OFFLOADING ARCHITECTURE KNOWLEDGE

1st Vienna Software Seminar (VSS) on "The Relation of Software Architecture and DevOps/Continuous Delivery"
Wien, Austria, 2017-12-19

Ta'id HOLMES
Infrastructure Cloud, Deutsche Telekom Technik GmbH

LIFE IS FOR SHARING.

AGENDA

01 Model-Based Engineering: Automation & CI/CD

02 Continuous Pipeline: Injecting Architectural Knowledge

03 Case Study: Cloud Application Orchestration Models

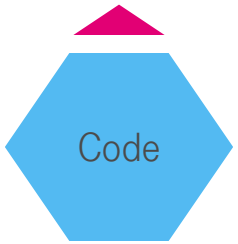
04 Architect. Model Refactoring: Approach & Use Cases

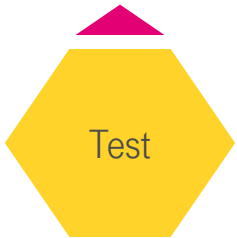
A GENERIC CONTINUOUS DELIVERY PIPELINE

AUTOMATION IS KEY

Developer

Test Engineer





A CI/CD PIPELINE AND TOOLCHAIN @ DEUTSCHE TELEKOM

PROJECT TERASTREAM / HYPERSCALE

PROCESSES

TOOLS

VMFactory

Gitlab

vTeraStream

Gerrit

DCSO-local

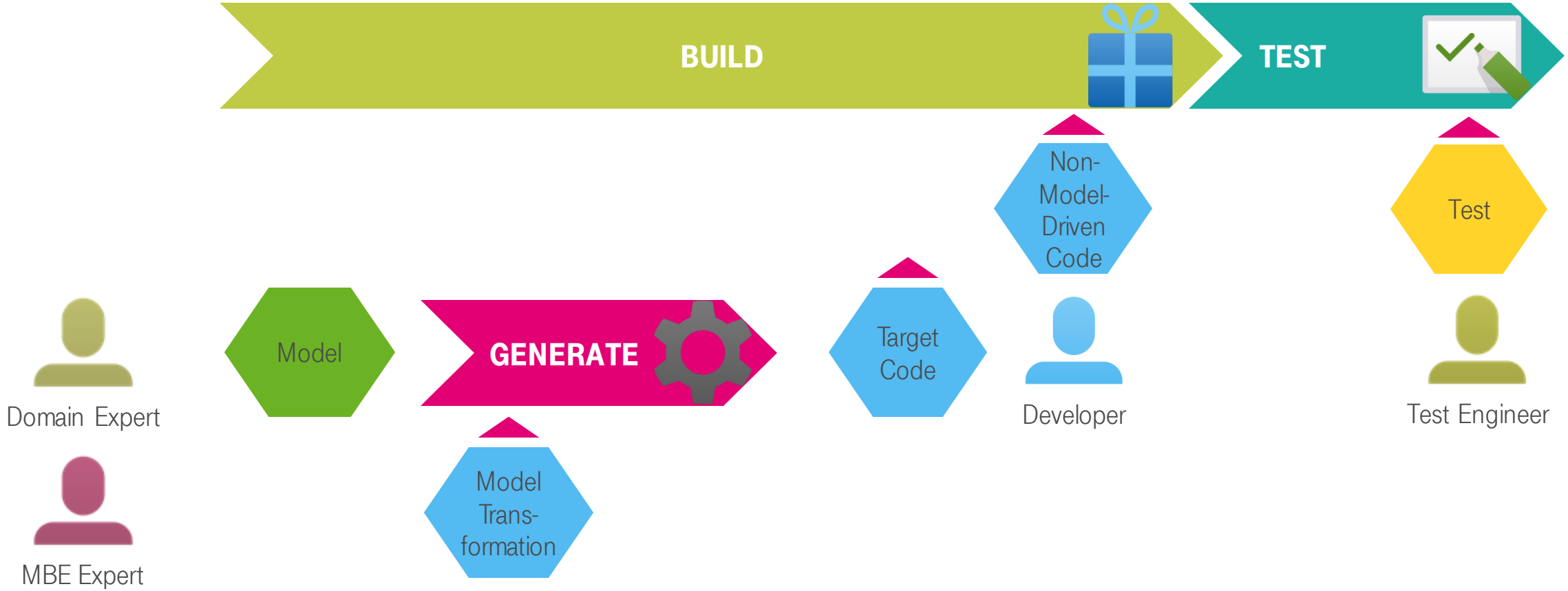
Jenkins

DCSO-global (VM)

