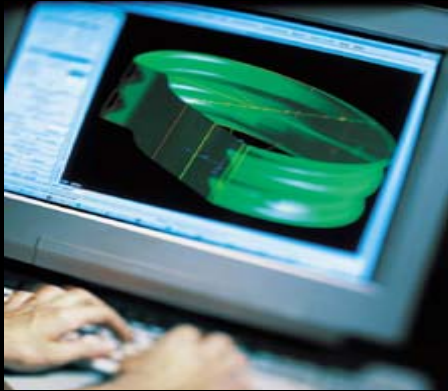


ORACLE®



Environmental Governance & Compliance

NEMI Data Exchange Workshop

Hardeep Gulati
John Haddad

Oracle Product Lifecycle Management

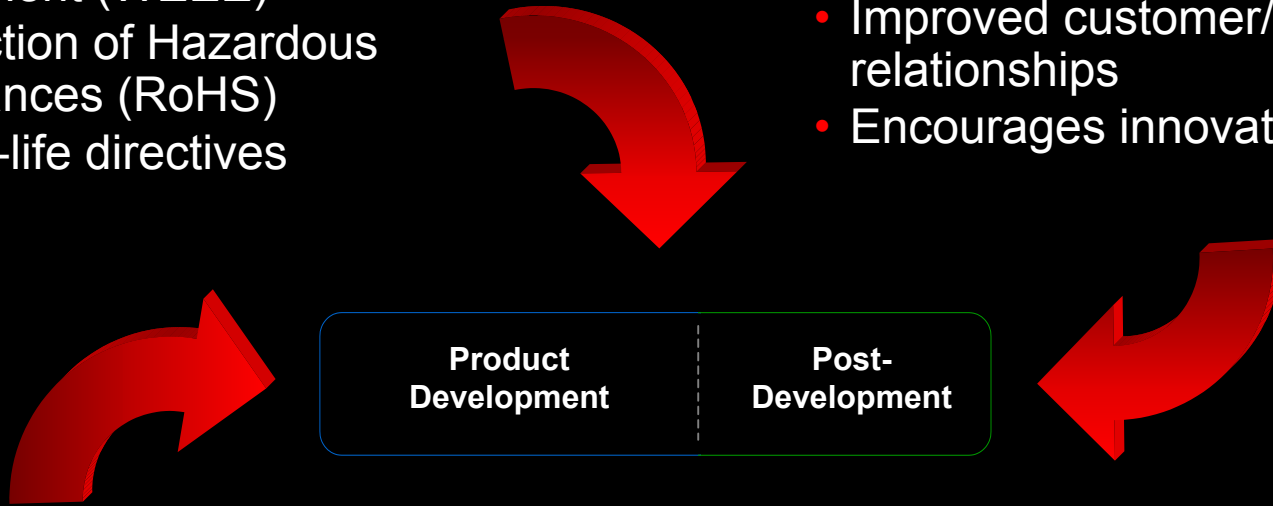
Business Pressures

Legislations

- Waste Electrical and Electronic Equipment (WEEE)
- Restriction of Hazardous Substances (RoHS)
- End-of-life directives

Competition & Cost Pressure

- Reduce material and resource consumption
- Reduction in waste generation during production
- Improved customer/supplier relationships
- Encourages innovation



Government Policies

- Product taxes
- Banned materials
- Eco-labeling scheme (e.g. Energy Star, Blue Angel)

Market Pressures

- Companies exerting pressure on supply chain to reduce environmental impact (e.g. ISO14001 certification)
- Increase market share by marketing to 'green' consumers

A Need for Change

Leading Business Trends

- Work with suppliers to eliminate hazardous substances from products
- Work with the supply chain to facilitate product re-use and recycling
- Create products that are more energy efficient and release less waste
- Deliver product function with less material and more recyclables
- Design energy efficient production processes and facilities
- Reduce environmental impact over the entire product lifecycle
- Protect the health and safety of workers and consumers

Current state



“Compliance strategies are lagging, placing high-tech producers at risk for missing January 2005 deadlines.”

“Eco regulations will cost manufacturers \$2M to \$3M in incremental IT spending”

“Some OEMs estimate that 20-30% of their component suppliers are non-compliant with RoHS”

“Eco regulations will cost manufacturers \$2M to \$3M in incremental IT spending”

