SPARX GLOBAL

ENTERPRISE ARCHITECT 15

The Business Value of Modeling

SPARX SYSTEMS

Scott Hebbard

- Communications Manager at Sparx Systems
- Over 2 decades of experience in computing and modeling

Sparx Systems

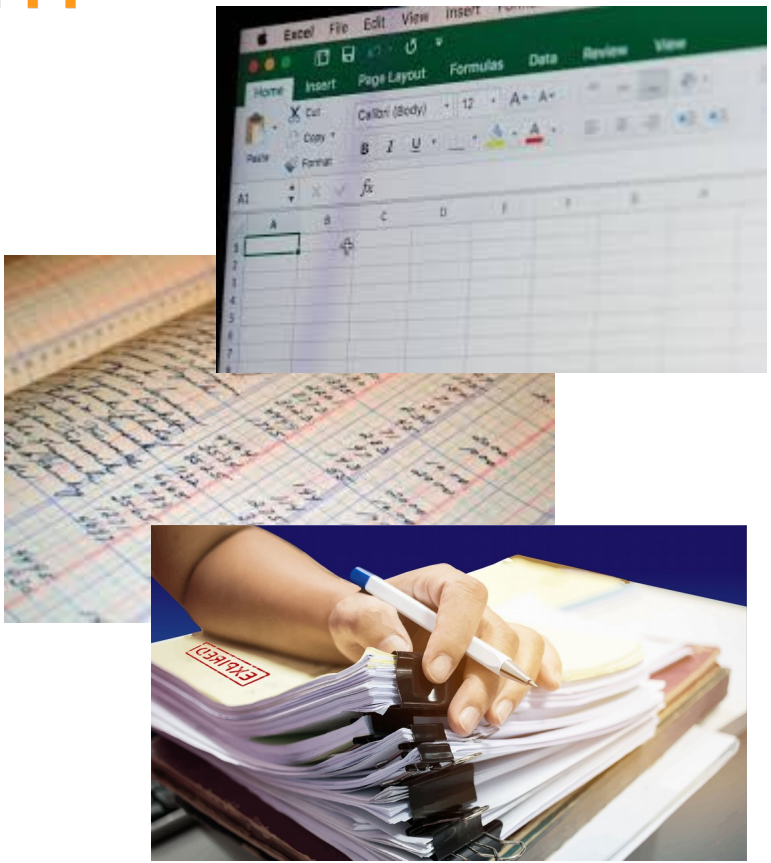
- Enterprise Architect:
  - Commercially released in 2000
  - Based in Creswick, near Melbourne, Victoria, Australia
  - 850,000+ paid users world wide
  - Designing and specifying ‘complex’ systems
  - Customers in all industries including Aerospace, Aviation, Retail Banking, Finance, Insurance, Healthcare, Government, Military, Utilities, Auto, Geospatial and much more

Agenda

- Discuss the Business Value of Modeling
- Reasons for implementing tooling
- Demonstration of the benefits using Enterprise Architect
- Questions and summary

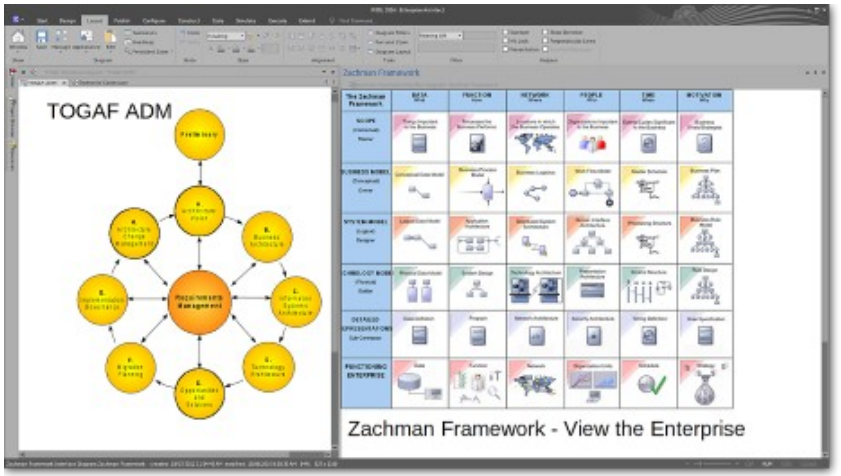
The Problem

- Office tools are ubiquitous – not suited for all tasks
- Spreadsheets are not suitable for requirements
- Drawing tools are not designed for enterprise architecture
- Written reports and diagrams are static with no traceability
- As organizations mature and grow, a more comprehensive approach is required that scales



Benefits of Modeling

- Gain insight into an organization or system
- Understand the impact of change
- Reduce and mitigate risk
- Reduce Complexity
- Improve Process
- Transformation



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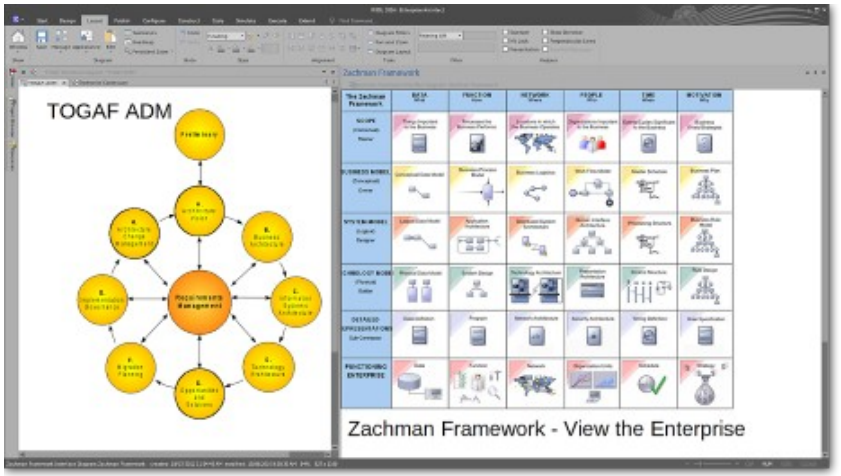

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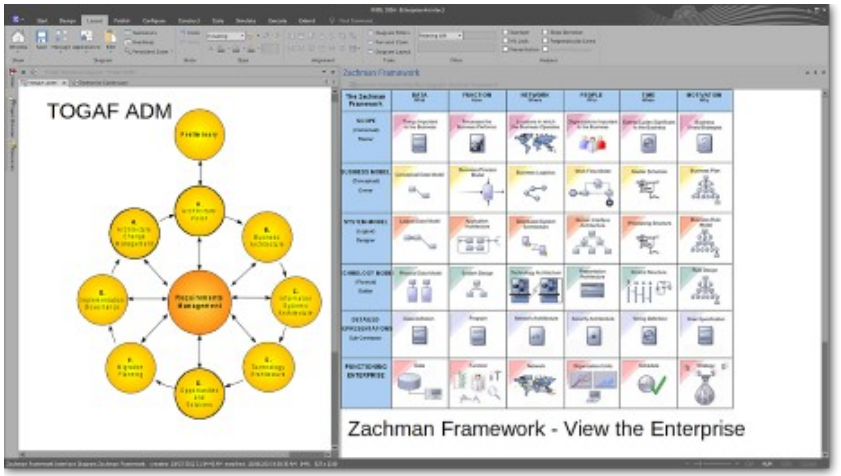
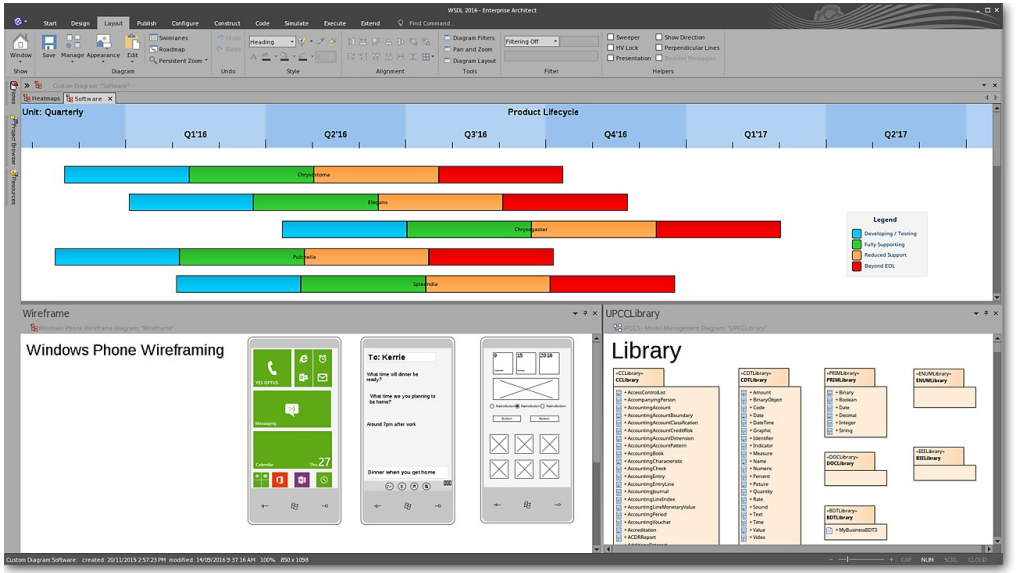


