



# RLINK

An ERP enabling technology at

*PolyOne*



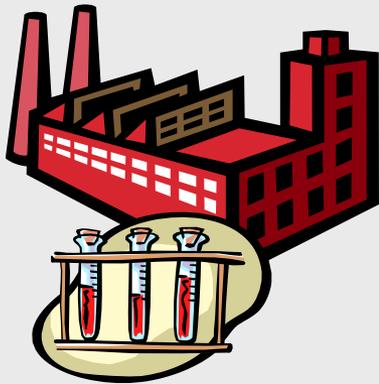
**PolyOne, who are we  
projectOne Background  
Vinyl Compound Implementation  
Elastomers Implementation  
Additions/Consolidations  
Lessons/Alternatives/Benefits  
Questions?**



# Who are we?



*As the world's polymer services leader,  
PolyOne forms a crucial link between two groups:*

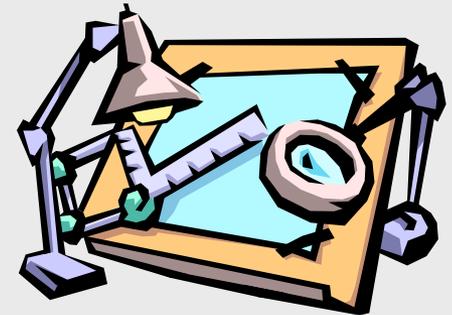


**Large Chemical  
Producers**

*Supply us with  
polymers and  
related materials*



- **Plastics Colors & Compounds**
- **Specialty Resins & Formulators**
- **Engineered Films**
- **Resins & Intermediates**
- **PolyOne Distribution**
- **Elastomers & Performance Additives**



**Designers,  
Assemblers,  
Processors**

*Industries ranging from  
telecommunications to building  
materials to medical  
supplies*



- Annualized Revenues - \$1.3 billion

- **Products**

Vinyl, engineering resins and additives; specialty colorant and additive systems

- **Markets**

Appliance, automotive, building materials, business equipment, consumer goods, wire and cable

- **Compound End Uses**

Appliance components, automobile trim, fax/printer housing, bottles, pipe and pipe fittings, wire and cable insulation

- **Colorant End Uses**

Plastic parts in virtually every market

- **Known For**

Proprietary compounds and technologies, including SPEEDeCOLOR™, a computerized color-matching system





- Annualized Revenues - \$265 million

- Products

Emulsion polymer and micro-dispersion specialty resins; vinyl plastisols, powders and inks; latex; rigid and flexible urethane and urethane foams

- Markets

Appliance, apparel, automotive, flooring, medical, packaging, sports and recreation, toy, wire and cable

- Product End Uses

Air filters; automotive instrument panels; vinyl flooring and carpet backing; appliance and fabric coatings; dishwasher and closet rack coatings; medical examination gloves; footwear; screen printing inks, signage

- Known For

High quality and consistency in specialty resins and the expertise to offer unique technical solutions for vinyl plastisols and powder, urethane and latex system applications





- **Annualized Revenues - \$153 million**

- **Products**

Flexible vinyl sheeting, thermoplastic olefin(TPO) and thermoplastic urethane(TPU) polymer films, polyvinyl chloride (PVC)/polyolefin foam laminates, TPO/polyolefin foam laminates, vinyl laminates

- **Markets**

Automotive, label/decal, medical, office supply, packaging, pond/pool/spa

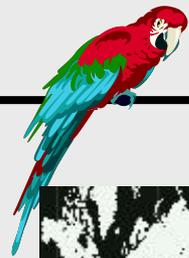
- **Product End Uses**

Automobile instrument panels, door trim panels, armrests, airbag doors and covers; medical blood bags and intravenous tubes; hospital inflatable mattresses; pool liners.

- **Known For**

Value-added film finishing technologies such as embossing, printing, painting and laminating





## • Equity Joint Ventures

- Australian Vinyls Corporation, Australia - Partner: Orica Ltd.
- Oxy Vinyls, LP, United States - Partner: Occidental Chemical
- Sunbelt Chlor-Alkali, United State - Partner: Olin Corporation

## • Other Joint Ventures

- DH Compounding Company, United States - Partner: Dow Chemical
- Geon/Polimeros Andinos, Colombia - Partner: Petroquimica Colombiana S.A.
- So.F.teR S.p.A., Italy - Partner: So.F.teR S.p.A.
- SPCGeon PTE Limited, - Singapore - Partner: Singapore Polymers Corporation
- Star Color Company Limited, Thailand - Majority owned by PolyOne
- Techmer, PM, LLC, United State - Partner: Techmer PM
- Tekno Polimer, Turkey - Majority owned by PolyOne





- **Annualized Revenues - \$520 million**

- **Services**

Delivery of more than 3,500 grades of engineering and commodity resins from approximately 20 major material suppliers, as well as standard and custom-compounded materials

- **Markets**

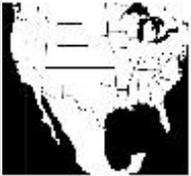
Custom molders and extruders of applications for automotive, building materials, consumer goods, electrical/electronics, industrial, medical, packaging, wire and cable

- **Distribution Locations**

United States, Canada, Mexico

- **Known For**

Adding value, not only through rapid delivery, but through specialists who advise customers on optimal resin formulations and processing support





- **Annualized Revenues - \$364 million**

- **Products/Services**

Thermoset elastomer (rubber) compounds, rubber compounds for roller and specialty applications, elastomer-enhancing colorants and additives, tolling (mixing of raw materials) for the rubber industry

- **Markets**

Aerospace, building materials, automotive, electrical, industrial, medical, sporting goods, wire and cable

