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

Szilard Szell, 5G DevOps transformation lead

# Szilárd Széll – intro


Responsibilities

- 5G DevOps transformation lead and Senior Consultant at Eficode
- Test Coach and DevOps Evangelist in NOKIA (19 years experience)
- Former 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, CTAL-TM, CTFL-AT, CTFL
- IREB CPRE
- Lean Six Sigma Green Belt
- Lean Service Creation - Facilitator

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## Index


# DEVOPS IN A NUTSHELL

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# 1. The First Way: The Principles of Flow

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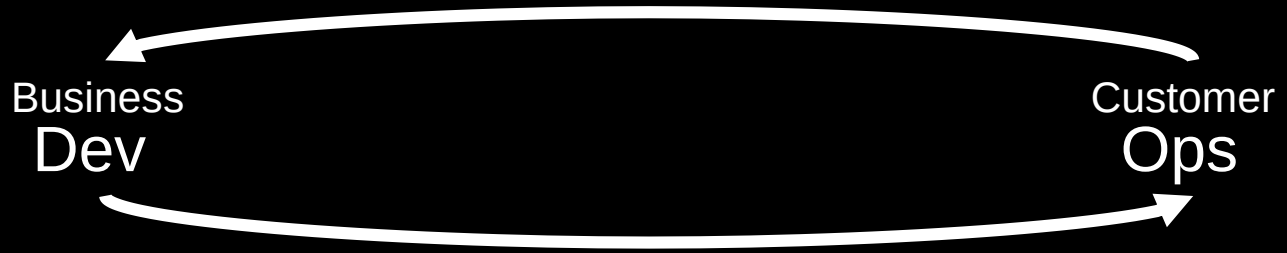
“Being able to take needless work out of the system is more important than being able to put more work into the system.”

Gene Kim

# 2. The Second Way: The Principles of Feedback

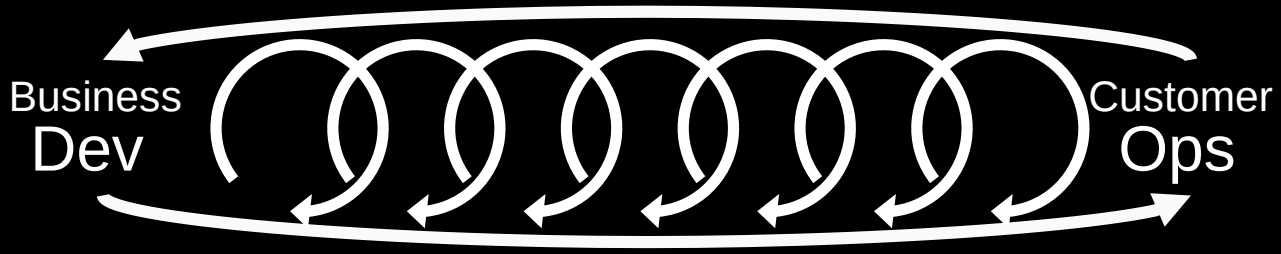


# 2. The Second Way: The Principles of Feedback

“Improving daily work is even more important than doing daily work.”

