



## HAVELSAN ALM Solution

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# Outline

- About Havelsan
- What is ALM?
- Havelsan ALM initiative
  - Motivation
  - Methodology Used
  - Gains
- Requirements Management in Havelsan ALM
  - Role of requirements management in ALM
  - HAVELSAN extensions for RM
  - HAVELSAN Use Case



# About Havelsan



1982



2015

30.33rd year



Turkish & Foreign Armed Forces

Public Sector / E-government

Foreign Public Sector

Global Companies



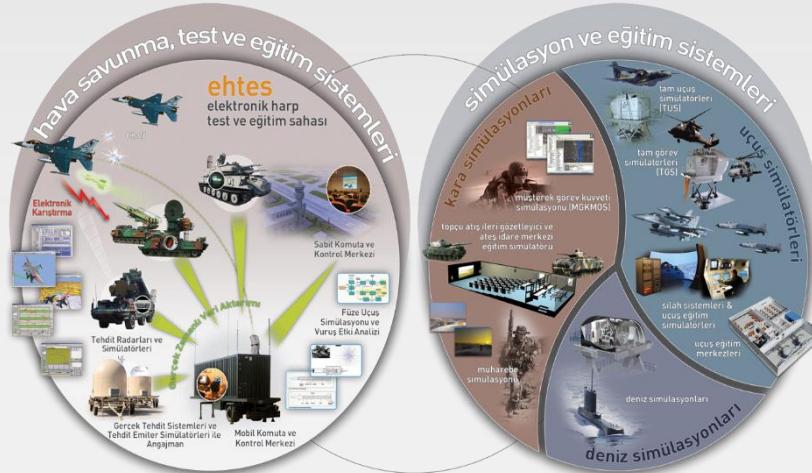
# Main Activity Areas



# Command and Control



# **Management Information Systems**

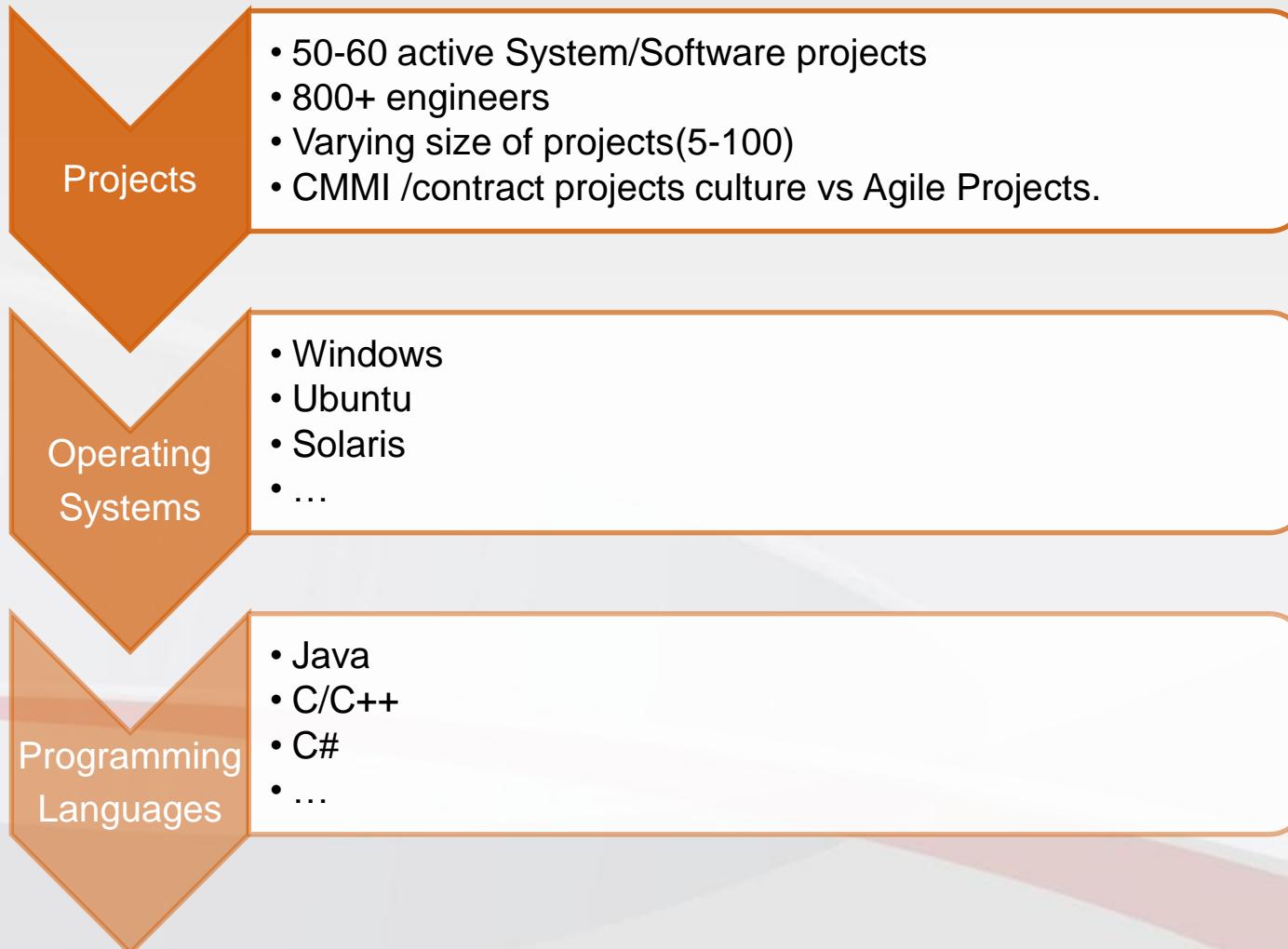


# **Training, Simulation, Test & Evaluation**



# Cyber & Security Solutions

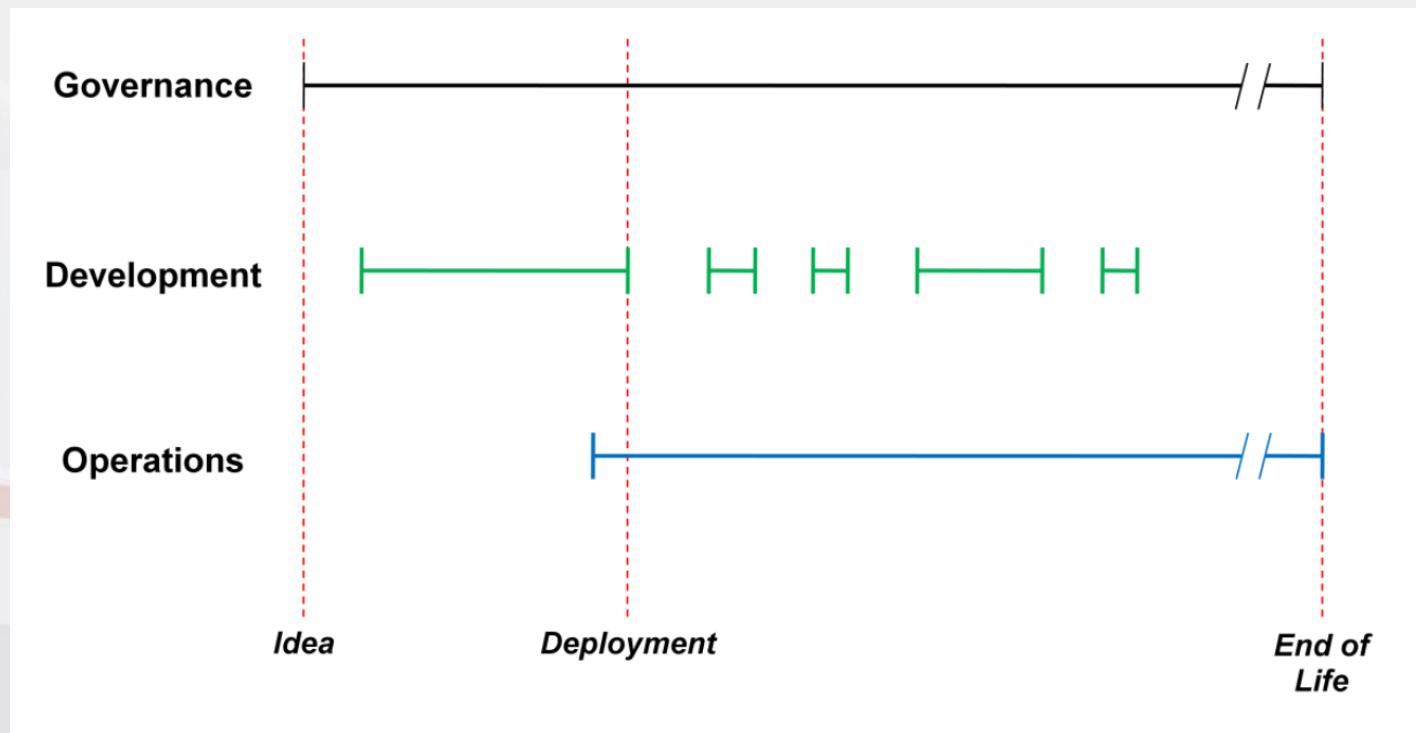
# Summary



# Production Environment



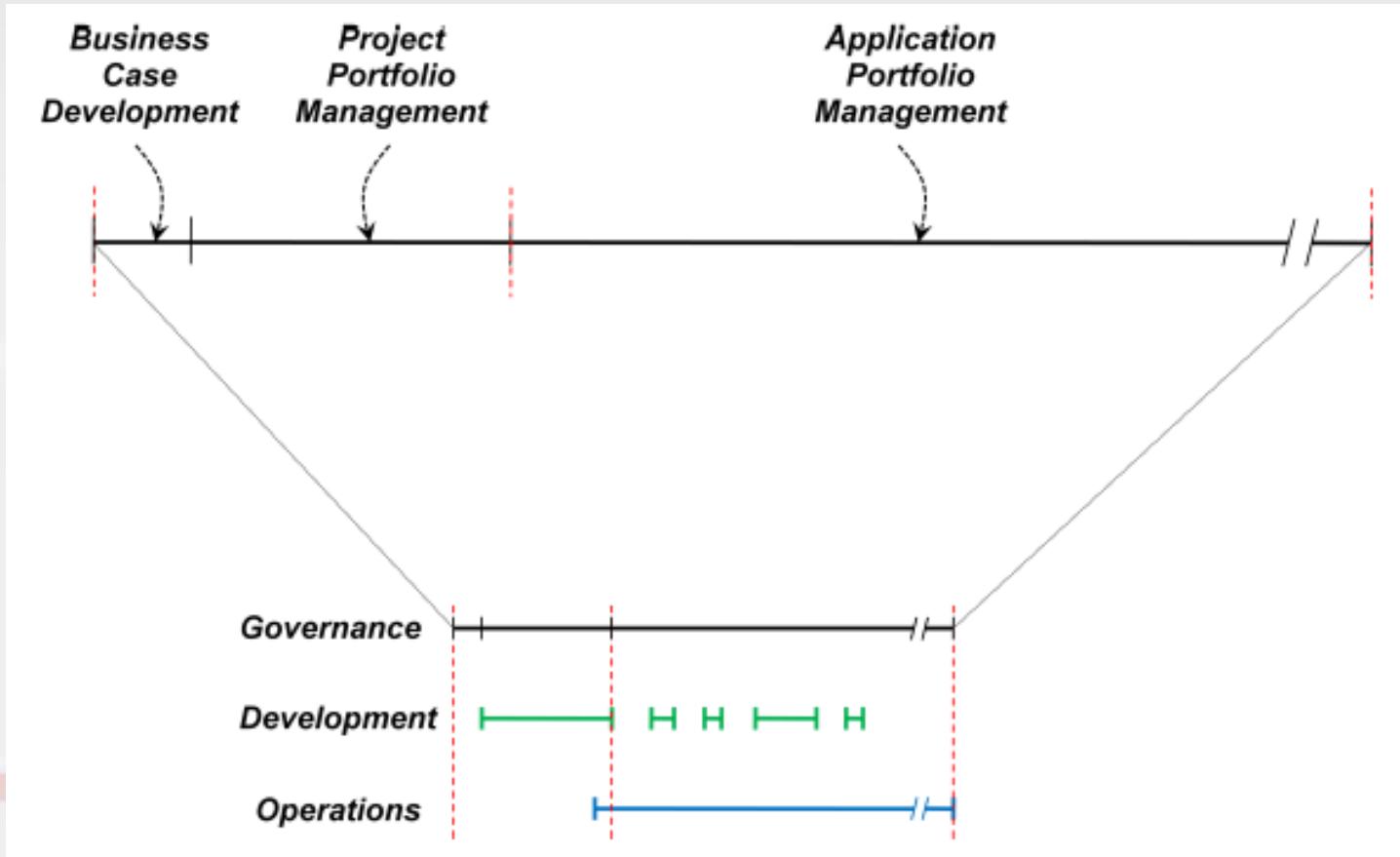
# What is Application Lifecycle Management?



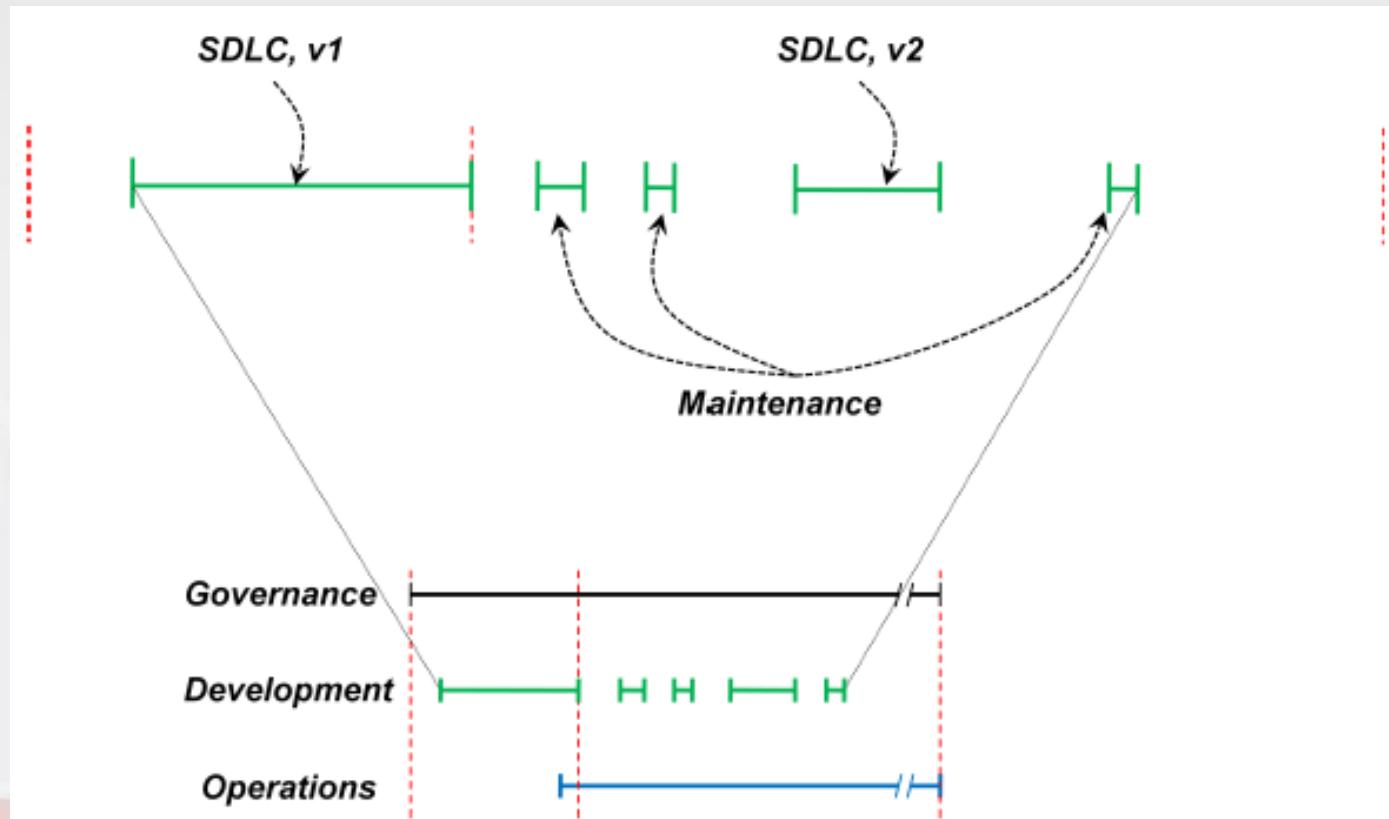
\*David Chappell, What is application lifecycle management?