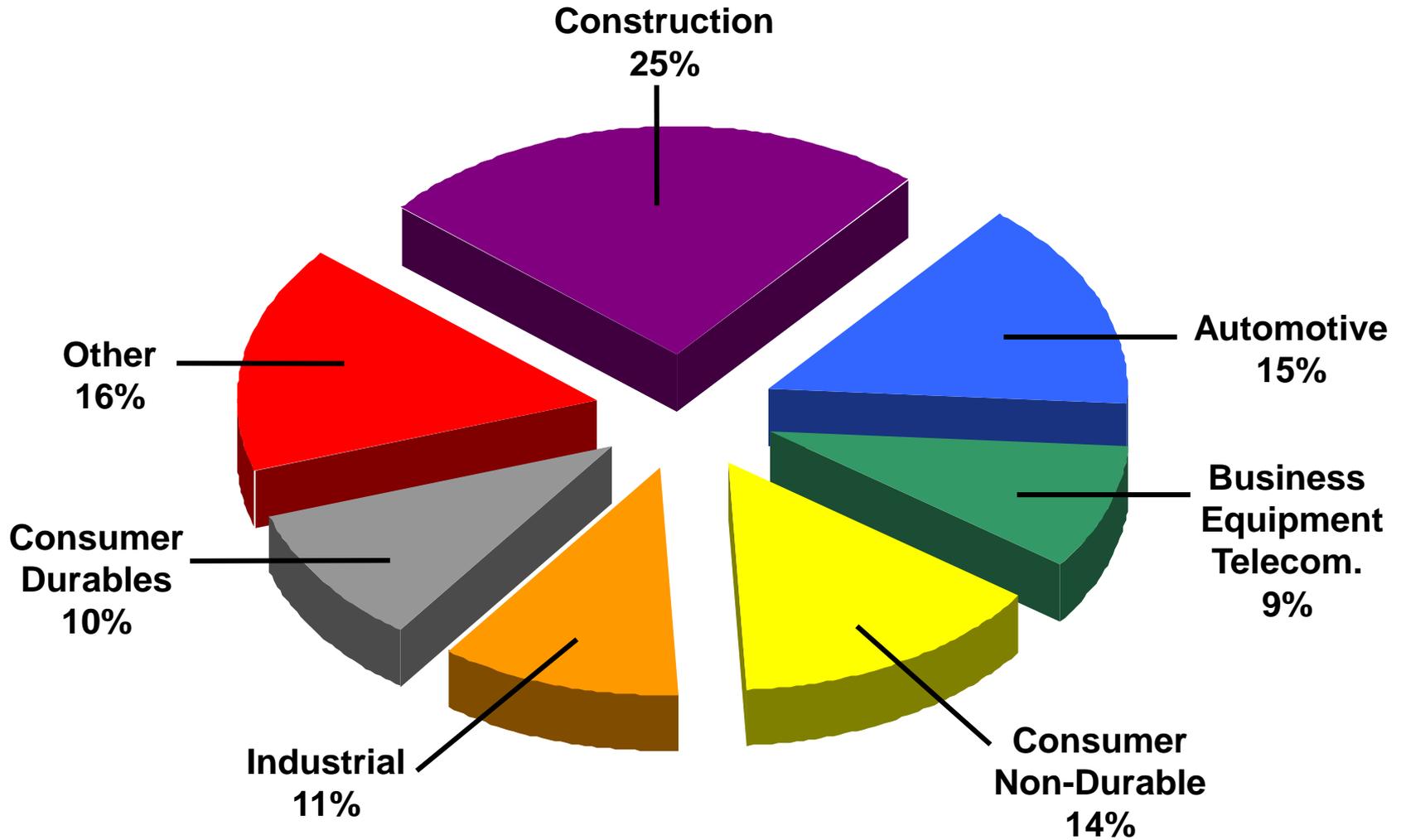
- **Product End Uses**

Automotive hoses and belts, footwear, escalator railings, industrial conveyers

- **Known For**

The leading non-tire rubber compounder in North America

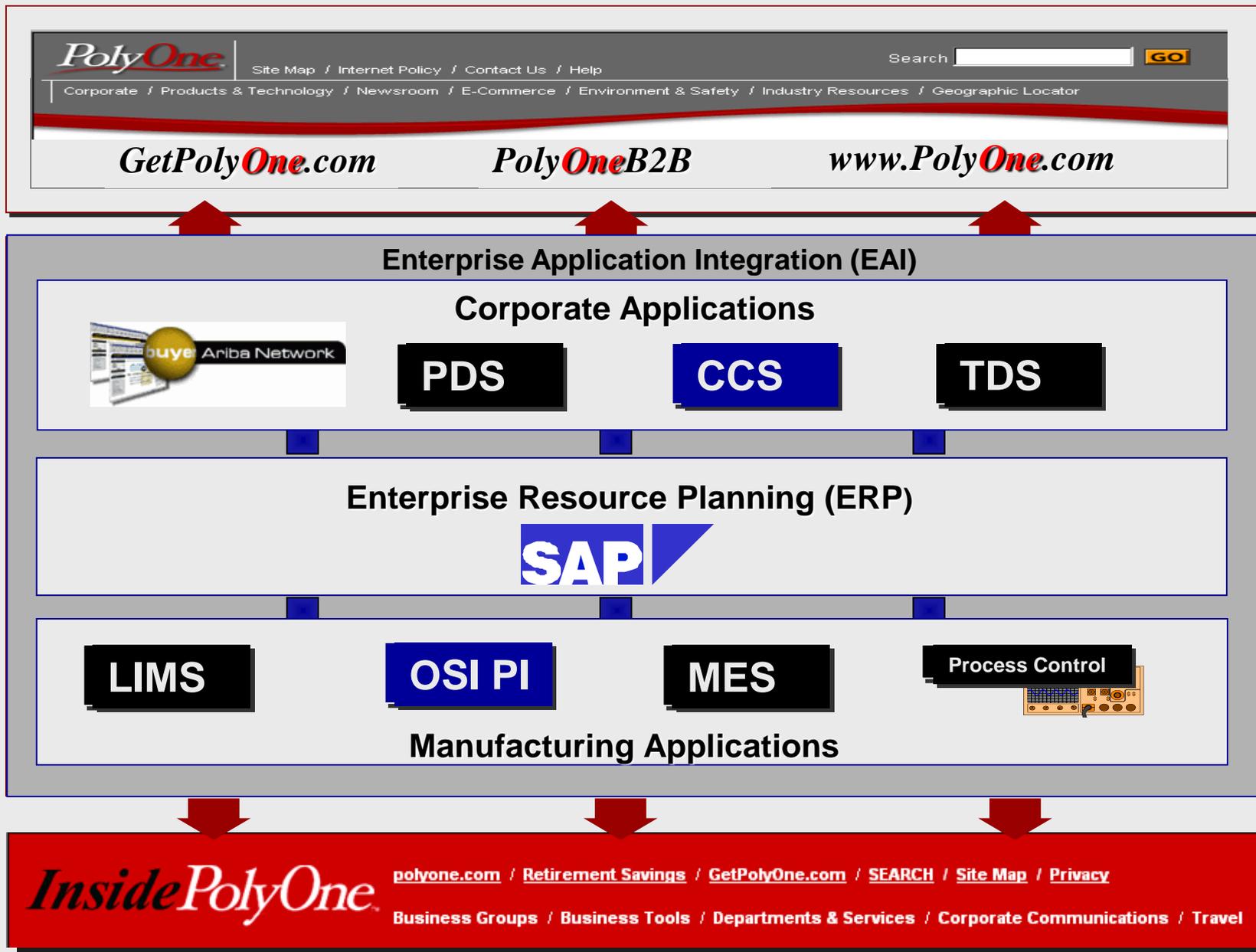






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**projectOne Background**  
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# PolyOne Future Common Business Platform





# 2001 Rollout

Gaggenau, Germany  
Seabrook, TX

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

VCSR EM Color & Europe Elastomers

- Avon Lake, OH (\*)
- Burlington, NJ
- Farmingdale, NJ
- Henry, IL (\*)
- Lakewood, NJ (UNICCO)
- Long Beach, CA (\*)
- Louisville, KY (\*)
- Niagara Falls, Ont (\*)
- Orangeville, Ont
- Pasadena, TX (\*)
- Pedricktown, NJ (\*)
- Plaquemine, LA (\*)
- St. Remi, Quebec
- Terre Haute, IN (\*)
- Valleyfield, Quebec

(\*)=plant + warehouse

- Bethlehem, PA
- Corona, CA
- Dyersburg, TN
- Houston, TX
- Norcross, GA
- Macedonia, OH

- Assesse, Belgium
- Bendorf, Germany
- Broadview Heights, OH
- Cergy, France
- Elk Grove, IL
- Florence, KY
- Fort Worth, TX
- Gastonia, NC
- Glendale, AZ
- Gyor, Hungary
- LeHigh Valley, PA
- Norwalk, OH
- San Fernando, CA
- Somerset, NJ
- St. Peter's, MO
- Suwanee, GA
- Tossiat, France
- Vonore, TN

- Burton, OH
- DeForest, WI
- Dyersburg, TN
- Jonesborough, TN
- Queretero, Mexico
- Santa Fe Springs, CA
- Solon, OH
- St. Etienne, France



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# 2001 Rollout

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VCSR

- Avon Lake, OH (\*)
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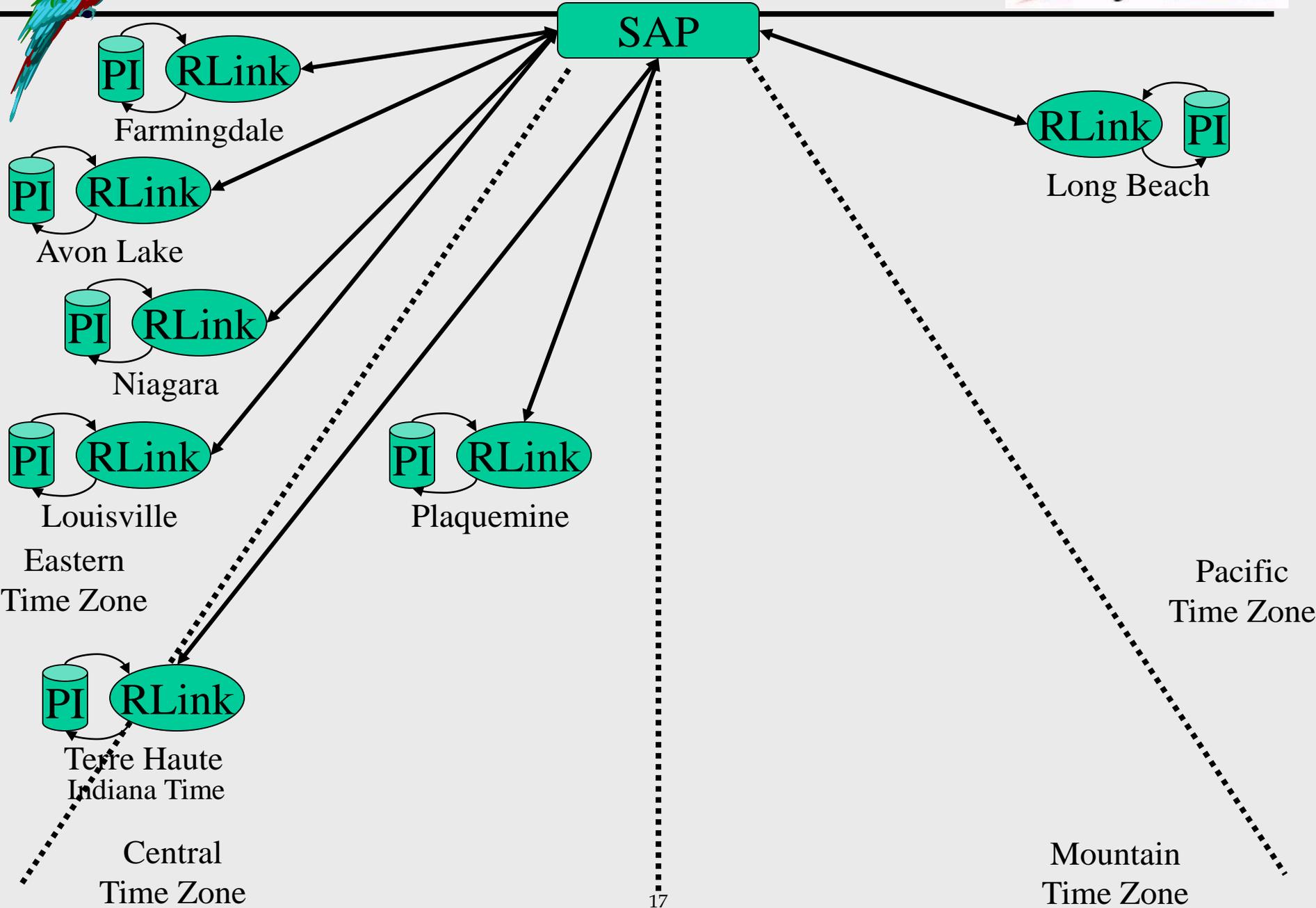
(\*)=plant + warehouse

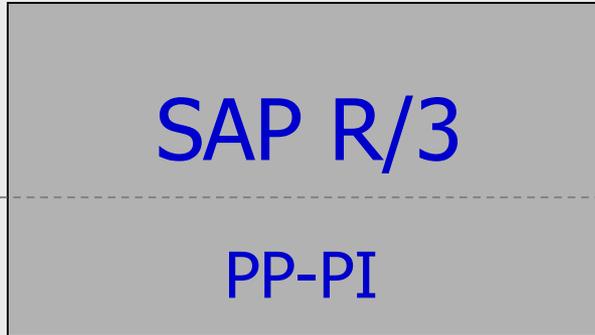


# Vinyl Compound



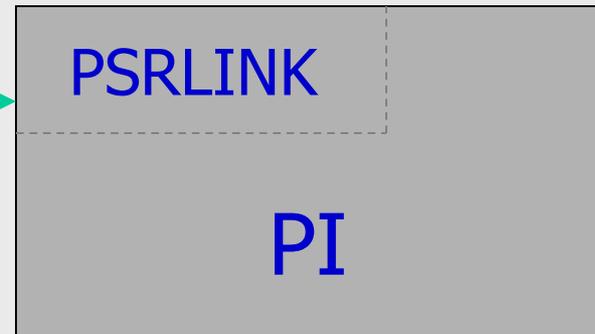
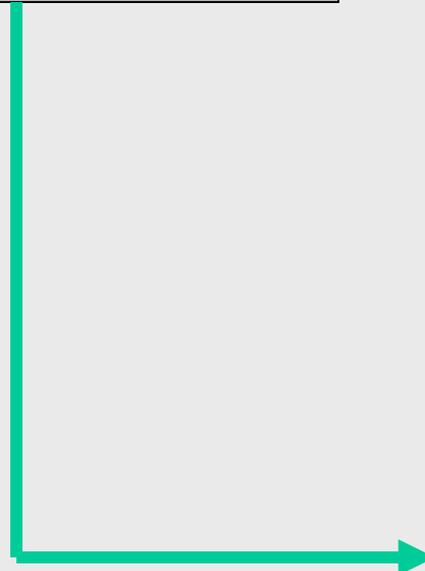
# Vinyl Compound SAP Integration