Gene Kim

# 3. The Third Way: The Principles of Continual Learning and Experimentation

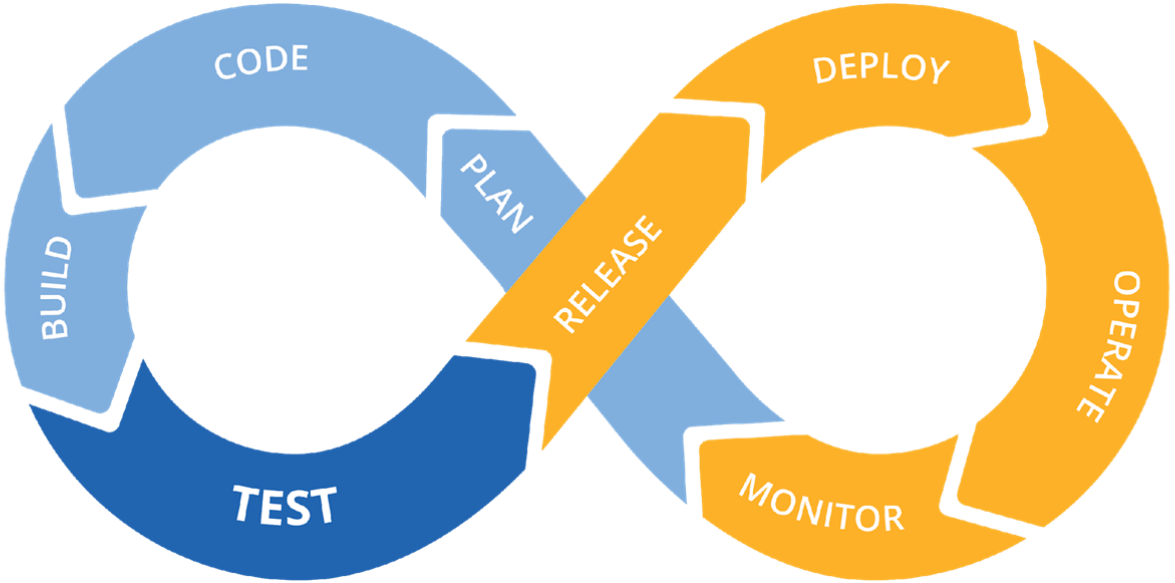


# 3. The Third Way: The Principles of Continual Learning and Experimentation

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

Gene Kim

# one DevOps view




- Image source: DevOps | freeCodeCamp Guide

