

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 :Do you deliver IP to the market ? Enhance your productivity
 - Case Study 1: IP provider Station Starter Kit
- IP Consumer: Do 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 over a firewall catalogs 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)

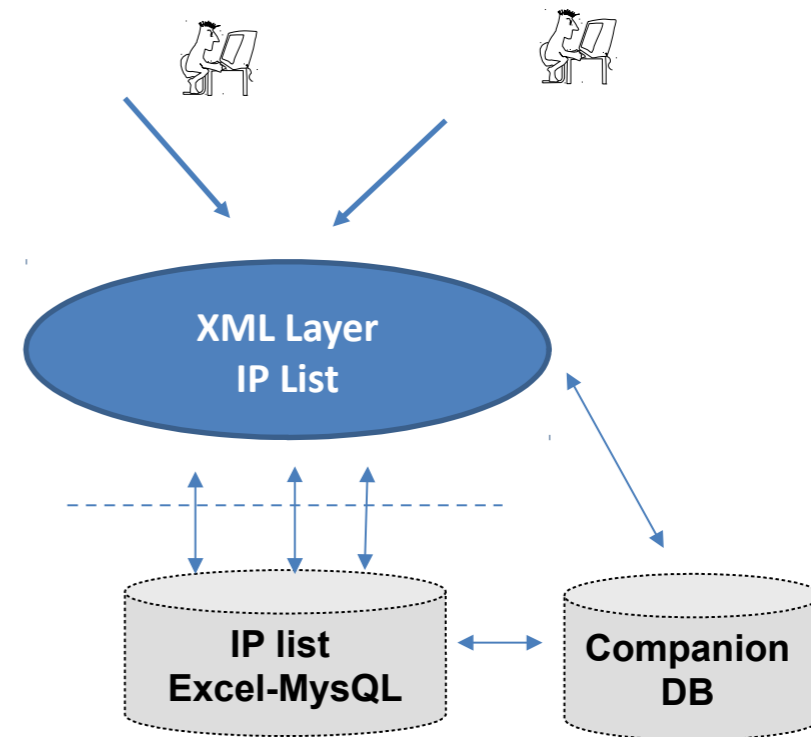
- Multi value attribute, Integer, parametric
- Field Dependent Section
- Access control and Dedicated Views (engineering, marketing)
- Hyperlink and URL...
- Hierarchy (embedded / related)
- Bridge to design DB

And More

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



Search
Smart Phone

Design
& Reuse

Extension to intranet smart IP Management Dashboards

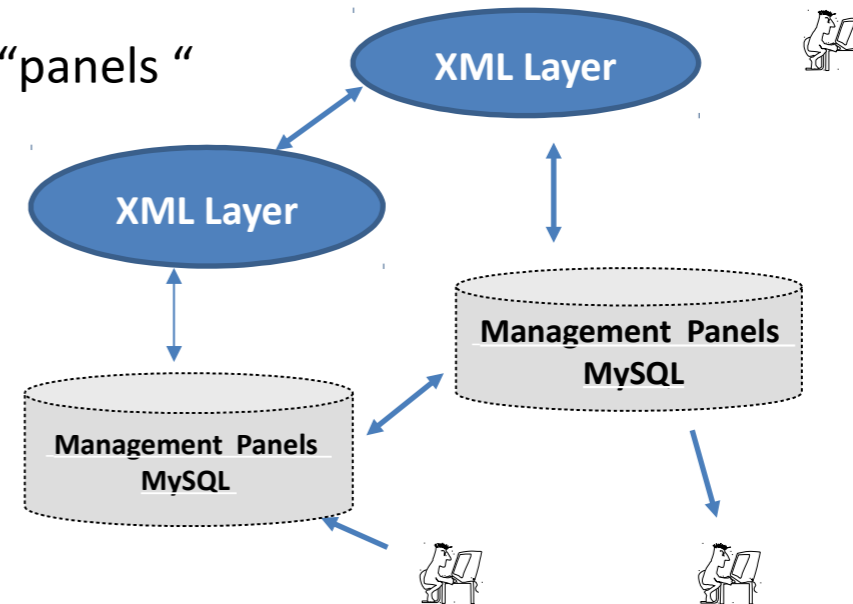
History:

- 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

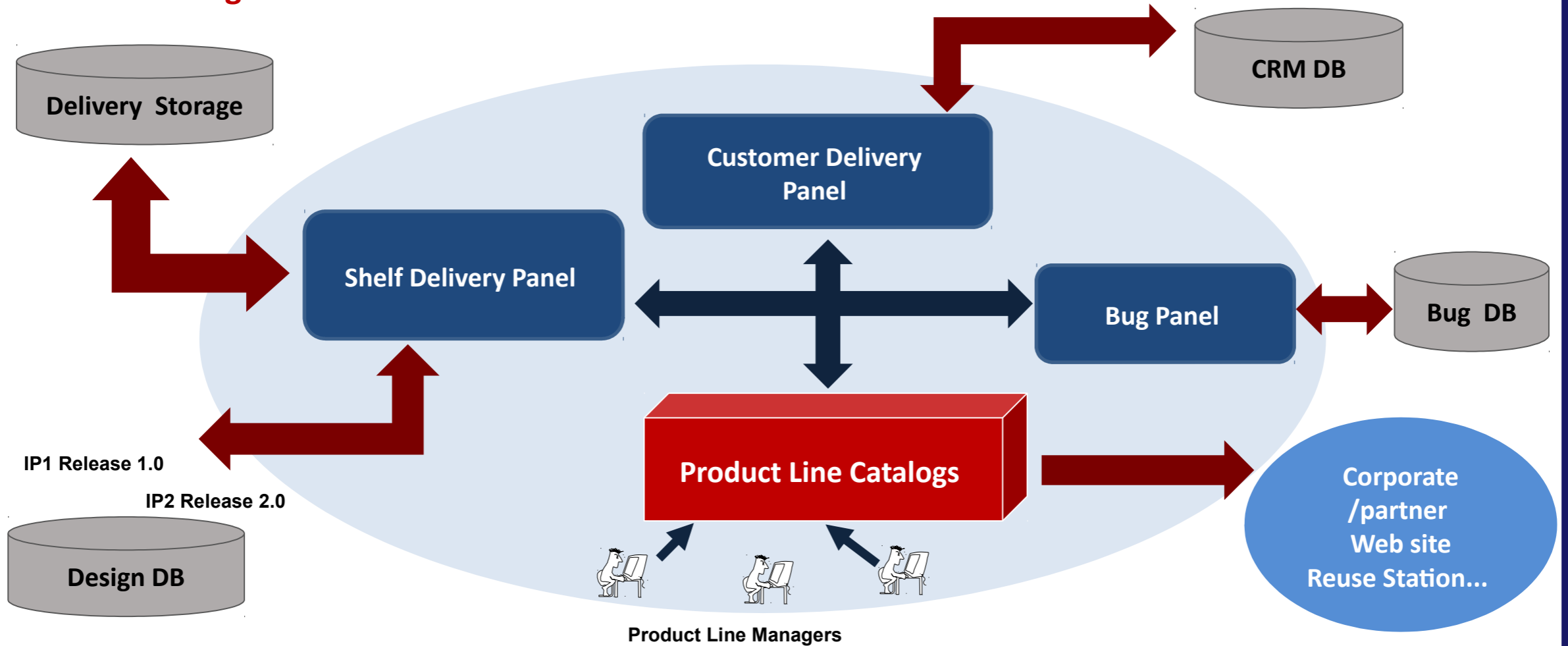
- Goal :
 - Enhance Productivity
 - Increase Quality and Customer Satisfaction
- How ? Make it available for Sales, Product managers, Engineers
 - Which Product Line /Product is available ?
 - Which product(s) release (.. various configurations, target nodes ..) has been delivered to whom
 - Which bug 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**

