

\* **Tasks, problems and  
real South African project**



**Masaryk University**

Faculty of Economics and Administration,

Department of Corporate Economy

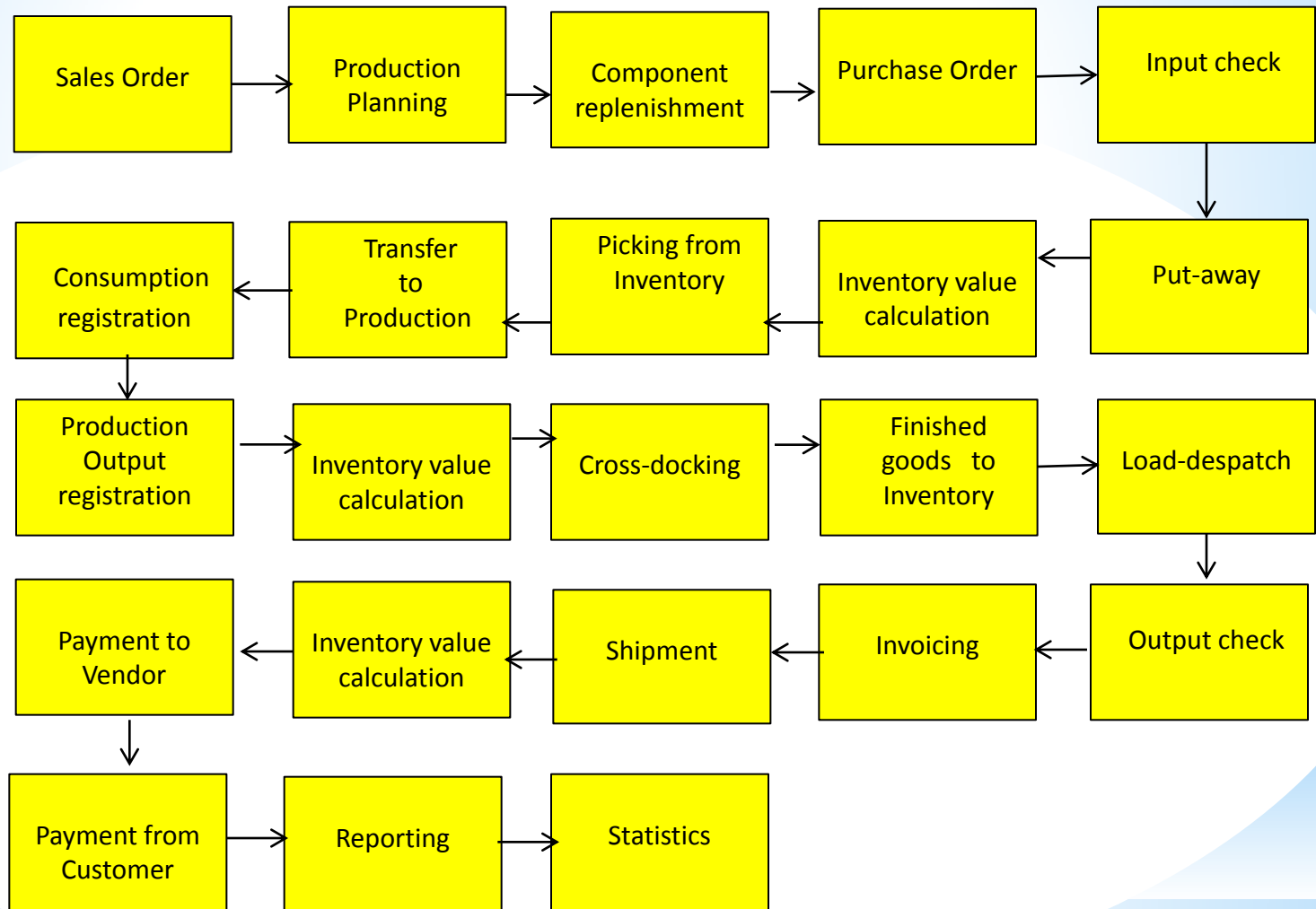
Ing. J. Skorkovský, CSc.



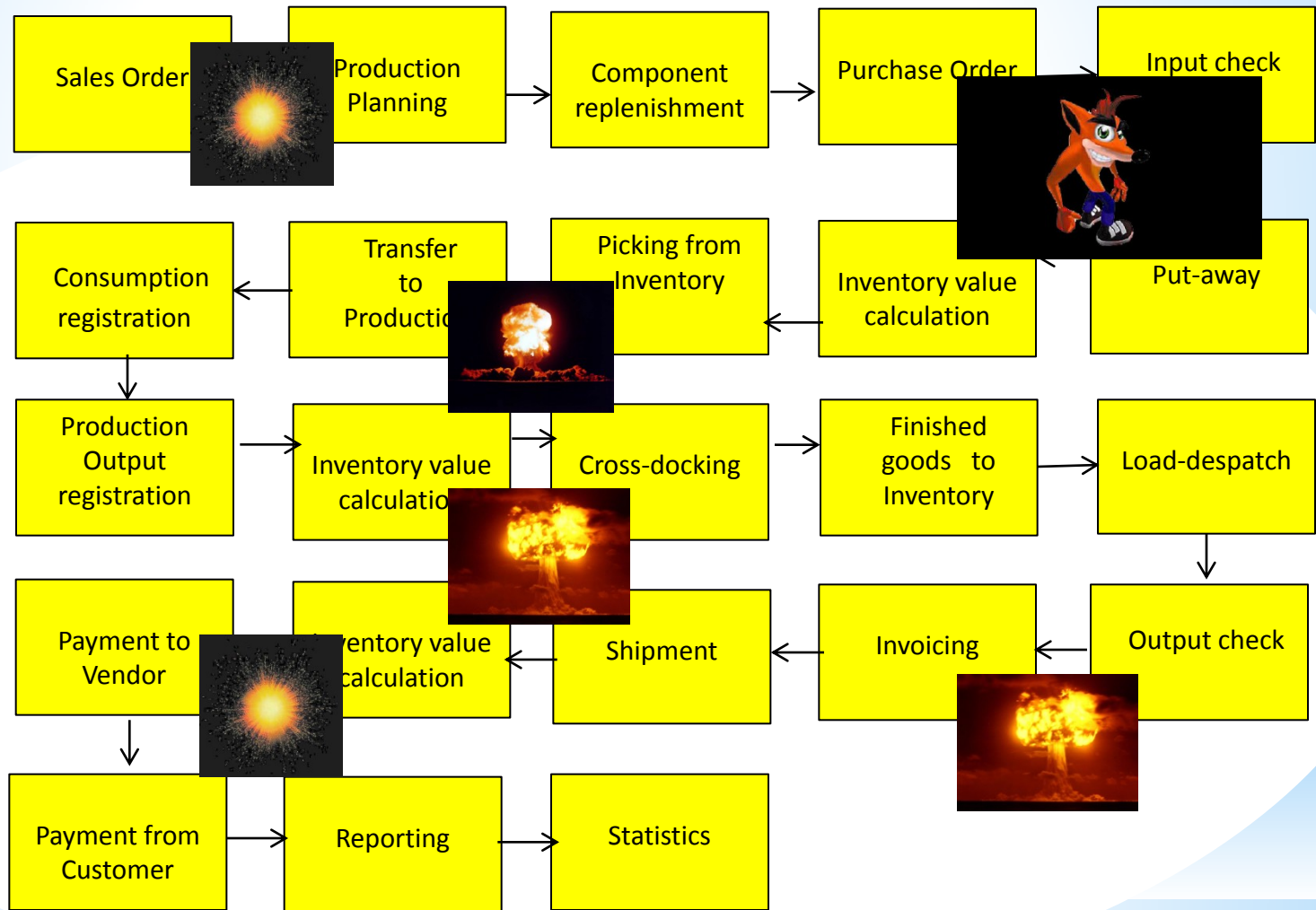
# \*Your main task (not organised set of processes)

Load-despatch	Purchase Order	Reporting	Statistics
Consumption registration	Production Output registration	Inventory value calculation	Output check
Delivery	Production Planning	Sales Order	Component replenishment
Transfer to Production	Put-away	Cross-docking	Input check
Finished goods to Inventory	Picking from Inventory	Invoicing	Payment

# \*Your main task (organised set of processes)



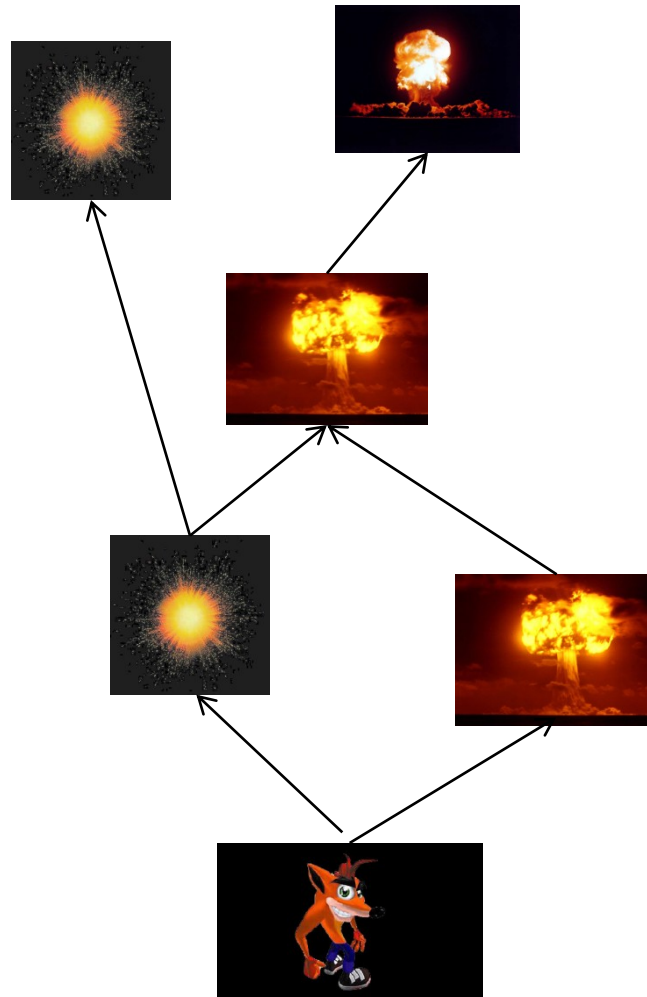
# \*Your main task (possible problems, bottlenecks,..)



