Sizing and Estimating ERP Implementations

Donald M. Beckett
Quantitative Software Management, Inc.
2000 Corporate Ridge, Suite 900
Mclean, VA 22102
Tel: 703 790-0055, Fax 703 749-3795
Email: info@qsm.com
Web: www.qsm.com

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Objectives

- Provide conference attendees with a practical method for estimating the project size of ERP implementations that is both easy to learn and apply.
- Compare the behavior of ERP implementations to other business IT projects:
  - Size vs. Schedule
  - Size vs. Effort
Outline

• Key differentiators between ERP implementations and software development

• Sizing ERP implementations
  ▪ RICEF objects
  ▪ Configuration items
  ▪ Normalizing to a common metric

• Estimating ERP implementations
“Perfection is the enemy of the possible”
- Voltaire (paraphrased)

“Precision is not accuracy”
- William Horton
Key Differentiators

- Software projects create code
  - Develop new systems
  - Modify existing systems
  - Are measured (sized) by the functionality they deliver and/or the code they create

- Software projects *may*
  - Develop interfaces
  - Have hardware, network, telecom components
  - Convert data
  - Have system setup and configuration
Key Differentiators

- ERP Implementations *have*
  - Significant system setup & configuration
  - Hardware, network, & telecom components
- ERP Implementations *may*
  - Develop interfaces
  - Convert data
  - Create additional functionality
  - Modify existing functionality
Sizing ERP Implementations

- ERP Implementation size: two components
  - Configurations
  - Customizations
- Configurations include parameters, properties, rules, values, table setup
- Customizations are principally code
- Proportions vary between projects
- ERP sizing must consider both
Configurations

- Estimate the number of configuration items (by category & complexity)
  - Best case, worst case, most likely scenarios
- Normalize them to a common elementary unit (using gearing factors)
Configuration Example: Tables

- Average table has
  - 3 indices to define
  - 20 columns to define
  - 20 data types (one per column)

- Average table (in this example) requires 43 elementary activities (or implementation units) to create
  - Gearing factor of 43
Customizations

- **RICEF objects**: **R**eports, **I**nterfaces, **C**onversions, **E**nhancements, **F**orms
- Estimate counts of each item (by complexity)
- Normalize them to a common elementary unit (using gearing factors)
- Add to normalized configuration items count for an estimated project size
## Sample Gearing Factor Table: RICEF Objects

<table>
<thead>
<tr>
<th>Component</th>
<th>Gearing Factor</th>
<th>Number</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Reports</td>
<td>100</td>
<td>10</td>
<td>1000</td>
</tr>
<tr>
<td>Average Reports</td>
<td>200</td>
<td>5</td>
<td>1000</td>
</tr>
<tr>
<td>Complex Reports</td>
<td>300</td>
<td>20</td>
<td>6000</td>
</tr>
<tr>
<td>Simple Interfaces</td>
<td>320</td>
<td>2</td>
<td>640</td>
</tr>
<tr>
<td>Average Interfaces</td>
<td>620</td>
<td>12</td>
<td>7440</td>
</tr>
<tr>
<td>Complex Interfaces</td>
<td>1520</td>
<td>1</td>
<td>1520</td>
</tr>
<tr>
<td>Simple Conversion</td>
<td>100</td>
<td>2</td>
<td>200</td>
</tr>
<tr>
<td>Average Conversions</td>
<td>200</td>
<td>5</td>
<td>1000</td>
</tr>
<tr>
<td>Complex Conversions</td>
<td>300</td>
<td>2</td>
<td>600</td>
</tr>
<tr>
<td>Simple Enhancements</td>
<td>100</td>
<td>2</td>
<td>200</td>
</tr>
<tr>
<td>Average Enhancements</td>
<td>500</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>Complex Enhancements</td>
<td>1000</td>
<td>3</td>
<td>3000</td>
</tr>
<tr>
<td>Simple Forms</td>
<td>100</td>
<td>2</td>
<td>200</td>
</tr>
<tr>
<td>Average Forms</td>
<td>200</td>
<td>15</td>
<td>3000</td>
</tr>
<tr>
<td>Complex Forms</td>
<td>300</td>
<td>3</td>
<td>900</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>27,200</strong></td>
</tr>
</tbody>
</table>
But, Does it Work?

• Step 1: Size completed ERP implementations using configuration items and RICEF objects

• Step 2: Compare trends for Effort, Schedule, Staffing, and Productivity to trends for Business IT projects (non-ERP)
Schedule vs Size

Size (thousands)

Months

-1σ

Average

+1σ

All Systems
Avg. Line Style
1 Sigma Line Style
Black lines are 2008 trends for Business IT Projects.

Blue lines are trends from 88 ERP implementation projects sized with RICEF objects and configuration items.
Average Staff

Average Staff vs Size

Size (thousands)

Average Staff

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Average Staff vs Size

Size (thousands)

Average Staff

- All Systems
- QSM 2008 Business
- Avg. Line Style
- 1 Sigma Line Style
Productivity Parameter vs Size

- Productivity Parameter vs Size
- Size (thousands)
- Productivity Parameter
- All Systems
- Avg. Line Style
- 1 Sigma Line Style
Productivity Parameter vs Size

- All Systems
- QSM 2008 Business
- Avg. Line Style
- 1 Sigma Line Style

Size (thousands) vs Productivity Parameter
Conclusions

• ERP Implementations have very similar behavior to other Business IT projects
  ▪ Schedule, effort, staffing, productivity
• Parametric estimation techniques used for Business IT projects are applicable to ERP implementations
• ERP Implementation size can be effectively estimated using Configuration Items and RICEF Objects
  ▪ Widely used by U.S. government for estimation and tracking
ERP Estimation Demo

- Estimate project size
- Create Baseline estimate
- Model with schedule & effort constraints
Questions?