Dirk Lehmann
Platform Engineering XXL
oder:
Wie wir eine CI/CD Platform für 30.000+
Entwickler:innen bauen und betreiben

IT-Tage
2023

#ittage

About Me

With SAP since 2001

Implemented the first daily delivery process at SAP (2014)

Current job: Solution Manager for internal development platform

SAP Contact person for german language user group (DSAG)
for the topic "DevOps"

Co-Organizer DevOpsDays Zurich
https://devopsdays.ch

Conference speaker
https://doergn.github.io/

1 Wife, 2 Kids

@doergn@mastodon.social

SAP Facts

⭐ Founded 1972

🏢 Enterprise software solutions
- Tailored for 26 industries
- Offered in 180 countries (in 30+ languages)

🪪 107.602 employees worldwide (08.02.2024)
- 36.444 (33.9%) employees in Research and Development (31.12.2023)

{·} Programming languages
- ABAP (Advanced Business Application Programming)
  - Own proprietary language and technology stack in (mainly) core ERP suite
- Non-ABAP
 - Java ~30%
  - JavaScript ~15%

🚚 Delivery channels
- On premise, Cloud, Hybrid, Mobile
- Multi-Cloud Strategy (Hyperscaler + own 52 Data Centers)

```abap
 1  CLASS zbp_generate_bookings_xxx DEFINITION
 2    PUBLIC
 3    FINAL
 4    CREATE PUBLIC .
 5
 6    PUBLIC SECTION.
 7      INTERFACES if_oo_adt_classrun.
 8    PROTECTED SECTION.
 9    PRIVATE SECTION.
10  ENDCLASS.
11
12
13  CLASS zbp_generate_bookings_xxx IMPLEMENTATION.
14
15    METHOD if_oo_adt_classrun~main.
16      DATA:it_bookings TYPE TABLE OF ztbooking_xxx.
17
18  *   read current timestamp
19      GET TIME STAMP FIELD DATA(zv_tsl).
20  *   fill internal table (itab)
21      it_bookings = VALUE #(
22        ( booking = '1' customername = 'Buchholm' numberofp
23          country = 'Germany' dateofbooking ='20180213125959
24        ( booking = '2' customername = 'Jeremias' numberofp
25          country = 'USA' dateofbooking ='20180313125959' da
26      ).
27
28  *   Delete the possible entries in the database table - in c
29      DELETE FROM ztbooking_xxx.
30  *   insert the new table entries
31      INSERT ztbooking_xxx FROM TABLE @it_bookings.
32
33  *   check the result
34      SELECT * FROM ztbooking_xxx INTO TABLE @it_bookings.
35      out->write( sy-dbcnt ).
36      out->write( 'data inserted successfully!' ).
37
38    ENDMETHOD.
39
40  ENDCLASS.
```

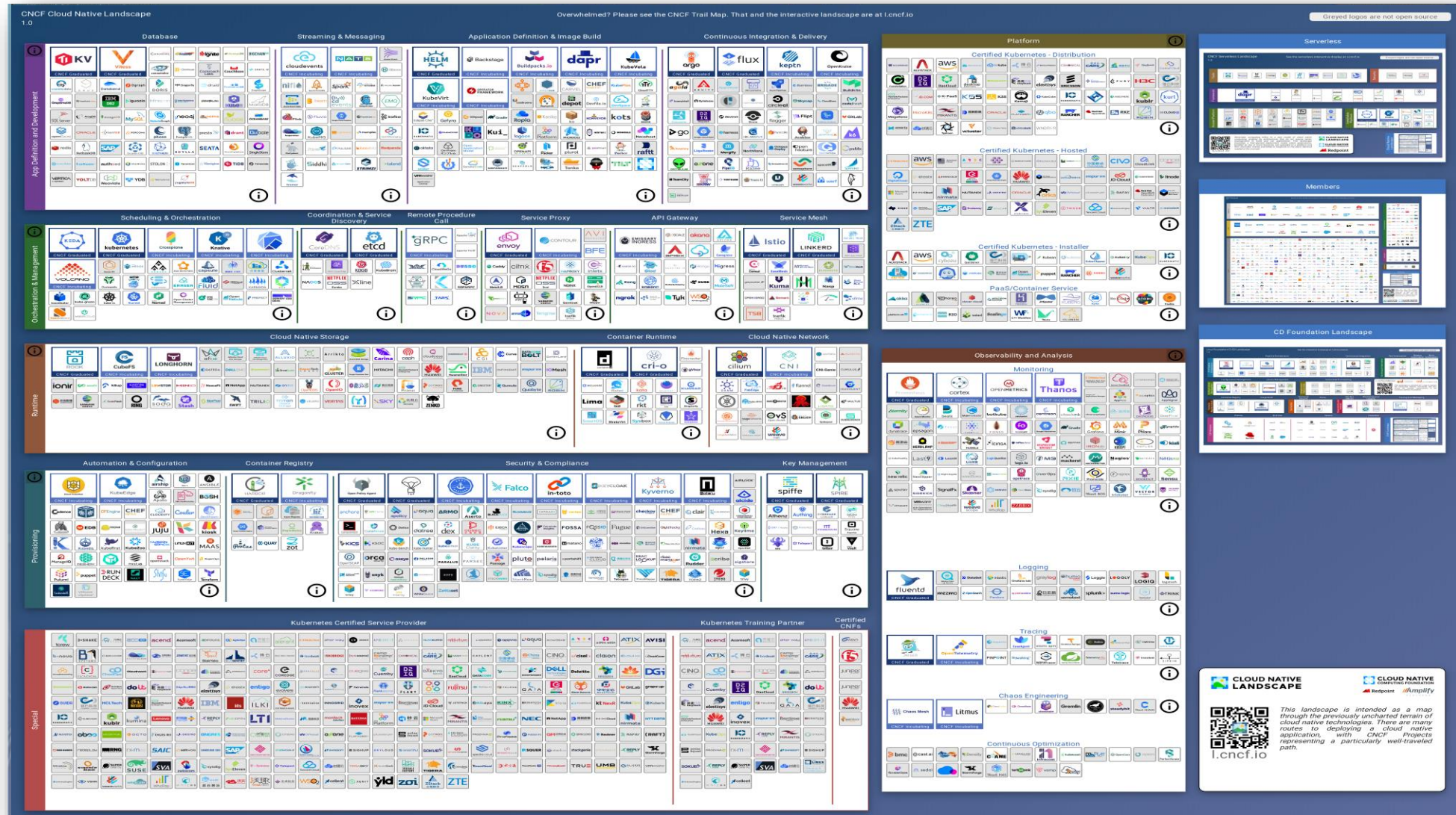# The Situation of a Development Team
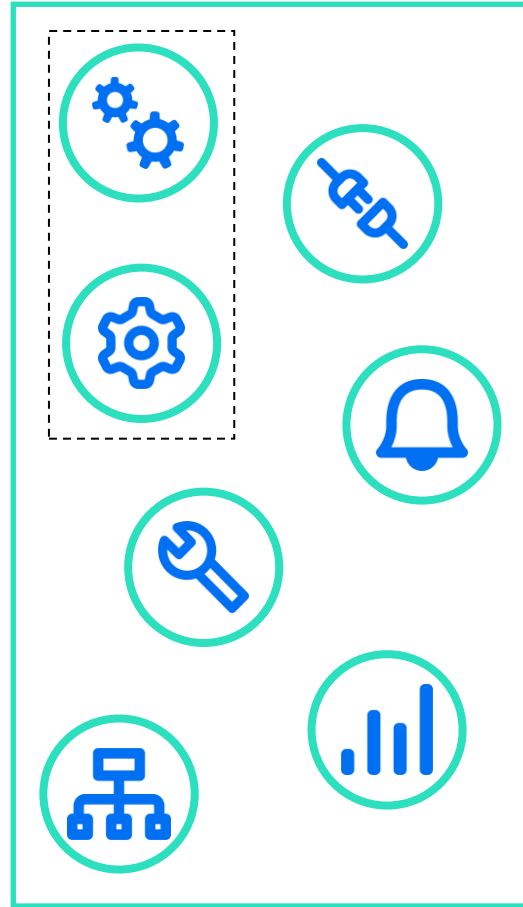
Development
Team

