

Quality for DevOps teams

Webinar 11 March 2020

TMAP: the body of knowledge for quality engineering in IT delivery



Challenges of today's high-performance IT delivery

The business demands:

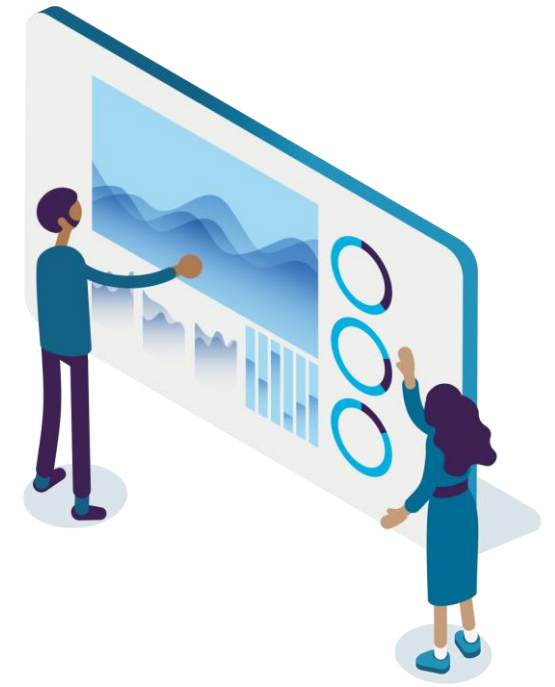
- Deliver business value
- Deliver quality at speed

The team challenges are:

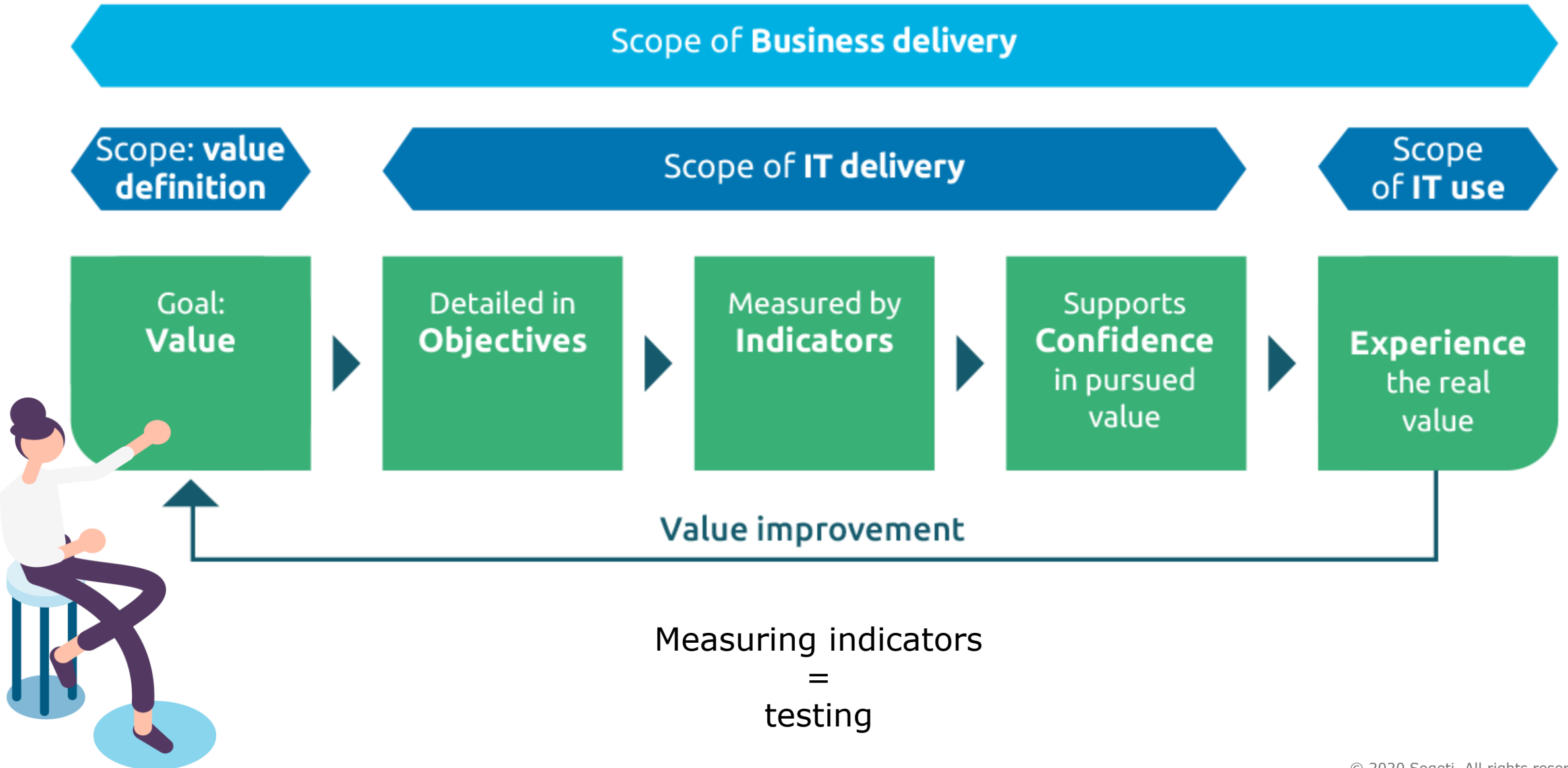
- Quality engineering is everyone's responsibility
- QA & testing is integrated in people and process

The focus is:

- Organize high-performing cross-functional teams (*you build it, you run it!*)
- Automate everything (as long as it is useful)