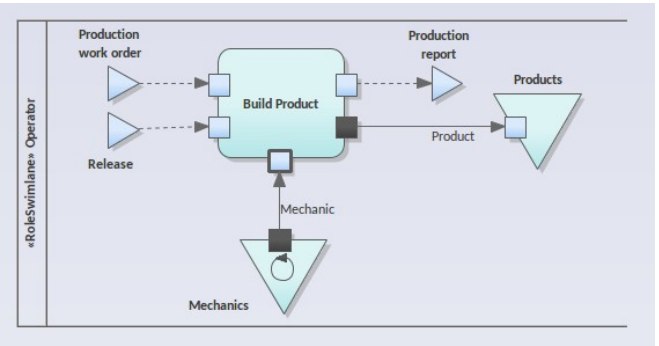
Benefits of Modeling

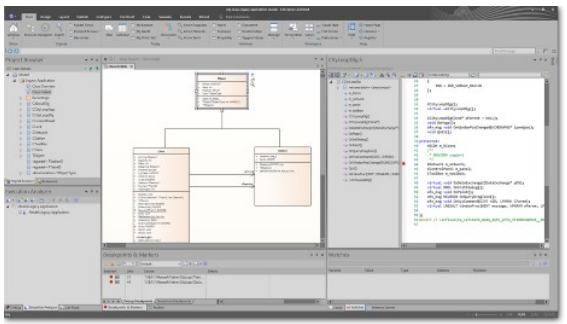
- Reuse
- Traceability
- Improves productivity
- Understand the business
- Make better decisions
- Retain knowledge



Benefits of Modeling

- Captures an understanding of the system
- Great for training or on-boarding of new s
- Improves documentation
- Helps to decompose complex systems into meaningful chunks
- Improve maintenance
- Reduce defects





Communicate with Stakeholders

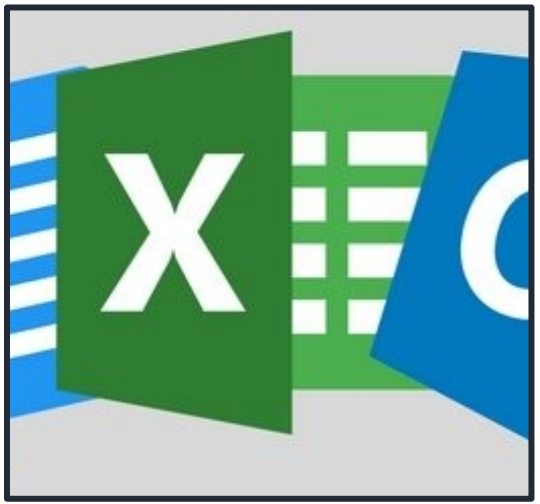
- Clear and Concise
- Models are easy to understand
- Explore connections
- Provide relevant information
- Easily accessible from any device
- Up to date

Problems with Office Tools

- Out of date the moment they are published
- Hard to distribute
- Static
- No feedback
- Hard to reuse without editing

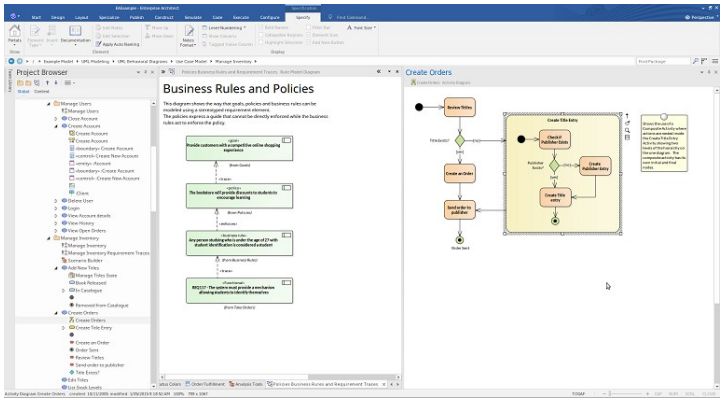
Drawing vs Modeling

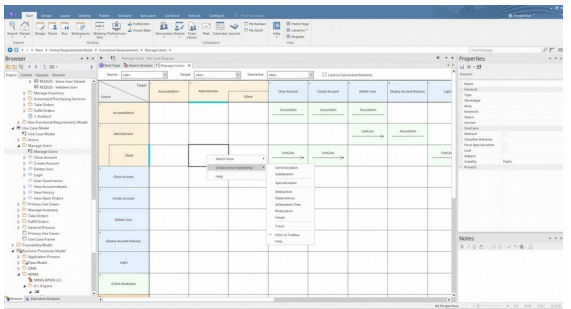
- Drawing is static and confined to a single diagram
- Any change requires a new diagram
- Content becomes out of date
- Difficult to maintain
- Hard to scale



What Enterprise Architect Offers

- Manage and gather requirements
- Model software and systems
- Model and analyze business processes
- Build design and behavioral models





What Enterprise Architect Offers

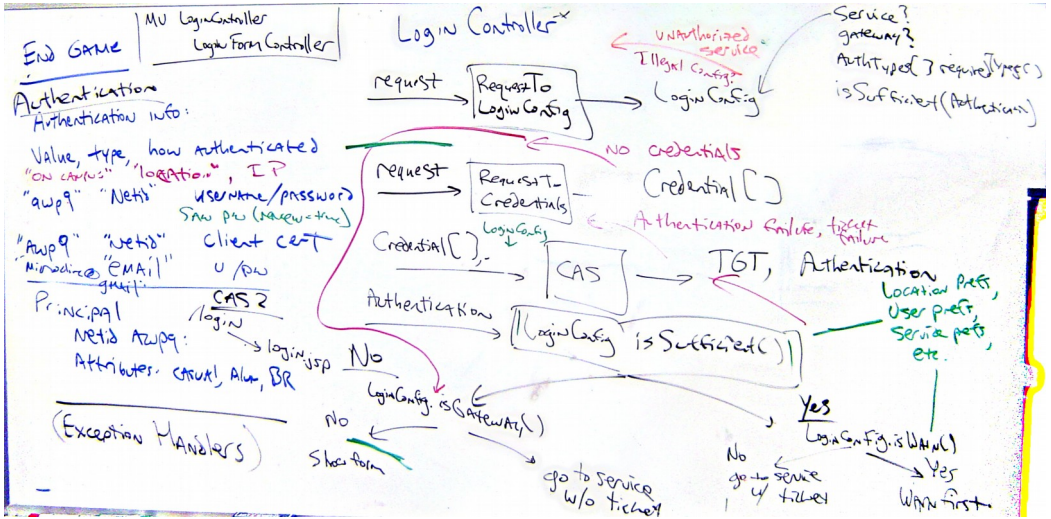
- Collaboration and team development
- Traceability from requirements through to deployment
- Model any system from a web application to embedded system
- Extensive project management support
- Test management and code engineering

Requirements - Gathering

- Offline means:
  - White Boards
  - Post IT Notes / Napkins / Notepads

- Software Based:
  - Word / Excel
  - Visio / Jira
  - Sparx Systems Enterprise Architect

