

Swedbank



Utilizing Compliance As Code to Optimize Deployment Practices

Markus Backman
Christian Edström



Swedbank | demographics



Sweden

Population	10.5 M
Private customers	3.7 M
Corporate customers	267 000
Organisations	66 000
Branches	145
Employees	9 414



Estonia

Population	1.3 M
Private customers	0.86 M
Corporate customers	131 000
Branches	13
Employees	2 541



Lithuania

Population	2.8 M
Private customers	1.6 M
Corporate customers	82 000
Branches	40
Employees	2 576



Latvia

Population	1.9 M
Private customers	0.9 M
Corporate customers	74 000
Branches	18
Employees	1 952



Who we are | The untold story

Christian Edström

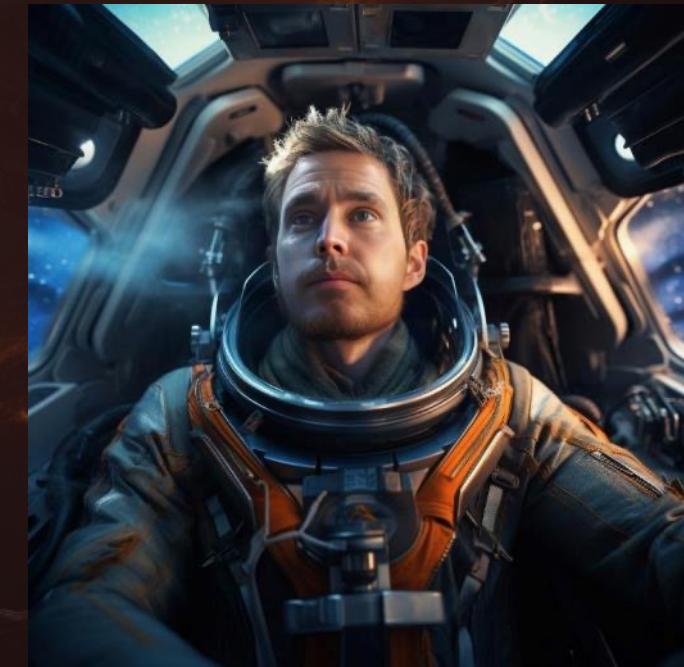
Chief Product Owner Developer Platforms
Developer turned manager