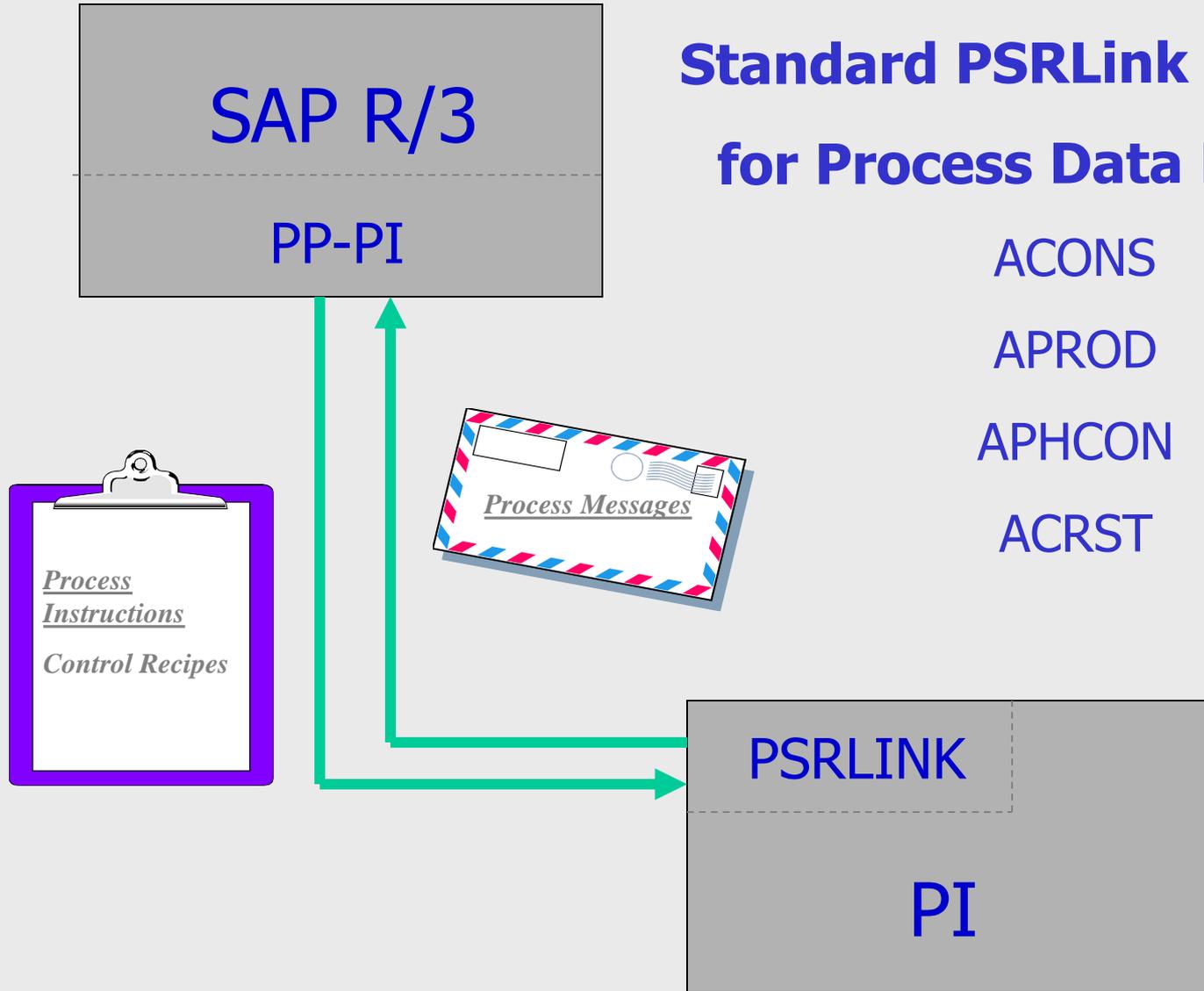
## Standard PSRLink Interface for Informational Data

- AMAT
- AMATP01
- APHASE
- AORD





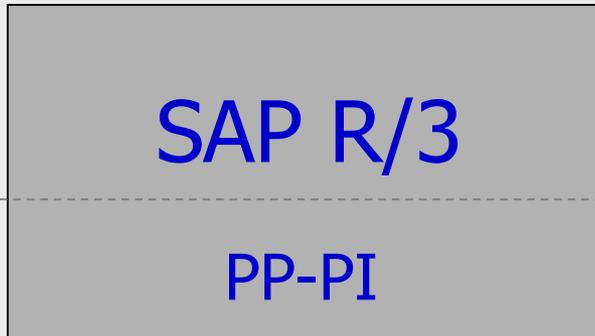
- **AORD - Order Data**
  - including start/finish date/time, PolyOne ProdVers
  
- **APHASE - Phase Data**
  - including External Phases
  
- **AMAT - Material Allocation Info**
  - Raw Material consumption
  
- **AMATP01 - Material Allocation Info**
  - Finished Goods production



## Standard PSRLink Interface for Process Data Request



- **ACRST - Control Recipe status**
  - Start/Processed/Discarded
  
- **ACONS - Goods Issue**
  - Raw Material consumption (MAT\_CONS)
  
- **APROD - Goods Receipt**
  - Finished Goods production (MAT\_PROD)
  
- **APHCON - Time Ticket Info**
  - Confirmation Qty & Time



## Standard PSRLink Interface for Unsolicited Process Data

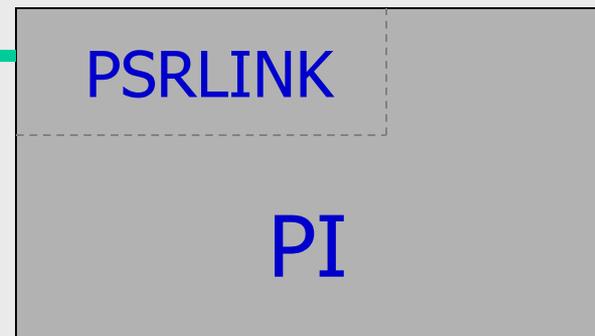
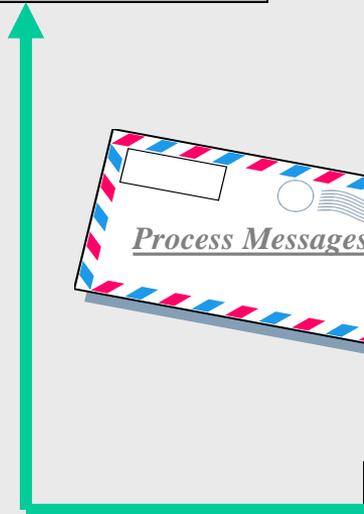
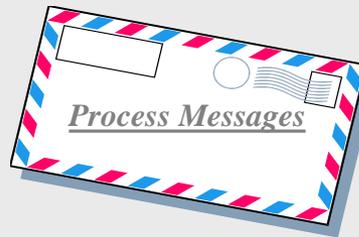
ACONS

APROD

MATRANS1

MATRANS2

LINEVENT





- **PI\_CONS - Unsolicited CONS**
  - unplanned consumption (SAP\_TRAN)
- **PI\_PROD - Unsolicited PROD**
  - unplanned production (SAP\_TRAN)
- **MATRANS1 - FG Grading**
  - Move from QI, then Batch ID change
- **MATRANS2 - Rework CONS**
  - Move from Blocked, then CONS
- **LINEVENT - Line Events**
  - Populates custom SAP table







