

MIS 5121:Enterprise Resource Planning Systems
Week 5: *Master Data, Inventory Control,*
Order to Cash Process: Shipping

External Financial Reporting regulations

Other Reg's

Organization's Objectives & Policies

Balance Sheet

P & L

Notes

FDA etc.

Performance & Policies

Arise through

Must be observed / achieved in

Business Processes

Procurement

Production

Order to \$\$

Finance

IT

Quality

Logistics

HR

...

Contain

Assertions

- Completeness
- Existence, rights
- Accuracy
- Valuation
- Presentation

Risks

- Product quality
- Delivery (OTD)
- Unused capacity
- Excess Costs
- Lower Sales

Errors & Fraud

Minimized by

ISC framework in the ERP environment

- Entity level controls
- Automated application controls
- Manual and semi-automated business process controls
- Authorizations and access protection (confidentiality, integrity)
- IT General controls (change management, operation, security)
- Automated testing and monitoring of business processes, KPIs, etc.

Master Data

Data Types

Master Data



Transaction Data



Nouns

Verbs

Data Types

- Master Data

- e.g. Materials, Customers, Vendors
- Relatively stable
- Used repeatedly in same way
 - Many transactions (see below)



Nouns

- Transaction Data

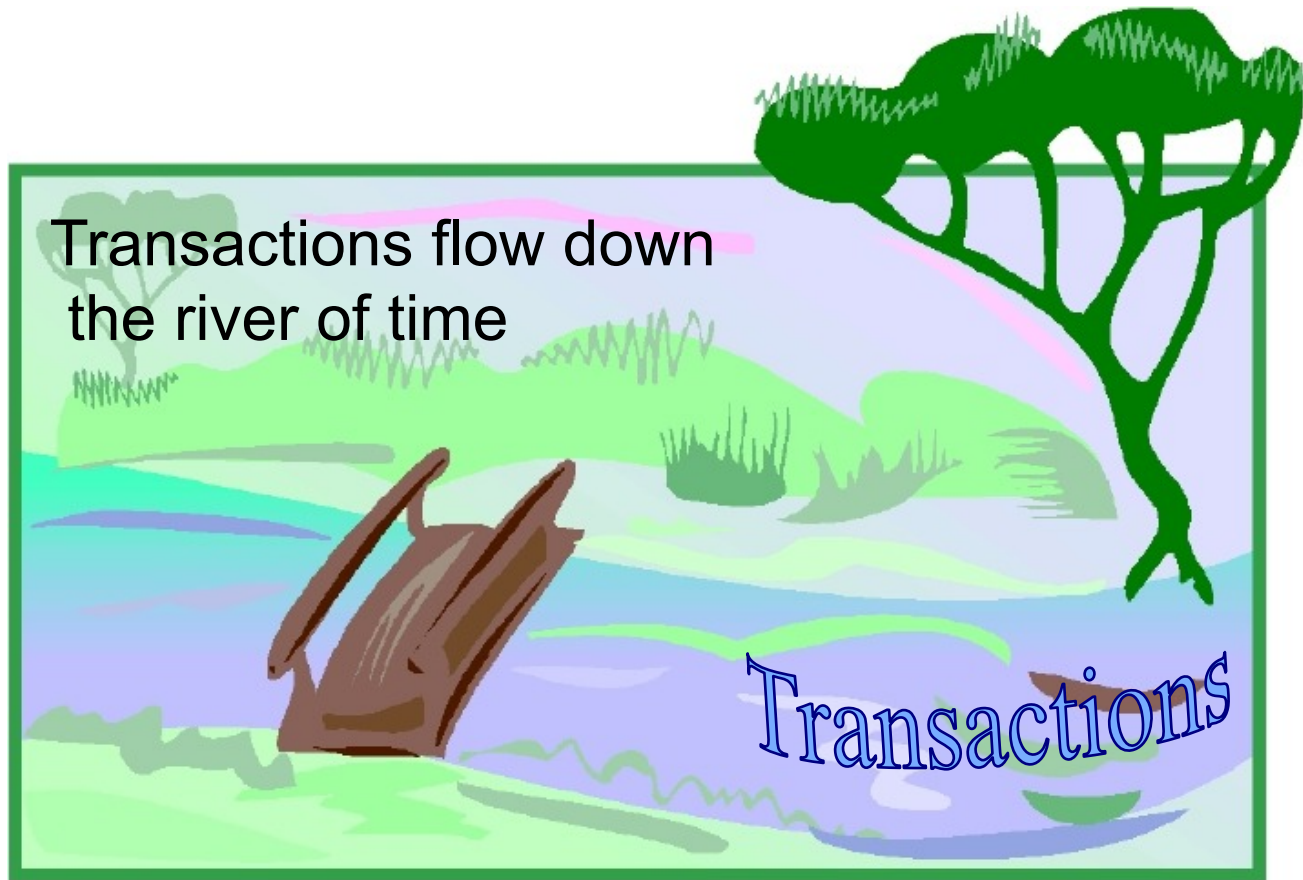
- Stored at various stages of a business process
 - e.g. Customer orders, purchase orders, production orders, customer payments
- Data associated with single process 'event'
 - Evidence of an event / activity
 - Logically Stored in process '**Documents**'
 - Repetitive transactions (events) but data stored associated with each event / document
 - Has a Time dimension

