

IPMS :IP Managment
From IP Design To Delivery up to Royalty Reporting

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Design and Reuse

Outline

- **History and Innovation**
- ***IP Provider :You deliver IP to the market ? Enhance your productivity***
 - ***Case Study 1: IP provider Station Starter Kit***
- **IP Consumer: You integrate many IP from many vendors ? *Monitor your 3PIP***
 - ***Case Study 2 :Third Party IP manager***
- **Conclusion**

History : IP Publishing Challenge

- **IP Publishing a D&R Challenge (starting in 97)**
 - Commonly used :”IP/product” list as an Excel Sheet (Provider list often not available..))
 - Import/export over firewall (early request)
 - Unique (VSIA) format: intractable ??? Diversified formats needed
 - Multi application (intranet management):IP reuse hot in 2000
- **Required :“Server hosted” Next Generation Catalog**
 - Multi format, multi Catalog, Evolving Format
 - Importable/ Exportable catalogs over a firewall to companion/partner/client site

History: Innovation in Cataloguing ?

Evolving Catalog Format in a XML layer with an extensible set of Field Types (all management needs)

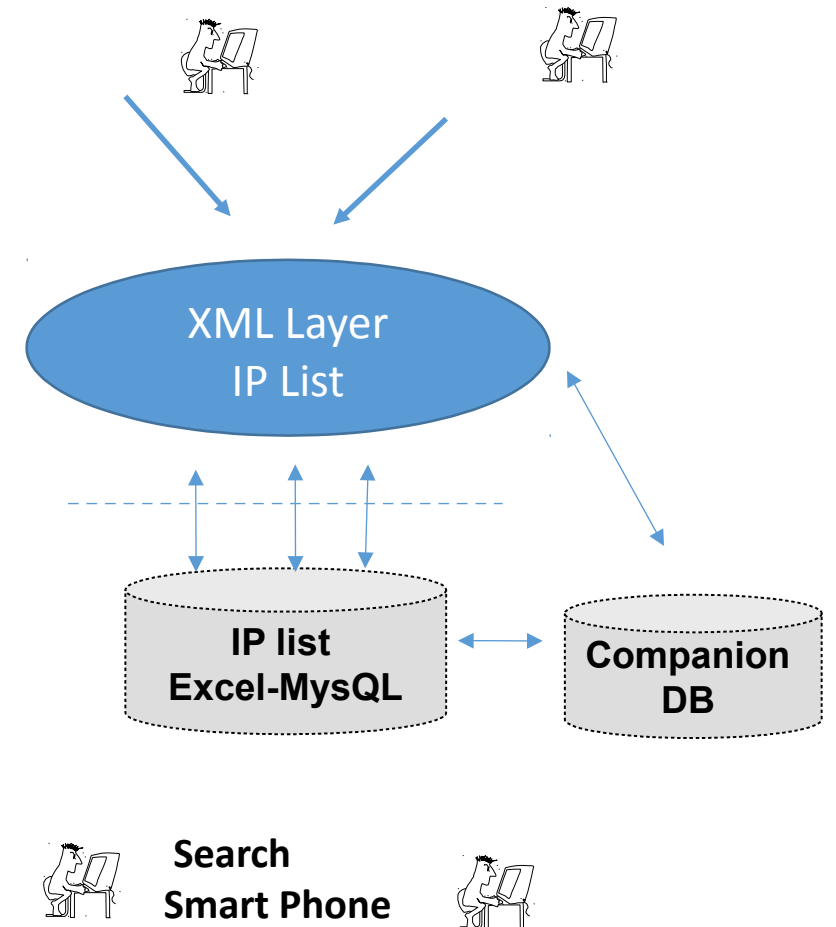
- Multi value attribute ,Integer, parametric
- Field Dependent Section
- Access control and Dedicated Views (engineering ,marketing)
- Hyperlink and URL....
- Hierarchy (embedded / related)
- Bridge to design DB

And More

- Customizable Search
- Automated Upload from Excel
- Import/ Export filtered catalogs (over firewall) to companion site

Build ,Search, Export in an XML layer /Store in Mysql

- Used as web portal
- Used for Internal Management
- Shared Data with Corporate web site



Extension to intranet smart IP Management Dashboards

History:

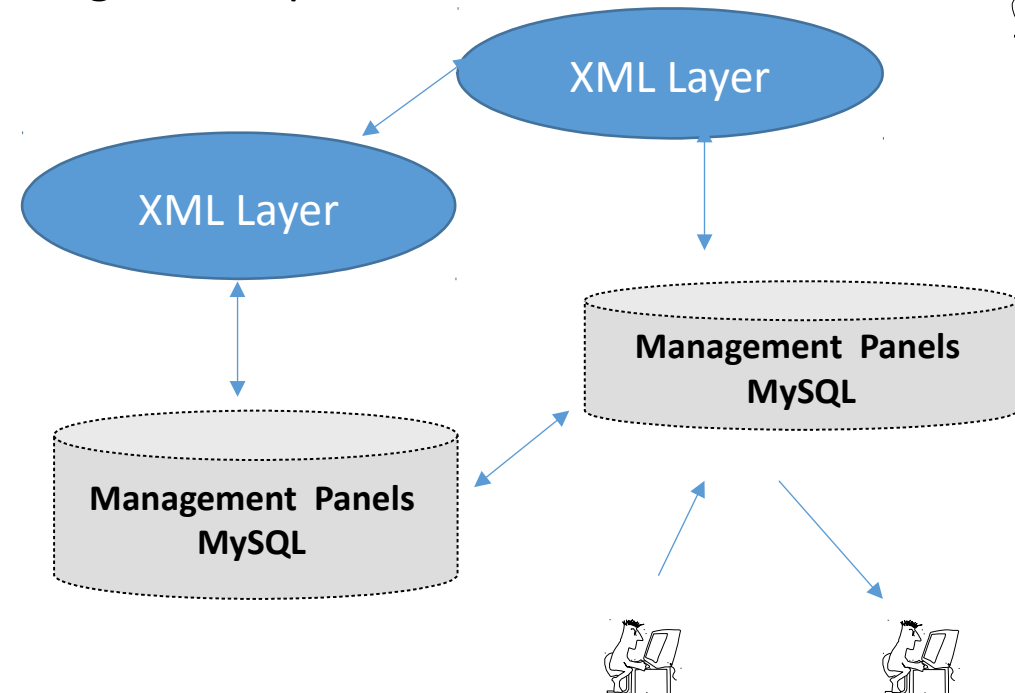
- IP centric tables (bug List ,delivery list ,additional property (Maturity, claims) ...)
- Commonly Used : **Fixed Format** DB Table