Requirements – Whiteboards



Requirements – Whiteboard @6pm

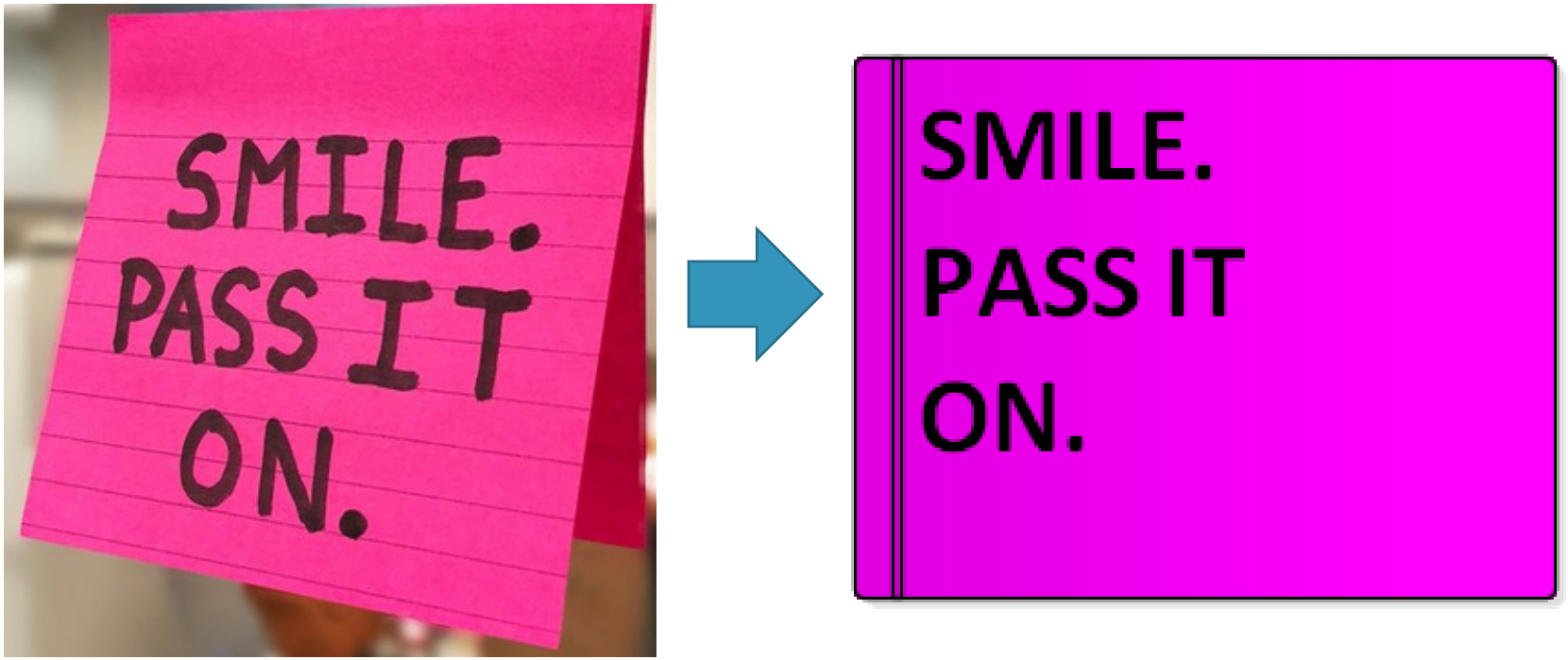
Post IT Notes and Napkins

Post IT Notes – Advanced Mode

Right Tool for the Task at Hand

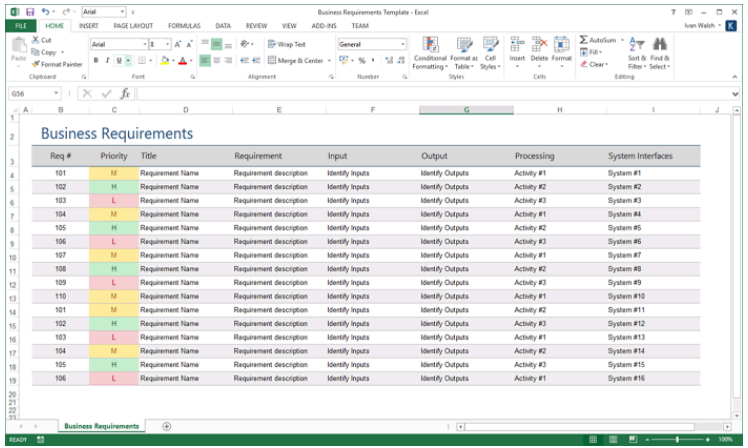
- Allow you to work as you always have done
- Will allow you to create understandable specifications
- Empower you to drive down steam activities
- Make subsequent projects faster
- Retain a history of decisions and implementations

Build Requirements



Convert to a Digital Approach

Work Like You Always Have



Name	Author	Priority	Status	Version	Type	Difficulty	Modified
					re		
REQ011 - Manage User Accounts	Paulene Dean	High	Validated	1.0	Requirement	Medium	6/11/2015
REQ025 - Store User Details	Paulene Dean	Medium	Validated	1.0	Requirement	Medium	24/04/2015
REQ027 - Secure Access	Tom O'Reilly	Low	Validated	1.0	Requirement	Medium	27/04/2016
REQ018 - Report on User Account	Paulene Dean	High	Proposed	1.0	Requirement	Medium	27/04/2016
REQ024 - Secure Access	Paulene Dean	High	Proposed	1.0	Requirement	Medium	26/08/2015
REQ017 -Remove User	Paulene Dean	Low	Validated	3.0	Requirement	Medium	27/04/2016
REQ026 - Validate User	Paulene Dean	Medium	Proposed	1.0	Requirement	Low	4/09/2015
REQ016 -Add Users	Paulene Dean	High	Validated	2.0	Requirement	Medium	28/01/2015

Structured Scenarios

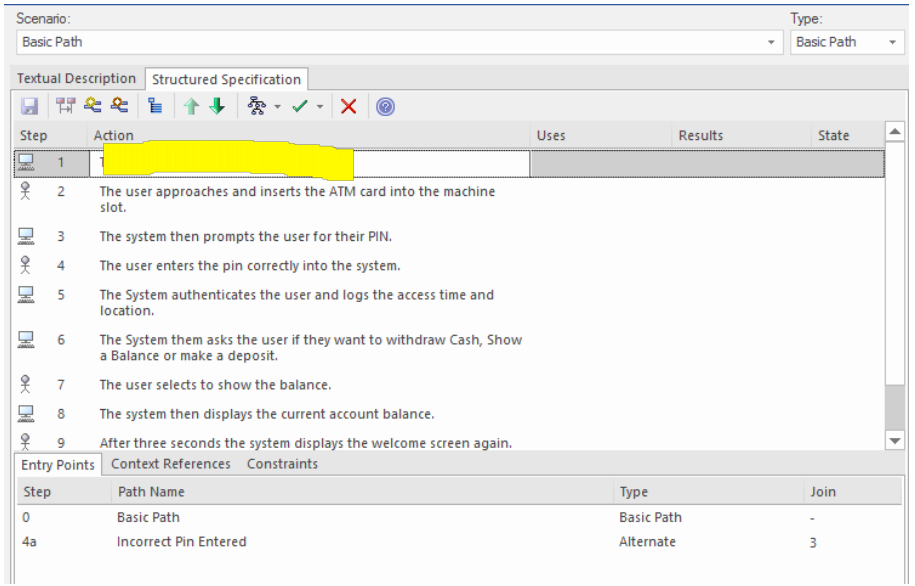
- Text to structure
- Structure to model
- Structure to tests

Structured Scenarios

- Automatically create structured data out of existing requirements/use cases/user stories

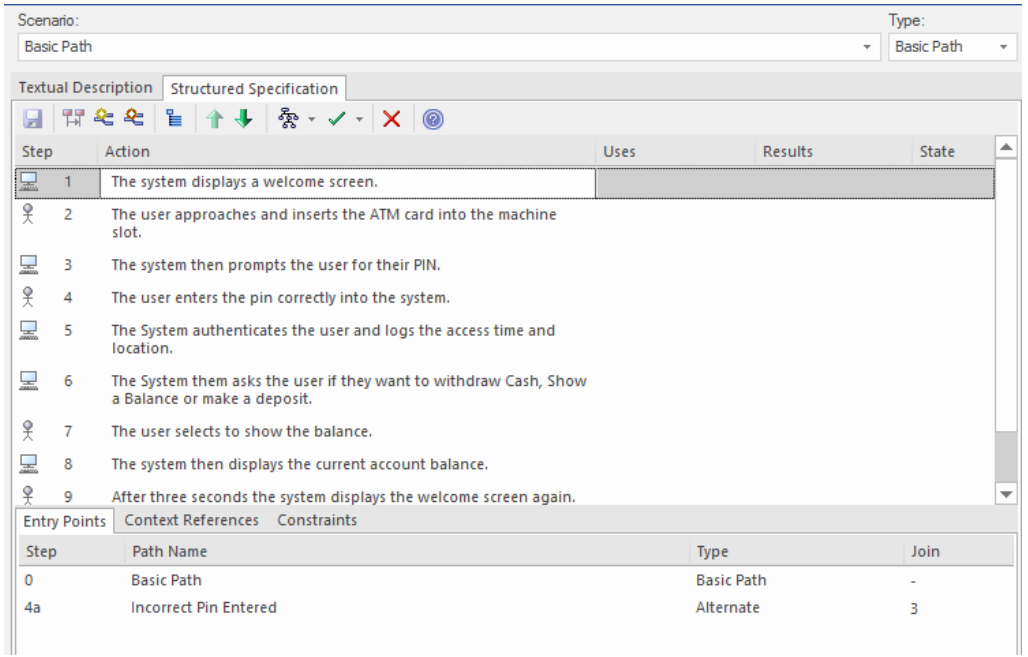
ATM User Story

[redacted] The user approaches and inserts the ATM card into the machine slot. The system then prompts the user for their PIN. The user enters the pin correctly into the system. The System authenticates the user and logs the access time and location. The System them asks the user if they want to withdraw Cash, Show a Balance or make a deposit. The user selects to show the balance. The system then displays the current account balance. After three seconds the system displays the welcome screen again