# \*Your main task

Search - **HOW** ??? Measure impacts -**HOW** ??? and Destroy - **HOW** ??? And improve - **HOW** ???

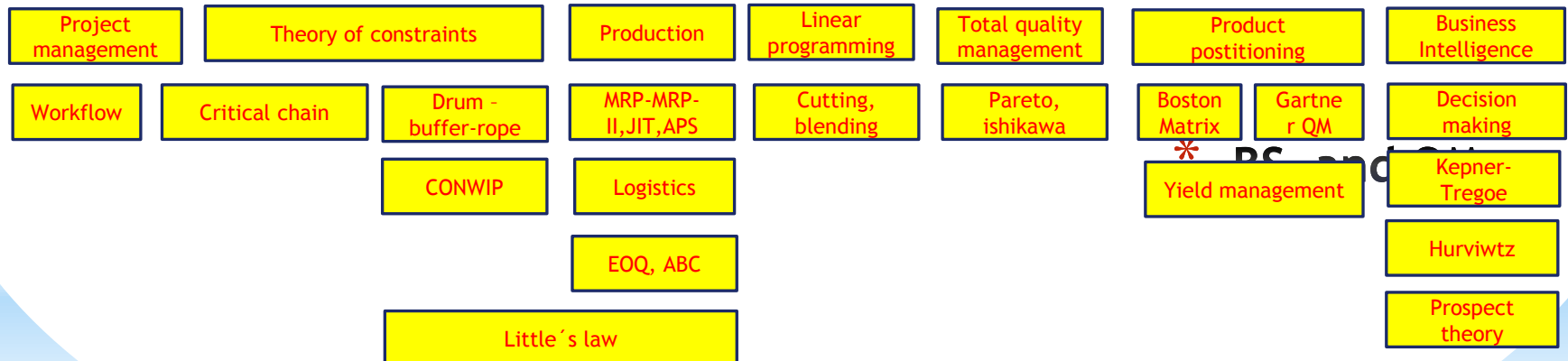
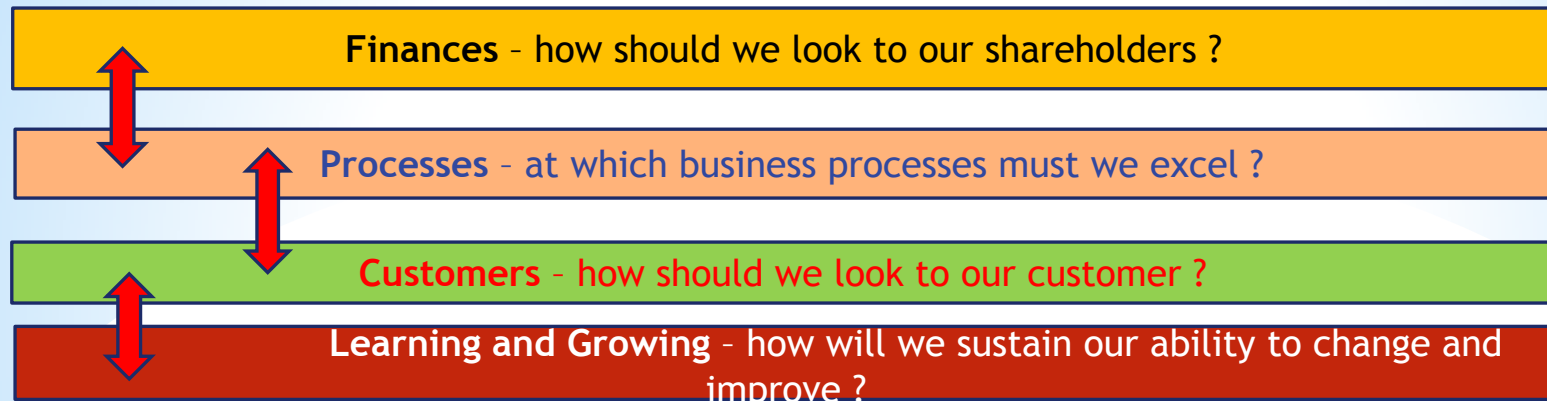
CAUSE->EFFECT RELATIONS



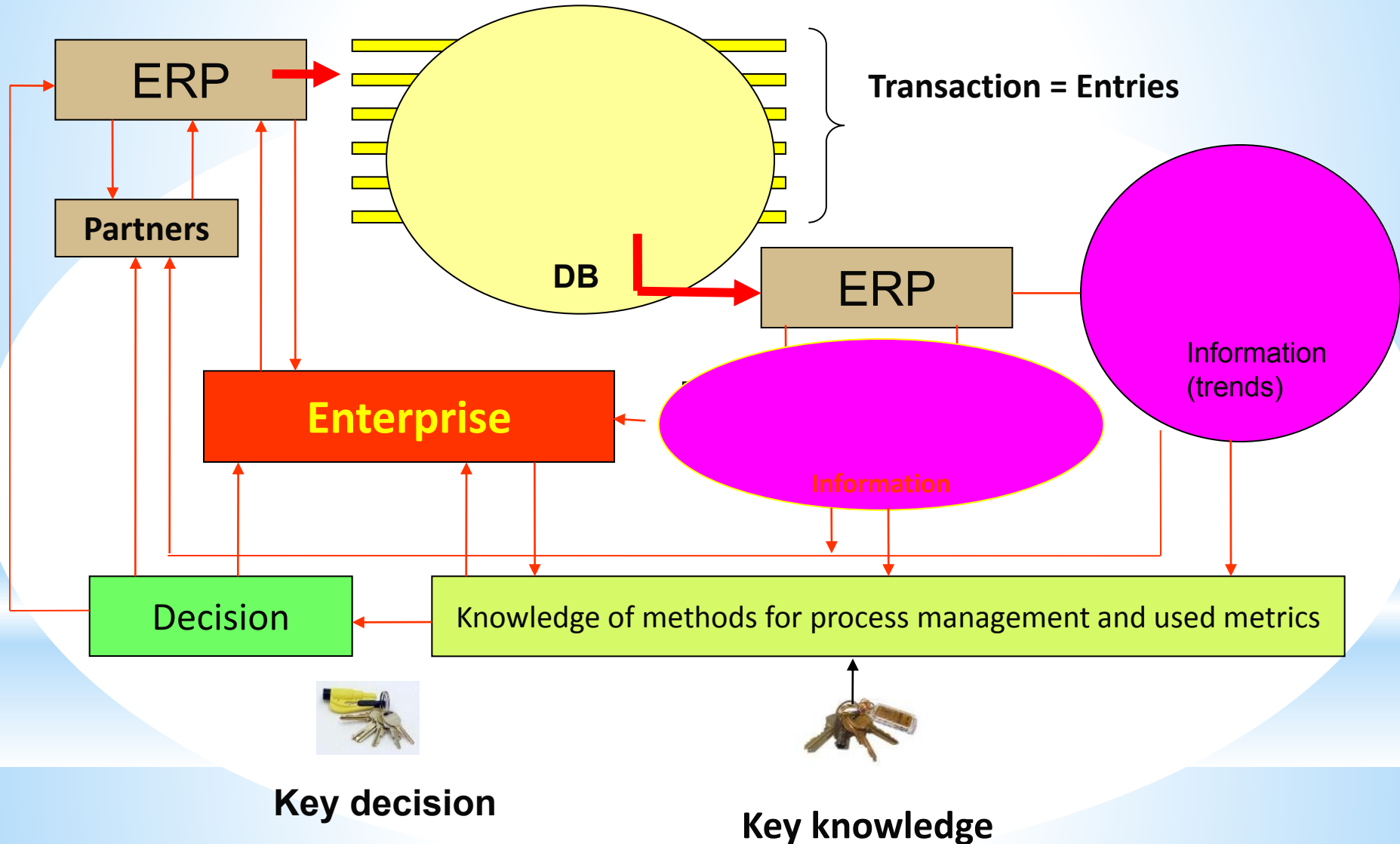
# \* Methods (not sorted so far )

- \* Theory of Constraints
- \* Critical Chain (DBR)
- \* Ishikawa Fishbone Diagram (Total Quality Management)
- \* Pareto Analysis , ABC, EOQ, Six Sigma and Ishikawa
- \* OLAP (On-Line Analytic Processing)
- \* Kepner –Tregoe methodology
- \* MaxMax and MaxMin (Hurwitz)
- \* SWOT, BOSTON and Gartner Magic matrices
- \* ERP Statistics and Reporting
- \* Little’s law
- \* Yield Management
- \* Linear programming
- \* Balanced Scorecard
- \* Production algorithms (MRP,MRP-II, JIT,APS)
- \* And many, many more.....

