NOKIA

Adopting DevOps in the Telecom World

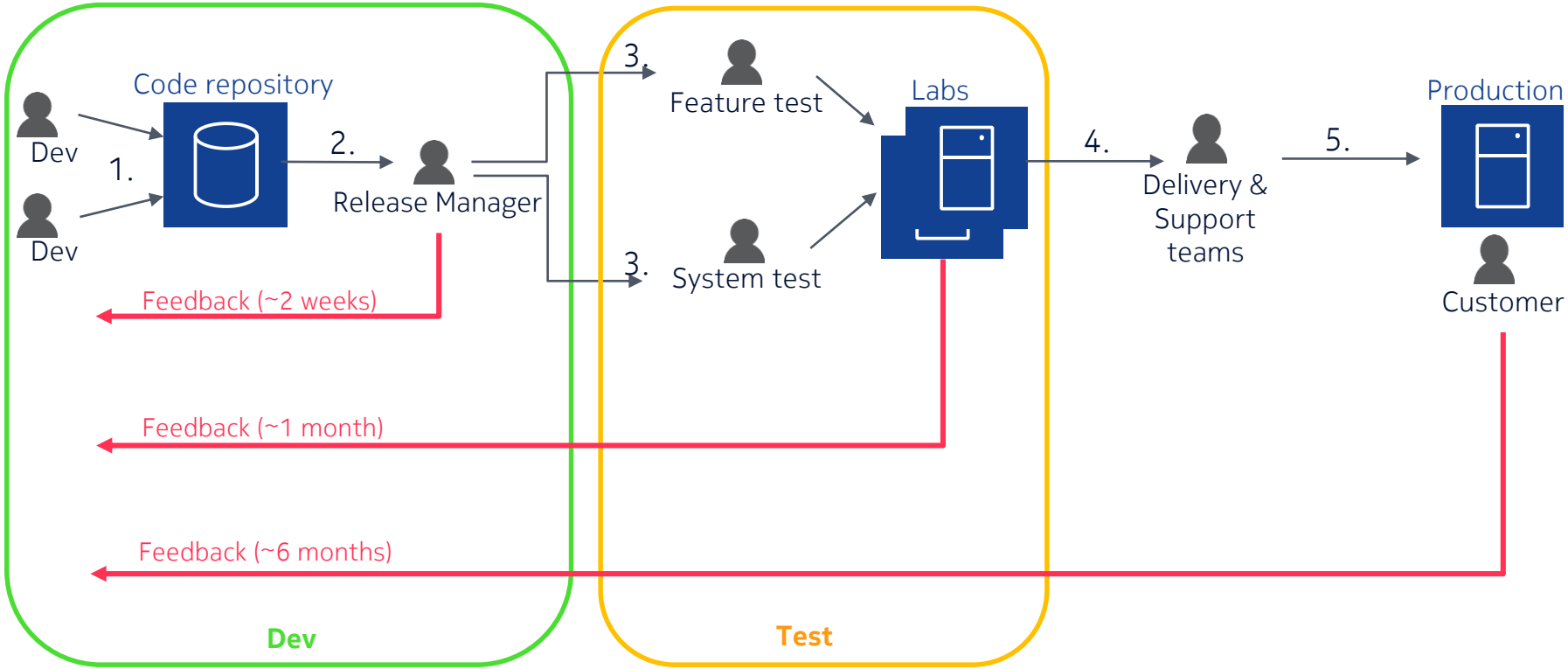
- Pierre-Henri SYMONEAUX / Erwan DUVAL
- 18-10-2016

Introducing the software uses as example
What are the characteristics of this software ?

- A network core equipment
- High real time constraint
- Distributed system, running up to **50 chassis of 16 servers** on biggest deployments
- Handles **tera bytes** of critical data
- More than **10 years** of existence
- **Millions** of line of code
- **Hundreds** of developers around the world
- **Thousands** of test cases
- Has known people turnover and sometimes full teams renewal
- To avoid any retaliation, we'll call it "**T-GOE**" or "This good old equipment"

