

Enterprise Resource Planning & SAP

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My background.....



20+ years of service ; **senior management** positions in Global Corporations with significant experience in:

- Program Management
- ERP Implementations & Software development
- IT Operations and Delivery - ITIL
- Networking
- IT Security and Compliance
- **MS** in IS from Georgia State University
- **MBA** in Operations Research
- **BE** in Electronics & Telecommunication
- Certified Project Management Professional (**PMP**)
- Certified Information Systems Auditor (**CISA**)
- **ISO 20000 certified Auditor**
- recent research focus in **Health Information technology**.

Agenda



- Business Challenges
- Planning
- MRP – MRP II – ERP - SCM
- Vendor Landscape
- Functional Modules – Generic
- SAP
- Sales Order-to-Cash – Revenue Cycle

Challenges – Senior Management



- How much Accounts Receivable is more than 180 days?
- Today's Sales Orders & Collections in North America?
- Dip in Sales orders from my biggest customer?
- How much Finished Goods do I forecast production for this month to achieve Sales numbers for this quarter?
- Is there sufficient Raw materials in stock for production?
- How much did we Purchase this year from "X" globally?
- Holding cost - "Inventory Turnaround Time" for class A items?
- Can my Cash-On-Hand last me for 15 days w/out overdraft?
- How much is today's "Production Batch cost"?

Challenges – Senior Management



- Can my Business Processes and Systems enable me with answers **immediately** ?
- Can I see inventory and cash across all of my **planning horizon**?
- Do I have sufficient **resources**?

What are a firm's strategic resources?



- From Classical Economics (*Samuelson & Nordhaus, '04*)
 - Land
 - Labor
 - Capital
 - Material
 - Money
 - Machinery
 - Characteristics
 - **Limited availability**
 - Potential for depletion / consumption
 - Utility
- **Resource-based view** - firms possess resources, a subset of which enables them to achieve competitive advantage, and a further subset which leads to superior long-term performance (*Barney '91; Grant '91; Penrose '59; Wernerfelt '84*).

Resource Planning tool



- Plan for optimized use of resources
- Possible only if there transparent flow of information between all functions inside the boundaries of the organization (e.g. Production should know how much to manufacture and when?)
- Should enable the enterprise to operate as an integrated, enterprise-wide, process oriented, information-driven (not guess work), and real-time enterprise
- To achieve the above.....let's look at the components of planning.....what are they?


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Bill of Materials (BOM)

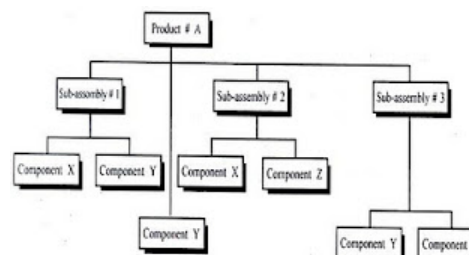


- List of components that make up a product or assembly

- Frame
 - Pedal
 - Break Kit
 - Front Wheel
 - Front Rim
 - Front Tire
 - Front Tube
 - Rear Wheel
 - Rear Rim
 - Rear Tire
 - Rear Tube
 - Gear System
- Saddle
 - Post
 - Seat
 - Clip
- Handle Bar Assembly
 - Bell
 - Clasp
 - Handle



Pre-assembled frame and fork	FRME01	1	PC
Handlebar assembly	HBA	1	PC
Derailleur gear system	GEARS	1	PC
Bottom bracket bearing	BEAR	1	PC
Saddle	SADDLE	1	PC
Saddle support	SADSUP	1	PC



MRP



- Material Requirement Planning – (Orlicky '69)
- Production planning and Inventory control system used in the manufacturing process
- Answers – **What** items are required? **How many** are required? **When** are they required?
- 3 objectives
 - Ensure availability of
 - raw materials(RM) for production in time
 - finished goods (FG) for customers when in demand
 - Maintain the lowest possible RM and FG (why??)
 - Plan purchasing, delivery & manufacturing schedules