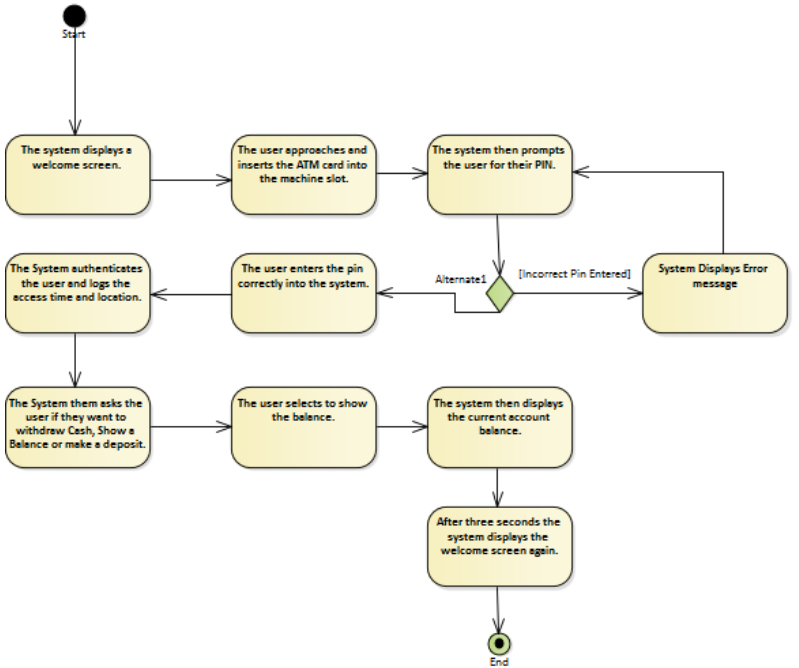
Structured Scenarios

- Create Diagrams, Tests, Sequence Diagrams and more



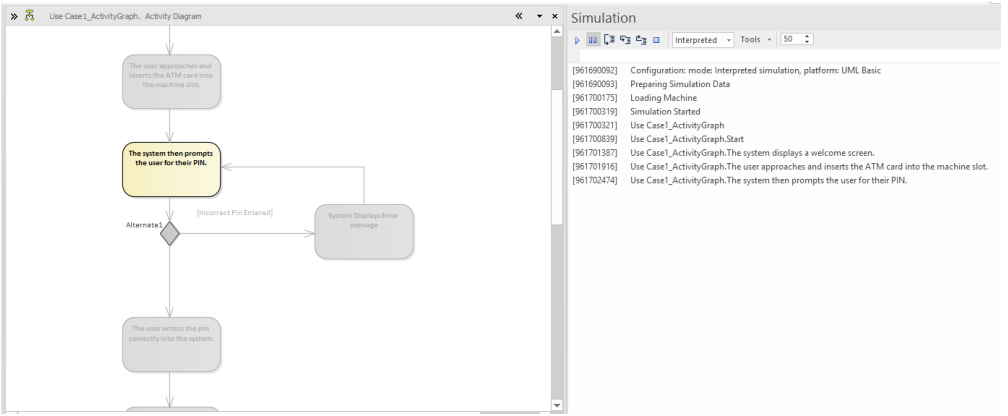
Structured Scenarios Activity Diagrams

- Easier to follow
- Identify any erroneous steps
- Looks nice in a report
- No extra effort needed



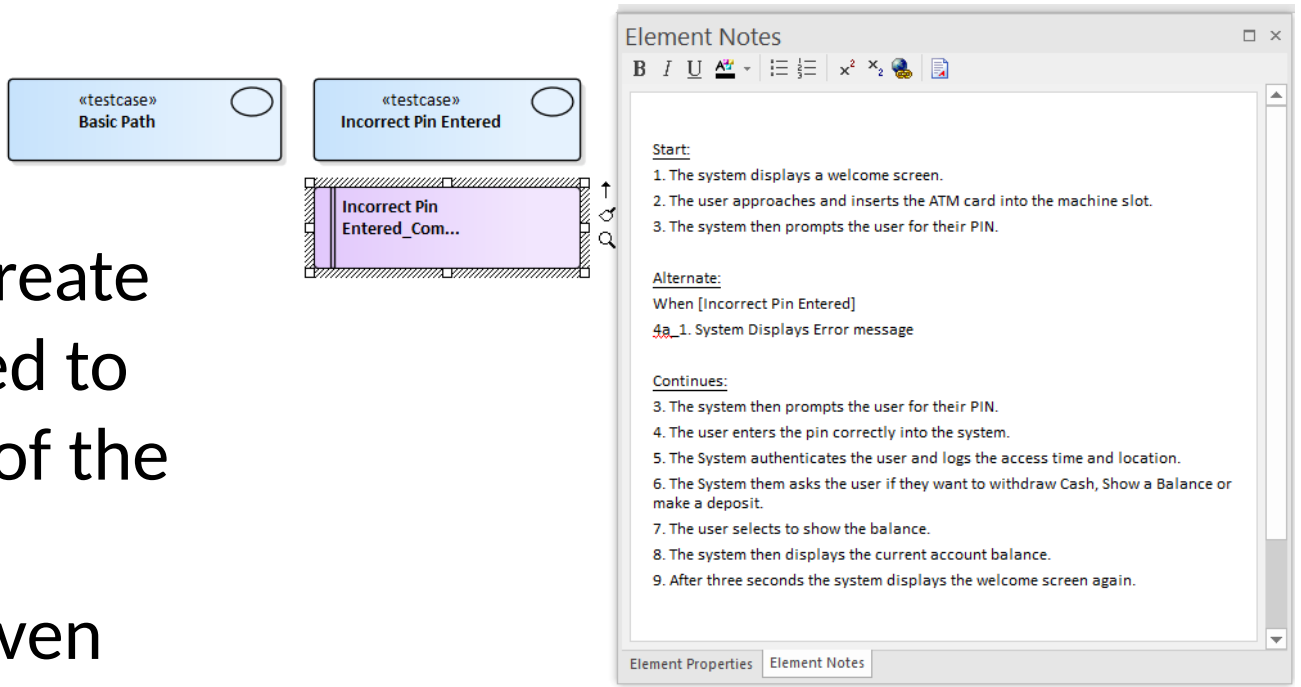
Structured Scenarios
Basic Simulation

- Visually follow the process
- Identify any bottlenecks
- Repeatable
- Ensure the process can finish
  - No endless loops



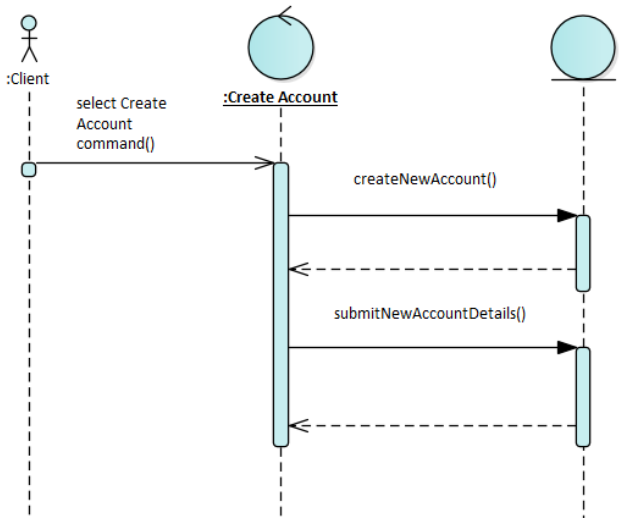
Structured Scenarios
Test Sets

- Automatically create the steps needed to test all aspects of the process.
- Start of Test Driven Design



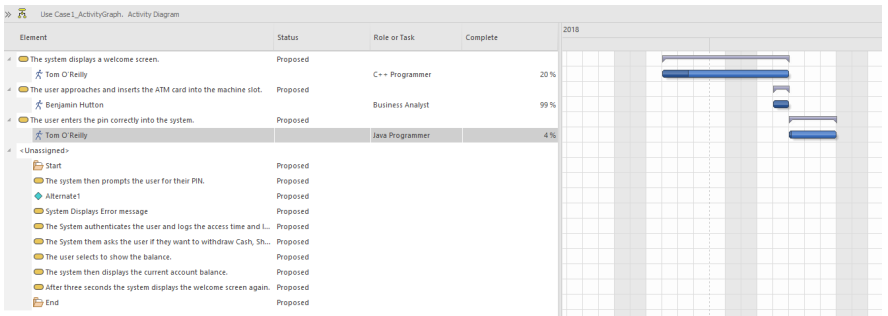
Structured Scenarios
Sequence Diagrams

- Start identifying the actors of a system
- How to interact with a system
- Capture the interaction between objects in the context of a collaboration.