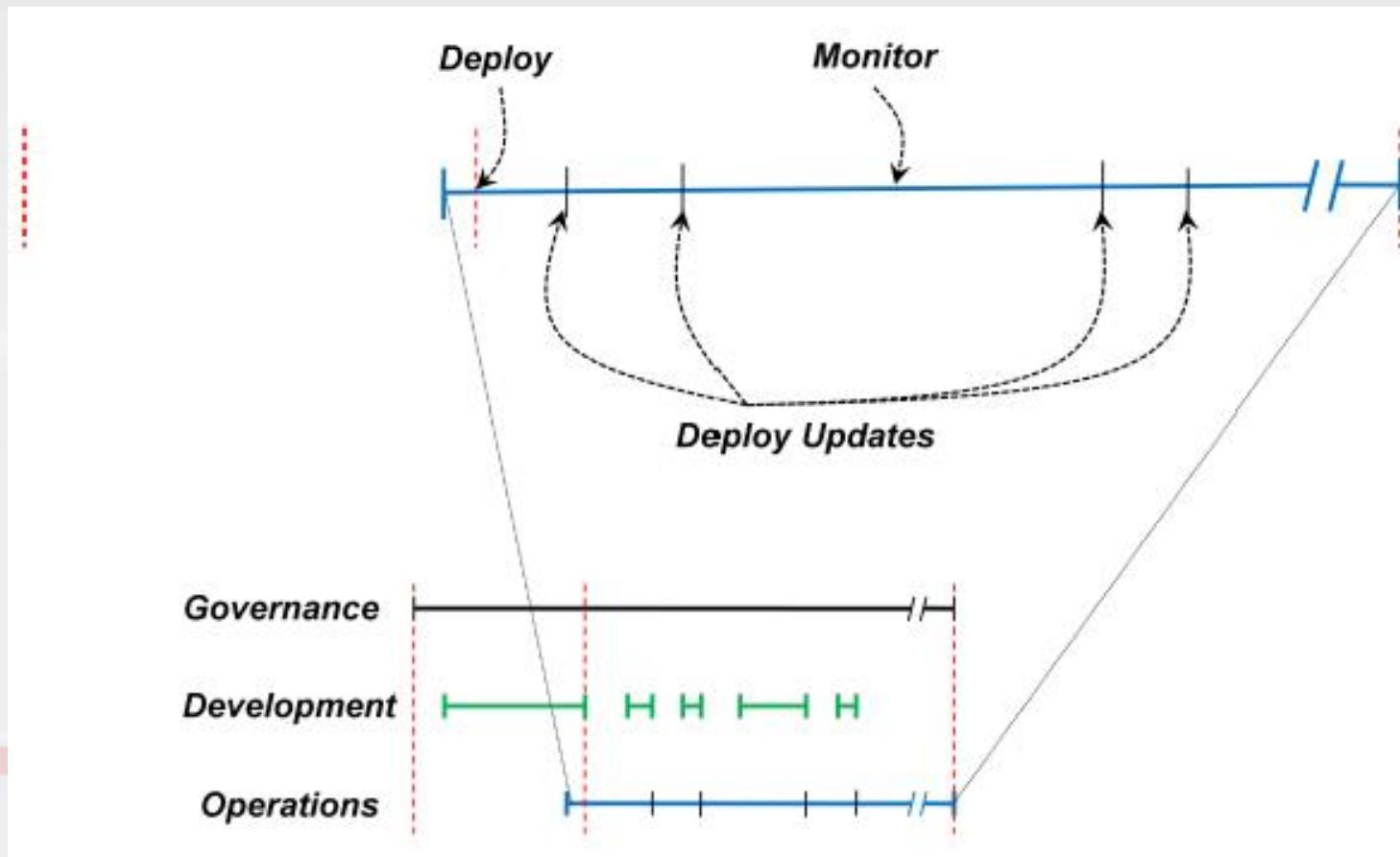
# ALM - Governance



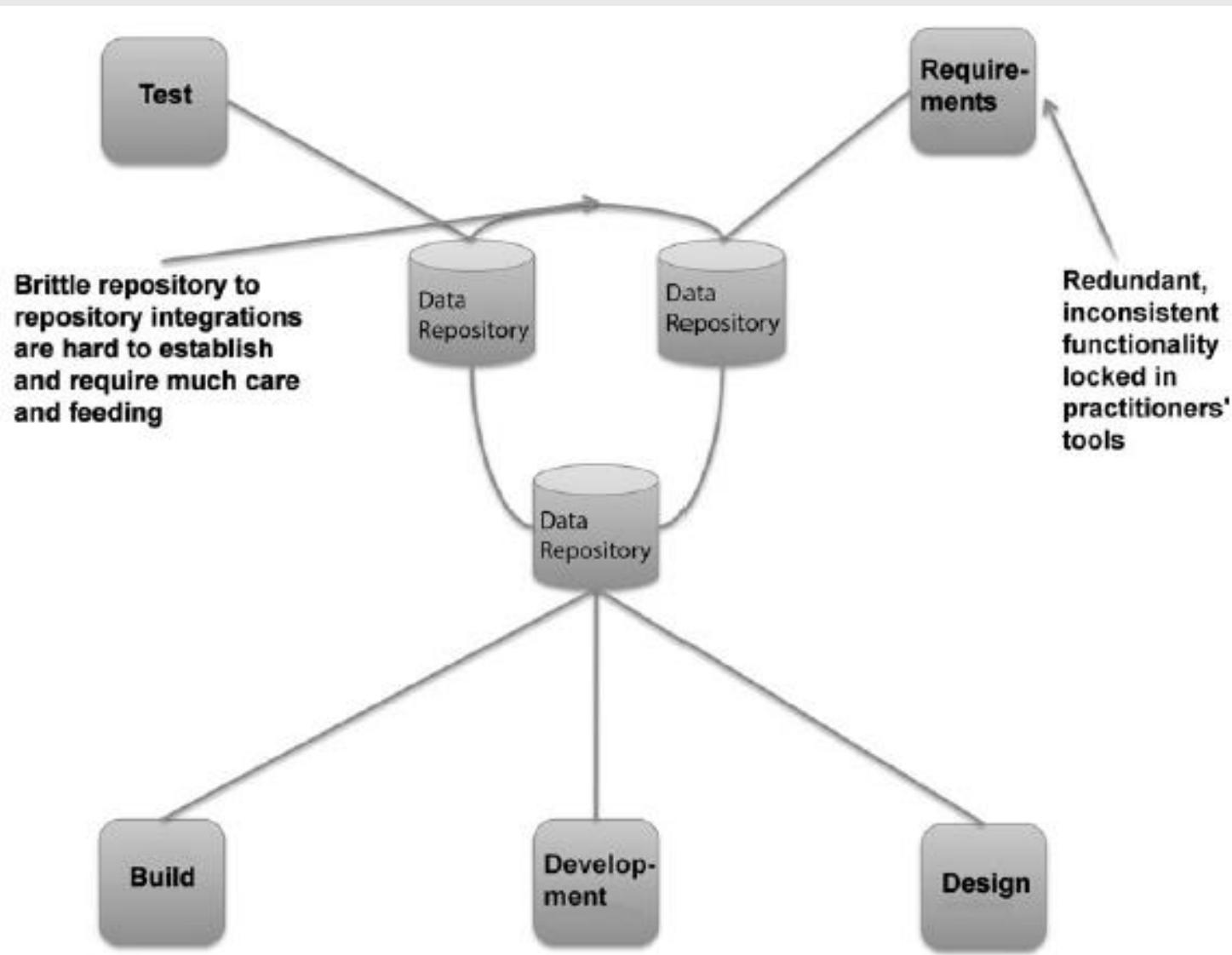
# ALM - Development



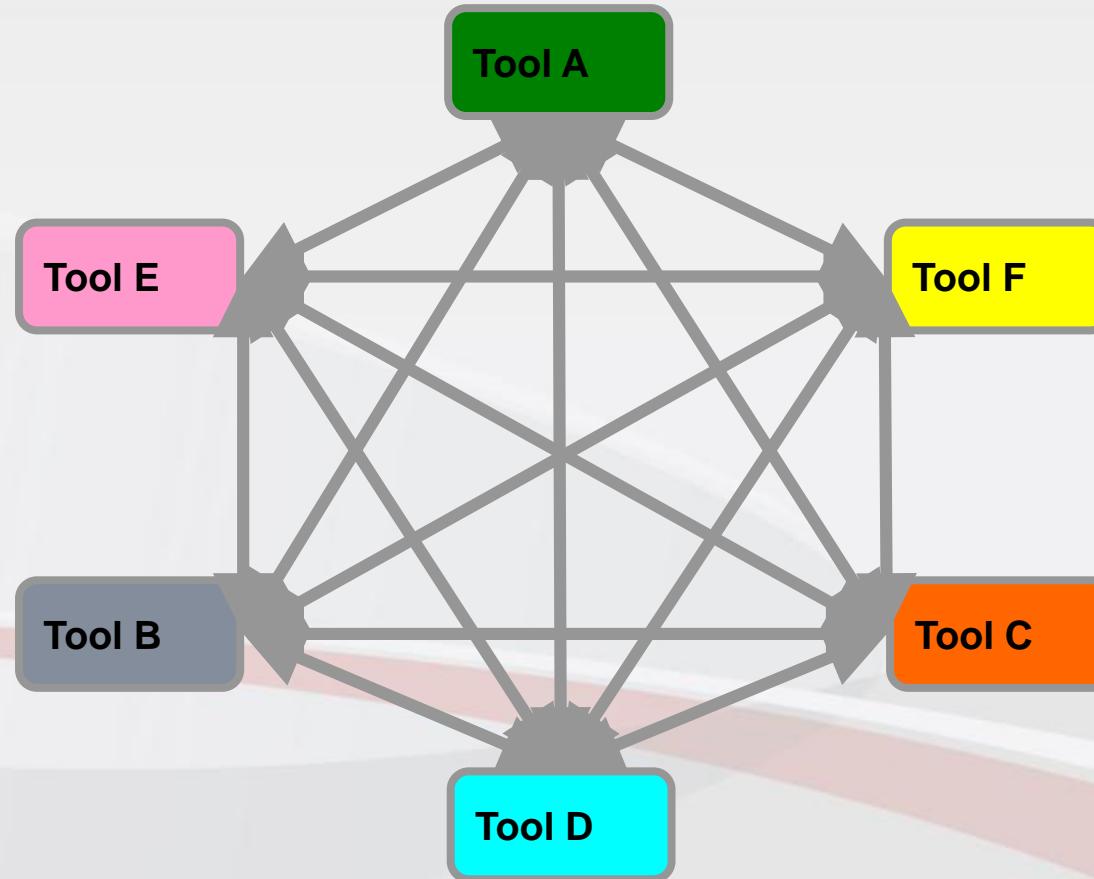
# ALM – Operations



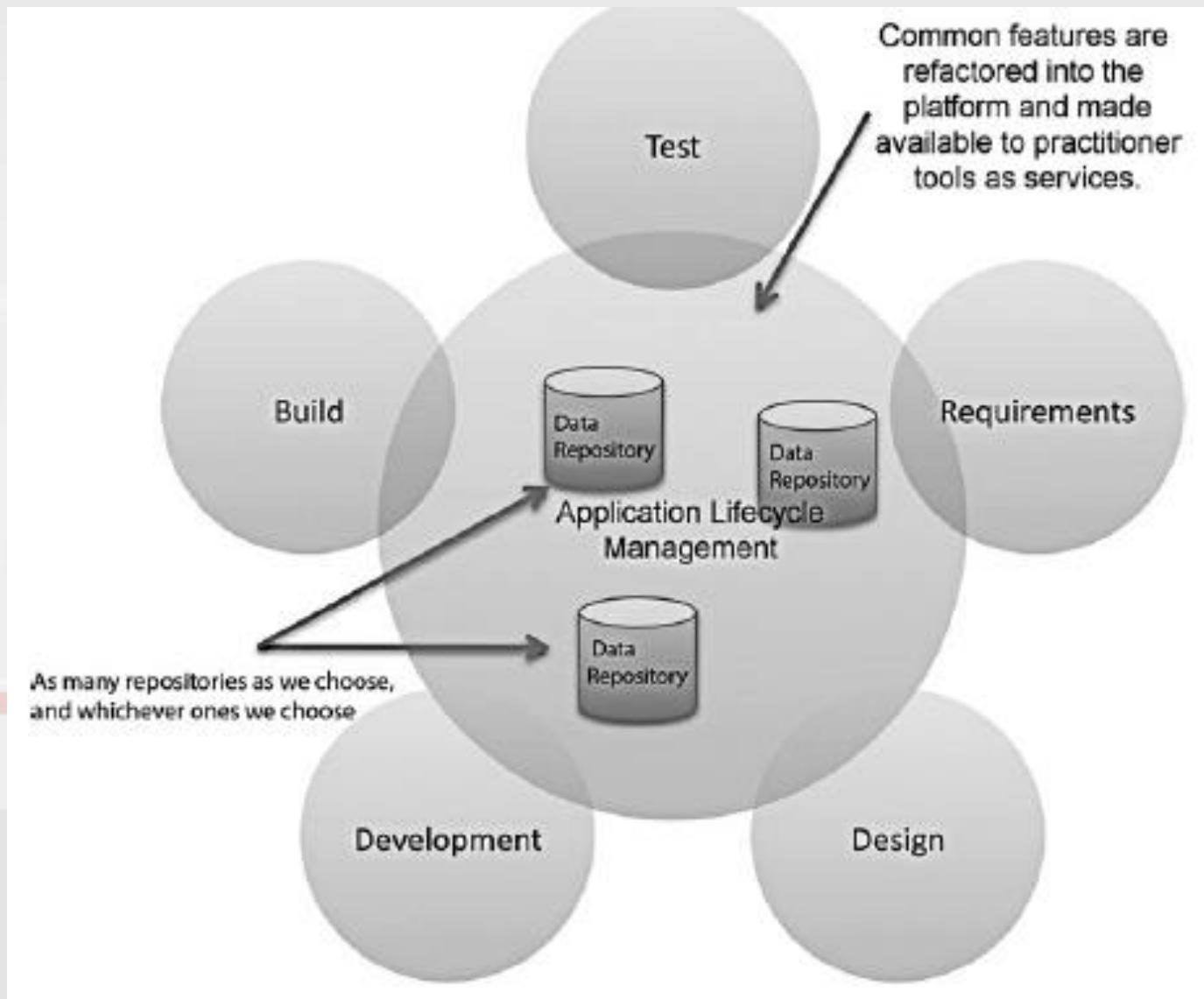
