# An Analysis Of Jigsaw Puzzles



## Requirements Discipline

## 2011 December 7

# Objective

- Explain the role of a Business Analyst
- Describe what an experienced Business Analyst can do to help improve productivity
- Demonstrate the job of a Business Analyst in terms of an activity with which everyone can relate
- The intended audience for this presentation is anyone with an interest in understanding the role of the business analyst

# Overview

- This presentation discusses various aspects of a requirements analysis process using the jigsaw puzzle as an analogy
- A jigsaw puzzle represents a problem in terms of a picture that has been chopped up into small pieces
- The puzzle pieces are scattered randomly within a defined space
- As the person responsible for completing the puzzle, you are performing the role of the Business Analyst

# Completed Jigsaw Puzzle


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# The Parts Of A Jigsaw Puzzle

- Pieces – The parts that make up the whole puzzle
- Edge Piece – A piece of the puzzle defining a boundary
- The picture – There are generally 2 pictures that come with a jigsaw puzzle
  - The picture on the box, describing solution to the jigsaw puzzle
  - The picture on the pieces, that assist with solving the puzzle
- Object – A grouping of pieces that forms an image shown in the picture on the box

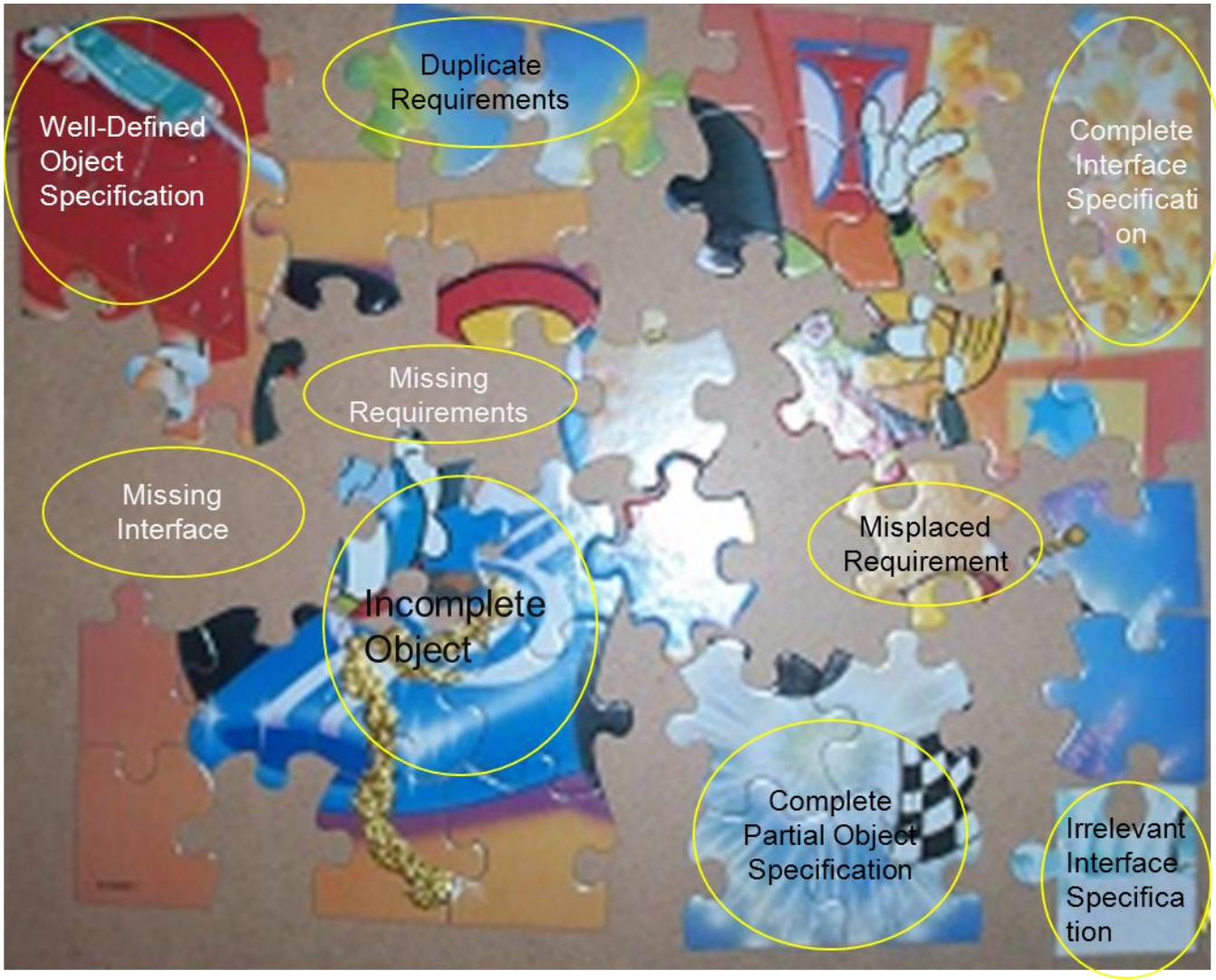
# The Analogy To Requirements

- The interior pieces – Map to the requirements that describe the problem being solved
- The edge pieces – Map to interfaces defining the boundary of the problem space
- The picture on the box represents a solution to the problem
- The picture on the puzzle itself represents the specification of the problem
- Objects in the picture – Represent the different features of the problem specification that are impacted by the requirements