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# Eficode's DevOps view

Using technology to make organization's operations more agile and reactive to customer needs

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# DEVOPS ASSESSMENT(s)

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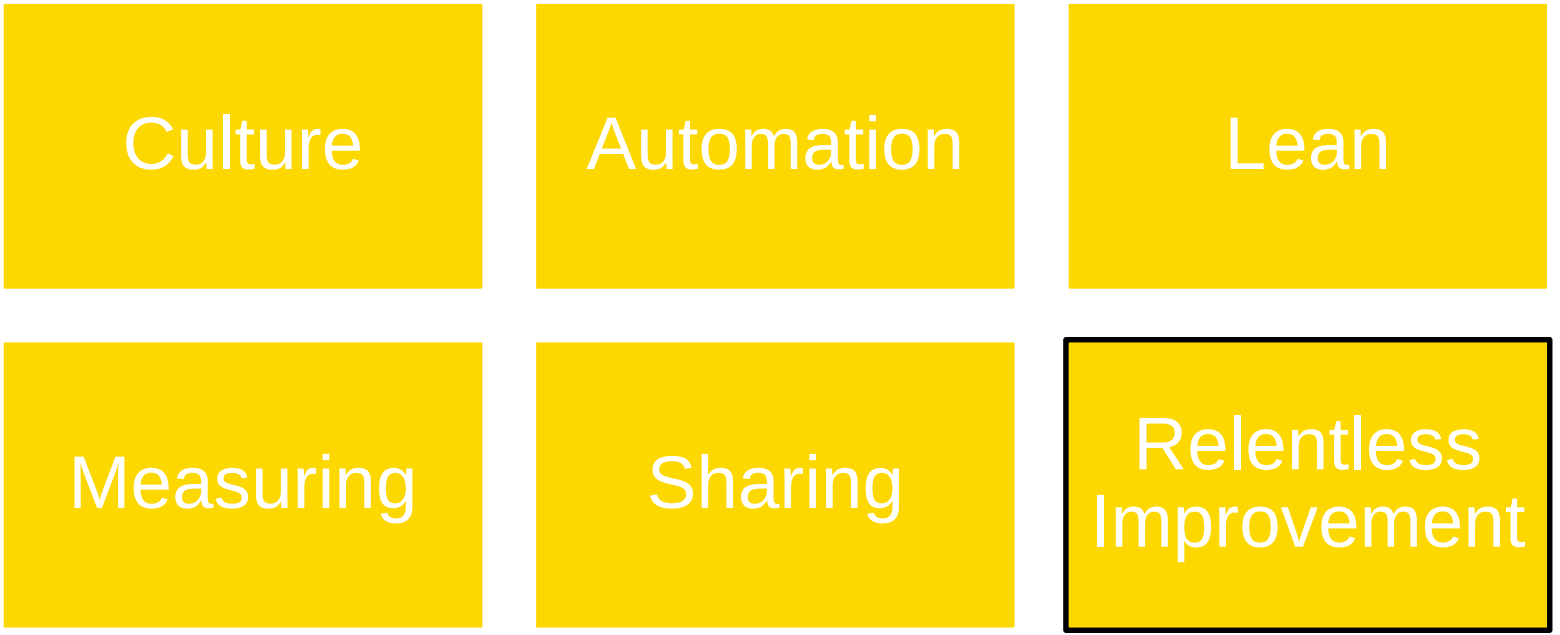
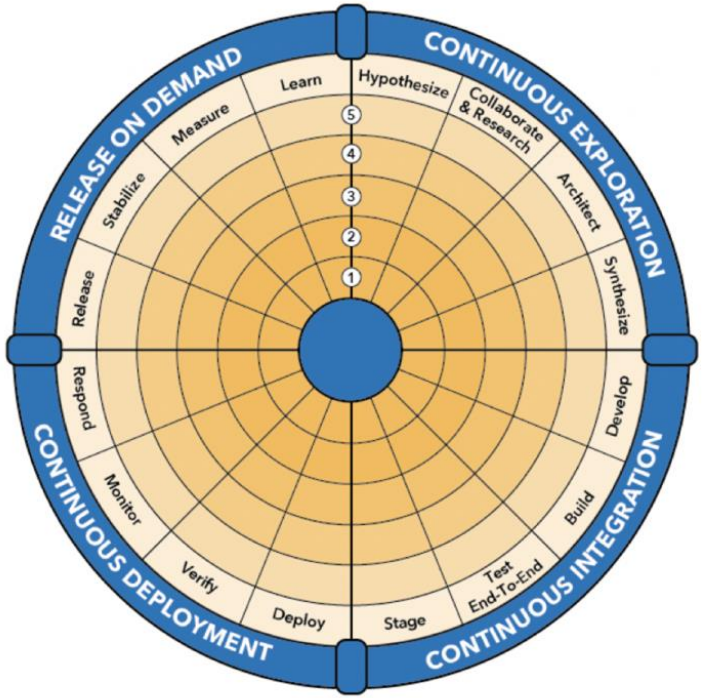
# DevOps – CALMS or CALMR model