Innovation: *Smart configurable* **synchronized** management “panels “



Extensible supported types

- Date and Alert
- Algorithmic Calculation (Python)
- Bridge to/ Synchronized with
Other panels
Companion DB
- Workflow primitive (control signal)
- ...



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IP Provider Intranet Station Station-Starter Kit

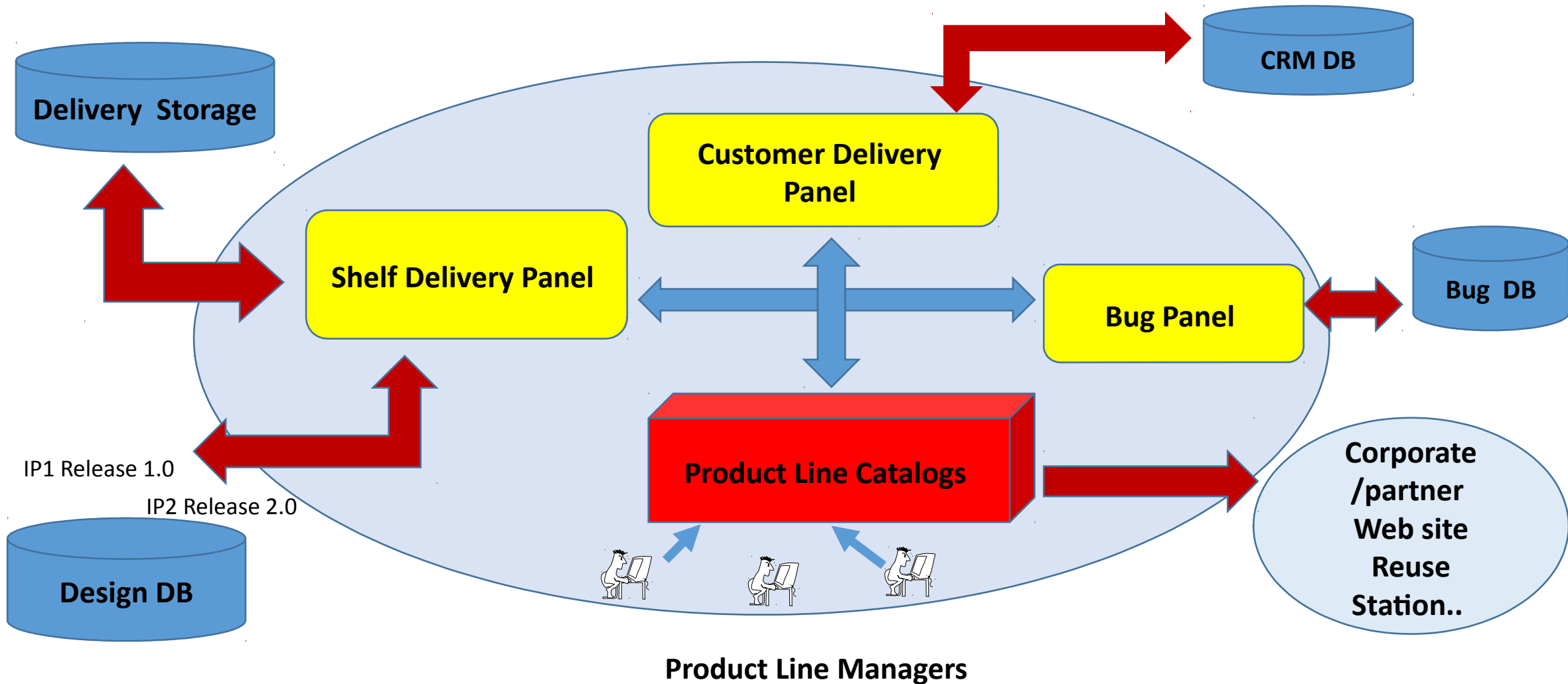
- Goal :
 - Enhance Productivity
 - Quality and Customer satisfaction increase
- How ? Make available for Sales ,Product managers, Engineers
 - Which Product Line /Product is available ?
 - Which product(s) release (.. various configurations, target nodes ..) has been delivered to which client
 - Which bug affects which client ?
- **In Sync with the corporate environment**