BS and OM - slide from Balanced Scorecard show (will be presented again in BS context)



# \* Simplified diagram of ERP usage





# \* Basic problem I. (one of many)



We have a huge data quantity

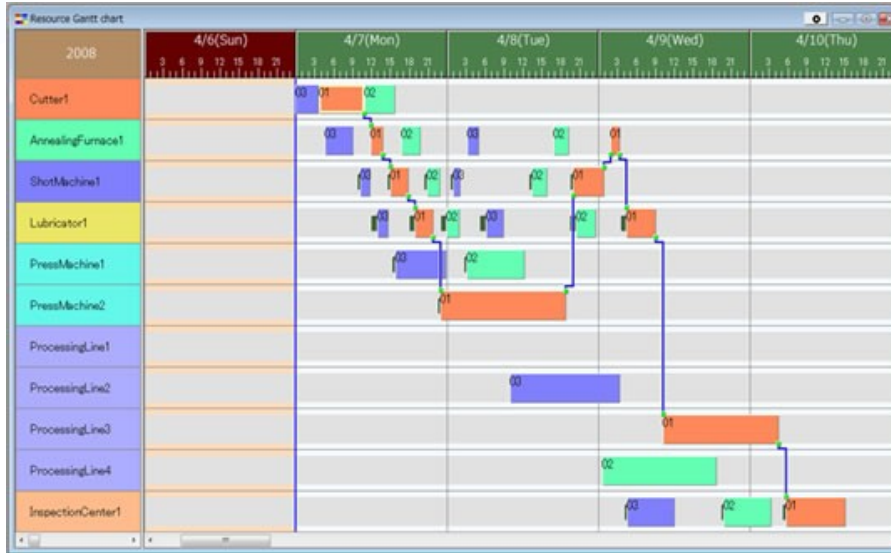


..and at the same time a minimum information which could be used for **decision making !!!!**



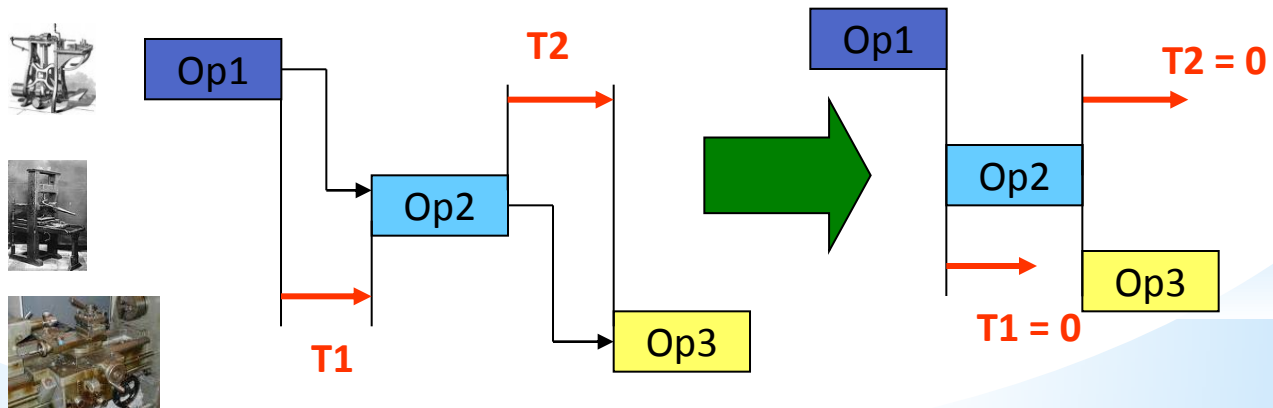
# \* Basic problem II. (we need reliable data )

To solve it we should use finite capacity scheduling (APS)- will be presented later

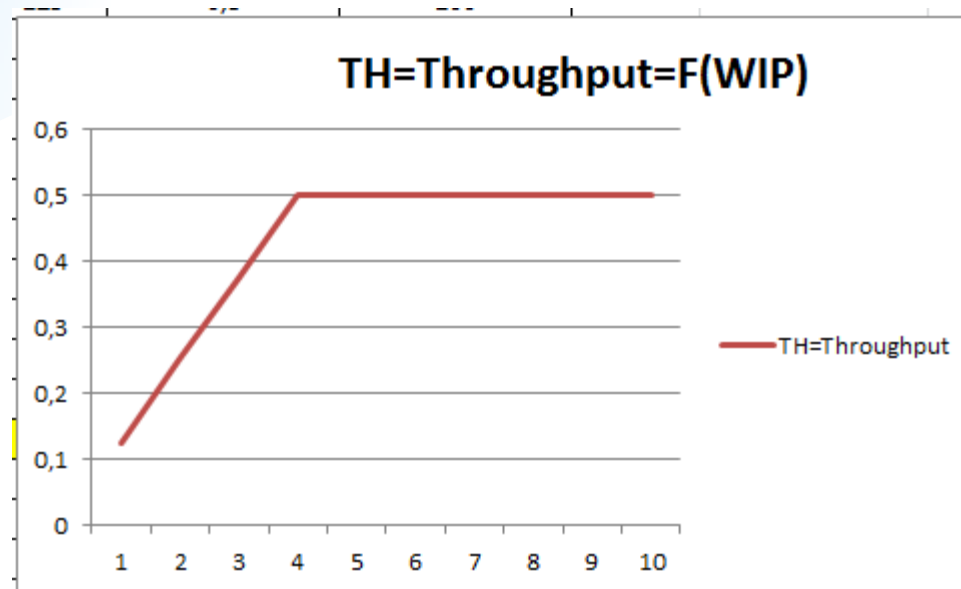


$$T1+T2=X$$

$$Opt=Min(X)$$



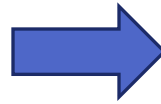
# \* Basic problem III.



Will be explained in Little's law presentation

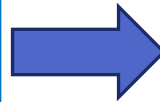
# \*Basic problem IV.

**Black**



White

White

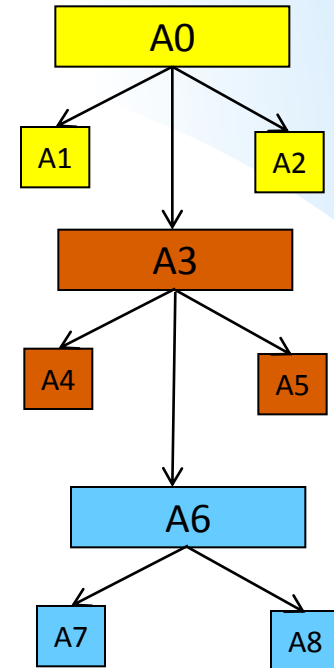
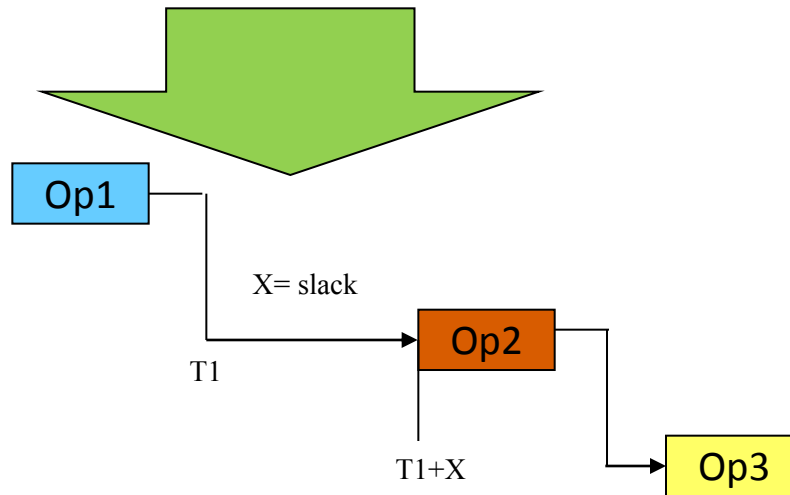
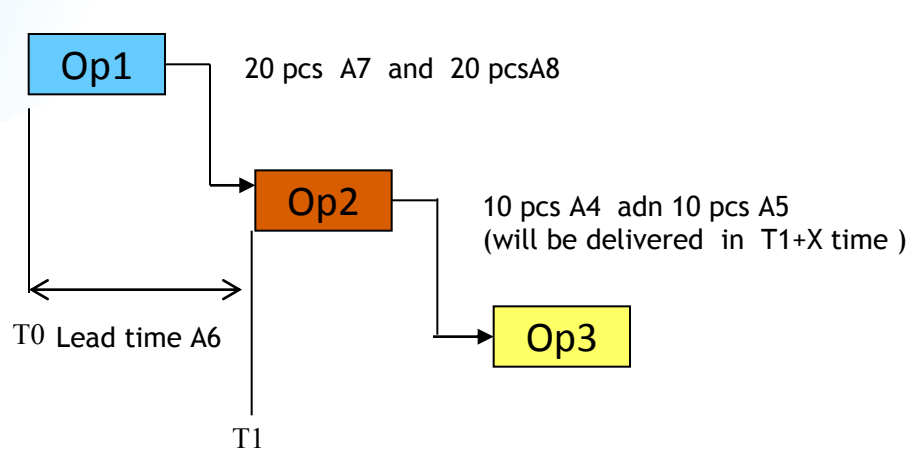


