SELECTING PROBLEMS FOR EXPERT SYSTEMS

Selecting a Problem for Expert System Development

Part I: Strategic Means to Select a Problem Area

Selecting an ES Problem Area

- Strategic Considerations
  - Competitive Advantage
  - Core Competence
- Tactical Concerns
  - Checklist method

Strategic Approaches Compared

- Competitive Advantage Approach
  - Defined by market and industry dynamics
  - External focus
  - Based on product and process re-engineering
- Core Competence Approach
  - Defined by company assets
  - Internal focus
  - Based on organizational knowledge
Core Competence Defined

- Based on the collective learnings of the organization
- A function of the skills of key individuals
- Pertains to the organization of work and delivery of value

What core competence is not

- Does not diminish with use
- Does not mean shared costs
- A competence area is not an SBU

Evidence of Core Competence in People

- People who can recognize ways to blend expertise in new and interesting ways
- Individuals who can coordinate diverse production skills and integrate multiple streams of technologies

Identify Core Competencies

- Q1
  - Does the competence provide access to a wide array of markets?
- Q2
  - Does the competence make a significant contribution to perceived value to the product?
- Q3
  - Is the competence difficult to imitate?
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What are Core Products?

- Core products are the physical embodiments of competencies.
- End-products represent brand markets
  - e.g., JVC for Matsushita
- World leadership can play out on all levels
  - i.e., core competencies, core products

Core Strategies (cont.)

- Bottom-Up Tree method (trunk to branches)
  - From core competence to core products to end products
  - Develop strategies to support core areas

Strategies to Identify Core Competencies

- Top-down "tree" method (branch to trunk)
  - List end products and work back to core products and competencies

Summary

- Core competence is well suited to finding areas of application for expert systems
  - Knowledge based approach
- Expert systems can be built around core competencies
- Requires a new way of viewing and valuing the business
- Does not address practical or tactical issues...
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Part II: Tactical Concerns in Choosing Expert Systems

Tactical Method Overview

- Use a check list to identify:
  - Key technical concerns
  - Key organizational concerns

Tasks to Avoid

- Common sense
- Reasoning by analogy
- Perceptual expertise
- Volatile expertise
- Experts disagree
- Spatial reasoning
- Time dependent rules

Type of Problem?

- Narrow vs. broad
- Classification type
- Construction type
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Sources of Knowledge?

- One human expert
- Several experts
- Text source
- Flow diagram
- Based on examples

Size of Project?

- Small single user station
- Distributed network system

Overall value?

- Internal cost savings
- Speeds up work
- Improves quality and consistency of decision making
- Creates new products/services
- Preserves company know-how

User Concerns?

- Perceived need
- Availability of H/W
- Explanation required
- Accuracy and speed requirements
- Motivation to use
- Training issues
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**Management Concerns?**

- Financial justification
- Senior management support
- Assigned priority (high/low)
- Match with culture

**ES Tactical Worksheet**

<table>
<thead>
<tr>
<th>Type of Problem?</th>
<th>Overall value?</th>
<th>Management Concerns?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
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**Summary: Selecting a Problem**

- Consider both strategic and tactical issues
- Strategic approaches include:
  - Competitive analysis
  - Core competence
- Tactical issues should not be overlooked
  - Use a check list