The VOICE model for delivering business value



Indicators

TMAP describes four groups of indicators

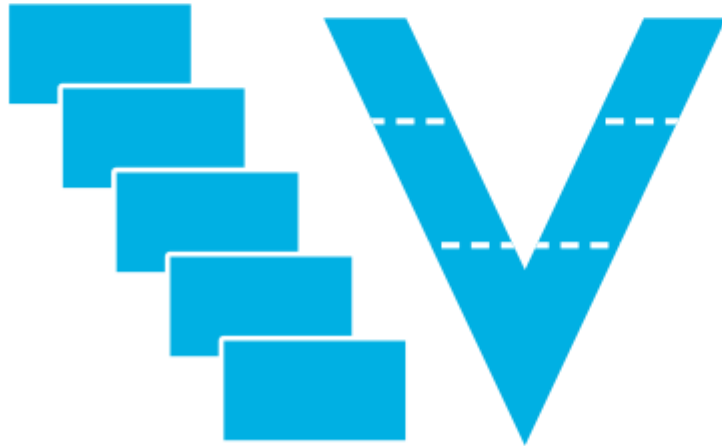
- Business value related indicators
- IT delivery related indicators
- Team related indicators
- Problem related indicators

A few well-measured and properly followed-up indicators are much better than a long list of unpractical indicators. So as a team, together with the relevant stakeholders, discuss which indicators show whether you are moving towards the pursued business value.



IT delivery models

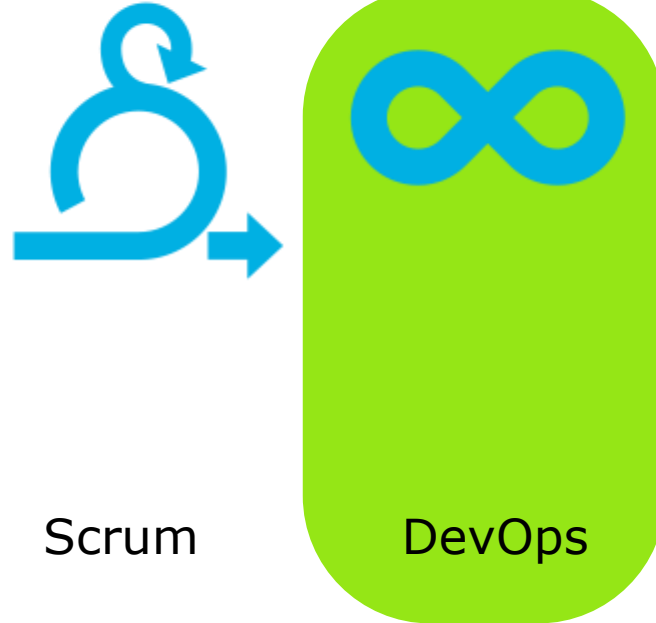
Sequential
IT delivery



Waterfall

V-model

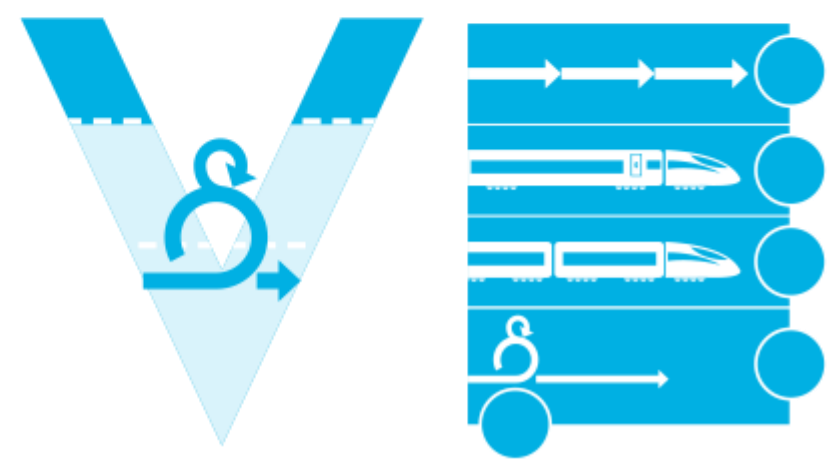
High-Performance
IT delivery



Scrum

DevOps

Hybrid
IT delivery



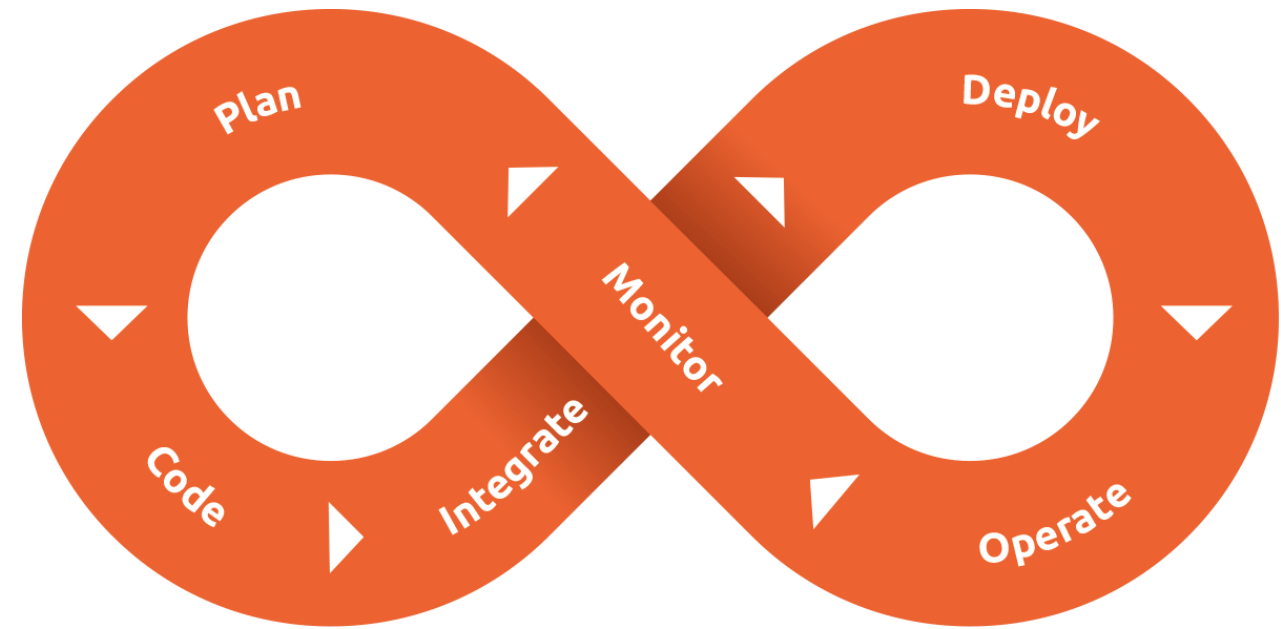
Demand-Supply

SAFe®

DevOps – highlights

The six DevOps principles:

1. Customer-centric action
2. Create with the end in mind
3. End-to-end responsibility
4. Cross-functional autonomous teams
5. Continuous improvement
6. Automate everything you can



The six DevOps activities

DevOps is a cross-functional systems engineering culture that aims at unifying systems development (Dev) and systems operations (Ops) with the ability to create and deliver fast, cheap, flexible and with adequate quality, whereby the team as a whole is responsible for the quality. Other areas of expertise, such as business analysis and quality assurance (including testing) are usually integrated in the team. A DevOps culture has an Agile mindset that can be supported/implemented by, for example, the Scrum framework.

The starting point for DevOps: **A cross-functional team**

TEAM:
Together
Everyone
Achieves
More



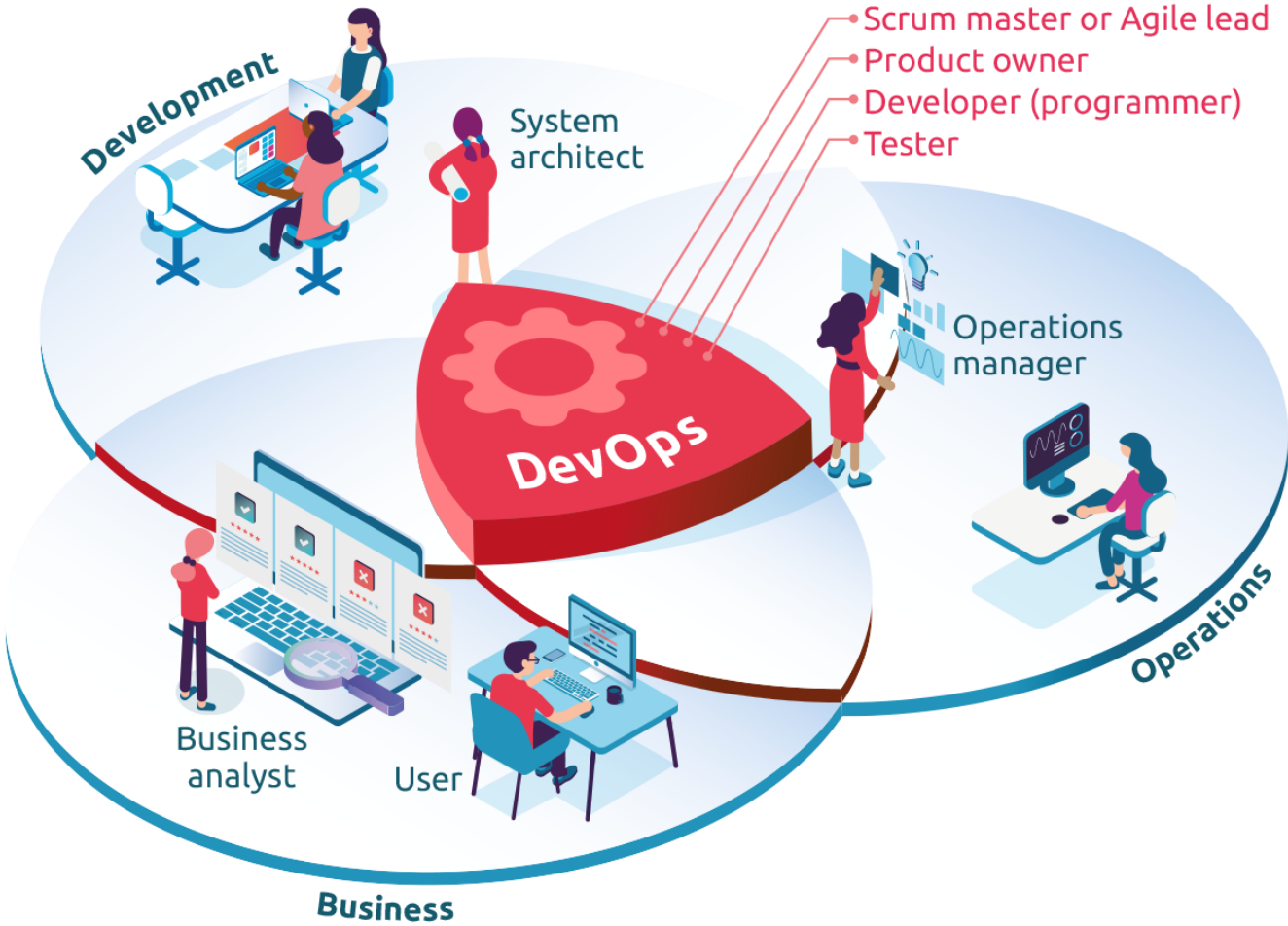
Example of a cross-functional
high-performance IT delivery team

Aligned with the DevOps culture of IT delivery – where roles are important and functions are not – keep in mind that if in TMAP you see a term such as developer or tester, we refer to the role of a team member at a specific moment in time, not to a function.