**Number of Plants:**

**6**

**Number of Lines:**

**21**

**DL Functions:**

**CRDL,**

**Parameters**

**Staff:**

**8**

**PMU Functions**

**CONS, PROD,**

**Design/Code:**

**2 months**

**BlkCONS,**

**Testing:**

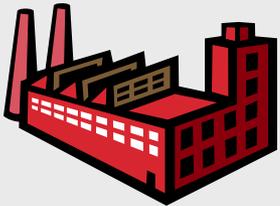
**2 months**

**Grading,**

**Implementation:**

**Staggered over 3 mo**

**LineEvents**



**Control Recipes:**

**avg. 182/week**

**CONS PMU :**

**avg. 4120/day**

**PROD PMU :**

**avg. 555/day**

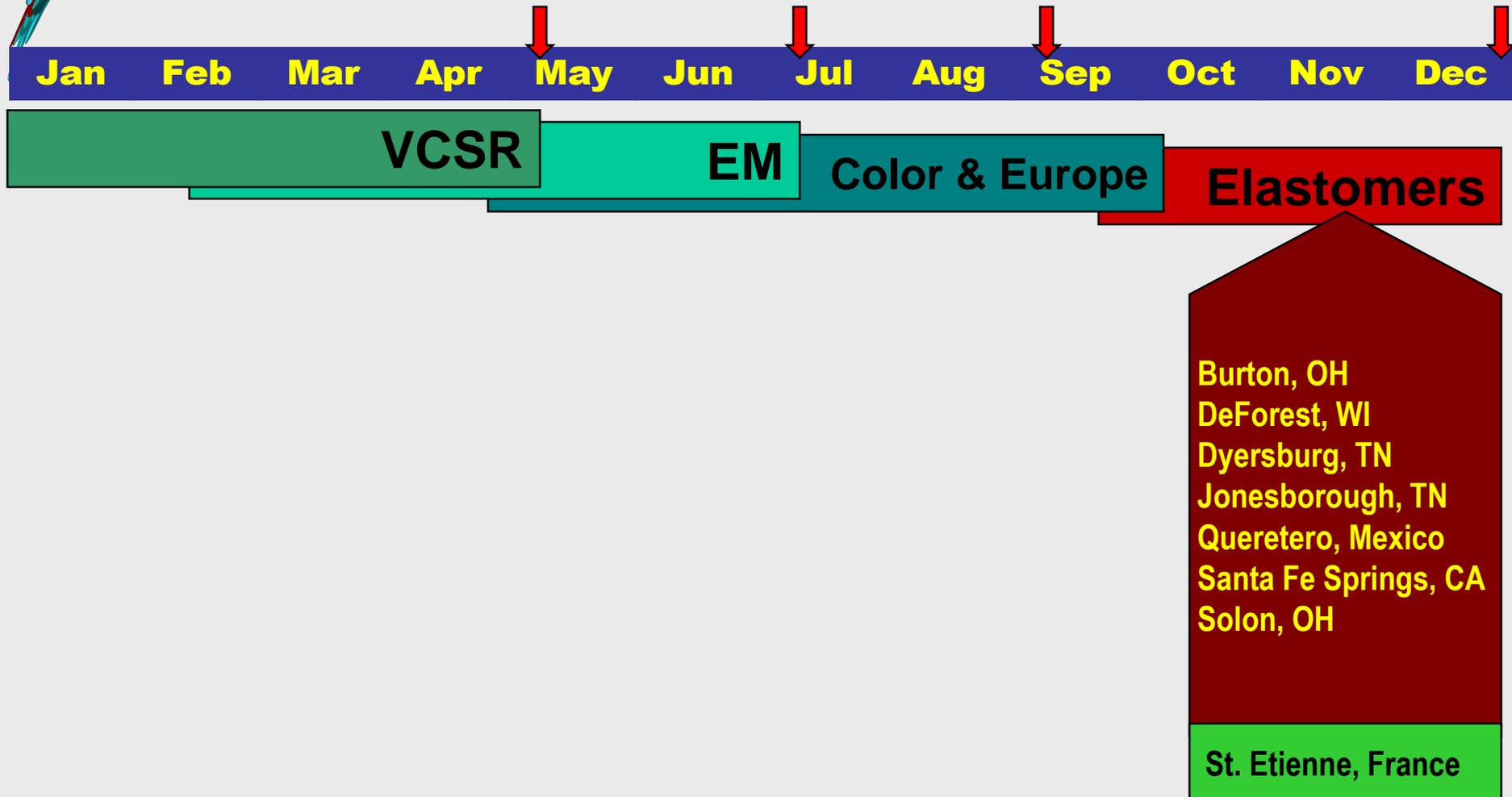




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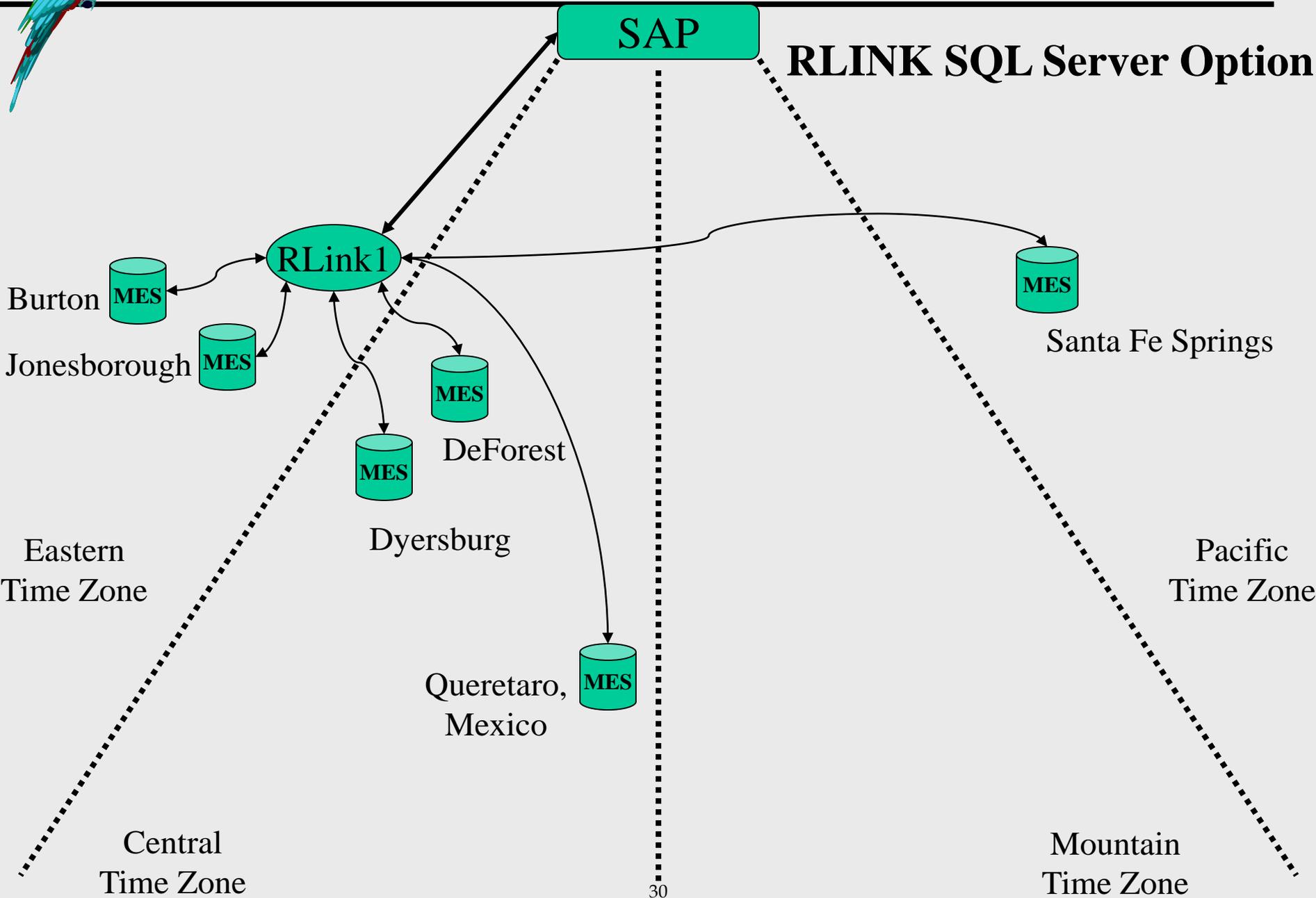
# 2001 Rollout

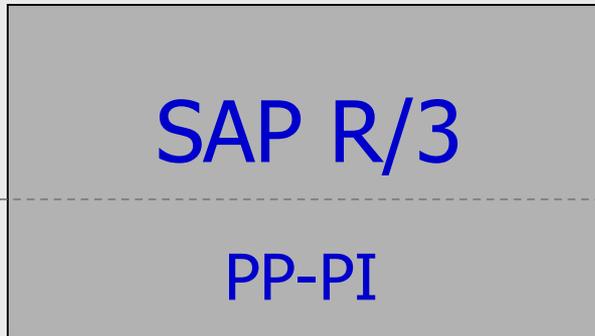






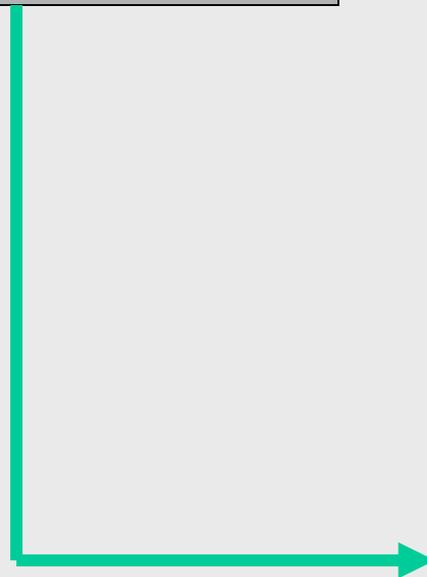
# Elastomers SAP-Spectrum Integration





## Standard PSRLink Interface for Informational Data

- AMAT
- AMATP01
- APHASE
- AORD





- **AORD - Order Data**

- including start/finish date/time, PolyOne ProdVers
- Batch\_Size, Num\_Batches, Polymer\_Type
- Cure\_Type, Dip\_Type, LH\_Value, Aging, Shelf\_Life

- **APHASE - Phase Data**

- including Phases

- **AMAT - Material Allocation Info**

- Raw Material consumption

- **AMATP01 - Material Allocation Info**

- Finished Goods production

# AORD Process Instruction



Process order Edit Goto System Help

RESTRICTED

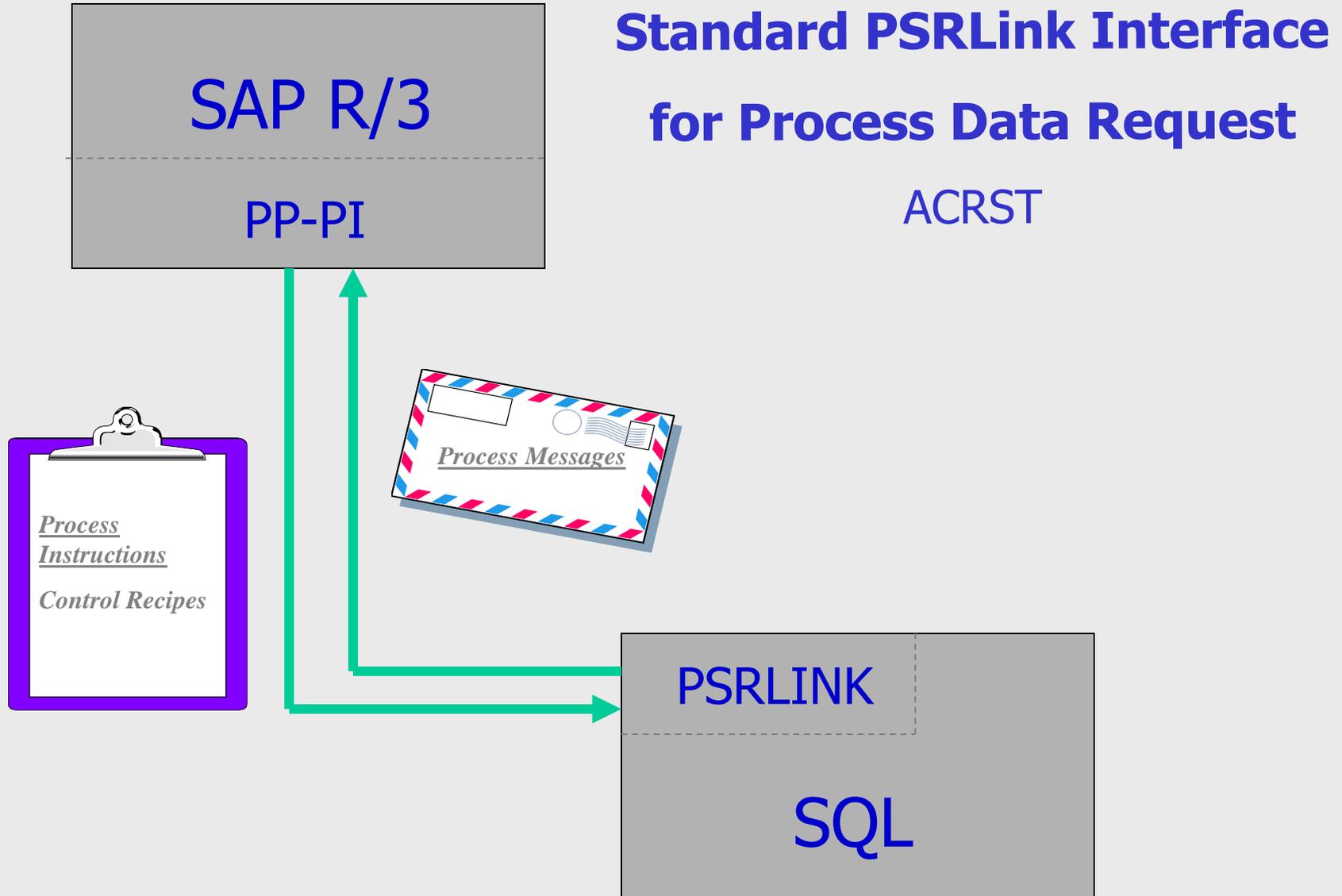
## Display Process Order: Process Instruction