EU Regulations – The Facts

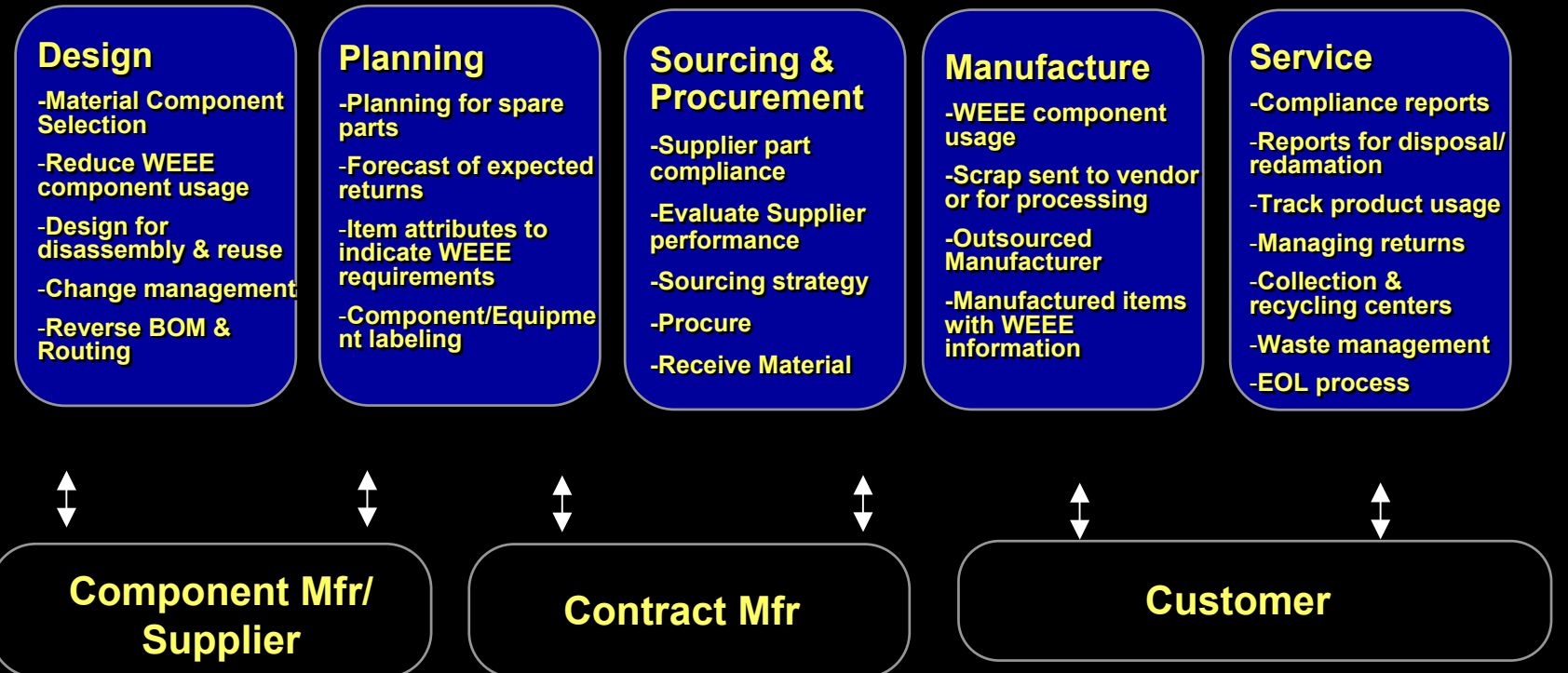
Minimum end-of-life re-use, recycling and recovery targets set by the WEEE Directive

Product category*	Component, material and substance re-use/recycling by average appliance weight	Rate of recovery** by average appliance weight
Large household appliances (eg fridges, washing machines, electric ovens)	75%	80%
Small household appliances (eg vacuum cleaners, toasters, irons, clocks, scales)	50%	70%
IT and telecommunication equipment (eg computers, photocopiers, telephones)	65%	75%
Consumer equipment (eg televisions, video recorders, Hi-fi equipment)	65%	75%
Lighting equipment (eg fluorescent lamps, discharge lamps)	80%	N/A
Electrical and electronic tools (eg drills, sewing machines, lawnmowers)	50%	70%
Toys, leisure and sports equipment (eg video games and consoles, train sets)	50%	70%
Medical equipment systems (eg radiotherapy equipment, pulmonary ventilators)	No target has been set	No target has been set
Monitoring and control equipment (eg thermostats, control panels)	50%	70%
Automatic dispensers (eg drinks machines)	75%	80%

* See the WEEE Directive at www.dti.gov.uk/sustainability for further details.

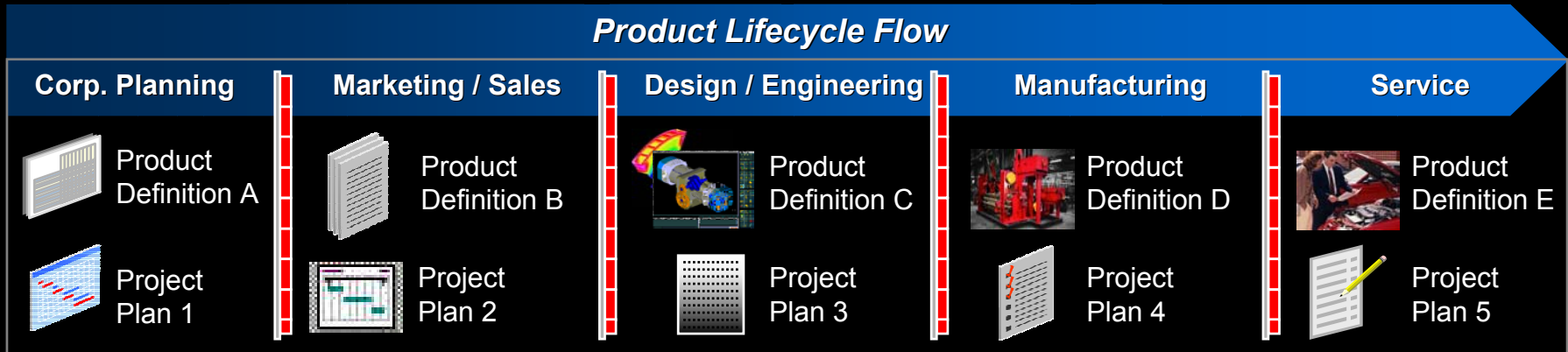
** Includes energy recovery in a power plant, in addition to re-use and recycling.