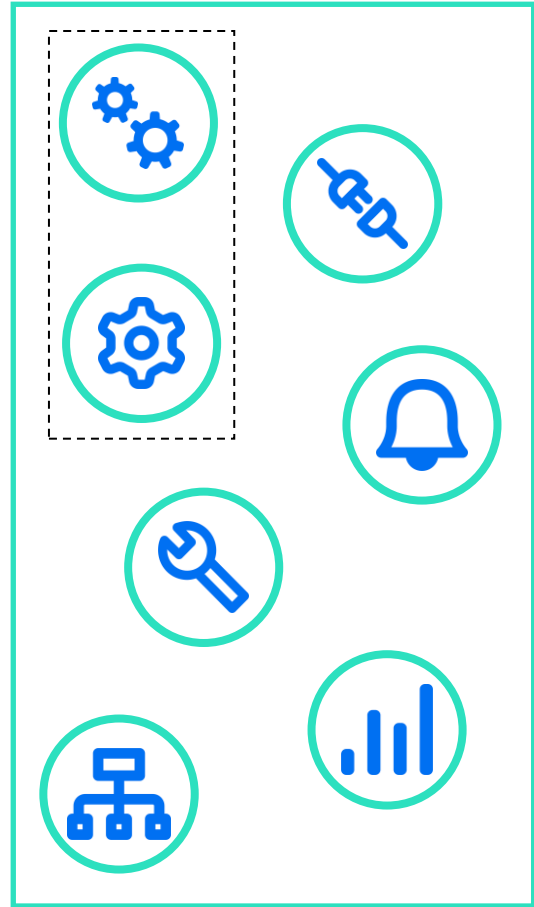Tools

Normal Tools. Just Innocent Tools.