Basic Implementation. Starter Kit

- Catalog and Three Key interconnected management panels

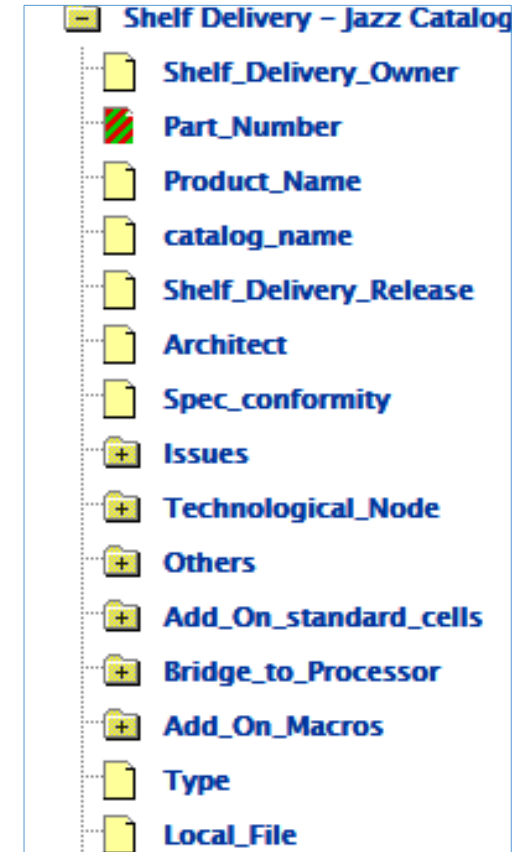
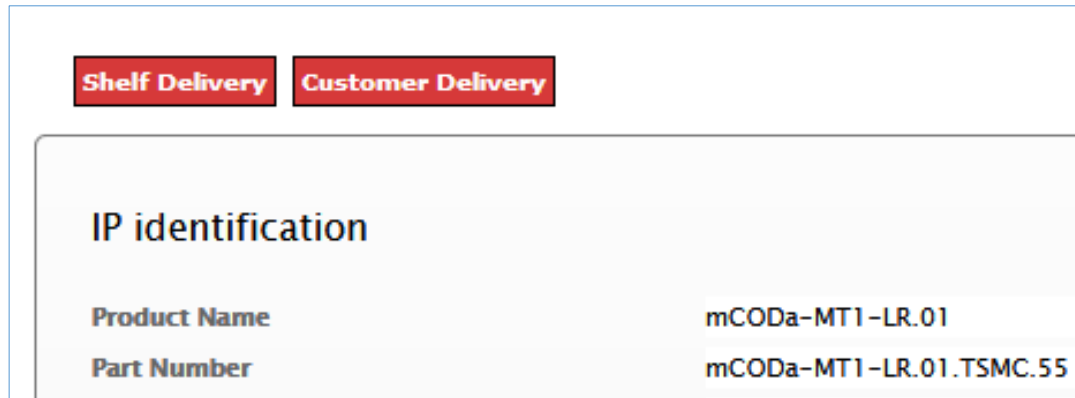
IP Provider Intranet Management Station- Starter Kit

- **Basic Configuration**



IP Provider Management Station - Starter Kit




Easy access of Key data (information Documentation sharing) in the product list
Powerful flexible documentation (Product Family specific)






- **Shelf Delivery :Hierarchy Support :**
 - A shelf delivery release can include other shelf Delivery
 - “ Add On” such as standard cell /add on macro...
- **Customer Delivery**
 - Easy On line client specific Package creation
 - Predefined Package of shelf delivery
 - Sponsored Package (Free on line download)

Synchronized Bug panel

Bug Declaration associated with Shelf delivery - Affected client automatically inherited

Part Number ▲▼	Shelf Delivery Release	Bug Status	Bug Criticality	Bug Details
auxADC-12x8-GP.01.TSMC.180.bis	auxADC-12x8-GP.01.TSMC.180.bis R3.2 	Confirmed	Critical	Bug Details
mCODa-MT1-LR.01.TSMC.55	mCODa-MT1-LR.01.TSMC.55 R1.0 	Confirmed	Minor	Bug Details
mCODa-MT1-LR.01.TSMC.55	mCODa-MT1-LR.01.TSMC.55 R1.2 	Delivered	Minor	Bug Details

- Warning on Bug in Shelf Delivery when creating Client Delivery

Part Number ▲▼	Shelf Delivery Release	Bug Info	
		Pending Bug	Bug Details
auxADC-12x8-GP.01.TSMC.180.bis	auxADC-12x8-GP.01.TSMC.180.bis R3.2 	Yes	Bug Details
mCODa-MT1-LR.01.TSMC.55	mCODa-MT1-LR.01.TSMC.55 R1.0 	Yes	Bug Details
mCODa-MT1-LR.01.TSMC.55	mCODa-MT1-LR.01.TSMC.55 R1.2 	Yes	Bug Details
mCODa-MT1-LR.01.TSMC.55	mCODa-MT1-LR.01.TSMC.55 R2.2	No	Bug Details
Metro-Jade-PM-mono.05.GSMC.130bis	Metro-Jade-PM-mono.05.GSMC.130bis R6.2	No	Bug Details
Metro-Jade-PM-mono.05.GSMC.130bis	Metro-Jade-PM-mono.05.GSMC.130bis	No	Bug Details