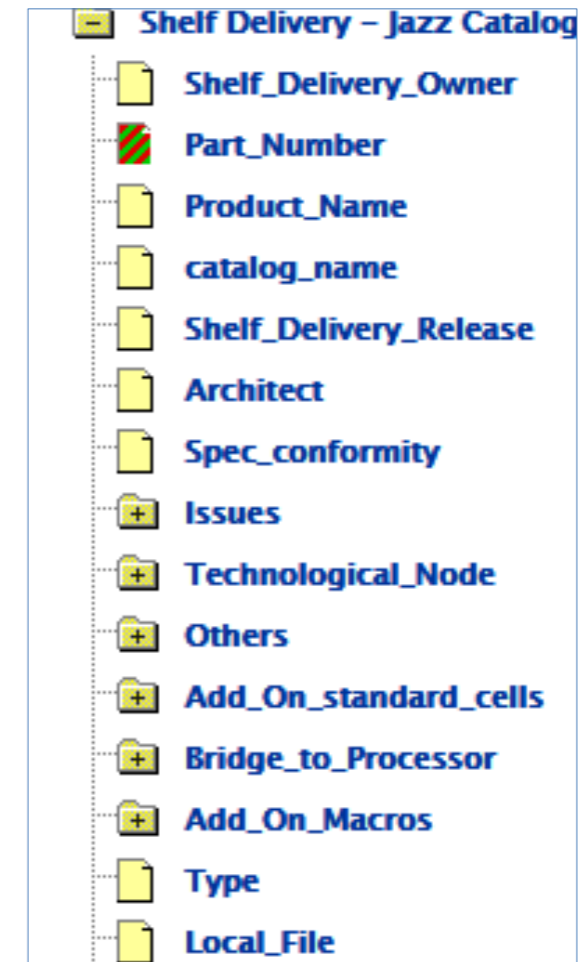


IP Provider Management Station - Starter Kit

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




Shelf Delivery Customer Delivery	
IP identification	
Product Name	mCODa-MT1-LR.01
Part Number	mCODa-MT1-LR.01.TSMC.55