Transaction Data

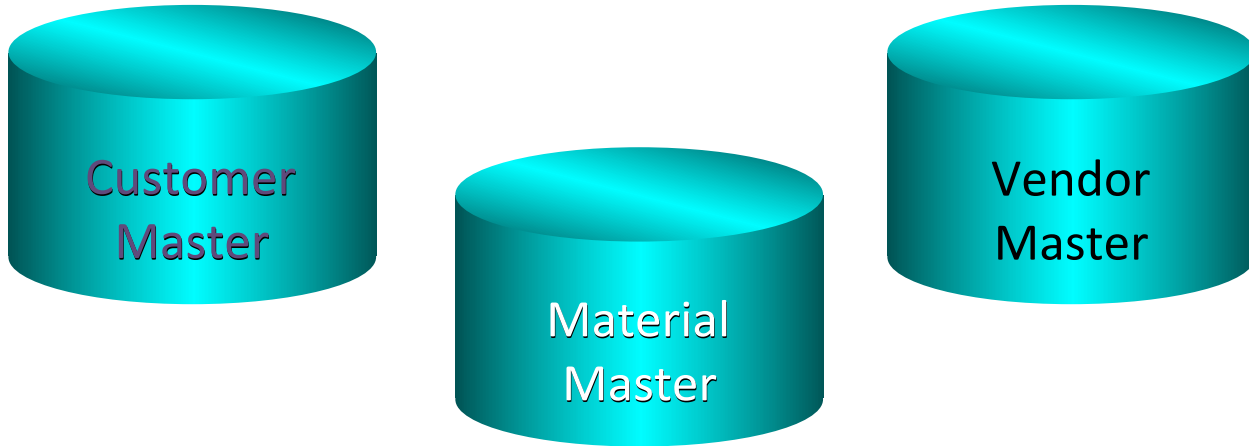


Verbs

Transaction Data



Master Data



Master Data



Nouns

- Master Data is centrally stored (shared across application modules) and is processed to eliminate data redundancy.
- When creating business transactions (like a sales order) the system copies information from master data.
- Three kinds of master data are critical to order processing:
 - Customer: Defined by SD, shared with FI/CO
 - Material: Defined by MM, shared with SD, PP, FI/CO
 - Vendor Master: Defined by MM, shared with SD, PP, FI/CO

Master Data Internal Controls

What Internal Controls would you recommend exist for Master Data?

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Master Data Internal Controls

Recommended Controls

- Process to define the ‘true’ data - leveraging external data, business policies where possible
- Trained ‘maker-checker’ enters / maintains the data including independent verification of source data
- Routine (quarterly?) review of critical field values changes (changes correct, authorized)
- Segregate ‘maker-checker’ / maintainer access from those performing the process (transactions)

‘Good to Have’ Controls

- Periodic (annual?) review of critical field values
- Validate data externally where possible (call phone #'s, Dunn & Bradstreet review, ...)
- Assure 1-time records only used 1-time (not routine)

Reading Assignment Questions:

- The book says (page 264): “there must be no customer “duplicates” if possible:” How can there be multiple master records for one customer?
- Which is more of a risk to a company: inaccurate data or excessive repetitive data?
- Is there anything in SAP that accounts for items that are discounted as “open items” or “floor model items” that are often sold for less than the regular stock?

Control Failure: 'One Piece at a Time'

- Background:

- ❖ [Johnny Cash](#) Song about an auto worker on the Cadillac Assembly Line



- Control Failure: 1949 – 1977?

- ❖ Continual theft of auto parts from assembly line (multiple years)
- ❖ Threat of punishment existed but obviously didn't find the missing engine, transmission, ...

- Results:

- ❖ 'Free' Cadillac car built from parts
- ❖ Fictitious story? Could this really happen?

- Reference:

- ❖ [Johnny Cash 'One Piece at a Time'](#)

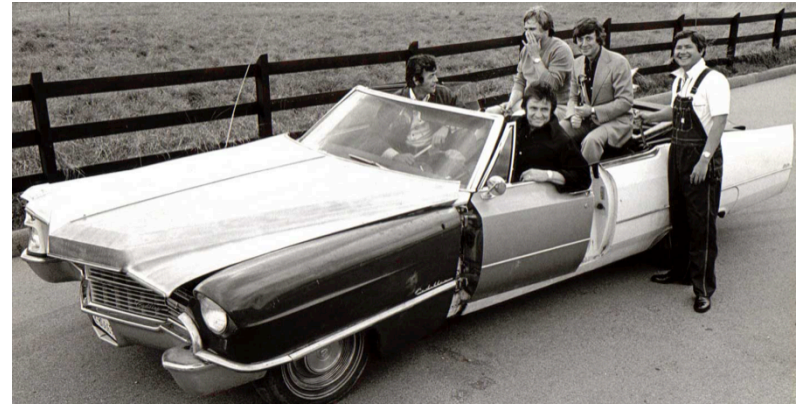


'One Piece at a Time'

Well, I left Kentucky back in forty nine
An' went to Detroit workin' on a 'sembly line
The first year they had me puttin' wheels on Cadillacs
Every day I'd watch them beauties roll by
And sometimes I'd hang my head and cry
'Cause I always wanted me one that was long and black.

One day I devised myself a plan
That should be the envy of most any man
I'd sneak it out of there in a lunchbox in my hand
Now gettin' caught meant gettin' fired
But I figured I'd have it all by the time I retired
I'd have me a car worth at least a hundred grand.

I'd get it one piece at a time
And it wouldn't cost me a dime
You'll know it's me when I come through your town
I'm gonna ride around in style
I'm gonna drive everybody wild
'Cause I'll have the only one there is around.



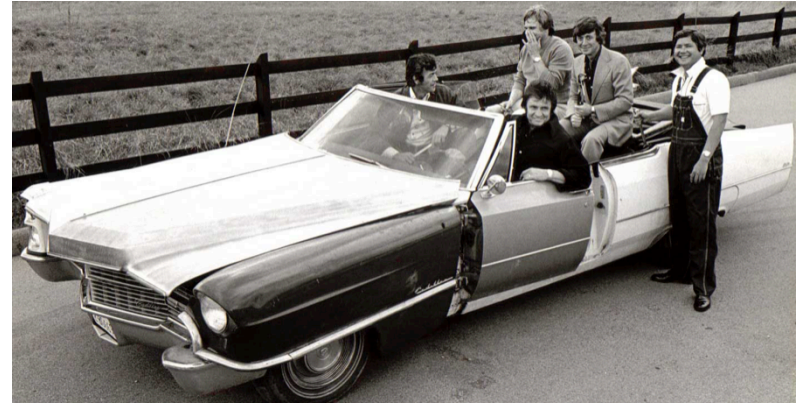
'One Piece at a Time'

So the very next day when I punched in
With my big lunchbox and with help from my friends
I left that day with a lunch box full of gears
I've never considered myself a thief
But GM wouldn't miss just one little piece
Especially if I strung it out over several years.

The first day I got me a fuel pump
And the next day I got me an engine and a trunk
Then I got me a transmission and all the chrome
The little things I could get in my big lunchbox
Like nuts, an' bolts, and all four shocks
But the big stuff we snuck out in my buddy's mobile home.

