Learning Objectives:

1. Project identification and selection process.
2. SWOT analysis
3. Corporate strategic planning: mission statement, objective statements, and competitive strategies
Project Identification and Selection: a part of Systems Development Life Cycle (SDLC)

Need for a permanent improvement of CIS

The need for permanent improvement of CIS

1. the cost of CIS (design development, outsourcing, implementation, maintenance, etc.) has risen steadily and approaches 40% of total expenses in some organizations;

2. many CIS cannot handle applications that cross organizational boundaries, various technical platforms, etc.;

3. many CIS often do not address the critical business functions/problems as a whole nor support strategic business applications;

4. data redundancy is often out of control, and users may have little confidence in the quality of data;

5. CIS systems’ maintenance costs are out of control as old, poorly planned systems must constantly be revised;

6. application backlogs (or, D&D delays) often extend three years or more, and frustrated end users are forced to create (or purchase) their own systems, often creating redundant databases and incompatible systems in the process.
**Project Identification and Selection stage consists of**

1. Step # 1: identifying potential development projects
2. Step # 2: classifying and ranking projects
3. Step # 3: selecting projects for development

**Step # 1: Identifying potential development projects.**

<table>
<thead>
<tr>
<th>This process can be performed by:</th>
<th>Project’s Characteristics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Top IT manager</td>
<td>*) greater strategic focus, largest project size, longest project duration</td>
</tr>
<tr>
<td>2. Steering Committee</td>
<td>*) cross-functional focus, formal cost-benefit analysis, larger and riskier projects</td>
</tr>
<tr>
<td>3. User Department</td>
<td>*) narrow, non-strategic focus, faster development, fewer users, management layers, and business functions</td>
</tr>
<tr>
<td>4. Development Group</td>
<td>*) “integration with existing system” focus, fewer development delays, more detailed project analysis</td>
</tr>
</tbody>
</table>

Project Manager / Team may identify multiple to-be-developed CIS projects

The question is How to select best projects? How to prioritize projects? What are selection criteria? What are good (reliable) selection criteria?
Step # 2: Classifying and Ranking IS Development Projects.

Possible Evaluation Criteria:

1. **Value Chain Analysis**
   - which activities/CIS features add value and costs when developing SW, CIS, products and/or services

2. **Strategic Alignment**
   - Does project help the organization achieve its strategic objectives and long-term goals

3. **Potential Benefits**
   - extra money, extra customers, extra quality, etc.

4. **Resource Availability**
   - amount and types of resources

5. **Project Size/Duration**
   - number of individuals and the length of time

6. **Technical Difficulty/Risks**
   - technical difficulty (equipment, hardware, software, access to the Internet, recourse constrains)

Information Systems Development Projects may come from Both Top-Down and Bottom-Up Initiatives

<table>
<thead>
<tr>
<th>Sources of Potential Projects</th>
<th>Project Identification and Selection</th>
<th>Project Initiation and Planning</th>
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</thead>
<tbody>
<tr>
<td><strong>Top Down</strong></td>
<td></td>
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<tr>
<td>• Top Management</td>
<td>Evaluate, Prioritize, and Schedule Projects</td>
<td></td>
</tr>
<tr>
<td>• Steering Committee</td>
<td>Schedule of Projects</td>
<td></td>
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<tr>
<td><strong>Bottom Up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• User Departments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Development Group</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Methods for Selecting Projects

- In every organization, there are always more projects than available time and resources to implement them.
- Very important to follow a repeatable and complete process for selecting SW/IT projects, to get the right mix (portfolio) for the organization.
- Business case – a document, developed by SME (subject matter experts), and composed of a set of project characteristics (costs, benefits, risk, etc.) that aid organization decision makers in deciding what projects to work on.

Four key issues needing answers for all SW, CIS, technology projects:
1. Business value
2. Cost/benefit analysis
3. Risk management
4. Technology/knowledge/personnel needed

SWOT Analysis
Project Selection techniques: SWOT Analysis

- **SWOT analysis** -- an often used tool to select CIS or CIS developer:
  - Strengths
  - Weaknesses
  - Opportunities
  - Threats

- An information gathering technique to evaluate external influences against internal capabilities

- **Selection Tools: Qualitative Models**
  - Subject Matter Expert (SME) judgments (based on SME’s knowledge + expertise)
  - “Sacred Cow” (pressure from upper mgnt) (upper Mngt. wants this project to get done)
  - Mandates (generated from external vendors, agencies)

