The Analyst’s Toolkit

A Survey of Tools, Techniques and Strategies for Eliciting Requirements
Welcome!

Meet your facilitator…

• Kris Ashton

• Systems Analyst, Consultant, Course Director/Developer, Technical Instructor, Author, Evangelist

• Senior Consulting Partner and Principal with The Center for Requirements Excellence in Denver, CO

• Over 25 years’ experience

Kris chillin’ on the island of Delos in Greece
Overall Strategies

- Use a Methodology
- Use Organic Tools
- Have (or get) Some Domain Knowledge
- Have a Good Set of Tools and Techniques (and know how to use them!)
Use a Methodology
Methodology

• Provides a framework
• Identifies specific work to be done in each phase
• Identifies roles and responsibilities
• General types:
  – Systems Development Life Cycle (SDLC)
  – Product Development Life Cycle (PDLC)
  – Project Management (PM)
  – etc.
## Generic SDLC

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation</td>
<td>Determine and agree scope of project; discover high-level requirements (business objectives)</td>
</tr>
<tr>
<td>Analysis</td>
<td>Discover detailed business functional requirements</td>
</tr>
<tr>
<td>Conceptual Design</td>
<td>Re-engineer business process(es) and specify high level technology components of solution</td>
</tr>
<tr>
<td>Technical Design</td>
<td>Convert business requirements to technical specifications</td>
</tr>
<tr>
<td>Coding</td>
<td>Develop and test code modules</td>
</tr>
<tr>
<td>Testing</td>
<td>Integration, system, regression, user acceptance testing</td>
</tr>
<tr>
<td>Implementation</td>
<td>Roll out to entire organization or pilot group</td>
</tr>
</tbody>
</table>
Other Methodologies

- Feasibility
- Definition
- Design
- Construction
- Rollout
- Close
- Initiate
- Plan
- Design
- Construct
- Implement
- Operate
- Initiation
- Exploratory Phase
- Alignment Phase
- Development
- Testing
- Installation
- Post-Implementation Review
Use Organic Tools
Use Your Brain

• Understand the business
• Understand the problem to be solved
• Know how to integrate information
• Know what a requirement sounds like (and how to differentiate it from a solution or statement of design)
Use Your Mouth

- Ask the right questions
- Talk to the right stakeholders
Use Your Ears

- Practice effective listening
  - Paraphrasing
  - Questioning
  - Summarizing
Use Your Eyes

• Look around your stakeholders’ space
• Observe business processes
• Examine artifacts
• Watch facial expressions and body language
Have (or Get) Some Domain Knowledge
Domain Knowledge

- Expert analysts. . .
  - Have a repertoire of skills, knowledge and meta-knowledge in a specific domain
  - Have a deep structure knowledge of the domain
  - Verbalize more domain-specific issues during analysis

Have a Good Set of Tools and Techniques
Examine Artifacts

- Forms, reports, listings
- Process descriptions, procedures, workflow diagrams
- Policies
- Job descriptions, organization charts
- Existing information system
- System documentation
- etc.
Examine Artifacts \textit{(continued)}

- **Advantages**
  - Analysts can gain a lot of knowledge about a system prior to interviewing stakeholders
  - Stakeholders are often impressed with the analyst’s knowledge of their system (even if it is wrong, as it happens)
  - Gives analysts credibility

- **Disadvantages**
  - Can be time-consuming
  - Documentation may be non-existent, old or obsolete, or just plain wrong
Interviews

• Non-judgmental collection of information and requirements

• Uses a variety of questioning techniques

• Requires full stakeholder involvement
Interviews (continued)

• Advantages
  – Analyst can motivate stakeholder to speak freely
  – Stakeholder has a sense of contribution
  – Analyst can probe more
  – Analyst can observe facial expression, body language and (possibly) stakeholder space

• Disadvantages
  – Time-consuming and resource-intensive
  – Success is highly dependent on communication skills of analyst
  – Analyst and stakeholders may not be co-located
Focus Groups

• A small collection of stakeholders that are interviewed together

• Usually fewer than 10 participants
Focus Groups (continued)

• Advantages
  – More effective use of time
  – Stakeholders may discover their inconsistent perspectives and resolve them through group discussion
  – Analyst can see where there is consensus and where there are issues to be resolved

