



Platform delivery with Ansible

Red Hat Forum 2018

ProRail



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Agenda

- ProRail & Itility
- Facing the world, our challenge (PRL)
- Moving forward using automation
- Ansible as orchestrator
- Demonstration
- One year of Ansible within ProRail

ProRail & Iility



Chris Verhoef

ProRail,
ICT Infra Architect,
Product Owner,
“Move forward IT”



Maarten van Kessel

Iility,
Architect,
Lead developer,
“Strong as-code believer”

Itility

We drive change from traditional IT towards utility-based IT. In terms of Business, Analytics – everything. IT as utility. Just that simple.

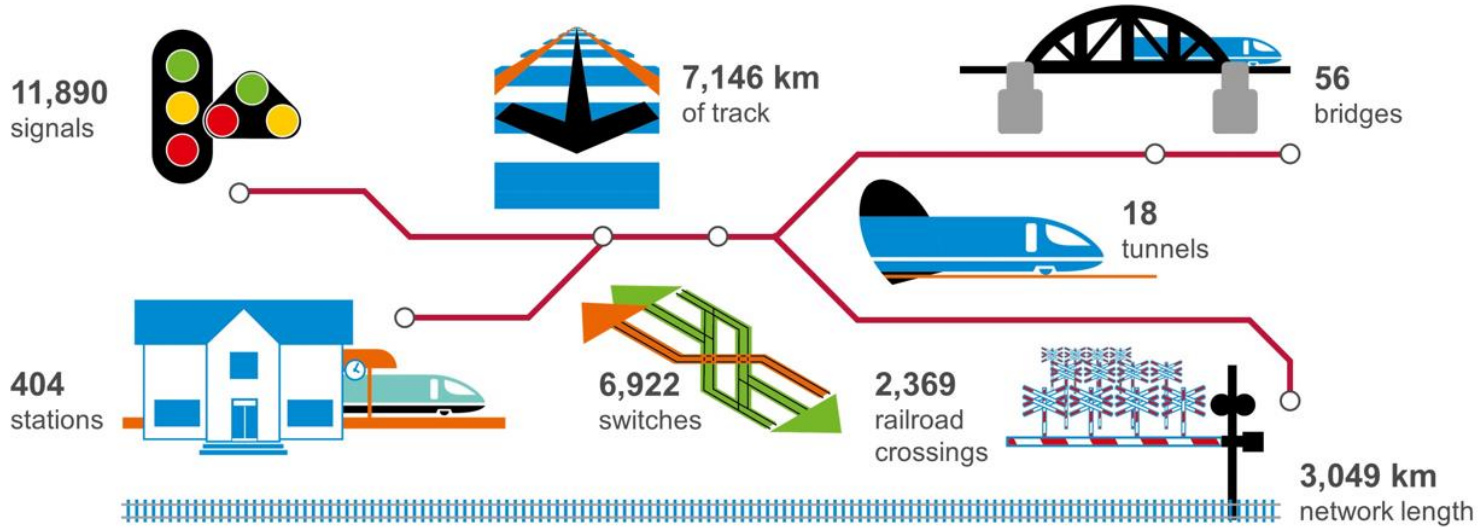
- As-code runs in our veins
- Working with our customer in dedicated DevOps teams
- Project blog: <https://content.itility.nl/prorail-handsoff-it>