The Situation of a Development Team

Development Team

Tools

Compliance

Guidelines

The Situation of a Development Team
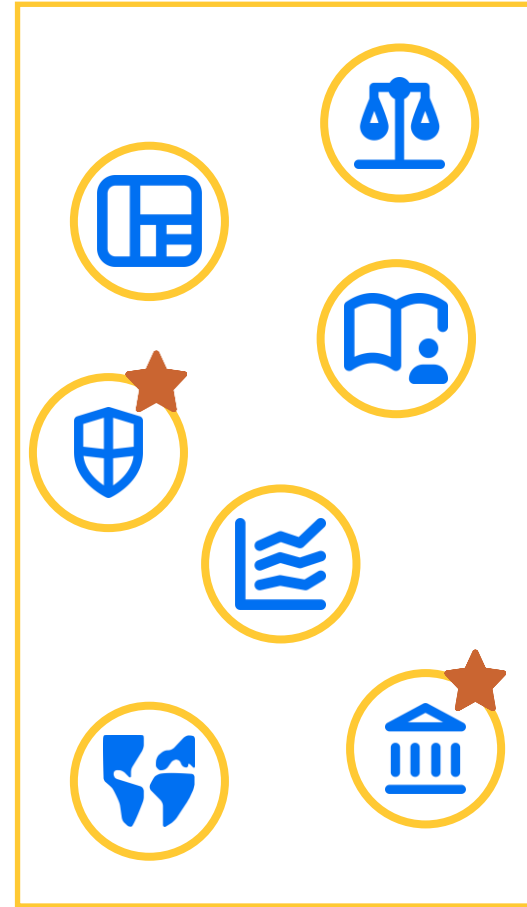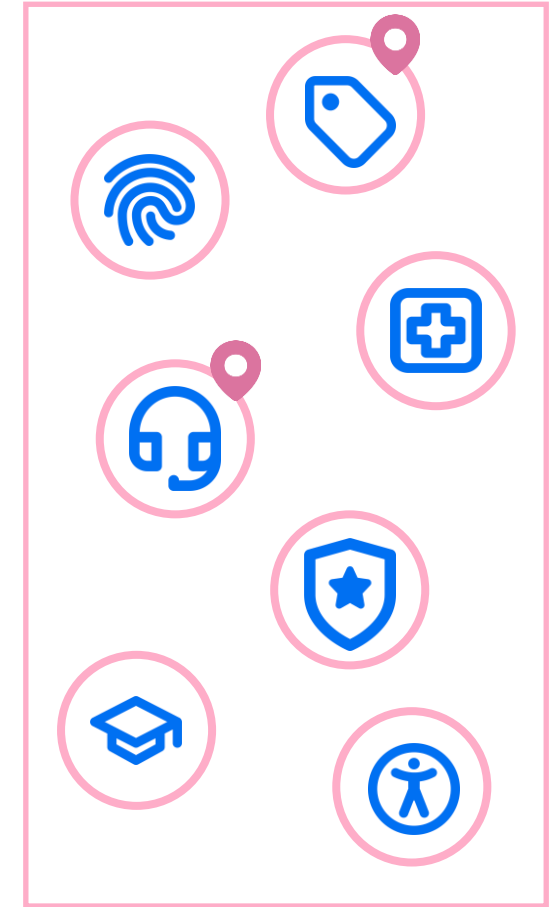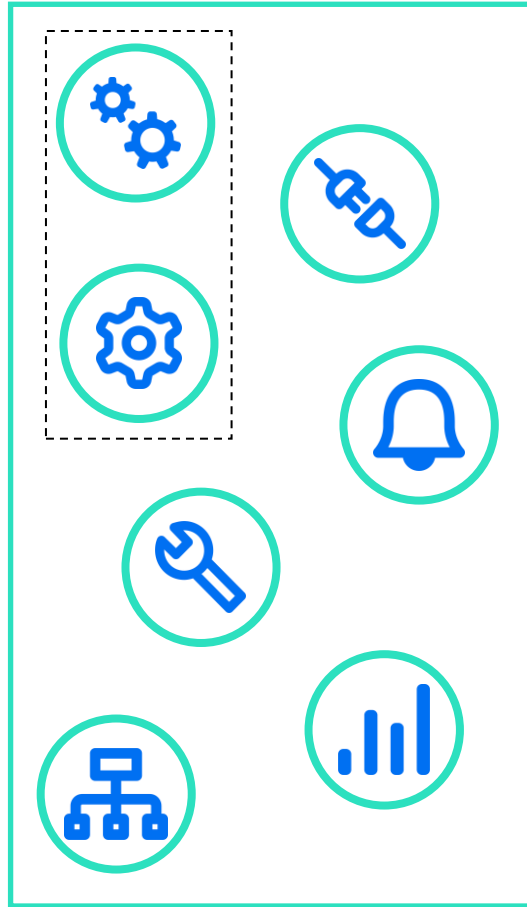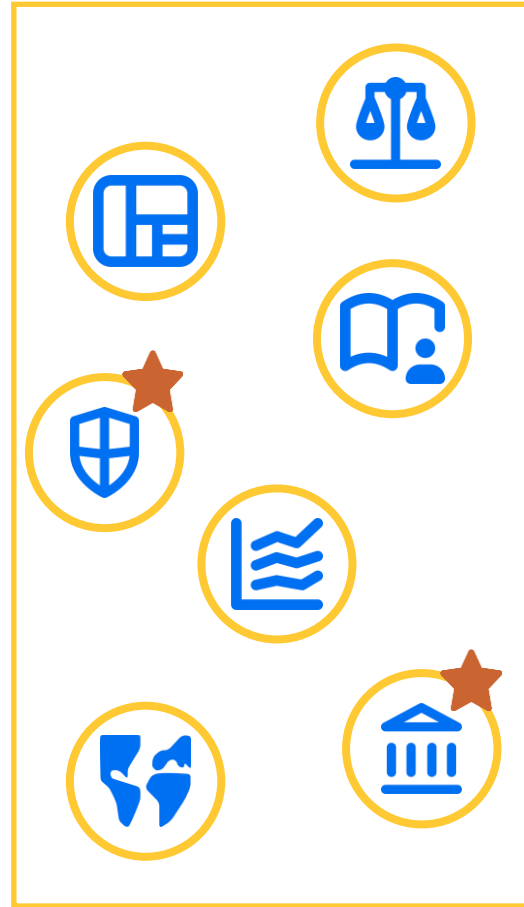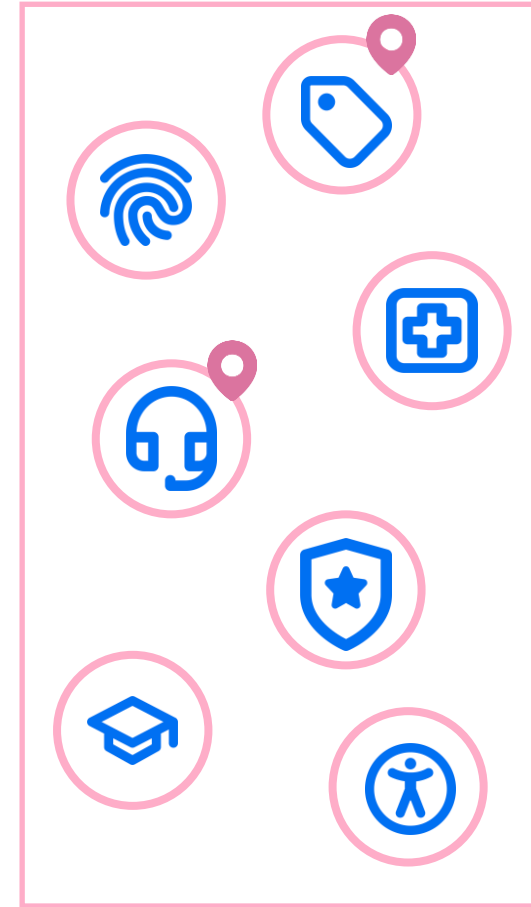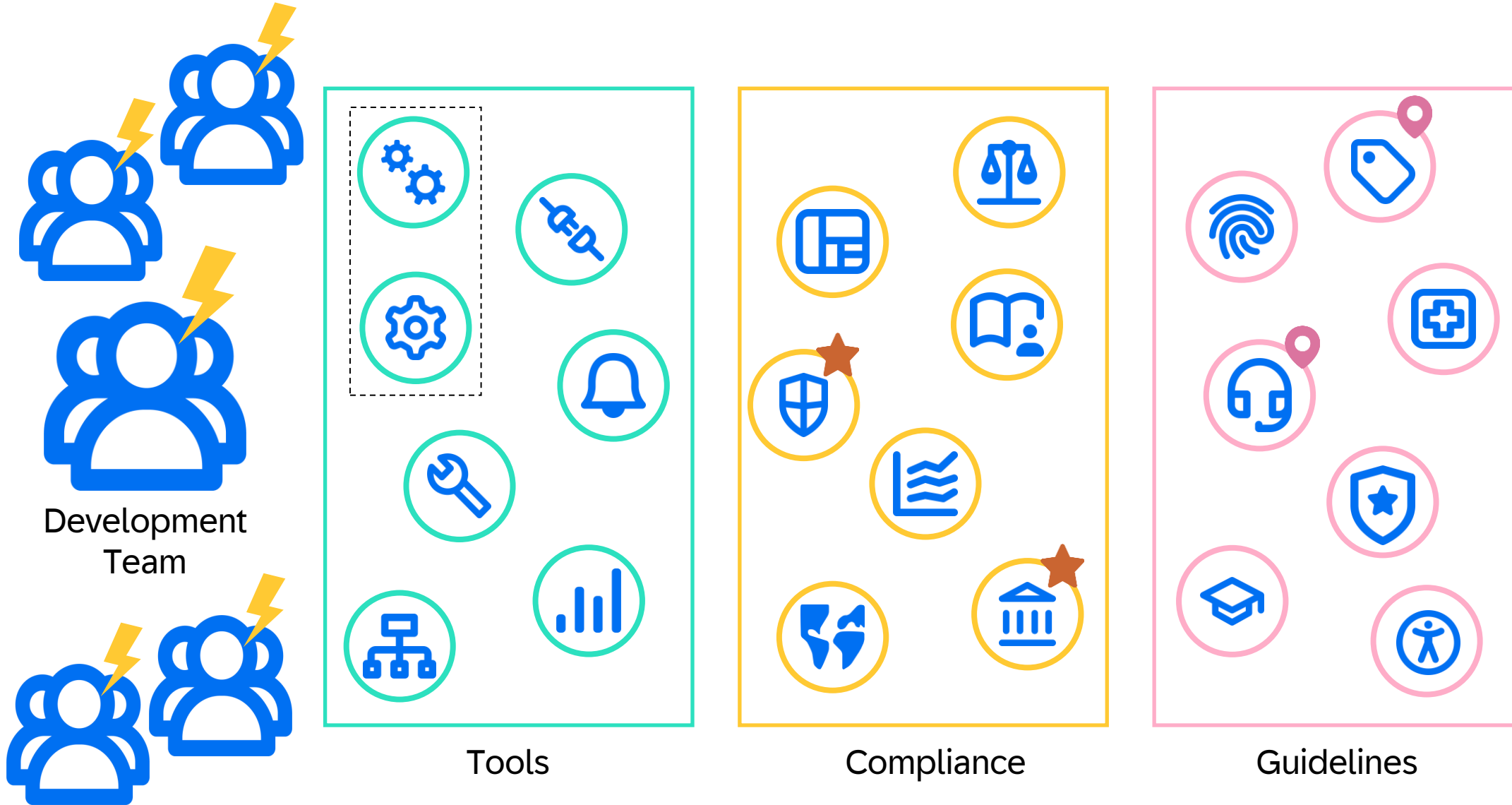
Development
Team