Now, up to now my plan went all right
'Til we tried to put it all together one night
And that's when we noticed that something was definitely wrong.

The transmission was a fifty three
And the motor turned out to be a seventy three
And when we tried to put in the bolts all the holes were gone..



'One Piece at a Time'

So we drilled it out so that it would fit
And with a little bit of help with an adapter kit
We had that engine runnin' just like a song
Now the headlight' was another sight
We had two on the left and one on the right
But when we pulled out the switch all three of 'em come

The back end looked kinda funny too
But we put it together and when we got through
Well, that's when we noticed that we only had one tail-fin
About that time my wife walked out
And I could see in her eyes that she had her doubts
But she opened the door and said "Honey, take me for a spin."

So we drove up town just to get the tags
And I headed her right on down main drag
I could hear everybody laughin' for blocks around
But up there at the court house they didn't laugh
'Cause to type it up it took the whole staff
And when they got through the title weighed sixty pounds.



'One Piece at a Time'

I got it one piece at a time
And it wouldn't cost me a dime
You'll know it's me when I come through your town
I'm gonna ride around in style
I'm gonna drive everybody wild
'Cause I'll have the only one there is around.

Ugh! Yeah, RED RYDER

This is the COTTON MOUTH

In the PSYCHO-BILLY CADILLAC Come on

Huh, This is the COTTON MOUTH

And negatory on the cost of this mow-chine there RED RYDER

You might say I went right up to the factory

And picked it up, it's cheaper that way

Ugh!, what model is it?

Well, It's a '49, '50, '51, '52, '53, '54, '55, '56 '57, '58' 59' automobile

It's a '60, '61, '62, '63, '64, '65, '66, '67 '68, '69, '70 automobile.



Songwriters: KEMP, WAYNE

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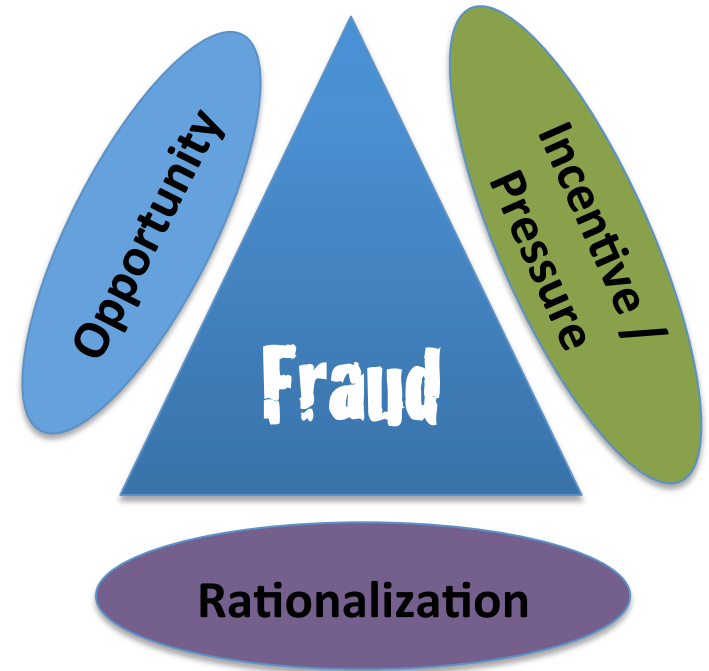
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Data From: [LyricFind](https://www.lyricfind.com/)

Environment Favorable to Fraud

Framework for spotting high-risk situations

- Perceived **opportunity** (*I can do it / conceal it and not get caught*)
 - Poor internal controls
 - Lack of oversight
- **Incentive or Pressure** (*Financial or emotional force pushing to commit fraud*)
 - Meet expectations
 - Avoid criticism
 - Cover a mistake
 - Personal failures, needs
- **Rationalization** (*Personal justification for dishonest actions*)
 - Low compensation
 - Company is profitable



Inventory: Not all the same

- Bulk vs. Packaged
- Produced vs. Purchased
- Finished vs. Intermediates vs. Supplies
- Trading Goods (purchased to be resold)
- Valued vs. non-valued
- Owned vs. not (e.g. leased, responsible for)



Impacts

- Valuation
- Handling (e.g. related configuration)
- How Counted

Inventory: Quantities

Inventory Record Accuracy: Does Physical inventory match system records

- Material / Batch
- Quantity
- Location



Method: Physical Counting

- Periodic (e.g. yearly, quarterly, ...) Frequency can depend on risk (e.g. value)
- Complete Count?
- If 'miss' someone else Adjusts Records based on Count

Inventory: Quantities



Inventory Record Accuracy: Does Physical inventory match system records

Methods: Cycle Counting

- **Continuous** counting of sections of inventory
- Hit or Miss based on tolerances (e.g. zero for package, +/- for bulk)
- If 'miss' someone else Adjusts Records based on Count
- Root cause analysis of reason and correction for 'miss'
- Track IRA % (# Hits / # checks)
- Acceptable alternative for full physical counts