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BOM - Car



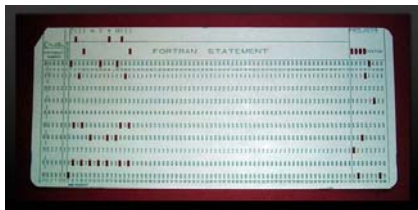
A single car has about 30,000 parts,
counting every part down to the smallest screws

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MRP – MRP II - ERP



Decade	Concept	Function
50	Inventory control systems (ICS)	Forecast and inventory management
60	Material requirement planning (MRP)	Requirement calculations based on bill-of-material (BoM)
70	Manufacturing resource planning (MRP II)	Closed-loop planning and capacity constraints
80	Computer-integrated manufacturing (CIM)	Automation, enterprise models
90	Enterprise resource planning (ERP)	Integrated processes



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DEC - PDP-1 in 1960,
world's first small,
interactive computer.
Sold at \$120,000,




MRP – MRP II - ERP




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**Digital Equipment Corporation
(DEC – PDP12)**
12 bit machine @ \$ 27, 900




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"IBM PC," in '81 - model 5150 .





What is ERP...then....?



-framework for organizing, defining, and standardizing the business processes necessary to effectively plan and control an organization so the organization can use its internal knowledge to seek external advantage

[APICS Dictionary (American Production/Inventory Control Society)– 11th Edition]

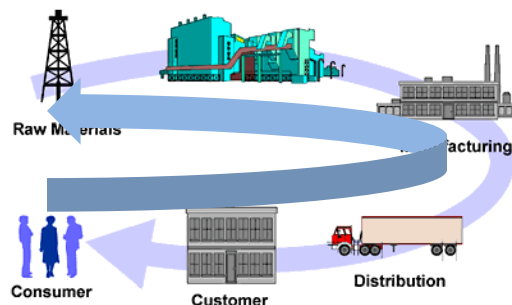
- “underlying integrated database that stores master and transactional data in a consistent way and with controlled redundancy” (Klaus, Rosemann, & Gable, 2000, p. 143).

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Supply Chain Management (SCM)



- a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances. and/or information from a source to a customer
- Transactions from Supplier to Customers and vice versa
- Capture GL transaction: underneath



Bullwhip Effect



- “the amplification of demand variability from a downstream site to an upstream site’
- Can **paralyze supply chains**
- accepted as a normal occurrence and an **inevitable outcome** of the order-to-delivery system
- is **everywhere** - P&G (Pampers), Hewlett Packard (HP), Xilinx, Canon, 3Com, Raychem, and Intel
- Control - **visibility** of inventory, demand, and supply in the supply chain with information systems and **collaboration – VMI / JIT**



[Lee, H. L., V. Padmanabhan, et al. (2004). "Comments on "Information Distortion in a Supply Chain: The Bullwhip Effect"." *Management Science* 50: 1887-1893.]

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So is MRP Relevant today?



MRP may in fact be more relevant than ever.

Today, too many people think of “supply chain” tools as Warehouse Management Systems (WMS) or logistics management packages. This is a huge mistake. At the heart of any supply chain are connected “islands” of manufacturing. At the heart of each of these islands is Materials Requirements Planning (MRP). MRP creates and connects the demand signals in the “archipelagos” that comprise most supply chains. **In order to get smarter and more agile supply chains we must get smarter and more agile MRP!** ←

Today, however, almost every mid-range and large manufacturing company is using MRP tactics and tools that are largely incapable of agility. **No matter how much money you spent on your ERP product, your planning system is antiquated and fundamentally broken!** Hard to believe? Read [this article from Software Advice](#) and you will see just how large and prevalent the problem is. The existence of this weakness is the source of the power of and the business case for a new approach called Demand Driven MRP (DDMRP).

<http://www.orlickysmrp.com/mrp.html>



Now...let's look at something else....



