MIS 5121: Enterprise Resource Planning Systems
Week 2: Business Process – System Components, Assertions, Procure to Pay
Introduction: New Students

Please Prepare a Name Card

- Name

- Why in this course
  
  OK to say ‘it’s Just a Requirement

- Unique experience, skills you bring to the class
  
  Include 1 Supply Chain you’ve dealt with and in what Role (e.g. customer, ___)

Control Failure: WorldCom

• **Background:**
  - American communications – esp. discount Long Distance service
  - Rapidly grew by acquisition – largest being MCI (challenging AT&T)
  - CEO Bernard Ebbers very wealthy from stock price increases & company loans for personal investments (Canada ranch, timberlands, shipyard)
  - ~ 2000 telecom industry was declining
  - Failed merger with Sprint

• **Control Failures: mid-1999 thru 2002**
  - Booked ‘line costs’ (interconnection expenses with other telecom companies) as capital $$ vs. expense
  - Inflated revenue with bogus accounting entries from ‘corporate unallocated revenue accounts’
  - Disguised declining earnings
Control Failure: WorldCom

- **Results / Outcomes:**
  - Internal auditors secretly met and found $3.8 B in fraud, assets inflated by ~ $11 B
  - Arthur Anderson withdrew audit opinion for 2001
  - Company went bankrupt in 2002 (largest at time – eclipsed by Lehman Bros)
    - Estimated loss of $180B shareholder value
    - Layoff of 5,100 employees initially; 30,000 eventually
  - Many executives indicted – some sentenced to prison
  - Former directors settled class-action suit ($18 M paid by directors themselves
  - Company reorganized as MCI – now absorbed into Verizon (2005)
  - Inspiration for ‘Fun with Dick and Jane’ movie remake

- **References / Links:**
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.

 Contains

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

Errors & Fraud

Minimized by

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

Risks

Arise through

- Procurement
- Production
- Order to $$
- Finance
- IT
- Quality
- Logistics
- HR

Must be observed / achieved in

Business Processes
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.
Assertion

Definition

‘a confident and forceful statement of fact or belief’

Oxford Dictionaries

In Auditing: ‘what management claims’
The Accounting Equation

Assets = Liabilities + Owner’s Equity

• Always True
• At all times
• Without Exception
The Accounting Equation

**Assets = Liabilities + Owner’s Equity**

- **Assets**: All Property Owned by Company
- **Liabilities**: All debts Company has outstanding
- **Owner’s Equity (aka Shareholder’s Equity)**: Company’s ownership interest in its assets after all debts have been paid
  
  **Assets – Liabilities = Owner’s Equity**
# My Asset is Your Liability

<table>
<thead>
<tr>
<th>Item</th>
<th>You</th>
<th>Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortgage Loan</td>
<td>Liability</td>
<td>Asset</td>
</tr>
<tr>
<td>Checking Account Balance</td>
<td>Asset</td>
<td>Liability</td>
</tr>
<tr>
<td>Saving Account Balance</td>
<td>Asset</td>
<td>Liability</td>
</tr>
</tbody>
</table>

Important to understand the perspective of the account holder / owner (which hat are you wearing?)
Financial Statements

Example:
Financial Statements

Example:
Balance Sheet

**Assets:** All Property Owned by Company

- __________
- __________
- __________
- __________
- __________

**Liabilities:** All debts Company has outstanding

- __________
- __________
- __________
- __________
- __________
Balance Sheet

**Assets:** All Property Owned by Company

- **Cash and Cash Equivalents:**
  - Balances in checking, savings accounts
  - Investments maturing within 3 months
- **Inventory:** Goods in stock for Sale or Use
- **Accounts Receivable:** Amounts
- **Property, Plant and Equipment:** Assets not easily converted to cash. e.g. buildings, mfg equipment, computers, vehicles, computers, goodwill, etc.
Balance Sheet