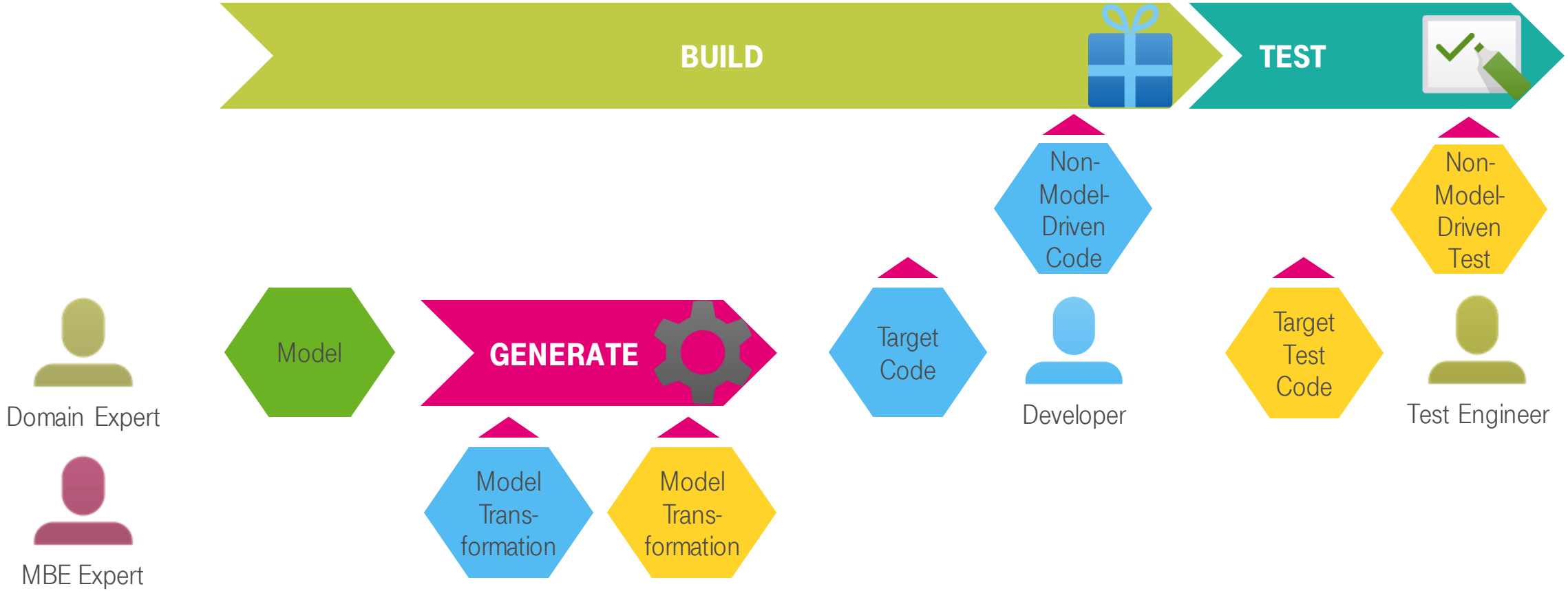
Robot Framework

MODEL-DRIVEN CODE GENERATION

ZOOM INTO THE PIPELINE

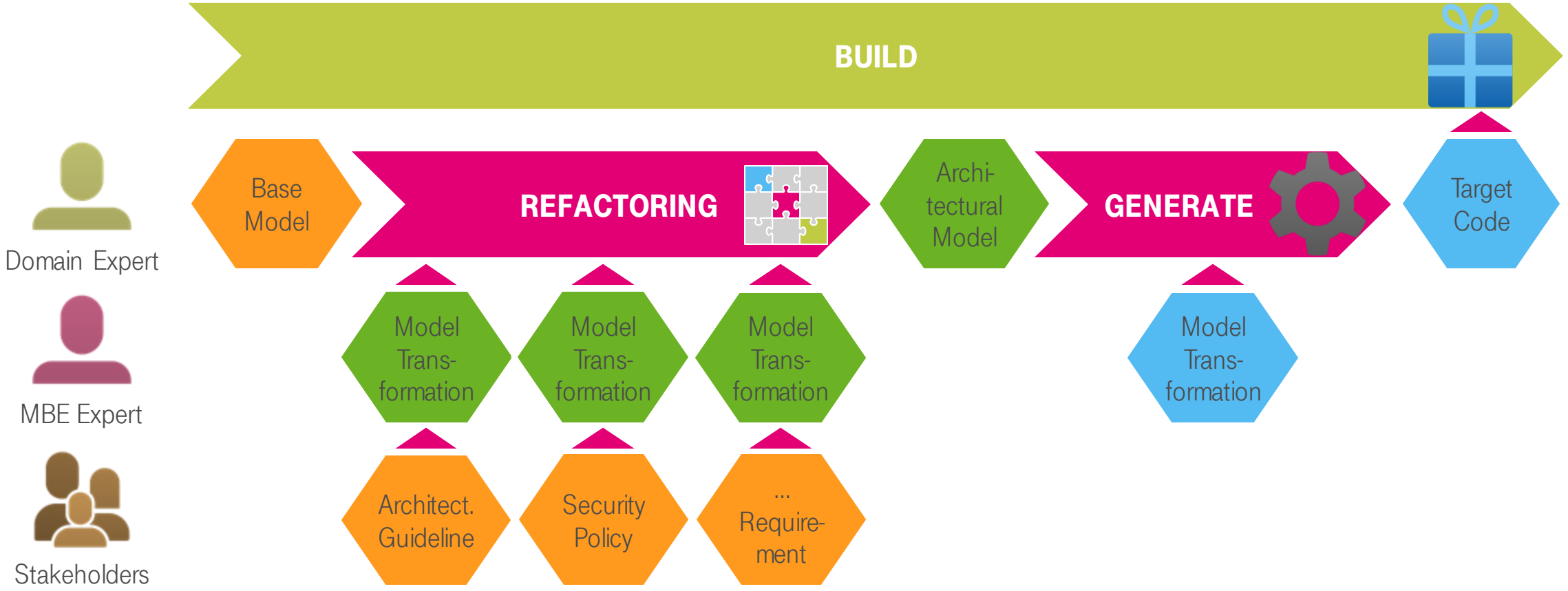


MODEL-DRIVEN CODE GENERATION
INCLUDING TESTS



02
AN ARCHITECTURAL KNOWLEDGE INJECTING CI/CD PIPELINE

OFFLOADING ARCHITECTURAL KNOWLEDGE
INJECTED VIA REFACTORING WITHIN THE PIPELINE

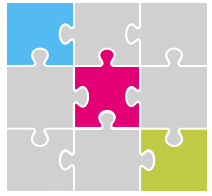


03
CLOUD APPLICATION ORCHESTRATION AND ARCHITECTURAL REQUIREMENTS

CLOUD APPLICATION ORCHESTRATION
CONCEPTS

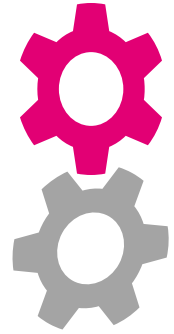
Cloud Application Orchestration Models describe Applications

- Resources
- Services
- Dependencies



Cloud Application Orchestration Engine consumes Models

- Transformation to Deployment Plans
- Provisioning of Resources and Services



PROVIDER REQUIREMENTS
POLICIES AND GUIDELINES

- Security Policies
- Architectural Guidelines
- Operational Requirements; Unified Approaches:
  - Operations, Administration, and Maintenance (OAM)
  - Access, Logging, Monitoring, Reporting

ADDITIONAL STAKEHOLDERS
FURTHER REQUIREMENTS

Legislator

- Legal Interception

Customer

- Service Level Agreements (SLAs)

ARCHITECTURE-IMPACTING REQUIREMENTS
SOURCES AND OWNERS

Requirement Sources	Vendor	Platform Provider	Legislator	Service Provider	End-Customer
Application	X				
Target Technologies		X			
Datacenter Design		X			
Datacenter Details		X			
Legal Interception			X		
Security Policies				X	
Architectural Guidelines				X	
Operational Requirements				X	
Service Level Agreements				X	X