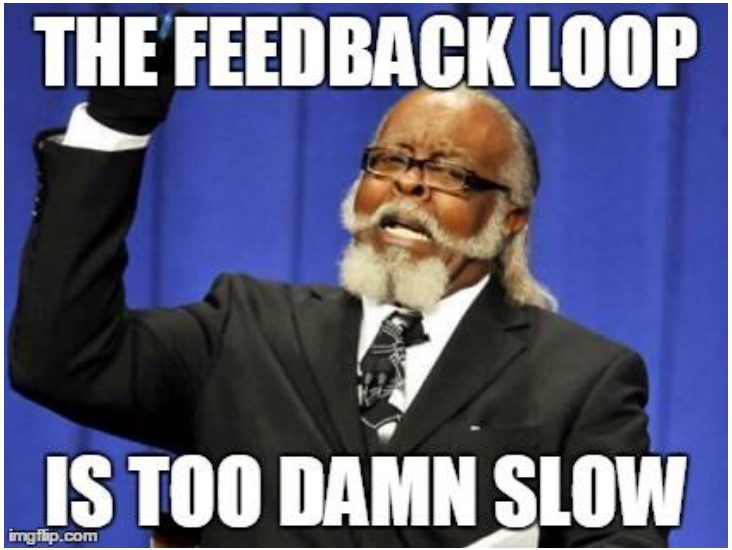
Once upon a time, in the telco industry

Simplified view of the good old manual process



Any problem ?

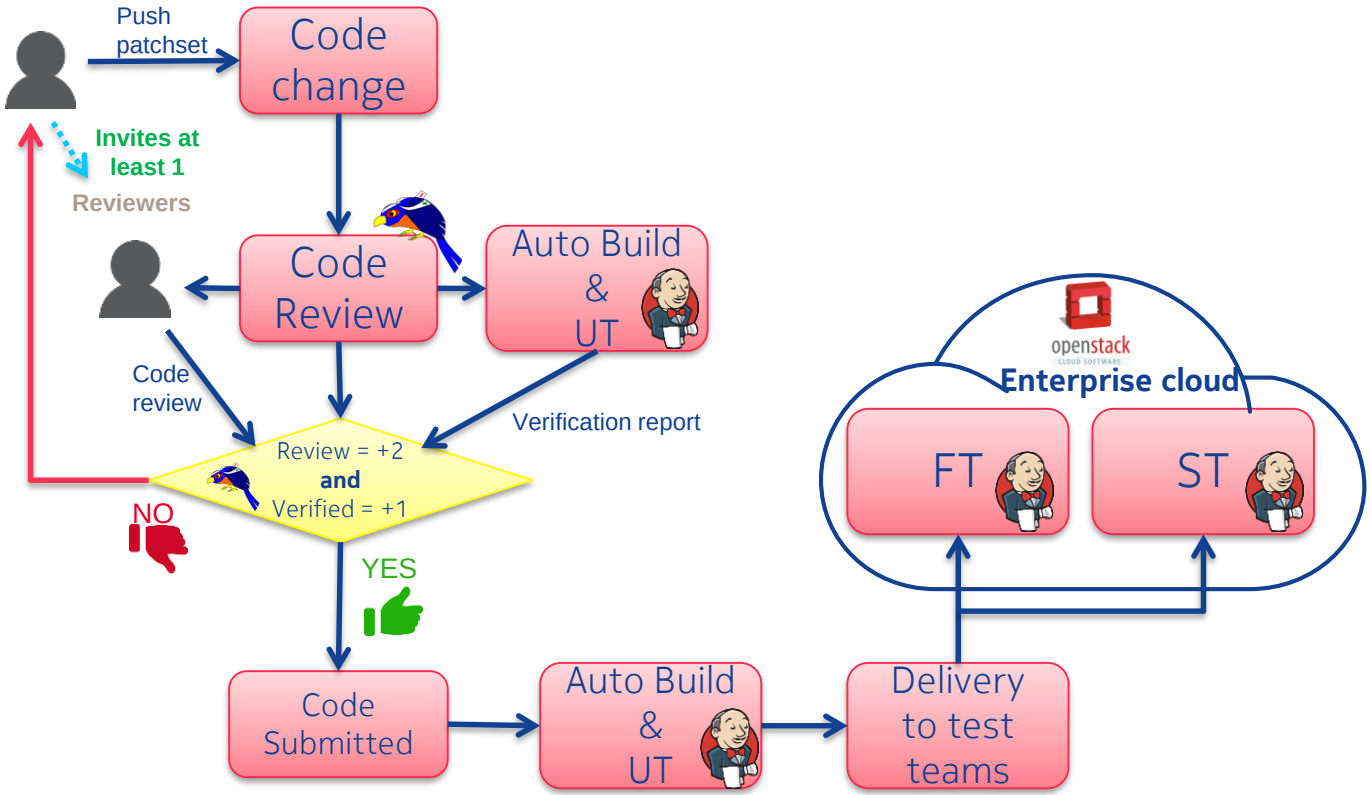
- Complex process which need to be masterized by peoples
- Tests are run in a shared lab with limited Hardware
  - Installs are manual and take some times
  - Testers need to wait for available Hardware
- Code integrations are scheduled (e.g. each 2 weeks)
- Deliveries to test teams are also scheduled (e.g. each month)
- Feedback to developers from FT, ST, Release Manager, delivery teams and customers is **too slow**
- Loss of agility
- Don’t even think about **time to market**