Structured Scenarios Gantt Chart

- Role dependent custom views
  - (Gantt, Excel, Document, Model etc.)
- Assign resources to steps – Project Planning

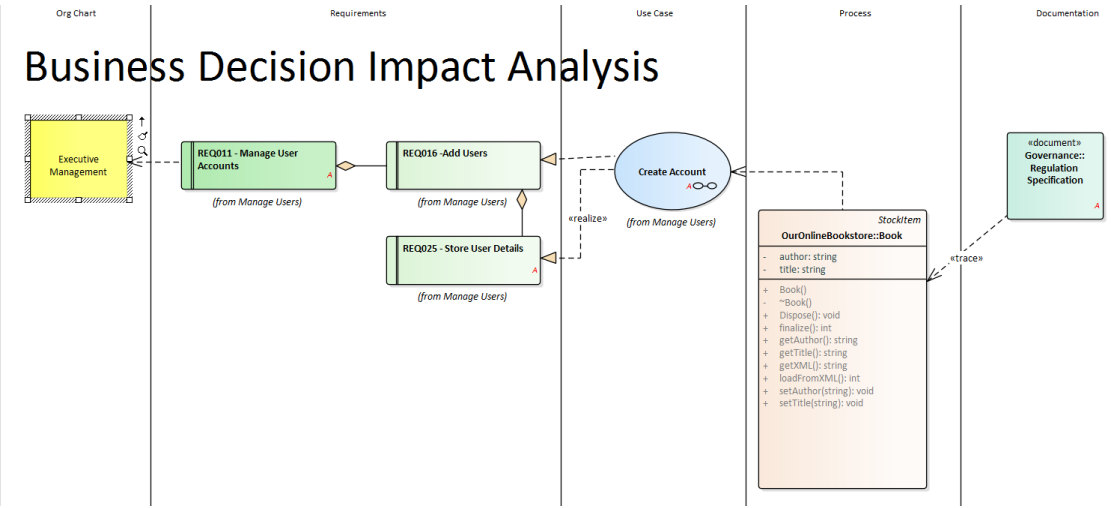


Using This Model

- Empower down stream activities
- Traceability
- Impact analysis
- Create accurate changes
- Gain insights
- Model driven development

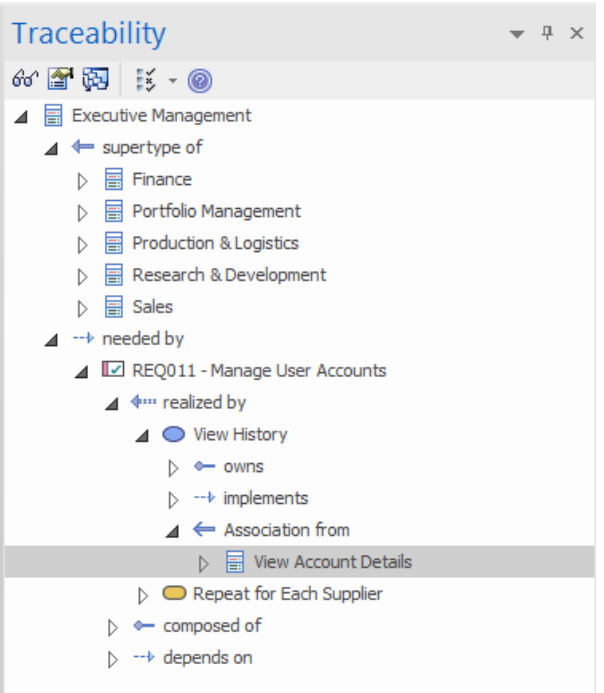
Traceability in Diagrams

- Can be hand crafted
- Automatic connectors for related elements



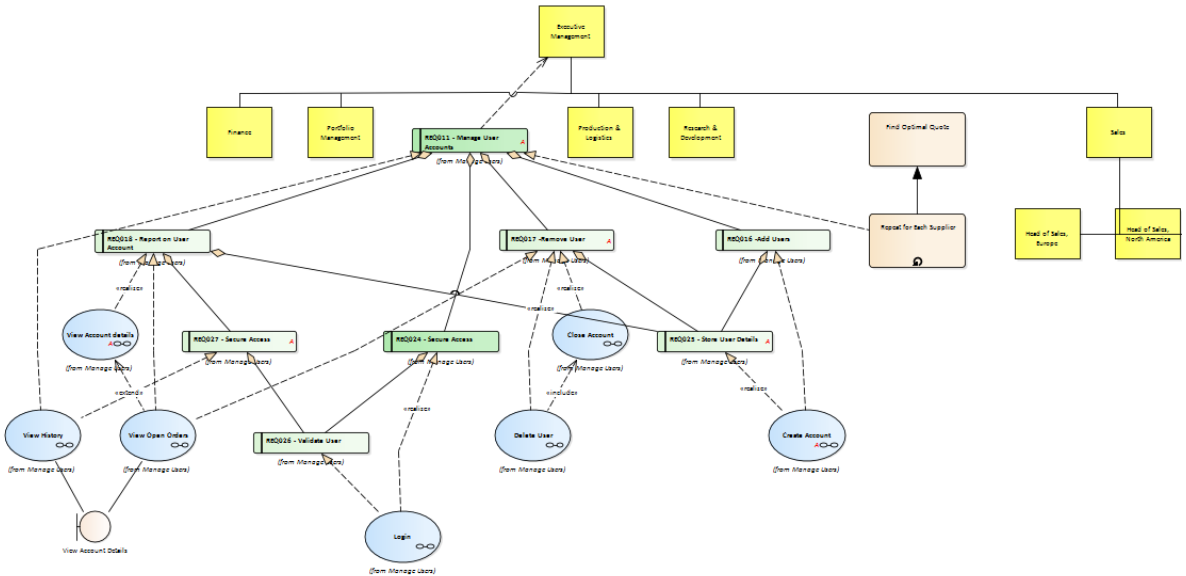
Traceability View

- Can be dynamic
- Easy to drill down
- Follow a path from strategy to implementation
- Context sensitive



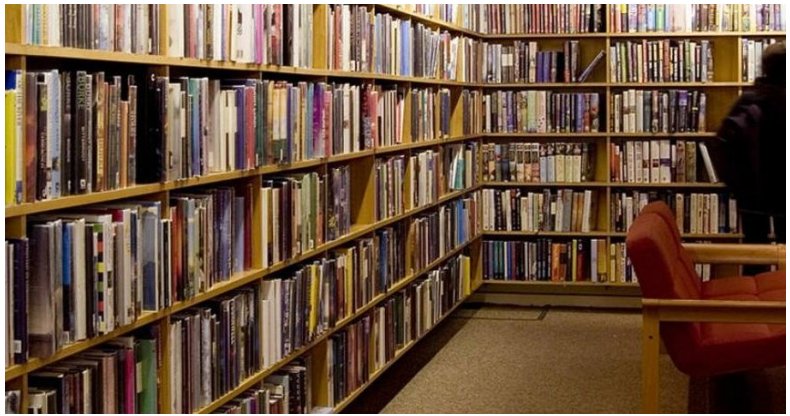
Traceability for True Impact Analysis

- Automatic
- Can identify unforeseen relationships
- Hard to reach this insight with a whiteboard