Environmental Governance & Compliance At-a-Glance

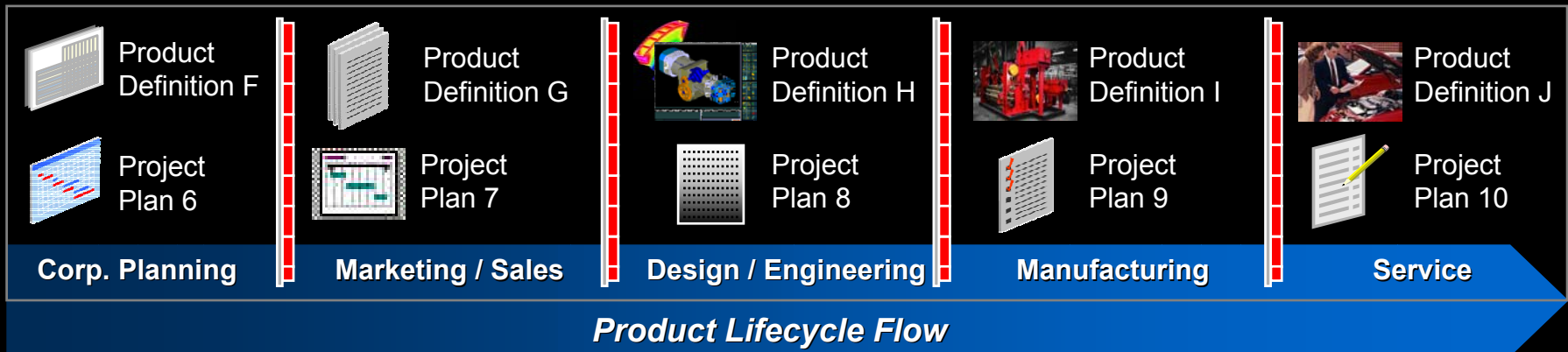


Operational Challenges

Company 1



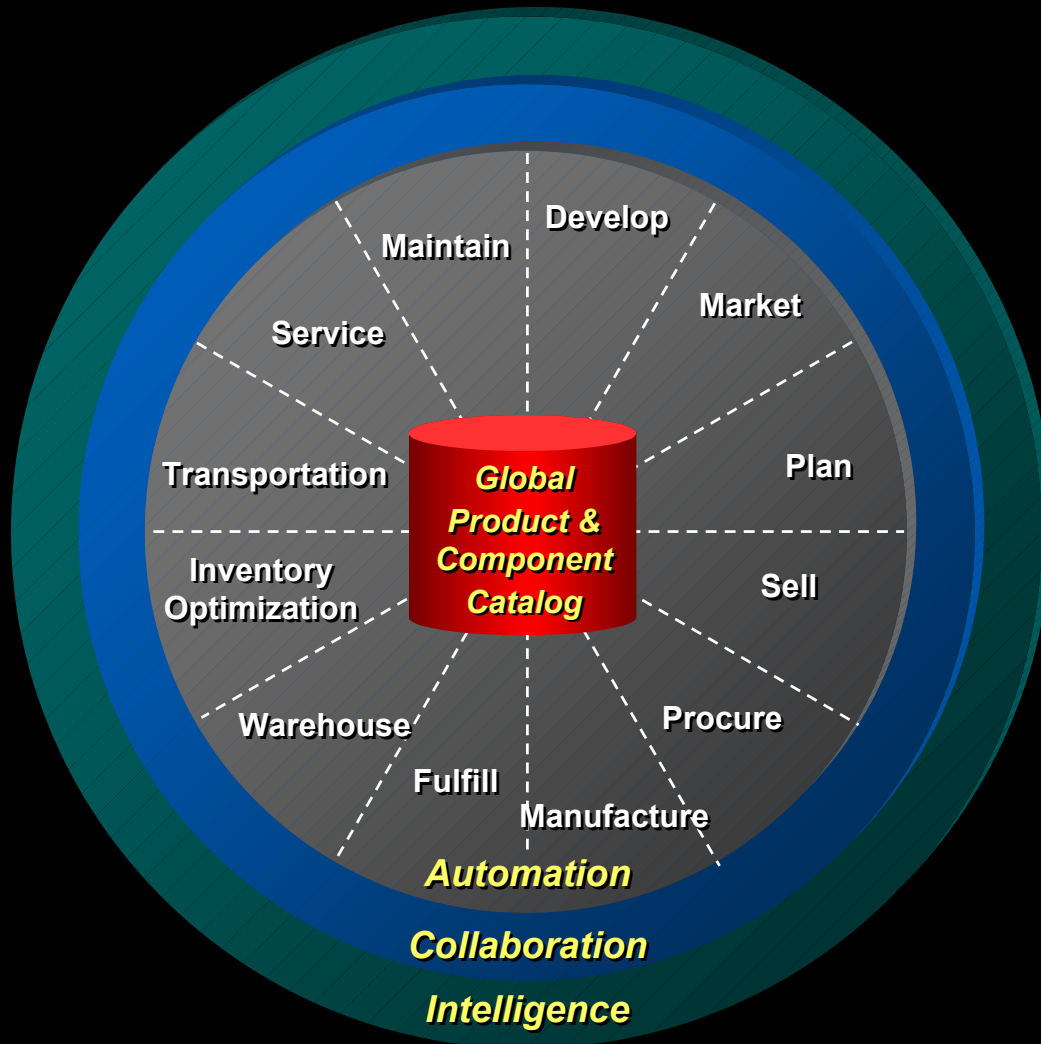
Company 2



Multiple Definitions, Limited Collaboration, Linear Product Life

How Oracle Delivers

Global Product/Component Catalog



Enables...

- ✓ Component Reuse
- ✓ RoHS/WEEE attributes
- ✓ Secure Collaboration with Customers & Suppliers

Leverages Oracle Database...

- ✓ Text & Parametric Search with Text & Partitioned Index Technology
- ✓ Scalability & Performance

Supports Full Global Operation...

- ✓ Single Global Instance
- ✓ 30 Languages
- ✓ All Currencies
- ✓ All Localizations

Unified Product Catalog Search

Provide Instant Access to Product Information

Casual Search → **Technical Search**

The interface includes a 'Search' and 'Browse' navigation bar. The 'Browse Catalog Hierarchy' section shows a tree view with 'Memory' selected, and sub-items 'DRAM' and 'SRAM'. The 'Simple Search' form has an 'Item' field containing 'sram-memory'. The 'Advanced Search' form has a 'Catalog Category' field with 'SRAM' and a 'Search' button. Below it is a table for search criteria:

Select Attribute	Operator	Value
<input type="checkbox"/> Item	is	
<input type="checkbox"/> Description	is	