- Process view of the firm.....
 - an ability to **see beyond the tasks and hierarchy** and to visualize the processes in one's organization.
- [Bassellier, Reich & Benbasat JMIS'01]*
- **So what are the processes in an organization??**
 - Only **line managers** are close enough to their business segments to see the **most effective ways to utilize this resource**. Only they possess the clout to embed IT into their strategies and to commit the necessary financial resources. Unless **IT is included in line managers' strategy and tactics**, and unless line managers can effectively understand and implement a process view of the world, the **best IT organizations are almost powerless**

[Rockart, J. F., M. J. Earl, et al. (1996). "Eight Imperatives for the New IT Organization."

Sloan Management Review 38(1): 43-55.]


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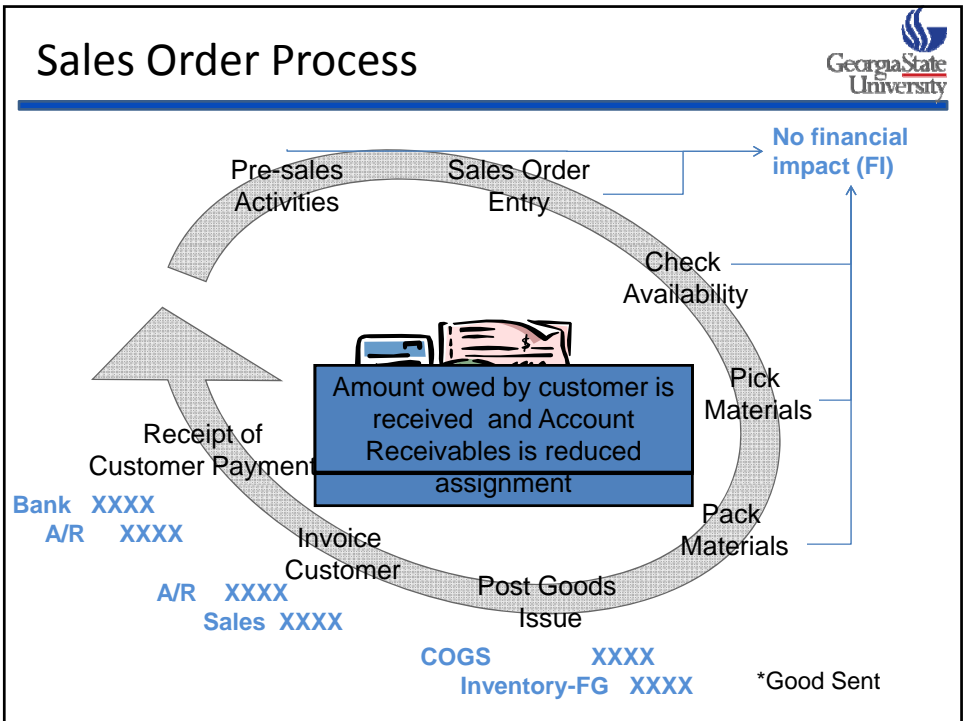
**SALES TO CASH
OR
REVENUE CYCLE**

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Functionality



- Sales
- Shipping and Transportation
- Billing
- Credit Management
- Sales Support
- Foreign Trade
- Integrates internal and external information across an entire organization - finance/accounting, manufacturing, planning, sales and service, etc.



GL Transactions Tracking



Display Document: Data Entry View

Display Currency General Ledger View

Data Entry View

Document Number	4900000125	Company Code	US00	Fiscal Year	2011
Document Date	09/25/2011	Posting Date	09/25/2011	Period	9
Reference	0080000002	Cross-Comp.No.			
Currency	USD	Texts exist	<input type="checkbox"/>	Ledger Group	

Print Refresh Back Forward Home Help Search Print All Print Selected Print Header Print Footer Print Table Print Chart Print Report Print Summary Print Detail Print Layout Print Template Print User Print Password Print Role Print Profile Print Session Print System Print User Print Password Print Role Print Profile Print Session Print System