Common Issue: timing of physical moves vs. system recording

Inventory: Values

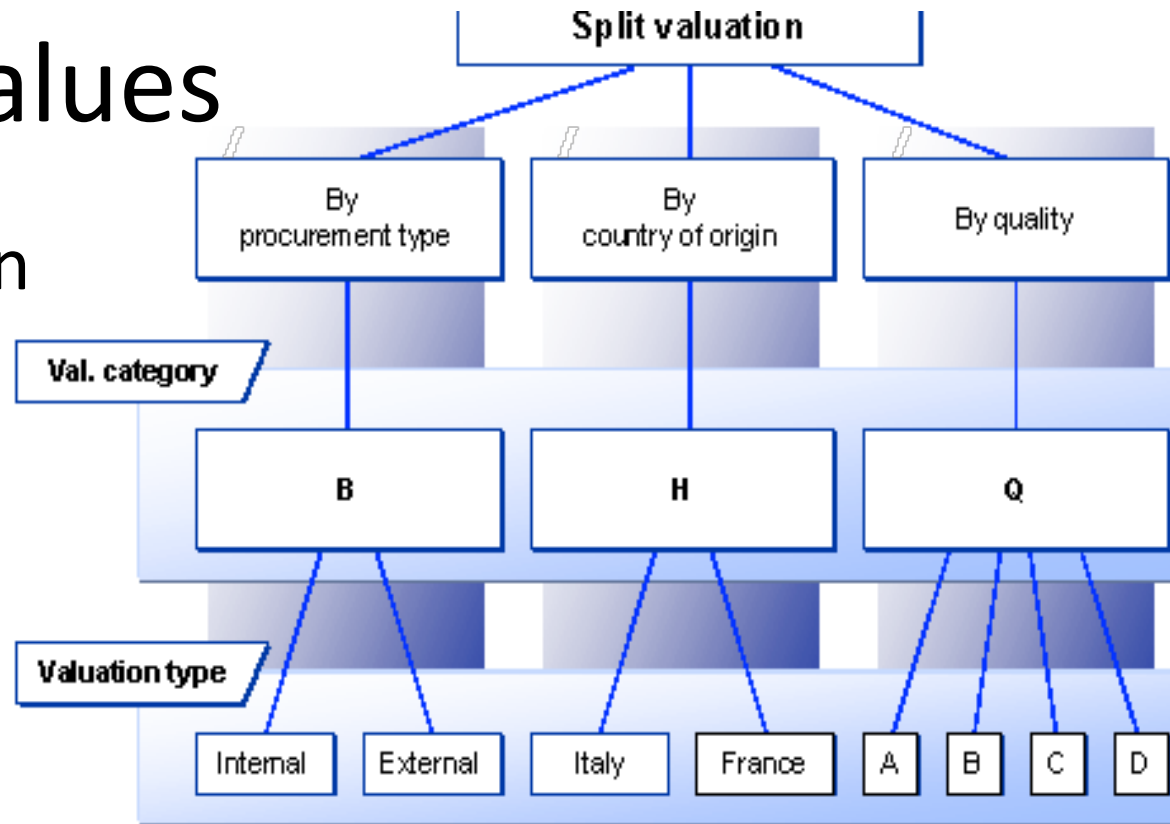
SAP: Valuation Control

- Controlled by Material Master
- Non-Split Valuation
 - One (1) value by:
 - Material
 - Company or plant (depending on configuration)
 - Valuation Methods
 - Not- valued (e.g. not owned, value is expenses vs. asset)
 - Standard Price (constant based on how procured / produced)
 - Moving Average (changes based on delivered price)



Inventory: Values

SAP: Split Valuation



- Material master for each Material / Valuation Type
 - Header record for each Material / Valuation Category created
 - Moving Average Price only calculation method allowed
 - Stock records managed separately for each valuation type

Inventory: Material Movements

Configuration (movement type) in **SAP** that controls:

- Account (G/L) determination of transactions (Key control)
- How value changes are calculated
- How quantity changes are calculated
- How transacted (inside other transaction or stand-alone)
- Transaction: OMJJ, Table: T156

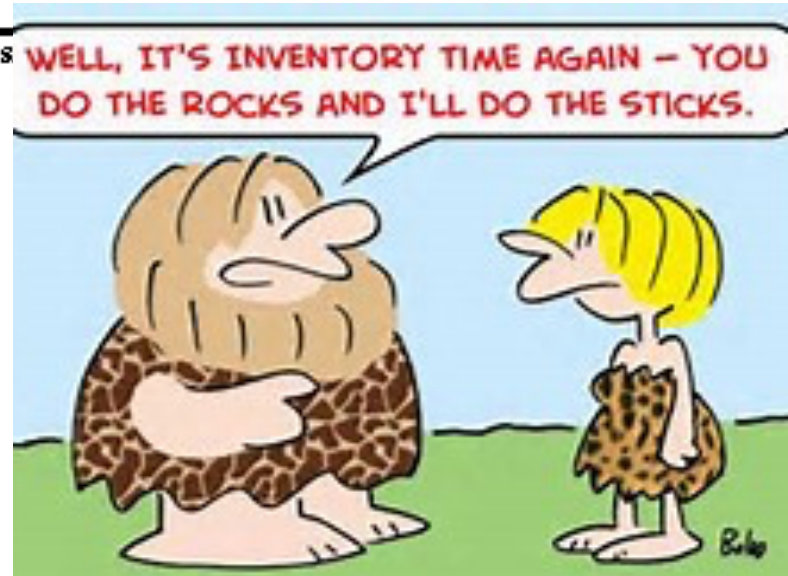
SAP transactions

- Often imbedded in other transactions / activities
 - Goods receipt (e.g. PO Receipt, Production reporting)
 - Goods Issue (e.g. PGI in delivery processing)
 - Transfers