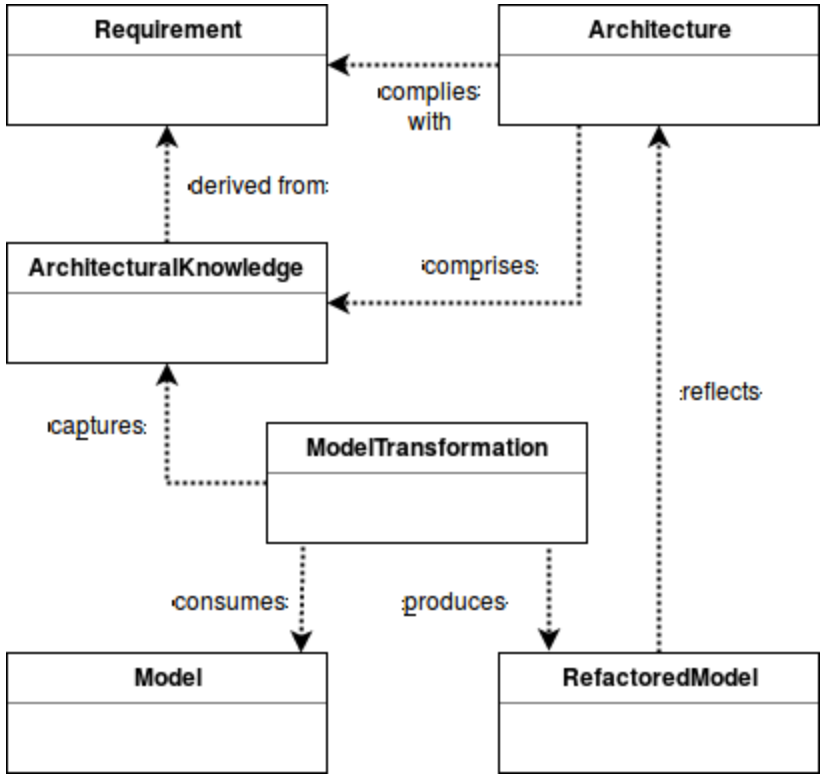
PROBLEMS
CONSEQUENCES

Symptoms
tangled, overall complex architectures

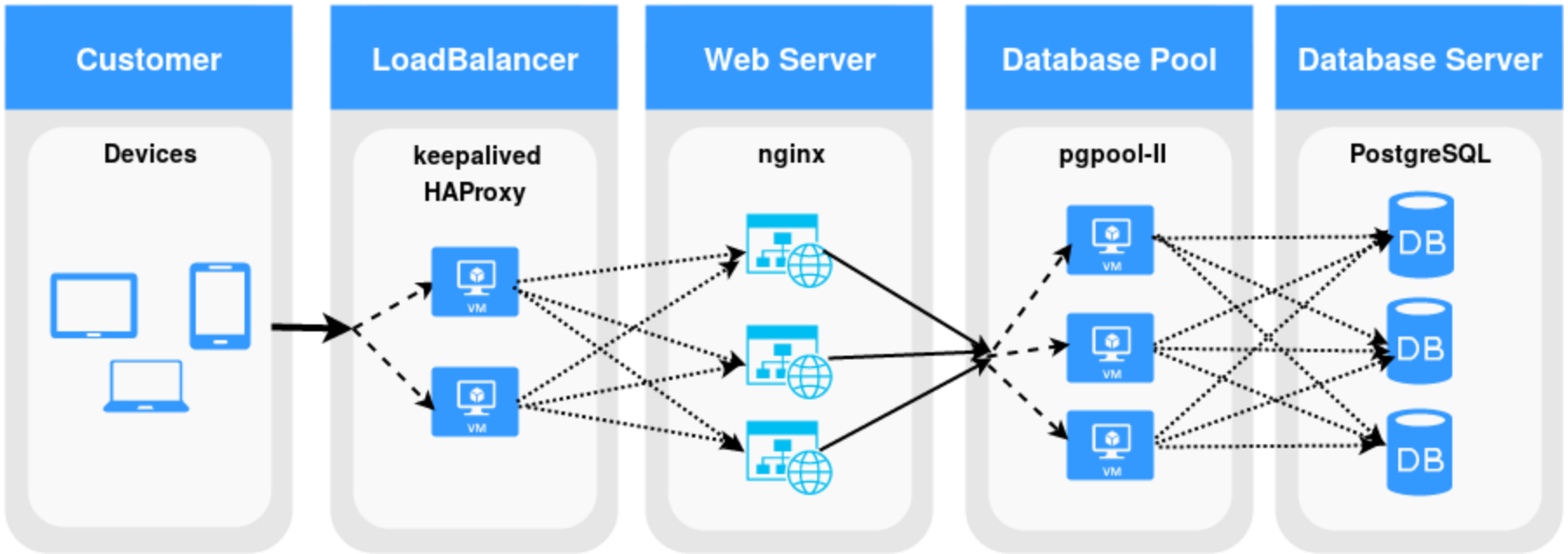
Root Cause
multiple, customer-specific requirements,
impacting the architecture;
from various sources