Tools

Compliance

Guidelines

The Situation of a Development Team

Development Team

Tools

Compliance

Guidelines

"<...> many organizations find themselves with **outdated, poorly governed, and unmanageable toolchains** as they **scale DevOps initiatives**."

"**Developers face challenges and time constraints** while maintaining these **complex, stand-alone tool siloes, building fragility and technical debt** that the [infrastructure and operations] leader has to deal with"

Source: Gartner Research - "Beware the DevOps Toolchain Debt Collector", April 2022

Platform Engineering

Platform Engineering – A Manifestation of DevOps

Technology Radar

An opinionated guide to today's technology landscape

"The adoption of cloud and DevOps, while increasing the productivity of teams who can now move more quickly with reduced dependency on centralized operations teams and infrastructure, also has constrained teams who lack the skills to self-manage a full application and operations stack. Some organizations have tackled this challenge by creating **platform engineering product teams**. These teams operate an internal platform which **enables delivery teams to self-service deploy and operate systems with reduced lead time and stack complexity**. The emphasis here is on API-driven self-service and supporting tools, with delivery teams still responsible for supporting what they deploy onto the platform."
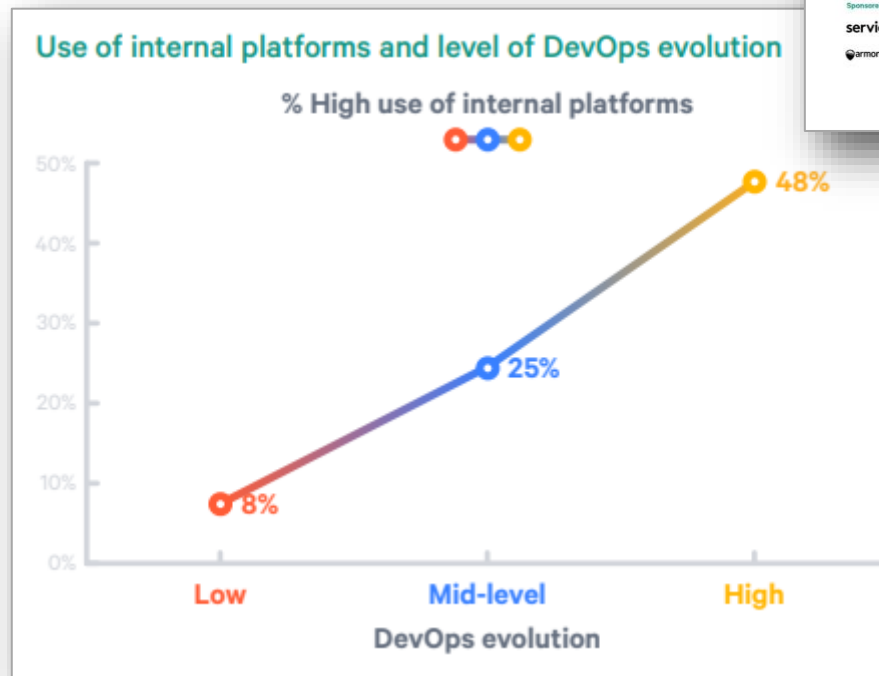
- Thoughtworks Technology Radar 2017

"**A digital platform** is a foundation of **self-service APIs, tools, services, knowledge and support** which are arranged as a **compelling internal product**. Autonomous delivery teams **can make use** of the platform to deliver product features at a higher pace, with reduced co-ordination."
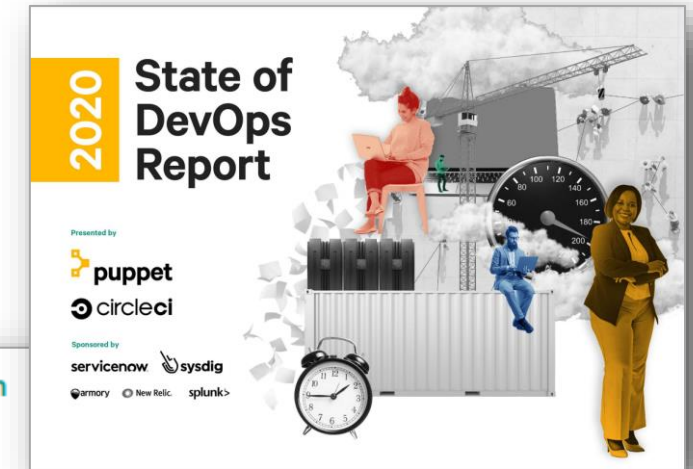
- Evan Bottcher, Thoughtworks, 2018

Platform Engineering – Takes Off

"**This year's DevOps survey has shown** two areas of structural change that can yield excellent results: a platform approach to software delivery and applying DevOps principles to change management. When **organizations successfully establish a platform model for enabling application development**, or significantly improve their change management effectiveness, **they achieve the goal that DevOps initiatives aim at: faster and easier delivery of better quality, more secure software.**"

