Foundations of Requirements Development

ASPE Technology Web Seminar

Presented by Rob Snowden

October 31, 2013

Now what were your requirements again?
Webinar Agenda

1. Introduction
2. ID’ing the Scope
3. ID’ing the Big Picture via the Context Diagram
4. Chunkifying the System to Get Organized
5. Planning Elicitation
6. Characteristics of Effective Requirements
7. Use Case Considerations
8. Agile Thoughts
About Your Presenter...

Name: Rob Snowden
Email: rob.snowden@mindspring.com
Background and Experience

- Requirements Manager and analyst at the Supreme Court of Virginia
- Management Consultant at Coopers
- Systems Consultant, Project Manager, Business Analyst and JAD Facilitator at Blue Cross and Blue Shield
- Since 2000, provided consulting, facilitation, visualization and training services directly to Capital One (US and UK), Circuit City, Land America, Anthem Blue Cross and Blue Shield, Markel, BarclayCard in Northampton, UK, and other organizations.
- Since 2004, Provided Business Analyst and JAD facilitation training through ASPE Technology at numerous organizations including Honda, Fedex, Boeing, Lockheed Martin, and many, many others.
- Certified Business Analyst Professional, Certified Scrum Master
Categorizing for Clarity

**Process for large group:**
1. Introduce the topic
2. Pose the question/assignment clearly
3. Individuals write their own lists
4. Sub groups compare/contrast/combine
5. Sub groups identify 5-7 items and write each in marker, legibly
   - Show example; write a block in the corner as shown
   - 6 items = 6 sheets
6. Place 5 or 6 category headers of a different color on wall, label A-F Collect items from each group
7. Collect items
8. Place on right side of sticky wall
   - Place on wall, then read it
   - Number each item in box for reference
9. Ask participants to ID which items go together by calling out numbers.
Categorizing for Clarity – How It Can Be Used

1. ID’ing the scope
2. ID’ing the functions of the system
3. ID’ing the purpose of reporting
4. ID’ing how this product differs from other products

5. ID Features of New Website
6. ID Use Cases like “Scare Children”
7. ID User Stories like “As a rock star, I need to bite off the head of a bat to gain fame.”

And this is everyday attire, never mind on Halloween
Context Diagram for Medical Management System

- PAID
- Fully Insured Group
- Provider Rptng. System
- Provider System
- Other Trigon Subsidiary
- Membership System
- Other BC Plan
- Self Insured Group
- Vendor
- Claims Systems
- Provider
- Medical Mgmt. Staff
- Northern Va. Healthcare
- Internal Trigon Department
Example of ID’ing Scope by Chunking, Then ID’ing the Sources of the Data Via Context Diagram

Context Diagram Based on Scope “Chunkification”
Numbers on lines correspond to numbers on the right

Example of Scope “Chunkification” for a PMO Website
## Swim Lanes For The System/Process

<table>
<thead>
<tr>
<th>Coyote</th>
<th>Vendor</th>
<th>RR</th>
<th>Fedex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logs On</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add Vendor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place Order</td>
<td>Process Order</td>
<td></td>
<td>Deliver Order</td>
</tr>
<tr>
<td>Accept Order</td>
<td>Send Invoice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set Trap</td>
<td>Capture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process Invoice so the payment can be sent</td>
<td>Receive Payment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Coyote**: Logs On, Add Vendor, Place Order, Accept Order, Set Trap, Process Invoice so the payment can be sent
- **Vendor**: Process Order, Send Invoice, Receive Payment
- **RR**: Deliver Order
- **Fedex**: Capture
Chunking To Organize Requirements – ID Functions

What do you want the system to do? Brainstormed, chunked, then requirements ID’ed by chunk/function
Chunking to ID: How this product differs to ID requirements categories.

ID Main “Chunks”

Brainstorm capabilities by chunks
Then prioritize within chunks.
Data Warehouse High Level Requirements Session

Categorization of Business Drivers

“What are you trying to effect through reporting?”

Prioritized list of questions to be answered within Driver category

“What questions need to be answered through reporting?”

Small groups ID’ed possible drivers, ideas categorized into common themes.

Small teams identified metrics to answer the questions

“What will answer the questions?”
Customer-Facing Web Screens for A Retail Organization
(What do you want on the screens?)

What questions are asked to make an informed purchasing decision? Such as:
• How much does it cost?
• How does it compare to other products?
• What are the accessories?

The categories are the requirements categories such as “design” “accessories” “warranties” “features”
What are the answers to those questions within each category? (Which gets us to the data needed on the screens).
Teams were assigned categories and identified the data needed.
Planning Is Key

“Well, lemme think.... You've stumped me, son. Most folks only wanna know how to go the other way.”