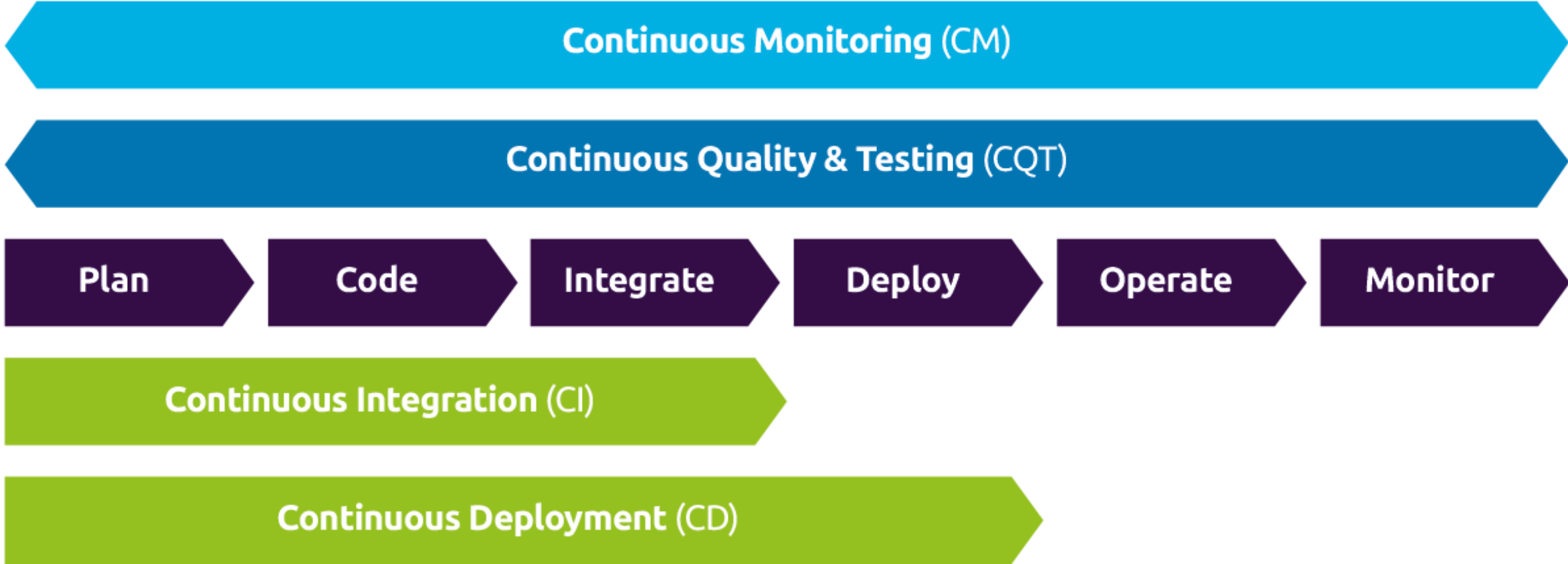
Responsibilities and Roles

Chapter 16 describes the common roles and the relevant responsibilities in a DevOps team.

Chapter 36 describes personal, interpersonal and team skills for people in cross-functional teams.



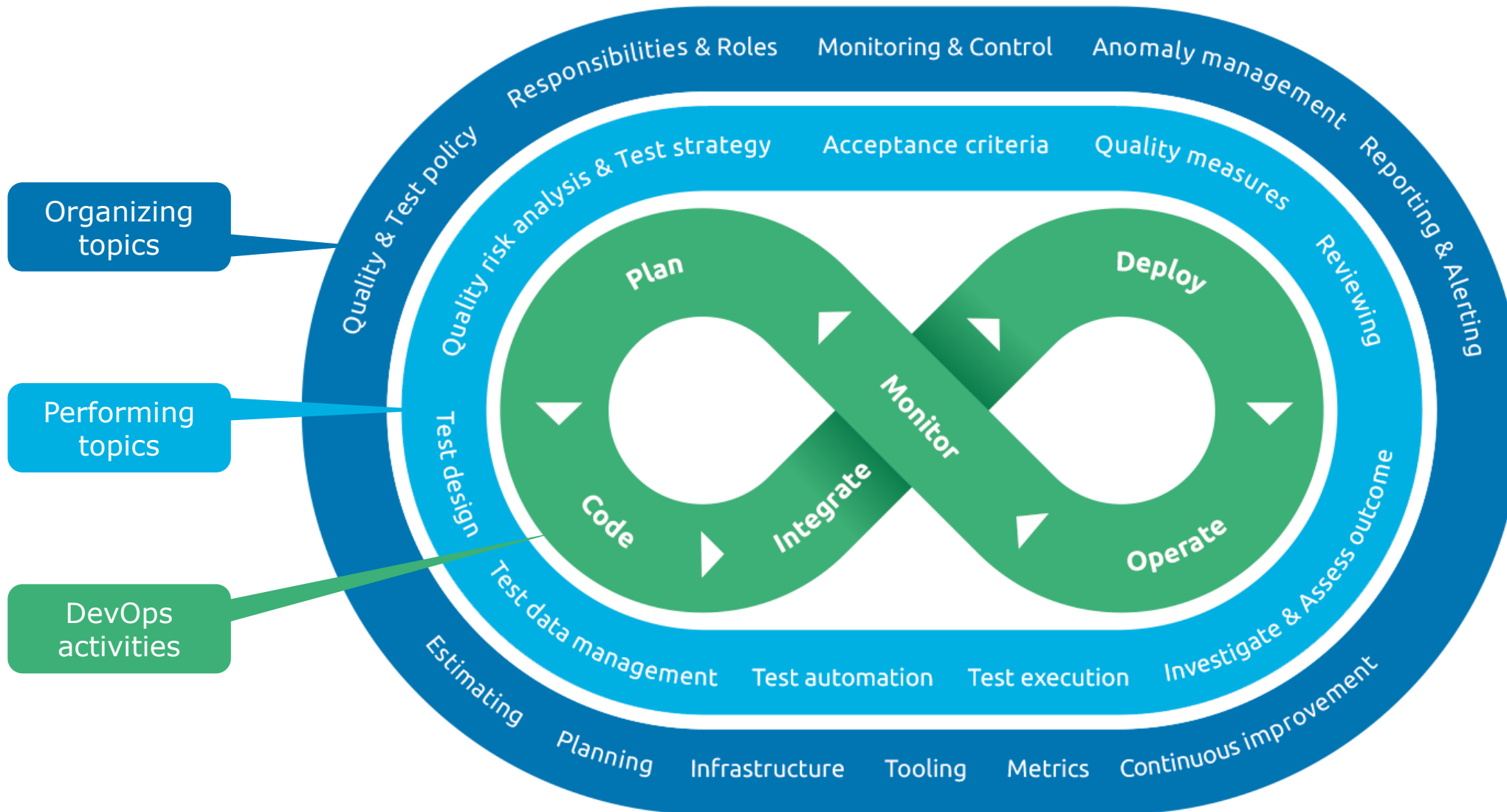
Continuous everything to achieve built-in quality



