MIS 2151:
Enterprise Resource Planning Systems

Introduction: Course, ERP, SAP, Controls
Introduction: Course

Course Web Home

See Syllabus

View Schedule
Introduction: Me and you

- Name
- Why in this course
- Unique experience, skills you bring to the class
What are ERP Systems?

• E__________

• R__________

• P__________

• Systems
MRP -> MRP II -> ERP

• **MRP** — Material (or Manufacturing – mfg) Requirements Planning (70’s)
  – Scope: typically mfg companies
  – Calculate material requirements (quantity, where, when, etc.) by translating Master Production Schedule (MPS) into component and Raw Material (RM) demands
  – ‘Little MRP’

• **MRP II**
  – MRP extended to resources beyond materials (capacity, detailed schedule, labor, etc.)
  – Includes demand from customer orders and/or forecasts
  – ‘Big MRP’

• **Enterprise Resource Planning** (90’s)
  – Scope: Full enterprise (all companies, sites, processes, …)
ERP Systems

• Software technology (system)
• Enables performing business processes
• Typically suite of integrated solutions (single vendor, common database, consistent look and feel …)
• Scope beyond mfg, distribution, order - invoice to include:
  – Customer relationship mgmt (CRM)
  – Human Resources (HR)
  – Project Management (PCM)
ERP Systems

• Incredibly large, extensive software packages used to manage a firm’s business processes.
• Standard software packages that must be configured to meet the needs of a company
• Database programs with the following functions:
  – Input
  – Storage/Retrieval
  – Manipulation
  – Output

28,610+ Tables in SAP
ERP System Suppliers

• SAP, the German juggernaut
  – Systeme, Anwendungen, Produkte in der Datenverarbeitung, or
  – Systems, Analysis and Products in Data Processing
• Oracle/PeopleSoft/J. D. Edwards (J.D. Orisoft)
• Microsoft Great Plains, aimed at smaller companies
  – SAP Business One is competing product
• Local Country Solutions (limited scope)
  – e.g. China
SAP R/3 Enterprise
SAP ECC (Enterprise Central Component) Function Modules

R/3
Client / Server
ABAP/4

- SD: Sales & Distribution
- MM: Materials Mgmt.
- PP: Production Planning
- QM: Quality Mgmt.
- PM: Plant Maint.
- HR: Human Resource
- FI: Financial Accounting
- CO: Controlling
- AM: Fixed Assets Mgmt.
- PS: Project System
- WF: Workflow
- IS: Industry Solutions
Business Functions / Organization

- Marketing / Sales
- Supply Chain
- Finance & Accounting / HR
Business Processes

• Sales
• Order to Cash
• Procurement to Pay
• Supply Chain Planning
• Manufacturing / Production
• Innovate / Commercialize
• People / Human Resources
• Finance / Record and Report
ERP System Implementation

• **Configuration**: process of making standard software fit your business
  – Achieved via setting defined parameters, config table entries
  – SAP: Over 8000 configuration decisions
  – Data structuring
    • Sales divisions, distribution channels

• **Modifications**: Rewriting standard system code
  – Not recommended because of compatibility problems when updated versions of the software are installed.
ERP System Implementation

- **Customization**: Writing code
  - Forms
  - Reports
  - Interfaces
    - Third-party software solutions
    - External Partners
    - Legacy Systems
  - Conversion of data
  - Enhancements to system logic - at SAP-specified user exits
ERP System Implementation

• **Change Management**: People side of
  – Design consistent with system / process ‘best practices’
  – Documentation
  – Training
  – Manage the organization / politics

• **Huge / Risky Projects**:  
  – Affects the basics of how an organization operates
  – $$ $$
  – Need help of experts
Break Time
Discuss (5 minutes)

What to you know of the following ...

• Enron
• WorldCom
• Arthur Anderson
Control Failure: Enron

• **Background:**
  - Natural Gas Trading company that grew significantly as that market was deregulated
  - To further growth it diversified into other industries (electricity plants, pulp and paper, water plants)
  - Gained revenue by trading contracts for these products and services (1996 – 2000)
  - Fueled stock price increases and rated as an innovative large company

• **Control Failures:**
  - Pushed envelope in using alternate (aggressive) revenue valuation techniques for contracts (Mark-to-market accounting)
  - Hid capital costs and risks in off balance sheet, special purpose entities.
  - Booked costs of cancelled projects as assets due to ‘technicalities’ (no official letter)
  - External Auditors (Arthur Anderson) had conflicted incentives for local partners (were able to overrule critical reviews of decisions by AA partners)
  - Audit committee didn’t have technical knowledge to question accounting practices, conflicts of interest, pressure not to raise questions
Control Failure: Enron