Source: Puppet's State of DevOps report, 2020

Use of internal platforms and level of DevOps evolution

% High use of internal platforms

- Low: 8%
- Mid-level: 25%
- High: 48%

DevOps evolution

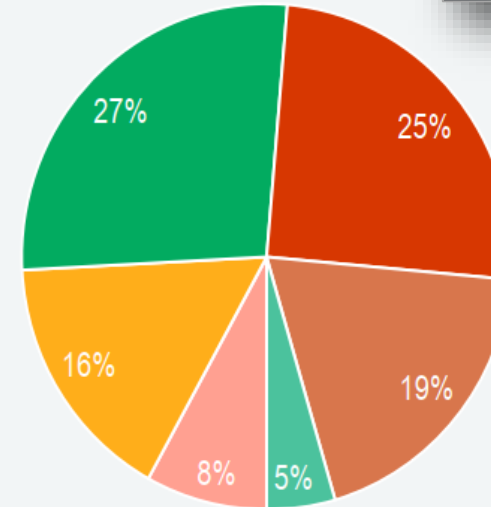Source: Puppet's State of DevOps report, 2020

Platform Engineering – State of the Art?

"Organizations that have adopted platform engineering are **experiencing significant improvements across standardization and process**, helping them **to better realize the benefits of DevOps**."

Source: Puppet's State of DevOps report, 2023

How long has there been a platform team at your organization?

- Less than 1 year
- 1 to 2 years
- 2 to 3 years
- 3 to 5 years
- 5+ years
- Don't know

27% 25% 16% 8% 5% 19%

Source: Puppet's State of DevOps report, 2023

Minimal Viable Platform

Internal Developer Platform (IDP)

Internal
Targeting enterprise's internal users only

Self service
Users access capabilities autonomously

User experience
Central Access point to documentation, support, tools, ...

Tool catalog
Comprehensive tools as part of aligned toolchains

Paved Roads (Golden Paths)
Drive standardization and leverage best practices

Compliance
Ensures rules and standards of the organization by default

APIs
Capabilities are composable (and optional)

How to Build a Internal Developer Platform

Treat the platform as a product

- Provides a "Holistic user experience"
- Provides support and great documentation

Strong collaboration with stream-aligned teams

- Designed with users (internal teams) in mind with focus on UX and Developer Experience
- Measure customer satisfaction

Focus on common uses cases

- Target ~80% of all Stream-aligned teams

Optional to use

- Platform lock-in decreases value
- Platform options increase value

TEAM
TOPOLOGIES

ORGANIZING BUSINESS AND TECHNOLOGY TEAMS FOR FAST FLOW

Foreword by: RUTH MALAN

MATTHEW SKELTON *and* MANUEL PAIS

Stream-aligned team
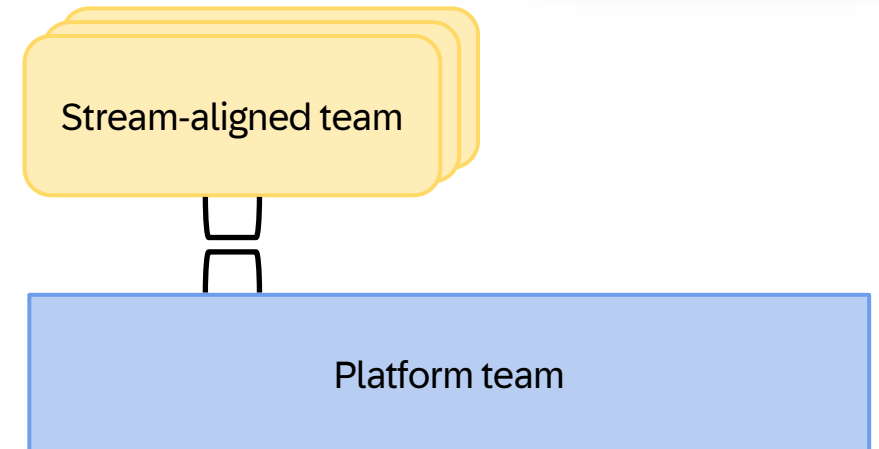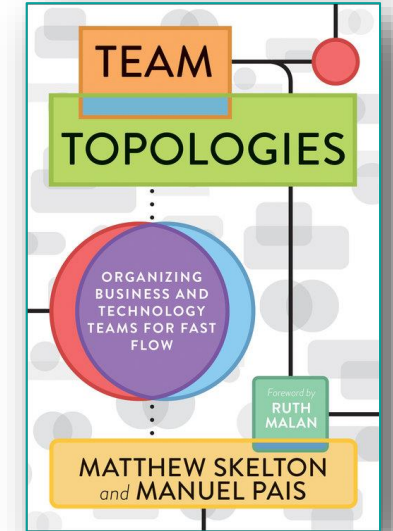
Platform team

DevOps, SRE, Platform Engineering – How Does It Blend?

Descriptions:

DevOps: A culture where people, regardless of title or background, work together to imagine, develop, deploy and operate a system.

Ken Mugrage - Thoughtworks

Platform Engineering: Reduce team cognitive load of application teams by eliminating toil and duplicate work.

Site Reliability Engineering (SRE): Help teams to increase reliability and scalability of their products.