# History of ALM ( ALM 1.0)



# Integrations in ALM 1.0



# History of ALM (ALM 2.0)



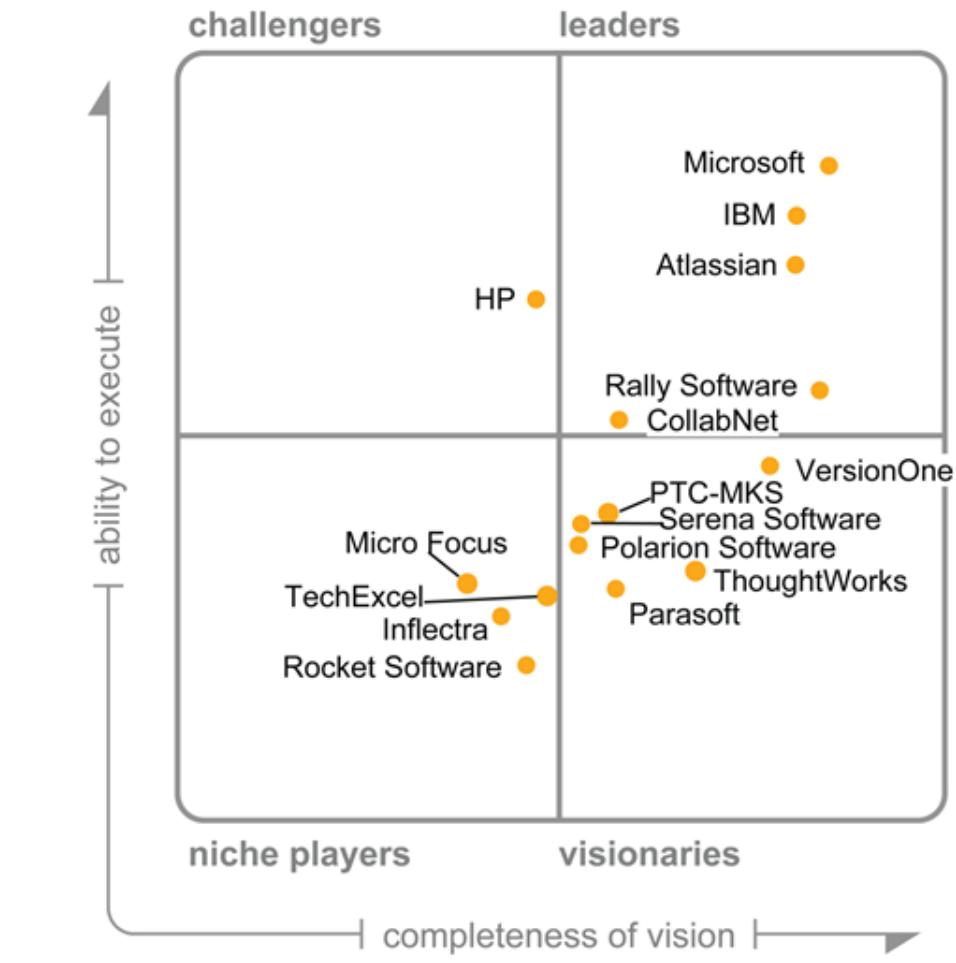
# Without integrated ALM Tools



# ALM Solution for HAVELSAN



Figure 1. Magic Quadrant for Application Life Cycle Management



Source: Gartner (May 2012)