**Liabilities:** All debts Company has outstanding

- **Accounts Payable:** Amounts due to suppliers for goods or services already received
- **Notes Payable:** Contractual obligations due to lenders (e.g. bank loans, long term leases)

**Owners Equity:** (aka Stockholder Equity)

- **Common Stock:** $$ invested by company owners
- **Retained Earnings:** Sum of all net income over business life not distributed to owners as dividend
Balance Sheet

Current vs. Long Term

- Common breakdown of Assets and Liabilities
- **Current:** within 12 months or less

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convert to Cash</td>
<td>Paid Off</td>
</tr>
<tr>
<td>e.g. Accounts Receivable</td>
<td>e.g. Accounts Payable</td>
</tr>
<tr>
<td>Inventory; Cash</td>
<td>Next 12 months Notes Payment</td>
</tr>
</tbody>
</table>

- **Long Term (non-Current):** Everything not current
  e.g. Property, Plants, Equipment, Note Payments > 12 months
## Temple University
Of The Commonwealth System of Higher Education
Consolidated Balance Sheets
(in thousands)

<table>
<thead>
<tr>
<th></th>
<th>June 30, 2015</th>
<th>June 30, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current assets:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>$189,008</td>
<td>$182,512</td>
</tr>
<tr>
<td>Investments and self-insurance trust funds</td>
<td>894,418</td>
<td>850,003</td>
</tr>
<tr>
<td>Accounts, loans and contributions receivable, net</td>
<td>379,796</td>
<td>416,052</td>
</tr>
<tr>
<td>Inventories and other assets</td>
<td>51,437</td>
<td>38,551</td>
</tr>
<tr>
<td>Deposits with trustees</td>
<td>31,743</td>
<td>24,554</td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td>$1,546,402</td>
<td>$1,511,672</td>
</tr>
<tr>
<td><strong>Non-current assets:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts, loans and contributions receivable, net</td>
<td>138,806</td>
<td>128,194</td>
</tr>
<tr>
<td>Investments and self-insurance trust funds</td>
<td>573,771</td>
<td>551,527</td>
</tr>
<tr>
<td>Deposits with trustees</td>
<td>79,694</td>
<td>160,228</td>
</tr>
<tr>
<td>Other assets</td>
<td>27,389</td>
<td>28,724</td>
</tr>
<tr>
<td>Property, plant and equipment, net</td>
<td>1,771,339</td>
<td>1,729,246</td>
</tr>
<tr>
<td>Goodwill and other intangibles</td>
<td>22,415</td>
<td>22,988</td>
</tr>
<tr>
<td>Funds held in trust by others</td>
<td>142,716</td>
<td>145,432</td>
</tr>
<tr>
<td><strong>Total non-current assets</strong></td>
<td>$2,756,130</td>
<td>$2,766,339</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>$4,302,532</td>
<td>$4,278,013</td>
</tr>
<tr>
<td><strong>Current liabilities:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts payable and accrued expenses</td>
<td>$381,635</td>
<td>$386,808</td>
</tr>
<tr>
<td>Deferred revenue</td>
<td>53,494</td>
<td>54,907</td>
</tr>
<tr>
<td>Current portion of long-term debt</td>
<td>34,768</td>
<td>26,131</td>
</tr>
<tr>
<td>Current portion of accrued pensions and postretirement benefits</td>
<td>598</td>
<td>641</td>
</tr>
<tr>
<td><strong>Total current liabilities</strong></td>
<td>$470,495</td>
<td>$468,487</td>
</tr>
<tr>
<td><strong>Non-current liabilities:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accrued expenses and other liabilities</td>
<td>266,239</td>
<td>276,861</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>1,166,162</td>
<td>1,198,599</td>
</tr>
<tr>
<td>Refundable federal student loans</td>
<td>51,252</td>
<td>50,794</td>
</tr>
<tr>
<td>Accrued pensions and postretirement benefits</td>
<td>163,733</td>
<td>130,239</td>
</tr>
<tr>
<td><strong>Total non-current liabilities</strong></td>
<td>$1,647,386</td>
<td>$1,656,493</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>$2,117,881</td>
<td>$2,124,980</td>
</tr>
<tr>
<td><strong>Net assets:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unrestricted</td>
<td>1,651,970</td>
<td>1,642,977</td>
</tr>
<tr>
<td>Temporarily restricted</td>
<td>125,279</td>
<td>137,569</td>
</tr>
<tr>
<td>Permanently restricted</td>
<td>407,402</td>
<td>372,485</td>
</tr>
<tr>
<td><strong>Total net assets</strong></td>
<td>$2,184,651</td>
<td>$2,153,031</td>
</tr>
<tr>
<td><strong>Total liabilities and net assets</strong></td>
<td>$4,302,532</td>
<td>$4,278,013</td>
</tr>
</tbody>
</table>
Financial Statements