Platform delivery with Ansible



ProRail

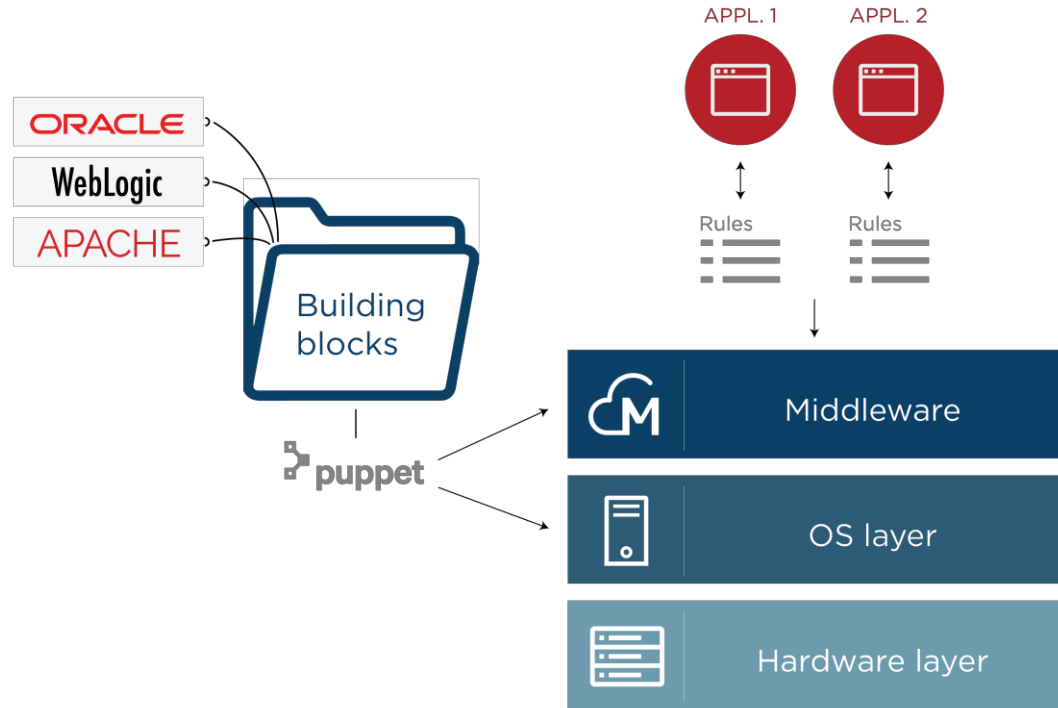
ProRail, maintainer of the railway infrastructure for the Netherlands. We deliver available train paths to our customers, in a secure and consistent way.



Source: Jaarverslag ProRail 2017

Facing the world, our challenge (ICT Platform)

The ICT Platform is the ICT Infrastructure built with a group of standardized building blocks to provide the application requirements



Platform delivery with Ansible

Facing the world, our challenge (issue)

The issues ProRail was facing:

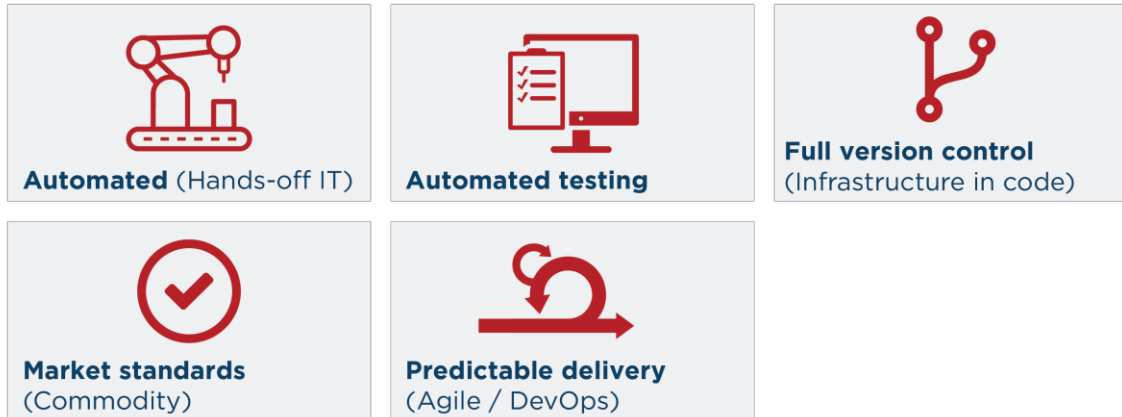
- Low delivery reliability
- Deployment on DTAP not consistent