Co.	Item	PK	S	Account	Description	Amount	Curr.	Tx
US00	1	99		200100	Inv-FG	7,000.00	USD	
	2	81		780000	COGS	7,000.00	USD	

Post Goods Issue

COGS XXXX

INV-FG XXXXX

Display Document: Data Entry View

Display Currency General Ledger View

Data Entry View

Document Number	90000002	Company Code	US00	Fiscal Year	2011
Document Date	09/25/2011	Posting Date	09/25/2011	Period	9
Reference	149	Cross-Comp.No.			
Currency	USD	Texts exist	<input type="checkbox"/>	Ledger Group	

Print Refresh Back Forward Home Help Search Print All Print Selected Print Header Print Footer Print Table Print Chart Print Report Print Summary Print Detail Print Layout Print Template Print User Print Password Print Role Print Profile Print Session Print System

Co.	Item	PK	S	Account	Description	Amount	Curr.	Tx
US00	1	01		3149	Philly Bikes	15,000.00	USD	
	2	50		600000	Sales Revenue	15,000.00	USD	


Invoice Customer

A/R XXXX

SALES XXXXX

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GL Transactions Tracking



Display Document: Data Entry View

Display Currency General Ledger View

Data Entry View

Document Number	1400000002	Company Code	US00	Fiscal Year	2011
Document Date	09/25/2011	Posting Date	09/25/2011	Period	9
Reference		Cross-Comp.No.			
Currency	USD	Texts exist	<input type="checkbox"/>	Ledger Group	

Print Refresh Back Forward Home Help Search Print All Print Selected Print Header Print Footer Print Table Print Chart Print Report Print Summary Print Detail Print Layout Print Template Print User Print Password Print Role Print Profile Print Session Print System

Co.	Item	PK	S	Account	Description	Amount	Curr.	Tx
US00	1	40		100000	Bank	15,000.00	USD	
	2	15		3149	Philly Bikes	15,000.00	USD	

Payment Received

BANK XXXX

A/R XXXXX

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Audit trail - Logistics



Document Flow

Status overview | Display document | Service documents | Additional links

Business partner: 0000025011 The Bike Zone

Document	On	Status
Inquiry 0010000005	05/28/2010	Completed
Quotation 0020000006	05/28/2010	Completed
Standard Order 0000000007	05/28/2010	Completed
Outbound Delivery 0080000006	05/28/2010	Completed
Picking request 20100528	05/28/2010	Completed
GD goods issue:delhy 4900000047	05/28/2010	complete
Invoice 0090000005	05/28/2010	Completed
Accounting document 0090000006	05/28/2010	Cleared

- Each business transaction impacting FI creates **unique numbered electronic document**.
- Once written to the SAP database, a financial document **can not be deleted** from the database.

Audit trail - Logistics



Document Flow

Status overview | Display document | Service documents | Additional links

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Inquiry 0010000005	05/28/2010	Completed
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Picking request 20100528	05/28/2010	Completed
GD goods issue:delhy 4900000047	05/28/2010	complete
Invoice 0090000005	05/28/2010	Completed
Accounting document 0090000006	05/28/2010	Cleared

- **Audit Trail** - contains critical and necessary information as:
 - Responsible person
 - Date and time of the transaction
 - Commercial content
- provides a solid and important framework for a **strong internal control system** – a **requirement of law** for SOX and other regulatory needs