- **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

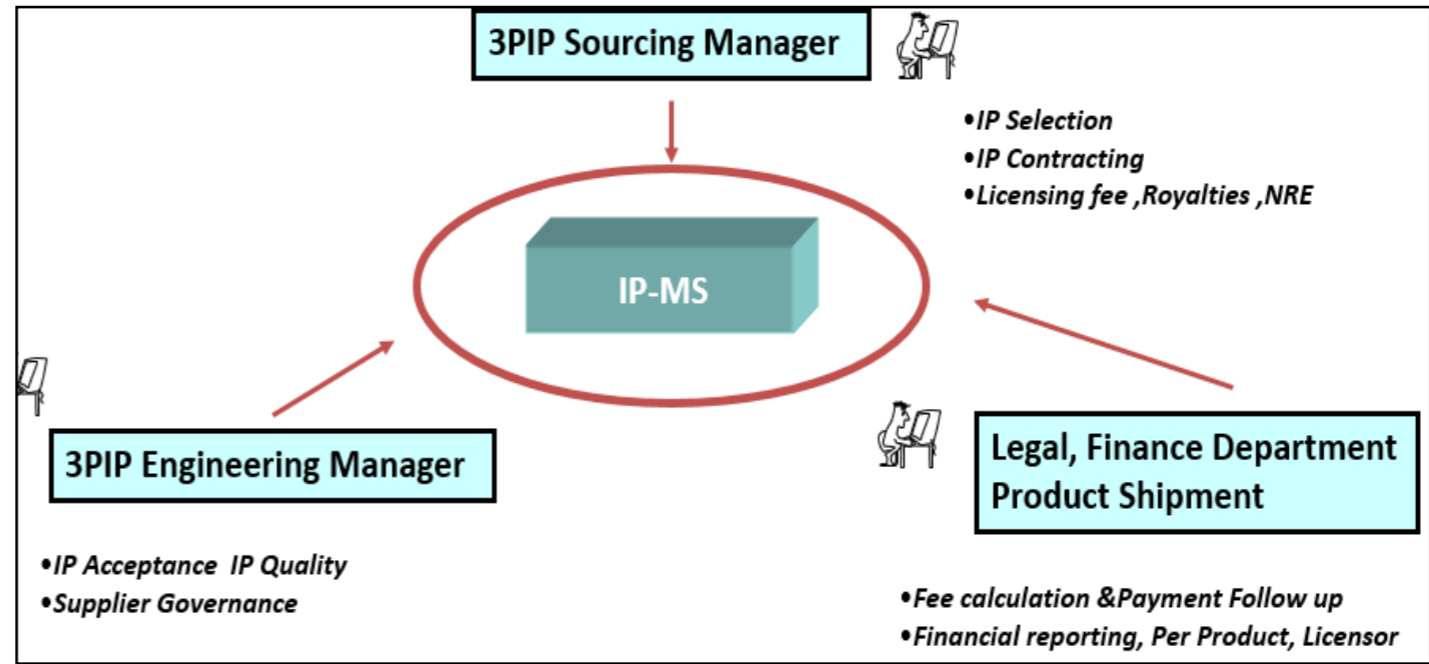
Part Number ▲▼	Shelf Delivery Release	Bug Info	
		Pending Bug	Bug Details
auxADC-12x8-GP.01.TSMC.180.bis	auxADC-12x8-GP.01.TSMC.180.bis R3.2 	Yes	Bug Details
mCODa-MT1-LR.01.TSMC.55	mCODa-MT1-LR.01.TSMC.55 R1.0 	Yes	Bug Details
mCODa-MT1-LR.01.TSMC.55	mCODa-MT1-LR.01.TSMC.55 R1.2 	Yes	Bug Details
mCODa-MT1-LR.01.TSMC.55	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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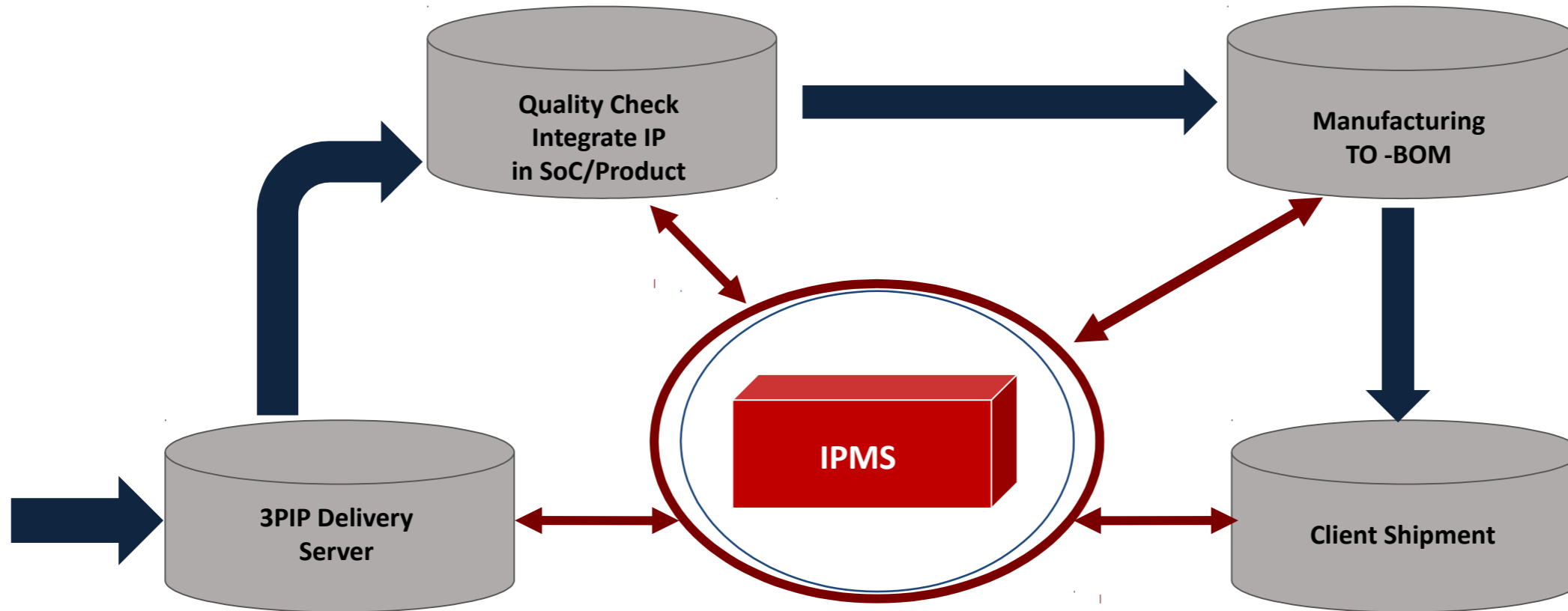
Needs and Goals of a global management