- **Selection Tools: Quantitative Models (based on financial considerations that can be calculated)**
  - Net Present Value (NPV)
  - Internal Rate of Return (IRR)
  - Return On Investment (ROI)
  - Payback Period (PP)
Microsoft SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Brand loyalty</td>
<td>1. Poor acquisitions and investments</td>
</tr>
<tr>
<td>2. Brand reputation</td>
<td>2. Dependence on hardware manufacturers</td>
</tr>
<tr>
<td>3. Easy to use software</td>
<td>3. Criticism over security flaws</td>
</tr>
<tr>
<td>4. Strong distribution channels</td>
<td>4. Mobile PC markets</td>
</tr>
<tr>
<td>5. Robust financial performance</td>
<td>5. Start to innovate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cloud based services</td>
<td>1. Intense competition in software products</td>
</tr>
<tr>
<td>2. Mobile advertising</td>
<td>2. Changing consumer needs and habits</td>
</tr>
<tr>
<td>3. Mobile device industry</td>
<td>3. Open source projects</td>
</tr>
<tr>
<td>4. Growth through acquisitions</td>
<td>4. Potential lawsuits</td>
</tr>
</tbody>
</table>

Microsoft SWOT Analysis 2013

Strengths
- Brand loyalty: Over the years, Microsoft has become the leading OS and software provider, making it a household name.
- Easy to use software: Windows OS and Office software products are easy to use and customizable Microsoft software is widely used, making it popular among businesses and consumers alike.
- Strong distribution channels: The company works with all major computer hardware producers such as Samsung, Dell, HP, and Lenovo, ensuring that Microsoft is well-represented in the market.
- Robust financial performance: Microsoft grew its revenues by 26% from 2010 to 2012 and holds more than $52 billion in cash and cash equivalents that can be used for acquisitions and substrate investments and R&D.
- Aspiration of Asia: With several billion users, Asia is a significant source to Microsoft's prime revenue and has a lot of potential for generating income through advertising.

Weaknesses
- Poor acquisitions and investments: Some of the recent acquisitions have not turned out to be profitable, leading to the company being criticized for spending too much on acquisitions.
- Dependence on hardware manufacturers: Microsoft relies heavily on hardware manufacturers, which can be a disadvantage in the ever-changing technology market.
- Criticism over security flaws: Microsoft has come under fire for security issues in its products, which can lead to loss of trust among consumers.
- Mobile PC markets: Microsoft has struggled to gain a foothold in the mobile market, which is dominated by Apple and Google.

Opportunities
- Cloud based services: Microsoft has a large user base for its cloud-based services such as Office 365 and Azure.
- Mobile advertising: With the increasing use of mobile devices, there is a huge opportunity for Microsoft to tap into the mobile advertising market.
- Mobile device industry: The increasing use of mobile devices provides a huge opportunity for Microsoft to expand its hardware offerings.
- Growth through acquisitions: Microsoft has a history of successful acquisitions, which can help it to expand its services and products.

Threats
- Intense competition in software products: With competitors like Apple and Google, Microsoft faces stiff competition.
- Changing consumer needs and habits: Consumers are increasingly shifting towards mobile devices and cloud-based services.
- Open source projects: The rise of open source projects has put pressure on Microsoft to adapt and innovate.
- Potential lawsuits: Microsoft has been involved in multiple lawsuits, which can be a threat to its operations.
Topic # 5

Identifying and Selecting Systems Development Projects

In-classroom Exercise

3-point Analysis (approach)
Considering Alternative Projects: 3-Point Analysis (approach)

- System analysts should consider at least two cases for each project:
  1. which design strategies would *minimally satisfy objectives and not violate constraints*, and
  2. which design strategies would *meet or exceed objectives with minimal violation of constraints*.

There are *many possible design strategies* between these two extreme positions.

- Analysts should generate *three alternatives* because three alternatives can represent both ends and the middle of a continuum of potential solutions.

  Ex: Expensive   Middle    Cheap
  High Quality   Average   Low Quality

Considering Alternative Projects: Weighing & Scoring Method (WSM) Analysis

- The method for evaluating alternatives is called *Weighting and Scoring Method*.

  (1) Create a table with (a) requirements, (b) constraints, and (c) alternative solutions.
  (2) Weights for requirements and constraints
  (3) Ratings for alternatives (rating of 5 indicates that the alternative meets or exceeds the requirement or clearly abides by the constraint).