04
MODEL REFACTORING: APPROACH & USE CASES

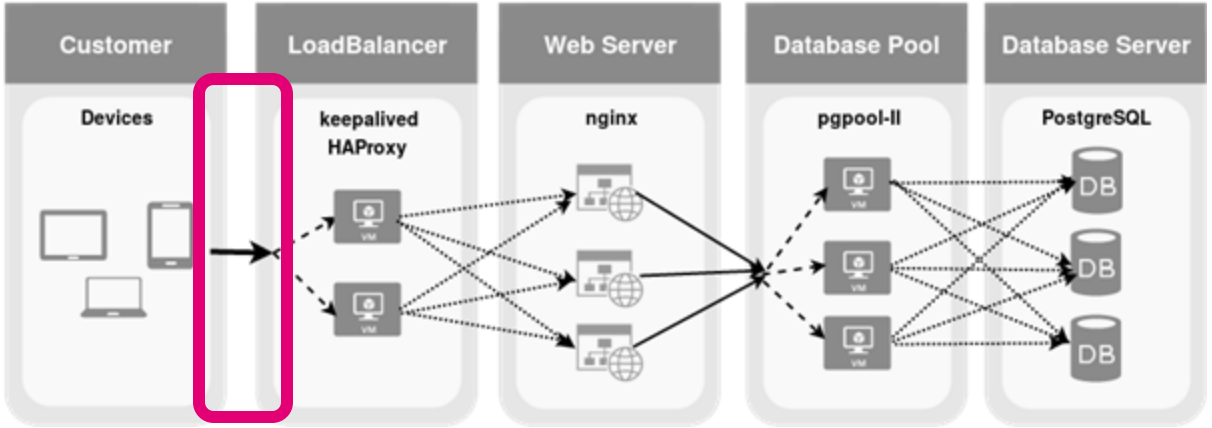
MODEL REFACTORING
APPROACH AND CONCEPTS

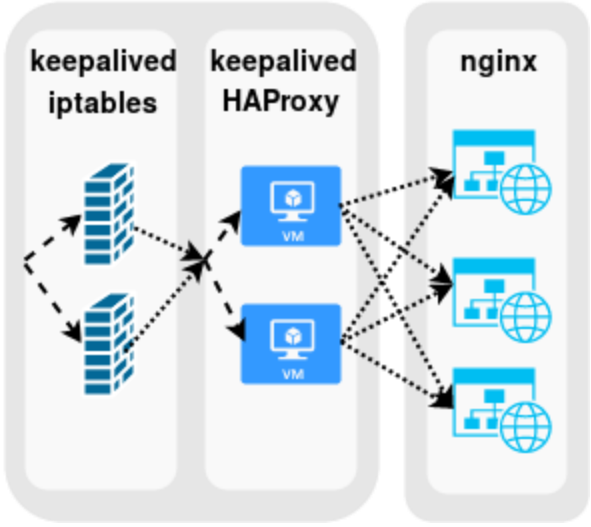


