



Personal Experience With SCM in Agile and DevOps

Lars Bendix
bendix@snescm.org

Christian Pendleton
cpe@pragma.net

*Scandinavian Network of Excellence
in Software Configuration
Management
(sneSCM.org)*

*Praqma AB
Malmö
Sweden*

<http://cs.lth.se/~bendix/Research/SCMnDevOps/>

© Lars Bendix & Christian Pendleton – sneSCM.org

DevOps Malmö Meetup, April 8, 2019



Presentation objectives

After this Meetup you will:

- know what role SCM has (also) in DevOps
- have a better idea of where you need SCM activities in your DevOps processes
- understand what SCM activities you actually currently carry out
- know what (other) possible ways there are and their pros and cons

© Lars Bendix & Christian Pendleton – sneSCM.org

DevOps Malmö Meetup, April 8, 2019



What is SCM – short version

Software Configuration Management is this cool stuff that will facilitate a team to coordinate people and things so they can carry out changes in an orderly fashion right from idea/conception to production – and retirement – and avoid any chaos and confusion in the process.

SCM will make sure that you know exactly what you have, not just when it is in production but also while you are developing it and SCM will provide a project with all the quality gates they could desire for.

SCM can be done in formal and rigid ways (top-down/waterfall) - or it can be done in more informal and flexible ways (bottom-up/Agile, DevOps).

© Lars Bendix & Christian Pendleton – sneSCM.org

DevOps Malmö Meetup, April 8, 2019



What is SCM - longer version I

It is about tracking, managing and controlling **changes** to (re-)establish **baselines**.

A process for establishing and maintaining **consistency** and **integrity** of a product. Provides **visibility**, control, orderly change.

Provisions for the **storing**, tracking and updating of **all parts**.

Tracks requirements (change requests) **throughout the life-cycle**.

Establishes baselines and performs a standard change management process through to “release management and delivery”.

Configuration management database – Configuration Items, their attributes and the dependencies between them.

© Lars Bendix & Christian Pendleton – sneSCM.org

DevOps Malmö Meetup, April 8, 2019



What is SCM – longer version II



Part CM:

- Identification (configuration items, baselines)
- Control (change process, change requests, CCB)
- Status Accounting (recording and reporting information)
- Audit (assesses compliance with requirements before acceptance of change into a baseline)

Part Software:

- Build management
- Process management (adherence to development processes)
- Environment management
- Teamwork (facilitate team interactions)
- Defect tracking



What is SCM – longer version III



- People (education)
- Processes
- Tools

- Strategic SCM
- Operational SCM



What is DevOps – short version



DevOps is: “a set of practices intended to **reduce the time** between **committing a change** to a system and the change being placed into normal **production**, while ensuring **high quality**”



What is DevOps – longer version I



- Culture (People, processes and tools)
- Automation (Do it once, do it twice, automate)
- Lean (Continuous improvement and learning)
- Measurement (development, production, business)
- Sharing (Collaborate, give feedback, don't copy)



What is DevOps – longer version II



Goals:

- improved deployment frequency
- lower failure rate of new releases
- shortened lead time between fixes
- faster mean time to recovery

Aims to maximize the **predictability, efficiency, security** and **maintainability** of operational processes.



Discussion questions



How does DevOps differ from Agile/Scrum/XP?

What more is DevOps than “just”: Dev + Ops?

Idea => backlog => development => production => used by people

DevOps: last 2.2? (from commit)

SCM: first 4.2! (until used by people)



SCM = DevOps?



DevOps is: “a set of practices intended to reduce the time between committing a change to a system and the change being placed into normal production, while ensuring high quality”

SCM is: “this cool stuff that will facilitate a team to coordinate people and things so they can carry out changes in an orderly fashion right from idea/conception to production - and retirement - and avoid any chaos and confusion in the process”

Ops: resist change

Dev: live on change – often and fast

SCM can make both happy – plus more (PM, company, customer)

Let's join forces – DevOps can get help from SCM, SCM can learn from DevOps



DevOps evolution in stages



The five stages of DevOps evolution:

- Stage 0: Build the foundation (facilitate sharing of ideas, metrics, knowledge, processes and technologies)
- Stage 1: Normalize the technology stack (agile, version control, continuous integration)
- Stage 2: Standardize and reduce variability (reduce overall complexity, reduce errors from inconsistencies)
- Stage 3: Expand DevOps practices (deployments are a huge pain, provide predictability and reliability)
- Stage 4: Automate infrastructure delivery (automation of system configuration and provisioning)
- Stage 5: Provide self-service capabilities



SCM-related DevOps activities I



Foundational practices:

- Monitoring and alerting are configurable by the team operating the service
- Deployment patterns for building applications or services are reused
- Testing patterns for building applications or services are reused
- Teams contribute improvements to tooling provided by other teams
- Configurations are managed by a configuration management tool



Discussion questions I



Do you use version control?

What do you version control?



Discussion questions I



Do you use version control?

What do you version control?

Why do you use version control?



SCM-related DevOps activities II



Various practices:

- Application development teams use version control
- Put application configurations in version control
- Source code is available to other teams
- Deployment patterns for building applications and services are reused
- Put system configurations in version control
- Teams use continuous integration
- Infrastructure teams use version control
- System configuration is automated
- Provisioning is automated
- Success metrics for projects are visible



Discussion questions II



Concrete examples:

- What branching strategies are there and what are their pros and cons?
- Why and what should be automated?
- Why should you worry about configuration items and a CMDB (git)?
- What are quality gates and where and when to use them?
- Why are concepts like baselines and BoM also useful for DevOps?
- Why should you have a change process with CRs and a CCB?
- Why is “build equivalence” important (if you are Huawei)?
- How do you handle multiple versions of libraries?
- Do you know which libraries you use – and where?



SCM-related DevOps activities III



Automate system configurations

- Some teams have a goal of automating all change, giving them completely repeatable, rebuildable systems.
- Consistency: Automated tasks follow a set process and thus produce predictable results.
- Documented behavior: Tasks now have a defined way they are supposed to work, so are easier to troubleshoot.

Application configurations are in version control

- Should be versioned, auditable, contain history, and ideally, the reasons why they changed.
- Separating code from configuration data allows for more rapid deployments, updates and validation.



Famous last words



This is the last time that I will deploy (someone else will do it in six month) and I can remember how I did it six month ago, so it is much faster/easier to do it by hand.

This is the last time that someone comes to me to ask for a new machine with a test environment, so it is much faster/easier to set it up by hand.

Checklists? A codified representation of things we have previously screwed up!

Automation? A quicker and safer way of doing things that we (or others) have to do often!