Example:
Income Statement

- Shows financial performance over a period of time (usually a year)
  - vs. Balance Sheet point in time view
  - Balance Sheet: photo, Income Stmt: video
- Also called Profit and Loss (P&L) Statement
- Typical Organization of Statement:
  - Revenue
  - Expenses
  - Net Income
### Temple University
Of The Commonwealth System of Higher Education

**Consolidated Statement of Activities**
For the Year Ended June 30, 2014
(in thousands)

#### Revenues:

<table>
<thead>
<tr>
<th>Source</th>
<th>Unrestricted Net Assets</th>
<th>Temporarily Restricted Net Assets</th>
<th>Permanently Restricted Net Assets</th>
<th>Total Net Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and fees (net of discounts of $90,499)</td>
<td>$672,914</td>
<td></td>
<td></td>
<td>$672,914</td>
</tr>
<tr>
<td>Commonwealth of Pennsylvania appropriation</td>
<td>126,624</td>
<td></td>
<td></td>
<td>126,624</td>
</tr>
<tr>
<td>Federal grants and contracts</td>
<td>123,713</td>
<td></td>
<td></td>
<td>123,713</td>
</tr>
<tr>
<td>Commonwealth of Pennsylvania grants and contracts</td>
<td>12,056</td>
<td></td>
<td></td>
<td>12,056</td>
</tr>
<tr>
<td>Local grants and contracts</td>
<td>3,418</td>
<td></td>
<td></td>
<td>3,418</td>
</tr>
<tr>
<td>Private grants and contracts</td>
<td>34,761</td>
<td></td>
<td></td>
<td>34,761</td>
</tr>
<tr>
<td>Contributions for operations and endowments</td>
<td>23,737 $21,114 $15,337</td>
<td></td>
<td></td>
<td>60,188</td>
</tr>
<tr>
<td>Investment return</td>
<td>37,922 2,634 367</td>
<td></td>
<td></td>
<td>40,923</td>
</tr>
<tr>
<td>Sales of educational activities</td>
<td>8,649</td>
<td></td>
<td></td>
<td>8,649</td>
</tr>
<tr>
<td>Auxiliary enterprises</td>
<td>95,133</td>
<td></td>
<td></td>
<td>95,133</td>
</tr>
<tr>
<td>Patient care activities (net of bad debt expense of $47,318)</td>
<td>1,497,846</td>
<td></td>
<td>1,497,846</td>
<td></td>
</tr>
<tr>
<td>Other sources</td>
<td>47,698</td>
<td></td>
<td></td>
<td>47,698</td>
</tr>
<tr>
<td>Net assets released from restrictions</td>
<td>17,036 (17,036)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total revenues</strong></td>
<td>2,701,507</td>
<td>6,712</td>
<td>15,704</td>
<td>2,723,923</td>
</tr>
</tbody>
</table>