<input type="checkbox"/> Speed Access Time	is <	25

- All Users
 - Casual users
 - Technical users
- Search Options
 - Browse catalog
 - Simple search
 - Advanced search

Results

Items in Catalog Category: SRAM.

Select	Item	Description	Technology	Config	Speed Access Time
<input type="checkbox"/>	15-1175-01	IC SRAM 8Kx 9 15ns SOJ20	ASYN	8Kx 9	15
<input type="checkbox"/>	15-0768	IC SRAM 16Kx 4 15ns SOJ24	ASYN	16Kx 4	15
<input type="checkbox"/>	15-0808	IC SRAM 8Kx 8 15ns SOJ28	ASYN	8Kx 8	20

- Intuitive Interface
- Internal and External Usage

Search and Find the Best Component

Increase Component Reuse & Compliance Through Advanced Parametric Search

Browse Category Hierarchy

Catalog Category Hierarchy

Select	Focus Name	Description	Number of Items	Cumulative Number of Items	Details
<input type="radio"/>	▼ All-Catalog Categories	Top Level Catalog Category	0	100	
<input type="radio"/>	⊕ ▼ Engine	Car engine	10	50	
<input type="radio"/>	⊕ ▼ Piston			20	
<input type="radio"/>	⊕ ▼ Cylinder			20	

Category

Search

Search Components by Specification Values
(and compare search results)

Catalog Category:

Attribute	Operator	Value
* Item		
Item Status		Engineering
Description	is not	
Category Set	is not	
Category	is not	
* No. of Cylinders	is	6
Gear Ratio	contains	16:9
Shaft Length	contains	