**Black**

**(Black ->White, Setup time=60 minut)**

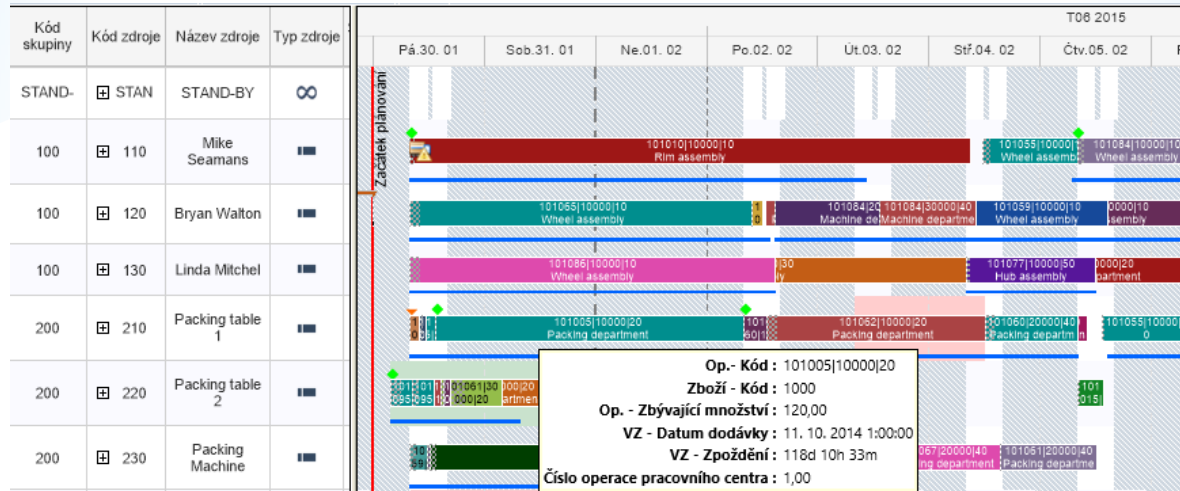
**(White->Black, Setup time = 20 minut)**

# \* Basic problem V-I. (availability of components)



# \* Basic problem V-II.

(availability of components)



Prod. Order Routing

Type to filter (F3) Prod. Order No.

Filter: Firm Planned • 101005 • 10000 • 10

Operati... No.	Type	No.	Description	Starting Date-Time	Ending Date-Time	Setup Time	Run Time	Material Fixed Date
10	Work Center	100	Wheel assembly	18. 8. 2014 14:41	22. 8. 2014 8:31	110	12	23. 8. 2014 0:00
20	Work Center	200	Packing department	27. 8. 2014 8:31	1. 9. 2014 14:46	15	15	10. 9. 2014 0:00
30	Work Center	300	Painting department	1. 9. 2014 14:46	4. 9. 2014 10:46	10	20	
40	Work Center	400	Machine department	4. 9. 2014 11:11	5. 9. 2014 12:21	10	8	

APS result ->18.8.->23.8. a 27.8.->10.9

# \* Basic problem VI-I. (over budget)

2012 - Budget

General Filters Options

Budget Name . . . . . 2012 ↑

Show as Lines. . . . . G/L Account ↑

Show as Columns . . . . . Period ↑

Code	Name	Budgeted Amount	26.03.12	02.04.12
<b>8100</b>	<b>Building Maintenance Expenses</b>			
▶ 8110	Cleaning	1 160,00	1 000,00	
8120	Electricity and Heating	1 120,00	1 000,00	
8130	Repairs and Maintenance	1 160,00	1 000,00	
<b>8190</b>	<b>Total Bldg. Maint. Expenses</b>	<b>3 440,00</b>	<b>3 000,00</b>	
<b>8200</b>	<b>Administrative Expenses</b>			
8210	Office Supplies	510,00	500,00	
8230	Phone and Fax	800,00	800,00	
8240	Postage	1 390,00	1 200,00	
<b>8290</b>	<b>Total Administrative Expenses</b>	<b>2 700,00</b>	<b>2 500,00</b>	
<b>8300</b>	<b>Computer Expenses</b>			
8310	Software	1 000,00	1 000,00	

1 7 31 3 12 ⋮ ⏪ ⏩ Balance Functions Help

# \* Basic problem VI-II. (over budget)

1015 London Postmaster - Purchase Invoice

General Invoicing Shipping Foreign Trade E-Commerce

No. . . . . 1015

Buy-from Vendor No. . . 10000

Buy-from Contact No. . . CT000066

Buy-from Vendor Name . London Postmaster

Buy-from Address . . . 10 North Lake Avenue

Buy-from Address 2 . . .

Buy-from Post Code/City N12 5XY  London

Buy-from Contact . . . Mrs. Carol Philips

Posting Date . . . . . 26.03.12

Document Date . . . . . 26.03.12

Vendor Invoice No. . . . Miki-0983

Order Address Code. . .

Purchaser Code . . . . . RL

Campaign No. . . . .

Responsibility Center . . LONDON

Assigned User ID . . . .

Status . . . . . Open

Type	No.	Description	Location Code	Quantity	Unit of Measure ...	Direct Unit Cost Excl...	Line Amount Excl. VAT	Line Disco...	Qty. to Assign
G/L Ac...	8110	Cleaning		10	HOUR	100,00	1 000,00		
G/L Ac...	8120	Electricity and Heating		20	HOUR	200,00	4 000,00		
G/L Ac...	8130	Repairs and Maintenance		30	HOUR	300,00	9 000,00		
G/L Ac...	8210	Office Supplies		10	HOUR	100,00	1 000,00		
G/L Ac...	8230	Phone and Fax		20	HOUR	200,00	4 000,00		
▶ G/L Ac...	8240	Postage		30	HOUR	300,00	9 000,00		

Invoice Line Functions Posting Help



# \* Basic problem VI-III. (over budget)

G/L Balance/Budget

Options

Date Filter . . . . . 01.03.12..31.03.12      Budget Filter . . . . . 2012

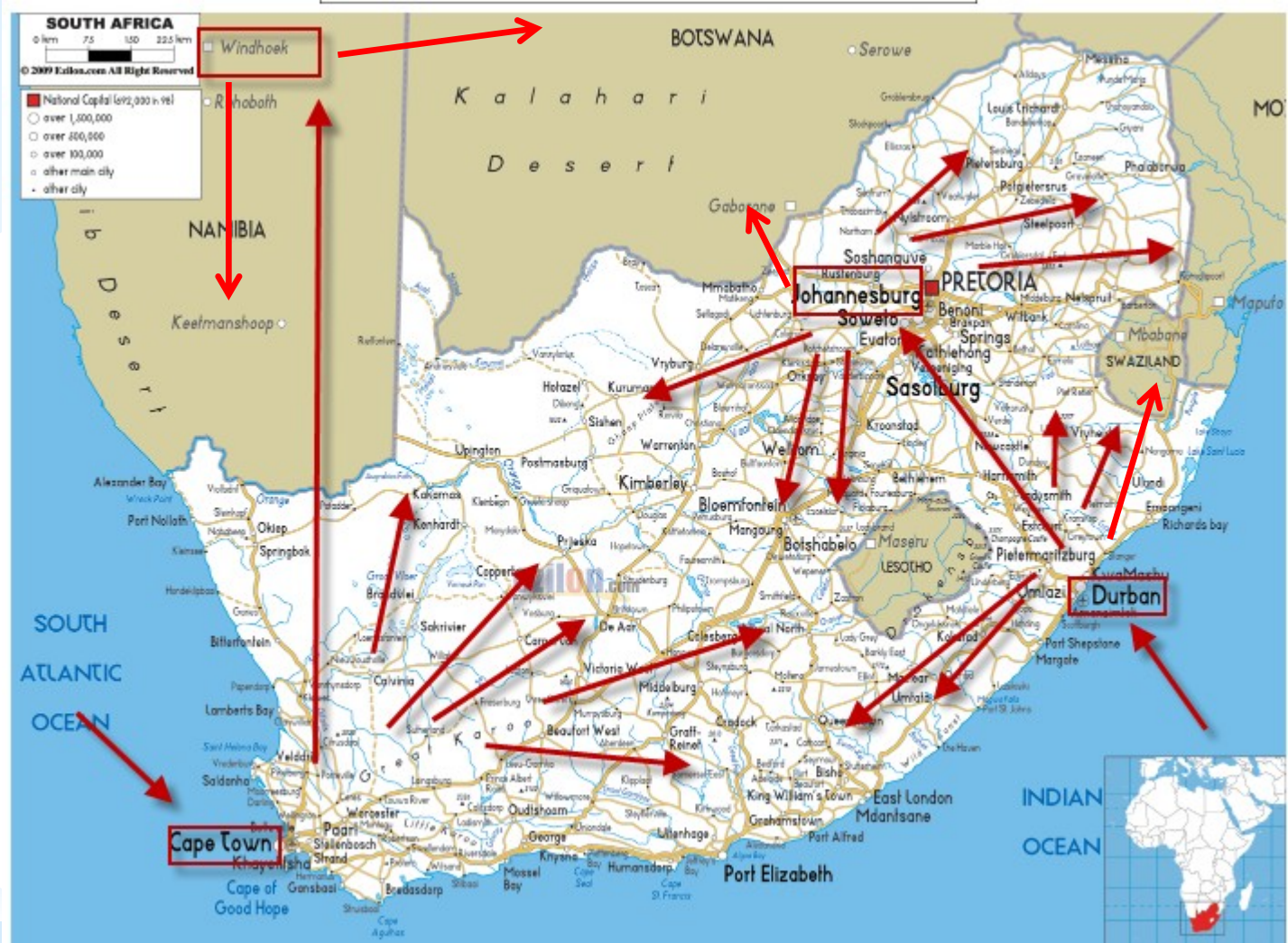
Department Filter . . . . .      Closing Entries . . . . . Include

Project Filter . . . . .