#### Expenses:

<table>
<thead>
<tr>
<th>Category</th>
<th>Unrestricted Net Assets</th>
<th>Temporarily Restricted Net Assets</th>
<th>Permanently Restricted Net Assets</th>
<th>Total Net Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational and general:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction</td>
<td>433,311</td>
<td></td>
<td></td>
<td>433,311</td>
</tr>
<tr>
<td>Research</td>
<td>166,235</td>
<td></td>
<td></td>
<td>166,235</td>
</tr>
<tr>
<td>Public service</td>
<td>16,433</td>
<td></td>
<td></td>
<td>16,433</td>
</tr>
<tr>
<td>Academic support</td>
<td>156,850</td>
<td></td>
<td></td>
<td>156,850</td>
</tr>
<tr>
<td>Student services</td>
<td>76,731</td>
<td></td>
<td></td>
<td>76,731</td>
</tr>
<tr>
<td>Institutional support</td>
<td>126,527</td>
<td></td>
<td></td>
<td>126,527</td>
</tr>
<tr>
<td>Student aid</td>
<td>12,016</td>
<td></td>
<td></td>
<td>12,016</td>
</tr>
<tr>
<td><strong>Total educational and general</strong></td>
<td>988,103</td>
<td></td>
<td></td>
<td>988,103</td>
</tr>
<tr>
<td>Auxiliary enterprises</td>
<td>118,558</td>
<td></td>
<td></td>
<td>118,558</td>
</tr>
<tr>
<td>Patient care activities</td>
<td>1,580,321</td>
<td></td>
<td></td>
<td>1,580,321</td>
</tr>
<tr>
<td><strong>Total expenses</strong></td>
<td>2,686,982</td>
<td></td>
<td></td>
<td>2,686,982</td>
</tr>
</tbody>
</table>
Debits and Credits

**Single-Entry:** e.g. personal checkbook

**Double-Entry:** Required for GAAP

- Equal Debits and Credits made in accounts for each transaction
- Enforces Accounting Equation

\[
\text{Assets} = \text{Liabilities} + \text{Owner’s Equity}
\]

\[
\text{Debits} = \text{Credits}
\]
Debits and Credits

• **Example 1:** Company uses $40,000 cash to purchase new equipment

\[
\text{Assets} = \text{Liabilities} + \text{Owner’s Equity} \\
-40,000 = - - + - \\
+40,000
\]

• **Example 2:** Company purchased equipment with a loan

\[
\text{Assets} = \text{Liabilities} + \text{Owner’s Equity} \\
+40,000 = +40,000 + -
\]
Debits (Dr) and Credits (Cr)

- Dr and Cr only designate the two halves of each transaction - also known as a ‘Journal Entry’
- Impact on balance depends on type of account

<table>
<thead>
<tr>
<th>Balance Sheet Accounts</th>
<th>Income Statement Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asset</strong></td>
<td></td>
</tr>
<tr>
<td>Debit</td>
<td>Credit</td>
</tr>
<tr>
<td>Increase (+)</td>
<td>Decrease (-)</td>
</tr>
<tr>
<td>Debit</td>
<td>Credit</td>
</tr>
<tr>
<td>Increase (+)</td>
<td>Decrease (-)</td>
</tr>
<tr>
<td>Liability</td>
<td></td>
</tr>
<tr>
<td>Debit</td>
<td>Credit</td>
</tr>
<tr>
<td>Decrease (-)</td>
<td>Increase (+)</td>
</tr>
<tr>
<td>Debit</td>
<td>Credit</td>
</tr>
<tr>
<td>Decrease (-)</td>
<td>Increase (+)</td>
</tr>
</tbody>
</table>

Copyright 2013 Money-Zine.com
Debits and Credits

- **Example 1**: Loan Funds Received
  
  Dr. Cash \hspace{1cm} 10,000
  
  Cr. Loan ABC Bank \hspace{1cm} 10,000

- **Ex 2**: Cash Sale
  
  Dr. Cash \hspace{1cm} 1,000
  
  Cr. Sales \hspace{1cm} 1,000

- **Ex 3**: Pay Electricity Bill
  
  Dr. Electricity Expense \hspace{1cm} 500
  
  Cr. Cash \hspace{1cm} 500
General Ledger (G/L)