Example:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
<th>Alt A</th>
<th>Alt B</th>
<th>Alt C</th>
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</thead>
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<td>Requirements</td>
<td></td>
<td>Rating</td>
<td>Rating</td>
<td>Rating</td>
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<td>Real-time data entry</td>
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<td>Auto re-order</td>
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<td>90</td>
<td>130</td>
<td>150</td>
</tr>
<tr>
<td>Constraints</td>
<td></td>
<td>Rating</td>
<td>Rating</td>
<td>Rating</td>
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<tr>
<td>Development costs</td>
<td>20</td>
<td>5</td>
<td>125</td>
<td>4</td>
</tr>
<tr>
<td>Hardware costs</td>
<td>20</td>
<td>5</td>
<td>125</td>
<td>4</td>
</tr>
<tr>
<td>Time to operation</td>
<td>15</td>
<td>5</td>
<td>75</td>
<td>4</td>
</tr>
<tr>
<td>Ease of training</td>
<td>15</td>
<td>5</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>85</td>
<td>275</td>
<td>245</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>440</td>
<td>405</td>
<td>395</td>
</tr>
</tbody>
</table>
Selecting IS Development Projects: possible outcomes

- Project Identification and Selection: deliverables and outcomes
  - The primary deliverable from this phase is a schedule of specific CIS development projects, coming from both top-down and bottom-up sources, to move into the next SDLC phase—project initiation and planning.
  - Principle of Incremental Commitment: A strategy in systems analysis and design in which the project is reviewed AFTER EACH PHASE and continuation of the project is re-justified in each of these reviews.
    - Ex.: National Science Foundation Project:
      - duration: 3 years
      - project revisions: every 0.5 year
      - project funding: depends on results of a previous project year
Corporate Strategic Planning:

The process of developing and refining models of the current and future enterprise as well as a transition strategy.

The ongoing process that defines/adjusts/improves mission, objectives, and strategies of an organization.

All development projects in a company, including CIS projects (acquisition, design & development, maintenance, etc.) should be in-line with Corporate Strategy.

Corporate Strategy components:

- Mission statement
- Objective statements
- Description of competitive strategy
Caterpillar: Corporate Strategy (Vision 2020)

**ENTERPRISE STRATEGY**
RENEWING OUR STRENGTHS... SHAPING OUR FUTURE

- **Best Team**
  - Safety
  - Inclusion

- **Superior Results**
  - Earn rate The Best
  - Operating Profit After Capital Charge
  - Cash Flow

- **Global Leader**
  - Dual
  - P&L
  - Aftermarket Parts

2011-2015 THE “BIG 8” IMPERATIVES
- Execute the Business Model
- Accelerate after-market parts and service growth
- Distribute growth
- Create new distribution and new-growth products
- Strengthen and expand customers
- Achieve profit and cash-pool through
  - LSKD
  - ACV
  - ID

WE MAKE IT WORK
- In India, ACCESS and DEB
- Achieve profitable growth in majoris, expansion, and DCE
- Exceed expectations in earnings and return on equity
- Accelerate growth
- Reposition System... and, lower conversion, growth markets and alternative fuels

**OUR BUSINESS MODEL**

- We are recognized as the leader everywhere we do business.
- Our products, services and solutions help our customers succeed.
- Our distribution system is a competitive advantage.
- Our supply chain is world class.
- Our business model drives superior results.
- Our people and brands stand for the future.
- Our work today helps our customers create a more sustainable world.
- Our financial performance consistently rewards our shareholders.

**OUR VALUES IN ACTION**

- **INTEGRITY**
  - The Power of Knowing
  - Integrity is our foundation. We:
    - Deliver what we promise
    - Are trustworthy
    - Comply fairly
    - Do not impede, influence, or let them improperly influence us

- **EXCELLENCE**
  - The Power of Doing
  - To achieve ambitious goals, we:
    - Take pride in what we make and do
    - Have an intense, acute focus on our customers
    - Add value at each stage
    - Achieve excellence through the Caterpillar Production System and Six Sigma

- **TEAMWORK**
  - The Power of Working Together
  - To help each other succeed, we:
    - Utilize the unique talents of our team
    - Strengthen our team and improve outcomes through inclusiveness
    - Collaborate with employees, clients, distributors and suppliers

- **COMMITMENT**
  - The Power of Responsive Living
  - To meet our impossibilities, we:
    - Are committed to Caterpillar’s success
    - Protect the health and safety of others and ourselves
    - Are personally accountable to meet our goals
    - Create and capture value through sustainable solutions
Strategic Planning

CIS projects authorized as a result of:
1. A market demand
2. An organizational need
3. A customer request
4. A technological advance
5. A legal requirement

Corporate Strategic Planning: Mission Statement


The mission statement of a company is a concise and precise statement about the main business of the organization.

Below are some sample mission statements.

Courtyard by Marriott
To provide economy and quality minded frequent business travelers with a premier, moderate-priced lodging facility which is consistently perceived as clean, comfortable, well maintained, and attractive, staffed by friendly, attentive and efficient people.