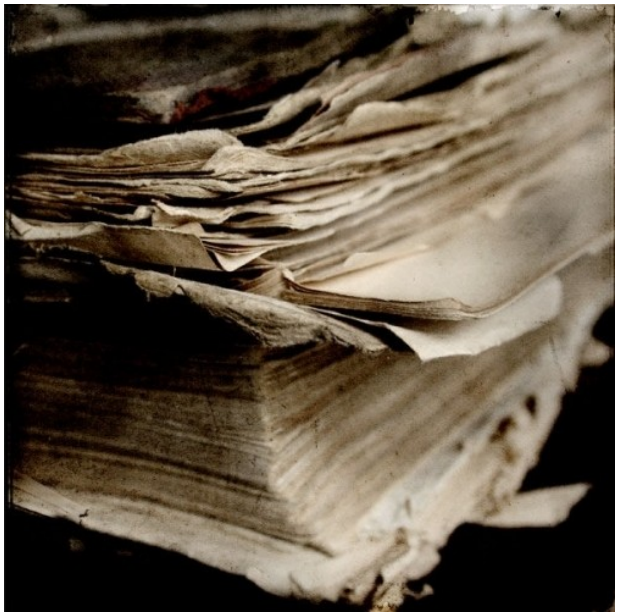
Reuse

- Never create the same requirement
- Build up a library



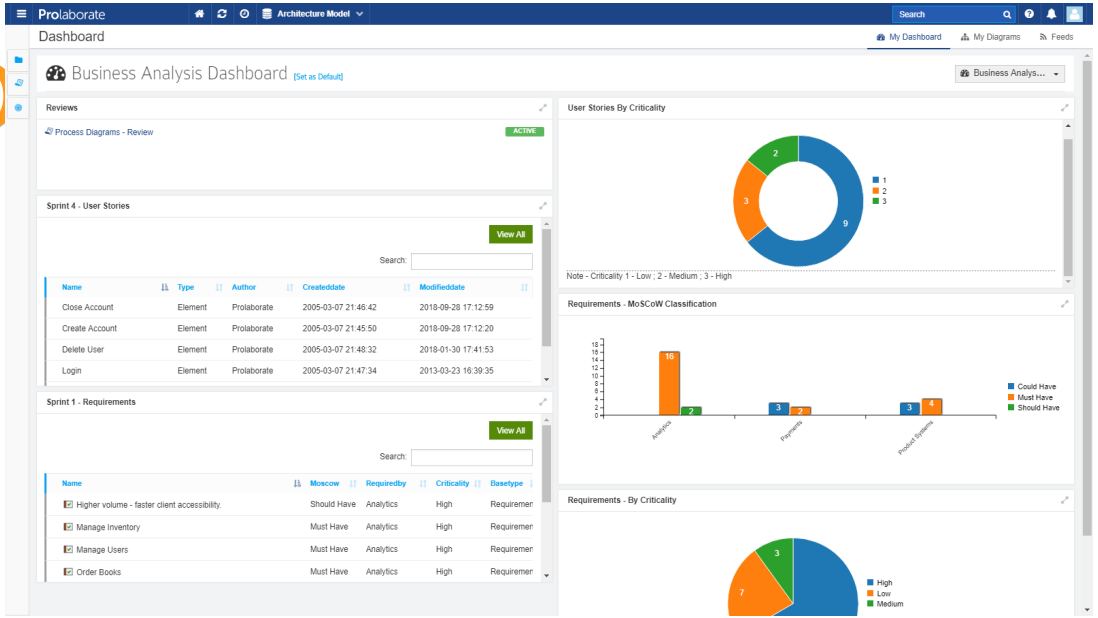
Retain Knowledge

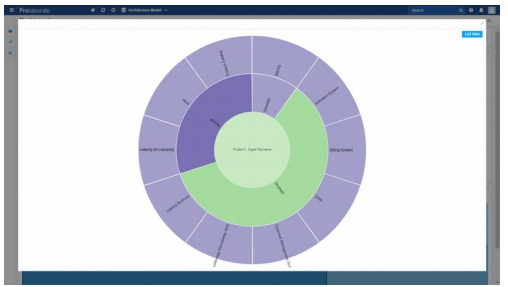
- Specifications come out of dusty draws
- Maintainable for years
- Doesn’t require a “knowledge silo” to remember the decisions made 10 years earlier



Communicatio

- Web based dashboards
- Curated views
- Easily consumable
- Socialize your business
- Provides real time analysis of the current model





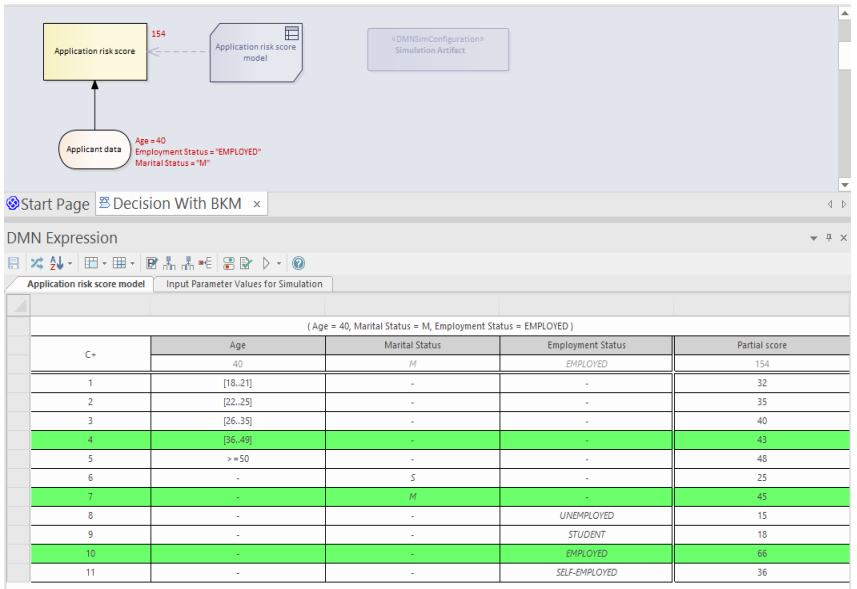
Prolaborate

Decisions - DMN

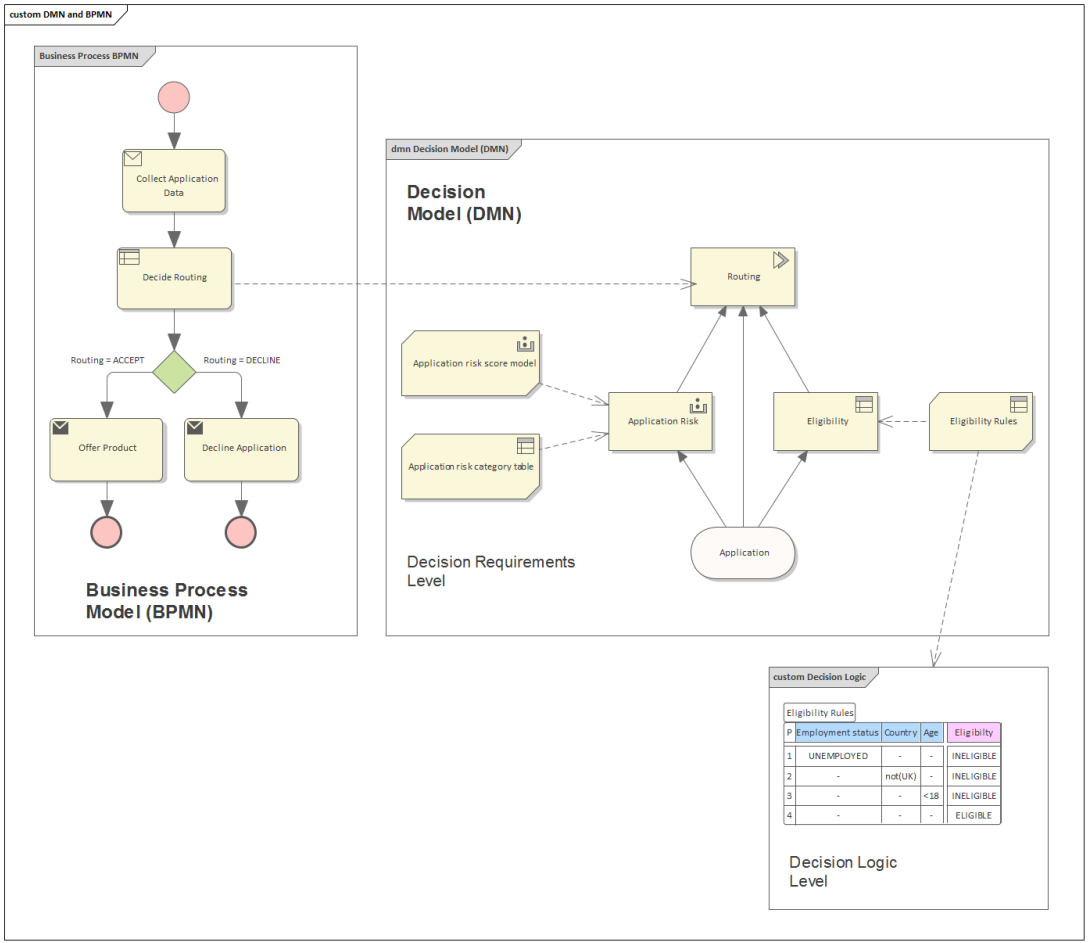
- Decision Model and Notation (DMN) is intended to provide a bridge between business process models and decision logic models
- Build, edit and execute a Decision Table
- Bridges Business and IT
- Puts the power in your hands
- Validate rule models to find and eliminate logical errors

Decision Model and Notation

- Easy to use interface that both business and IT can use
- Spread Sheet look and feel
- Easy to modify programming logic
- Generate source code directly to your solution.
- The basis for AI



Model Complex Decisions



DMN – Code Generation

(Age = 40, Marital Status = M, Employment Status = EMPLOYED)

C+	Age	Marital Status	Employment Status	Partial score
	40	M	EMPLOYED	154
1	[18..21]	-	-	32
2	[22..25]	-	-	35
3	[26..35]	-	-	40
4	[36..49]	-	-	43
5	>=50	-	-	48
6	-	S	-	25
7	-	M	-	45
8	-	-	UNEMPLOYED	15
9	-	-	STUDENT	18
10	-	-	EMPLOYED	66
11	-	-	SELF-EMPLOYED	36

```
//Business Knowledge Model Definitions
//Function Defined In: "Application_risk_score_model", Request Output:"
public static double Application_risk_score_model_Partial_score(double
{
    //DecisionTable HitPolicy: "COLLECT"; Request Output: "Partial_scor
    ArrayList<Double> Partial_score_collection = new ArrayList<>();
    //DecisionTable Rule Definitions Begin
    //Rule #: 1
    if((Age)>=18 && (Age)<=21)
    {
        double outputEntryValue = 32;
        Partial_score_collection.add(outputEntryValue);
    }
    //Rule #: 2
    if((Age)>=22 && (Age)<=25)
    {
        double outputEntryValue = 35;
        Partial_score_collection.add(outputEntryValue);
    }
    //Rule #: 3
    if((Age)>=26 && (Age)<=35)
    {
        double outputEntryValue = 40;
        Partial_score_collection.add(outputEntryValue);
    }
    //Rule #: 4
    if((Age)>=36 && (Age)<=49)
    {
        double outputEntryValue = 43;
        Partial_score_collection.add(outputEntryValue);
    }
    //Rule #: 5
    if((Age)>=50)
    {
        double outputEntryValue = 48;
        Partial_score_collection.add(outputEntryValue);
    }
    //Rule #: 6
    if((Marital_Status).equals("S"))
    {
        double outputEntryValue = 25;
        Partial_score_collection.add(outputEntryValue);
    }
    //Rule #: 7
    if((Marital_Status).equals("M"))
    {
        double outputEntryValue = 45;
```