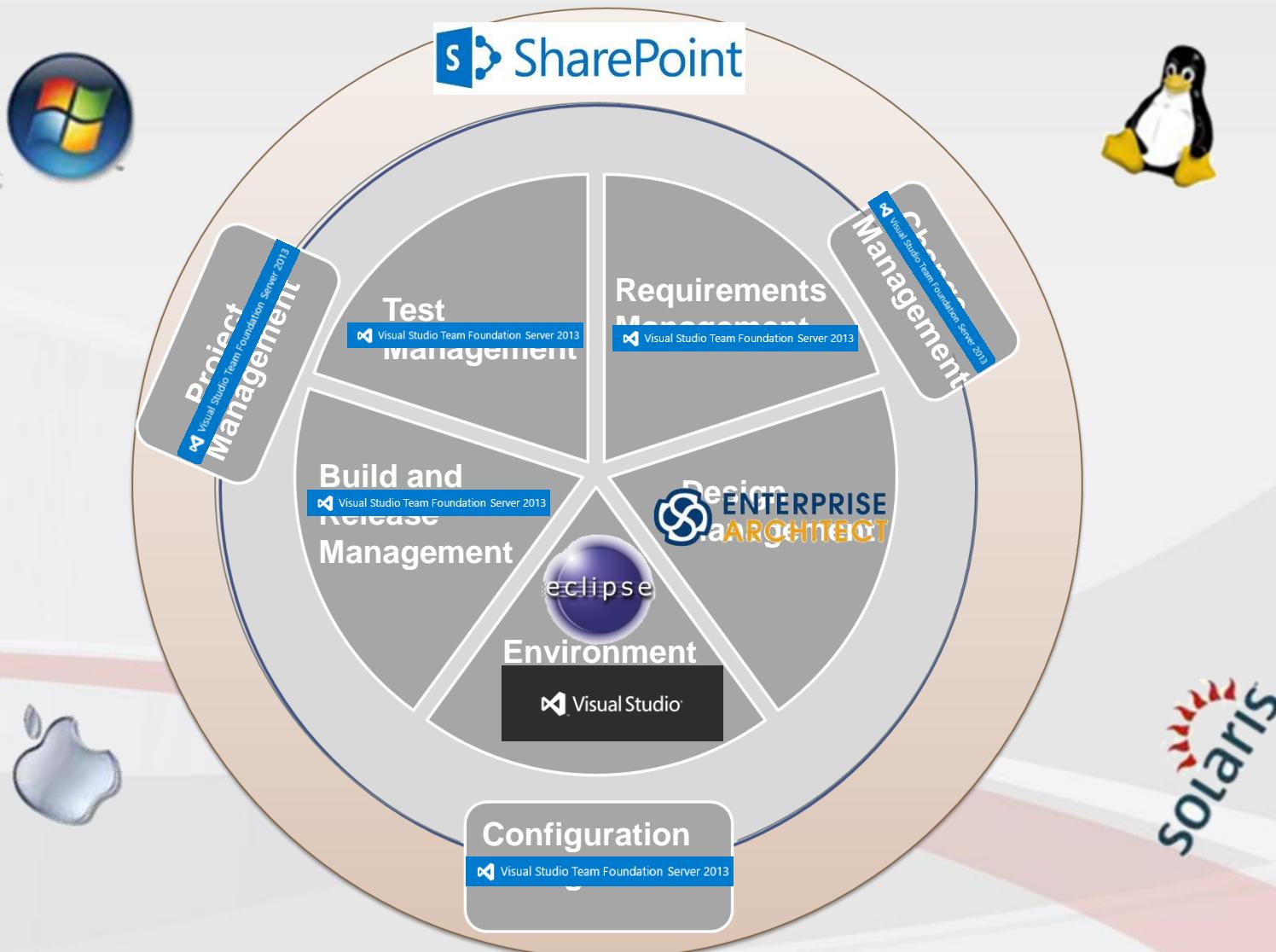


HAVELSAN is a Turkish Forces Foundation company.

3.5.2015

15

# ALM Solution Product Placement



# Development Extensions



## Requirements Management

- Baseline
- Traceability matrix
- Comparison
- Suspect Analysis Graphs
- Document view / generation



## Test Management

- Screenshot capture (WEB)
- Gathering System Info (WEB)



## Build and Release Management

- Build extension for Linux-based System using web services
- Build extension for Linux-based System using SSH



## Project Management

- Working log
- Timesheet
- Working log- SAP synchronization

# Usage Data

Organization Data	Value
# of Projects	90
# of Users	450

Items	Value
# of Work Items	87.456
# of Work Item Revisions	471.560
# of files in Source Control	548.624
# of files' revisions in Source Control	1.054.647
# of Builds	13.732

Work Item Details	Value
Requirement	34.794
Task	37.636
Backlogs	5.503
Test Case	1.052
Bugs	6.036
Other	2.435

As of 2014 September



# Quantifying the Value of ALM



## Acquisition Costs

- License & Hardware costs
- Acquisition activities
- Installation activities

Before	After
20 unit	1 unit
30 mm	1 mm
45 mm	9 mm



## Operations

- Maintenance & Backup Operations
- Helpdesk and functional support

Before	After
248 mm	60 mm
495 mm	180 mm



## Organization

- Customization Effort
- Duplication of training costs
- Workforce loss during trainings

Before	After
15 mm	4 mm
150 unit	50 unit
204 mm	15 mm



## Production

- Project Initiation Speed
- Internal & external data transfer costs
- Downtime cost
- Decision Support
- Process Audit Time

Before	After
3 months	3 hours
57 mm	0 mm
60 mm	0 mm
75 mm	8 mm
18 mm	4 mm

Projection is based on 5 years and 50 projects



# Requirements in ALM

- Traceability with other artifacts is key
  - Requirements to other requirements
    - Customer/System/Software/Hardware..
    - Dependency relation between requirements
  - Requirements to tasks (Project management)
  - Requirements to Test Cases
  - Requirements to Design elements
  - Requirements to generated documents
  - Requirements to source code
  - Requirements to Build
  - Requirements to bugs
  - Requirements to risks



# Requirement Work Item



Requirement 4878\*: Üniversitenin tüm akademik birimlerini hiyerarşik olarak görebileceklerdir.



Code

YGB\_BLG\_001

Title

Üniversitenin tüm akademik birimlerini hiyerarşik olarak görebileceklerdir.

DESCRIPTION ANALYSIS STORYBOARDS ALLOCATIONS LINKS ATTACHMENTS HISTORY PLAN OTHER

CLASSIFICATION

Area YGO Föritim



New

Proposed

Yagup MACİT

7/26/2012

DISCUSSION ONLY ALL CHANGES

- ▶ Kürşat İNCE made field changes (2 weeks ago)
- ▶ Kürşat İNCE made field changes (2 weeks ago)
- ▶ Nahit Fırat DOĞAN added link (3 months ago)
- ◀ Yagup MACİT created the Requirement (8 months ago)
  - Fields

Field	New Value
Iteration Path	UYY\Sürüm 2\Tur 4
Iteration ID	20
Team Project	UYY
Node Name	II. Faz - Gereksinim Yönetimi (A-H91201.02.10)
Area Path	UYY\YGO (A-H91201.02)\II. Faz - Gereksinim Yönetimi (A-H91201.02.10)
Area ID	84