NOKIA

Code review and continuous integration
Giving the feedback loop some steroids

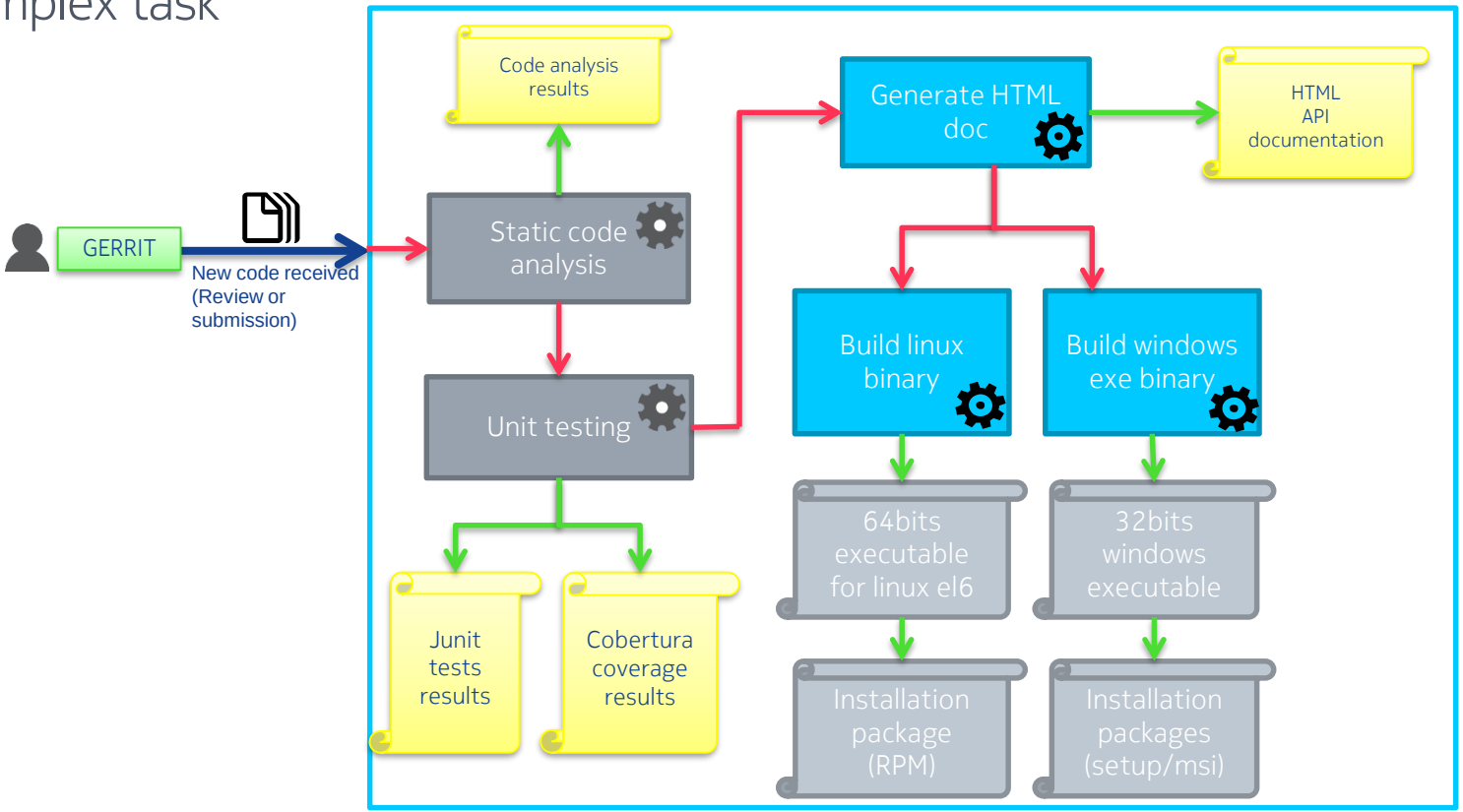
- **Jenkins** is used for
  - Job execution
  - Artifact publishing
- **Gerrit** is used for
  - Code review
  - Job triggering
- **Openstack** replaced the hardware infrastructure