Process order: 2427085 Type: ZI01  
 Material: EL00007078RC WJT-7529 Plant: 3003  
 SupOperatr: 0010  
 Operation: 0015  Ind.:Phase  
 CtrlRec.destin: PD Spectrum Interface  
 Instruction no.: 0000 AORD\_1 1 Order data (PCS example)

Numb...	Characteristic name	Long ...	A...	Val.a...	Characteristic value	Change num...
0010	OSI_ORDER_QUANTITY	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	296.19900	
0020	PPPI_RESOURCE_NETWORK	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	A	
0030	PPPI_PLANT_OF_RESOURCE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3003	
0040	OSI_START_DATE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	04/25/2003	
0050	OSI_START_TIME	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	02:21:26	
0060	OSI_FINISH_DATE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	04/25/2003	
0070	OSI_FINISH_TIME	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	02:24:35	
0080	POLYONE_PROD_VERSION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	A001	
0095	PPPI_PROCESS_ORDER	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2427085	
0100	POLYONE_NUM_BATCHES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1 EACH	
0110	POLYONE_BATCH_SIZE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	296.375 kg	
0120	POLYONE_CUSTOMER_NUMBER	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000025622	
0130	POLYONE_CUSTOMER_NAME	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NPC CUSTOM RUBBER EXTRUSION..	
0140	POLYONE_SALES_ORDER	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0015327893	
0155	POLYONE_CURE_TYPE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SPG-Su	
0164	POLYONE_DIP_TYPE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ZnSt R	
0174	POLYONE_LH_VALUE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	25.000	
0184	POLYONE_SPECIFIC_GRAVITY	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2768	

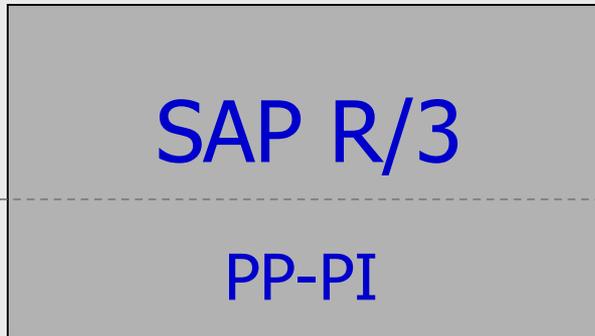
Values Assign InitValue Entry 1 of 26







- **ACRST - Control Recipe status**
  - **Start/Processed/Discarded**



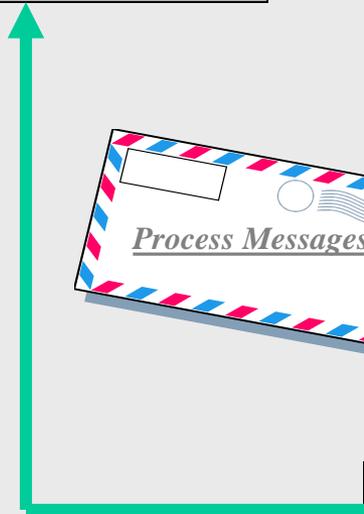
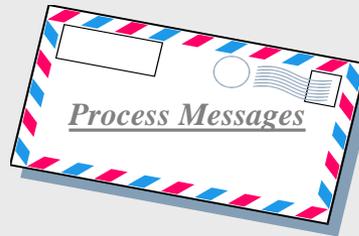
## Standard PSRLink Interface for Unsolicited Process Data

ACONS

APROD

MATRANS2

LINEVENT





- **PI\_CONS - Unsolicited CONS**
  - Consumption (SAP\_TRAN)
  