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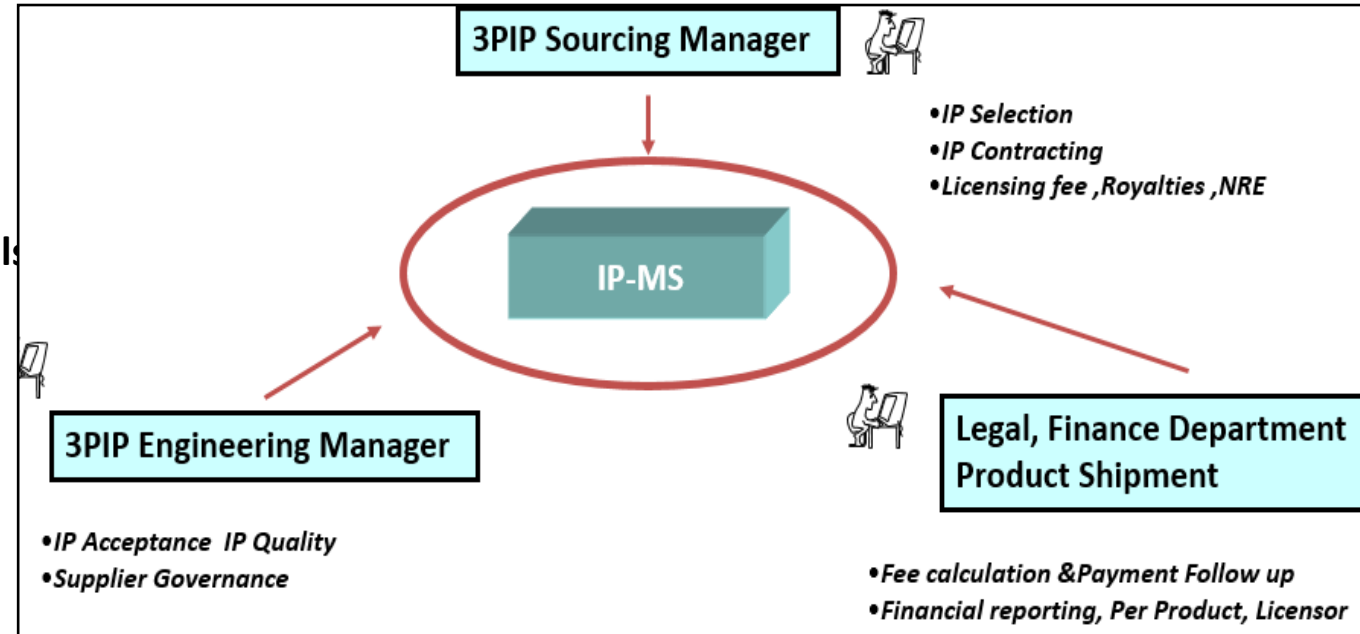
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Needs and Goals of a global management

3PIP monitoring across all organizational Units

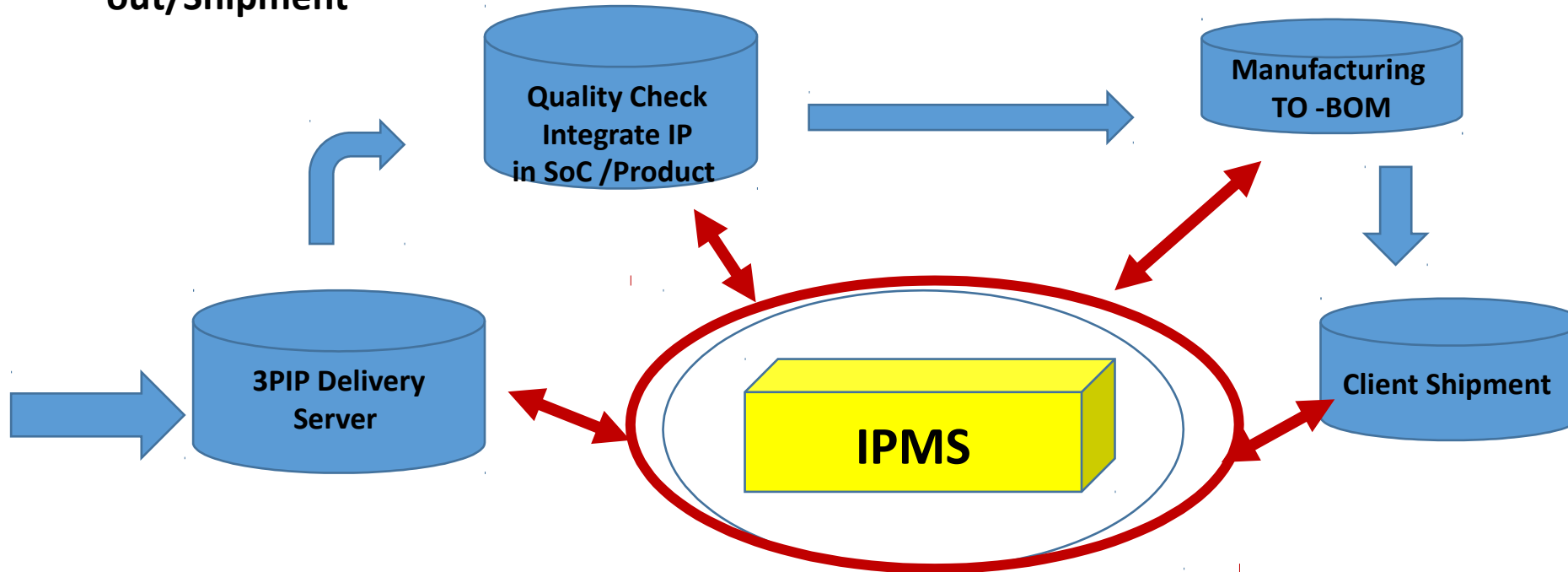
Procurement department

- License agreement
- Legal restriction
- Pricing Negotiation :Fee , royalty scheme
- Engineers need to know
 - Which IP have been licensed (key technical details)
 - Under which type of agreement
 - Which usage restriction
- 3PIP Engineering Manager
 - IP acceptance IP quality
- Finance department
 - Payment calculation & schedule
 - Expense prediction
 - Finance Tear sheet