- Place where all company’s journal entries get recorded
- Original: paper ledger  Today: accounting software
- Key financial document-Source for All financial statements

<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
<th>A/C #</th>
<th>Debit (Dr)</th>
<th>Credit (Cr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 May 20XX</td>
<td>Cash</td>
<td>301</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loan - ABC Bank</td>
<td>401</td>
<td></td>
<td>10,000</td>
</tr>
</tbody>
</table>

Loan funds received

<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
<th>A/C #</th>
<th>Debit (Dr)</th>
<th>Credit (Cr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 May 20XX</td>
<td>Cash</td>
<td>301</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sales</td>
<td>101</td>
<td></td>
<td>1000</td>
</tr>
</tbody>
</table>

Sale of inventory

<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
<th>A/C #</th>
<th>Debit (Dr)</th>
<th>Credit (Cr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 May 20XX</td>
<td>Electricity expense</td>
<td>201</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cash</td>
<td>301</td>
<td></td>
<td>500</td>
</tr>
</tbody>
</table>

Payment of electricity bill
T-Accounts

- Tool to view activity in an account over period of time
- Useful tool to visualize impact of transaction series
- Beginning and ending balances sometimes included

<table>
<thead>
<tr>
<th>ASSETS</th>
<th>=</th>
<th>LIABILITIES</th>
<th>+</th>
<th>EQUITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debit</td>
<td></td>
<td>Debit</td>
<td></td>
<td>Debit</td>
</tr>
<tr>
<td>In More Increase</td>
<td></td>
<td>Out Less Decrease</td>
<td></td>
<td>In More Increase</td>
</tr>
</tbody>
</table>

```
ASSETS
Debit Credit
In More Increase Out Less Decrease

LIABILITIES
Debit Credit
Out Less Decrease In More Increase

EQUITY
Debit Credit
In More Increase Out Less Decrease
```
T-Accounts

- Tool to view activity in an account over period of time
- Useful tool to visualize impact of transaction series
The Accounting Equation:

\[
A = L + E
\]

where:
- \(A\) is Assets
- \(L\) is Liabilities
- \(E\) is Equity

Debits (D) are shown entering from the bottom, and Credits (C) leaving from the top.

T-Account:

\[
\text{Rv (Revenue)} - \text{Ex (Expense)} = \text{Profit or Loss}
\]
General Ledger (G/L) in SAP

- Global Bike Inc. company G/L accounts are in three groups

<table>
<thead>
<tr>
<th>Account Group</th>
<th>Number Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS – Balance Sheet</td>
<td>100000 – 399999</td>
</tr>
<tr>
<td>PL – Profit and Loss</td>
<td>400000 – 999999</td>
</tr>
<tr>
<td>RA – Reconciliation</td>
<td>110000 – 310000</td>
</tr>
</tbody>
</table>

**Profit and Loss (P&L)** accounts track the income and expenses (aka Income Statement Accounts). At end of fiscal year, “closed” to **Retained Earnings** balance sheet account.

**Reconciliation Accounts** track changes to sub-ledger accounts (e.g. for each vendor, customer). When sub-ledger account posted, automatic posting made to **Reconciliation** G/L account to keep the G/L balanced.
Assertion

Definition

‘a confident and forceful statement of fact or belief’

Oxford Dictionaries

In Auditing: ‘what management claims’
Management Assertions

- **Occurrence:**
  - Recorded transactions exist
  - Transactions actually occurred during the period

- **Existence:**
  - Evidence the assets, liabilities and equity balances exist (have real world counterpart)
  - Exist at a given date

- **Timing (cutoff):**
  - Transactions recorded in proper accounting period
  - Transactions recorded with correct dates