## Customized Form

## Attributes

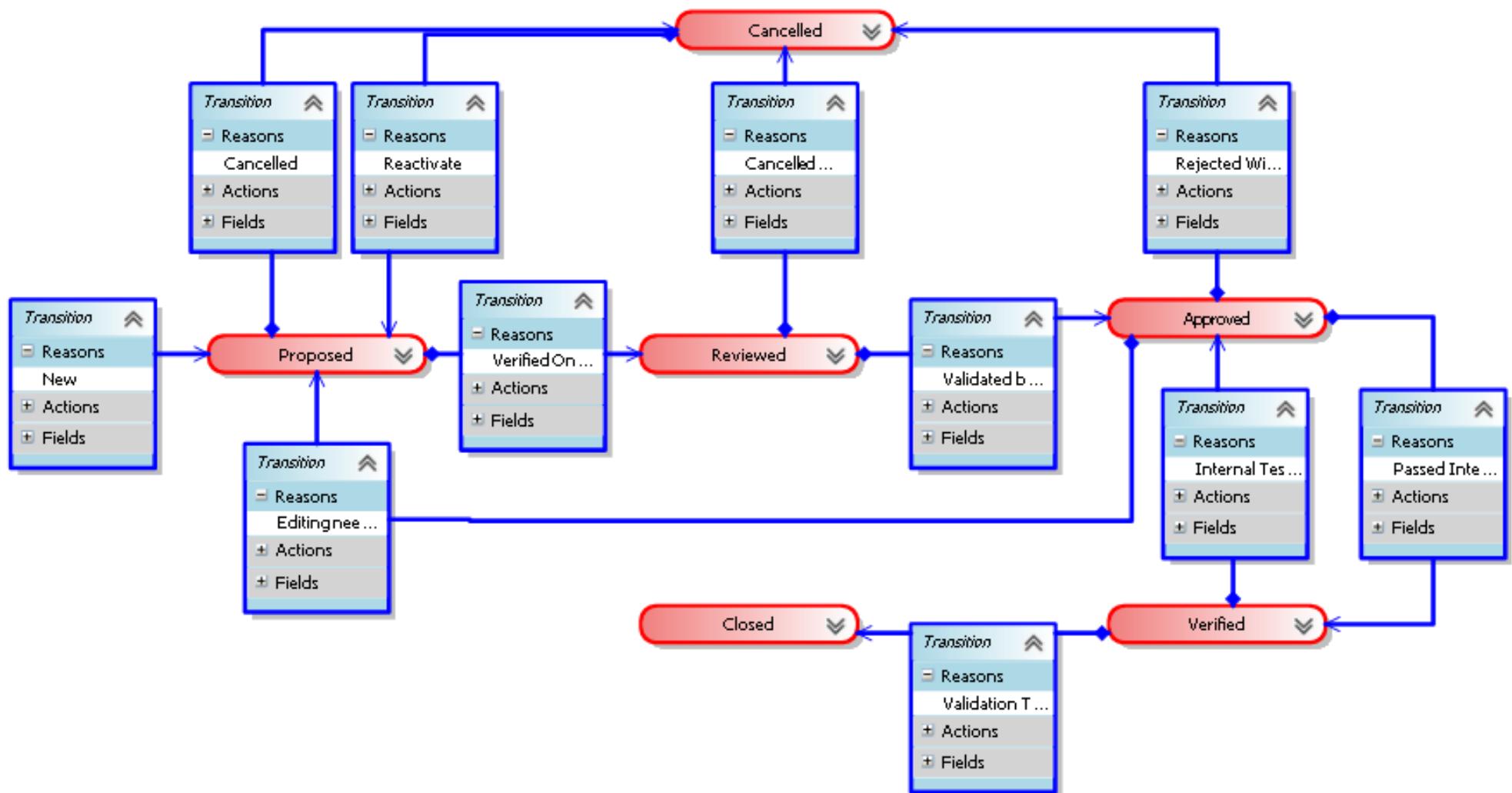
## WorkItem Number Patterns

## History

## Discussion



# Requirement LifeCycle



# Excel Extension



- Query support
- Hierarchy support
- Bulk import/output
- Bulk editing

The screenshot shows a Microsoft Excel spreadsheet titled "Book1 - Microsoft Excel". The ribbon at the top has "Table Tools" selected. The status bar indicates "Project: HGP Server: stfs11mrk1\Gosteri Query: Open Requirements List type: Tree". The data is presented in a table with columns: ID, Work Item code, Title 1, Title 2, Title 3, Title 4, Title 5, Requirement Family, and State. The table contains approximately 30 rows of requirements data. Row 12 is highlighted with a yellow background, and row 13 is highlighted with a red background. The "Title 1" column for row 13 contains the text "HVL-KEWTS-SSS-002". The "Title 2" column for row 13 contains the text "EWTS shall have the following Threat Systems with the identified quantities in parentheses". The "Requirement Family" and "State" columns for row 13 show "System" and "Proposed" respectively. The "Title 1" column for row 14 contains the text "HVL-KEWTS-SSS-002". The "Title 2" column for row 14 contains the text "title123456". The "Requirement Family" and "State" columns for row 14 show "System" and "Cancelled" respectively.

ID	Work Item code	Title 1	Title 2	Title 3	Title 4	Title 5	Requirement Family	State
19	HVL-KEWTS-SSS-1	deneme title					Software	Proposed
12	HVL-KEWTS-CS-032	E3003 shall be a Real Threat Weapon System.					Contract	Proposed
10	HVL-KEWTS-CS-007	E3002 shall be a Real Threat Weapon System.					Contract	Proposed
9	HGP-4.1.1		Deneme 2				Contract	Proposed
20	HVL-HGP-001			deneme2 req.			System	Proposed
22					task2			Proposed
21					task1			Proposed
1	HVL-KEWTS-SSS	CS2					Contract	Proposed
11	HVL-KEWTS-SSS-001	EWTS shall have the following Threat Systems with the identified quantities in parentheses					System	Proposed
12	HVL-KEWTS-SSS-002	EWTS shall have the following Threat Systems with the identified quantities in parentheses					System	Proposed
13	HVL-KEWTS-SSS-002			title123456			System	Cancelled
14	15	Cod 1 gereksinimin analizi						Proposed
15	16	Cod 1 gereksinimin tasarımı						Proposed
16	17	Cod 1 gereksinimin geliştirmesi						Proposed
17	18	deneme taskı						Active
18	23 HVL-	PYP Dokümanının Oluşturulması					System	Proposed
19	24	PYP Dokümanı şablonu tedariki					Resolved	
20	25	pyp 1-4 başlıklarının yazılması						Proposed
21	26 AA-MI-1	bankamatik					Contract	Proposed
22	27 SS-BM-001		bankamatik kimlik doğrulama				System	Proposed
23	29 BK-1		Banka kartı okunması				Software	Proposed
24	30			Analiz			Active	
25	28 HVL-	Bankamatik Görev Doğrulama					System	Proposed



Static or Dynamic

Baseline States

Baseline Comparison

Displaying contents

Displaying evidence

CHANGE BASELINE

ID

Numbering Baseline Document View Analysis

+ Baseline Compare  
Baseline Title  
Yazılım Gerkesinimleri Temel Ç...  
software baseline  
soft1  
Onaylı Temel Çizgi  
Görev Temel Çizgisi  
Fonksiyonel Temel Çizgi

Change  
Change State  
Manage Milestones  
Delete  
Fill By Query  
Add Items  
Remove Items  
Clear Content

Baseline items for Fonksiyonel Temel Çizgi

Baseline

Item ID	Rev.	Last Rev.	Item Code	Item Title	Item State	Operation	Change Rec...
4849	11	15	HVL-AHS-2	Program bilgileri bölüm ile ilişkilendirilerek t...	Approved	Changed	11759
4850	10	13	HVL-AHS-3	Programlara ait müfredat bilgileri tanımlana...	Approved	Added	
4851	11	16	HVL-AHS-4	Bölümle ait ders bilgileri tanımlanabilme...	Approved	Changed	11760
4848	11	16	HVL-AHS-1	Bölüm bilgilerinin hiyerarşik yapıda tanımla...	Approved	Added	
4852	19	22	HVL-AHS-5	Sistem bölüm programlarına ait tüm detay...	Approved	Added	
4854	11	14	HVL-AHS-7	Yapılan değişikliklerin kim tarafından ne sek...	Approved	Added	
4855	10	13	HVL-AHS-8	Üniversitenin Akademik Birimlerinin Tanımla...	Approved	Added	
4856	10	14	HVL-AHS-9	Üniversitenin İdari Birimlerinin Tanımlanabil...	Approved	Added	
4857	10	13	HVL-AHS-10	Sistem Akademik Personel Bilgilerinin tanımla...	Approved	Added	
4858	10	14	HVL-AHS-11	Sistem İdari Personel Bilgilerinin tanımlanab...	Approved	Added	
4859	10	13	HVL-AHS-12	Sistem Üniversite Yerleşke bilgilerinin tanımla...	Approved	Added	
4860	10	14	HVL-AHS-13	Sistem Yerleşkelerdeki Binaların bilgilerin t...	Approved	Added	
4853	13	16	HVL-AHS-6	Sistem tanımlanmış ders bilgilerine ilişkin B...	Approved	Added	
4861	10	15	HVL-AHS-14	Sistem binalardaki derslik bilgilerinin tanıml...	Approved	Added	