• Disadvantages
  – Difficult to schedule
  – Stakeholders must be actively managed
  – Sessions tend to result in some level of conflict among stakeholders
Direct Observation

• Watching individuals or groups, processes and events to determine the facts surrounding a particular process and/or culture within a business environment
Direct Observation (continued)

• Advantages
  – Discover what happens and how it happens
  – Confirm information obtained through other means
  – Can give an analyst a more objective view of the true nature of an event or activity
  – Can show things otherwise missed

• Disadvantages
  – Requires a high level of structure and planning
  – Observation can’t be continuous; shows only a snapshot
  – Is time-consuming
  – Systems being observed tend to change simply because they are being observed
Elicitation Workshops (JAD, JRP, etc.)

- Brings together a large number of stakeholders
- Facilitates and expedites the collection of requirements
- More highly structured than a focus group
- Best if professionally facilitated
Elicitation Workshops (continued)

- **Advantages**
  - More effective use of time
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  - Analyst can see where there is consensus and where there are issues to be resolved

- **Disadvantages**
  - Difficult to schedule
  - Stakeholders must be actively managed
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Same as for Focus Groups
Iterative Prototyping

• Where the basic requirements are converted into a limited working model

• Model can be viewed and tested by stakeholders

• Allows for refinement of requirements early in the development life cycle, before any significant construction of the system occurs
Iterative Prototyping (continued)

• Advantages
  – Rapid changes can be made to find and clarify missing requirements
  – Stakeholders are more apt to accept the final system
  – Represents less of an investment than the final system as proof-of-concept

• Disadvantages
  – The prototype is intended to be thrown away
  – Takes development time and developer resources
  – Tendency to adopt the prototype as the completed system (by the stakeholder, the developer, or both)
Business Modeling

• An analysis technique that uses a variety of models to depict business systems

• Provides a way to think about what is being modeled (a conceptual framework of a system)

• Provides a way to depict what is being modeled (a notation scheme)

• Process model and data model
Business Modeling (continued)

- Advantages
  - Helps analysts understand how the business and/or business process(es) work now
  - Helps analysts understand what the business wants to retain, remove, redesign, or add
  - A very powerful visual tool

- Disadvantages
  - Can be time-consuming
  - Not all projects or systems are complex enough to be modeled
  - With new business processes, only works for the “to be” system
  - Models (and modeling notation) must be understood by business stakeholders and by developers
Model Examples

• **Context Diagram**
  - Depicts our system in the context of the outside world
  - Shows system under study, external entities, and interactions between them (inputs and outputs)
Model Examples (continued)

• Activity Diagram (with Swim Lanes)
  – Depicts actors and the processes they perform
Model Examples (continued)

- Process Flowchart
  - Traditional flowchart
  - Depicts flow of an individual process
  - Only depicts process steps

Start

Write a descriptive name for the process

Determine process inputs

Find missing step(s) and resolve them

Determine sequential steps

All steps resolved?

Yes

Flowchart done!

No
Model Examples *(continued)*

- Use Case
  – Another way to depict process steps

<table>
<thead>
<tr>
<th>Use Case 1: Receive Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actor:</strong></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
</tr>
</tbody>
</table>
| **Pre-conditions:** | 1. Customer has sent a payment.  
2. Billing system is online. |
| **Post-conditions:** | 1. Payment is posted as a credit to the customer’s account.  
2. Payment item is ready to be prepared for deposit. |
| **Normal Course:** | 1. Receive payment  
1. A/R Specialist verifies that customer's payment item is valid.  
2. A/R Specialist enters reservation number into system  
3. System displays customer’s open reservations.  
4. A/R Specialist selects open reservation to which payment will be applied.  
5. A/R Specialist enters payment amount, type and date.  
6. System credits the reservation with the amount of the payment.  
7. System adjusts the balance due of the reservation. |
Model Examples (continued)

- Data Flow Diagram
  - Traditional DFD
  - Depicts how the process uses data
  - Only depicts data use and not process steps, conditional branching, etc.

![Data Flow Diagram]

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    • kwyche@aspetech.com
    • 919-816-1711

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