Cobol -> Java -> PPT/Excel

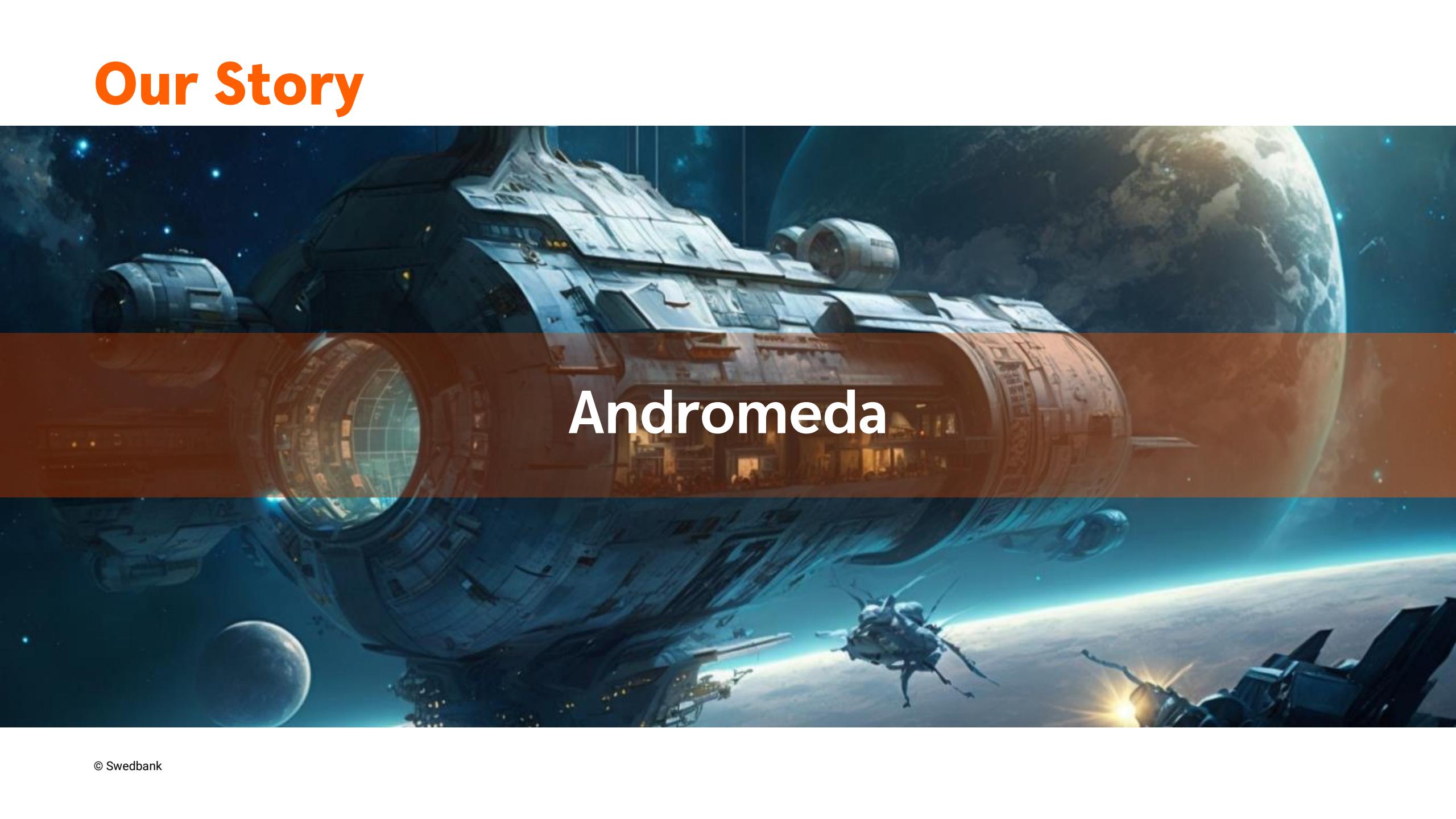
Markus Backman

Technology Enterprise Domain Architect
Developer turned architect



SQL -> Java -> PPT, IoT geek

Our Story



Andromeda



Swedbank



It's called Andromeda



A **developer-friendly** application development **platform** based on **micro services architecture** with **managed services** for developing, deploying and operating cloud native applications