Focus on Automatic build and UT process

Automating complex task

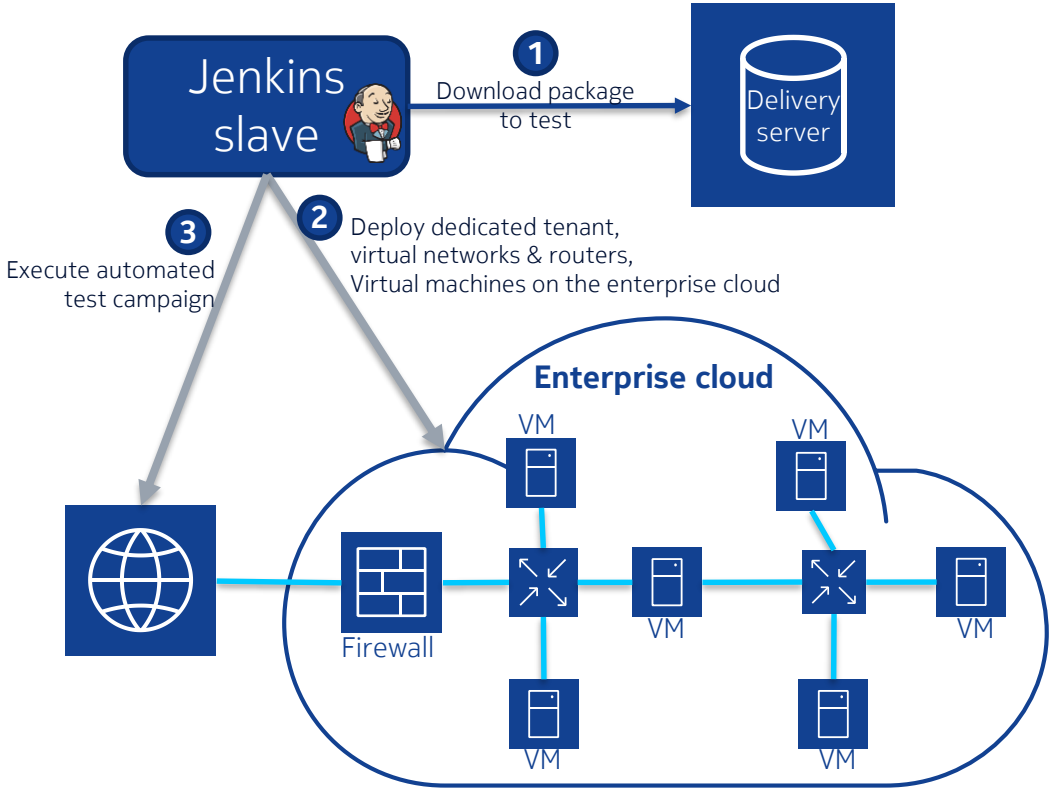
- The more you automate the more you can do
- Build for multiple targets
- Generate some Q&A metrics
- Cannot miss a step