DMN Generation

- Generate to a number of different languages
- Use tree structure to develop extremely complex decisions
- Can test the decisions in the tool
- Rapidly change logic without editing code
- Integrates seamlessly to simulate business processes and logic

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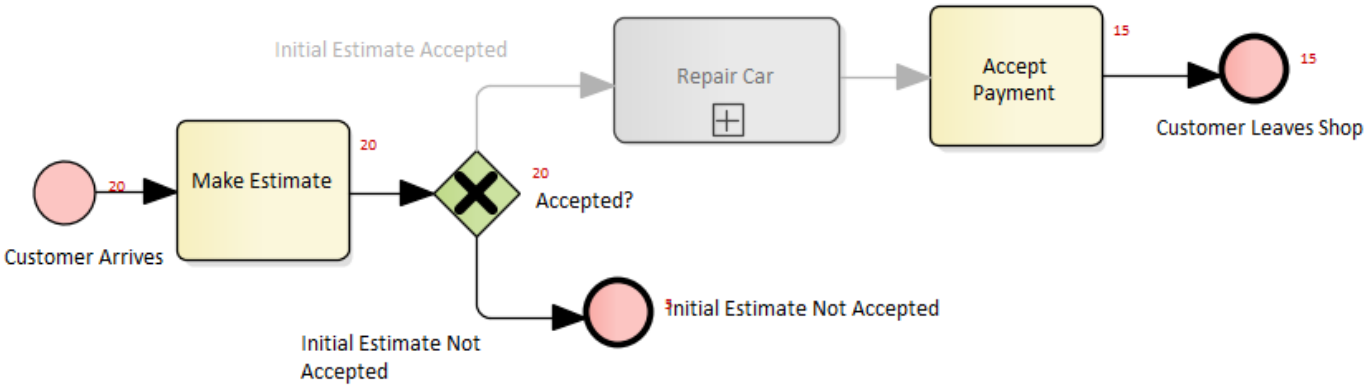
```

Simulation - BPSim

- Comprehensive simulation of processes
- Integrates in with BPMN
- Run and store results from multiple simulations
- Better understand your process

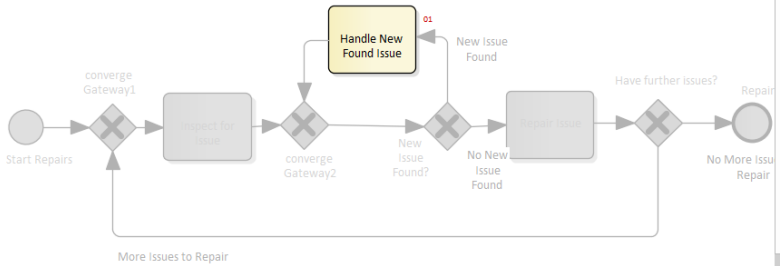
Simulation - BPSim

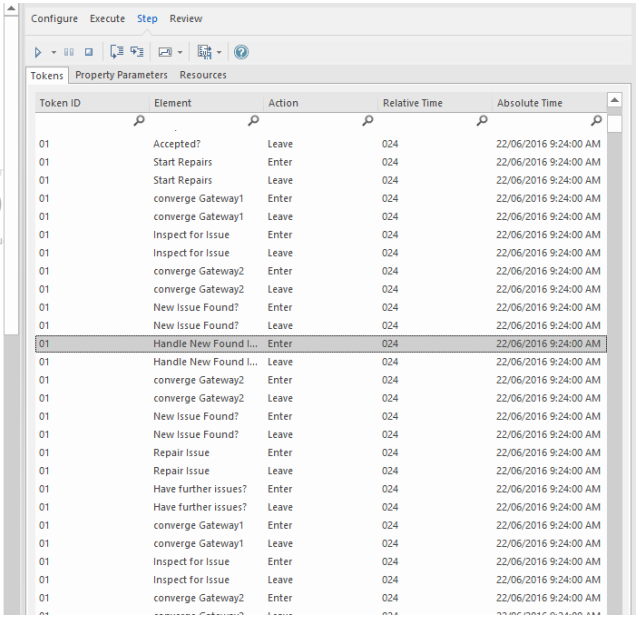
- Comprehensive simulation of processes



Simulation - BPSim

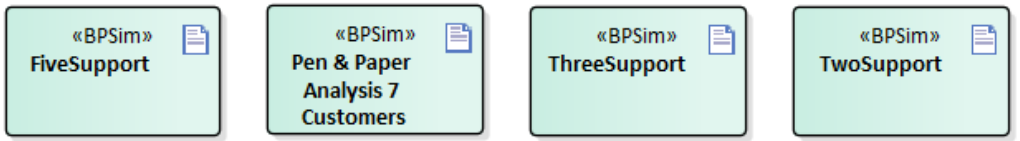
- Step through simulation events
- Know how the simulation ran at any point





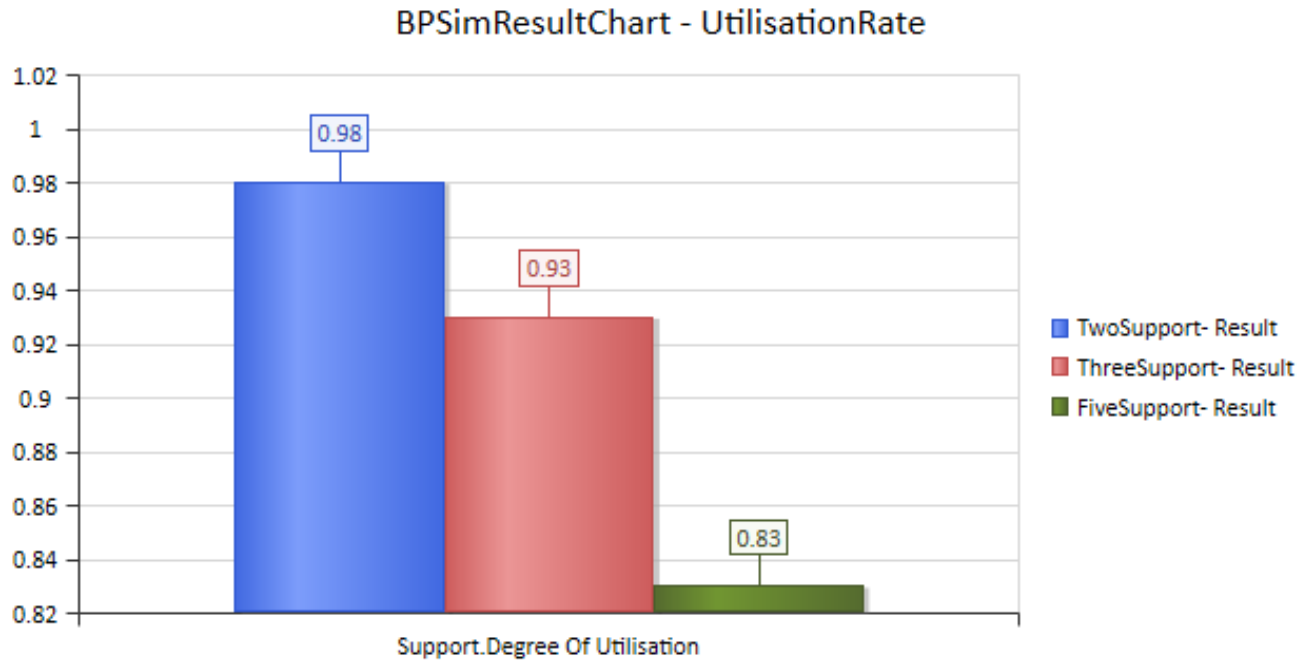
Simulation - BPSim

- Multiple simulation configurations outside the process
  - Able to ask “What if” questions

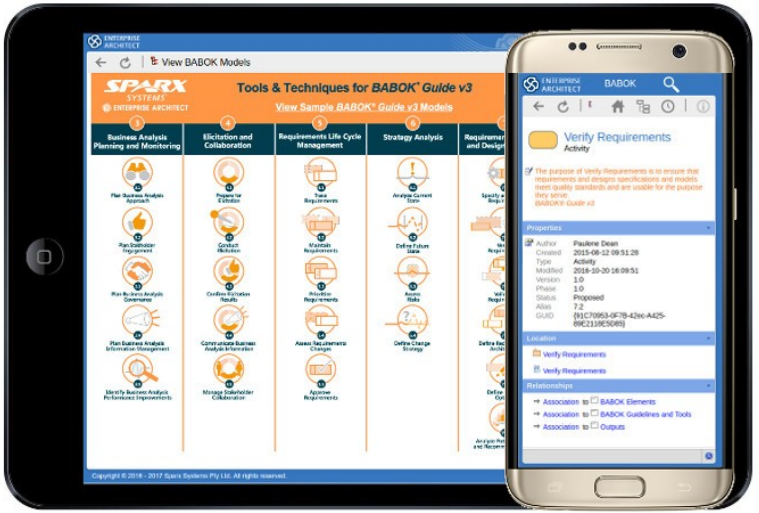


Simulation - BPSim

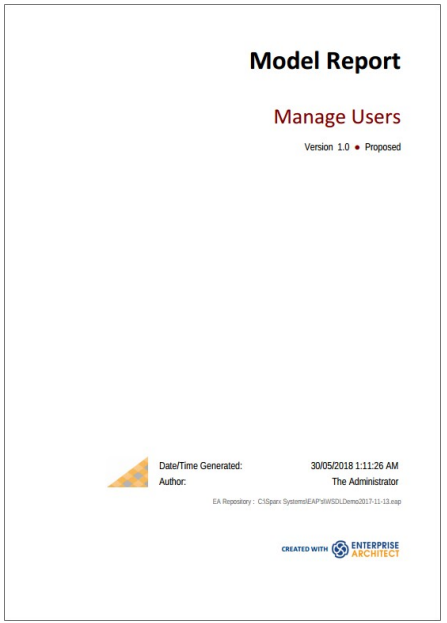
- Use charts and graphs to display the results



Sharing Models



Documents Templates


Model Report

Manage Users

Version 1.0 • Proposed

Date/Time Generated: 30/05/2018 1:11:26 AM

Author: The Administrator

EA Repository : C:\Sparx Systems\EAP's\WSDLDemo2017-11-13.eap

CREATED WITH ENTERPRISE ARCHITECT

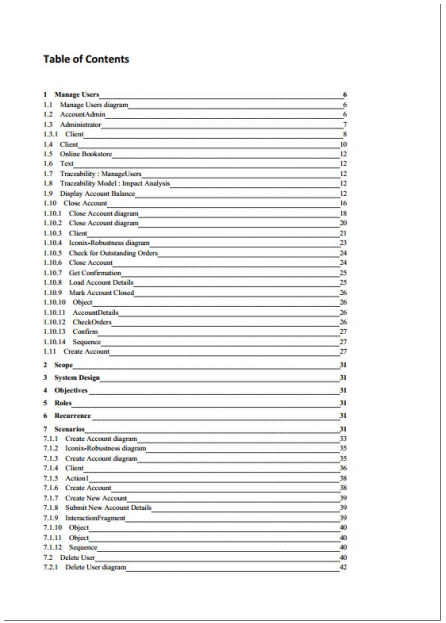


Table of Contents

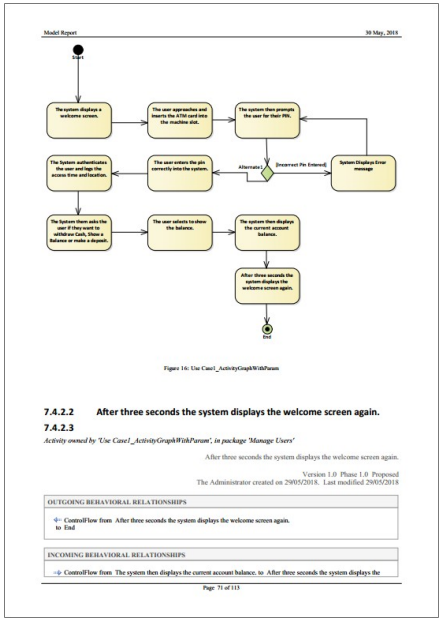


Figure 16: Use Case1_ActivityGraphWithParam

7.4.2.2 After three seconds the system displays the welcome screen again.

7.4.2.3

Activity owned by 'Use Case1_ActivityGraphWithParam', in package 'Manage Users'

After three seconds the system displays the welcome screen again.

Version 1.0 Phase 1.0 Proposed
The Administrator created on 29/05/2018. Last modified 29/05/2018

OUTGOING BEHAVIORAL RELATIONSHIPS

ControlFlow from After three seconds the system displays the welcome screen again. to End

INCOMING BEHAVIORAL RELATIONSHIPS