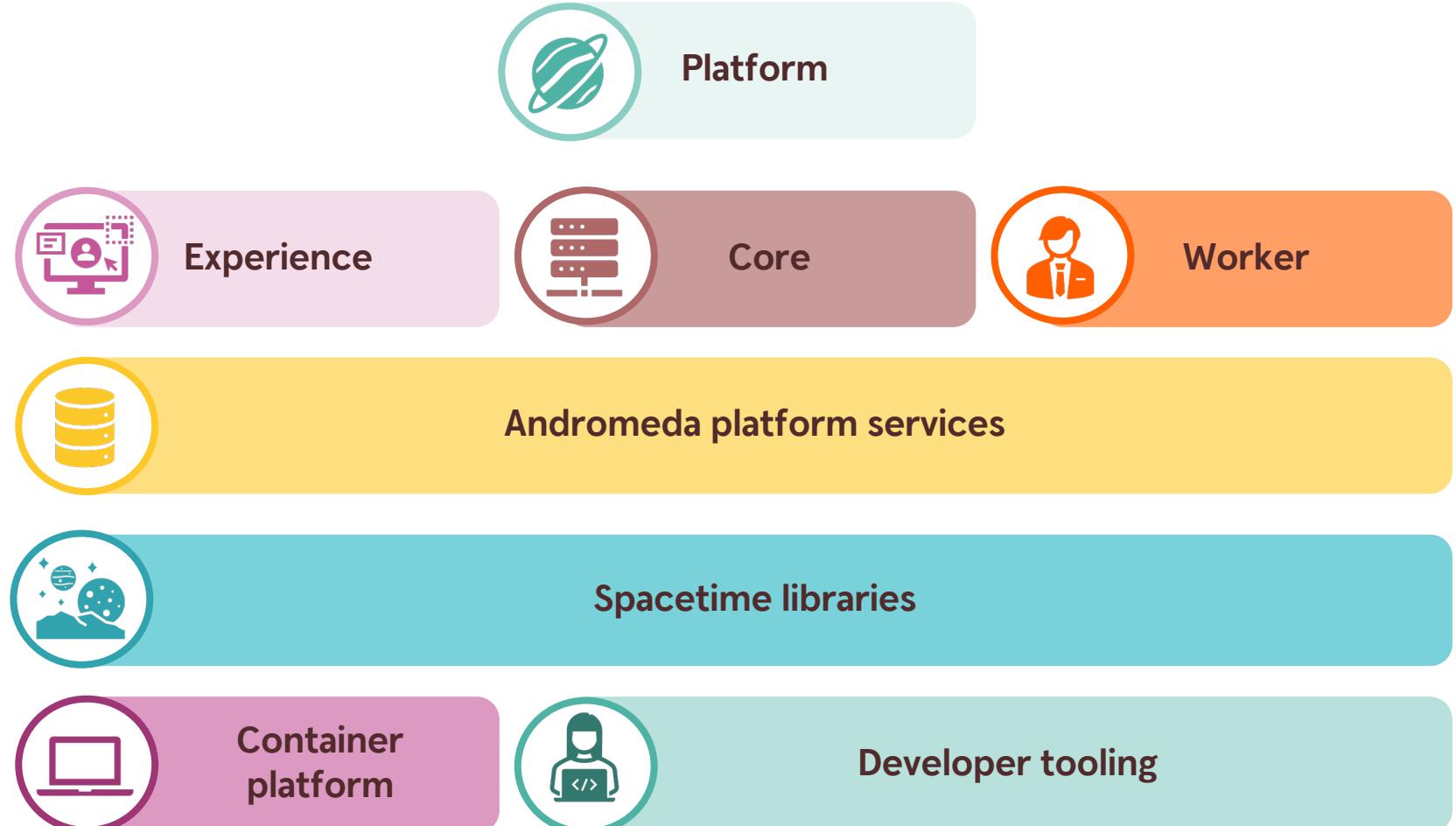


**But it doesn't come
without challenges**

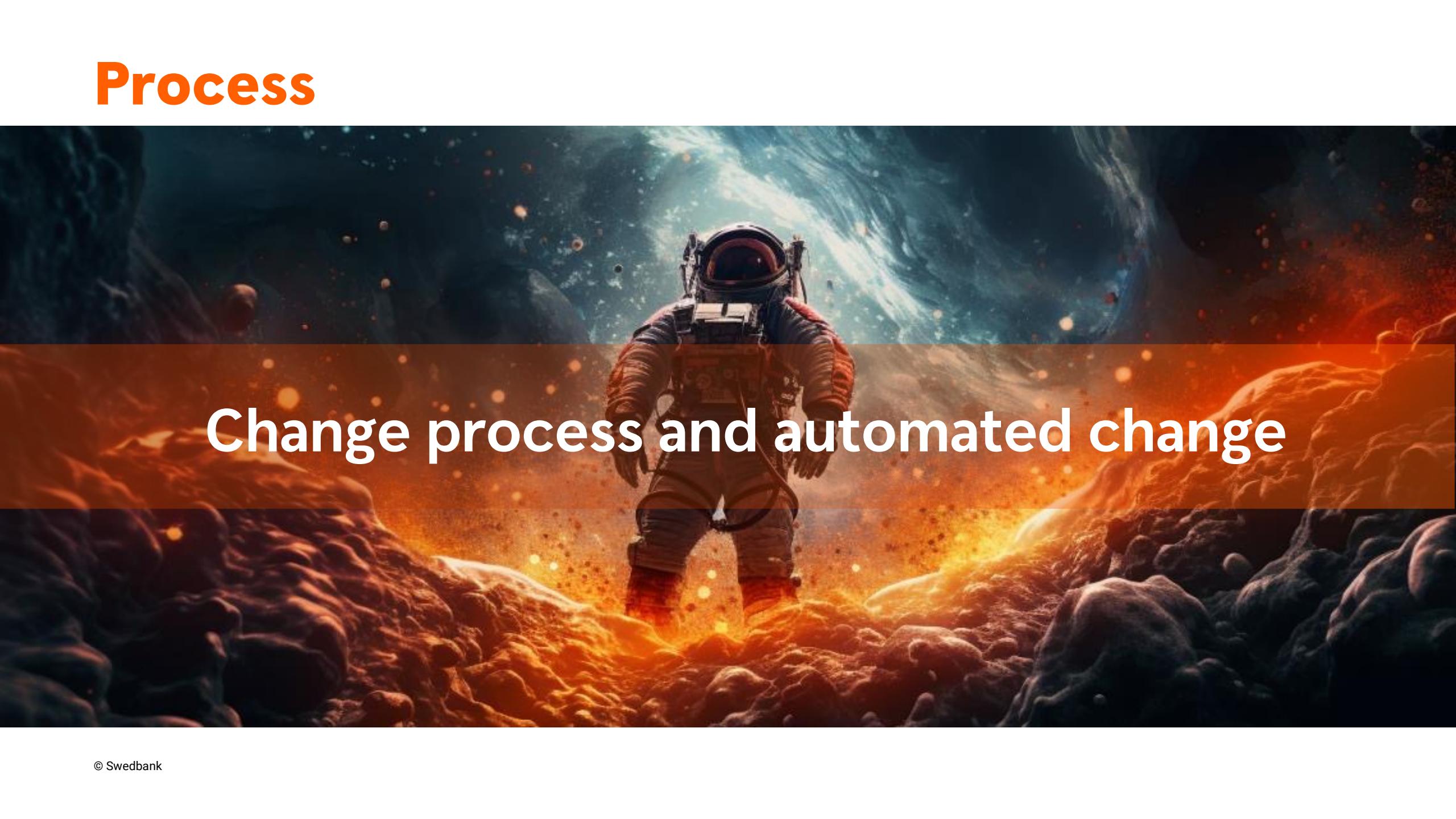




The platform – Technology



Process



Change process and automated change



Change process



We wanted to **help teams to deploy daily**.



To be allowed to deploy to production, a **change request needs to be created manually**.