Save Save and Close Cancel

# Havelsan Ext - Baseline Comparison



Query Based

Baselines

Comparison Options

Result Set

Item by item comparison

Compare

compare-editor

compare-result

ID	Title	Rev	Removed	DateTime	Title	Rev	Removed	D
4878	Üniversitenin tüm akademik birimlerini h...	5		17.04.2013 08:15:26	Üniversitenin tüm akademik birimlerini h...	6		1
4879	Bölüm bilgilerinin kayıt güncelleme deği...	4		17.04.2013 08:15:26	Bölüm bilgilerinin kayıt güncelleme deği...	5		1
4880	Akademik Birim Bilgileri Detayı	4		17.04.2013 08:15:26	Akademik Birim Bilgileri Detayı	5		1
4881	Akademik birimlerle ilişkili olarak Progra...	4		17.04.2013 08:15:26	Akademik birimlerle ilişkili olarak Progra...	4		1
4882	Program Bilgileri ilişkili oldukları Akadem...	5		17.04.2013 08:15:26	Program Bilgileri ilişkili oldukları Akadem...	5		1
4883	Program bilgileri detayı	6		17.04.2013 08:15:26	Program bilgileri detayı	6		1
4884	Kullanıcılar programlara bağılı müfredat...	5		17.04.2013 08:15:26	Kullanıcılar programlara bağılı müfredat...	5		1
4885	Müfredat Bilgileri Dönemler Bazında Tan...	6		17.04.2013 08:15:26	Müfredat Bilgileri Dönemler Bazında Tan...	6		1
9311	yazılım gereksinimi	3		17.04.2013 08:15:26	yazılım gereksinimi	3		1

ID:      Code:      Title:

▶ Compare

4879

YGB\_BLG\_002

Bölüm bilgilerinin kayıt güncelleme değişiklikleri

Revision	4	5
Description	Bölüm bilgilerinin kayıt güncelleme <b>değişiklikleri</b>	Bölüm bilgilerinin kayıt güncelleme
Rev	4	5
Watermark	3586	3953
Authorized Date	09.03.2013 13:31:03	17.04.2013 08:16:21
Authorized As	Çağdaş ÜSFEKES	Ahsen İkbal AYTEKİN
Changed Date	09.03.2013 13:31:03	17.04.2013 08:16:21
Revised Date	17.04.2013 08:16:21	01.01.9999 00:00:00
Links	Tested By---9147 Tested By---9148 Parent---4849	Tested By---9147 Tested By---9148 Parent---4849



# Havelsan Ext - Traceability Matrix



Traceability

Traceability

editor result

	Parent	Child
Query Editor		
All relation types	[HVL-KEWS-SSS] - CS2 +	
Define traceability on the fly	[HVL-KEWTS-CS-007] - E3002 shall be a Real Threat Weapon System. +	[HVL-KEWTS-CS-032] - E3003 shall be a Real Threat Weapon System. ✗ [HGP-4.1.1] - Deneme 2
Delete traceability	[HGP-4.1.1] - Deneme 2 +	[HVL-KEWTS-CS-007] - E3002 shall be a Real Threat Weapon System. ✗
Ability to see orphan items	[AA-MI-1] - bankamatik +	
	[HVL-KEWTS-CS-032] - E3003 shall be a Real Threat Weapon System. +	[HVL-KEWTS-CS-007] - E3002 shall be a Real Threat Weapon System.
		CS2 bankamatik

Child - Parent  
 Parent - Child



# Havelsan Ext - Suspect Analysis



Query Based

Checking link status

Graphical Representation

Updating Link Status

## Suspect Analysis

editor

result

### SUSPECT GRAPH

Click to the red cubes for updating suspect relations

2033  
KY-TD-2033  
Komut Satırı Kullanımı ve Ko...  
Test Case

### Message from webpage



This relation is between Test Case (2033) and Requirement (1650). Link date is: 12/3/2012 Do you want to update this suspect link?

OK

Cancel

[1929](#) Fld10119 Doküman Üretme

31 2/12/2013 1 1 <?

[1931](#) Fld10119 Nesne Türleri Özellikleri

56 2/12/2013 6 6 <?



# Havelsan Ext - Document Generation



Preview

Word Extension

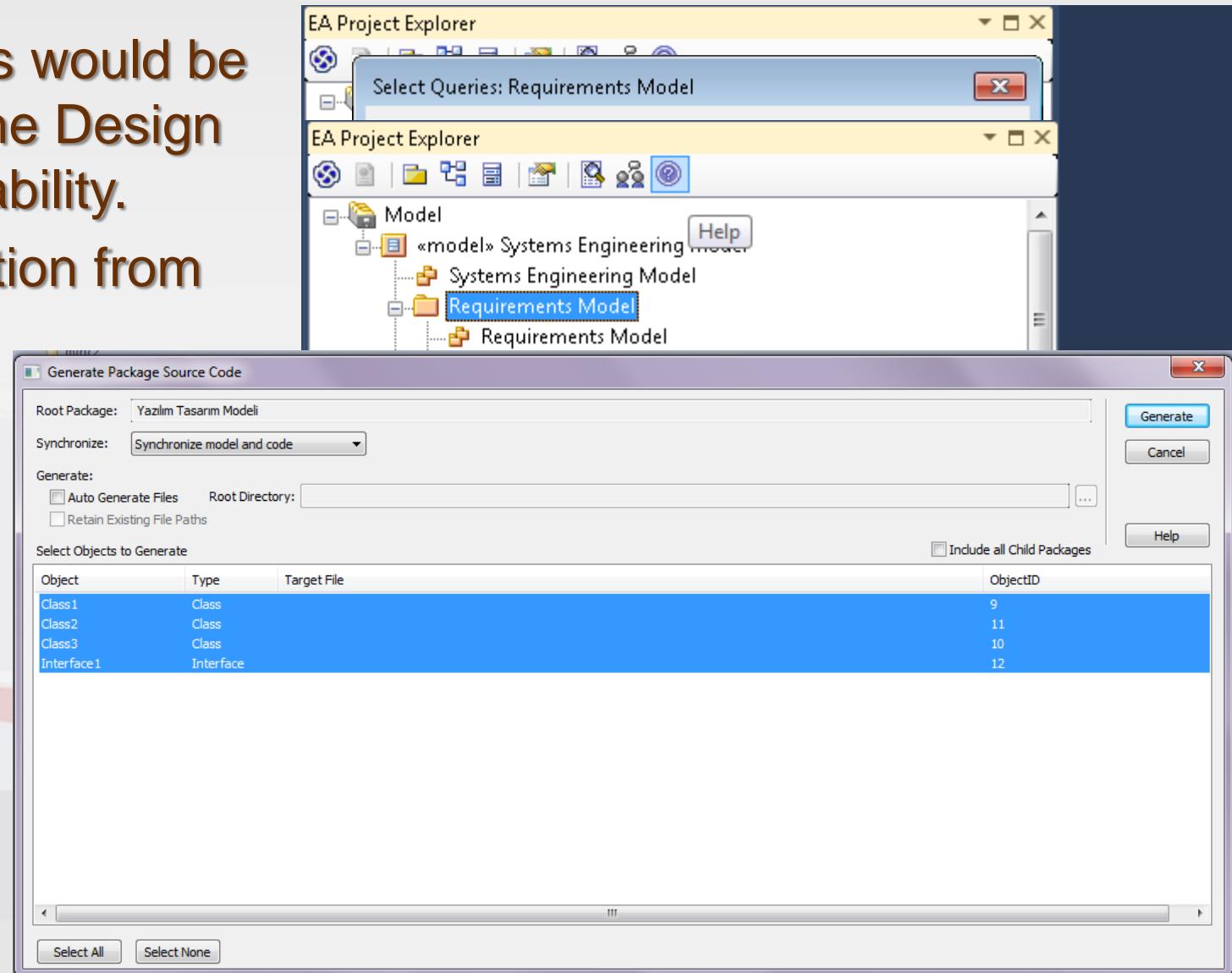
Support for  
Templates

The screenshot shows a Microsoft Word window titled "template555.doc [Compatibility Mode] - Microsoft Word". On the left, there's a ribbon bar with tabs like File, Home, Insert, Page Layout, References, Mailings, Review, View, and Team. A "Havelsan Document Creator" ribbon tab is also present. Below the ribbon, there's a toolbar with icons for "Connect TFS Server", "Create Word Document", and "About". A main panel displays document metadata: "Document Query" set to "System1", "Trace Query" set to "Contract1", "Trace Link" set to "Child-Parent", "Document No" set to "HVL-HGP-555", "Issue No" set to "1.01", and "Issue Date" set to "14.01.2013". A "Create Document" button is at the bottom of this panel. Below it is a "Document Bookmarks" section with a search bar and a list of items such as "Adaptation", "Capability", "Computer\_Resource", "Design", "DocumentName", "DocumentNo1", "DocumentNo2", "Environment", "External\_Interface", "Internal\_Data", "Internal\_Interface", "IssueDate1", "IssueDate2", "IssueNo1", "IssueNo2", "Logistics", "Other", "Packaging", "Personnel", "Priority", "Quality", "Safety", "Security\_and\_Privacy", "States\_and\_Modes", "Traceability", "Traceability\_Reverse", and "Training". At the bottom of the window, status bars show "Page: 1 of 10", "Words: 1,179", "Turkish", and "110%". The main content area of the Word document contains the HAVELSAN logo, the text "[PROJE ADI]", "SİSTEM GEREKSİNİMLERİ SPESİFİKAS", "SYSTEM/SUBSYSTEM SPECIFICATION", and fields for "Doküman No", "Yayın No", "Yayın Tarihi", and "SÖZLEŞME NUMARASI / CONTRACT NUMBER".