Early checkers
1. **Intro/Background (15 minutes – including delayed start)**
   1. Review agenda
   2. Review ground rules
   3. Intros – name and recent purchase
      - Obtain an idea of possible groupings of participants at tables
   4. Brief level-set by Kevin et al
   5. Determine table groupings (if possible) – i.e. based on responses, identify table topics such as electronics, cameras, etc. so that each table focuses on the next step from the perspective of their product category (Kevin?)
      - Note – I think we should identify some default categories in case this doesn’t work. – or we decide not to categorize the tables.
   6. People self select to appropriate tables

2. **ID Questions Asked To Make Informed Purchasing Decision (45 minutes)**
   1. The purpose of this agenda item is to identify broad categories of questions needing to be answered to make an informed decision about a product.
   2. Prime the group:
      - What questions do you ask when making a purchasing decision? What do you need to know? For example: “How much is it?” “What colors does it come in?”
      - Think about the questions that are asked.
   3. Individuals make own list – 2 minutes
   4. Discuss at their tables – compare/contrast/combine – 14 minutes
   5. Each table ID’s 5-7 key questions and writes each on ½ sheet of paper in marker.
   6. Facilitator collects questions, reads each and places on sticky wall, numbering each for quick reference
   7. Full group suggests which questions can be bucketed together (i.e. price, features, design, etc.) Bucket names are derived from items placed in the buckets

3. **ID Info to Answer Questions Within “Buckets” (25 minutes)**
   1. The purpose of this agenda item is for sub teams to generate many ideas for their “bucket” that would answer the questions about products.
   2. Flip charts are placed on the walls and are numbered/named to correspond with the “bucket” names. (Or we have enough flip chart easels to have one at each table)
   3. Participants self select to the “bucket” of their choice and assemble at the appropriate flipchart/sheet on wall.
   4. Each sub team member has post it notes and a sharpie.
   5. Team members generate ideas on post it notes that would answer the questions posed in the previous step (plus any other related questions they might think of)
   6. Business Analyst in the sub-group will number each post-it note, then review the generated list to eliminate duplicates.

**Team 1 Features**
- List of features 1
- Easiness 2
- Speed 3
- Compatibility 4

**Team 2 Price**
- Product cost 1
- Shipping cost 2
- Rebates 3

**Team 3 Design**
- Product image – views 1
- Colors 2
- Ergonomics 3
- Extended warranty 4
4. Sub-teams review other team’s work (20 minutes: 3-5 minutes at each flipchart)
   1. The purpose of this agenda item is for sub teams to perform a “gallery walk" looking at other team's work and adding new items.
   2. Teams rotate clockwise – add new items, then rotate again until all teams review all other teams.

5. Review and consider prioritization
   1. The purpose of this agenda item is to determine if it is possible to prioritize either the buckets or the information generated by the sub-teams.
      • If at the bucket level, we could vote with dots.
      • If at the post-it note level, we could have teams sort the ideas into 3 categories:
         • Most important
         • Moderately important
         • Somewhat important
   2. We can decide this during agenda item 4.

6. Next Steps
   1. The purpose of this agenda item is to convey what will happen next
   2. List next steps
   3. Determine who and approximately when.
   4. Conclude meeting – Kevin/Matt et al

Supplies:
1. Client supplies flipchart pads/easels and lots of larger post it notes (3 x 4”)
2. I supply everything else – sticky wall, paper, markers, sharpies.
Some Characteristics of Effective Requirements

1. Complete – The system shall capture vendor data (like what?)
2. Consistent – Is it a bird, a road runner, prey, a target. And the requirements don’t conflict with each other.
3. Correct – The trap will capture desert animals. All? Just road runners?
4. Feasible – Paint that looks like a tunnel?
5. Necessary – The system shall notify the coyote of road runner capture within a 1200 mile radius. Really?
6. Prioritized – Critical, important, desirable, wacko.
7. Unambiguous – Only acceptable roadrunners will be captured.
8. Testable/Verifiable – The coyote shall be notified quickly once a road runner is captured.
9. Design-independent – Coyotes shall be able to access the system by laptops. Do you mean access from remote locations?
10. Documented – Must write it down
11. Traceable – Traced to source, how to test, business rules, etc.
12. Singular – Each requirement stands on it’s own. Not – The trap shall operate in temperatures up to 125 degrees Fahrenheit and the coyote shall be unharmed when using the trap.
Types of Requirements

<table>
<thead>
<tr>
<th>Types of Requirements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business requirement</td>
<td>A goal</td>
</tr>
<tr>
<td>Data definition</td>
<td>A data element, attribute, tied to a Business Object – something we collect info about</td>
</tr>
<tr>
<td>External interface</td>
<td>Send/receive to/from another system</td>
</tr>
<tr>
<td>Quality attribute</td>
<td>Response time, concurrent users, reliability, availability, etc.</td>
</tr>
<tr>
<td>Use case</td>
<td>Like a process – verb/noun</td>
</tr>
<tr>
<td>Business rule</td>
<td>Rules that affect use cases, functional requirements</td>
</tr>
<tr>
<td>Design constraint</td>
<td>H/W, S/W, Time, Money, Resources</td>
</tr>
<tr>
<td>Functional requirement</td>
<td>Shall, Will, Must</td>
</tr>
<tr>
<td>Solution idea</td>
<td>Let’s send Tweets.</td>
</tr>
</tbody>
</table>
Write a first shot of the requirements, then go back edit to make them effective requirements
Use Cases – Brainstorm Things A Particular Actor Needs to Do