Focus areas:

- Waterfall process from design to run
- ProRail specific implementations
- A lot of manual actions

Facing the world, our challenge (approach)

Goal → A development and deployment factory for ICT Platforms



How to prove → First application for production: PRL

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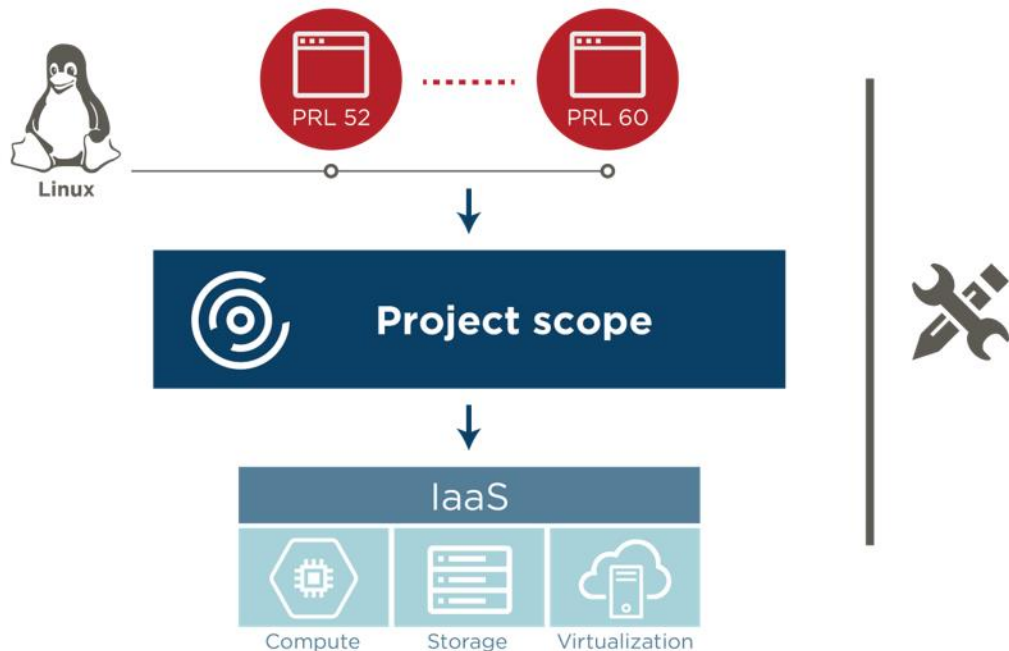
Facing the world, our challenge (PRL)

- PRL → Procesleiding Rijwegen
- Is used to control the traintraffic in the Netherlands
- Is used by 82 train controllers (around 650 in total)
- Is deployed on 13 decentral locations and in action 24x7
- First release in 1992
- Consists of 1,5 million lines of code
- Written in Pascal and DCL scripting
- Ported to C(++) this year
- Migration to Linux is started as we speak.

Platform delivery with Ansible



Facing the world, our challenge (project)