McDonald’s
To offer the fast food prepared in the same high-quality manner world-wide, tasty and reasonably priced, delivered in a consistent, low-key decor and friendly atmosphere.

After defining its mission, an organization can then define its objectives.
Corporate Strategic Planning

Step # 2: Development of **Objective Statements**.

It refers to “broad and timeless” goals for the organization. These goals can be expressed as a series of statements that are either qualitative or quantitative, but typically do not contain details that are likely to change substantially over time.

There are typically two types of objectives used: financial and strategic.

1) **Financial objectives** target outcomes that relate to improving the company’s financial performance. Two examples are: (1) increasing earnings growth by 10 to 15 percent per year, and (2) boosting return on equity investment from 15 to 20 percent.

2) **Strategic objectives** target outcomes that will result in greater competitiveness and a stronger long-term market position. Three examples are: (1) overtaking rivals on quality or customer service, (2) attaining lower overall costs than rivals, and (3) achieving technological superiority over rivals.

Once a company has defined its mission and objectives, a competitive strategy can be formulated.

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Corporate Strategic Planning

Step # 3: Identification of a **Competitive Strategy**.

This is the method by which an organization attempts to achieve its mission and objectives.

Main types:
- Low-cost producer (products, services, etc.)
- Highest-quality possible (products, services, etc.)
- Product or service differentiation
- Innovative product or service
- etc.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LowCost Producer</td>
<td>This strategy reflects competing in an industry on the basis of product or service cost to the consumer. For example, in the automobile industry, the South Korean–produced Hyundai is a product line that competes on the basis of low cost.</td>
</tr>
<tr>
<td>Product Differentiation</td>
<td>This competitive strategy reflects capitalizing on a key product criterion requested by the market (for example, high quality, style, performance, roominess). In the automobile industry, many manufacturers are trying to differentiate their products on the basis of quality (e.g., “All Ford, quality is job one.”).</td>
</tr>
<tr>
<td>Product Focus or Niche</td>
<td>This strategy is similar to both the low-cost and differentiation strategies but with a much narrower market focus. For example, a niche market in the automobile industry is the convertible sports car market. Within this market, some manufacturers may employ a low-cost strategy and others may employ a differentiation strategy based on performance or style.</td>
</tr>
<tr>
<td>Topic # 5</td>
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<tr>
<td>Strategic planning</td>
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<tr>
<td><strong>In-classroom Exercise</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Topic # 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying and Selecting Systems Development Projects</td>
</tr>
<tr>
<td><strong>Homework Assignment</strong></td>
</tr>
</tbody>
</table>
Identifying and Selecting Systems Development Projects

Additional Information

Information Systems Planning Matrices

Information Systems Planning

- Information systems in general represent automated or non-automated systems used to transform data into useful information to support business processes –
  a) business functions such as business planning, product development, marketing, sales, production operations, etc.
  b) data entities such as customer, product, vendor, order, invoice, etc.
  c) particular information systems such as payroll processing, accounts payable, accounts receivable, etc.

- After creating detailed lists of business functions, data entities, and particular information systems, a series of matrices can be developed to cross reference various elements of the organization such as
  1. Function-To-Data-Entity
  2. Unit-to-Function
  3. Process-to-Information System
  4. Location-to-Function
  5. Location-to-Unit
  6. Function-to-Objective
  7. Function-to-Data Entity, etc.
## Information Systems Planning Matrices

### Example of a business matrix:

In the following matrices, data entities are abbreviated as: CU=Customer, PR=Product, VEN=Vendor, RM=Raw Material, OR=Order, WC=Work Center, EQ=Equipment, EMP=Employee, INV=Invoice, and WO=Work Order.

#### Information System–to–Data Entity Matrix

<table>
<thead>
<tr>
<th>Data Entities</th>
<th>C U</th>
<th>P R</th>
<th>V E N</th>
<th>R M</th>
<th>O R</th>
<th>W C</th>
<th>E Q</th>
<th>E M P</th>
<th>I N V</th>
<th>W O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information System</td>
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<tr>
<td>Payroll Processing</td>
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</tr>
<tr>
<td>Accounts Payable</td>
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<td>X</td>
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<tr>
<td>Accounts Receivable</td>
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<tr>
<td>Inventory Management</td>
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</table>

#### Function–to–Data Entity Matrix

<table>
<thead>
<tr>
<th>Data Entities</th>
<th>C U</th>
<th>P R</th>
<th>V E N</th>
<th>R M</th>
<th>O R</th>
<th>W C</th>
<th>E Q</th>
<th>E M P</th>
<th>I N V</th>
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<td>Functions</td>
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<td>Circuit Design</td>
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