 Remove 1
 Remove 2
 Remove 3
 Remove 4

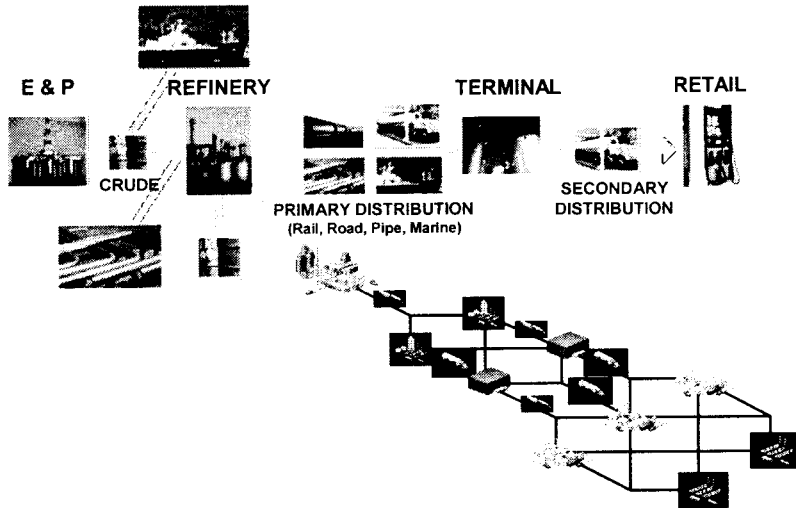
05:00:00 06:00:00 08:00:00 10:00:00 02-JUN-99 11:00:00

90 d 60 d 30 d 7 d 1 d 12 h 8 h 4 h 2 h 1 h 05:00:00 HOURS +

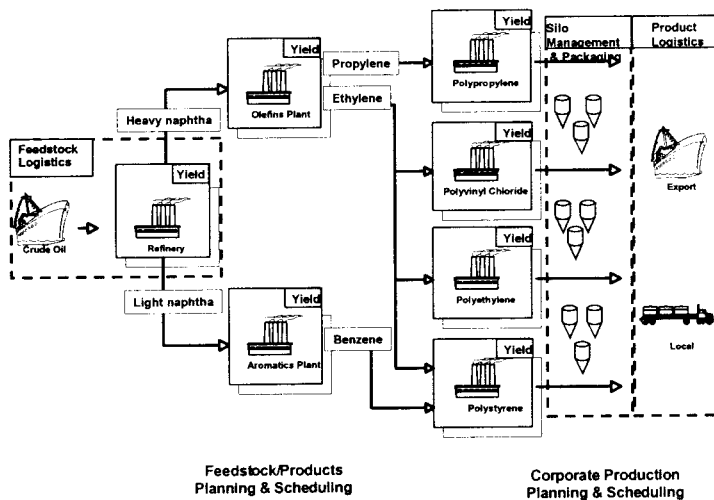
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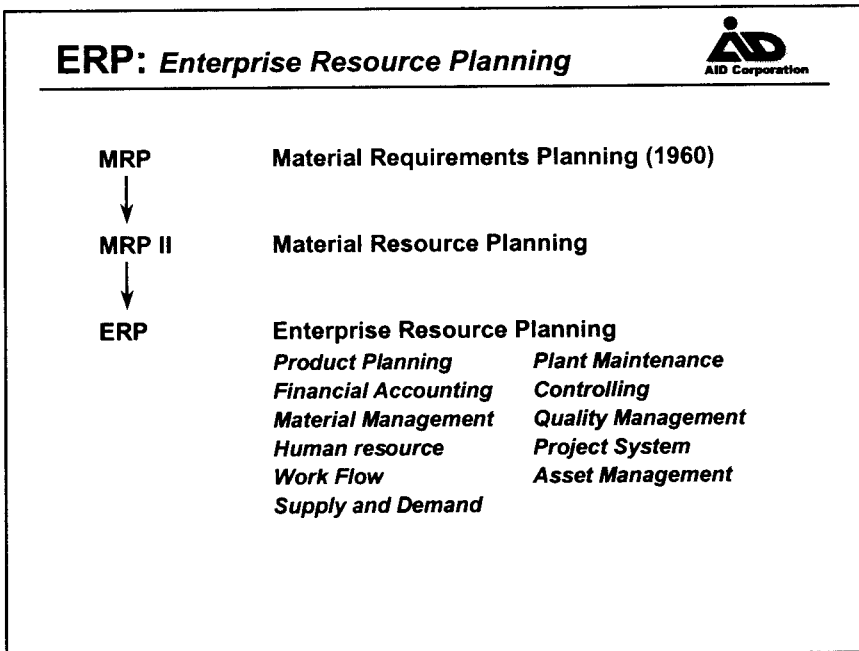
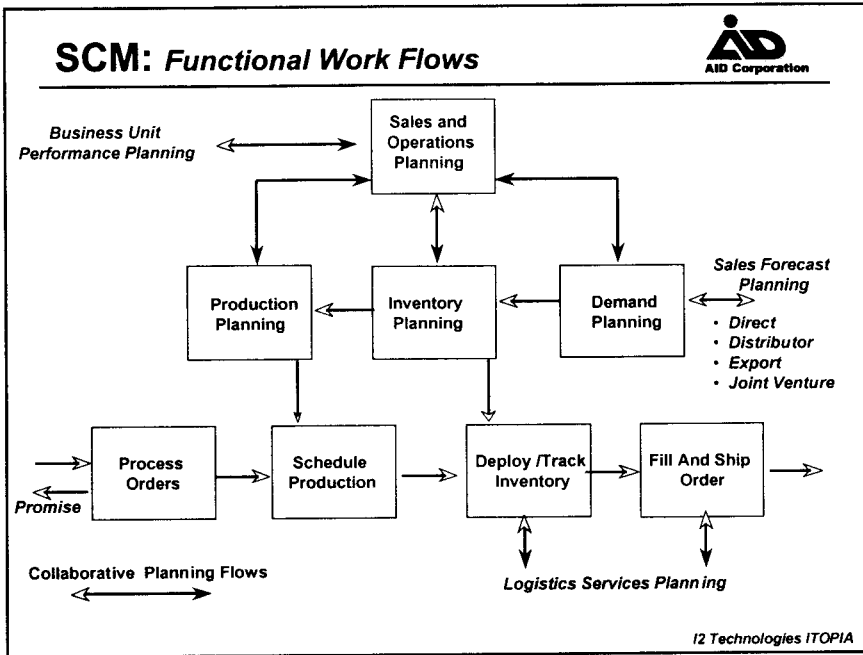
SK