# Analogy Examples

- A enter piece might be equivalent to a requirement for user security in order to login to a system
- An edge piece might be the specification of an interface to a LDAP system for user lookup
- The box picture a solution which allows users to login, access and change company information and logout again
- An object in the picture might represent a set of requirements for a function, i.e: a user request for login assistance because they are unable to locate their username and password

# Typical Requirements Document

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# How Do We Deal With It?

- We review the puzzle to locate errors
  - Reviewers do not have a complete picture to compare against
- We work from a picture of the requirements that is 'good enough'
- Missing and incomplete requirements may be discovered by developers and testers
- We deliver an erroneous solution to our customers

# Introducing The Analyst

- Gather requirements – Collect pieces of the puzzle from various sources in the workplace
- Solicit – Search for hard to find pieces by interviewing stakeholders
- Elucidate – Arrange the pieces into groups which represent objects and edges in the puzzle
- Scope – Put the edge pieces together in order to define the boundary to the puzzle
- Organize – Use the groups of pieces to start creating objects in the picture
- Analyze – Connect the objects and edges of the puzzle to create a complete specification of the requirements

# Gather Requirements

- Requirements may come from anywhere
- The project vision is the starting point of your journey to locating the requirements
- Existing documentation, business procedures, user manuals and the existing system can all be used to start the requirements analysis process
- In some cases a piece of the puzzle may be missing; in this situation you must, using your best guess, create it yourself

# Haphazardly Gathered Requirements

# Solicit Information

- Pieces of the puzzle are scattered over various departments within the organization; for example the security department has access requirements
- Don’t expect to find all of the pieces from a department stacked neatly on the supervisors’ desk
- Look for pieces to come from anyone that works in the department and even people interfacing with people within that department
- Pieces may be mixed in with pieces from other puzzles; for example the security department is not only concerned with access to computer systems, but also with access to the company premises

# Solicited Requirements Information

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# Elucidate Information

- Once we have gathered a large number of pieces for the puzzle we now organize them in such a way that we can get feedback on what we have gathered
- Pieces are grouped into piles that appear to be for the similar parts of the puzzle
- Odd or outstanding pieces are shown to the stakeholders for clarification whether they are part of the puzzle, or need further identification as to which part of the puzzle that they belong to

# Grouped Requirements Information

# Scope The Problem

- Define the boundary for the problem space, just as one might start a puzzle by completing the edge pieces first
- Work with requirements, we identify the interfaces to the problem space by specifying the events and data entering and leaving a solution
- Actors (systems and people interfacing with the problem space) provide the scope
- Draw and maintain a context diagram that describes the interfaces to the problem space

# Scoped Problem Space


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# Organize Information

- Start putting together pieces of similar color and texture to form components of the picture
- Puzzle components represent use cases (or similar requirements tool) that describe a set of related requirements
- The components are not necessarily consistent with the departments from which the pieces were solicited
- Information from many areas may be combined into a single component (use case)

# Components Of The Requirements

# Analyze Requirements

- The first part of the analysis is to put the component pieces of the puzzle (use cases) together inside the boundary edges of the puzzle (context of the problem space) in such a way that they form a complete picture
- When components are linked there will be spaces between them and maybe even some mistakes in the making of those component parts
- Fixing these problems is the final part of requirements analysis; use cases alone will not provide a complete solution to the problem
- Use cases should be connected using a combination of class, state and sequence diagrams to show inconsistencies, errors and missing requirements

# Components Within The Scope

# An Analyzed Set Of Requirements

- Producing a puzzle completion of 90% is an almost always 'good enough'
- Even the first deployment of a complete system (after development and testing) is often acceptable with 90% satisfaction of stakeholder requirements
- Remember that Business Analysts do not get to see a picture of the complete puzzle until after it is deployed

# The Complete Puzzle

# Summary

- No specification is ever perfect. We work from our best guess of the problem space
- The business analyst creates a specification of the problem through soliciting, analyzing, reviewing requirements and repeating the process
- Early discovery of actors (both people and systems) that define interfaces
- Build incrementally by specifying objects in the picture one at a time and reviewing them
- Locate hard to find pieces before building the easy objects