QA & testing topics



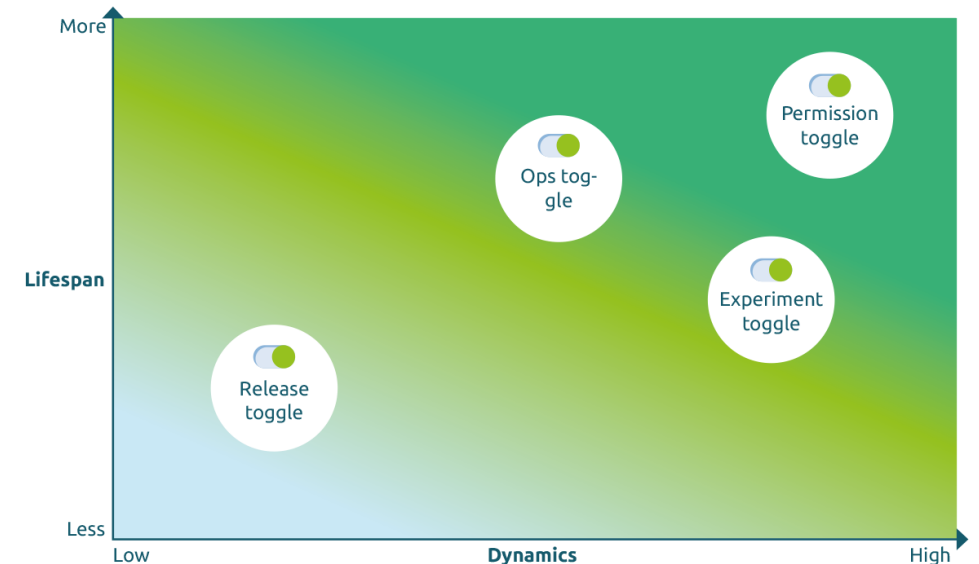
The QA & testing topics related to the DevOps activities



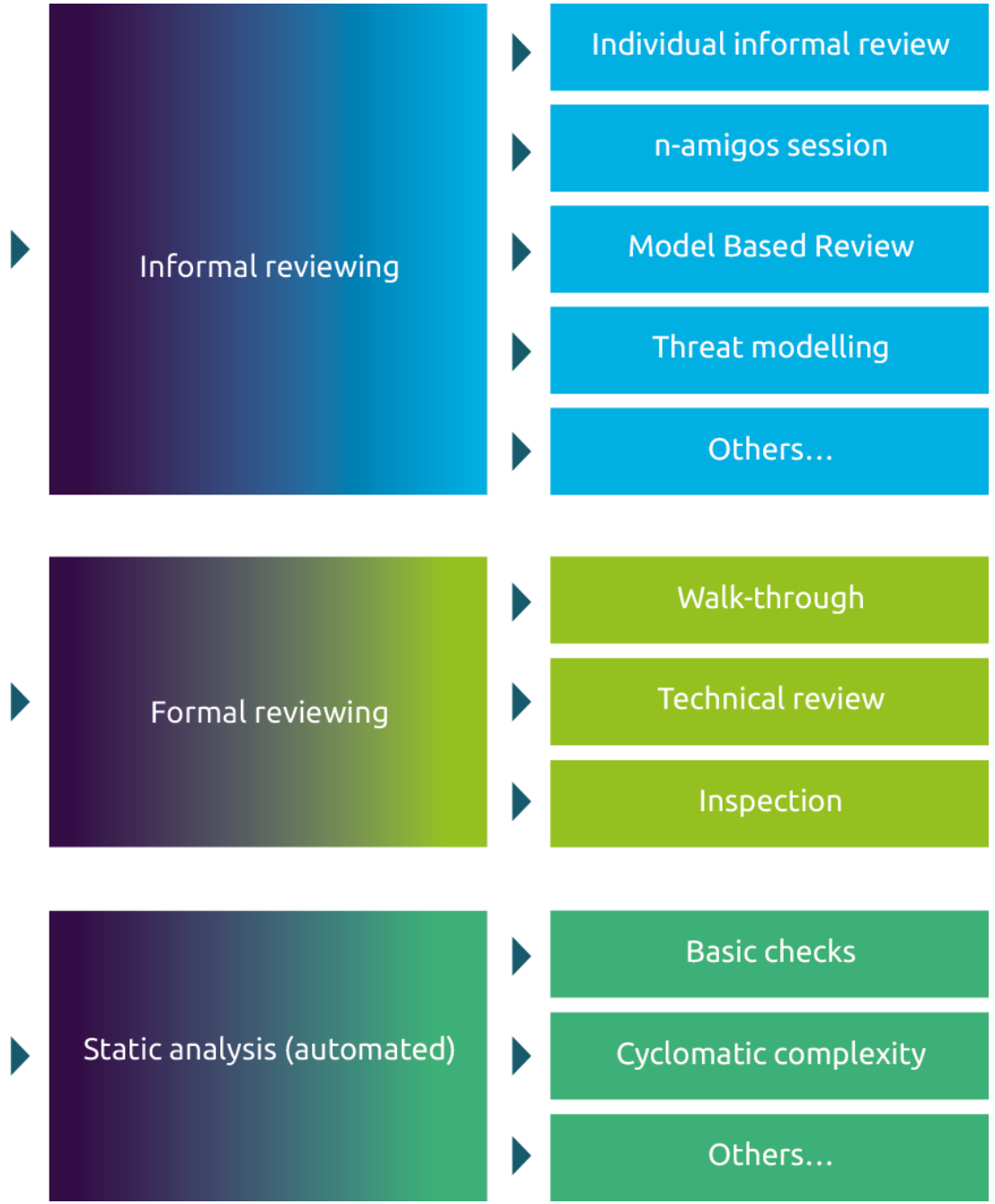
Quality measures

The quality measures that are described in TMAP are:

- Root cause analysis (RCA)
- Specification and Example (SaE)
- Test-driven development (TDD)
- Pair programming
- Pairing
- Review
- Test design techniques
- **Feature toggles**
- Monitoring
- Parallel testing

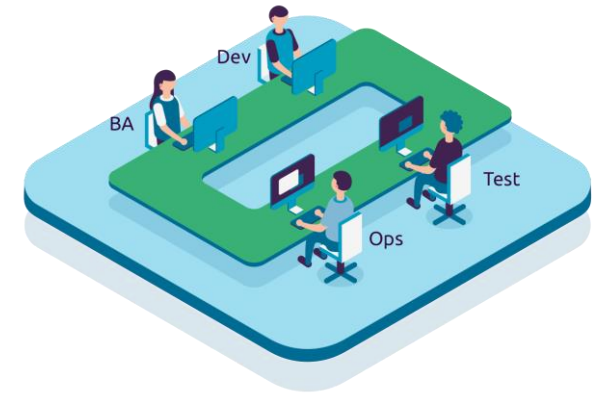


Static testing



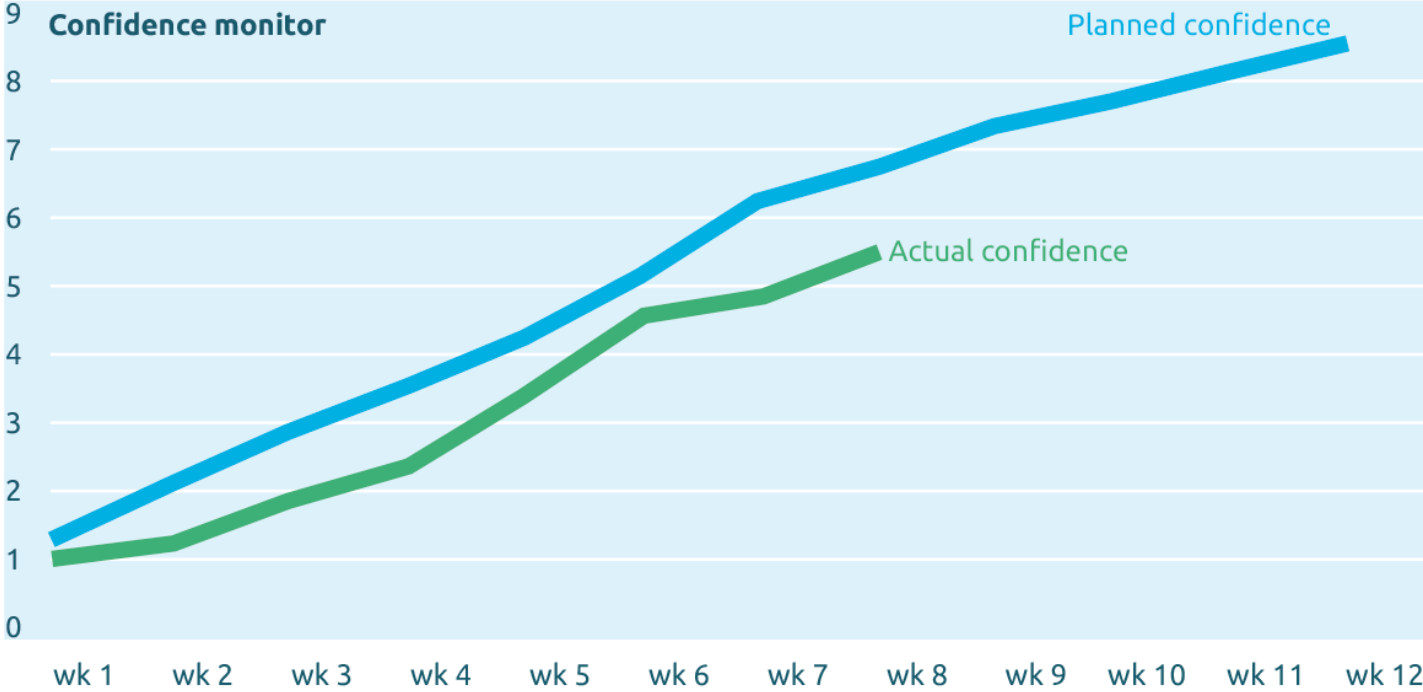
Static testing

Example of individual informal review:
Pull request

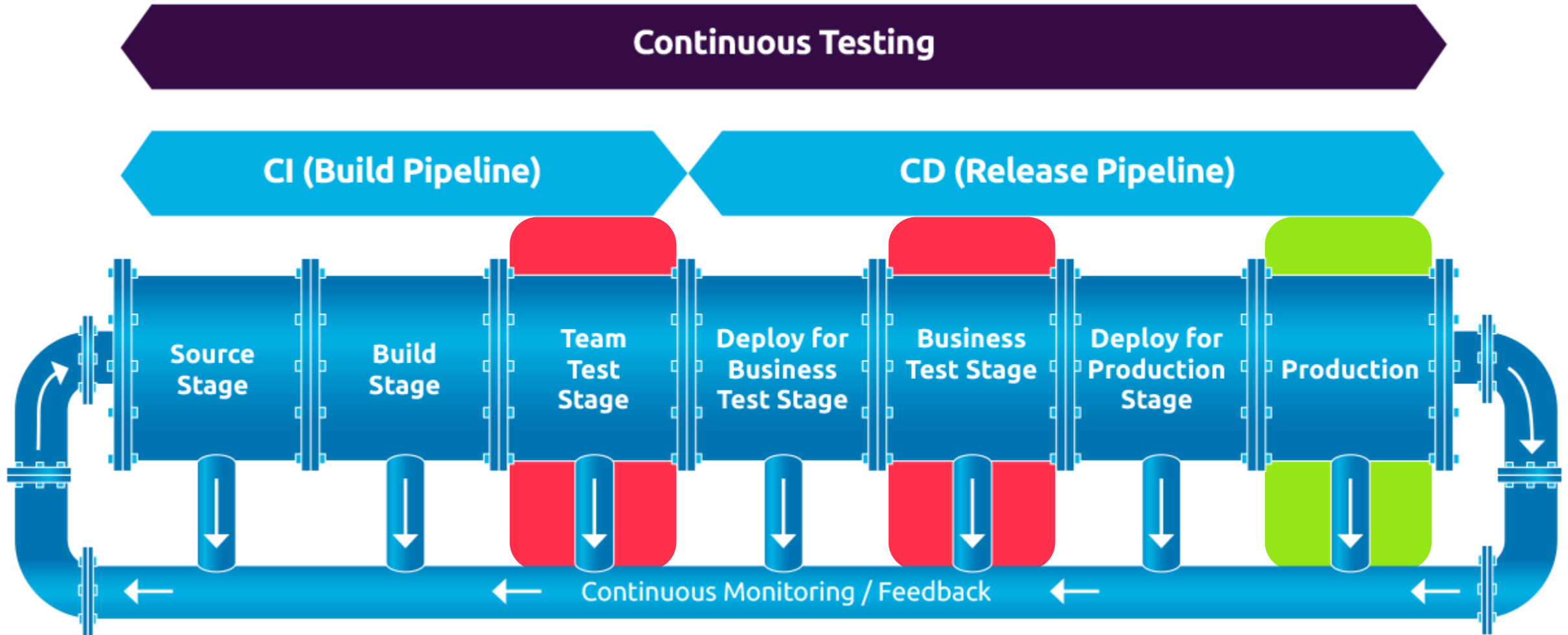


Four amigos

Monitoring, control, reporting & alerting



Automate everything (as long as it is useful)



An automated pipeline enables: elimination of errors due to manual task execution, provisioning of standardized development feedback loops and enabling of fast product iterations.

Capabilities in a CI/CD pipeline

Continuous Integration

- version control and configuration management for maintaining the different versions of the code
- compiler
- validation
- code review (automated and through "pull request")
- unit testing
- integration testing
- containerization (packaging)

Continuous Delivery

- configuration management
- user acceptance testing
- ready for deployment of the build application (container, package)

Continuous Deployment

- configuration management
- user acceptance testing
- deployment of the build application (container, package)
- automated checks and validation for automated deployment approval

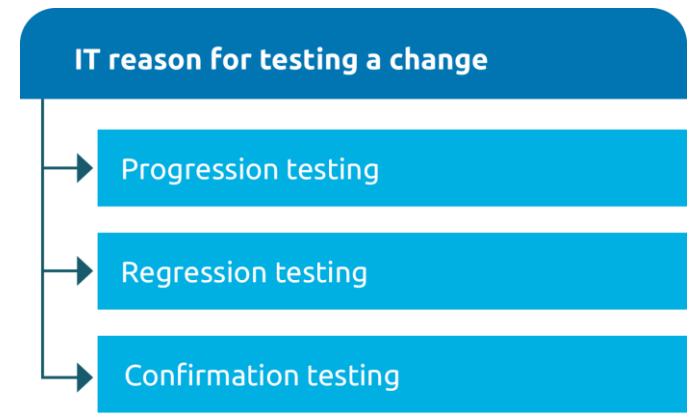
Continuous Monitoring

- monitoring ensuring that the applications operate successfully
- alert management to get the right people's attention when specific events occur in one of the DevOps activities
- analytics to be able to identify problems in the code and to perform root cause analysis
- team telemetry to understand the maturity of the team and how the team can improve.
- live site telemetry to measure how the system runs, the platform behaves and log management.
- cognitive monitoring to automate and improve IT operations by applying machine learning to the log data.
- security monitoring to monitor security threats.
- user telemetry to measure user sentiment and behavior.

Continuous Quality & Testing

- automated provisioning of test environments with test data
- automated test execution
- automated anomaly detection
- workflow supporting anomaly severity/priority assignment related to the risk
- AI and ML technologies to continuously and automatically optimize the test sets
- continuous visibility on quality status across the CI/CD pipeline

Organize your automated test varieties: Testing pyramid and testing quadrants



Unit testing and mutation testing

Code coverage demonstrates the percentage of program code that is covered by tests. Different test design techniques guarantee less or more coverage.

Mutation testing is a type of testing where certain statements in the source code are changed (mutated) to check if test cases will identify the fault that was introduced this way. This is a manner to verify the quality of the test set (instead of the object under test).