- **Completeness:**
  - Existing transactions are recorded
  - All transaction that should be included are in fact included
SAP Design for ‘Completeness’

- In SAP, there are very few delete options:

- **Implication**: Don’t save if things don’t look 100% correct! Exit the transaction and start over

- **Implication**: Once transaction included, always included
Management Assertions

• **Accuracy:**
  • Transactions have been recorded with correct amounts
  • Transactions recorded in the appropriate accounts

• **Valuation:**
  • Included at appropriate amounts
  • Value adjustments are properly determined and recorded

• **Rights (Ownership):**
  • Entity holds or controls rights of ownership to assets
  • Liabilities faithfully represent entity’s obligations
  • Rights exist as of given date

• **Summarization / Presentation:**
  • Transactions are included in the master files
  • Transactions correctly summarized
Management Assertions

‘a confident statement of fact’ if:

- Occurrence  
  Income Statement
- Completeness  
  all
- Accuracy  
  all
- Timing  
  all
- Classification  
  all
- Summarization / Presentation  
  all
- Existence  
  Balance Sheet
- Rights (Ownership)  
  Balance Sheet
- Valuation  
  Balance Sheet
Management Assertions

Taxonomy for class

- Occurrence / Existence (timing)
- Completeness
- Accuracy / Valuation
- Rights (Ownership)
- Summarization / Presentation
WorldCom: How the Fraud took place

• Operating Expenses to Assets
  - CFO’s directions affected the income statement:

  Revenues: xxx (no change)
  COGS: xxx (no change)
  Operating Expenses:
    Fees paid to lease other companies phone networks: xxx (Huge Decrease)
    Computer expenses: xxx (Huge Decrease)
  NET INCOME: xxx (Huge Increase)

= HAPPY INVESTORS
How the Fraud took place (con’t)

• Operating Expenses into Assets
  – WorldCom’s journal entry for $500 million in computer expenses:

  | Computer Assets   | 500 million |
  | Cash             | 500 million |

Documents to support entry never found!

• Huge losses turned into enormous profits.
  – $1.38 billion in net income in 2001

• Inflated the company’s value in its assets
The existence of controls imply the existence of assertions.

Assertions require the existence of controls.
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.
Application Controls (ERP)

• Controls designed into ERP System (e.g. SAP)
• Important part of an integrated information system – ERP system
• Embedded within system and how the application works
• Essential to the system functioning properly
• For additional information about these controls see ISACA (Information System Audit and Control Association), website www.isaca.org.
Application Controls (ERP)

- Field check: ________________________________
- Sign check: ________________________________
- Range check: ________________________________
- Limit check: ________________________________
- Size (or capacity) check: ________________________________
- Completeness check: ________________________________
- Validity check: ________________________________
- Reasonableness test: ________________________________
Application Controls (ERP)

• **Field check**: data matches the structural definition of the data element  
  e.g. characters (numeric vs. character), # decimal places, etc.

• **Sign check**: data matches he defined sign limits (if any) for the field  
  e.g. credit values must have negative sign in accounting entries

• **Range check**: data is within a specified range of values  
  e.g. the month of a person's date of birth should lie between 1 and 12.

• **Limit check**: Unlike range checks, data are checked for one limit only, upper OR lower  
  e.g. data should not be greater than 2
Application Controls (ERP)

- **Size (or capacity) check**: data results within defined or dynamic size / capacity
  
e.g. maximum quantity per bin in inventory storage type

- **Completeness check**: all necessary data values are entered to allow correct processing
  
e.g. data fields entered defined completion rules for transaction

- **Validity check**: data matches cross-reference ‘check’ table entries
  
e.g. Company code matches configured values

- **Reasonableness test**: data reasonable in relation to other supplied data
  
e.g. execution Date is today +/- X days (common variation)
Integration of:
- Business Organization
- Business Process
- ERP / SAP Functions
Business Functions / Organization

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

Customers

Suppliers
Global Bike Organization

Marketing / Sales

Supply Chain

Warehouse Distribution

Conversion

Procurement

Finance / HR

Customer Service

Billing

Accounts Receivable

Accounts Payable

Customers

Suppliers
Business Process

Definition

‘A series of logically related activities / tasks performed together to produce a defined set of results.’