Team Topologies

Stream-aligned team

Platform team

Enabling team
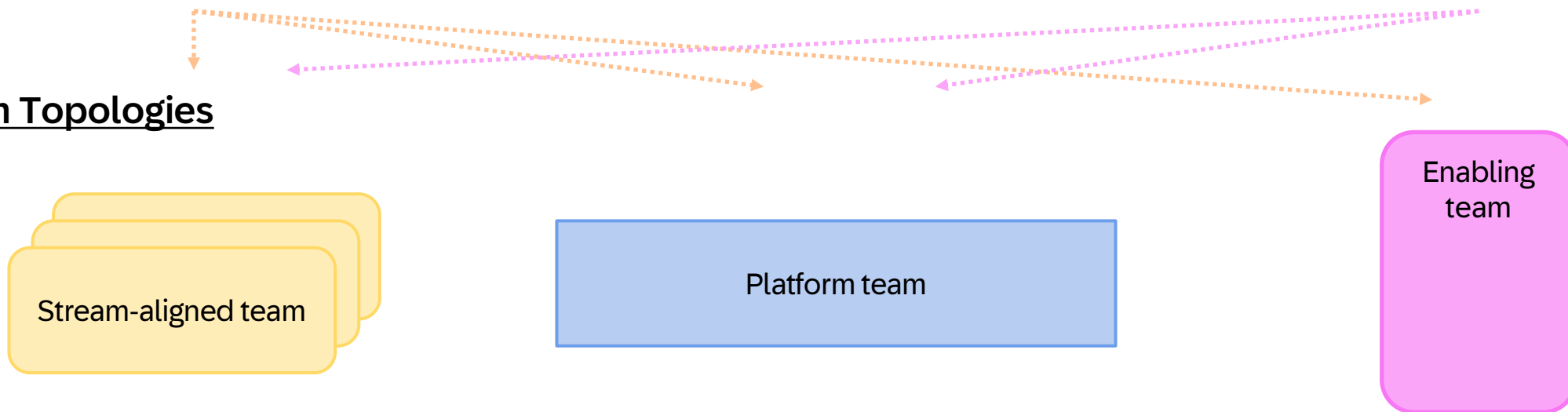
DevOps, SRE, Platform Engineering – How Does It Blend?
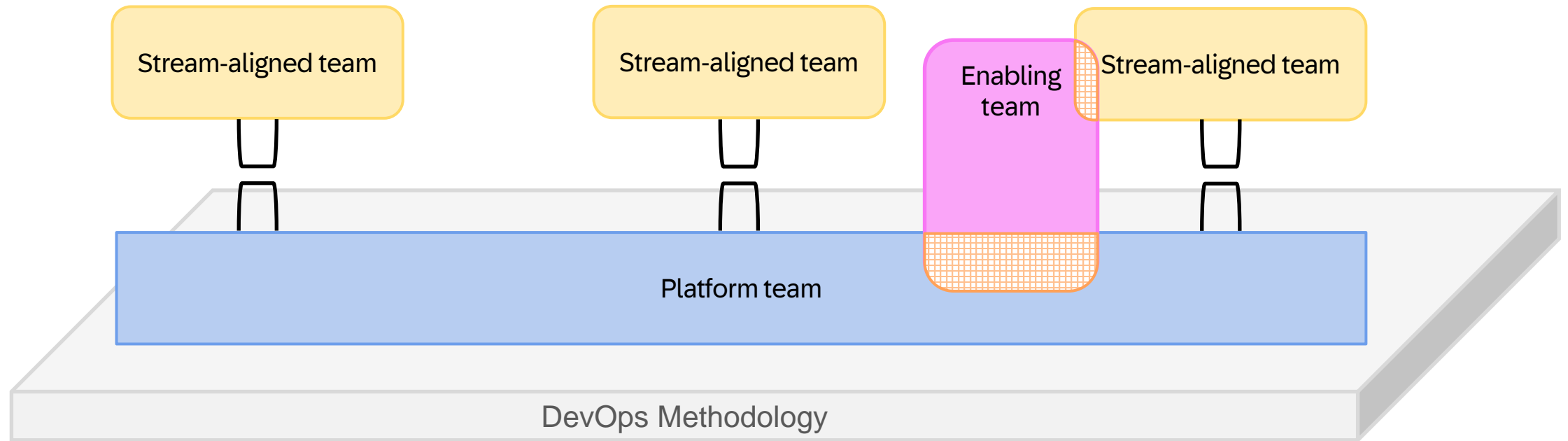
Team Interaction Modes

= X-as-a-Service

= Facilitating

Hyperspace
SAP's Internal Development Platform

Hyperspace - SAP's Internal Development Platform
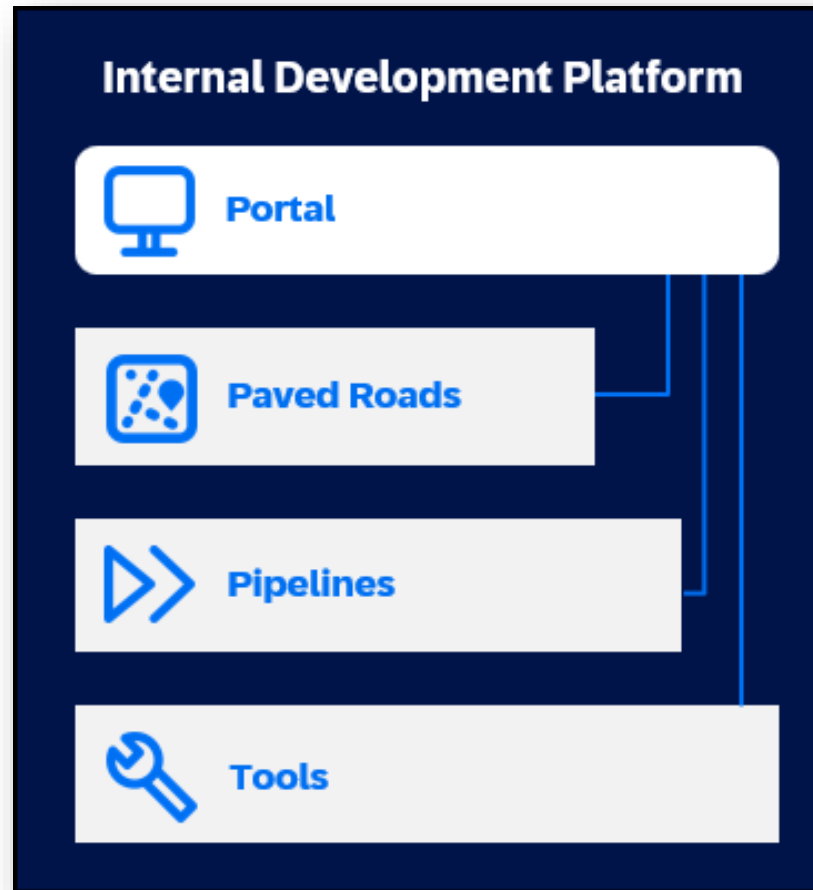
Planning Coding Building Validating Deploying Releasing Cross

Tools

Internal Development Platform
- Portal
- Paved Roads
- Pipelines
- **Tools**

Tool catalog
Self-service inventory

Harmonize support channels
One support channel

Adjust SLAs
Communicate and measure SLAs
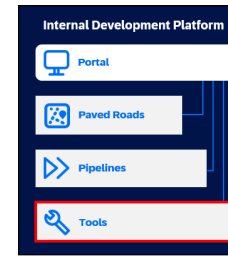
Improve documentation
Structure documentation and terminology
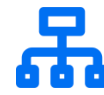
Consolidate tools
One organization

Integrate tools
Provide open APIs and align data models

User management
One authorization and access management

Services
Replace individual tools with services

Catalog

All ▼

Artemis ✓

Artemis is a standalone application enabling Scrum Teams to easily set up their SAP Jira project. Via Artemis new SAP Jira projects can get created, either using the SAP default configuration or using a reference project as template. SAP Jira projects can be staffed, using single users, distribution...
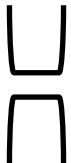
Category:
Manage Platform
Services

Artifa...

"Artifa... compl... direct... cloud... access...

Categ...
Softwa...
Packa...