Audit trail – GL Transactions Tracking

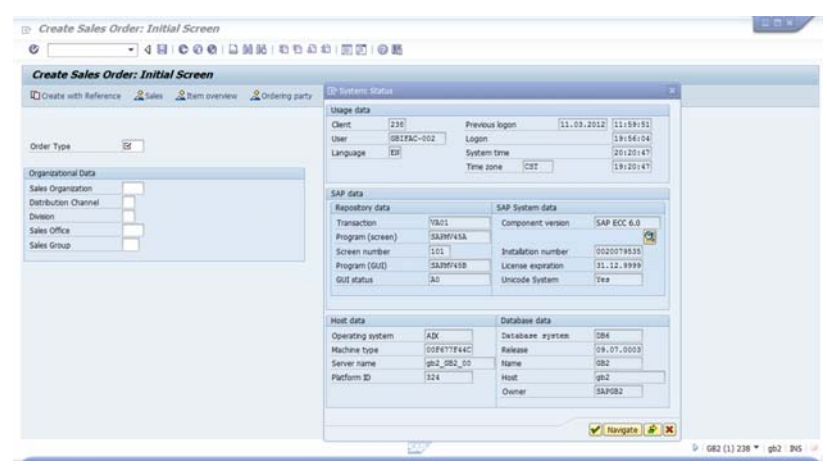


Global Bike Inc. Line Item Journal													Time 15:49:57	Date 10/26/2011	
Dallas Ledger OL													RPEF000/GBI-149		Page 1
Posting Date	Entry Date	DocumentNo	Ita	Doc. Date	BusA	FK	SG	SI	Account	User Name	LCurr	Amount in LC	TX	Assignment	8
CoCode US00 Acct Type D Type D2 SpG/L Period 201109															
09/23/2011	09/23/2011	1400000001	2	09/23/2011	15				3149	GBI-149	USD	15,000.00-		20110923	
09/25/2011	09/25/2011	1400000002	2	09/25/2011	15				3149	GBI-149	USD	15,000.00-		20110925	
* Posting period 201109													USD	30,000.00-	
CoCode US00 Acct Type D Type D2 SpG/L Period 201110															
10/03/2011	10/03/2011	1400000003	2	10/03/2011	15				3149	GBI-002	USD	15,000.00-		20111003	
10/11/2011	10/11/2011	1400000004	2	10/11/2011	15				3065	GBI-065	USD	15,000.00-		20111011	
* Posting period 201110													USD	30,000.00-	

Global Bike Inc. Line Item Journal													Time 15:49:57	Date 10/26/2011	
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09/23/2011	09/23/2011	900000001	1	09/23/2011	01		X		3149	GBI-149	USD	15,000.00		0090000001	
09/25/2011	09/25/2011	900000002	1	09/25/2011	01		X		3149	GBI-149	USD	15,000.00		0090000002	
* Posting period 201109													USD	30,000.00	
CoCode US00 Acct Type D Type RV SpG/L Period 201110															
10/03/2011	10/03/2011	900000003	1	10/03/2011	01		X		3149	GBI-002	USD	15,000.00		0090000003	
10/11/2011	10/11/2011	900000004	1	10/11/2011	01		X		3065	GBI-065	USD	15,000.00		0090000004	
* Posting period 201110													USD	30,000.00	
** Account Type D													USD	0.00	