1. Order traps
2. Add Vendor
3. Review A/P report
4. Modify trap order
5. Update vendor info
6. ID how effective trap is
7. ID best locations for traps
8. Delete vendors
9. Evaluate coyote success
10. Grade vendors
11. Approve payments to vendors
12. Delete order
13. Cancel Payment
Use Cases – Sort Them Into Categories, Then ID Additional Ideas in Each Category

A Traps
1 Order traps
4 Modify trap order
12 Delete orders

B Vendors
2 Add Vendor
5 Update vendor info
8 Delete vendors
10 Grade vendors

C Payments
3 Review A/P report
11 Approve payments to vendors
13 Cancel payment

D Evaluate Traps
6 ID how effective trap is
7 ID best locations for traps

E Evaluate Coyotes
9 Evaluate coyote success

F

G
Barclaycard Examples

Well planned agenda

During mid-morning break showing progress thus far, issues on far right and below.

Business Analyst using various techniques demonstrated during the engagement.
### Agile Approaches – ID User Stories

Brainstorm the things a coyote needs to do with the system in verb/noun format then create user stories based on the list

| A. As a coyote I need to record the success rates of traps so I can select the most effective ones to reorder |
| B. As a coyote, I need to determine the best location for traps to maximize the chances of catching roadrunners. |
| C. As a coyote, I need the ability to predict which traps and locations will guarantee successful capture of road runners |
| D. As a coyote, I need to be able to maintain vendors so I can evaluate viability of potential vendors. |
| E. As a coyote, I need to be able to process invoices so I can pay vendors |
| F. As a coyote I need to order traps from viable vendors so I can capture roadrunners |
| G. As a coyote, I need to evaluate coyotes by their success rates of capturing roadrunners so I can pay them earned incentive payments |
| H. As a coyote, I need to delete vendors that are not viable to remove unneeded vendors |

**Brainstormed list things coyote needs to do:**

1. Order traps
2. Record success rates
3. ID best location
4. Delete vendors
5. Maintain vendors
6. Evaluate success of coyotes
7. Process invoices
8. Predict best locations
9. Predict best traps
10. Evaluate viability of vendors
11. Generate electronic payments
12. Pay coyote incentive payments
## Story Mapping (MoSCoW Prioritization)

### Sort stories in categories

<table>
<thead>
<tr>
<th>Must Have – absolutely critical</th>
<th>Should Have – If possible</th>
<th>Could Have – “Nice to have”</th>
<th>Won’t Have (for now at least)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. As a coyote, I need to be able to process invoices so I can pay vendors.</td>
<td>A. As a coyote I need to record the success rates of traps so I can select the most effective ones to reorder.</td>
<td>H. As a coyote, I need to delete vendors that are not viable to remove unneeded vendors.</td>
<td>G. As a coyote, I need to evaluate coyotes by their success rates of capturing roadrunners so I can pay them earned incentive payments.</td>
</tr>
<tr>
<td>F. As a coyote I need to order traps from viable vendors so I can capture roadrunners.</td>
<td>B. As a coyote, I need to determine the best location for traps to maximize the chances of catching roadrunners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. As a coyote, I need to be able to maintain vendors so I can evaluate viability of potential vendors.</td>
<td></td>
<td></td>
<td>C. As a coyote, I need the ability to predict which traps and locations will guarantee successful capture of roadrunners.</td>
</tr>
</tbody>
</table>
Decomposing Prioritized User Stories

Sequence the “Must Have” user stories, then ID more detailed user stories for each and sequence those

1. As a coyote, I need to be able to add vendors so I can evaluate viability of potential vendors.
2. As a coyote, I need to be able to modify vendors so I can maintain current vendor information.
3. As a coyote I need to place new trap orders from vendors so I can catch roadrunners.
4. As a coyote I need to modify/cancel a trap order once placed so I can correct an erroneous trap order before it is filled.
5. As a coyote, I need to receive an Accts. Payable report so I can approve payments to trap vendors.
6. As a coyote, I need to be able to generate electronic payments to pay vendors for traps received.

D. As a coyote, I need to be able to maintain vendors so I can evaluate viability of potential vendors.
F. As a coyote I need to order traps from viable vendors so I can capture roadrunners.
E. As a coyote, I need to be able to process invoices so I can pay vendors.
Thank you.

Feel free to contact me at rob.snowden@mindspring.com