- ▶ What does the change include?
- ▶ Have you tested, where is your test protocol?
- ▶ Can this change impact large number of customers?
- ▶ Does this change depend on other changes?



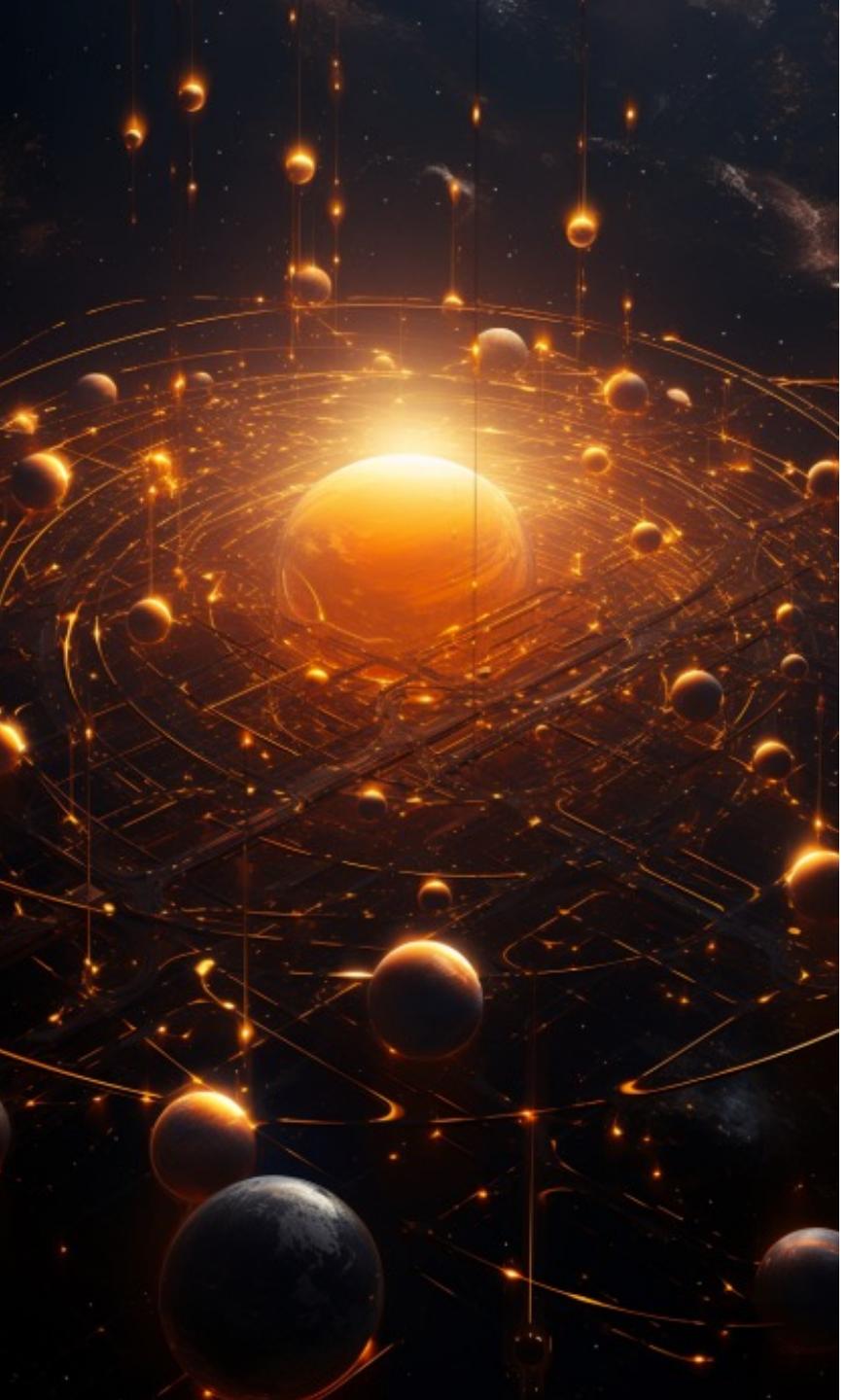
Worked with process office to **define a new change type** – Automated change.