# SAFe DevOps and Release on Demand Health Radar






- Continuous Exploration
- Continuous Integration
- Continuous Deployment
- Release on Demand

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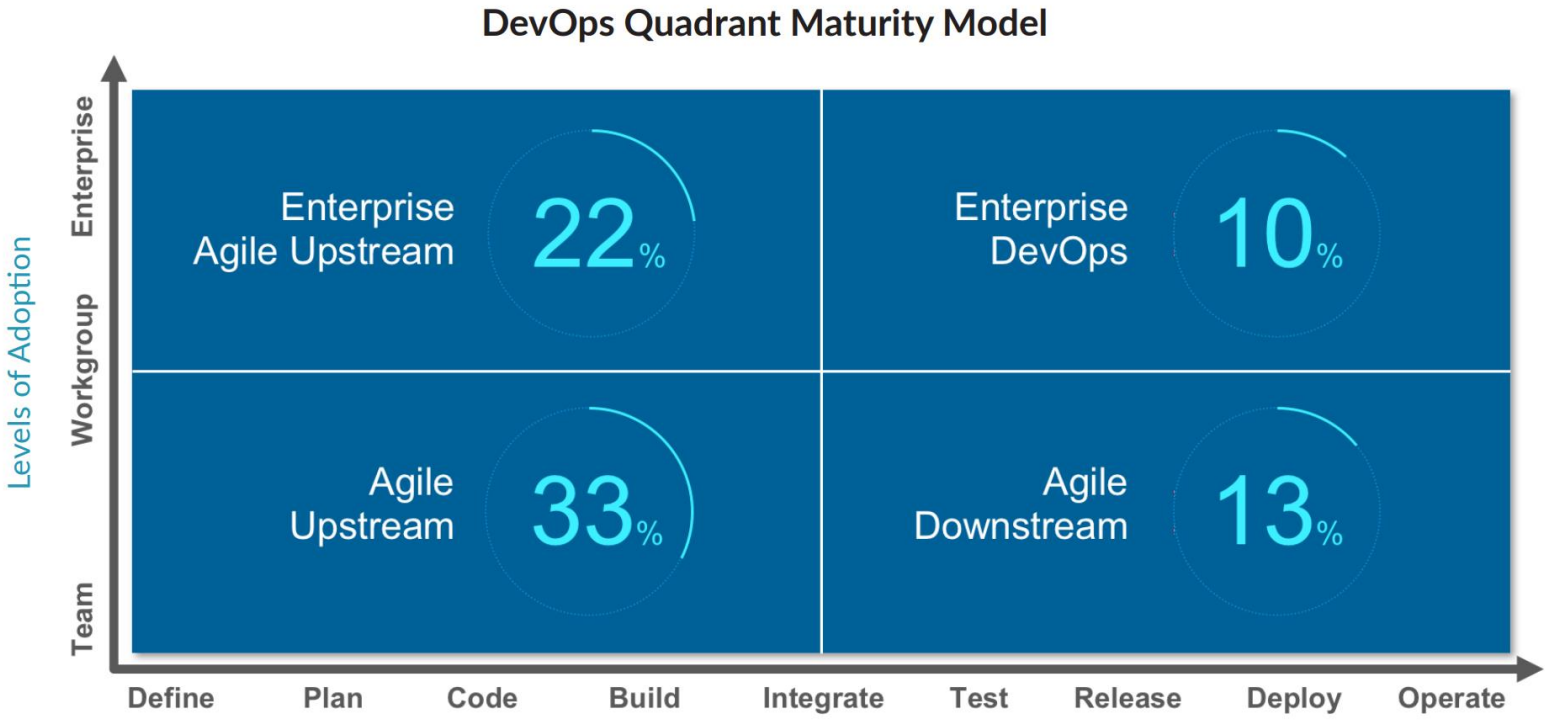
# CouldBees DevOps Quadrant