CLOUD APPLICATION
EXAMPLE OF A MULTI-TIER ARCHITECTURE



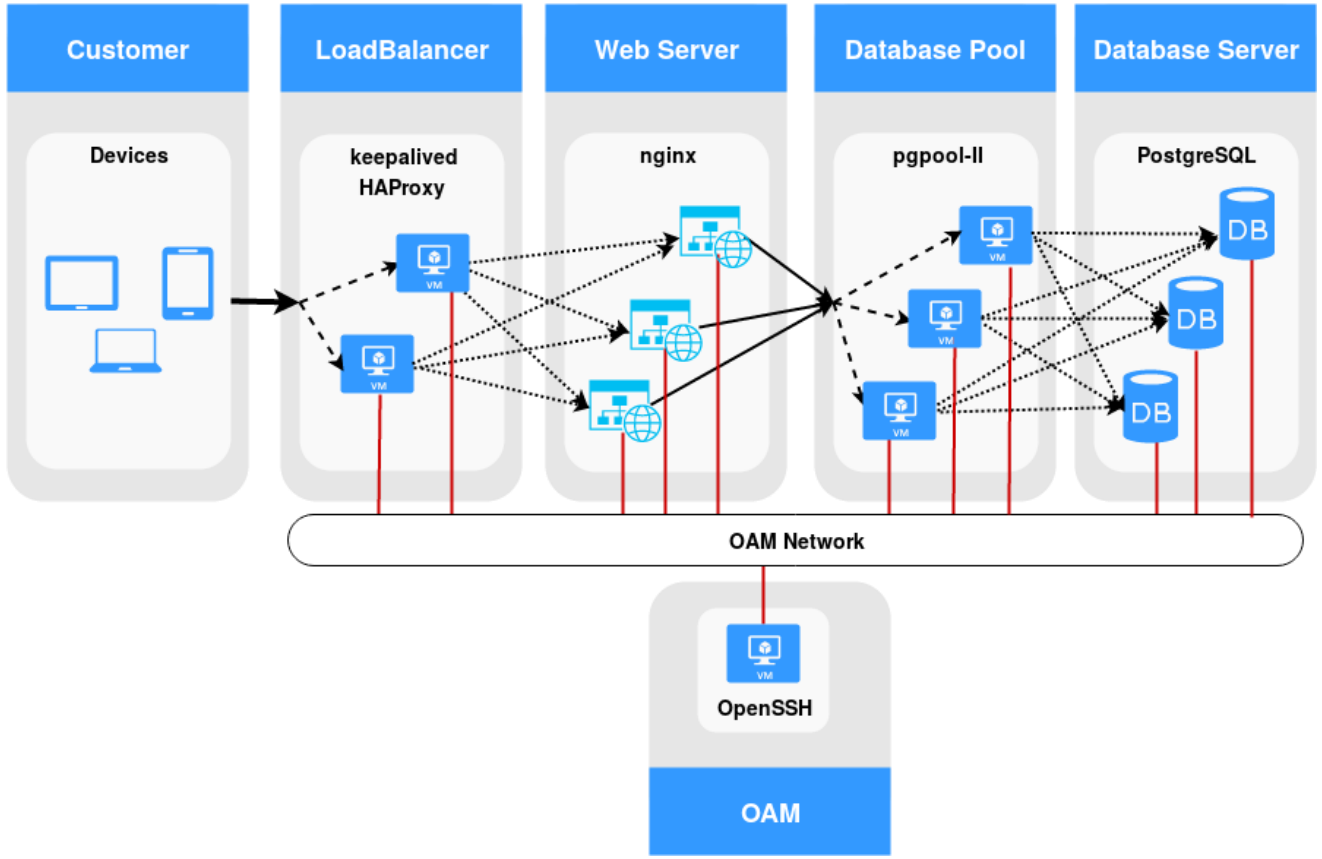
ENRICHMENT WITH FIREWALLS &
ESTABLISHING HIGH-AVAILABILITY