FT & ST flow

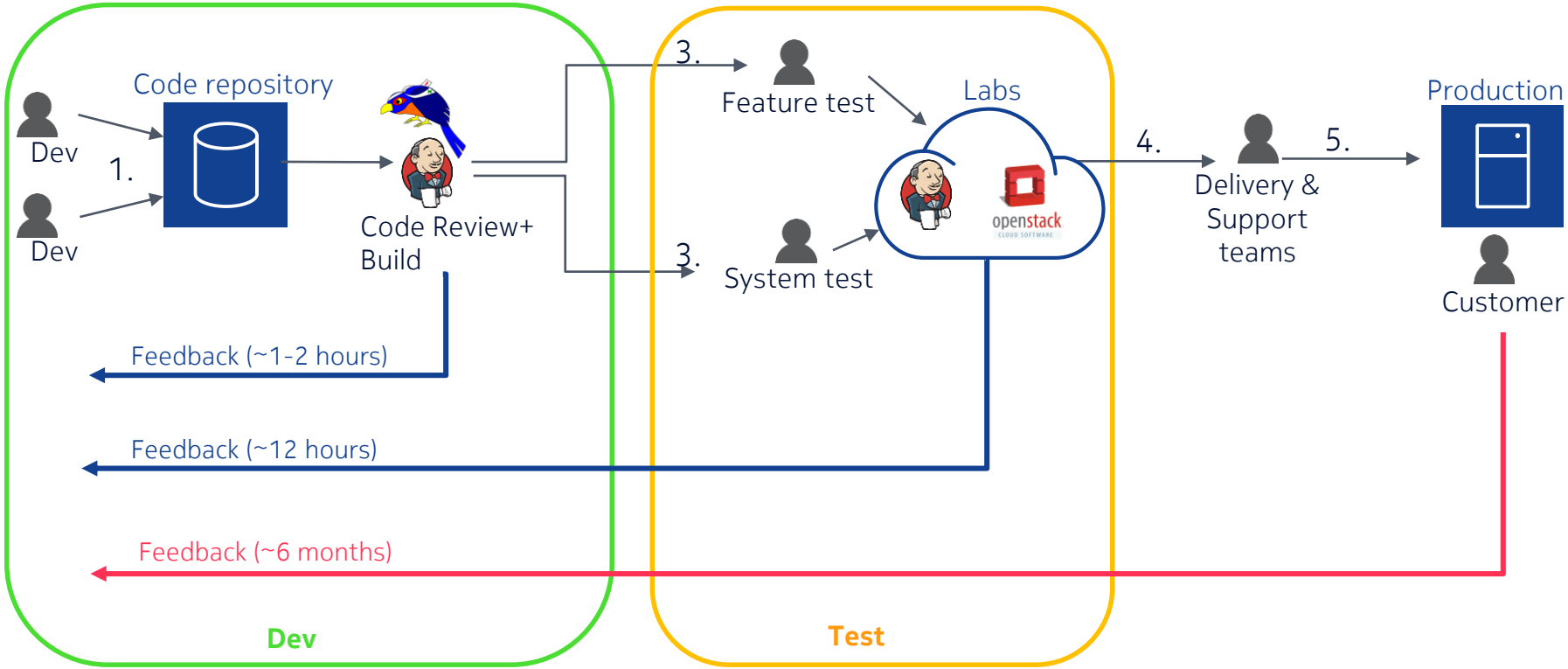
Leverage the full power of the cloud

- No more hardware labs
- No more fight against testers to reserve labs resources
- No more manual testers. They now write automated tests
- Complex distributed infrastructures can now be easily tested