- **PI\_PROD - Unsolicited PROD**
  - Production (SAP\_TRAN) with cont\_id
  
- **MATRANS2 - Rework CONS**
  - Move from Blocked, then CONS
  
- **LINEVENT - Line Events**
  - Populates custom SAP table





**Number of Plants:**

**6**

**Number of Lines:**

**30**

**DL Functions:**

**CRDL,**

**Parameters**

**Staff:**

**3**

**PMU Functions**

**CONS, PROD,**

**Design/Code:**

**1 month**

**BlkCONS,**

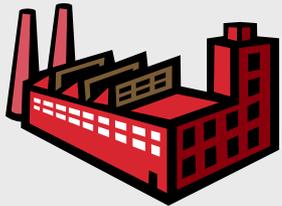
**Testing:**

**2 months**

**LineEvents**

**Implementation:**

**1/1/02**



**Control Recipes:**

**avg. 370/day, max. 450/day (during 12 hour period)**

**CONS PMU :**

**avg. 5200/day, max. 311/hour**

**PROD PMU :**

**avg. 1350/day, max. 184/hour**



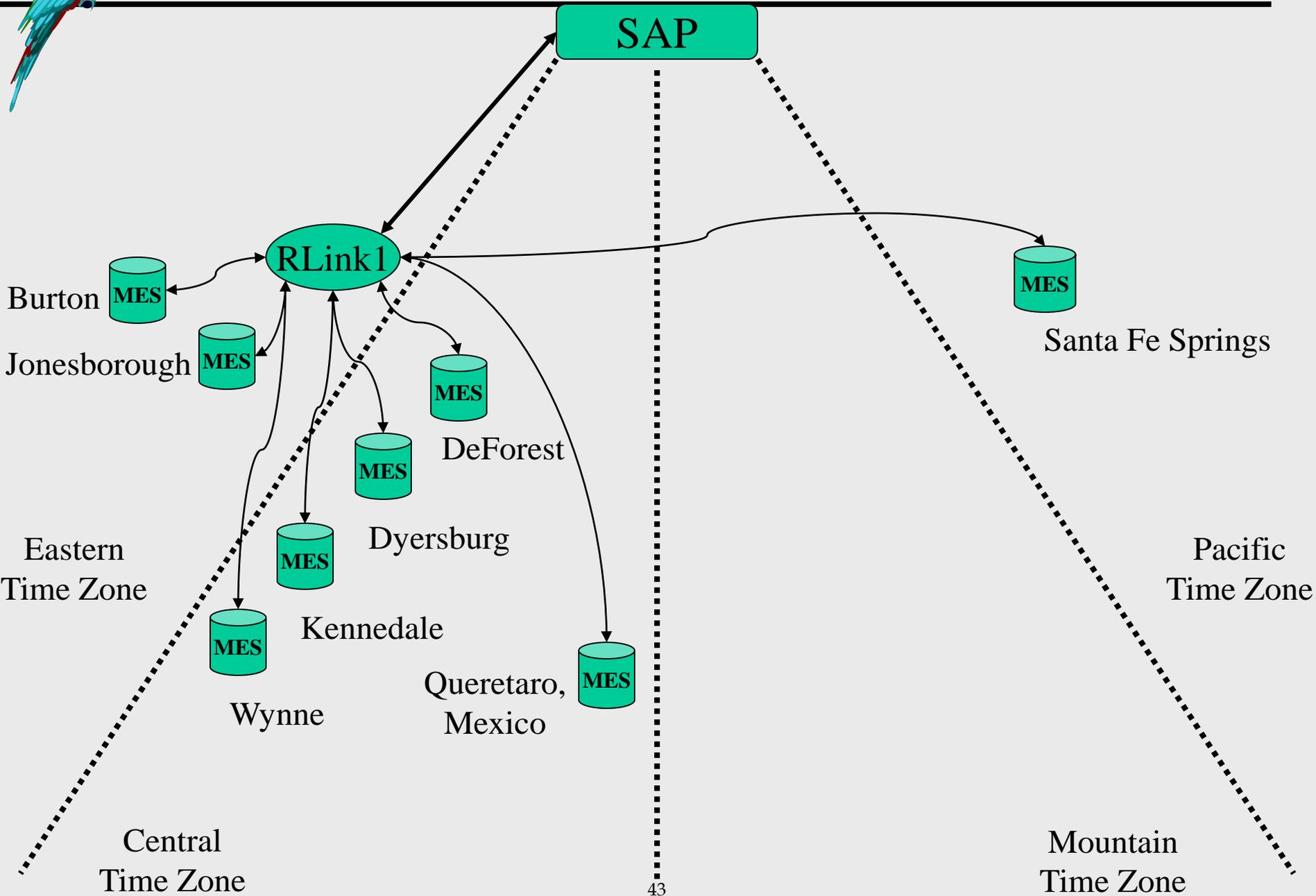


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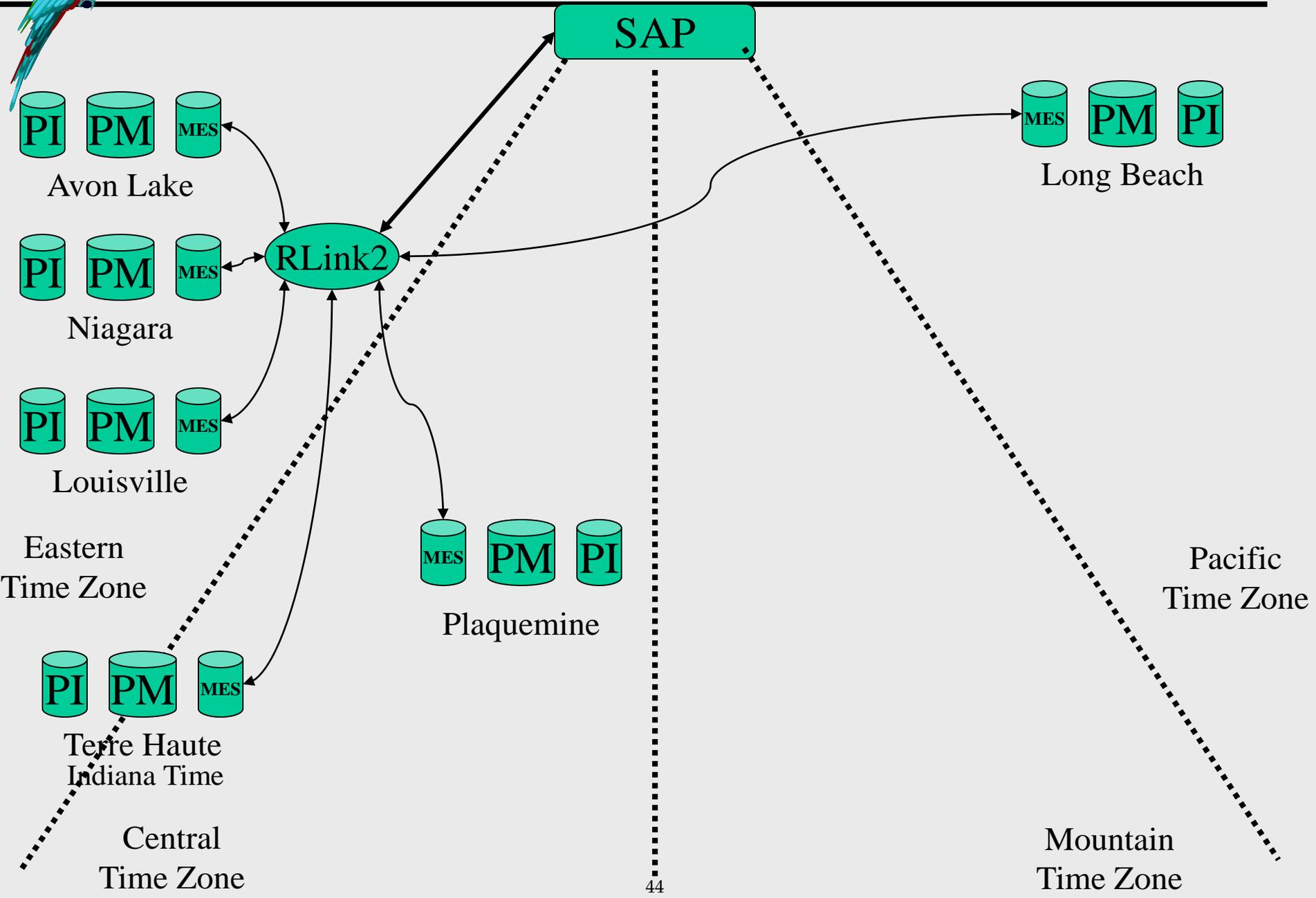


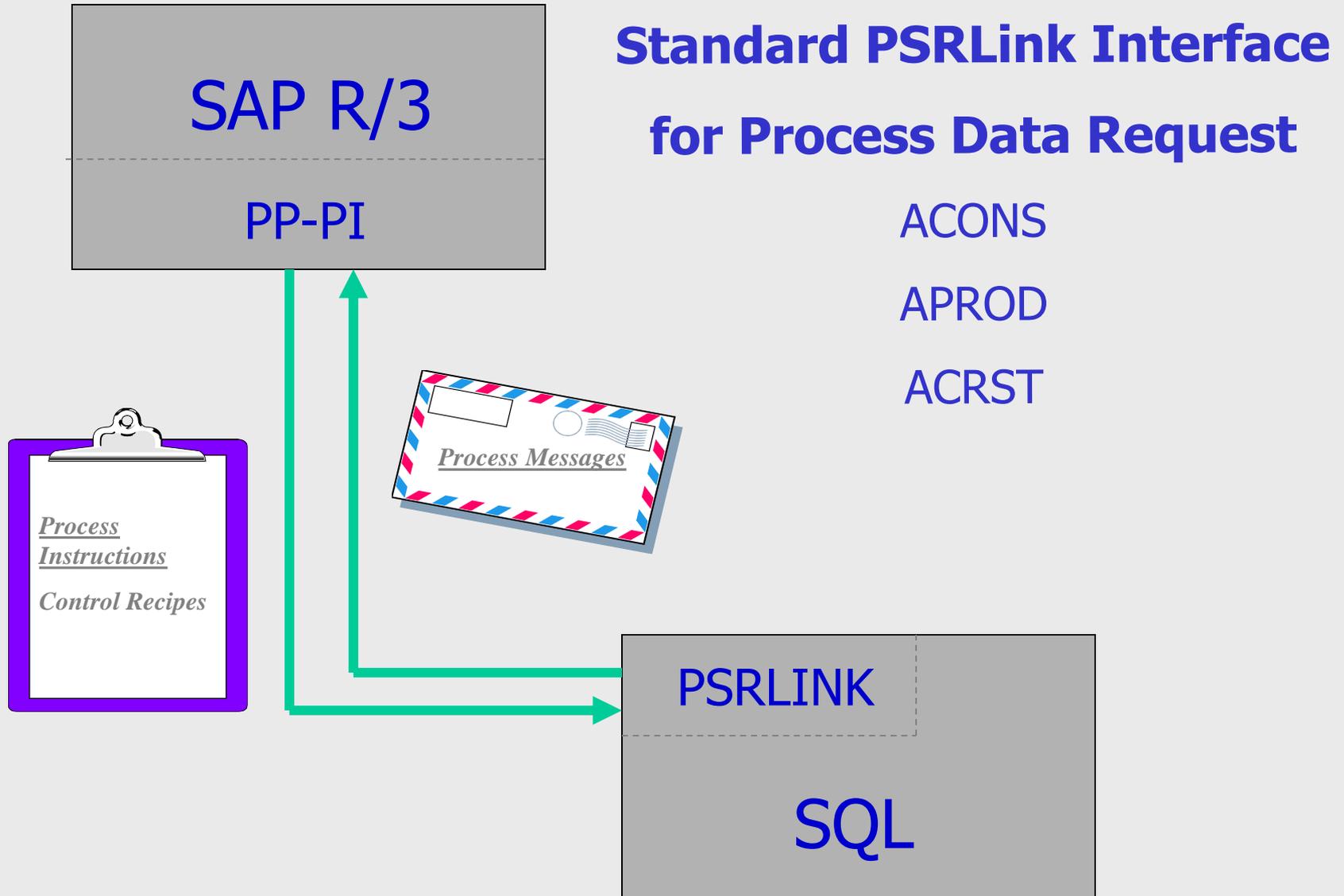


# Elastomers SAP-Spectrum Integration



# Vinyl Compound SQL RLINK







- **ACRST - Control Recipe status**

- **Start/Processed/Discarded**

- **ACONS - Goods Issue**

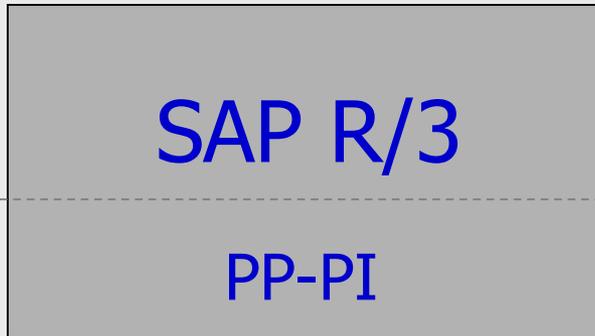
- **Raw Material consumption (MAT\_CONS)**

- **APROD - Goods Receipt**

- **Finished Goods production (MAT\_PROD)**

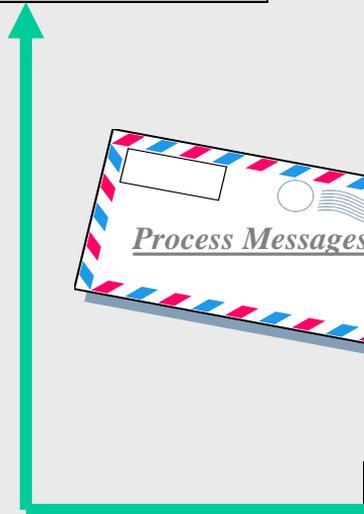
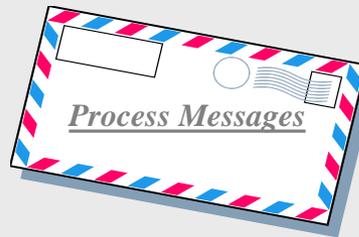
- **APHCON - Time Ticket Info**

- **Eliminated!**
- **use Line Event data to generate this information via a custom batch job on SAP**



## Standard PSRLink Interface for Unsolicited Process Data

- ACONS
- APROD
- MATRANS1
- MATRANS2
- MATRANS3
- LINEVENT
- Z\_UPLPRD





- **PI\_CONS - Unsolicited CONS**
  - unplanned consumption (SAP\_TRAN)
  
- **PI\_PROD - Unsolicited PROD**
  - unplanned production (SAP\_TRAN)
  