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# DEVOPS

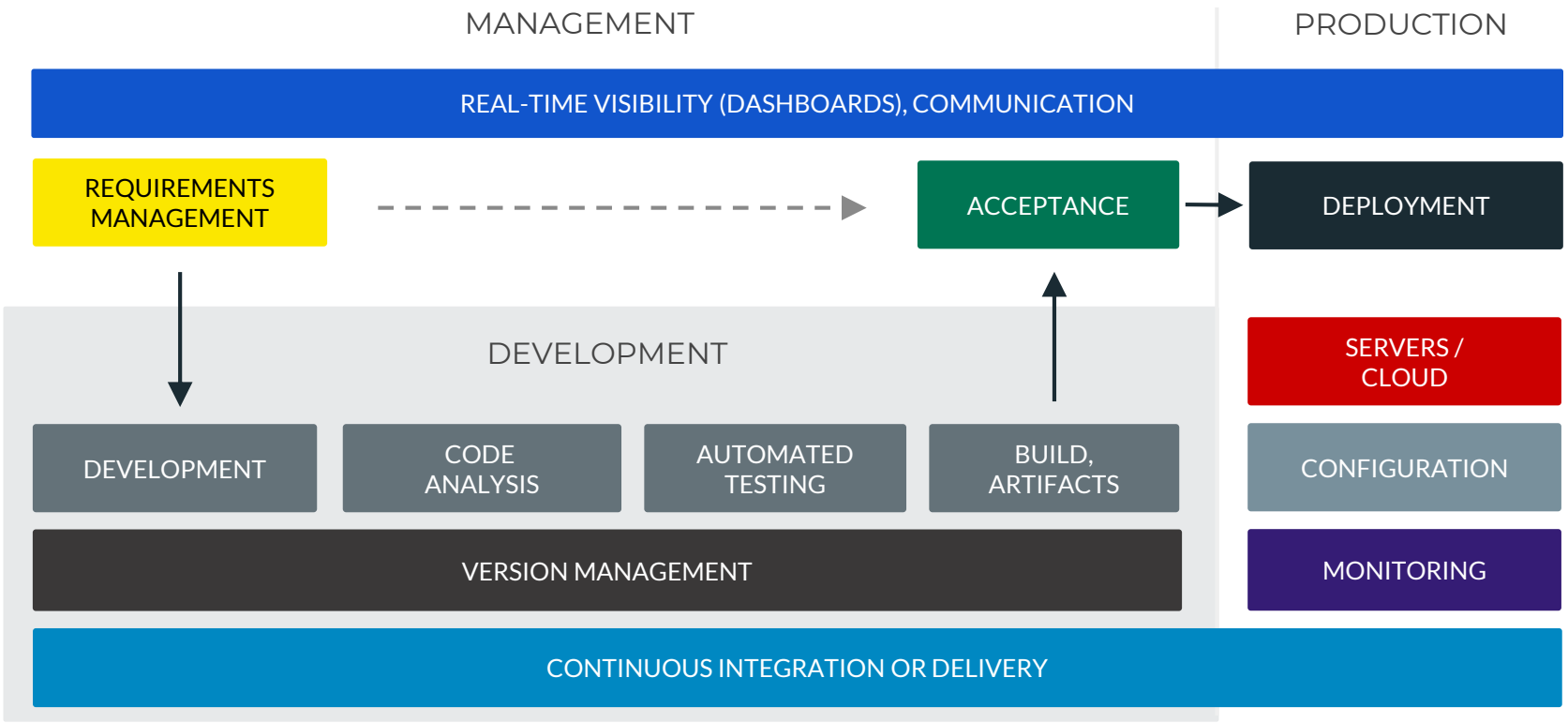
## eficode Maturity model

**DEVOPS MATURITY 68 / 100**

| | 001 | 002 | 003 | 004 |
|---|---|---|---|---|
| ENABLEMENT | Development operations have been separated from the business knowledge. Starting a new development project is laborious. | Starting new development projects is agile, and there are practices in place for steering the project. | New projects can be connected to organization's strategic targets. Starting a new pilot project is easy. | Real-time metrics supporting decision making and tracking the completion of strategic targets are available. |
| ORGANIZATION AND CULTURE | Design, development and quality assurance are separate from each other. Communication is primarily in writing. | Work is conducted in teams but development and quality assurance are separate from each other. | The teams work independently. They have total liability for the development and quality assurance of features. | The teams communicate with each other regularly and work together to improve their practices. Communication with the IT operations is continuous. |
| ENVIRONMENTS AND RELEASE | Products are environment-specific and they are compiled manually. Environments are installed and configured manually. | The system is divided into parts and the compiling environment is known. Some releases are automated. | Environments can be installed and configured automatically. Build and release processes are automated. | Releases may be conducted automatically and continuously. Migration and recovery processes work as expected. |
| BUILDS AND CONTINUOUS INTEGRATION | Product integration is automatic, but configuration and deployment are controlled manually. No artifact or change logs management. | The product is built by team specifically after every change. Tools are shared. Integration does not involve testing. | Integration covers the entire product and it is connected to acceptance testing. Dependencies are known and managed. | Build and integration processes are continuously improved based on collected metrics with aim to speed up the feedback cycle and improve visibility. |
| QUALITY ASSURANCE | Quality assurance is conducted completely by hand and primarily after development. | Unit testing or static code analysis is in place for some parts of the product. | Features visible to the end users are covered with automatic tests. Testers participate in the development process. | Acceptance tests present system requirements clearly and guide the development of the system as much as possible. |
| VISIBILITY AND REPORTING | Reports are made by hand when necessary. | Code integration, unit testing and code analysis are visible to the team. | The status of requirements can be monitored in real time in relation to tests and released features. | Real-time metrics are automatically collected from the product development process and used as a basis for improvement. |
| TECHNOLOGIES AND ARCHITECTURE | Technologies and tools are obsolete or are not fit for current requirements. | Technologies are growing old and the architecture is only partially adaptive or the interfaces are lacking. | Technologies are modern or well supported. The interfaces are well documented and exist for all key functionalities. | The architecture and technologies are optimal and enable reaching business targets efficiently. |

EXAMPLE

# eficode DevOps maturity assessment scope

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# TESTING ASPECT OF DEVOPS

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# What is important for QA in DevOps?

- Value driven testing built on customer collaboration

Test First Thinking

Continuous Product level Quality Assurance

Shift Left

Automation of Testing tasks

Share (testing) tools and assets across the Value Stream

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# What is important for QA in DevOps?