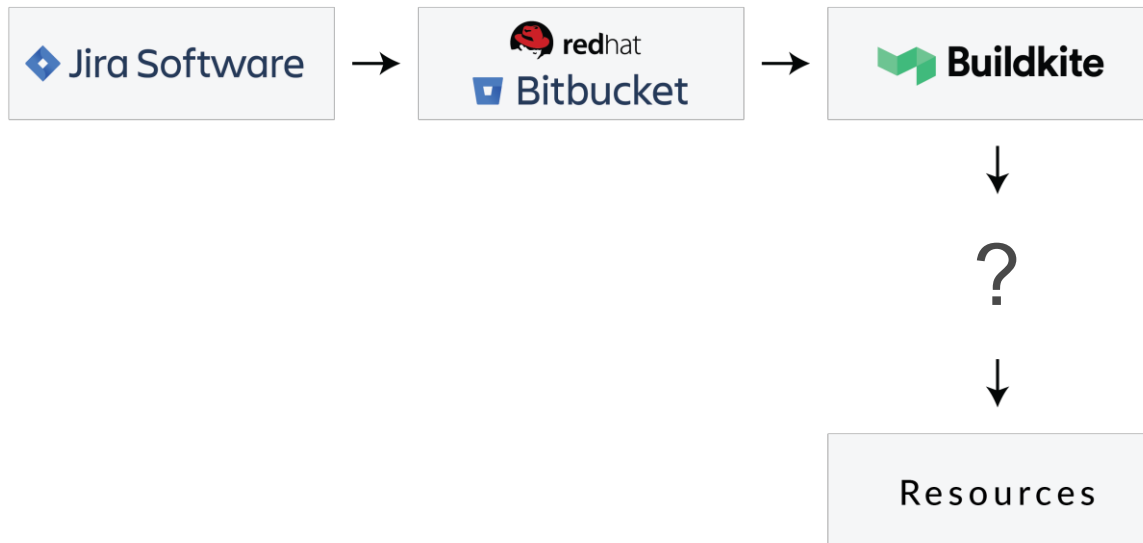


Moving forward using automation (1)

- What needs to be accomplished?
 - Describe as much as possible in code
 - Create virtual machines
 - Deploy RHEL7 operating systems
 - Configure software
 - Automate testing

Moving forward using automation (2)

- Two pipelines:
 - Deployment
 - Development
- Operation:
 - Monitoring



Ansible as orchestrator (1)



- Mapping the ProRail building blocks to Ansible
 - A platform consists of multiple building blocks
 - “Recipes” are stored as projects
 - Job templates can be the cooks baking the “recipe”
 - Workflows are chains of cooks (and their recipes)

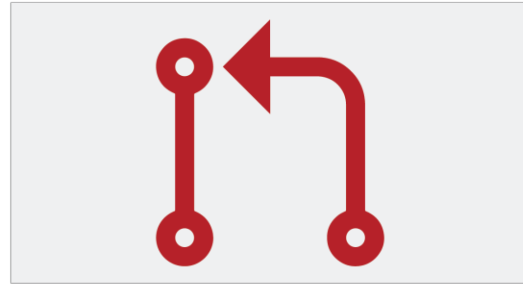
Ansible as orchestrator (2)

- Deployment pipeline
 - Reads changes in pull request
 - Creates workflow with information from code
 - Runs workflow to create a new platform

```
{
...
  "type": "vm",
  "hostname": "development-machine.prorail.nl",
  "primary_interface": {
    "network": "frontend1",
    "ip": "10.0.0.10"
  },
  "size": "s",
  "os": {
    "name": "rhel7",
    "version": "1.5.1"
  },
  "disks": [
    {
      "size": 20,
      "vg": "u01"
    }
  ],
  "lvm": {
    "u01": {
      "u01": {
        "mountpoint": "/u01",
        "size": "100%"
      }
    }
  }
},
...
}
```

Ansible as orchestrator (3)

- Development pipeline
 - Reads changes in pull request
 - Creates two workflows
 - Test node creation
 - Automated tests
 - New building block release



DEMO

Platform delivery with Ansible

One year of Ansible within ProRail (1)

- Lessons learned:
 - We started when everything was new for Red Hat as well, but support has made big steps during our project
 - The Ansible project is still very dynamic
 - If things look complicated there is an easier way of doing things
 - Start with parallelism in mind

One year of Ansible within ProRail (2)



Project result:

- Delivery reliability as agreed
- Tests in hours instead of weeks
- Deployment in hours instead of days
- Deployment consistent within DTAP
- Delivering of the ICT Platform code and methods to partners
- Other interest groups are also adopting the CI/CD tools and methodology

Further development & migration of other applications

QUESTIONS?