- 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



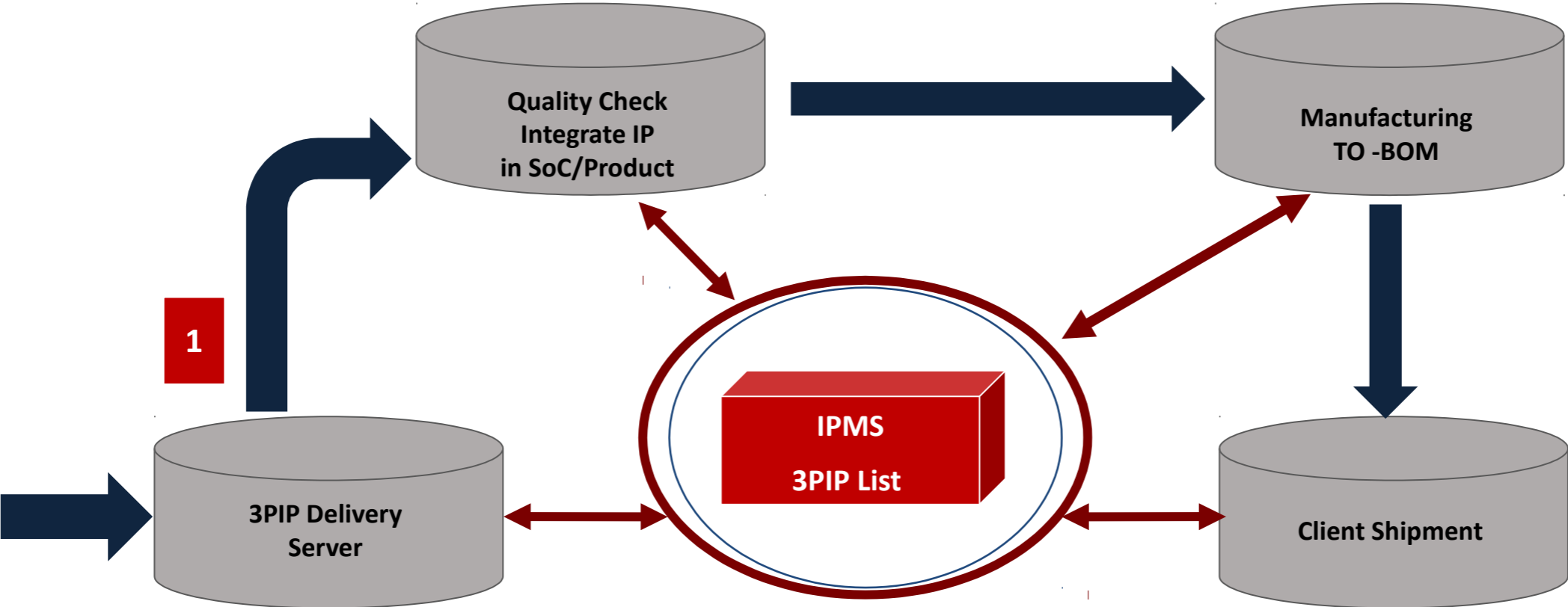
Synchronization Badly Needed: IP Life Cycle

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..