- Value driven testing built on customer collaboration

Test First Thinking

- Feature level acceptance criteria are defined upfront collaboratively
- All types of test are identified upfront collaboratively
- Testing is guided by Risk

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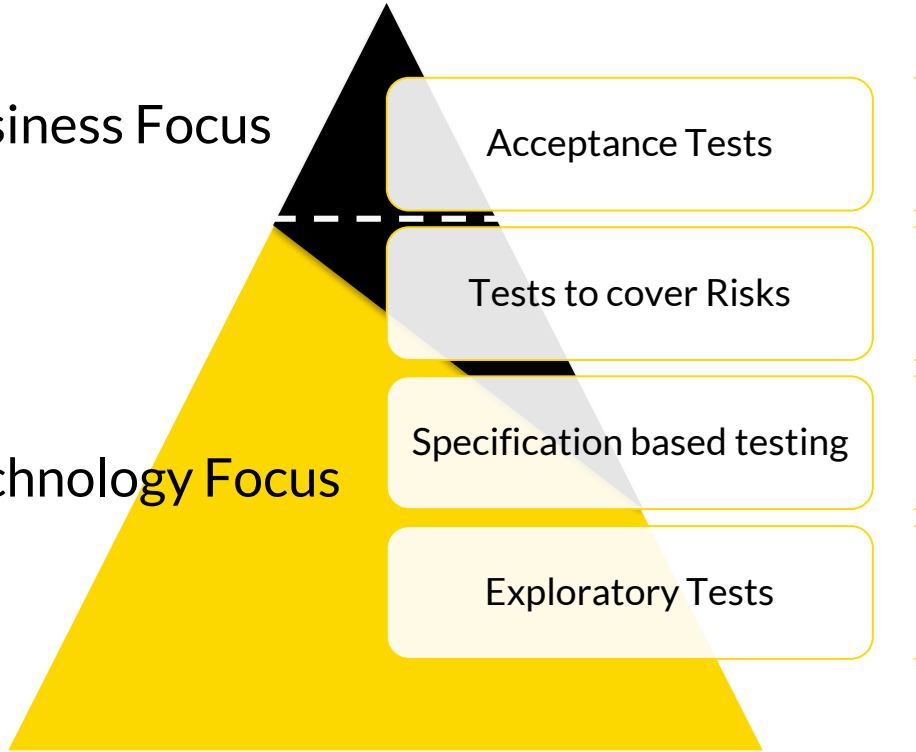
# Collaborative Test Design

Production Acceptance Test

In house testing




**Acceptance Tests**

- ATDD or BDD, resulting in Automatic Acceptance Tests
- Focusing on Functional aspect

**Tests to cover Risks**

- Failure Mode and Effect Analysis to capture negative scenarios
- Risk Based Testing to focus effort

**Specification based testing**

- Requirement Based Test Design on all level of Requirements, with traceability
- Focusing on Non-functional aspect as well

**Exploratory Tests**

- Experience Based test design focusing on Rainy Day scenarios
- Continuous learning of our system