Attributes

Attribute Values

Choose Best Fitting Component

Best Component



Item: M10000
Organization: R & D HQ

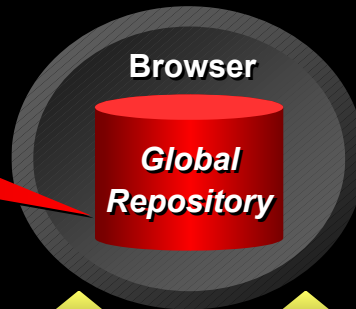
Easy Stakeholder Access

Drive Participation of All Contributors

Your Company



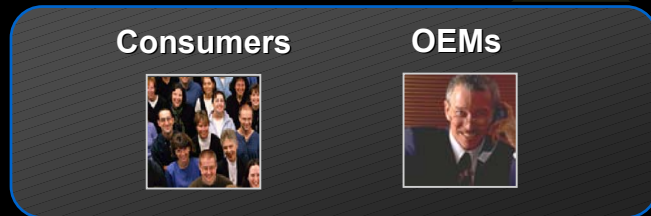
**Secure,
Role-Based
Access**



Global access anywhere anytime

- Office and home
- Customer and supplier sites
- Airport terminal
- Other

Customers

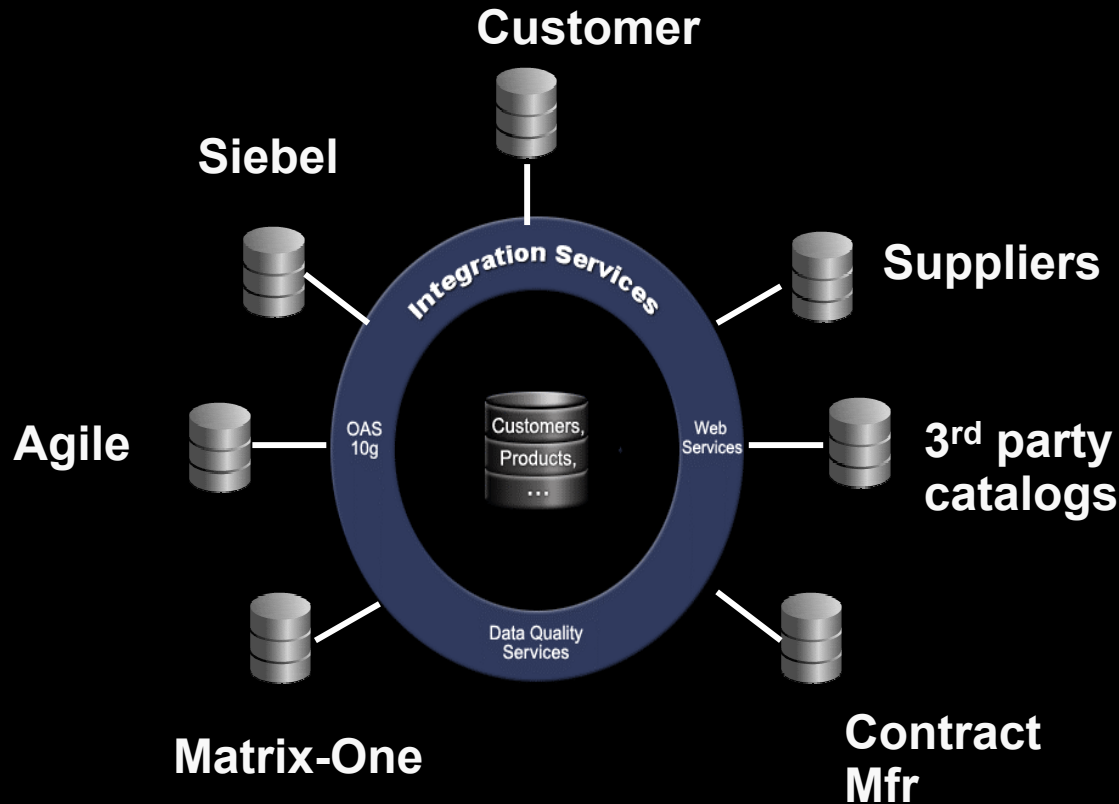


Partners



- Browser-based for fast roll-out and user adoption
- Streamlined Communications UI for higher utilization
- Configurable CAD UI for ease of use by all stakeholders

Oracle Product Hub



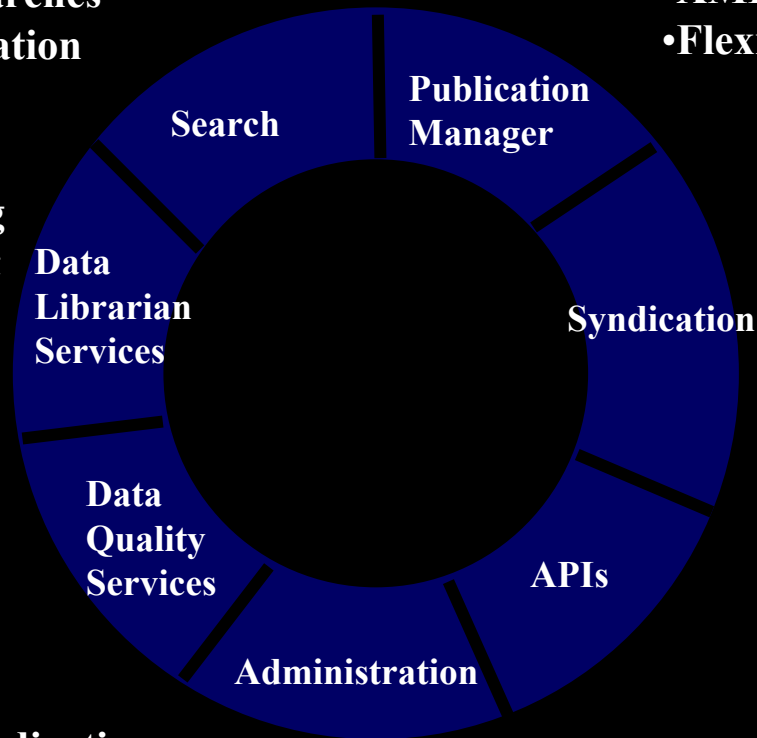
- **Central Product master *data store***
- **Integration Services**
- **Platform for custom applications**
- **Improved product visibility**