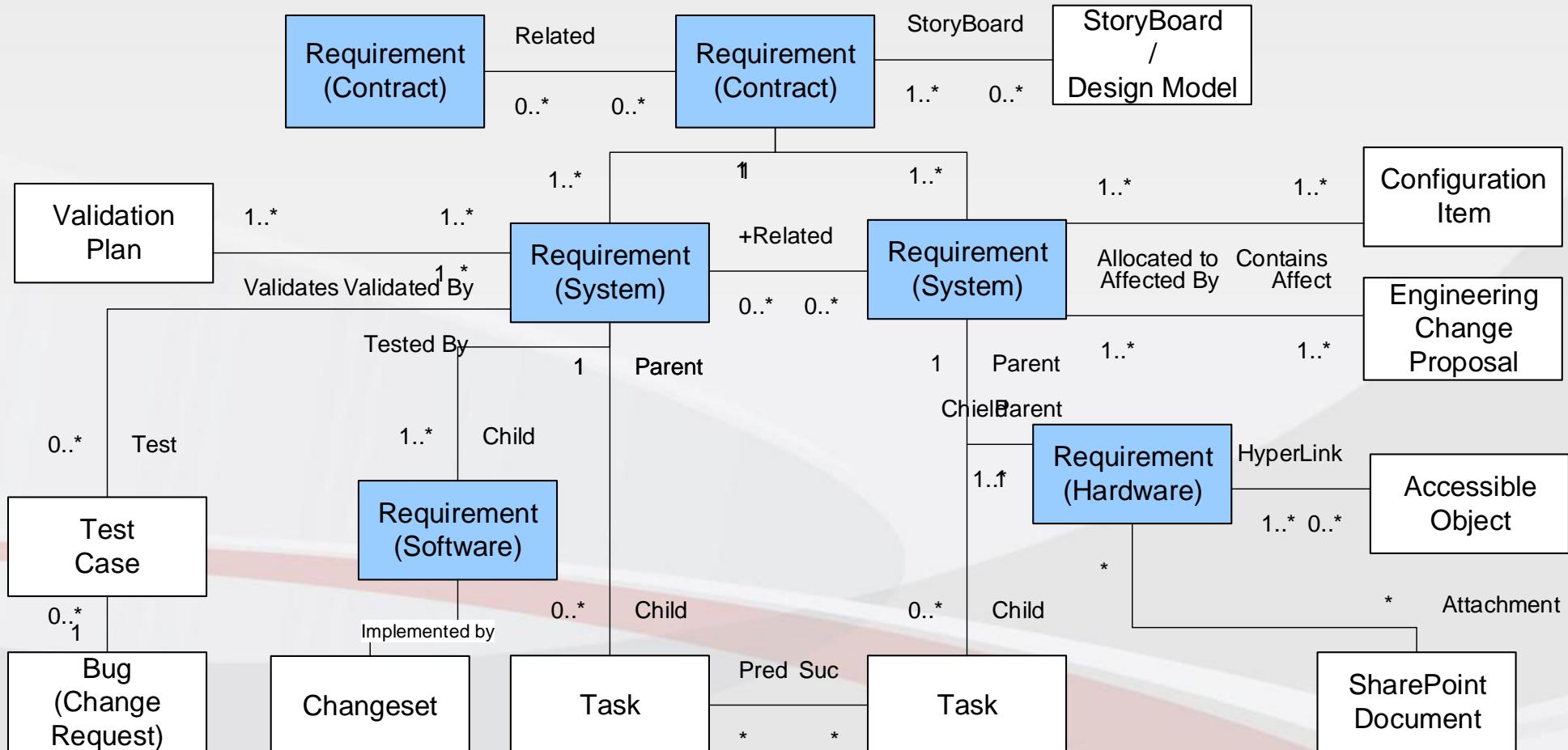


# Requirements - Design Model Traceability

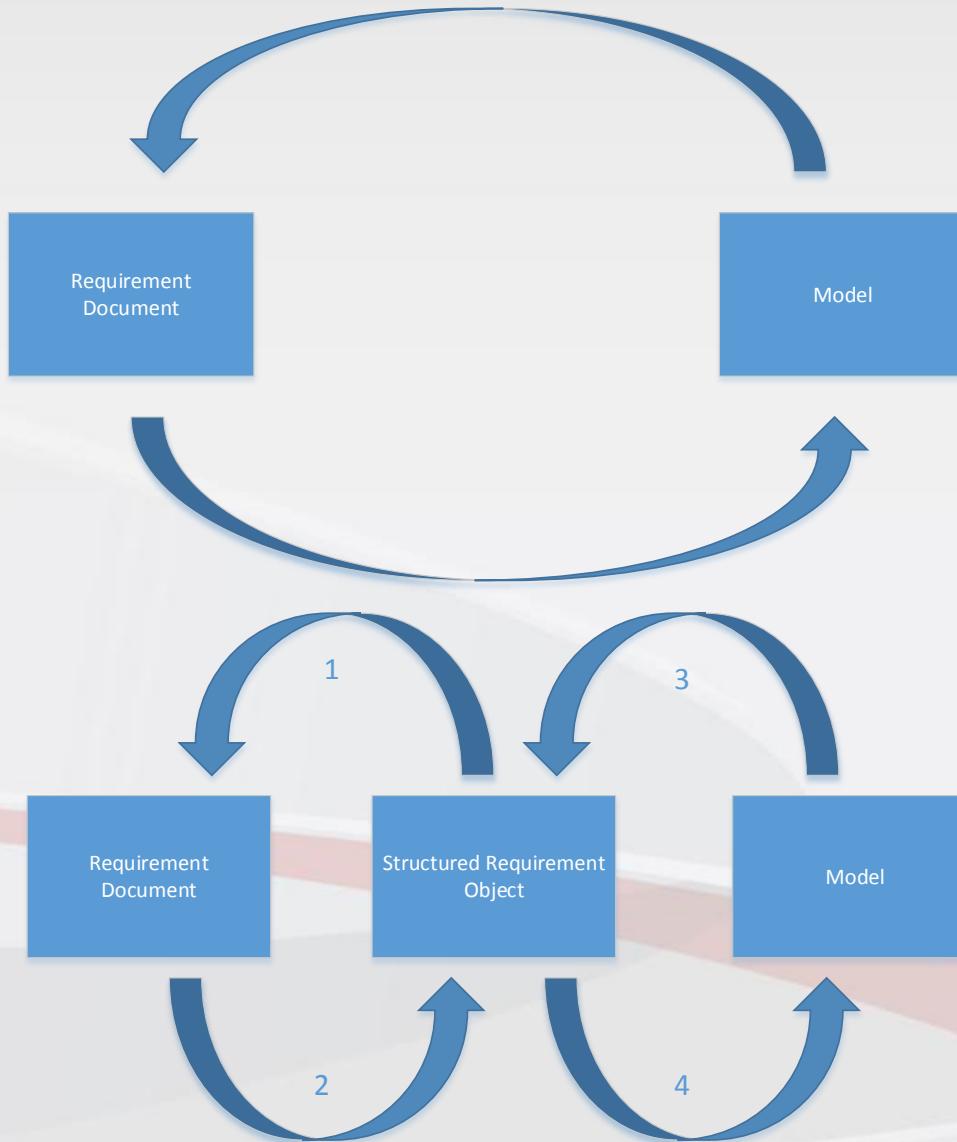
- Requirements would be imported to the Design tool for traceability.
- Code generation from design



# HAVELSAN Use case for ModelWriter



# HAVELSAN Use case for ModelWriter



Currently we support scenario #1 and #4, and interested in Scenario #3, #2



# Thank you for listening