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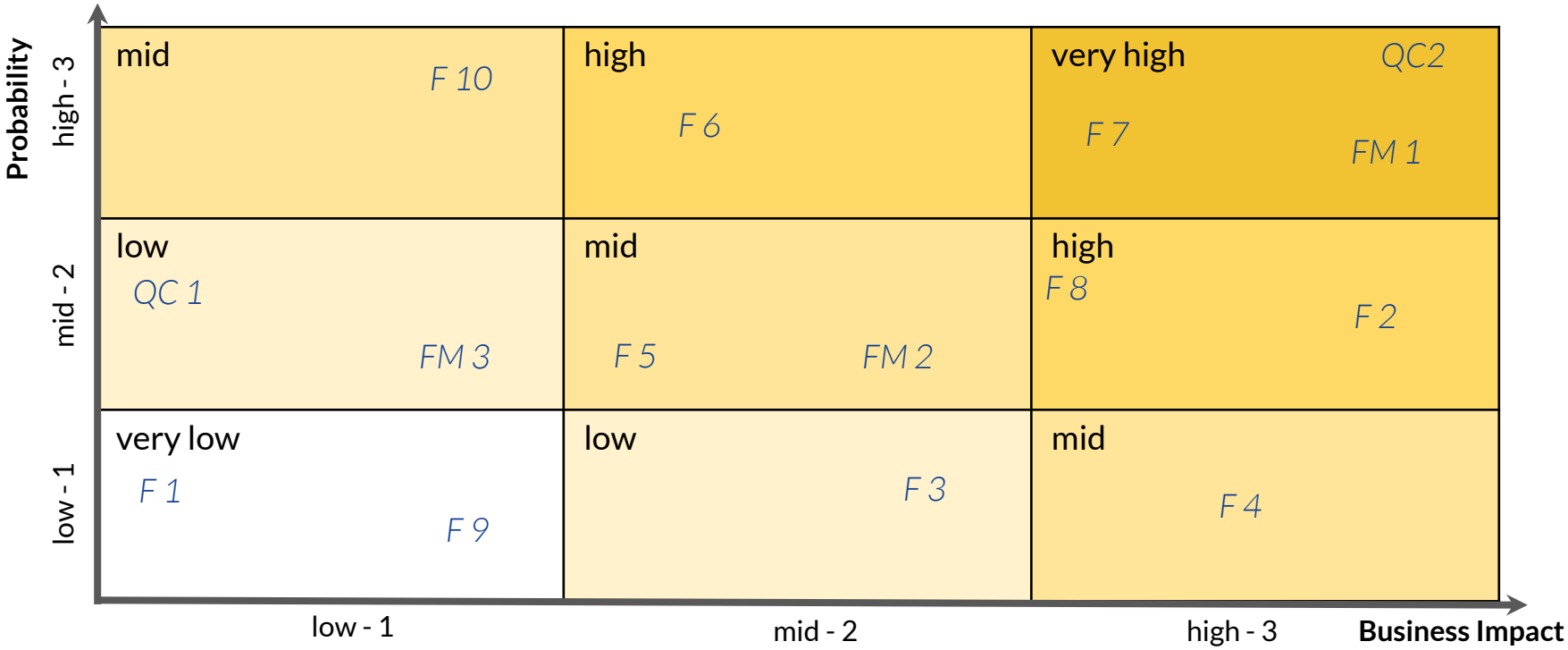
# Testing is guided by Risk Levels




*Fx – Feature x or Functional Requirement*
*QCx – Quality Characteristic or Non-functional Requirement*
*FMx – Failure mode*

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# Differentiated Test Approach for different Risk levels – example by Rex Black

| Aggregate Risk | Extent of Testing | Comments |
|---|---|---|
| Very low | None | Only report bugs observed in these risk areas. |
| Low | Opportunistic | Leverage other tests or activities to run a test or two of an interesting condition in the related risk area, but only if it involves a very small investment of time and effort and only if the opportunity presents itself. |
| Medium | Cursory | Run a small number of tests that sample the most interesting conditions in the related risk areas. |
| High | Broad | Run a medium number of tests that exercise many different interesting conditions in the related risk areas. |
| Very high | Extensive | Run a large number of tests that are both broad and deep, where deep tests exercise many combinations and variations of interesting conditions. |

# What is important for QA in DevOps?

- Value driven testing built on customer collaboration

Continuous Product level Quality Assurance

- Coverage and Traceability
- Non-functional QA
- Regression set is updated regularly

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# What is important for QA in DevOps?

- Value driven testing built on customer collaboration

Shift Left

- Static Code Analysis is in use
- Module/Unit testing is in use
- Collaborative, cross-functional Test Planning

# What is important for QA in DevOps?

- Value driven testing built on customer collaboration

Automation of Testing tasks

- Test case as Software
- Automated Test results analysis and reporting
- Test environment deployment automation

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# What is important for QA in DevOps?

- Value driven testing built on customer collaboration

Share (testing) tools and assets across the Value Stream

- Reuse of Test Assets
- Standardized pipeline and tools in use


# TAKE AWAY

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## Learning points

1. Big size transformation needs a dedicated team and support
2. There are many DevOps assessments available, choose the one for you
3. Testing and CI/CD is key in DevOps, but there are more key areas
4. Continuous Exploration and Learning is a must

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# Thank You

For more information,
please contact

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