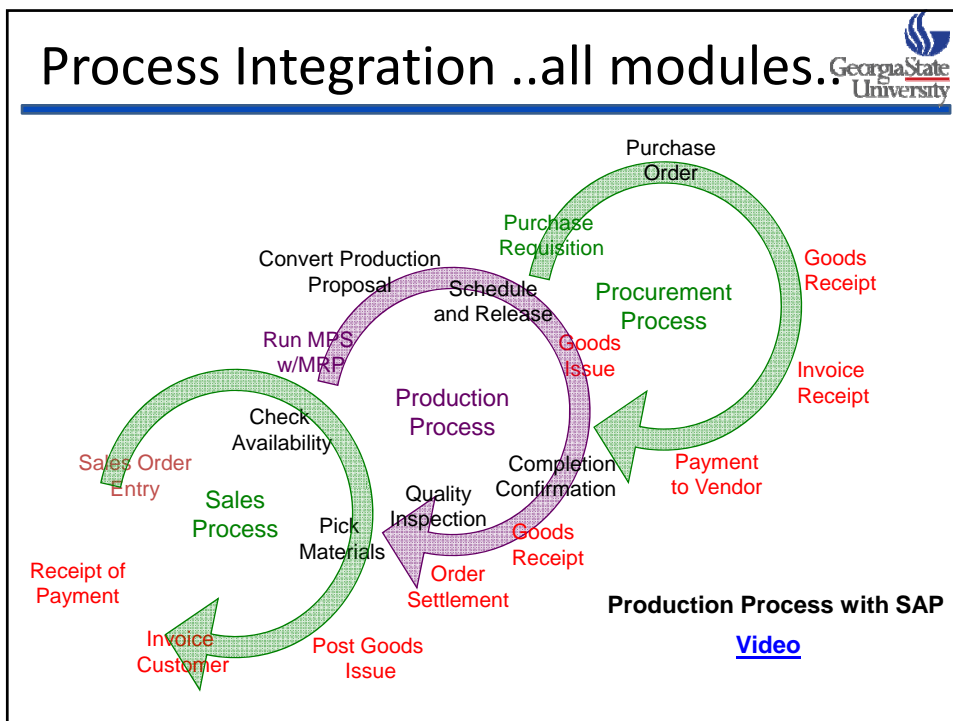
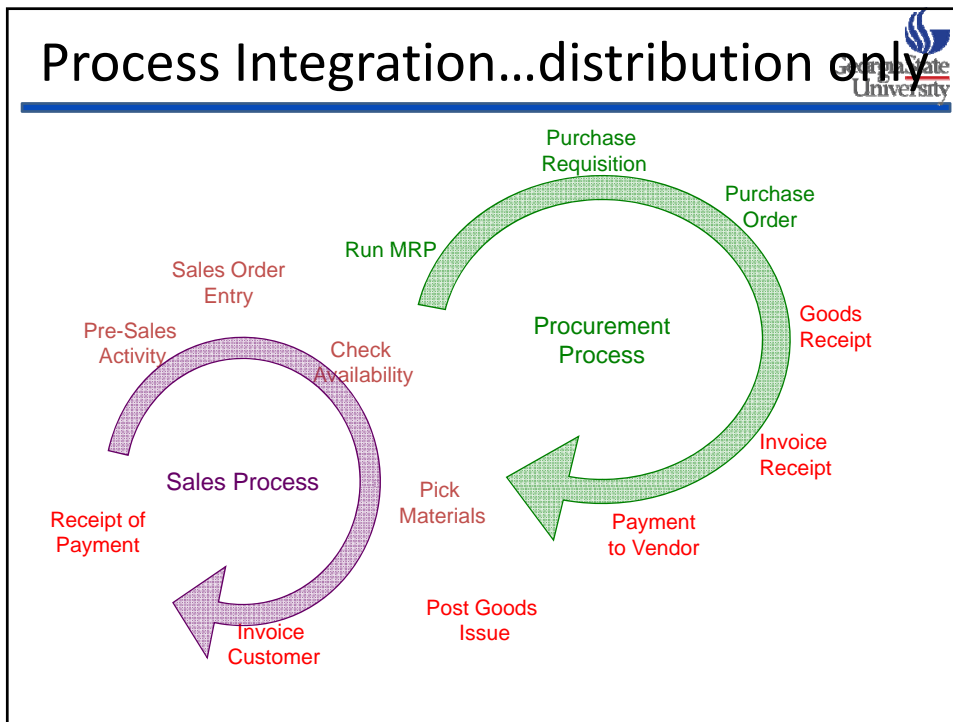
S_ALR_87012291 Line item journal from Accounting → General Ledger → Information system → Document → Line item journal.

Audit trail – User input tracking



Transaction:VA01

System → Status



So what did we cover.....



- ✓ • Resource Planning.....
- ✓ • Process Flow.....
- ✓ • Financial Integration.....

Challenges – Senior Management ✓



- ✓• How much Accounts Receivable is more than 180 days?
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