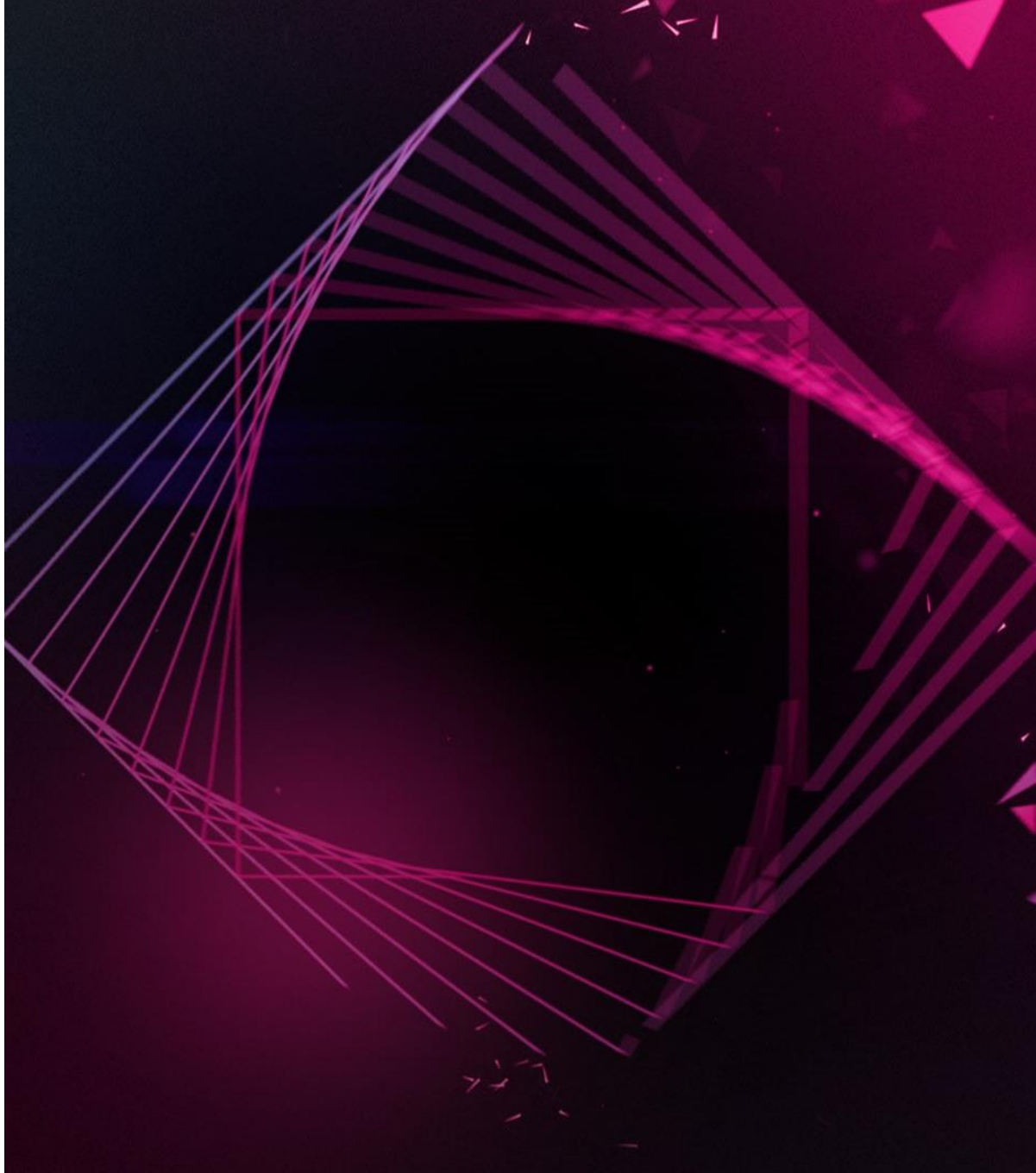
UNIFIED OAM ACCESS

MANAGEMENT ZONE, JUMP HOST, OAM NETWORK, VIFS, SSHD



ASSUMPTIONS

- architectural knowledge can be captured in form of model transformations
- unified/standardized architecture metamodel
- conflicting requirements are identified and resolved at an earlier point in time



CONTACT

TA’ID HOLMES
T.HOLMES@TELEKOM.DE
+49 6151 583-7571

DOCUMENT MODIFICATION HISTORY

Date	Version	Responsible	Changes
14.12.2017	1.0	Dr. Ta'id HOLMES	publication

APPROVAL DETAILS

Document name		Document title
2017-12-19_Holmes		Offloading Architecture Knowledge
Version	**As at**	**Status**
1.0	14.12.2017	Final
Author	**Contents checked by**	**Approved by**
Dr. Ta'id HOLMES, IC, DTT	Axel CLAUBERG, TI-ATI, DTAG	Maik EXNER, T-BCF, TDG
Contact	**Telephone**	**Email**
Dr. Ta'id HOLMES, IC, DTT	+49 6151 583-7571	t.holmes@telekom.de

Short description

Offload Architectural Knowledge on to Your CI/CD Pipeline