Oracle Product Hub Services

- Secure searches
- Dynamic searches
- CAD Integration

- Data-driven page layouts
- XML Publisher integration
- Flexible reporting

- Content creation & editing
- Taxonomy/attribute mgmt
- Document management
- New item creation/control
- PCN/EOLs



- XML Gateway
- Mapping Attributes
- Synchronization (change Notifications and update)

- Aggregation
- Transformation
- Validation rules
- Normalization & Standardization
- Cleansing

- Role based security
- User defined catalog(s)
- User defined attribution

- Java & PL/SQL
- Bulk load APIs
- Web service APIs
- Core services

Outlook of the Hub

Parts Manufacturers

Inspection Request
 Material(Change) Info
 Parts(Change) Info
 MSDS
 MSDS Authoring Request

Component Manufacturers

Inspection Request
 Material(Change) Info
 Parts(Change) Info
 MSDS
 MSDS Authoring Request
 Component(Change) Info

Product Manufacturers

Inspection Request
 Material(Change) Info
 Parts(Change) Info
 MSDS
 MSDS Authoring Request
 MSDS Authoring Request

Portal

Material Info

Basic Attributes
 Hazardous Substance
 Reusable Material
 Recycle Material

Parts Info

Basic Attributes
 Materials(CAS Code)*
 Amount of substance**
 Part specification
 Reusable Material
 Recycle Material

Component Info

Basic Attributes
 Component Configuration*
 Materials(CAS Code)*
 Amount of substance**
 Components specification
 Reusable Material
 Recycle Material

MSDS

Portal

Material info
 Material Change
 MSDS

MSDS Authoring Request
 MSDS

Inspection Request
 Material info
 Material Change

Material Manufacturers



MSDS Authoring Serv

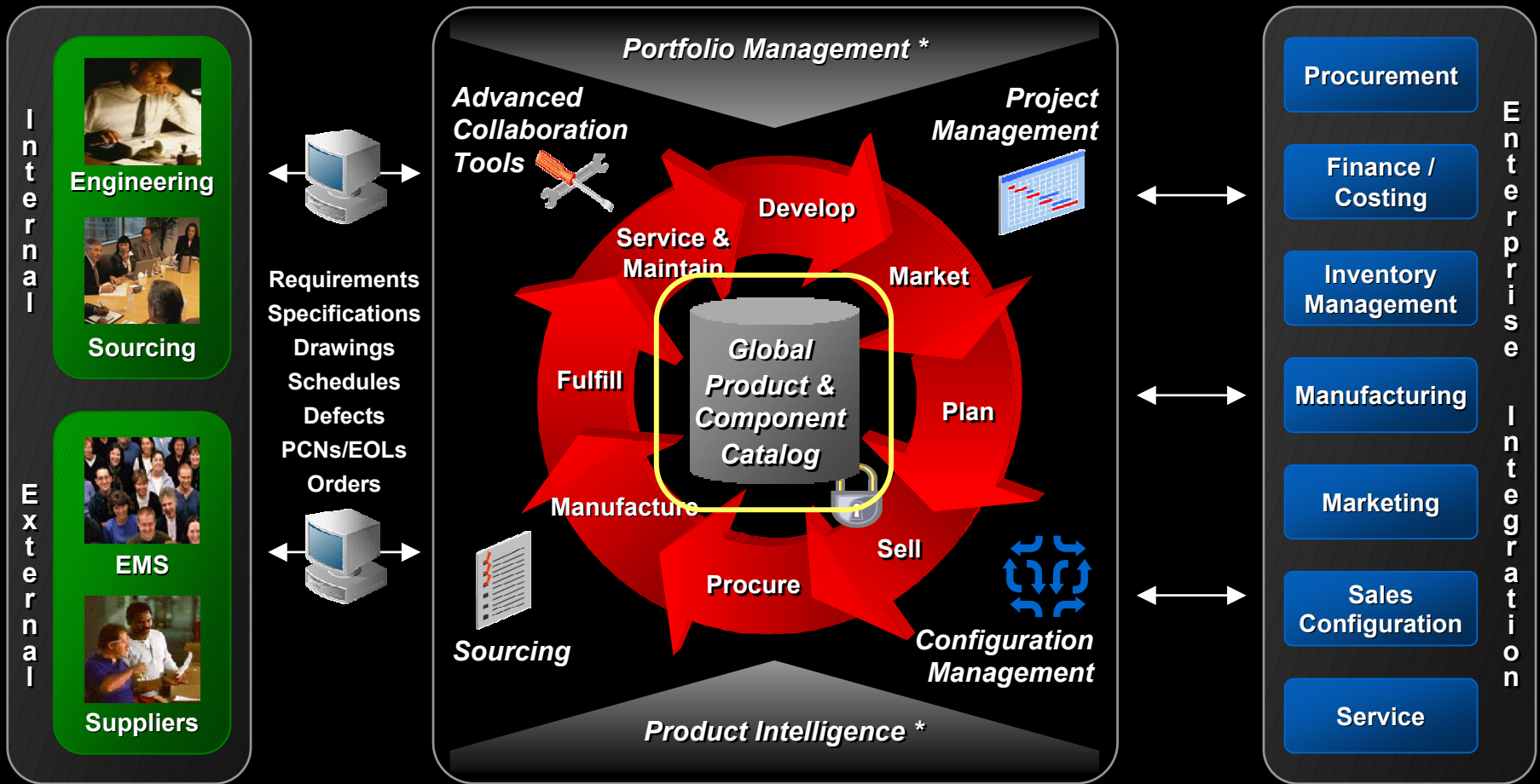


Inspection Service



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Oracle Product Lifecycle Management