- **MATRANS1 - FG Grading**
  - Move from QI, then Batch ID change
  
- **MATRANS2 - Rework CONS**
  - Move from Blocked, then CONS

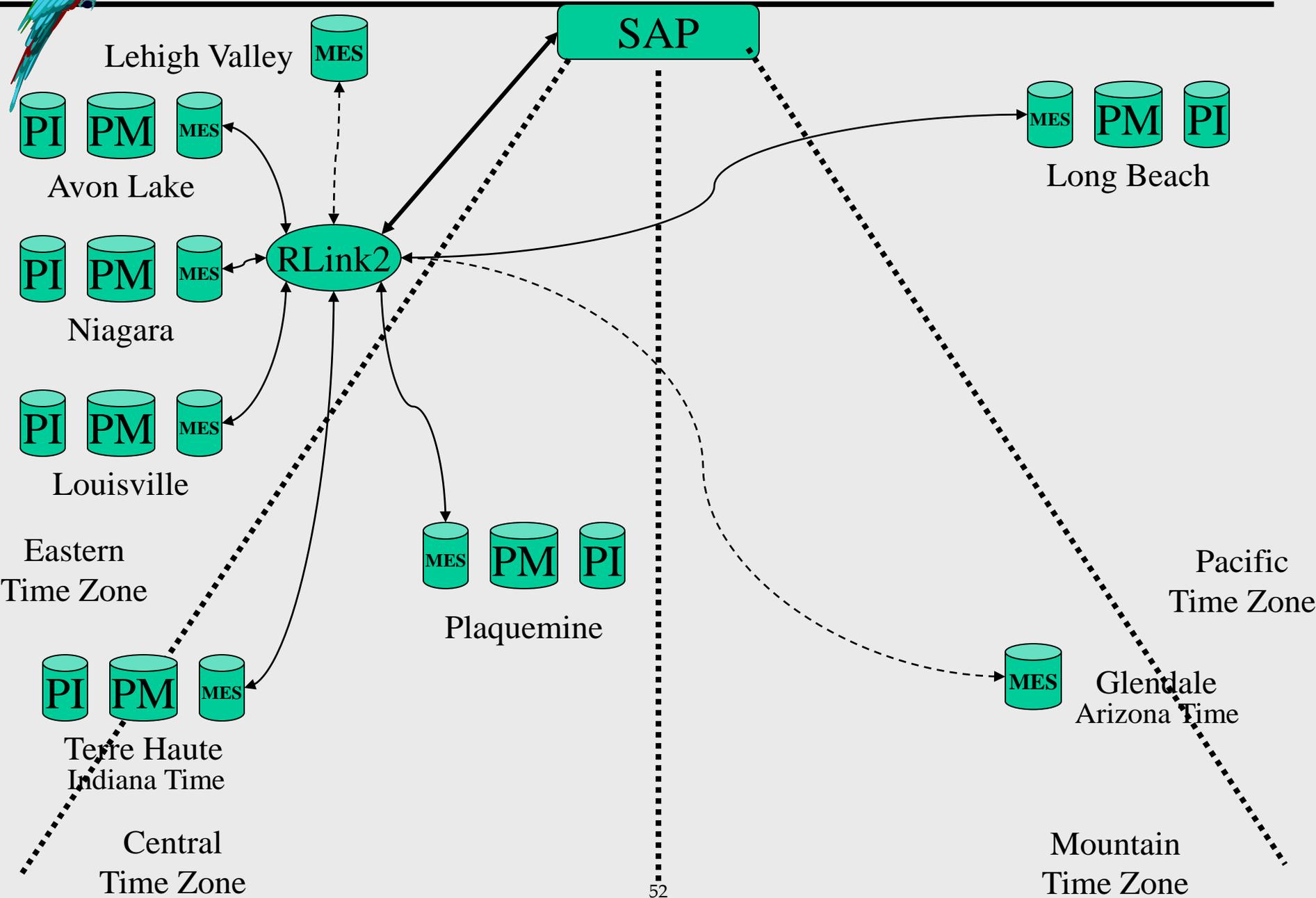


- **LINEVENT - Line Events**
  - Populates custom SAP table
  
- **MATRANS3 - Rework Reversal**
  - Back out PROD for Rework within an Order
  
- **Z\_UPLPRD - Unplanned PROD**
  - Co-Product PROD movement





# Vinyl Compound/Color SQL RLINK





## Elastomers

## Vinyl Compound

Plants

Eight (8)

Six (6)

Lines

Fifty (50)

Twenty Two (22)

DL Functions

CRDL, Parameters

CRDL, Parameters

PMU Functions

CONS, PROD, CRST,  
BlkCONS, LineEvents

CONS, PROD, CRST,  
BlkCONS, LineEvents,  
Rework, Grade, CoProduct

Control Recipes

327 /day

29 /day

CONS

5160 /day

3655 /day

PROD

1128 /day

616 /day

Custom

379 /day

283 /day

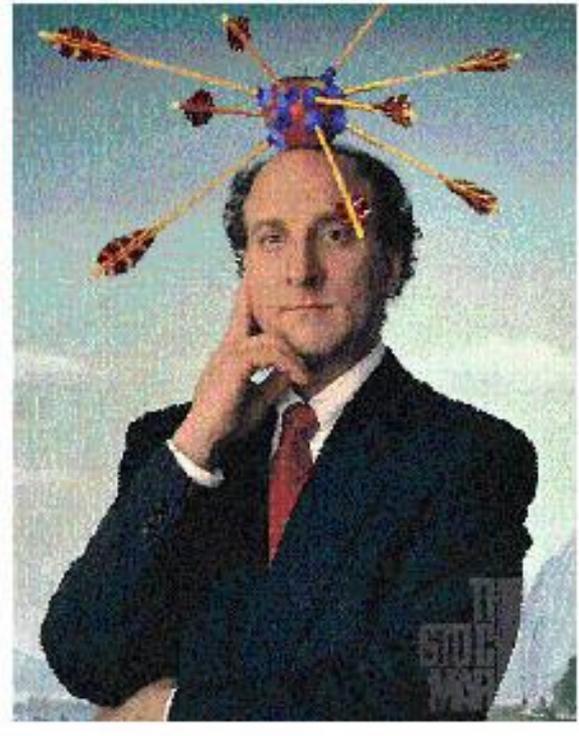


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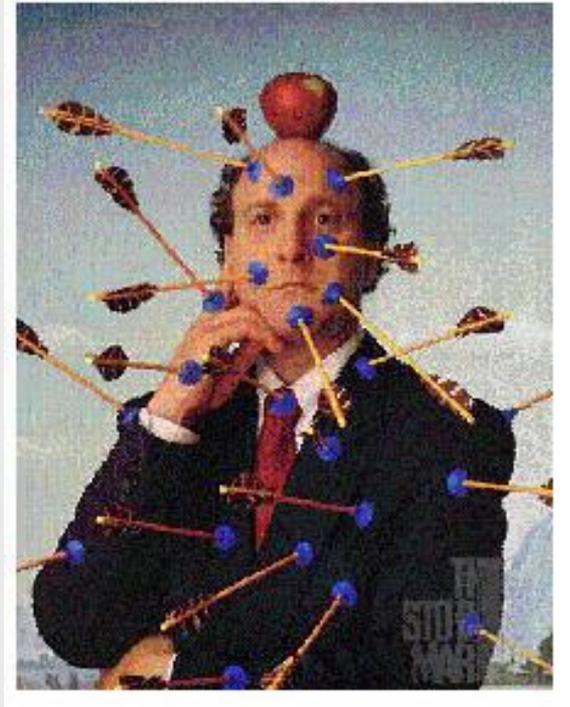
## Key lessons learned from these Projects were

- **Involve people from the plants**  
**SAP will change their lives!!**
- **Spend the time up front on SAP recipe design, involving both SAP & Plant experts**
- **Start developing “data integrity discipline” now!**



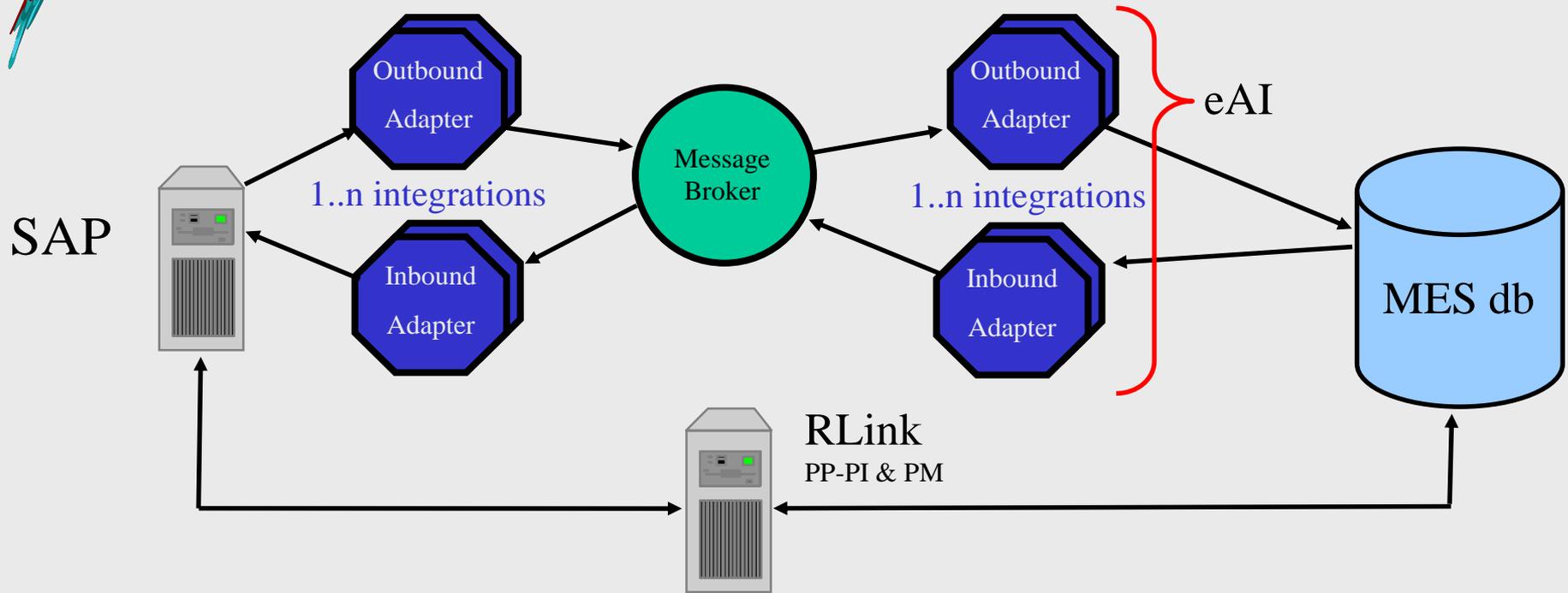
SIMPLICITY IS “GOOD”

COMPLEXITY IS “BAD”





# Technical Comparison - RLink & eAI



## RLink

- Direct connection
- Certified end to end
- Single point to monitor
- Standard install creates connection with SAP

## eAI

- Passes through broker
- Must configure multiple adapters
- Multiple points to monitor
- Requires PolyOne to develop same BAPI's and RFC's to create connection with SAP



- For true point-to-point applications, where it is unlikely that other applications will require the data, certified interfaces are the method of choice.
- Certified Interfaces are “off the shelf” solutions that are extensions of the primary application.
- Two examples of this are OSI’s RLink product (PPPI certified interface) and LabSystems SMIDI product (QM certified interface).
- Certified Interfaces protect us from having to write extensive code or perform extensive testing for SAP version changes, this is handled by the supplier of the interface .
- These Certified Interfaces are robust in capabilities because the primary application (SAP) will normally require it, as a part of certification.



