Requirements

Requirements Engineering

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Learning Objectives

By the end of this video, you will be able to

• Explain what requirements are about.
• Name example stakeholders whose needs are expressed by requirements.
• Name top requirements-related factors for software project failures.
• Classify a given requirement into functional or non-functional requirement type.
• Name example non-functional requirements.
Requirements Are About “What”
Requirements Are About “Stakeholder Needs” to “Achieve Goal”

customers  managers  designers  developers  testers
# Top Factors for Software Project Failures

(Standish Group, 1995)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Incomplete requirements</td>
<td>13.1%</td>
</tr>
<tr>
<td>2</td>
<td>Lack of user involvement</td>
<td>12.4%</td>
</tr>
<tr>
<td>3</td>
<td>Lack of resources</td>
<td>10.6%</td>
</tr>
<tr>
<td>4</td>
<td>Unrealistic expectations</td>
<td>9.9%</td>
</tr>
<tr>
<td>5</td>
<td>Lack of executive support</td>
<td>9.3%</td>
</tr>
<tr>
<td>6</td>
<td>Changing requirements &amp; specifications</td>
<td>8.7%</td>
</tr>
<tr>
<td>7</td>
<td>Lack of planning</td>
<td>8.1%</td>
</tr>
<tr>
<td>8</td>
<td>Didn’t need the system any longer</td>
<td>7.5%</td>
</tr>
<tr>
<td>9</td>
<td>Lack of IT management</td>
<td>6.2%</td>
</tr>
<tr>
<td>10</td>
<td>Technology illiteracy</td>
<td>4.3%</td>
</tr>
</tbody>
</table>
Issues (e.g., those in requirements) found earlier are cheaper and easier to fix than later.
Customers’ Role for Requirements in XP

Write
Interpret
User stories

customers
Types of Requirements

• **Functional** requirements
  • Software’s *functional effects* on the environment
  • Effects are resulted from software operations

• **Non-functional** requirements (-ilities)
  • Constraints on *the way* the software should satisfy its functional requirements or on *the way* it should be developed

(Lamsweerde, 2009)
Example Non-functional Requirements

- **Performance** (time and space): (quality of service)
  - Must answer a query in 3 seconds

- **Usability** (quality of service)
  - New user must be able to finish buying a book in 15 minutes
  - 90% of users must say they like interface

- **Maintainability** (development constraint)
  - New programmers should be able to fix first bug in a week on the job

Security, safety, reliability, ...
References


The End