Automated changes are allowed to be **created by approved pipelines**.



PR approval, automated testing, scanning requirements, etc.



Automated change

- 👉 Service owner is allowed to **press the deploy button**.
- ☢️ Service owner is responsible to **perform a risk and impact evaluation** before pressing the deploy button.
- 🔥 Ok if impact are **Minor or Limited**
 - ▶ Major or Critical requires a Normal Change
- 📝 The pipeline ensure QA and **creates an Automated Change request** for audit trace.
 - ▶ What commits are parts of the deployment
 - ▶ PR comments
 - ▶ Test stage outcomes
 - ▶ Who pressed the deploy button
 - ▶ etc.

Culture



How do we change the culture?

Andromeda Spacetime

latest

An Application Development Platform built on modern principles.

Microservice architecture patterns

MacOS or Windows!

Kubernetes, Spring Boot 3, Java 20

Join the community!

Join 890 other developers currently working on Andromeda.

Build a microservice

So far, there are 550 repositories labeled with spacetime in Bitbucket!

Ready for production

75 teams are together running 250 apps in production!

Deploy when you want

64 deploys to prod today, 7447 this year, the team decides when to deploy!

Latest deploy

platform-service-gateway was deployed 27 minutes ago by Andromeda Platform Team

Leaderboard

Well done **Common Core** for deploying to prod 14 times this month!

Teams

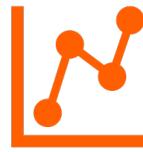
Get started now

Gamify deployment...

 <p>Microservices! 2000 XP Four apps in production! One for each developer? <i>P & C insurance adv & dist., yesterday</i></p>	 <p>We bet our weekend plans! 1 XP Deploy on a Friday after 15:00 <i>Swedbank Gateway (SGW), yesterday</i></p>	 <p>My little cluster 2000 XP Three apps in production! Easy peasy by now! <i>P & C insurance adv & dist., yesterday</i></p>
 <p>Like it's nothing 5000 XP 100 successful deploys to production! <i>Online Savings, yesterday</i></p>	 <p>Happy APO 1000 XP 50 JIRAs shipped to production! <i>P & C insurance adv & dist., 2 days ago</i></p>	 <p>A regular schedule 2500 XP Monthly deploy streak of 5 months! <i>Online Pension Private, 2 days ago</i></p>
 <p>No pain, no gain 1 XP We're only human, that's 10 failed deploys. Thank you auto-rollback pipeline! <i>P & C insurance adv & dist., 2 days ago</i></p>	 <p>Could you have a look at my PR? 1000 XP Code reviewed and approved by 5 different people <i>Common Inforum, 2 days ago</i></p>	 <p>Same procedure as every year, James 10000 XP Deploy at least once every month for 12 months in a row! <i>Kundportalen, 2 days ago</i></p>
 <p>Same procedure as every year, James 10000 XP Deploy at least once every month for 12 months in a row! <i>Digital Security, 3 days ago</i></p>	 <p>Today again 500 XP Again today? You deployed yesterday! <i>Finance Company Sweden, 3 days ago</i></p>	 <p>Market opening! 500 XP Deploy during the stock market opening <i>Finance Company Sweden, 3 days ago</i></p>