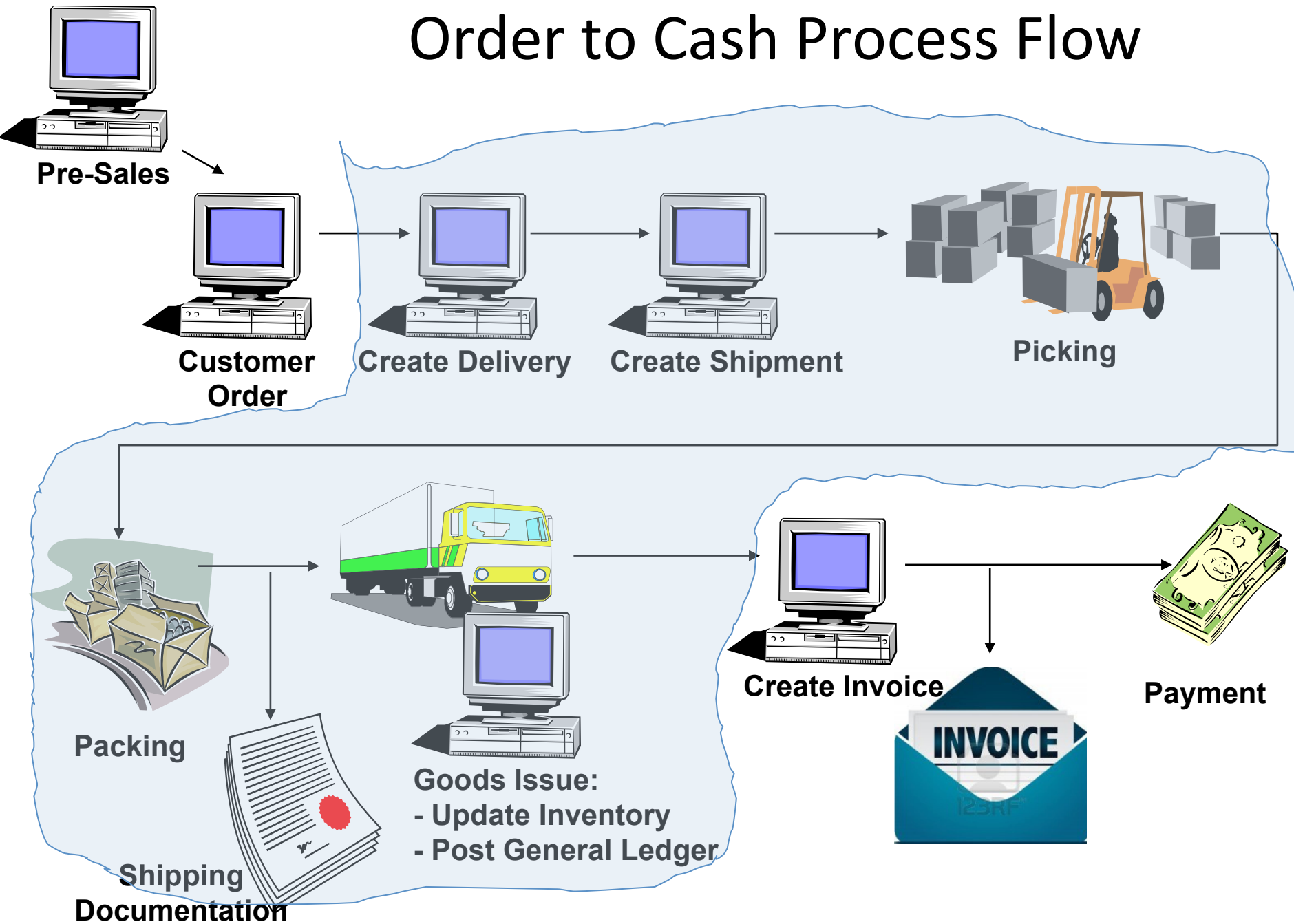
An Auditor With An Attitude of Professional Skepticis
This Guy Has CPA Weights All Over Him!



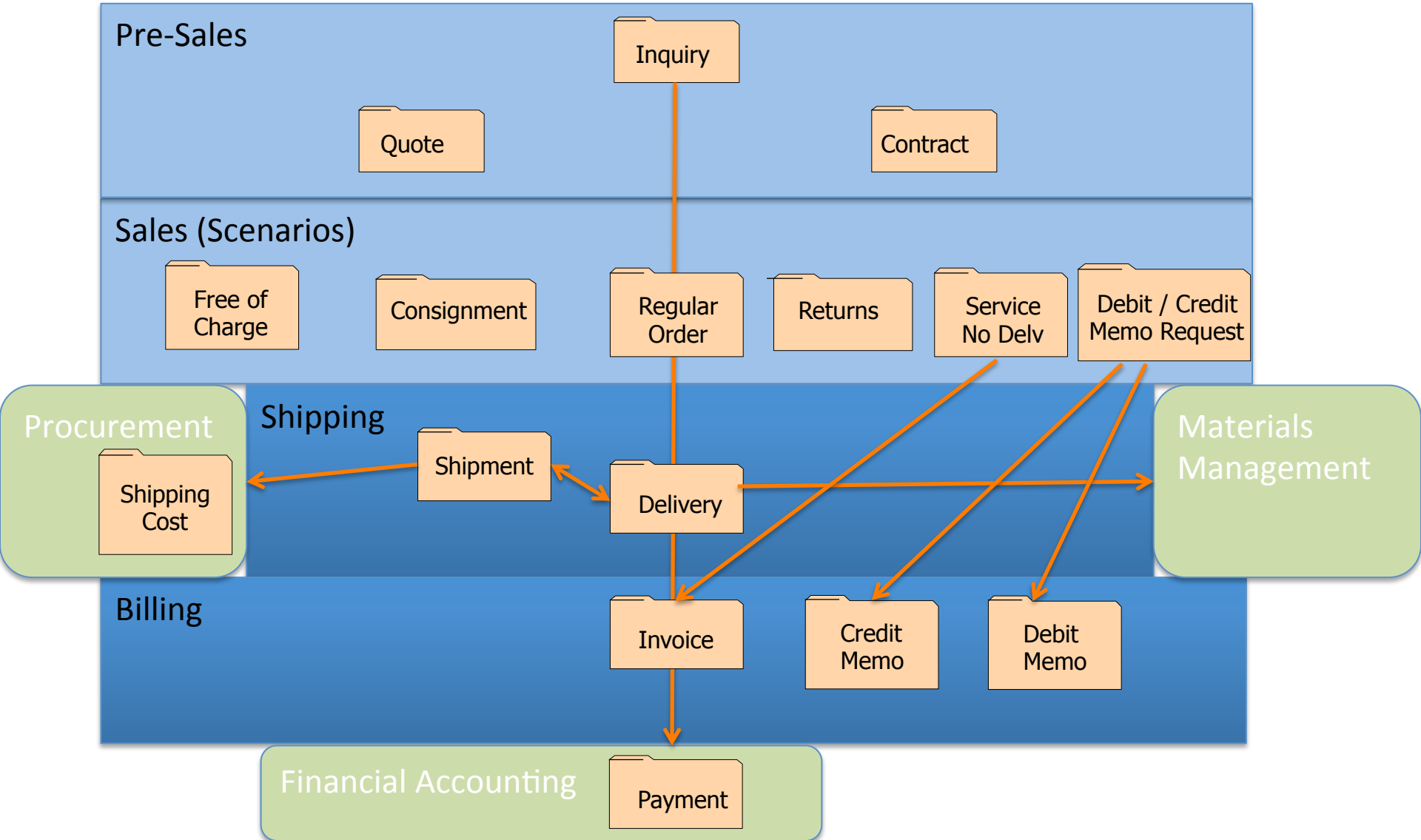
Business Process Controls

Order to Cash
(OTC, O2C)