ControlFlow from The system then displays the current account balance. to After three seconds the system displays the

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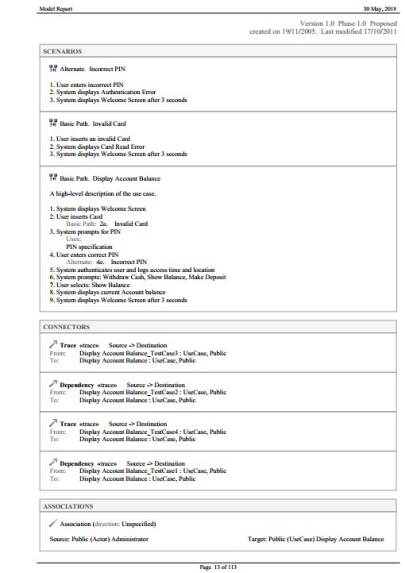


Version 1.0 Phase 1.0 Proposed
created on 19/11/2005. Last modified 17/10/2011

SCENARIOS

Alternate: Incorrect PIN

1. User enters incorrect PIN
2. System displays Authentication Error
3. System displays Welcome Screen after 3 seconds

Basic Path: Invalid Card

1. User inserts an invalid Card
2. System displays Card Read Error
3. System displays Welcome Screen after 3 seconds

Basic Path: Display Account Balance

A high-level description of the use case.

1. System displays Welcome Screen
2. User inserts Card
   Basic Path: 2a. Invalid Card
3. System prompts for PIN
   Uses: PIN specification
4. User enters correct PIN
   Alternate: 4a. Incorrect PIN
5. System authenticates user and logs access time and location
6. System prompts: Withdraw Cash, Show Balance, Make Deposit
7. User selects: Show Balance
8. System displays current Account balance
9. System displays Welcome Screen after 3 seconds

CONNECTORS

Trace «trace» Source -> Destination
From: Display Account Balance_TestCase3 : UseCase, Public
To: Display Account Balance : UseCase, Public

Dependency «trace» Source -> Destination
From: Display Account Balance_TestCase2 : UseCase, Public
To: Display Account Balance : UseCase, Public

Trace «trace» Source -> Destination
From: Display Account Balance_TestCase4 : UseCase, Public
To: Display Account Balance : UseCase, Public

Dependency «trace» Source -> Destination
From: Display Account Balance_TestCase1 : UseCase, Public
To: Display Account Balance : UseCase, Public

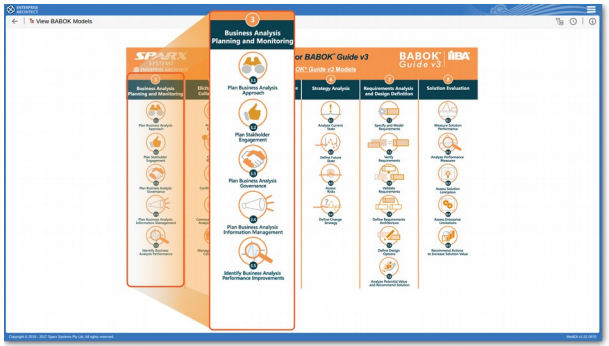
ASSOCIATIONS

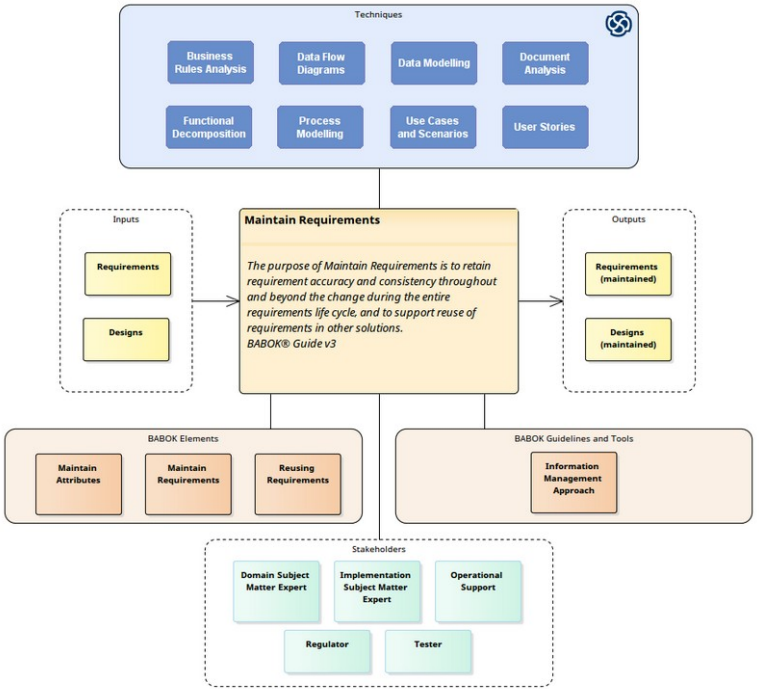
Association (direction: Unspecified)

Source: Public (Actor) Administrator Target: Public (UseCase) Display Account Balance

BABOK Reference Guide

- Freely available
- http://babok.sparxpublic.com/index.
- Access Code: babok.model





BABOK Reference Guide

- Modeling Options
- Diagrams and Tools list
- Fleshed out examples
- Access to help