## **Testing in DevOps - how to assess teams and give guidance**

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- Szilard Szell, DevOps Evangelist, SAFe SPC, Nokia
- Jorma Peisalo, Transformation Senior Manager, Nokia

## Introduction Szilárd Széll – DevOps Evangelist, Test Coach, NOKIA

- Responsibilities
- Test Coach and DevOps Evangelist in NOKIA with 18 years experience
- President of the Hungarian Testing Board
- Processes Management and Compliance Work Group Chair of ISTQB
- Program Committee Chair and Member of UCAAT and HUSTEF
- Certifications
- DevOps DASA Foundation, SAFe SPC, Certified Scrum Master
- ISTQB CTEL-ITP-Full
- IREB CPRE
- Lean Six Sigma Green Belt





#### Introduction

## Jorma Peisalo, Transformation Senior Manager, NOKIA

- Role
- Support, coach, facilitate all kind of transformation projects inside Nokia Business Groups

- Knowledge areas
- 20+ years of R&D experience
- Transformation, Business case calculation, Lean, Agile, Continuous Delivery, DevOps, Verification, Project management





#### Explosion of possibilities announcing new performance levels of people and things



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#### Agenda for today

#### DevOps in a Nutshell

DevOps Assessment

Continuous Integration Aspect of DevOps

part .

Testing Aspects of DevOps

Take away





# 1. System thinking

"Being able to take needless work out of the system is more important than being able to put more work into the system." Gene Kim

NOKIA

# 2. Amplify feedback loops

"Improving daily work is even more important than doing daily work."

Gene Kim

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# 3. Culture of continual experimentation and learning

"If you can't out-experiment and beat your competitors in time to market and agility, you are sunk."

Gene Kim

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# Need for driver - DevOps Center of Excellence

DevOps maturity model is a tool to guide business and R&D transformation









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What is the scope of the DevOps Maturity Model? Continuous @everything in the Software Lifecycle







#### Maturity Levels of DevOps Maturity Model Similar to other frameworks (e.g. CMMI, TMMi)





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#### The 12 Assessment Categories Addressing DevOps capabilities end to end – like TPI NEXT®







## DevOps Maturity Model provides e2e insights and awareness Helps to find gaps and improvement areas











#### Value chain / Work flow

#### "Theory of Constraints"

Maturity Assessment + VSM will reveal deficiencies.\*



#### Model Structure and Logic For calculating a weighted maturity score











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Category – Continuous Integration Key areas



# Automated Delivery Pipeline

# Continuously Green Build

# Automated Release

Frequent Commits and Fast Feedback



#### Key area - Automated Delivery Pipeline An example of best practices and levels for CI



Best practice	LEVEL 1 Initial	LEVEL 2 Consistent	LEVEL 3 Managed	LEVEL 4 Quantitatively Managed	LEVEL 5 Optimizing
Release decision	* Delivery	* Main parts of	* All transitions	* All checks	* Review is the
is made	pipeline	the delivery	between	required for	only manual
automatically by	exists	pipeline are	delivery	release, except	steps between
fully automated	* Some steps	automated	pipeline steps	for code review,	code change and
delivery pipeline	of the		are automated	are automated	delivery decision
	pipeline are			as part of	
	automated			delivery pipeline	



#### Category – Continuous Integration How to translate levels into real-life scenarios?

#### Dream state scenario:



**Sufficient testing** on all test levels **is executed automatically** for every proposed change to the product main line. If the tests pass the change is merged to the product and can be delivered to customers with no further verification. **If the test fail** the developer receives **immediate feedback** and can try again, many times in a day.



#### Pessimistic scenario:

The latest **development** on different SW components is **on different branches**. Integrating the branches to form a working product is **slow manual work** and a long commit freezing period is required to stabilize the build.

**Lead times** for delivering fixes and features to customers **are long**. Small changes cannot be delivered individually.



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Take away



#### The 12 Assessment Categories Focus on Quality Assurance and Verification







What is important for QA & Verification in DevOps? Value driven testing built on customer collaboration





Automation of Testing tasks

Share (testing) tools and assets across the Value Stream



## Category – QA & Verification – Key Areas example Test First Thinking





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#### Key Areas – Test First Thinking

## An example of best practices and levels for QA&V



Best practice	LEVEL 1 Initial	LEVEL 2 Consistent	LEVEL 3 Managed	LEVEL 4 Quantitatively Managed	LEVEL 5 Optimizing
Feature level acceptance criteria are defined upfront	Acceptance criteria are defined on release level	Acceptance criteria are defined on feature level within development iterations	Acceptance criteria are defined during feature screening and refined during development	Requirements are defined in the form of Acceptance Tests description (ATDD or BDD)	Acceptance Tests are written in formal language that specifies both Requirements and Acceptance tests, and can be executed as using Test Automation (example using Robot framework)



#### How to translate levels into real-life scenarios?



#### Dream state scenario:

Tester is a **value driven role** in the DevOps team who is **collaborating** throughout the value chain up to the **customer**, driven by **knowing the risks**, providing quick **feedback** on development and **quality** assurance **of product**, using **shared tools** and **commonly** available **automation solutions**, building on **Continuous exploration** and **improvement** 



#### **Pessimistic scenario:**

Testing is a **cost driven**, separated **silo** at the end of the pipeline, being a **bottleneck** caused by its **low automation**, long feedback cycle, outdated practices and tools



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