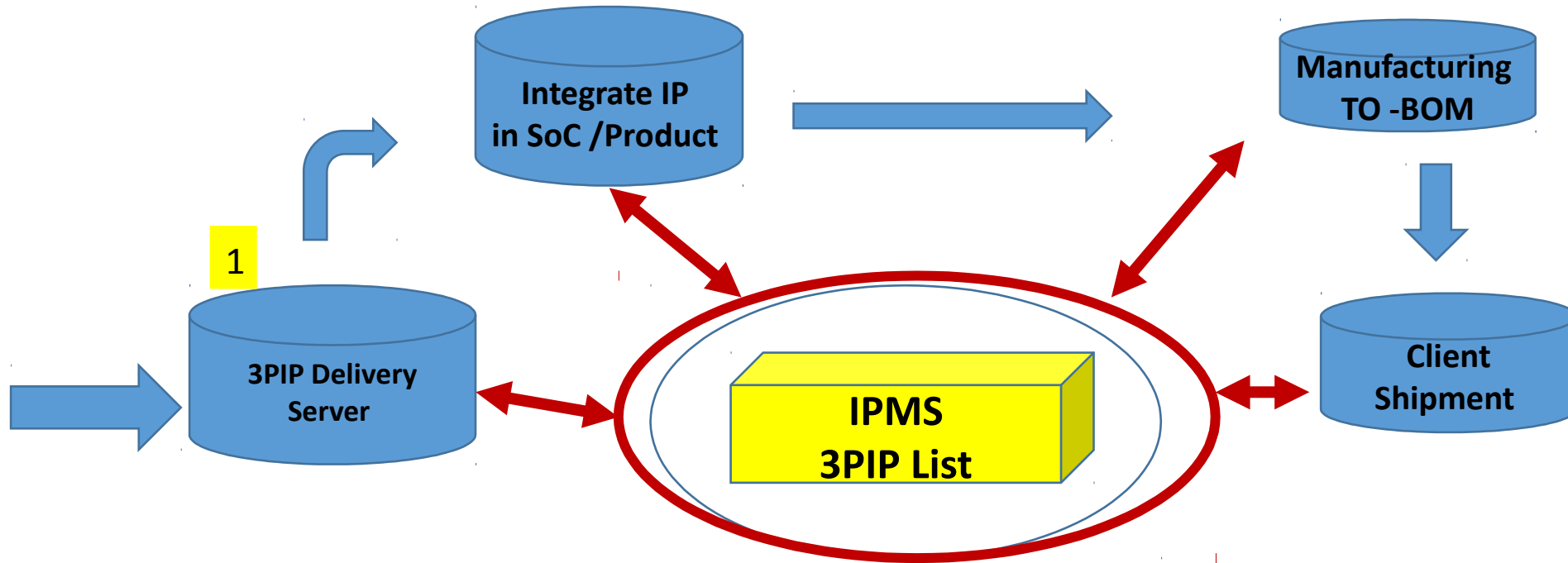
Synchronisation Badly Needed: IP Life Cycle

- IP reception*Qualification* Delivery to Design Manager*Integration in SoC *Product Tape out/Shipment



- Goal :Reliability and Quality enhancement ,easy and secure access, expenses control, high quality finance management .including prediction and tear sheet etc..