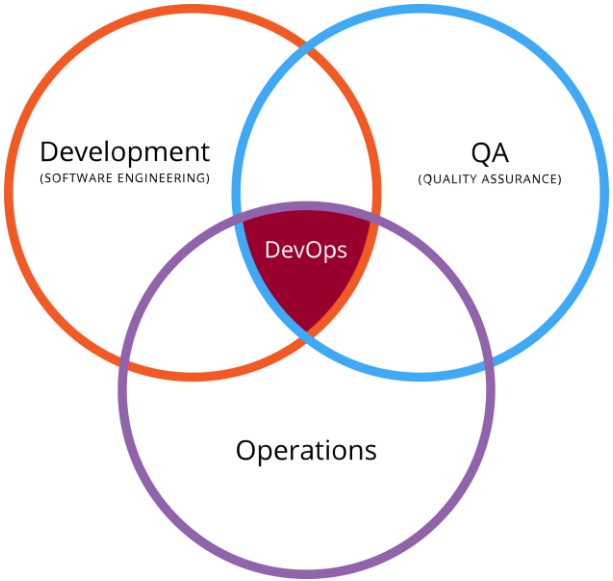
Once upon a time, in the telco industry

Simplified view of the good old manual process



Introducing devops

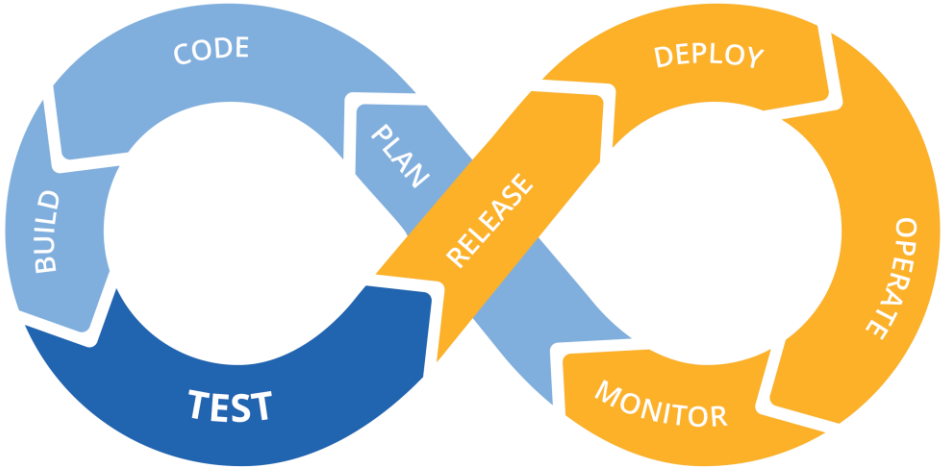
- DevOps is the contraction of **Development** and **Operations**
- It aims at establishing a culture and environment where building, testing and releasing software can happen rapidly, frequently, and more reliably
- Bring many advantages :
  - significantly shorter time-to-market
  - improved customer satisfaction
  - better product quality
  - more reliable releases
  - improved productivity and efficiency
  - increased ability to build the right product by fast experimentation



NOKIA

Introducing devops

- DevOps can create an infinite loop of release and feedback for all your code and deployment targets
- The process from the code modification to the deployment is fully automated
- The microservices architectural style is becoming the standard for building continuously deployed systems



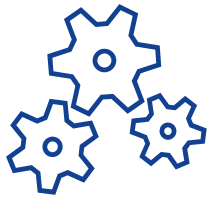
NOKIA

NOKIA

Moving toward NFV with microservices

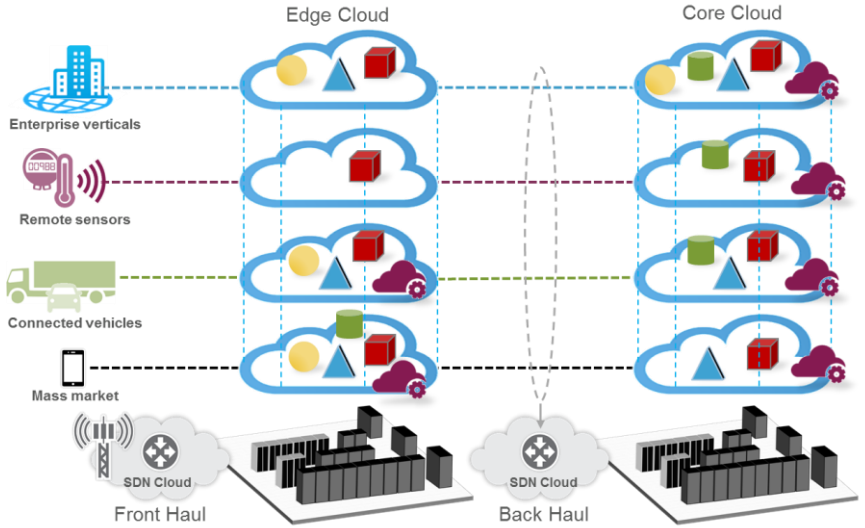
Objectives and Drivers to Transition to Micro-Service Architecture

Enabling cloud optimized State-less VNF Architecture

Today	Expected Benefit of micro-services	Tomorrow
Lead time to deliver new features Architecture still too monolithic		Divide into smaller and simpler set of independent services Micro-services : developed and deployed independently
Speed of Scalability constrained by operational model Deployment still linked to hardware, and scalability tight heavy operations		Evolution to highly scalable and programmable network Scale the services independently and without operations

5G programmable network
Network slicing for 5G

- Vertical slicing: enables vertical industry and services
  -> 5G architecture should be **flexible**
- Horizontal slicing: improves system capacity and user experience.
  -> 5G architecture should be **scalable**



Micro-services architecture will enable reliable and scalable 5G mobile networks.