Business Dictionary
Procurement Process

1. Determination of reqmts
2. Source determination
3. Vendor selection
4. PO processing
5. PO monitoring
6. Goods receipt
7. Invoice verification
8. Payment processing
Procurement at GBI

- Accounts Receivable
- Billing
- Finance / HR
- Supply Chain
- Conversion
- Warehouse
- Distribution
- Goods Receipt
- Conversion
- Vendor / Sourcing
- Purchase Order
- Procurement
- Invoice Verify
- Accounts Payable
- Payment

Customer Service
Marketing / Sales
Procurement Functions in SAP

- Goods Receipt
- Reqmts
- Purchase Order
- Vendor / Sourcing
- Invoice Verify
- Payment

R/3

Client / Server

ABAP/4

Suppliers

- Sales & Distribution
- Material Mgmt.
- Production Planning
- Quality Mgmt.
- Plant Maint.
- Human Resource
- Financial Accounting
- Controlling
- Fixed Assets Mgmt.
- Project System
- Workflow
- Industry Solutions
# Procurement Functions in SAP

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<th>SD</th>
<th>MM</th>
<th>QM</th>
<th>FI</th>
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</table>
Order to Cash Process

Fitter Snacker’s Sales Process

Sales
- Sales order
- Price quote

Warehouse
- Pick, pack, and ship

Receiving
- Returns

Accounting
- Invoice
- Payment
Order to Cash at GBI
Order to Cash Functions in SAP

Custome

Payment
Invoice
Delivery
Order
Inquiry

Customers

R/3
Client / Server
ABAP/4

SD
Sales & Distribution

OM
Quality Mgmt.

PP
Production Planning

MM
Material Mgmt.

HR
Human Resource

PM
Plant Maintenance

WF
Workflow

CO
Controlling

AM
Fixed Assets Mgmt.

FI
Financial Accounting

PS
Project System

IS
Industry Solutions
## Order to Cash Functions in SAP

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<tr>
<th>Task</th>
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</table>
Break Time
Purchase-to-Pay Exercise

• Primary Learning objectives
  – Experience the steps in a typical purchasing transaction
  – See how an ERP system handles typical purchasing transactions
  – Work through the procedures involved in a test of transactions
  – Investigate related application controls in an ERP system

• Secondary learning objectives:
  – See the integration between materials management (MM) and financial accounting (FI) modules of SAP
  – View some basic FI module settings than enable proper system functions
Exercise 1: Purchase to Pay

• Agenda
  – Today: Logging On; Steps 1 - 6
  – Next Class (February 1): Steps 7 - 14
  – Due February 4 @ 11:59 PM: Assignment Submission
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
# SAP Access Details

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<td>SAPGUI - System Number</td>
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</table>
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
Enable ‘Expert’ Mode

Also: Extras -> Technical Details
Exercise 1: Purchase to Pay

- Agenda
  - Today: Tasks 1 - 6
  - Next Class (Feb 2): Tasks 7 - 14
  - Due Feb 5 11:59 PM: Assignment Submission
Exercise 1: Purchase to Pay

• Task 1.1 - Examine the Chart of Accounts
  – Menu: Accounting ► Financial Accounting ► General Ledger ► Information System ► General Ledger Reports ► Master Data ► Chart of Accounts
  – Transaction: S_ALR_87012326

• Task 1.2-3 - Examine General Ledger Accounts
  – Menu: Accounting ► Financial Accounting ► General Ledger ► Master Records ► G/L Accounts ► Individual processing ► Centrally
  – Transaction: FS00
Exercise 1: Purchase to Pay

• Task 2 - Examine System Settings
  – Menu: Tools ▶ Customizing ▶ IMG ▶ Execute Project
  – Transaction: SPRO
  Do not make any changes to the system while you are in the IMG.