Preference for types of code coverage



Line coverage



Statement coverage



Decision coverage

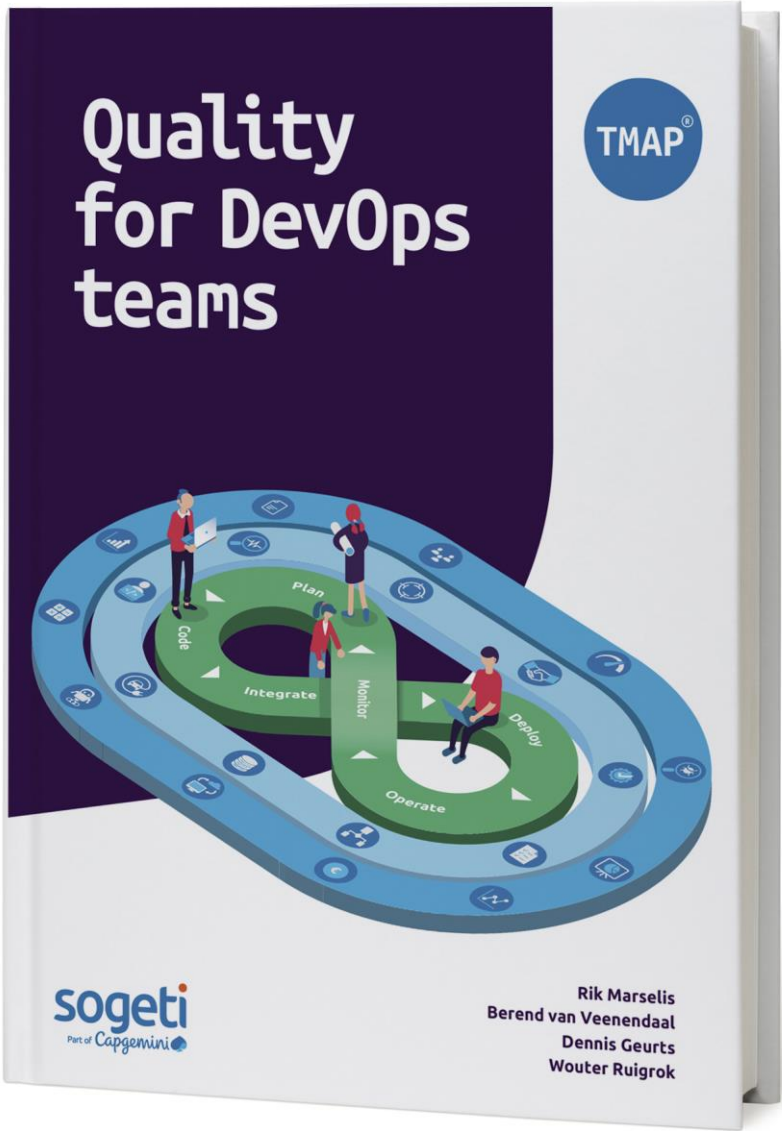


Branch coverage



Path coverage

We proudly present: Quality for DevOps teams
and the renewed body of knowledge www.tmap.net



Thank you to all contributors!! *(names in random order)*

Leo van der Aalst, Robbert van Alen, Eveline Moolenaars, Bert Linker, Wouter de Kort, Gitte Ottosen (DK), Nicklas West (SE), Vincent Wijnen, Filip Joele, Joey van Hoek, Jurian de Cocq van Delwijnen, Jan Sleutjes, Paul Custers (NS), Werner Soeteman (KLM), Willem-Jan van Tongeren (PostNL), Reindrich Geerman (KPN), Edward Elgeti (UWV), Peter Claassen (Rabobank), Caroline Arkesteijn (NIBC Bank), Eva Holmquist (SE), Peter Betting (FR), Tom van de Ven, Andrew Fullen (UK), Barry Weston (UK), Fredrik Scheja (SE), Marianne Duijst, Paul van de Geer, Matthias Hamburg (DE), Sven Fanslau (DE), René Boswinkel, Arno Balemans, Albert Tort Pigubet (ES), Geert Vanhove (BE), Geert Jan Carpay, Gijs Op de Beek, Maurice Siteur, Marc Roekens, Martijn van der Salm, Erwin Riemersma, Mark van der Walle, Emil Wesselink, Charlotte Janus, Rianne Oorebeek – de Neef, Dirkjan Kaper, Jan-Willem van den Brink, Tinus Vellekoop, Marco van den Brink, Casper Schipper, Richard Ammerlaan, Randy Semeleer, Bas de Heer, Daan Kroese, Derk-Jan de Groot, Ard Kramer, Bart Broekman, René Tuinhout (RDW), John Bertens (Achmea), Bart Enkelaar (Bol.com), Pascal Nicolakis (Micro Focus), Arno van der Velde (Micro Focus), Patrice Chorot (Micro Focus), Antoine Aymer (FR), Blue Ityalam (IR), Fethi Mebrouk (FR), Jürgen Beniermann (DE), Maheshwar Kanitkar (IN), Markus Niehammer (DE), Mona Iversen (NO), Monish Pawar (IR), Torunn-Cathrine Ludvigsen (NO), Vishal Rai (IR), Clemens Reijnen, Erik Kuipers, Gert Stad, Hester van der Helm, Marco Jansen van Doorn, Pepijn Paap, Ralph Klomp, Stefan Gerstner, Mark Buenen, Sander van Logchem, Peter ten Hoor, Minke Sikkema, Mirjam Kroondijk, Annelies Gallagher, Richard Wouters, Lex Stuip, Pepijn van der Meer, Linda van Tilborgh, Jolien Dusseldorp-Schipper, Nicolette van der Heide and Rob Vijverberg.



Want to learn more about TMAP? The TMAP training courses and certification!



Upgrade

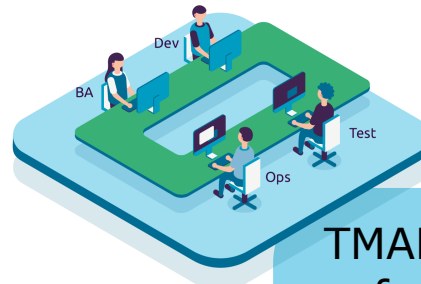


TMAP: Upgrade for high-performance IT delivery

1-day training (no exam)

Knowledge at TMAP certificate level

Certification scheme (with iSQI)



TMAP: Quality for cross-functional teams

All involved people

3-day training including exam of 30 questions

TMAP: High-performance quality engineering



Performing people

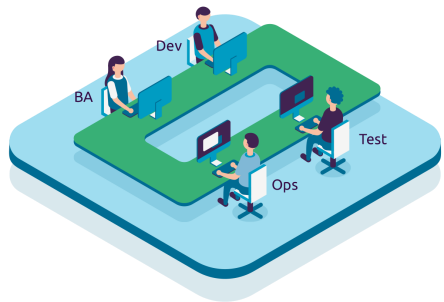
TMAP: Organizing built-in quality at scale



Organizing people

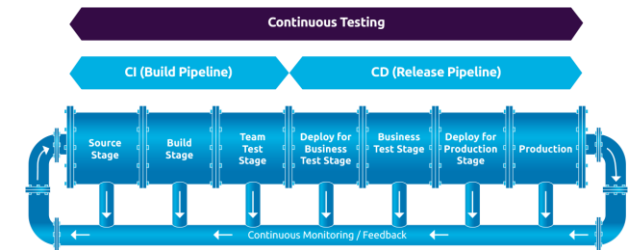
3-day training courses separate exam of 40 questions

Your role in making your clients benefit from the TMAP body of knowledge



Promote quality engineering for your cross-functional teams

Automate everything with CI/CD pipelines



Apply QA&Testing topics in your IT delivery



Contribute your good practices to the **TMAP** body of knowledge



TMAP: body of knowledge for quality engineering

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