Deploy with Confidence ✓

Deploy with Confidence (DwC) is a combination of cloud-native engineering principles, a feature-driven development process, and the right toolset to develop, deploy, and deliver...

ECC...

The E...
collec...
contr...

Portal

Self service
Users access capabilities autonomously

Central access point
Entry point for all platform capabilities

Tool catalog
Self-service inventory

Support
Context enriched support

Documentation
Access to documentation

Extensible
Open for contributions

Internal Development Platform

- Portal
- Paved Roads
- Pipelines
- Tools

⊙ **Hyperspace Portal**   Manage   Explore   Docs

- 🏠 Home
- ⊕ Components
- ☰ Backlog
- ⊟ Security
- ⊡ Test
- ▱ Deployment
- ⤳ Release
- ⊕ CI/CD
- ☰ DevOps Metrics
- ⊟ Members
- ⊡ Documentation

- ⤳ Argo CD

- ▱ Installed Services

⚙   + Add / Active

Next Evolution Mark

DORA

2.2
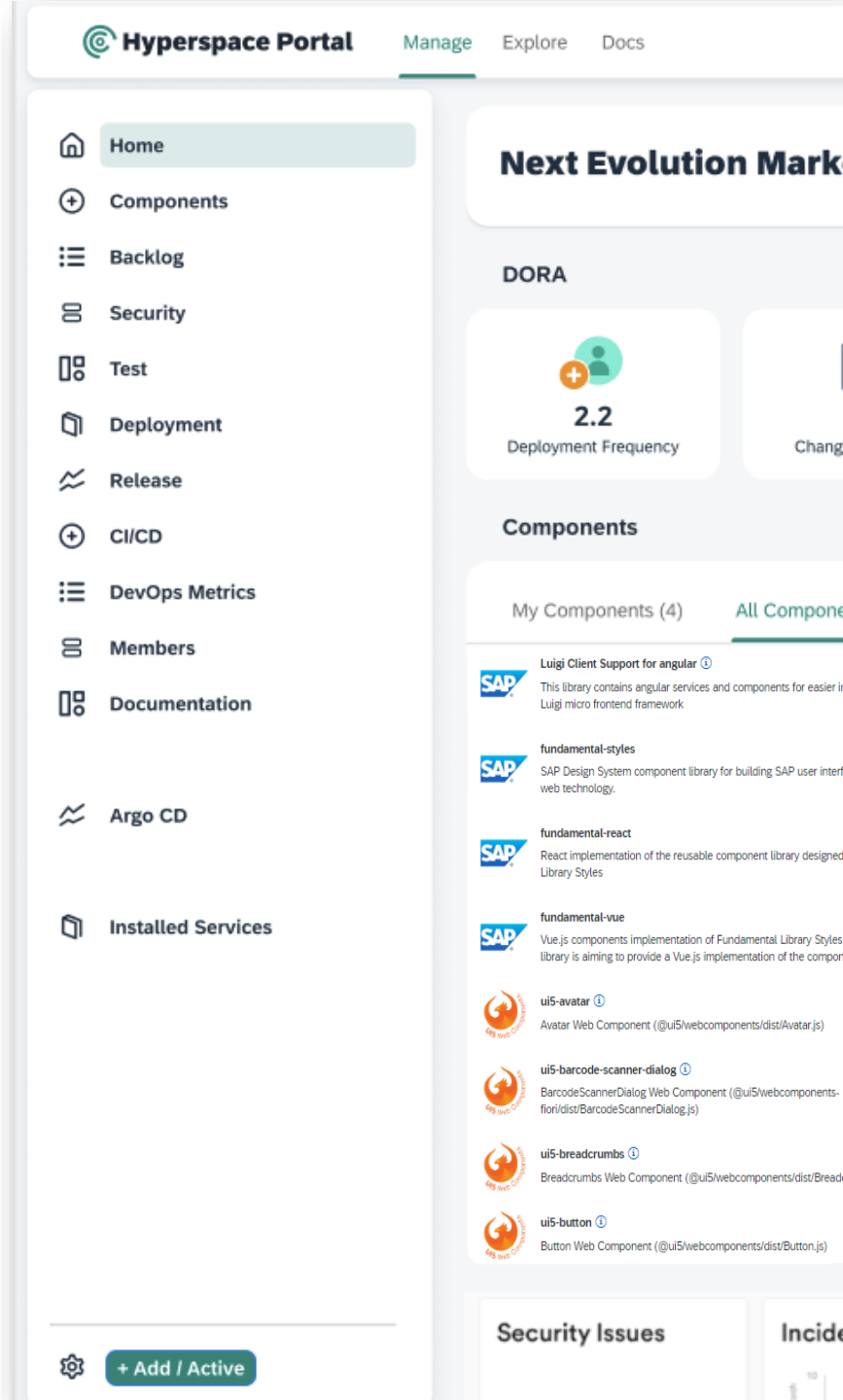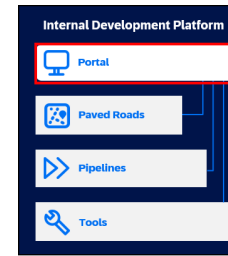Deployment Frequency

Chang

Components

My Components (4)   All Compone

Luigi Client Support for angular ⓘ
This library contains angular services and components for easier i
Luigi micro frontend framework

fundamental-styles
SAP Design System component library for building SAP user interf
web technology.

fundamental-react
React implementation of the reusable component library designed
Library Styles

fundamental-vue
Vue.js components implementation of Fundamental Library Styles
library is aiming to provide a Vue.js implementation of the compor

ui5-avatar ⓘ
Avatar Web Component (@ui5/webcomponents/dist/Avatar.js)

ui5-barcode-scanner-dialog ⓘ
BarcodeScannerDialog Web Component (@ui5/webcomponents-
fiori/dist/BarcodeScannerDialog.js)

ui5-breadcrumbs ⓘ
Breadcrumbs Web Component (@ui5/webcomponents/dist/Bread

ui5-button ⓘ
Button Web Component (@ui5/webcomponents/dist/Button.js)

Security Issues   Incide
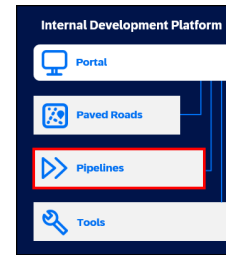
Pipelines

Integrate tools
Provide open APIs and align data models

Grow on demand
Extend pipeline following team needs

Fast set up
Quick access to CI/CD pipelines

Extensible
Open for contributions

Compliance by default
Set up according to corporate rules and governance

APIs
Library for easy tool access

Internal Development Platform
- Portal
- Paved Roads
- Pipelines
- Tools
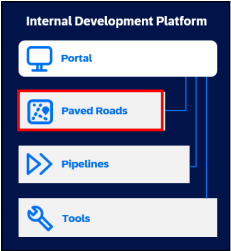
RECOMMENDED

Paved Road

Set up a pipeline

Get a new end to end Hyperspace pipeline which is compliant by default.