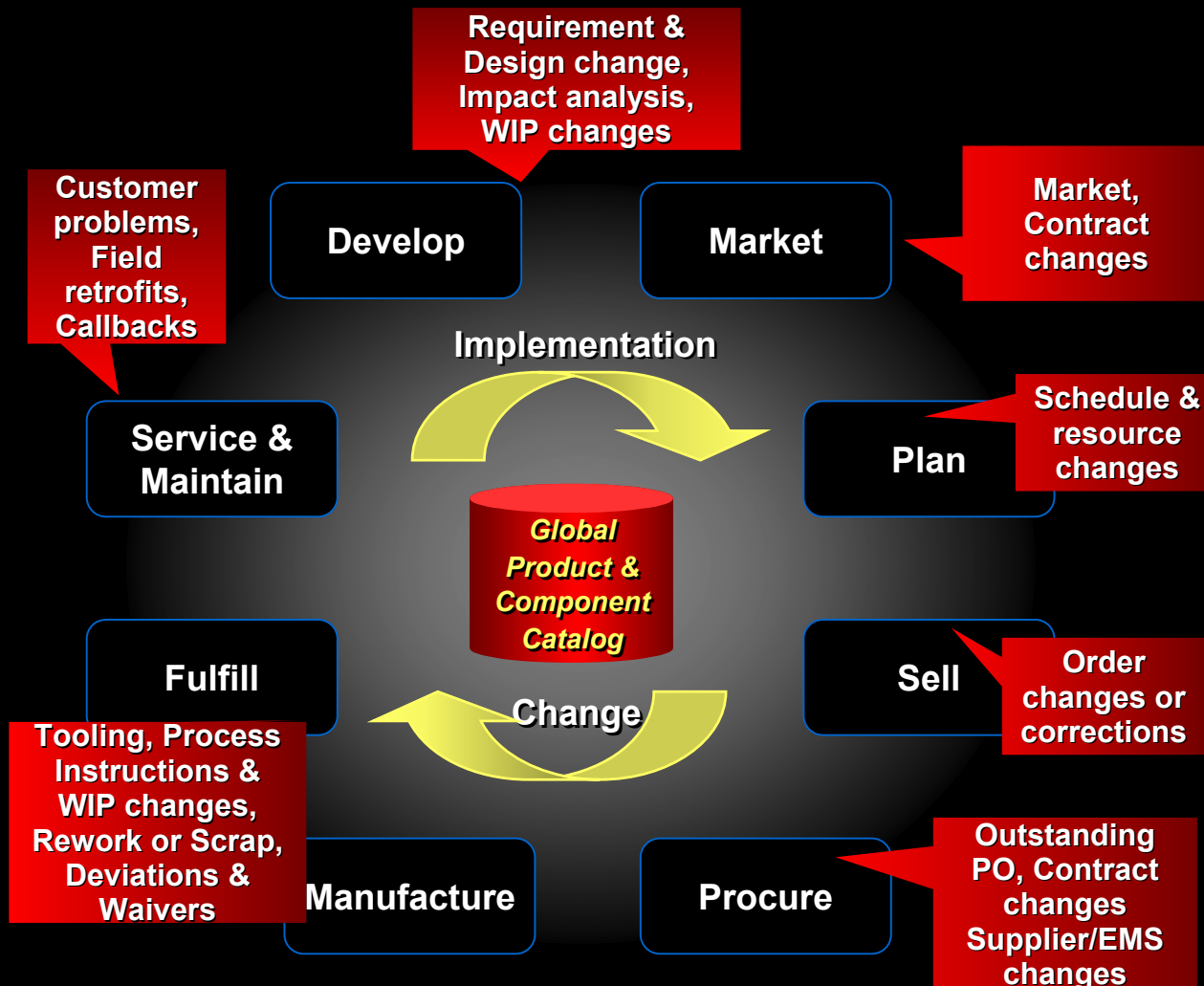
* Coming in a future release

Design Analysis for Environmental Governance and Compliance

- Search product structures for component items containing hazardous substances
- Define alternative structures to meet regulatory compliance across geographical regions
- Specify reverse logistics for disassembly, reuse, and recycling
- Track material and components during treatment, disposal and recycling
- Track product genealogy
- Create 'as-maintained' structures to track components under regulatory compliance