NOKIA

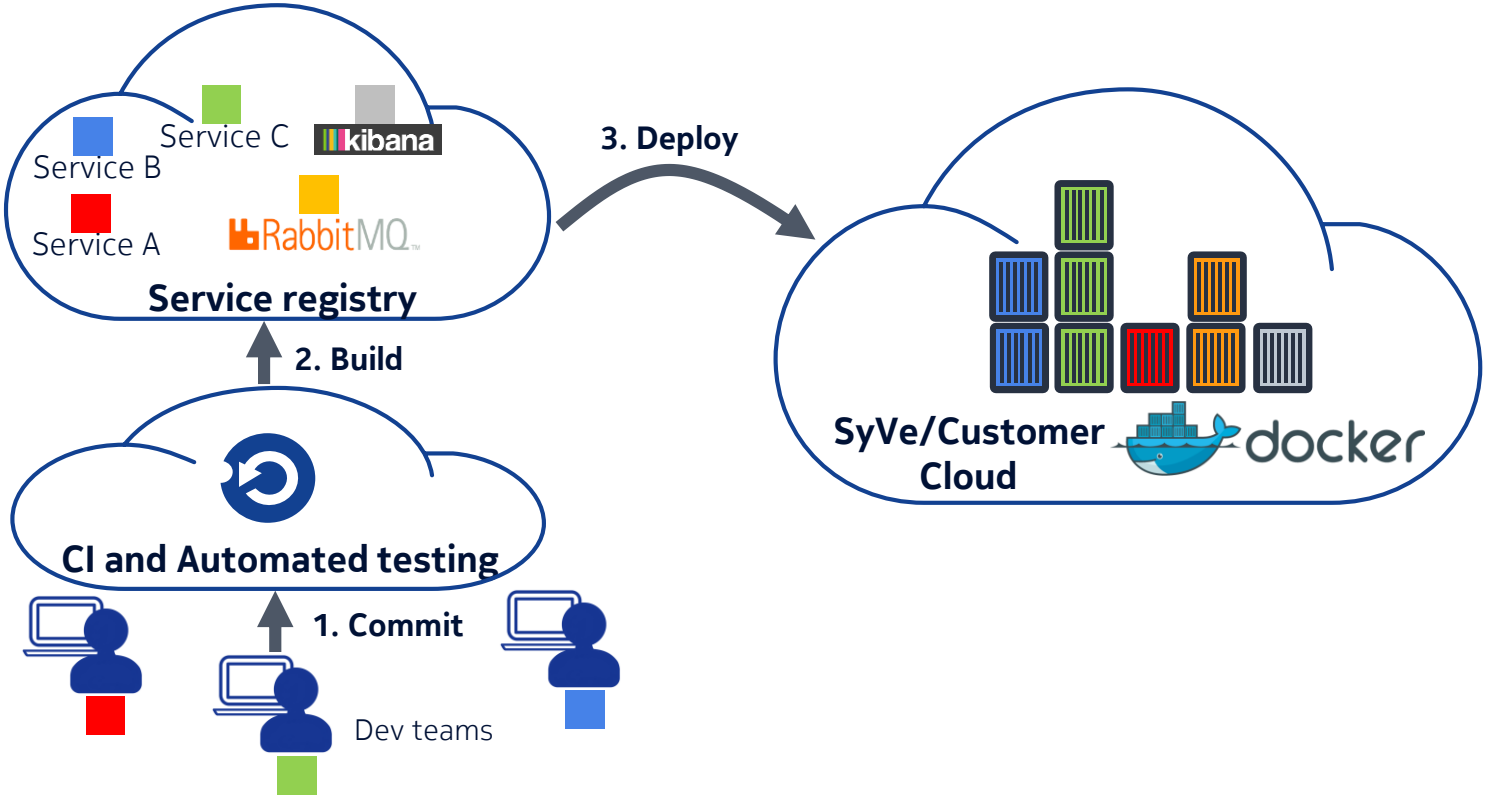
Micro-services architecture
Introduction

Basically, the micro-services approach in a nutshell dictates that instead of having one giant code base that all developers touch, which often becomes difficult and risky to manage, that there are numerous smaller code bases managed by small and agile teams. The only dependency these code bases have on one another is their APIs.

NOKIA

Challenges: Time-to-market / Flexibility / Scalability

Micro-services architecture & Cloud are enablers for DevOps



NOKIA

DevOpS
New Way of Working

NOKIA

NOKIA