Set up Pipeline

Public

Paved Roads

Tools

Compliance & Guidelines

Paved Roads

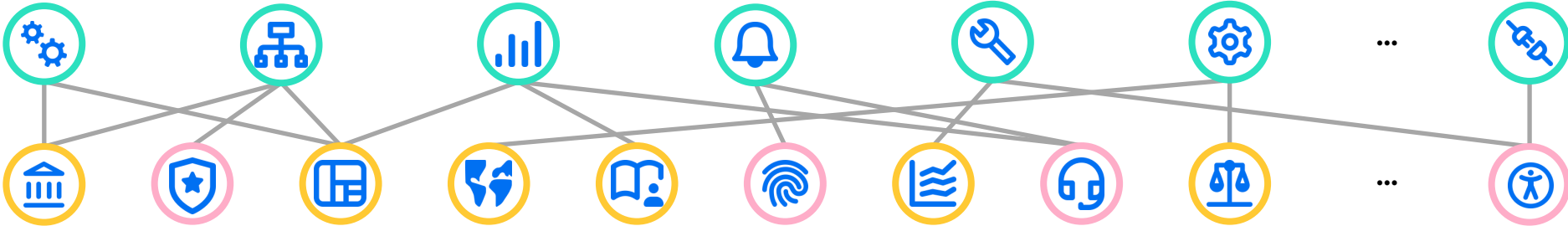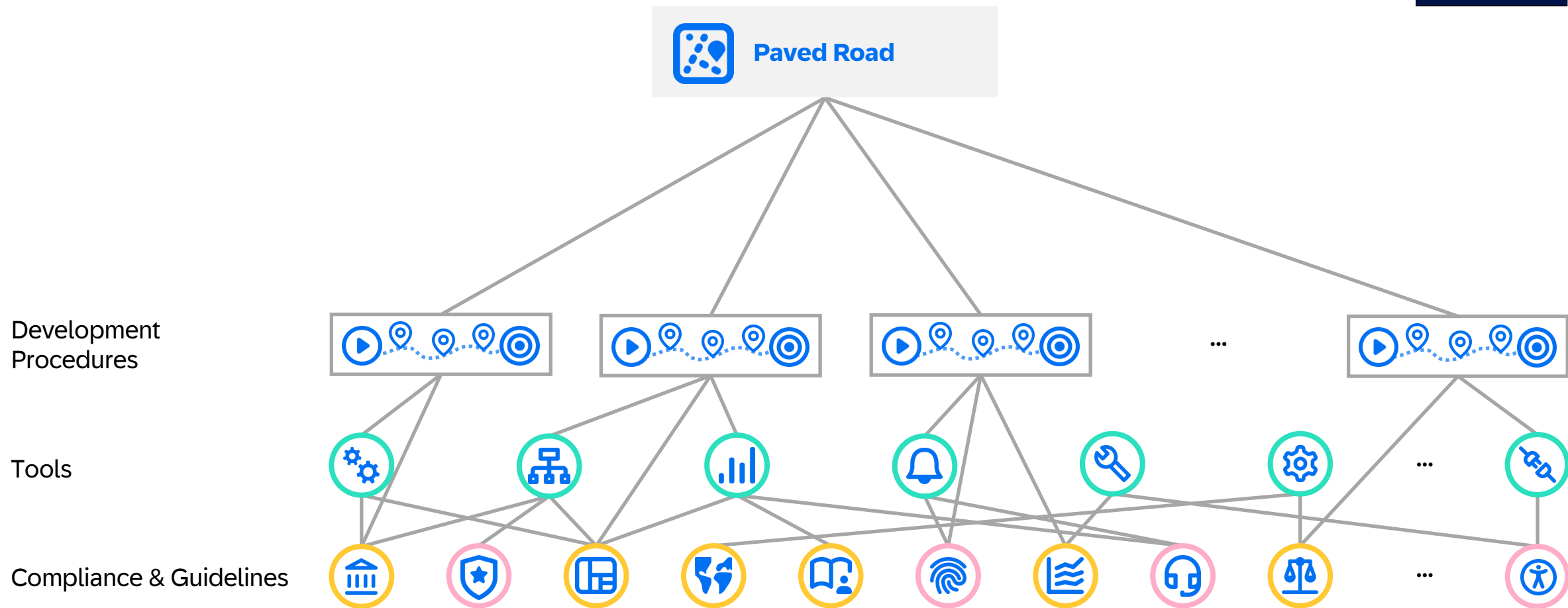Development Procedures

Tools

Compliance & Guidelines

Criticism on Platform Engineering

Technology Radar

An opinionated guide to today's technology landscape

"The adoption of cloud and DevOps, while increasing the productivity of teams who can now move more quickly with reduced dependency on centralized operations teams and infrastructure, also has constrained teams who lack the skills to self-manage a full application and operations stack. Some organizations have tackled this challenge by creating platform engineering product teams. These teams operate an internal platform which enables delivery teams to self-service deploy and operate systems with reduced lead time and stack complexity. The emphasis here is on API-driven self-service and supporting tools, with delivery teams still responsible for supporting what they deploy onto the platform. **Organizations that consider establishing such a platform team should be very cautious not to accidentally create a separate DevOps team, nor should they simply relabel their existing hosting and operations structure as a platform."**

- Thoughtworks Technology Radar 2017

- One size (does not) fit all

- Stream aligned teams loose (to much) control

- "Eierlegende Wollmilchsau"

Learnings from SAP's Internal Development Platform (so far)

Put responsibility into one organization
Distributed setting causes lot of (unnecessary) friction

Paved Roads / Golden Paths are your friend
Help to get systemic view

It's a marathon
It takes times to change status quo

KPI reporting is difficult
Which KPI indicates platform success?

Requires proper staffing
Dedicated people to work on the platform.
Inner source won't solve the problem

> Matthew Skelton
> Team Topologies co-author. Founder at Conflux. CEng.
> 3w
>
> No, inner source is not going to magically fix under-investment in your internal platforms.
> Most orgs are nowhere near the maturity or culture to make inner source work well.
>
> #DevOps #rant #PlatformEngineering
>
> 256 · 36 Comments
>
> 👍 Like   💬 Comment   ↗ Share

Source: LinkedIn post by Matthew Skelton, Sep. 2023

Trust
Reliability and ability to execute is key

Learnings from SAP's Internal Development Platform (so far)

Share a vision
For customers <u>and</u> platform team members

Thank you.

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