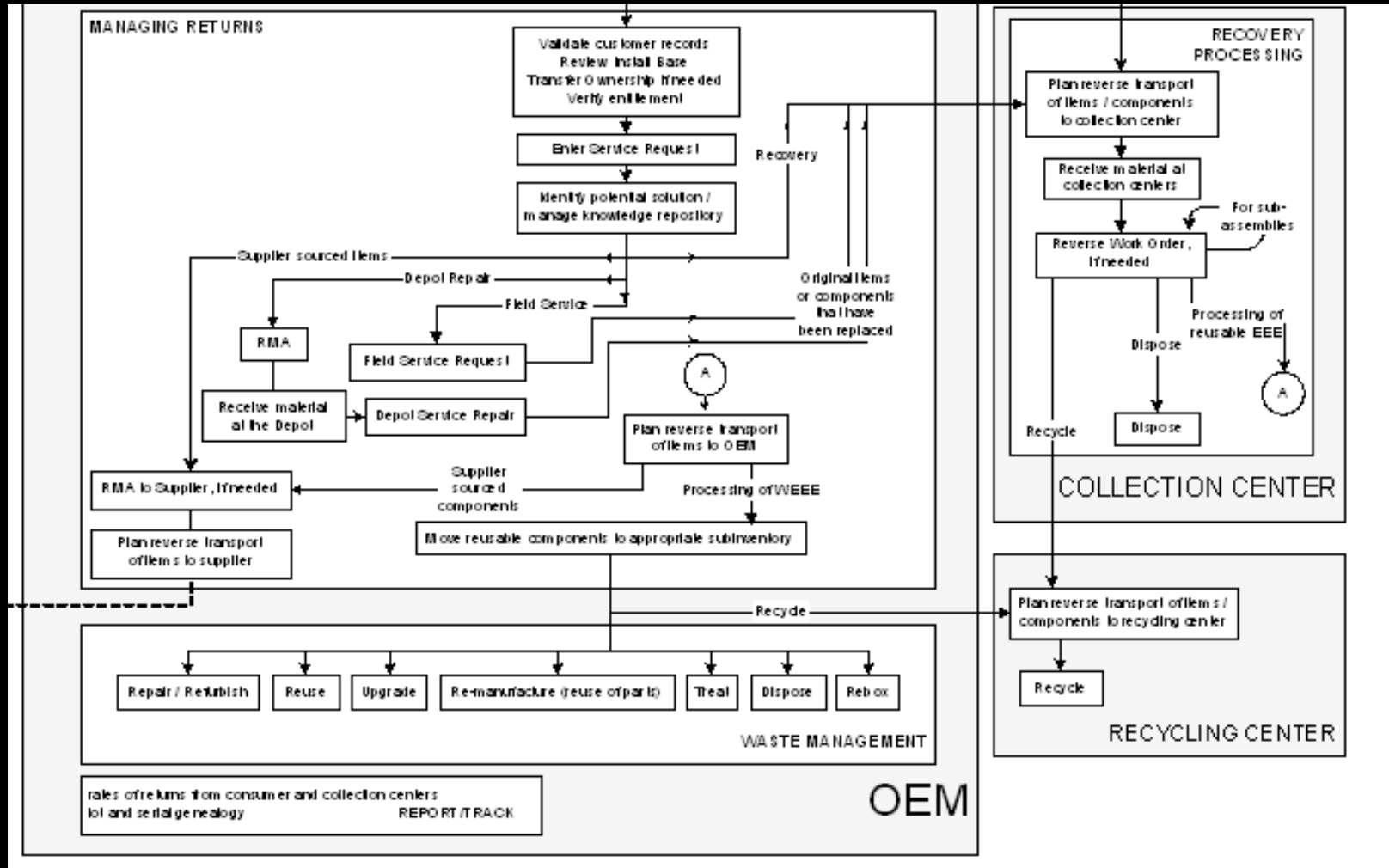
Improve handling of Product Changes

Collaborative Change Management Across Lifecycle



- Integrated Change Management
 - Change control product and **related** information through out the product lifecycle
 - Manage integrated change for design & manufacturing
- Multi-organization change management
- Collaborative workflow driven automation

Oracle Service System



Support Global Operations

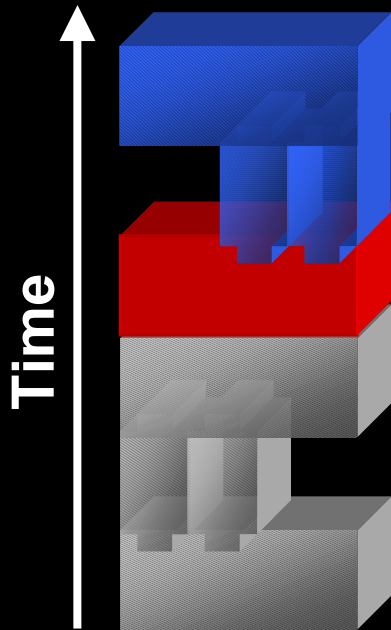
Think Globally, Act Locally



- **30 Languages**
- **Multiple Currencies**
- **Customers in 100+ Countries**
- **All Languages Installable in Same Unicode Instance**
- **Support for Statutory and Customary Local Requirements**

Modular Architecture

Implement Based on Your Business Priorities



- **Implement by Business Flow**

- Start with one flow, demonstrate initial success
- Add more flows to expand business coverage
- Support changing business needs

- **Flows are Seamlessly Integrated**

- Replace disparate systems
- Eliminate data synchronization
- Decrease time and cost to implement

ORACLE®

Know More. Do More. Spend Less.