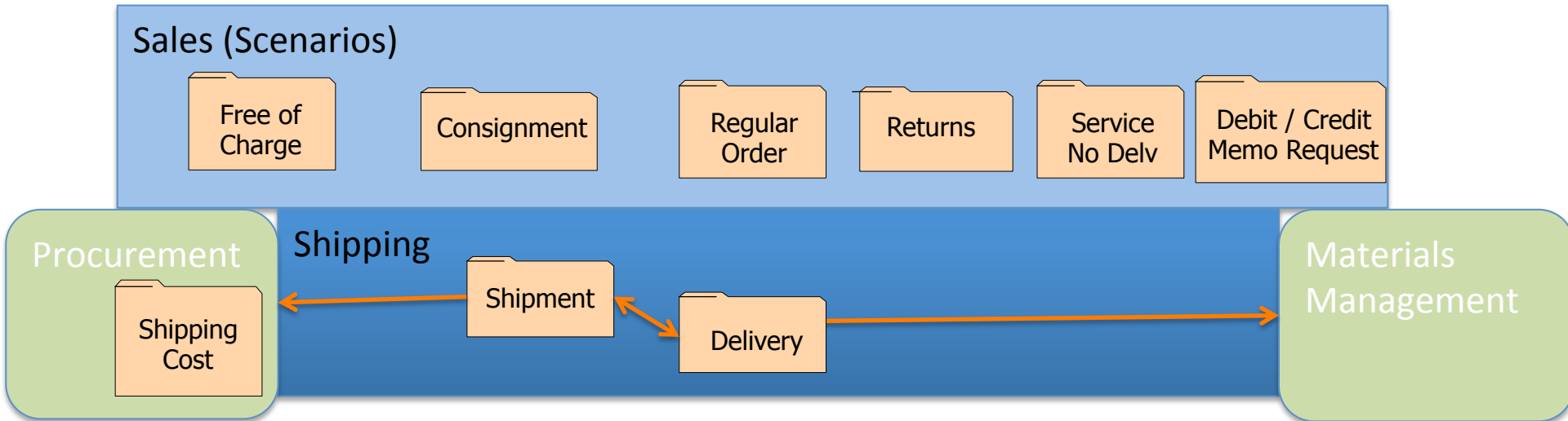
Order to Cash Process Flow



Order to Cash: Document Flow



Order to Cash: Shipping



- **Key Shipping Functions**

- Delivery (1 plant -> 1 ship-to -> 1 day)
- Shipment (truck Movement)
- Post Goods Issue (PGI)
- Shipping Cost (logistics Payable)

Delivery (Ready for the truck)

- Delivery Document (1 plant -> 1 ship-to -> 1 day)
- Basis for Shipment, PGI
- Create: manually, automatically, batch
- Picking
 - Assign batch, get from storage location / bin
- Packing (optional)
 - Add weight for packing materials used to ship



Shipment (Logistics Movement)

- Linked to 1 or more deliveries
- Transportation Planning & Shipment completion
- Contains logistics Info: provider, equipment, dates, ...
- Can have multiple 'legs'
- Integrated form of work flow: Shipment stages
 - Trigger outputs
 - Trigger PGI
 - Status Tracking



Post Goods Issue (PGI)

- When: Truck / shipment leaves (no longer in possession)
- Goods Issue posted only when these conditions met
 - Delivery Data is complete (config: Completion Rules)
 - Picking is complete
 - If Warehouse Management (WM): item status is complete
- What: is Posted
 - Inventory movement (remove)
 - Cost of Goods Sold
- Updates following:
 - Delivery (VL03N)
 - Linked order document (VA03)
 - Requirements (MD04)
 - Billing Due List (VF04) – via Delivery status (Does not post revenue: Billing Does)



Shipping Cost

- Logistics process equivalent of Goods/Service Receipt in the Procure to Pay process
- Creates accrual for freights payable process
- Can support accurate delivered cost data for analysis
 - Because calculated at detailed shipment transaction level
 - If costs are accurate



Class Exercise

- Small groups – Assigned sub-process
 1. Inventory Management
 2. Shipping
- Assignment:
 - List 4 Internal Control Risks that might exist in assigned sub-process
 - For 1 of the risks – define a control to minimize the risk
- 8 Minutes

Report Back



Inventory Control: Common Risks

- Theft
- Lost Inventory / Damage
- Transaction Errors
 - Human Errors
 - System caused (e.g. BOM accuracy)
- Material Life Cycle (e.g. obsolete / scrapping) and Shelf Life
- Segregation of Duties (physical custodians vs. accounting record custodians)



Order to Cash (b) : Common Risks

Shipping

- Manipulate client names and addresses on shipping documents
- Service/good Issue
- Shipping Poor quality stock vs. 1st quality issued
- Shipment of unfinished product
- Shipment of product before customers desire or agreed to delivery
- Shipment to customers that did not place an order
- Shipment of more product than the customer ordered
- Recording shipments to the company's own warehouse as sales
- Shipping often done by 3rd party Logistics personnel



Inventory Control: Common Controls

- Segregation of Duties (physical vs. record custodian)
- Inventory policies (Written, taught, monitored)
- Test inventory transactions (shipping, production, procurement, transfers, etc.)
- Inventory Record Accuracy: physical or cycle count
- Timing
- Match control / methods to size of risk (high value)



Order to Cash (b) : Common Controls

Shipping

- On-going review of shipping / delivery status
- Backlog of shipping monitored and controlled
- Inventory accuracy vs. shipping
- Use pre-numbered shipping documents



Break Time



Start Recording





Order to Cash Exercise



- Primary learning objectives are:
 - Experience the steps in a typical sales transaction
 - See how an ERP system handles a typical sales transaction
 - Work through the procedures involved in a test of transactions
 - Look at a special feature of the sales and distribution (SD) module of SAP
 - See the integration between Sales and Distribution (SD) and financial accounting (FI) modules of SAP



Exercise 2: Order to Cash



- Agenda
 - Last Class (*Feb 8*): Steps 1 – 8
 - This Class (*Feb 15*): Steps 9 – 15
 - Next Class (*Feb 22*): Steps 16 – 23
 - *Due Feb 25 11:59 PM*: Assignment Submission