Communicate successes...



Your metrics



Position 71 out of 127



Position 16 out of 127



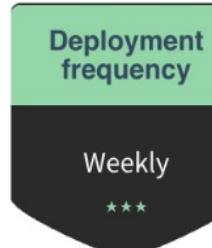
Position 26 out of 127

We have a strong belief that deploying often leads to amazing results like better code quality, resilient applications, lower risk, fewer incidents, happier teams and much more.



Team of the month

Team Digital Corporate Banking is the best team within your area this month. They deployed 37 times to production last month. Please make sure that the team is rewarded for their hard work on changing the way Swedbank develop software!





Weekly reminder

Summary

Name	Java version	Helm chart	Spring version	Pending updates
exp-corporate-services	20.0.1+9	12.9.1	3.1.1	Yes
core-entitlement	20.0.2+9	12.9.3	3.1.2	No
worker-entitlement	20.0.2+9	12.9.3	3.1.2	No

exp-corporate-services

Deployment Frequency
WEEKLY

Lead Time For Change
ONE MONTH

Active Developers
4

Java upgrade

Upgrade the applications Java version to **20.0.2+9** from 20.0.1+9 as that is the latest supported **explorer** version.

Helm upgrade

Upgrade the applications Helm version to **12.10.0** from 12.9.1.

Spring boot upgrade

Upgrade the applications Spring boot version to **3.1.2** from 3.1.1.

Pending updates

The latest version that hasn't been deployed is 4.26.3.

This unreleased version contains **1 changes (0 feature, 0 bug fixes, 1 renovates upgrades, 0 other)**.

There are **7 open pull requests** that has not yet been approved.

Back on Earth...



Unscheduled rapid disassembly



Swedish bank's IT fault puts customer accounts in the red



The Local - news@thelocal.se

Published: 29 Apr, 2022 CET. Updated: Fri 29 Apr 2022 10:38 CET

f t in



Swedbank's headquarters in Sundbyberg, Stockholm. Photo: Henrik Montgomery/TT

A technical problem at Sweden's Swedbank on Thursday night gave customers a nasty surprise, with their account balances inexplicably going negative, payments impossible, and Swish payments no longer working.

Finance

Swedbank receives \$82 mln administrative fine over lack of IT control

By Louise Rasmussen

March 15, 2023 10:14 AM GMT+1 · Updated 5 months ago

Q Aa <



The Swedbank logo is pictured on its branch in Riga October 21, 2014. REUTERS/Ints Kalnins/File Photo

COPENHAGEN, March 15 (Reuters) - Swedbank (SWEDa.ST) has received an administrative fine of 850 million Swedish crowns (\$81.52 million) due to a "lack of internal control" after changing its IT systems last year, Sweden's bank regulator said in a statement on Wednesday.

Finansinspektionen (FSA) said its investigation showed that Swedbank did not follow internal procedures when changing its system, and that it did not have suitable control mechanisms in place to ensure it followed internal procedures.

FSA said its investigation showed that Swedbank did not follow internal procedures when changing its system and that it did not have suitable control mechanisms in place to ensure it followed internal procedures

Change freeze



“Suitable controls”

The conflict

Evidence vs Wild West

- ▶ I just want to get my feature out
- ▶ FSA requires us to have good control of changes
- ▶ Trust me, I never introduce any incidents
- ▶ One team failed, trust no one!





The impacts on Andromeda

➔ Controls in place

- ▶ No one have production access (emergency access during incident exists).
- ▶ All changes recorded with automated changes.