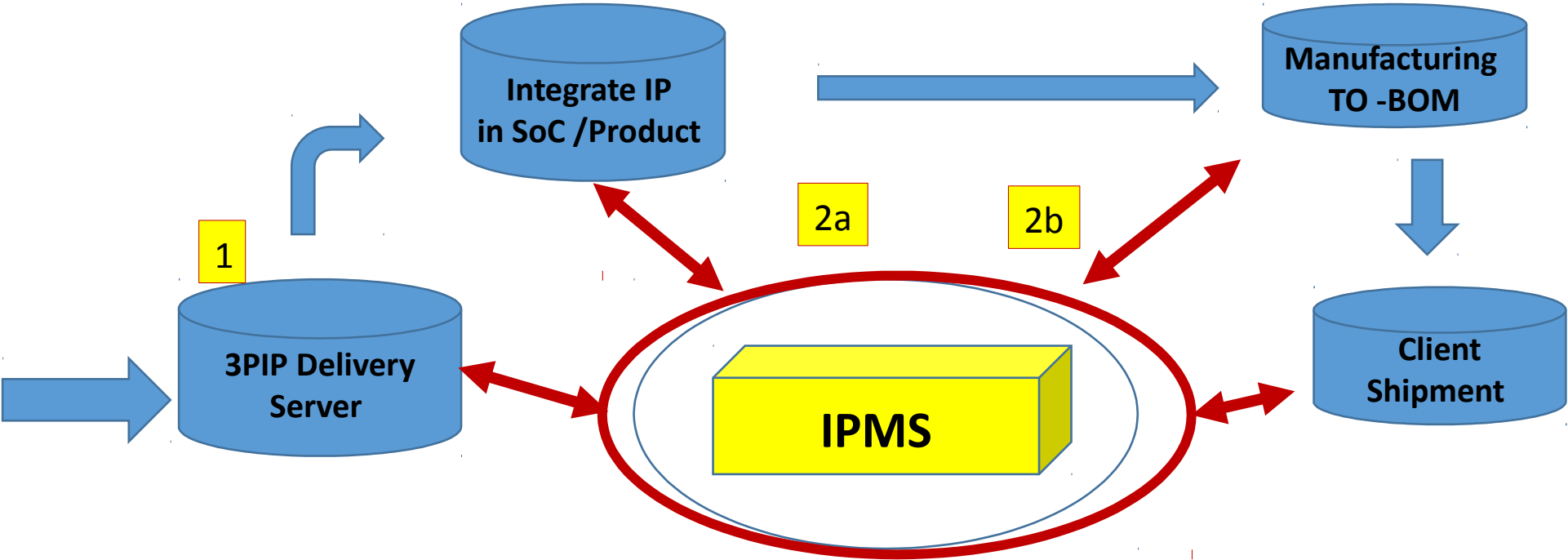
Synchronisation Badly Needed: IP Entry



Third Party IP Entry

- Information for designers in a 3PIP IP List (***Catalog technology***)
 - Which IP have been licensed (key technical details)
 - Under which type of agreement
 - Which usage restriction
- Alert about new IP ,about Bug ..(***Alert technology***)
- Controlled Secure access to the IP version (***optional***)
 - IP Version entry (**Packaging Station**)
 - Download workflow for secure and controlled download (***Workflow technology***)
 - File transfer if distributed locations (***controlled ftp/sftp technology***)

Synchronisation Badly Needed : IP Tracing



Which IP in which Product ? Who Used? Where Used?

- IP version in Product version ?
 - IP version in SoC version
 - IP in Package in Board
 - IP activated (Fuse technology) in Package in a Board
- Constructive Entry (Product/project Manager)
 - Map IP in Soc (Package)
 - Map Soc (Package) in product
- Synchronize /Upload existing table
 - *Bridge to any existing table / DB record /BOM*
- **Result Tracing Table**

Tracing Table

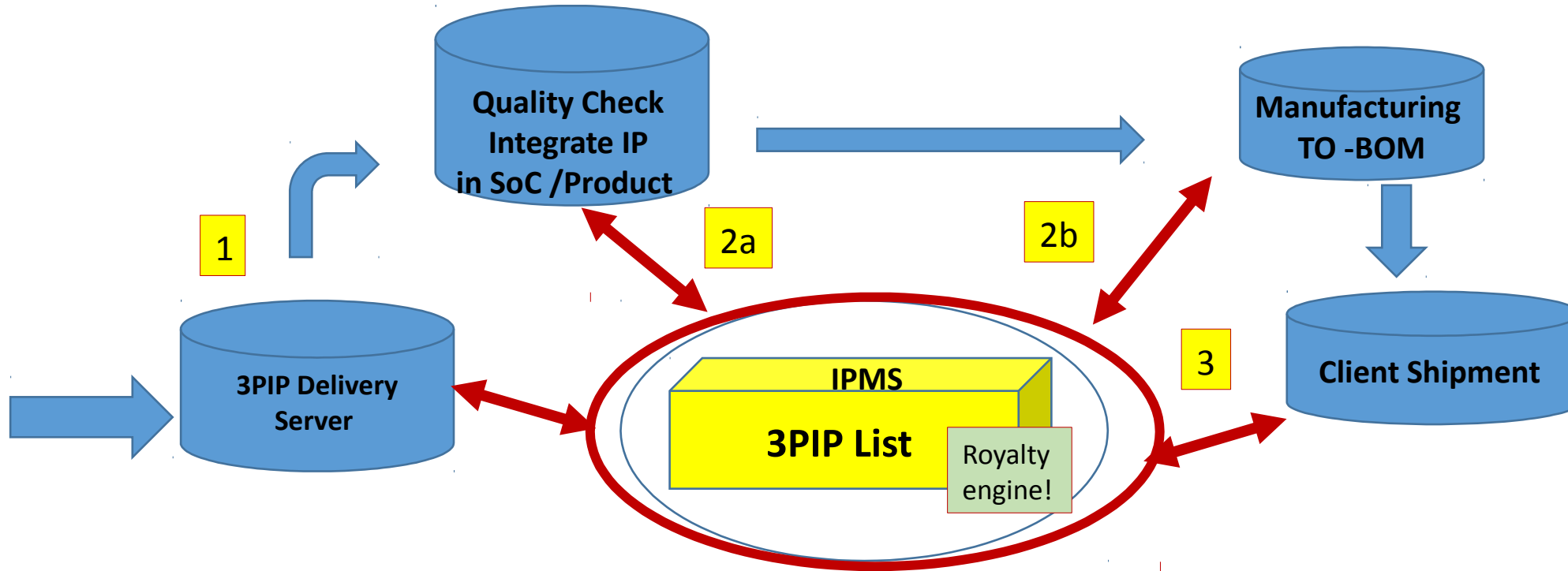
Project			Package	IP		
Project Name ▲▼	Sub Project Name ▲▼	Project Alert Group	Package Id ▲▼	Key Identifier ▲▼	block name ▲▼	Vendor ▲▼
Project 1	alone project	Git Single User ellaha Group USER1049 USER1049 USER108 USER108 USER1049 USER1049	Lattice Package	RLDRAM Controller MACO Core	RLDRAM Controller MACO Core	Lattice
MD Project	MD Sub-Projects	USER1 USER1 SERRA Arnaud USER10 USER10 ellaha Group	MD Package	MD IP	MD IP Product Name	Altera_Corporation

Number of Instances

IP Block A	SoCA2	1	AppleTwo2
IP Block A	SoCA2	1	AppleOne2
IP Block A	SoCA1	1	AppleTwo1
IP Block A			