Exercise 2: Order to Cash



- Task 6 – Create a Sales Order
 - Menu: *Logistics* ▶ *Sales and Distribution* ▶ *Sales* ▶ *Order* ▶ *Create*
 - Transaction: **VA01**
- Task 7 – Display the Sales Order
 - Menu: *Logistics* ▶ *Sales and Distribution* ▶ *Sales* ▶ *Order* ▶ *Display*
 - Transaction: **VA03**
- Task 8 – Display the Document Flow for the Sales Order
 - Within transaction use menu: *Environment* ▶ *Display Document Flow*
 - Transaction: **VA03**
- Task 9 - Check Status of Various Accounts
 - See details of Task 5

Exercise 2: Order to Cash



- Task 10 – Create the Delivery for the Sales Order
 - Menu: *Logistics* ▶ *Sales and Distribution* ▶ *Shipping & Transportation* ▶ *Outbound Delivery* ▶ *Create* ▶ *Single Document* ▶ *With Reference to Sales Order*
 - Transaction: **VL01N**
- Task 11 - Check Status of Various Accounts
 - See details of Task 5
- Task 12 – Display the Document Flow for the Sales Order
 - Within transaction use menu: *Environment* ▶ *Display Document Flow*
 - Transaction: **VA03**

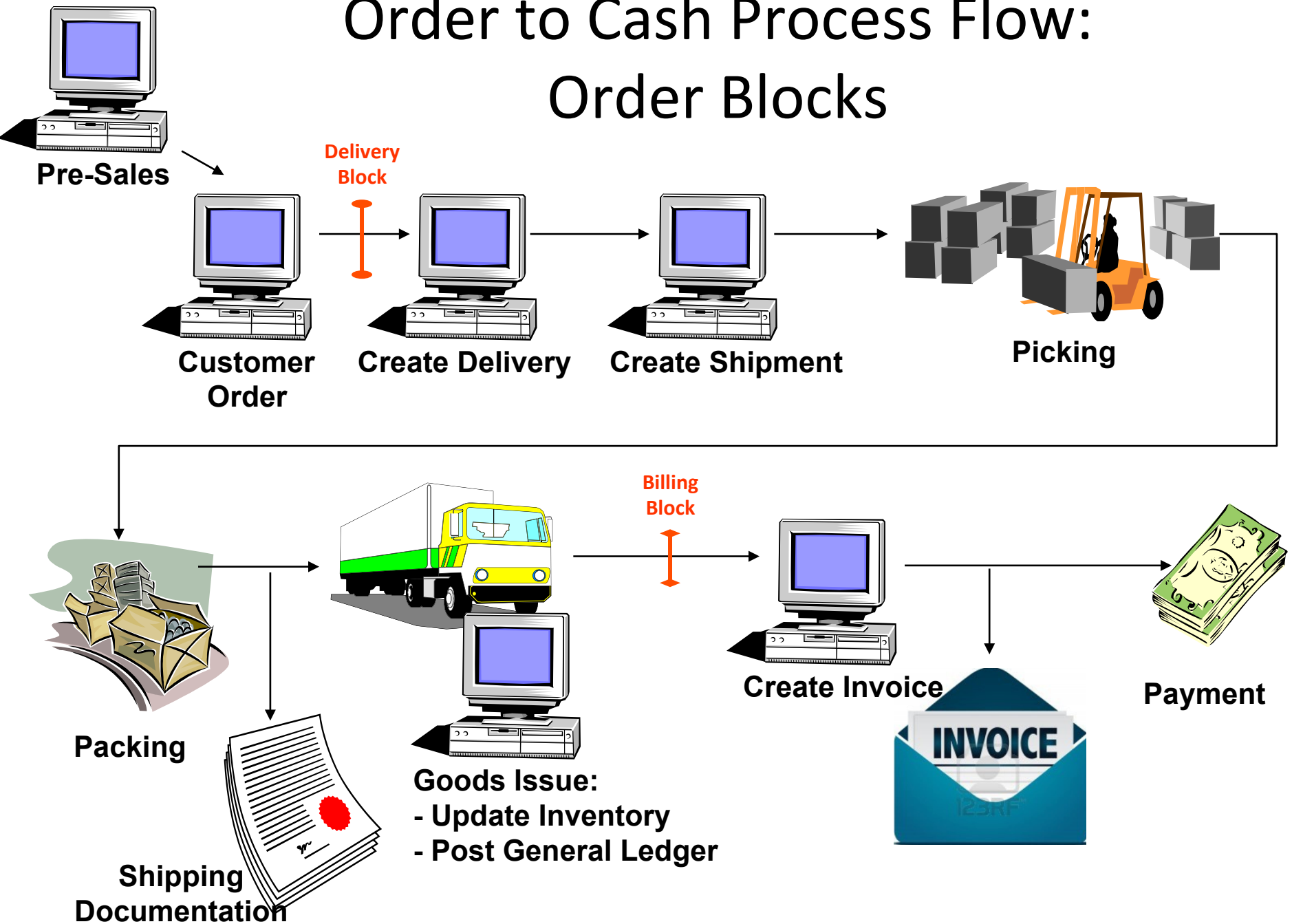
Exercise 2: Order to Cash



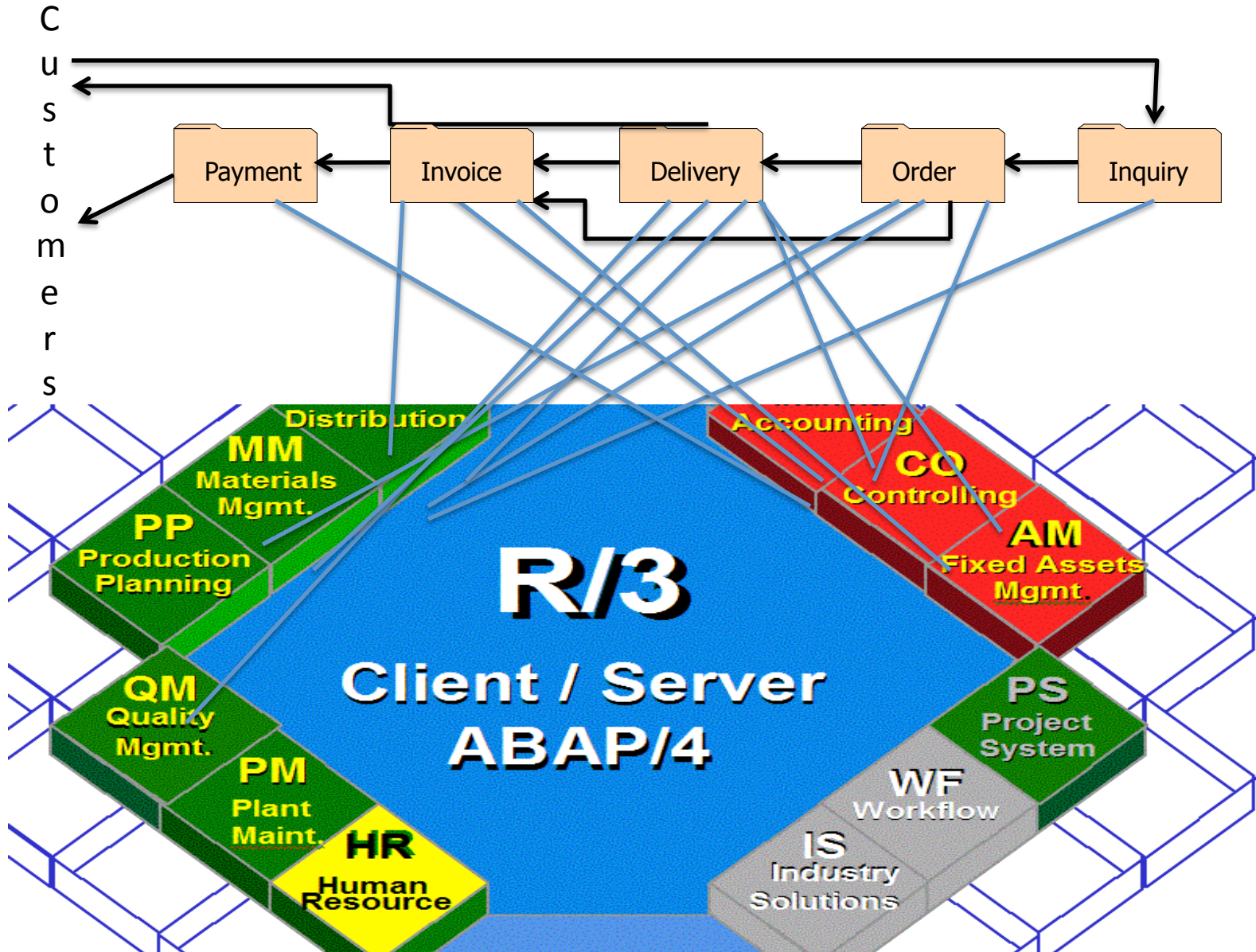
- Task 13 – Post the Goods Issue
 - Menu: *Logistics* ▶ *Sales and Distribution* ▶ *Shipping & Transportation* ▶ *Outbound Delivery* ▶ *Change* ▶ *Single Document (VL02N)*
 - Transaction: **VL02N**
- Task 14 - Check Status of Various Accounts
 - See details of Task 5
- Task 15 – Display the Document Flow for the Sales Order
 - Within transaction use menu: *Environment* ▶ *Display Document Flow*
 - Transaction: **VA03**

Extra Slides

Order to Cash Process Flow: Order Blocks



Order to Cash Functions in SAP



Order to Cash Functions in SAP

Task	SD	MM	QM	FI	CO
Inquiry	<input checked="" type="checkbox"/>				
Order	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Delivery	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Invoice	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Payment				<input checked="" type="checkbox"/>	

Exercise 2: Order to Cash



- Task 1 – Extend the Material Master Record for Sales
 - Menu: *Logistics* ▶ *Materials Management* ▶ *Material Master* ▶ *Material* ▶ *Create (Special)* ▶ *Trading Goods*