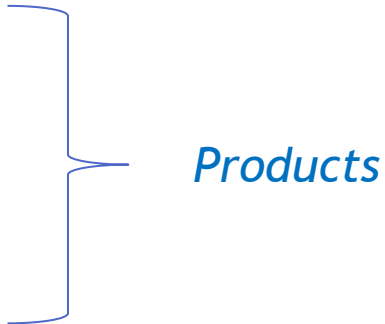
No.	Name	I... Debit Amount	Credit Amount	Balance/Budget (%)	Budgeted Debit Amount	Budgeted Credit Amount	Budgeted Amount
<b>8100</b>	<b>Building Maintenance Expenses</b>	<b>L...</b>					
▶ 8110	Cleaning	I... 1 000,00		100,0	1 000,00		1 000,00
8120	Electricity and Heating	I... 4 000,00		400,0	1 000,00		1 000,00
8130	Repairs and Maintenance	I... 9 000,00		900,0	1 000,00		1 000,00
<b>8190</b>	<b>Total Bldg. Maint. Expenses</b>	<b>L... 14 000,00</b>		<b>466,7</b>	<b>3 000,00</b>		<b>3 000,00</b>
<b>8200</b>	<b>Administrative Expenses</b>	<b>L...</b>					
8210	Office Supplies	I... 1 000,00		200,0	500,00		500,00
8230	Phone and Fax	I... 4 000,00		500,0	800,00		800,00
8240	Postage	I... 9 000,00		750,0	1 200,00		1 200,00
<b>8290</b>	<b>Total Administrative Expenses</b>	<b>L... 14 000,00</b>		<b>560,0</b>	<b>2 500,00</b>		<b>2 500,00</b>
<b>8300</b>	<b>Computer Expenses</b>	<b>L...</b>					
8310	Software	I...			1 000,00		1 000,00

1 7 31 3 12 | Account | Functions | Help

# \* Wholesale-paper-warehouse management-ERP



# Basic business specification

- \* 100 000 Tones per Year
  - \* *Carbonless papers*
  - \* *Cast coated papers and Board*
  - \* *Coated papers*
  - \* *House brands*
  - \* *Office papers*
  - \* 5000 locations in HQ and 40 000 M<sup>2</sup> warehousing space
  - \* 50000 customers
  - \* 90 vehicles
  - \* FEC trading (Forward Exchange Contracts)
  - \* Hundreds of employees
  - \* Heterogeneous IT system with **every day synchronization** of data in HQ and subsidiaries
  - \* High volume-low margin type of business
- 
- Products*

# Basic requirement

- \* One database only (MS SQL)
- \* Modern IT technology ensuring :
  - \* Fast access to data providing on-line information any time
  - \* Easy upgrades
  - \* Mobile technologies (BAR code readers,..)
  - \* Quick response to business partner requirements
  - \* Multidimensional analytic tool->reporting to support decision making process
  - \* Efficient warehousing (inbound and outbound operations)
  - \* On-line reporting (warehouse status, accounting, cost control,.....)