IP Block ▲▼	Version ID	Licensors ▲▼	Master SoC	SoC Version	Material
USB 2.0	V3.2	Synopsys	Edison	Edison V1	1985-ED-CA
USB 3.0	V1.3	Synopsys	Lamar	Lamar V1	1700-LAM-CD
USB 3.0	V1.3	Synopsys	Lamar	Lamar V1	1700-LAM-CA

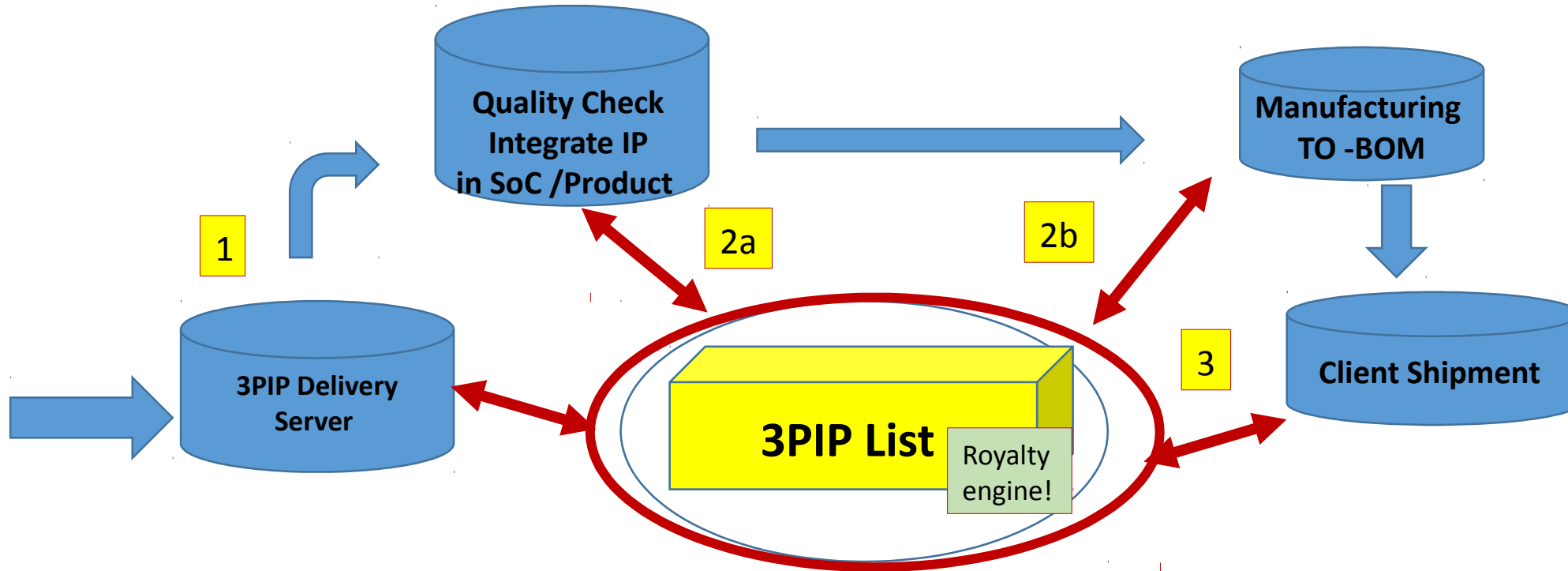
In Sync Shipment Data



Shipment Report

- Shipment Type
 - *Direct* /Distributor/client
- Manual entry :Quarterly Product Shipment Entry
- Existing Table upload
- Shipment Data synchronized from Shipment Center
 - Shipment Raw Data Table
 - Daily updated
 - Java Cron or Scheduled Batch Processes
 - Filtered and interpreted in IPMS table
 - Volume added
 - Volume Break detection