 - Transaction: **MMH1**
- Task 2 – Extend the Material Master Record for Sales
 - Menu: *Logistics* ▶ *Sales and Distribution* ▶ *Master Data* ▶ *Business Partners* ▶ *Customer* ▶ *Create* ▶ *Complete*
 - Transaction: **XD01**
- Task 3 – Set up Credit Limits for the Customer
 - Menu: *Logistics* ▶ *Sales and Distribution* ▶ *Credit Management* ▶ *Master Data* ▶ *Change*
 - Transaction: **FD32**



Exercise 2: Order to Cash



- Task 4 – Check Inventory Availability
 - Quantity:
 - Transaction: **MMBE**
 - Value:
 - Menu: *Accounting* ▶ *Financial Accounting* ▶ *General Ledger* ▶ *Account* ▶ *Display Balances*
 - Transaction: **FS10N or FAGLB03**



Exercise 2: Order to Cash



- Task 5 - Check Status of Various Accounts
 - Check Inventory: MM Inventory Quantity
Transaction: **MMBE** (*Stock Overview*)
 - Check Account Values: GL Inventory, GL Cash, Sales Revenue, Cost of Goods Sold (COGS), GL A/Receivable :
Transaction: **S_ALR_87012291** (*Line Item Journal*)
 - Check A/P Vendor sub-ledger:
Transaction: **FBL5N** (*Customer line item display*)

Exercise 2: Order to Cash



- Task 16 – Create an Invoice for the Delivery
 - Menu: **Logistics** ▶ **Sales and Distribution** ▶ **Billing** ▶ **Billing Document** ▶ **Create**
 - Transaction: **VF01**
- Task 17 - Check Status of Various Accounts
 - See details of Task 5
- Task 18 – Display the Document Flow for the Sales Order
 - Within transaction use menu: **Environment** ▶ **Display Document Flow**
 - Transaction: **VA03**

Exercise 2: Order to Cash



- Task 19 – Locate the Accounting Document Number
 - Menu: *Logistics* ▶ *Sales and Distribution* ▶ *Billing* ▶ *Billing Document* ▶ *Display*
 - Transaction: **VF03**
- Task 20 – Post the Customer's Payment on Account
 - Menu: *Accounting* ▶ *Financial Accounting* ▶ *Accounts Receivable* ▶ *Document Entry* ▶ *Incoming Payment*
 - Transaction: **F-28**



Exercise 2: Order to Cash



- Task 21 - Check Status of Various Accounts
 - See details of Task 5
- Task 22 – Display the Document Flow for the Sales Order
 - Within transaction use menu: *Environment* ► *Display Document Flow*
 - Transaction: **VA03**
- Task 23 – Write Down the Journal Entries the System Made
 - Non-SAP Task