• Results / Outcomes:
  ❖ Company went bankrupt in 2001 (largest at time – eclipsed by WorldCom)
    ❖ Estimated loss of $62B shareholder value
    ❖ Layoff of ~22,000 employees
    ❖ Many folks lost $$$ (including Enron Employees with stock in 401-K, pensions (e.g. Florida State Pension fund), etc.)
  ❖ Many executives indicted – some sentenced to prison
  ❖ Arthur Anderson was external auditor for Enron
    ❖ Convicted of destroying documents (30,000) relevant to SEC investigation (later overturned)
    ❖ Company lost customers, ceased operating (25,000 people lost a job)
  ❖ One Driver for regulations / legislation like Sabanes-Oxley Act (more about ‘SOX’ later)

• References / Links:
  ❖ SAP GRC for Dummies by Vu Broady, Denice & Roland, Holly. Published by Wiley Publishing, Inc., 2008
Results of Massive Failures

- Sarbanes – Oxley Act (US)
- SOX (Canada)
- SOX (Japan)
- SOX (China)
- SEC Regulations (US)
- Combined Code on Corp Governance (UK)
- Eighth EU Directive (Audit Directive)
- Stock Corporation Act (Germany & Austria)
- Basil II and III (EU Banking)
- Various others
Business Risk Drivers

External Financial Reporting regulations
- Sarbanes – Oxley Acts
- GAAP
- Various Others

Other Reg’s
- FDA
- Chemical Control Laws
- GMP
- Import Export

Organization’s Objectives & Policies
- Balanced Scorecard
- KPI’s
- Process Improvement
- Profitability

Risks
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.
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Company Background

Global Bike Inc., (GBI) is a world class bicycle company serving the professional and “prosumer” cyclists for touring and off-road racing. GBI’s riders demand the highest level of quality, toughness and performance from their bikes and accessories.

Product development is the most critical element of GBI’s past and future growth. GBI has invested heavily in this area, focusing on innovation, quality, safety and speed to market. GBI has an extensive innovation network to source ideas from riders, dealers and professionals to continuously improve the performance, reliability and quality of its bicycles.

In the touring bike category, GBI’s handcrafted bicycles have won numerous design awards and are sold in over 10 countries. GBI’s signature composite frames are world-renowned for their strength, lightweight and easy maintenance. GBI bikes are consistently ridden in the Tour de France and other major international road races. GBI produces two models of their signature road bikes, a deluxe and professional model. The key difference between the two models is the type of wheels used, aluminum for the basic model and carbon composite for the professional model.

GBI’s off-road bikes are also recognized as incredibly tough and easy to maintain. GBI trail bikes are the preferred choice of world champion off-road racers and have become synonymous with performance and strength in one of the most grueling sports in the world. GBI produces two types of off-road bike, a men’s and women’s model. The basic difference between the two models is the smaller size and ergonomic shaping of the women’s frame.

GBI also sells an accessories product line comprised of helmets, t-shirts and other riding accessories. GBI partners with only the highest quality suppliers of accessories which will help enhance riders’ performance and comfort while riding GBI bikes.
Exercise Objectives

• Understand how Connection is made to operational SAP system
• Each person logon to GBI system
  – Password reset
• Review SAP User Interface navigation and common components
• Add ‘favorite’ transactions and use each:
  – SE16N – Table display
  – SU01D – Display user
  – SPRO – Configuration access
• Logoff
Three-tier Client/Server Architecture
To log on to an R/3 system with the SAP Gui, you need the proprietary SAP Gui (Graphical User Interface) software loaded on your system and an internet connection.
Configured SAP Gui

Select System: double-click or Logon button
Logging On

Enter Client

Enter User (R/3 Account)

Enter Password (R/3 Account)

Don’t worry about language—English will default in
Configured SAP Gui

Select System: double-click or Logon button
Logging On

Enter Client

Enter User (R/3 Account)

Enter Password (R/3 Account)

Don’t worry about language—English will default in
On the first time logging in to a new account, you will have to change the password—try To remember your new Password WITHOUT WRITING IT DOWN!

Then a message or two
Then . . . .
Success !!

SAP Easy Access
• Master Data Entry
• Transaction Data Entry
# SAP Access Details

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<td>Client Name</td>
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<td>Student Userids</td>
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</tr>
<tr>
<td>Student Passwords (case sensitive)</td>
<td>AISDevel</td>
</tr>
</tbody>
</table>
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SPRO: Implementation Guide (IMG)

Display IMG

Where Configuration Takes Place