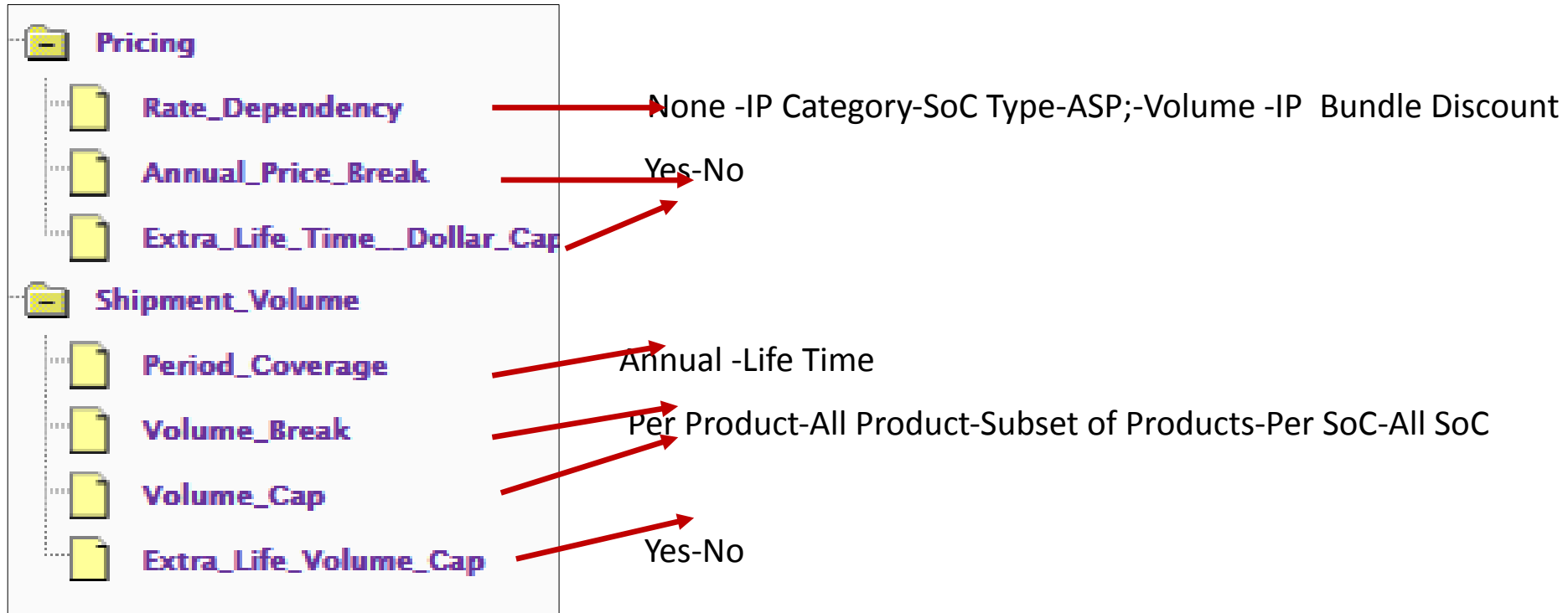
IN Sync Shipment Data



- If shipment data captured
- Platform will be able to handle NRE fee ,licensing Fee (with reminder alerts)
 - **And royalty..... An unique Royalty Engine**

Royalty Functions Library

- Extensible Python library
 - Platform owner can enter his own
- Parameters



Royalty Parameter Value

- Values entered in the IP description

Forecasted Royalty Structure	IP Annual Volume Cap Forecast	
Royalty Bearing	Yes	
Annual Volume Cap		
Number of Years	9	
Add Extra Royalty Parameter	Select...	
Year 1		
Year	2007	
Volume Cap	10000	
Royalty Rate Before Cap	0.2	\$
Royalty Rate After Cap	0.1	\$

Royalty Display

Licensors A

Product	SoC	IP Block	Licensors	Royalty Structure	Q1 Volume	Q2 Volume	Q3 Volume	Q4 Volume	Q1 Royalty	Q2 Royalty	Q3 Royalty	Q4 Royalty	Cumulative
AppleTwo	SoCA	IP Block B (2)	Licensors A	IP Annual Volume Cap	10,000	20,000	30,000	40,000	\$ 1,000.00	\$ 3,500.00	\$ 3,000.00	\$ 4,000.00	\$ 11,500.00
AppleOne	SoCA	IP Block B (2)	Licensors A	IP Annual Volume Cap	10,000	20,000	30,000	40,000	\$ 1,000.00	\$ 3,500.00	\$ 3,000.00	\$ 4,000.00	\$ 11,500.00
AppleOne1	SoCA1	IP Block B (2)	Licensors A	IP Annual Volume Cap	10,000	20,000	30,000	40,000	\$ 1,000.00	\$ 3,500.00	\$ 3,000.00	\$ 4,000.00	\$ 11,500.00

Arteris

Material	SoC Version	IP Block	Licensors	Q1 Volume	Q2 Volume	Q3 Volume	Q4 Volume	Template Name	Q1 Royalty	Q2 Royalty	Q3 Royalty	Q4 Royalty
1871-STH-CA	Kepler V1	FlexNoC	Arteris	15,500	22,000	31,000	41,000	Annual Volume Cap - IP Centric	\$ 3,100.00	\$ 3,300.00	\$ 4,650.00	\$ 5,130.00
				15,500	22,000	31,000	41,000		\$ 3,100.00	\$ 3,300.00	\$ 4,650.00	\$ 5,130.00

Synopsys

Material	SoC Version	IP Block	Licensors	Q1 Volume	Q2 Volume	Q3 Volume	Q4 Volume	Template Name	Q1 Royalty	Q2 Royalty	Q3 Royalty	Q4 Royalty
1701-LAM-CB	Lamar V1	USB 3.0	Synopsys	15,000	25,000	33,000	45,000	Annual Price Break	\$ 6,000.00	\$ 7,500.00	\$ 9,900.00	\$ 13,500.00
1700-LAM-CA	Lamar V1	USB 3.0	Synopsys	15,000	21,000	32,000	35,000	Annual Price Break	\$ 4,500.00	\$ 6,300.00	\$ 9,600.00	\$ 10,500.00
1700-LAM-CD	Lamar V1	USB 3.0	Synopsys	25,000 15,000	25,000	30,005	42,000	Annual Price Break	\$ 7,500.00 \$ 6,000.00	\$ 7,500.00	\$ 9,001.50	\$ 12,600.00

Licensors Tear sheet edited in one click



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Description

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License Agreement	Licensed IP	Lifetime License Fees	Lifetime Royalties	Lifetime Payments	Lifetime Volumes
Cadence License Agreement 2	Cadence IP 2 Cadence IP 3	\$50,000	\$0	\$50,000	0
Cadence PHY Agreement	Cadence IP Cadence IP 4	\$777	\$50,000	\$50,777	1,970,000

Conclusion

- Managing several IPs from many suppliers needs a global management platform
 - Dedicated to IP in Product
 - From IP files to Financial Views
- Synchronized with all related corporate Views
 - Outsource
 - No competitive tool on the market
 - Use 2 decades of experience .. Use IPMS platform