# \* Isolated Data Islands

Accounting Island



Marketing & Sales Islands



Island of Deliveries



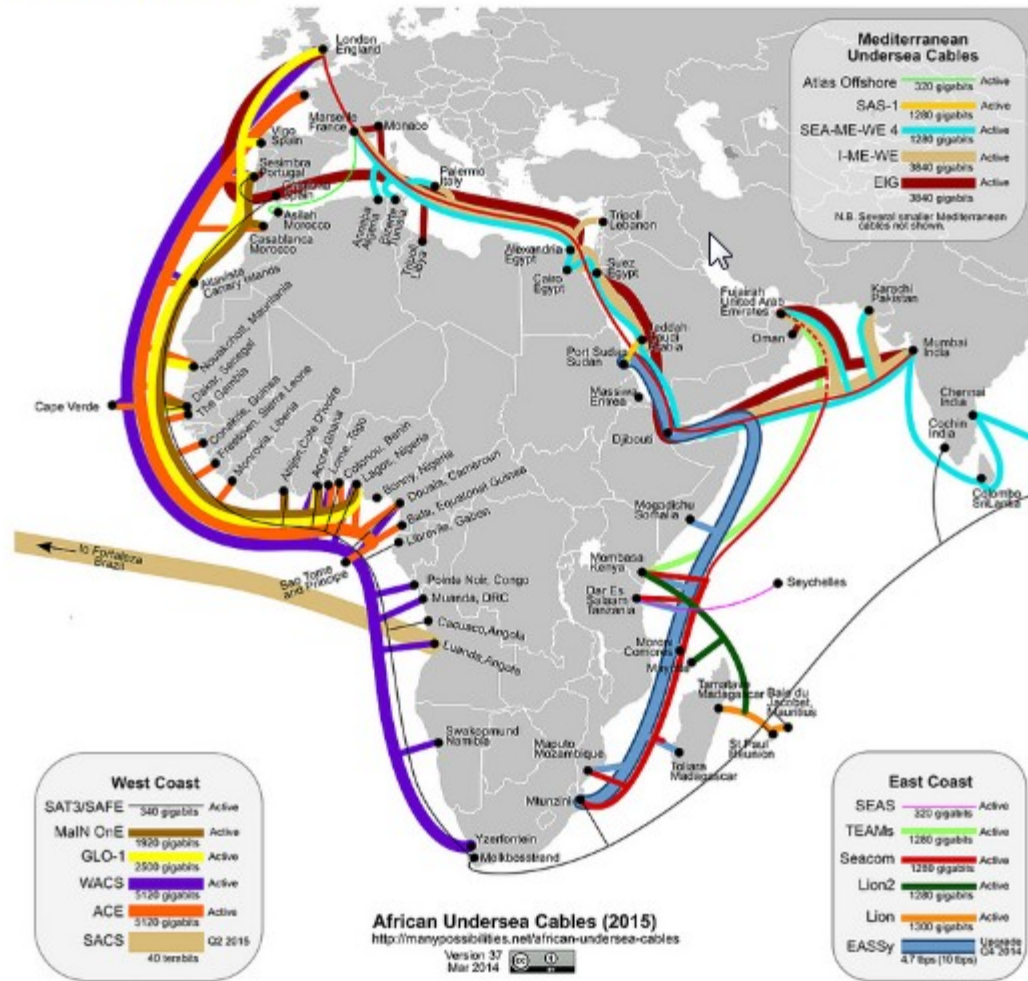
Quality Management Island



# One Solution ● One Database ● All Microsoft



# Communications limits (band width, stable connection...)



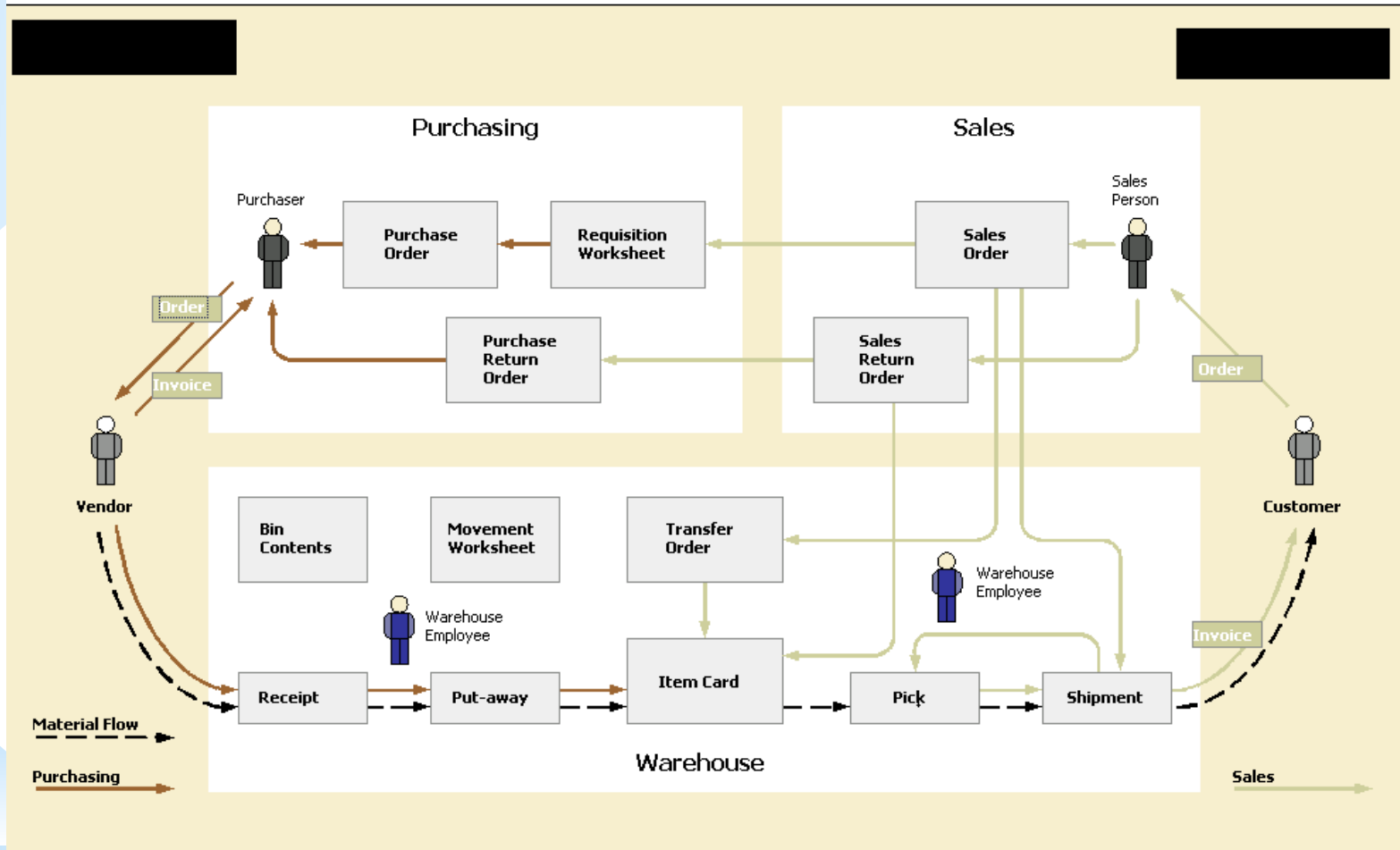
# Efficient warehousing

-(only a few examples)

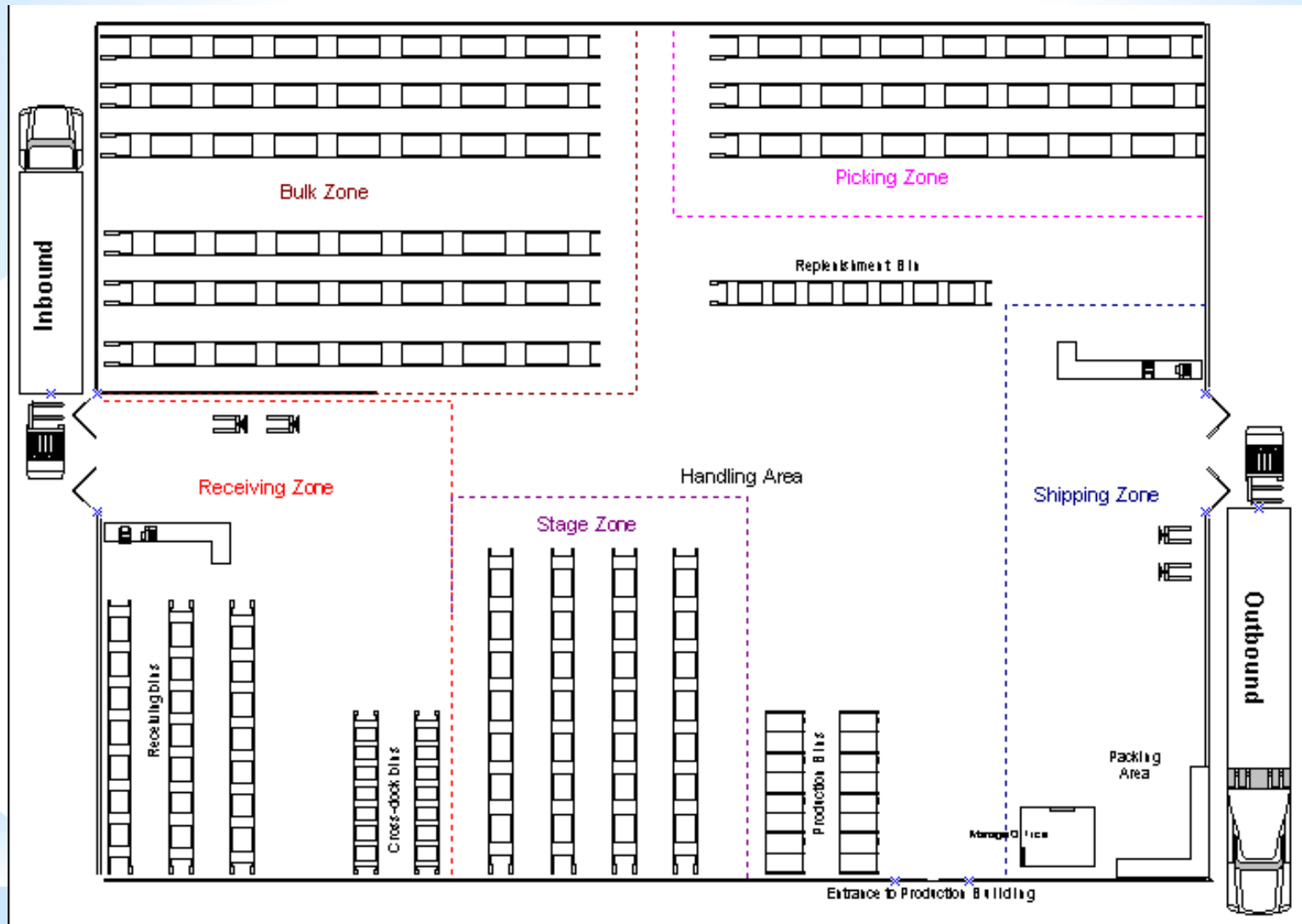
- \* Receipt bins (area where lorries are unloaded)
- \* Put-away to bins (racks) based on zones definition
- \* Capacities of the bins (racks) - (weight, size)
- \* Cross docking (from inbound are directly to outbound area)
- \* Transfer between location (HQ and subsidiaries)
- \* Picking slips (from rack to shipment area)
- \* Shipments area (bins, cages)
- \* Transport planning
- \* Credit limits and overdue payment check
- \* Invoices, Credit memos,....
- \* Claim management



# \*Warehousing



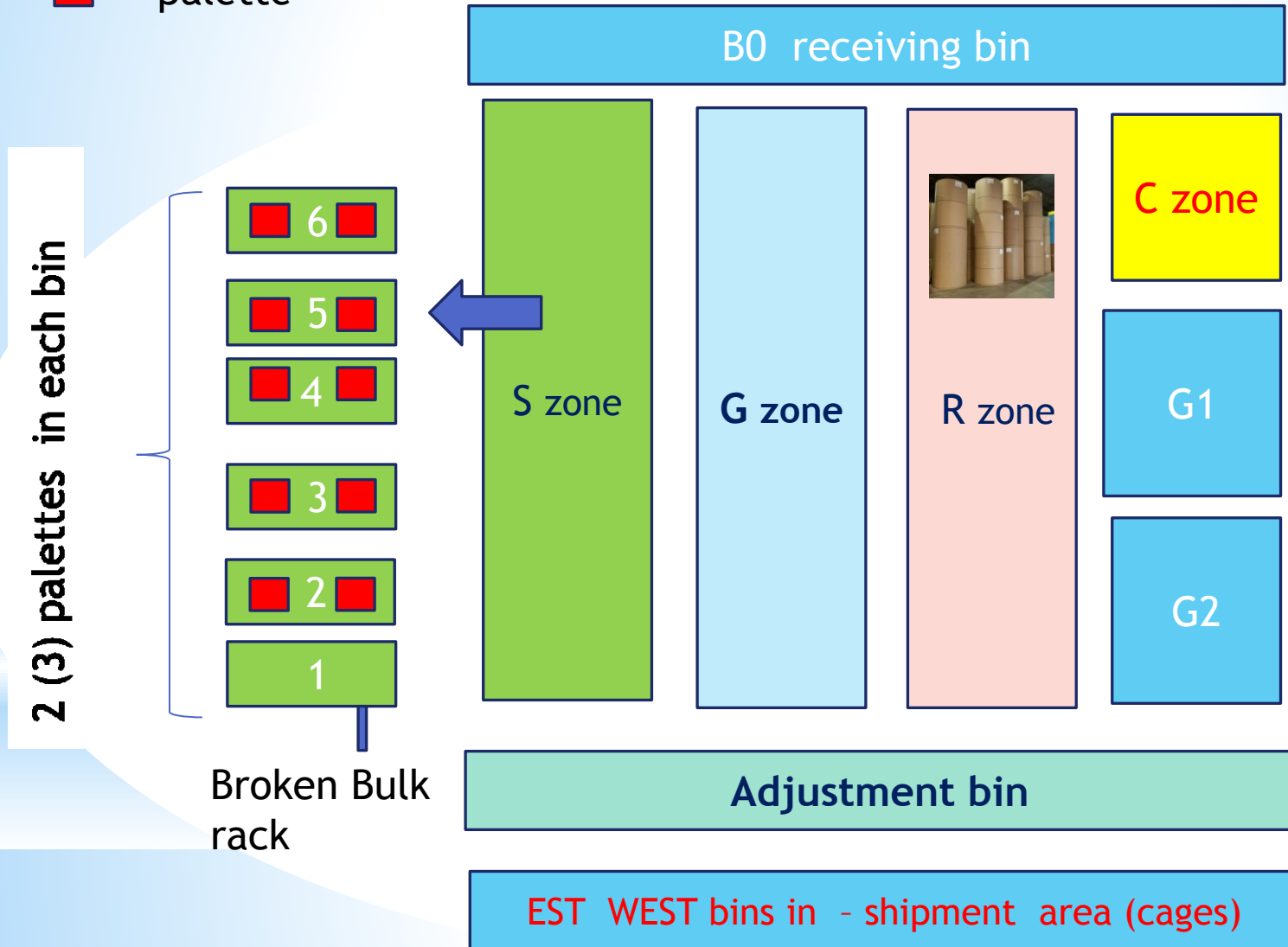
# \*Warehousing





\* **Design** (S=Sheets, R=Reels, G=Graphics,  
C=Cutting, G=Guillotine)