SCM: In Refinery Industry

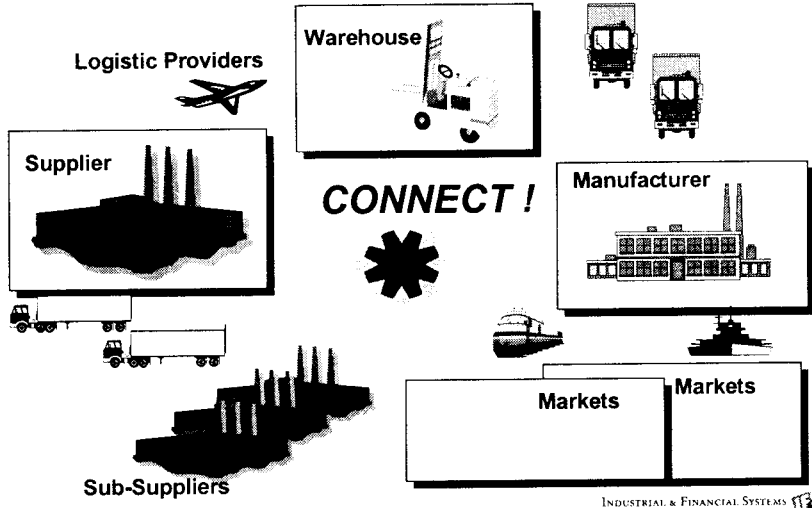


SCM: In Petrochemical Industry

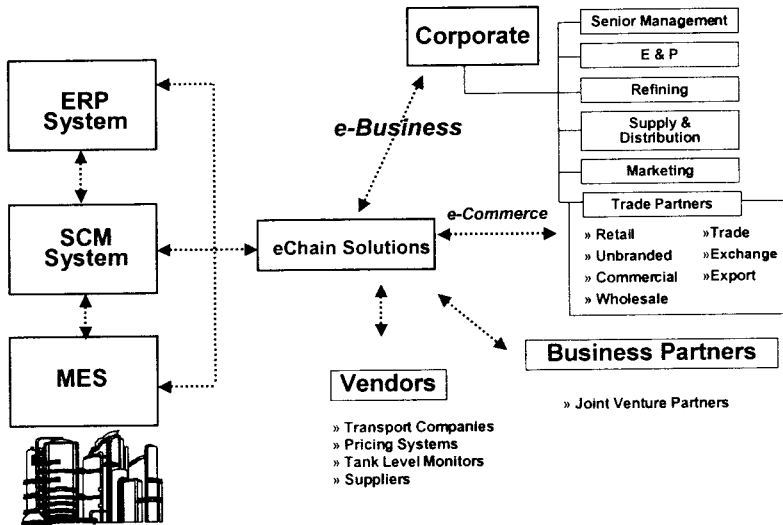




ERP: Enterprise Resource Planning



e-Business



Conclusion



The majority of Revenue will continue to be based on long-term contracts

The majority of Profit (Opportunity) will be based on volatile demand and response - Supply/Demand will be "auctioned" in an electronic environment

The Commodities Will Be Sold on a Web Auction and Your Business Needs to Know :

Real-time Margins
Ability to Deliver
Flexibility of Manufacturing Assets

for the Ability to Promise

Conclusion - Continued



e-Commerce as just a trade channel will not help the business.

e-Commerce needs to be integrated with the corporate business.

e-Business is the final target but we need to review MES as a back-bone.

Lacking area in Korea looks to be SCM and MES right now.

SCM : Supply Chain Management (From Order via Production until End User Delivery with Raw Material Purchase)

MES: Operation Information Management, APC/Optimization, Data Reconciliation, Data Platform (RTDB etc.)