• Task 3 - Create a Master Material Record
  – Menu: Materials Management ▶ Material Master ▶ Material ▶ Create (Special) ▶ Trading Goods
  – Transaction: MMH1
Exercise 1: Purchase to Pay

- Task 4 - Create a Vendor Master Record
  - Menu: **Logistics** ▶ **Materials Management** ▶ **Purchasing** ▶ **Master Data** ▶ **Vendor** ▶ **Central** ▶ **Create**
  - Transaction: **XK01**

- Task 5 – Create Information Record for the Vendor/Material
  - Menu: **Logistics** ▶ **Materials Management** ▶ **Purchasing** ▶ **Master Data** ▶ **Info Record** ▶ **Create**
  - Transaction: **ME11**
Exercise 1: Purchase to Pay

- Task 6 - Check Status of Various Accounts
  - Check Inventory: MM Inventory Quantity
    Transaction: **MMBE (Stock Overview)**

  - Check GL Inventory, GL Cash, GL A/P, GR/IR (Goods Received / Invoice Received):
    Transaction: **S_ALR_87012291 (Line Item Journal)**

  - Check A/P Vendor sub-ledger:
    Transaction: **FBL1N (Vendor line item display)**
Activity to Date in SAP


Transaction: S_ALR_87012291

Enter company code ##FS, and Fiscal Year then click execute icon

- Hit ‘Sort in Ascending Order’ icon
- Highlight & remove all current ‘Sort Fields’ (Double arrow to right).
- Choose the listed fields 1 by 1 from the list on the right and move to the ‘Sort Fields’ list (single arrow to left).
- Click Copy icon
Activity to Date in SAP

Activity from previously executed process steps (e.g. Sales Process, etc.) are listed.

**Note:** Offsetting Debits and Credits for each document

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Extra Slides
Reading Assignment Questions:

- What is difference between ERP and SAP?
- What is the difference between compliance driven and profitability driven controls?
- Internal control system (ICS) generally focuses on compliance with legal regulation and profitability of business process. Can we look the ‘compliance’ as baseline objective and ‘profitability’ as additional objective?
- Does organization need to audit profitability, efficiency focused controls as legal controls are? How to bridge between legal reqmt of ICS vs. practical structure of ICS?
- How do you deal with client that is difficult to work with (e.g. not providing info to do your job)?
- What is error risk and what is discovery risk? Differences?
- With ICS, auditing, IT as an aid, etc. can we ever reach an absolute assurance position?
- Why is it hard to have a preventative control in ERP?
- Balanced Scorecard is a good tool for measuring and controlling the activities of an organization, which can work perfectly in an ERP environment. If it is used, when should we use the ICS?
- There are so many different audits. Year end, transaction, software, etc. Which one is the best for each company to perform?
- Different countries have their own version of SOX. How does a company with locations in multiple countries know which version they should follow? Is it all based on where they issued stock? Or is there some other reasoning?
- Why do you feel that each country has adopted and modified the SOX vs. agreeing and implementing a universal set of laws as the standard for all audits practices?
- Who is ultimately responsible for the failure to comply with the SOX laws? What governing body upholds the penalty either on a company level or world level?
Reading Assignment Questions:

- When outsourced transaction audits occur in different country, does outsourcing company have to meet compliance for both countries if falling under different compliance regions?

- Could you please clarify the difference between IT general controls and general application controls? Provide one example for each of those categories.

- Do ICS controls that focus on profitability and efficiency need to be audited just as controls focused on legal requirements are?

- The concepts of ICS and GRC are introduced in book. I understand ICS is part of integrated GRC approach but sometimes the terms are used interchangeably in book (e.g. section 1.5). What differentiates these practices?