Lecture 7.1

Generating and Selecting Design Alternatives

Lecture Objectives

- At the completion of this lecture you should have a consideration of and be able to:
  - Describe the different sources of software
  - Generate alternative design solutions
  - Recommend the best design alternative
Recommending a Design Alternative: Process

- A design alternative includes:
  - the system’s functionality, hardware and system software platforms, and methods of acquisition

- Recommending the best design alternative involves:
  - generating a range of feasible alternatives
  - evaluating the alternatives to assess which is best able to meet the organisation’s needs

Generating Alternatives: How many?

- While it is possible to generate a large no. of alternatives … 3 feasible alternatives is usual:
  - low end … conservative in terms of effort, cost and technology
  - high-end … many extra features, functionality not cost primary focus
  - mid-range … a compromise of the above
Assessing Feasibility

- Feasibility is checked by assessing:
  - Political .. how do people feel about it?
  - Operational .. how well will it work?
  - Schedule .. is the time-table reasonable?
  - Technical .. are the technical resources and expertise available?, is the technical solution practical?
  - Economic .. how cost-effective is it?
  - Legal .. Is it within legal and contractual constraints?

Generating Alternatives: Process

- Prioritise the users requirements
  - 'required' to 'desired'
- Propose different development and implementation environments
  - hardware, system software and network platforms
- Propose different ways to acquire requirements for the different alternatives
Generating Alternatives: Issues

- Constraints
- Outsourcing
- Sources of software
- Hardware and system software issues
- Implementation issues
- Organisational issues

Constraints

- Date when system is required
- Available financial and human resources
- Elements of the current system that cannot change
- Legal and contractual restrictions
- The strategic importance of the system to the client (may limit outsourcing)
- How firm are the constraints? .. can they be violated in special circumstances
Outsourcing

- The practice of turning over some or all of an organisation’s IS applications and/or operations to an outside firm.
- Why?
  - May be cost-effective
  - May be specialist in your business area
  - To overcome operating problems
  - Running IS not part of core business
- Need to be aware of the pros and cons

Sources of Software

- Hardware manufacturers
  - mainly systems software
- Packaged software producers
  - range from generic eg MS Project to very narrow, niche packages
- Custom software producers
  - when internal expertise or personnel not available
- Enterprise wide solutions
- Application service providers
- In-house development

- Hybrid solutions are common
### Comparison

<table>
<thead>
<tr>
<th>Hardware manufacturers</th>
<th>System software and utilities</th>
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<tbody>
<tr>
<td>Packaged software producers</td>
<td>Supported task generic</td>
</tr>
<tr>
<td>Custom software producers</td>
<td>Task require custom support and can’t be build internally</td>
</tr>
<tr>
<td>Enterprise wide solutions</td>
<td>Complete system with cross-functional boundaries</td>
</tr>
<tr>
<td>Application service providers</td>
<td>Supported task generic, instant access, Buying or installing locally expensive</td>
</tr>
<tr>
<td>In-house development</td>
<td>Must be built from scratch due to uniqueness and internal resources are available</td>
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### Choosing Off-the-Shelf Software: Issues

- Cost
- Functionality
- Vendor Support
- Viability of Vendor
- Flexibility
- Documentation
- Response Time
- Ease of Installation
Choosing Off-the-Shelf Software: Process

- Identify products which may suit specified requirements
- Solicit, evaluate and rank vendor proposals
- Select the best vendor proposal
- Establish requirements for integrating the vendor’s products

Choosing Off-the-Shelf Software: Criteria

- Identify criteria by which to evaluate hardware and software
  - cost, functionality, vendor support, vendor viability, quality of documentation, ease of learning, ease of use, ease of installation, response time, throughput, version?, ease of customisation, number of current installations, licensing arrangement, training, internal controls, database size limitation, maintenance contracts, customer references
- To help identify criteria you can use
  - past experience, trade magazines and journals, information services, potential vendors .. bias
Hardware and System Software Issues: 1

- Advantages of running a new system on the existing platform:
  - lower costs
  - familiarity with system
  - easier to integrate with current systems
  - no added cost with converting old systems to new platforms

Hardware and System Software Issues

- Reasons for acquiring new hardware or system software
  - some components of your new system may only run on the new platform
  - opportunity to upgrade/expand current technology
  - may allow for radical change eg. centralised to distributed processing, mainframe or 2-tier to client-server 3-tier
Solicit Proposals/Quotes from Vendors

- Some organisations are committed to buying from a specific vendor .. so it’s simple .. just get a quote and terms
- If you are going to the marketplace you must prepare either a:
  - Request for Quotations (RFQ) .. if you have already decided on a product .. and just want information on:
    - price, vendor specific configuration, maintenance agreements, conditions regarding buyer changes and servicing
  - Request for Proposal (RFP) .. if you are open to a variety of products

Request for Proposal - Outline

- The primary purpose of an RFP is to communicate requirements and desired features to prospective vendors
  - Introduction
    - Background, Brief summary of needs, Explanation of RFP document, Call for action
  - Standards and instructions
    - Schedule of events leading to contract
    - Ground rules that govern the selection decision
  - Requirements and features
    - Hardware, Software, Service
  - Technical questionnaires
  - Conclusion
Validate, Evaluate and Rank Vendor Proposals

- Eliminate any proposals that do not meet your mandatory requirements
  - All claims made in the proposal received must be validated .. customer references, visits to customer sites, demonstrations of products, access to relevant documentation Perform cost-benefit analysis on the various proposals
- Use set evaluation criteria to evaluate the alternatives

Implementation Issues

- User training
- Disruptions in work procedures must be addressed
- How long will implementation take?
- Resistance to change
- Social issues
- Metrics
Organisational Issues

- Overall cost and the availability of funding
- How long will implementation take?
- What will management support?
- Are there any political issues?
- Will users accept the new system?

Finally...

- While the systems development team will recommend what they believe to be the best alternative …
  the CLIENT will make the FINAL decision as to which design alternative to adopt
References