## Benefits from these Projects

- **Flexibility**
  - **Custom PMU Transactions**  
(Grading, BlkCONS, Rework Rev, Line Evts, CoProducts)
  - **Parameters with Control Recipe Download**
- **SAP upgrades are a “non-issue” for interfaces**
- **Ease of support**
- **IT WORKS**



## **SAP Benefits from RLINK integration**

- **Closer to real-time data in SAP**
  - **Updates:**
    - PROD every 20 minutes**
    - CONS every 60 minutes**
  - **Manual Plants update SAP once per shift at BEST!**
- **Improved Inventory Management**
- **Better Order Management & more timely Customer responsiveness**



## Linking Our People and Partners Worldwide

[www.PolyOne.com](http://www.PolyOne.com)

Our corporate web site containing detailed information about our entire family of products & services

[www.GetPolyOne.com](http://www.GetPolyOne.com)

A secure real-time web site where our vinyl compound and specialty resin customers can place and manage their orders

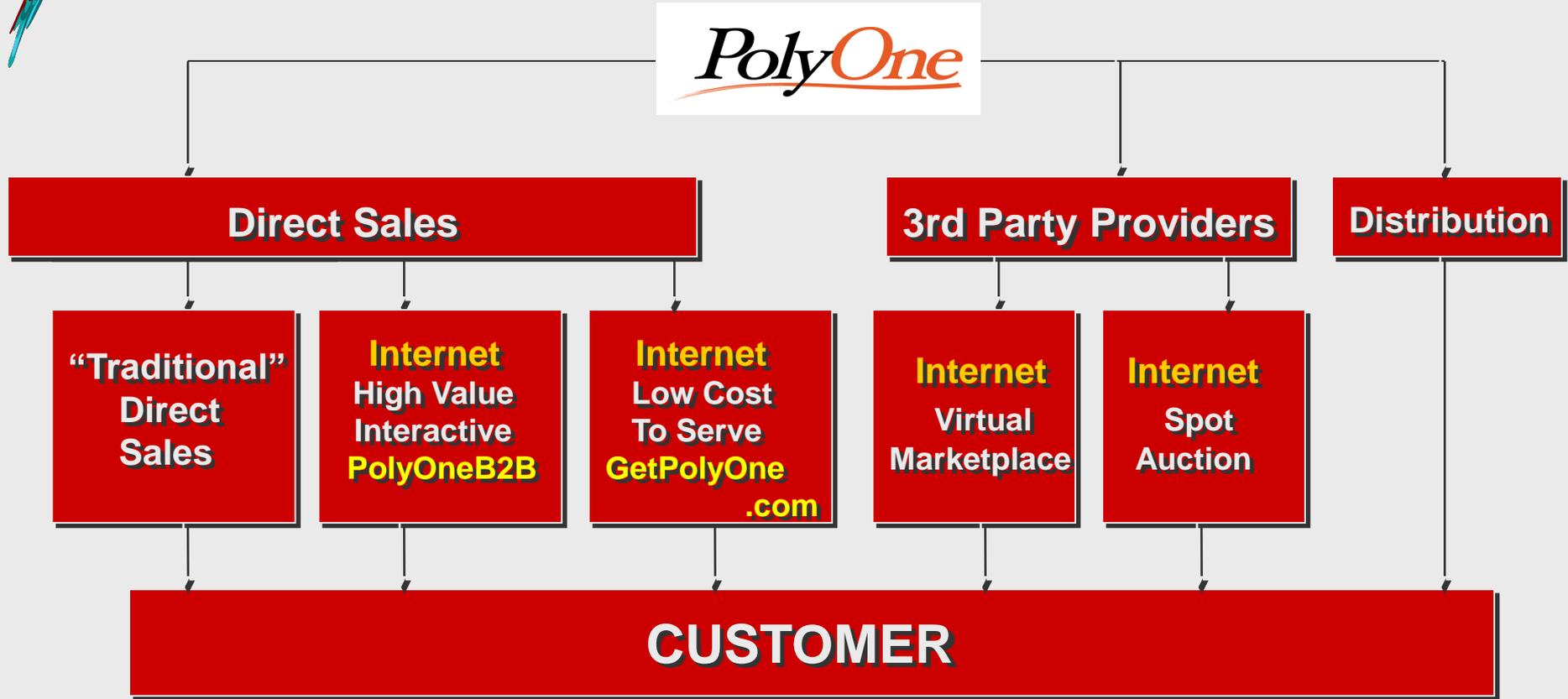
[www.PolyOneDistribution.com](http://www.PolyOneDistribution.com)

Our resin homepage, provide full, interactive troubleshooting from one of the largest knowledge bases available, and the ability to place and manage orders on-line





# Product to Market Model

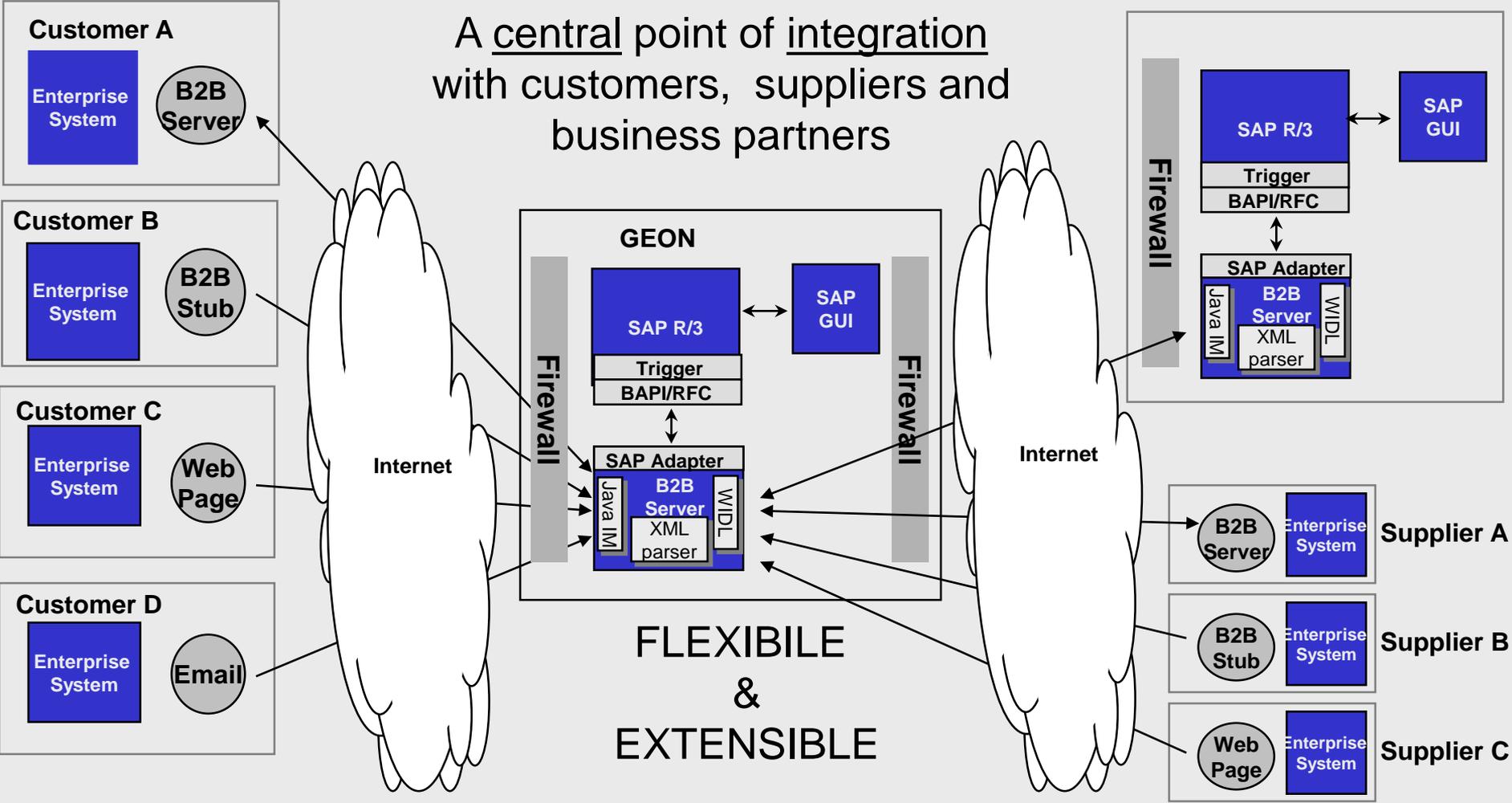




# Business To Business Integration

## A Flexible Approach

A central point of integration with customers, suppliers and business partners



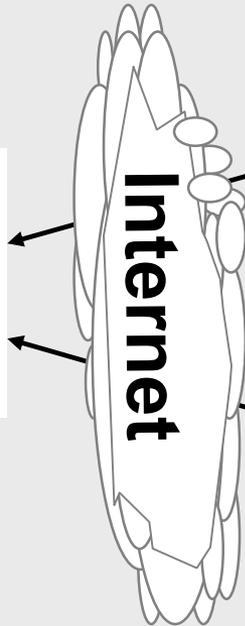
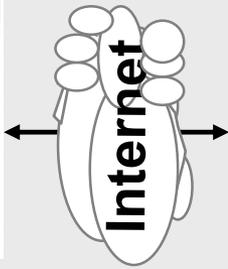
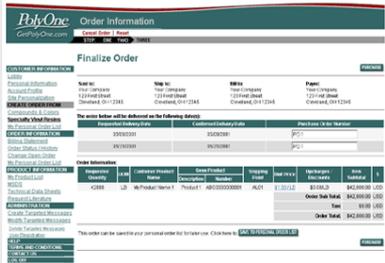


# PolyOne's e-Commerce Solution



PolyOne is a central point of integration with customers, suppliers and business partners

## GetPolyOne.com

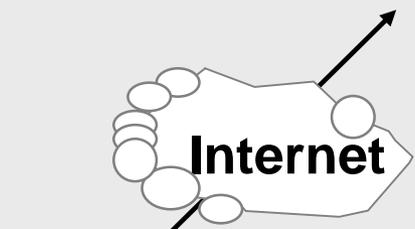


## PolyOneB2B

Customers



Suppliers



## Exchanges





PolyOne, who are we  
projectOne Background  
Vinyl Compound Implementation  
Elastomers Implementation  
Additions/Consolidations  
Lessons/Alternatives/Benefits  
**Questions?**