■ = palette



# \*Project management

- \* Budget <-> Quote and contract
- \* Planning of resources and task control
- \* Planning tools - see following slides
- \* Reporting
- \* Change management
- \* Project Risks
- \* Consignment stock
- \* CPM, PERT, CCPM - will be mentioned later

# \*Resource Planner tool

The screenshot displays the CRONUS Resource Planner tool interface. The main window is titled "Role Center - Job Manager". The interface is divided into several sections:

- Navigation Menu (Left):** Includes "Role Center", "Jobs", "Home", "Job Analysis", "Inventory", "Resources", "Posted Documents", and "Departments".
- Job Manager Activities (Center):** A dashboard with various activity tiles:
  - Jobs:** Planning Jobs (2), Quote Jobs (6), Order Jobs (50). The "Planning Jobs" tile is highlighted with a red box.
  - Sales:** Sales Quotes (12), Sales Orders (64), Sales Invoices (4), Sales Cr. Memos (1).
  - Purchases:** Purchase Quotes (3), Purchase Orders (27), Purchase Invoices (1), Purchase Credit Memos (0).
- My Notifications (Bottom Center):** A table with columns: From, Created Date, Note, Page.
 

From	Created Date	Note	Page
CCSNET,RICK	3/28/2014	Check the Subcontract Expenses on this Job please.	Job Card - 1006...
- My Job Estimate to Actual (Top Right):** A bar chart showing estimates vs actuals for Job Numbers 1006-01, 5010-01, and 5010-02.
- My Jobs (Middle Right):** A table listing jobs with columns: Job No., Description, Description 2, Start Date, Status.
 

Job No.	Description	Description 2	Start ...	Status
1006-01	Sub Job For SQ No.1006	Custom Material Hand...	2/3/2014	Order
5010-01	Cannon Group Master...	Finished Good #101 (J...	2/3/2015	Order
5010-02	Cannon Group Master...	Custom Material Hand...	10/7/2...	Order
- Customers per Salesperson (Bottom Right):** A bar chart showing customer counts for Salesperson Codes DC, JR, and PS.
- My Customers (Bottom Right):** A table listing customers with columns: Customer No., Phone No., Name.
 

Customer ...	Phone No.	Name
10000	317-846-6025	The Cannon Group PLC
20000	317-846-6025	Selangorian Ltd.

# \*Resource Planner tool

The screenshot displays the Resource Planner tool interface. At the top, there is a navigation bar with tabs for 'Planning', 'Display', 'Actions', and 'Filter'. Below this is a toolbar with various icons for navigation and customization, including 'Today', 'Select date', 'Previous period', 'Next period', 'Start of planning', 'End of planning', 'Go to', 'Time scale' (Week, Day, Month, Advanced), 'Hide non-working periods', 'Activity colors', 'Activity labels', 'Activity ScreenTips', 'Row Height', 'Zoom in', 'Zoom out', 'Cancel', 'Zoom', 'Auto refresh', 'Refresh', and 'Restore defaults'. The main area shows a list of project cards under the heading 'Completely planned (7)'. Each card displays the project name, company, and date. A progress bar at the bottom of each card shows the percentage of resources planned, with a green bar for 100% and a red/orange bar for the remaining percentage.

Project Name	Company	Date	Planned %	Remaining %
COVENTRY Setting up Four Work /	Selangorian Ltd.	12 days ago	100 %	9.09 %
DEERFIELD, 8 WP Setting up Eight	Deerfield Graphics Company	12 days ago	100 %	4.13 %
GUILDFORD, 10 CR Setting up Ten	Guildford Water Department	29 days ago	100 %	0 %
STRAFFORD Setting up Ten Confer	John Haddock Insurance Co.	5 days ago	100 %	32.8 %
VIENNA Preparacion del forum	Deerfield Graphics Company	7 days ago	100 %	0 %
WAYNE Setting up Six Work Areas	The Cannon Group PLC	12 days ago	100 %	0 %
WASHINGTON Washington State f	The Cannon Group PLC	57 days	100 %	0 %

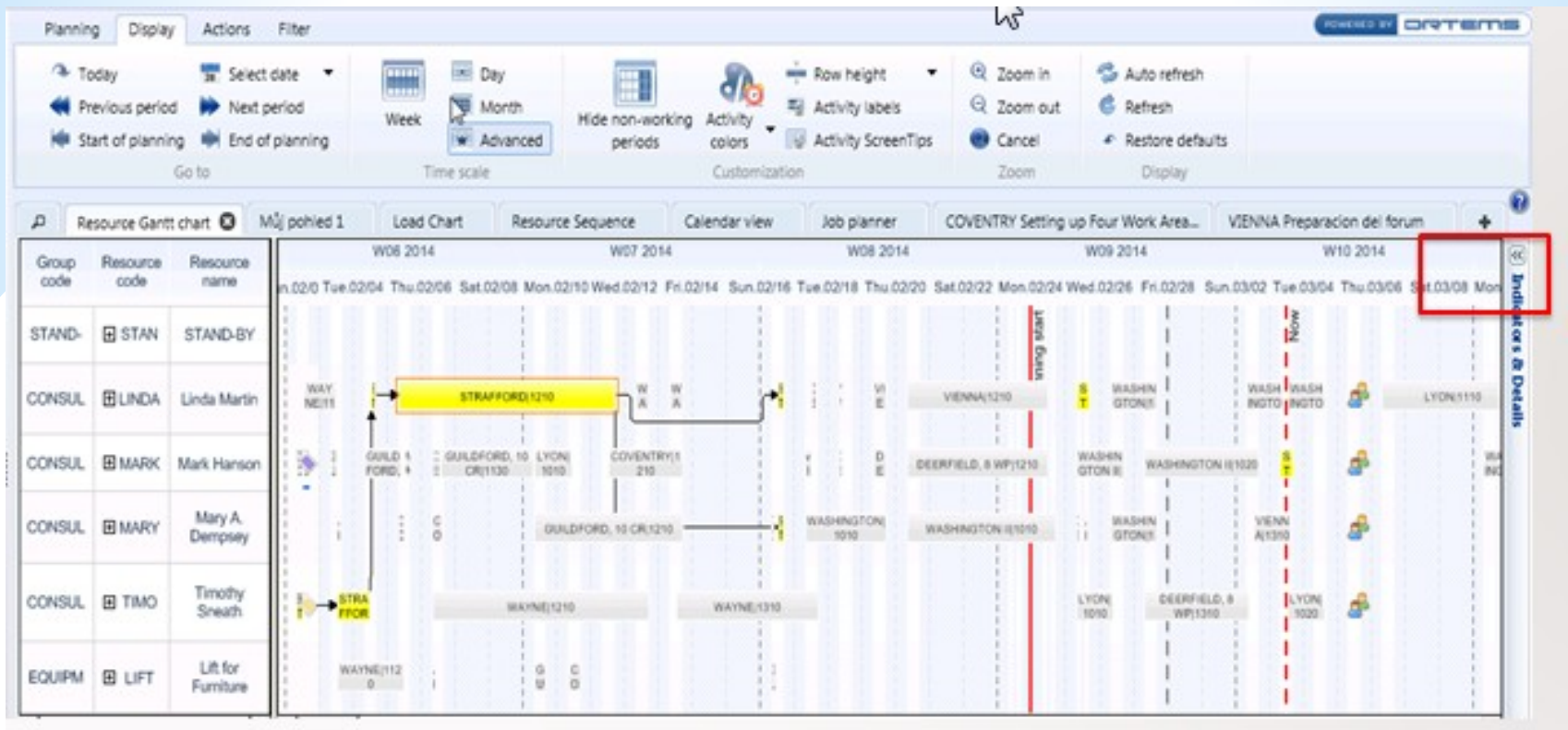
Navigation sidebar (left):

- Overview
- Favorites
- Recently planned
- Not completely planned (3)
- Completely planned (7)
- Exceeding budget (2)

Summary bar (bottom left):