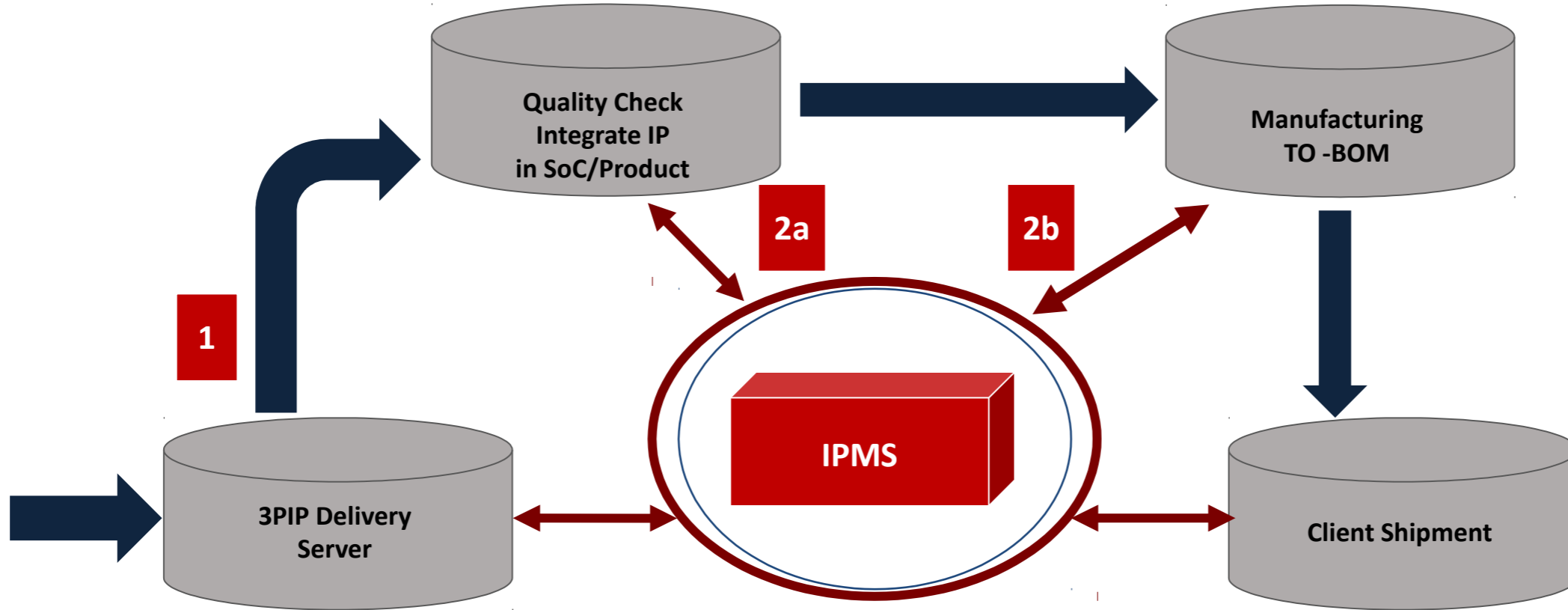
Synchronisation Badly Needed: IP Entry



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***)

Synchronization Badly Needed: IP Tracing



Which IP in which Product ? Who? 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

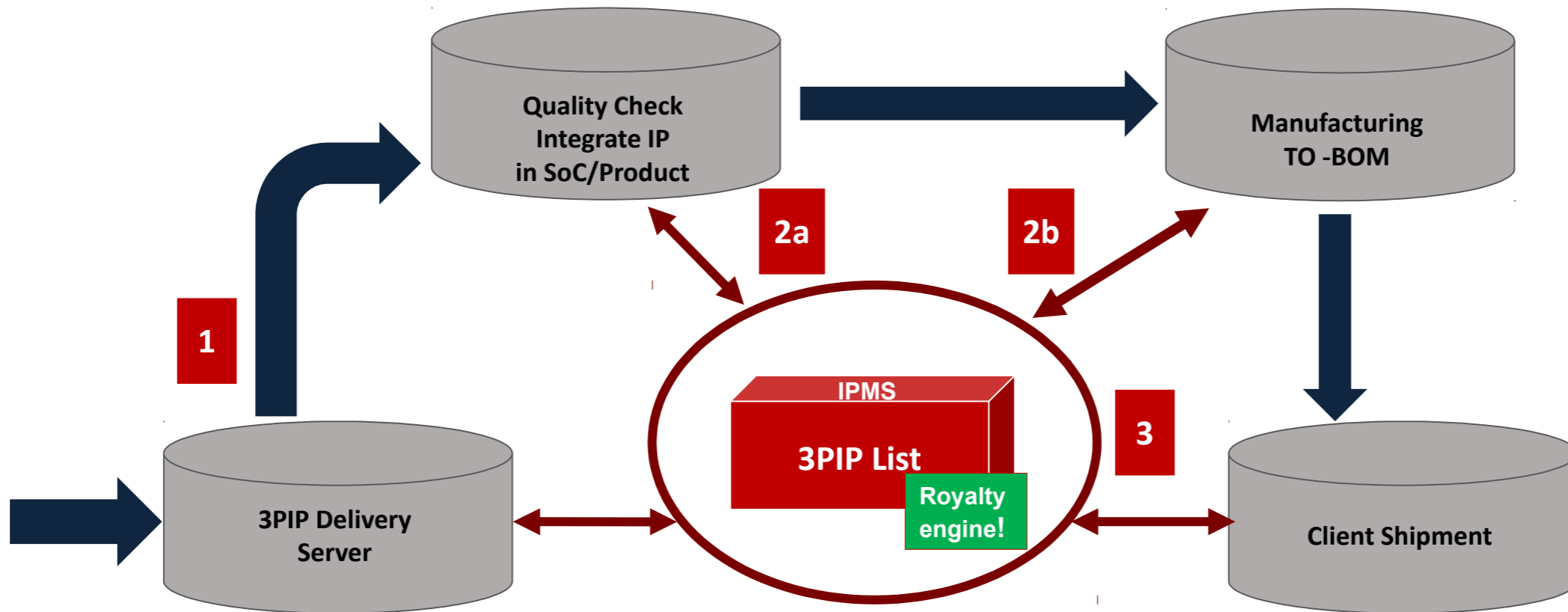
Project			Package	IP		
Project Name ▲▼	Sub Project Name ▲▼	Project Alert Group	Package Id ▲▼	Key Identifier ▲▼	block name ▲▼	Vendor ▲▼
Project 1	alone project	Git Single User ella Group USER1049 USER1049 USER108 USER108 USER1049 USER1049	Lattice Package	RLDRAM Controller MACO Core	RLDRAM Controller MACO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

