Requirements Analysis and Negotiation
- Goal – uncover problems and reach agreement
- Interleaved with elicitation and representation

Organizing requirements

Goals
- Hierarchical
- Decompose requirements into set of sub requirements

Viewpoints
- Business
  - management
- Personal
  - End user

Easy way to find conflicts
Prioritizing and Categorizing Requirements

MoSCoW
- Must haves
- Should haves
- Could haves
- Won’t haves

Kano
- Attractive
  - More satisfied if included but not less satisfied if not included
- Must-be
  - Dissatisfied if not included
- One-dimensional
  - Satisfaction is proportional to how many of the requirements are met
- Indifferent
- Reverse
  - Users judgment of requirement is opposite of what the analyst expected
- Questionable

Analysis Checklists
- Used to assess each requirement
- Premature design
  - How rather than what
- Combined requirements
  - Can this be broken down into multiple requirements
- Unnecessary requirements
  - Cosmetic addition
- Use of non-standard hardware
  - Need to know platform requirements
- Conformance with business goals
  - Consistent with goals described in the requirements document
- Ambiguity
  - Can it be read differently by different people
  - What are the possible interpretations
- **Realism**
  - With given/available technology
- **Testability**
  - Can a test be derived to show the requirement has been met

### Requirements Matrix
- Looking at interactions between requirements
- Finding and highlighting conflicts and overlaps
- 1 conflict
- 1000 overlap
- 0 independent

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<thead>
<tr>
<th></th>
<th>R1</th>
<th>R2</th>
<th>R3....</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
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<td>0</td>
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</tr>
<tr>
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<td>...</td>
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- Sum each row, col
- # conflicts = sum % 1000
- # overlaps = sum/1000
- Requirements with high values indicate need for examination as a change to one with a high overlap value will have a major impact on the system

### Representation
- Document the requirements in a formal manner
- Used to communicate requirements to customers, engineers, and managers
- Used by
  - Customers – ensure meets needs and specify changes
  - Managers – plan bid, development process
  - Engineers – design specifications
  - Test engineers – develop validation tests
  - Maintenance engineers – understand system & relationship between parts
- Start with standard document and tailor it
- Mixture of natural language and diagrams
Things to remember
- Requirements are read more than written
- Readers are from diverse backgrounds
- Not easy – allow sufficient time
- Use language simply, consistently and concisely
- Use diagrams to present broad overviews and to show relationships
- Present the same information in different ways
  - Use natural language, equations, and diagrams
- Use quantitative language
  - Reliability, usability and or performance