Completely planned (7)  
100 % 0.92 % 4.78 %

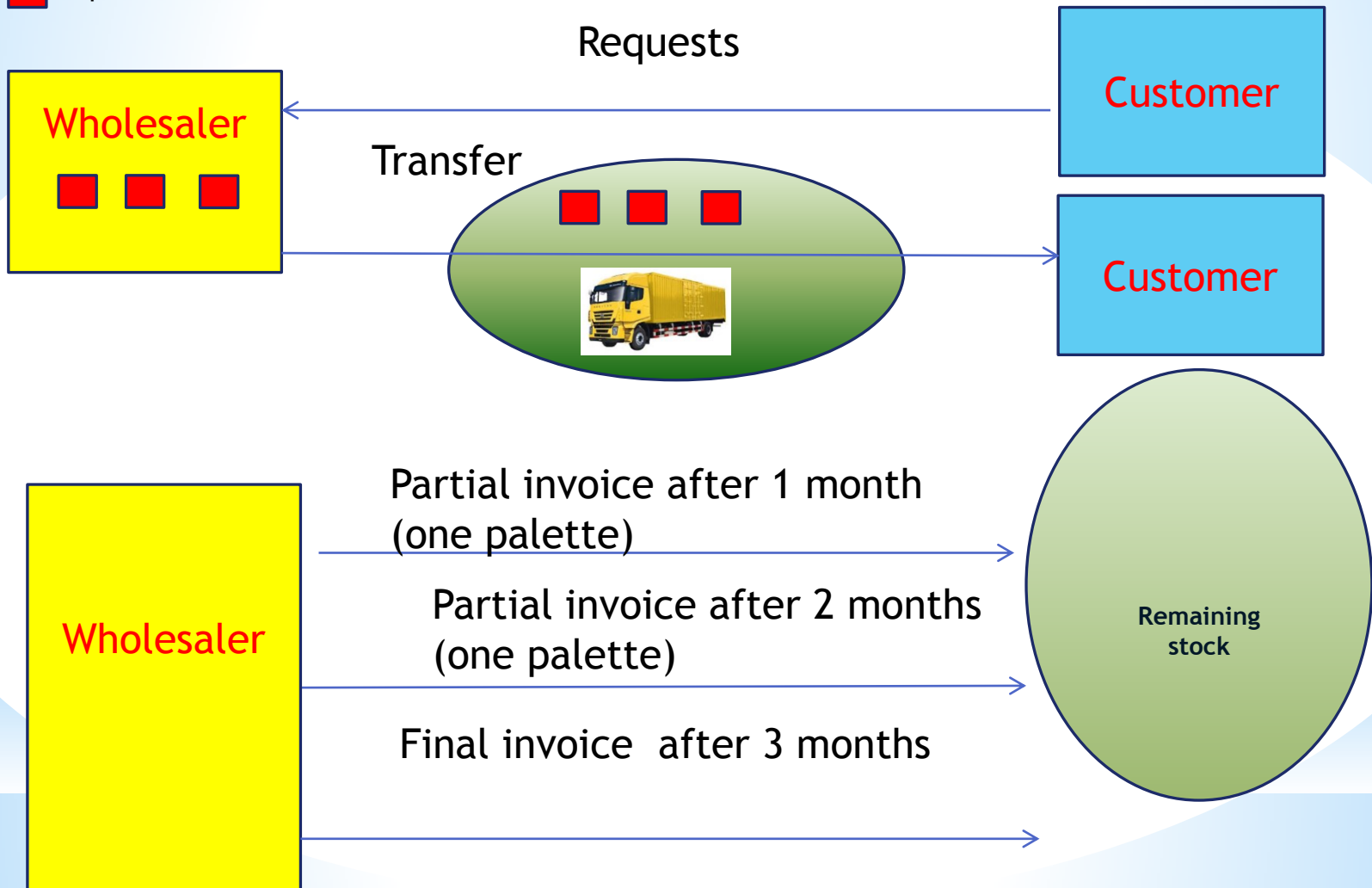
# \*Resource Planner tool





# \* Consignment stock (benefits)

 = palette



# \* Forward Exchange Contract (home study)

A special type of foreign currency transaction. Forward contracts are agreements between two parties to exchange two designated currencies at a specific time in the future. These contracts always take place on a date after the date that the **spot** contract settles, and are used to protect the buyer from fluctuations in currency prices.

Opened from Purchase order (MS Dynamics NAV 2013)

Contract No.	Currency Code	Date	Exchange Rate	Spot Rate	Amount	Amount (LCY)	Used Amount	Amount to Invoice
FEC01	USD	22.7.2014	10,678	10,000	1 000,00	10 678,00	1 000,00	0,00
FEC03	USD	31.7.2014	10,700	10,000	400,00	4 280,00	400,00	0,00

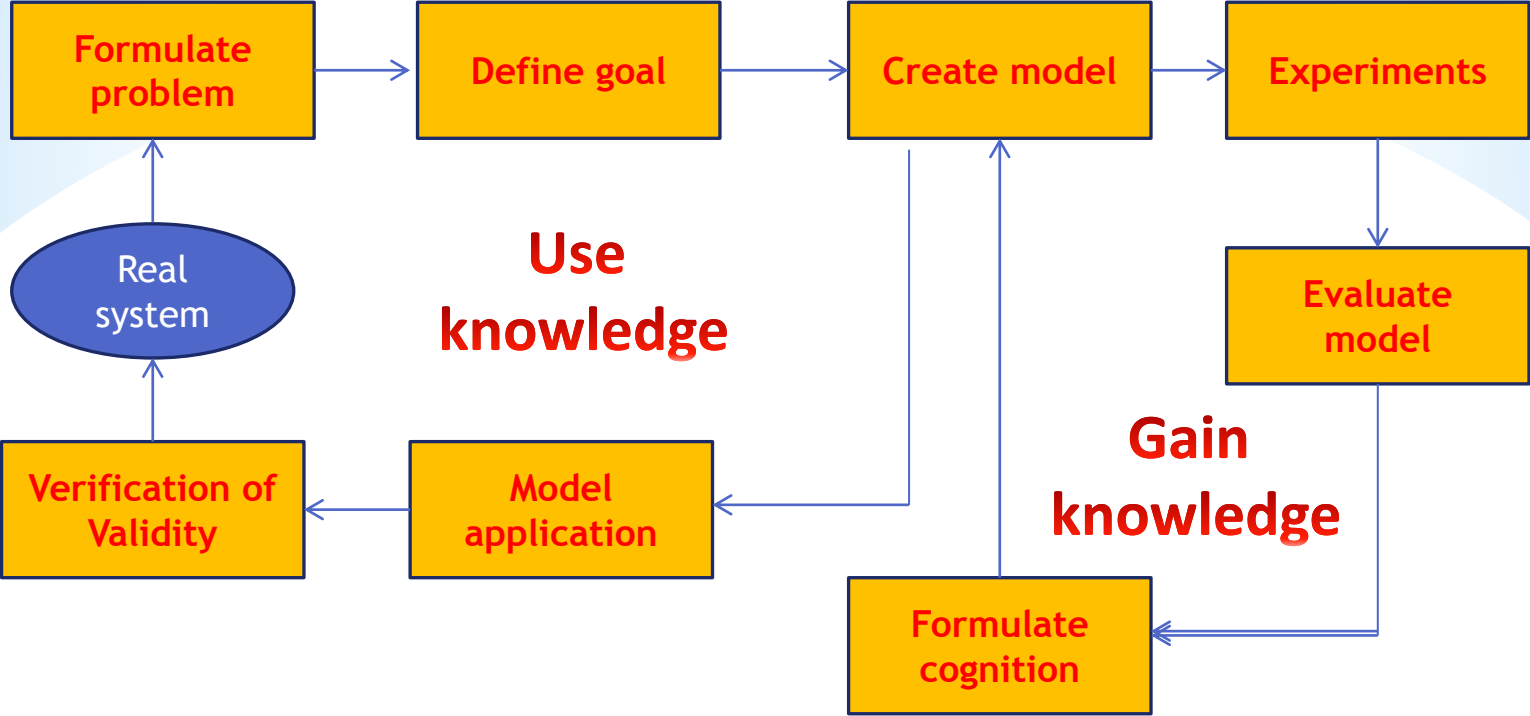
# \*Staff training

- \*Materials
- \*Key users
- \*Training planning
- \*Examination
- \*Change management

# \*Project Management I.

- \* Budget (financial and resource capacities)
- \* Data transfers
- \* Setup of the ERP system (MS Dynamics NAV)
- \* Tests
- \* Evaluation of customized solution
- \* Change management
- \* Sharp start
- \* Closing project -evaluation

# Steps in the model based problems solving process



\* Nyhuis, Wiendahl, Fundamentals of Production Logistics

# \*Project Management II.

- \* Capacities of the teams unbalanced
- \* Underestimation (perils)
- \* Language barriers (especially understanding)
- \* Budget excess (reasons will be explained)
- \* Quantity of locations
- \* Low margin
- \* .....

# \* Implementation

- \* Data transfer
- \* Setup of the system
- \* Role Tailored Clients- profiles, Approvals
- \* Tests
- \* Evaluation
- \* Change management
- \* Sharp start (Namibia and SA)
- \* Closing project
- \* Next stages

**THIS IS**

**THE END**