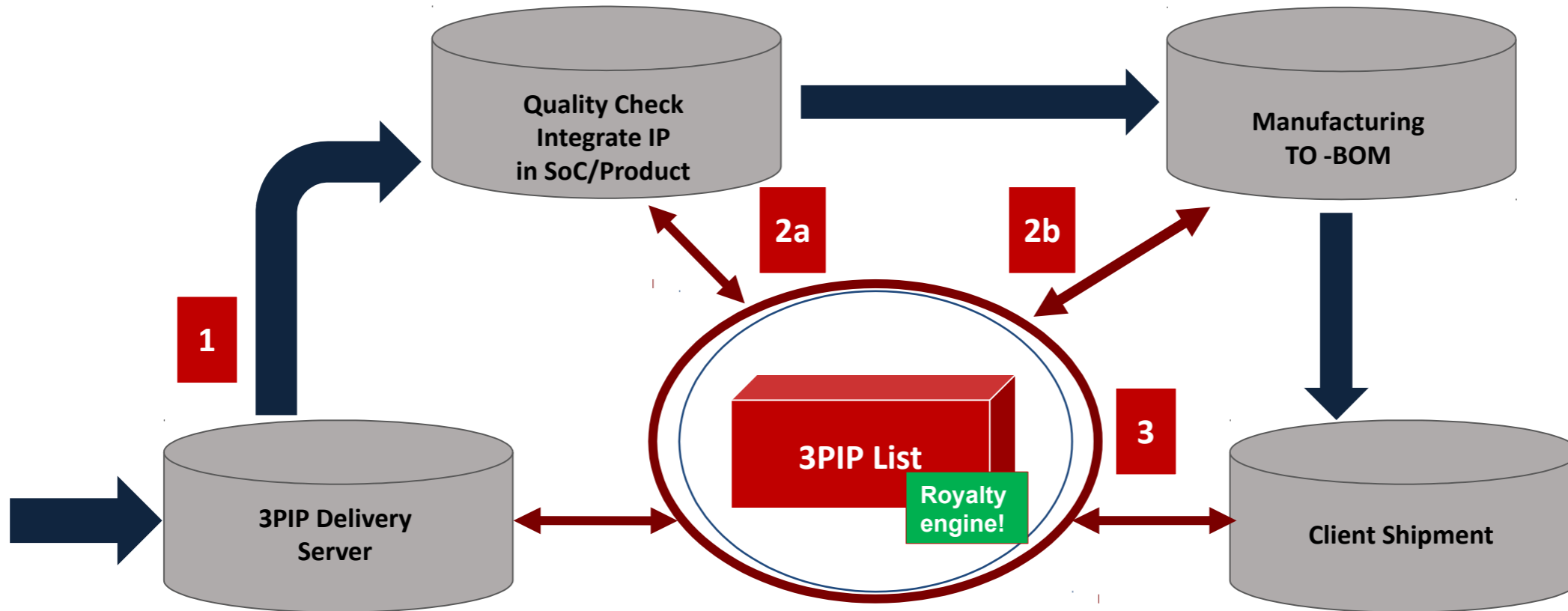
In Sync Shipment Data



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

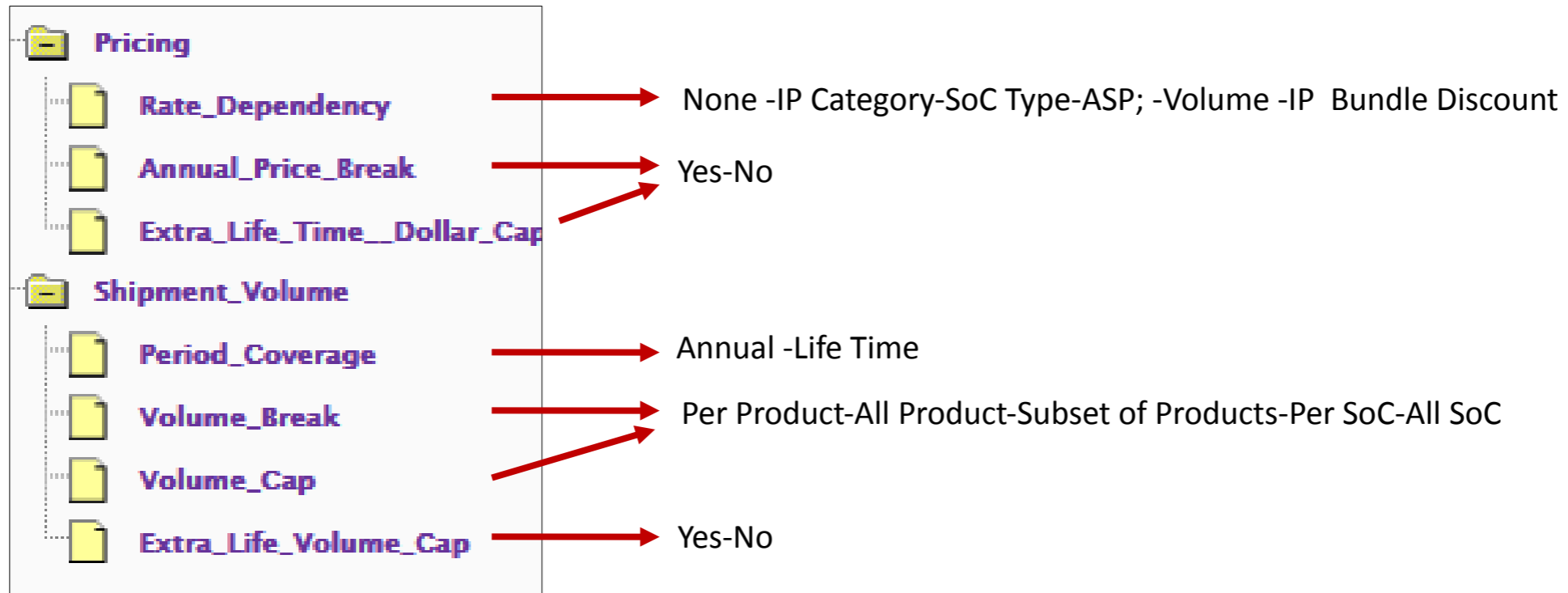
In Sync Shipment Data



- 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 Royalty
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

Licensor Tear sheet edited in one click

The logo for Cadence, featuring the word "cadence" in a lowercase, sans-serif font. The letter "a" has a red horizontal bar above it.

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Description

Cadence Design Systems is a leading global EDA company. Cadence customers use our software, hardware, and services to overcome a range of technical and economic hurdles. Our technologies help customers create mobile devices with longer battery life. Designers of ICs for game consoles and other consumer electronics speed their products to market using our hardware simulators to run software on a virtual chip long before the actual chip exists. We bridge the traditional gap between chip designers and fabrication facilities, so that manufacturing challenges can be addressed early in the design stage. And our custom IC design platform enables designers to harmonize the divergent worlds of analog and digital design to create some of the most advanced mixed-signal system on chip (SoC) designs. These are just a few of the many essential Cadence solutions that drive the success of leading IC and electronic systems companies.

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