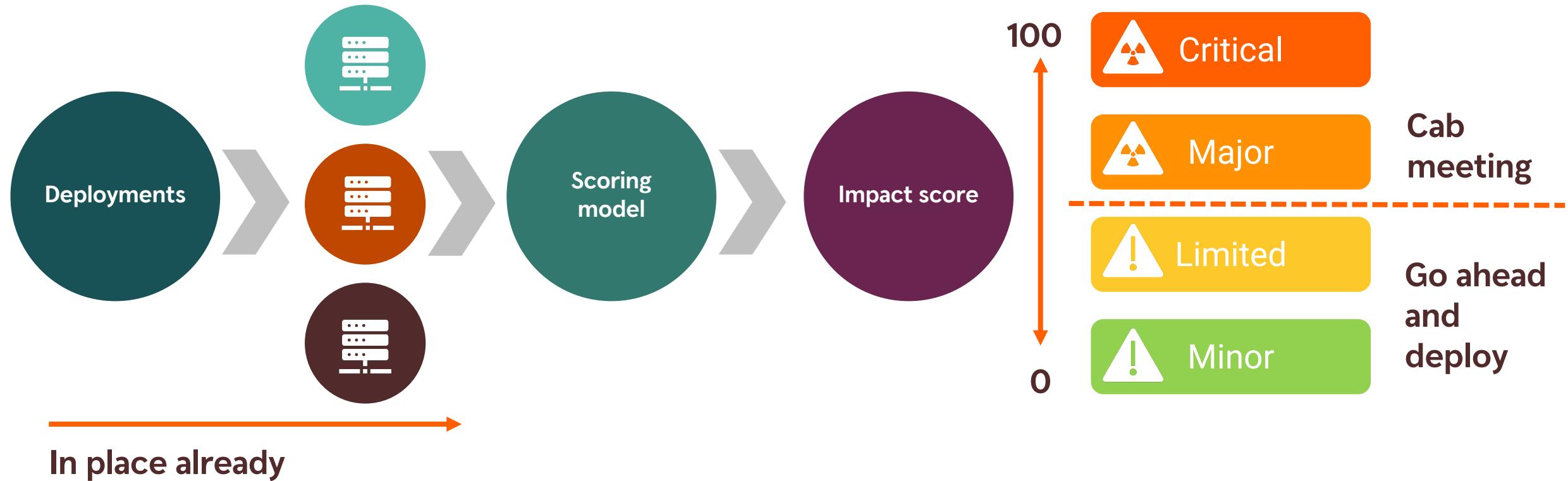
🚫 The missing automated control

- ▶ Service owners are responsible to do a risk and impact assessment.
- ▶ If the change is deemed to be Major or Critical the Service owner need to go to CAB meeting with a Normal Change.

👍 Reality

- ▶ Out of 3.500 deployments in 2022 not a single Normal Change was raised by the Service owners.

The foundation of Automated Governance was already in place



The model

A futuristic control room filled with rows of identical, metallic, humanoid robots. They are all wearing dark, reflective helmets and are seated at large, curved, illuminated control panels. The panels feature numerous buttons, screens, and glowing blue lights, suggesting complex machinery. The room has a high-tech, industrial feel with warm lighting from overhead panels.

Automated Impact Scoring

The two sides of the metrics



The application version to be deployed



Looking for high risk changes for this deployment



The team owning the application



Looking for good practices the team has embraced to reduce the risk

What metrics are we using



The application version to be deployed

Business Critically.

Number of commits.

Time since the last deployment.

The complexity of the deployment.

- ▶ chores, fixes, features, breaking changes, cognitive complexity

Application leverages all test stages and is over the agreed coverage limit.

No known critical vulnerabilities.



The team owning the application

Has the team actively used feature flags rollout.

> 3 active code contributors and approvers.

The teams secure coding score.

The team has performed a successful rollback.

The teams number of successful deployments in a row.



Impact assessment

What your team is doing good to reduce impact is

You deployed only commits with low risk (CHORES, FIX, etc.).

You have more than 3 developers that are actively working with the application.

You have at least 10 successful deployments in a row for this application!

What your team can do to reduce impact in the future

Your application doesn't leverage the test stages: Service tests, Baseline tests

Consider using Feature Flags to reduce the risk of the deployments.

The developers could improve their application security training scores in Secure Code Warrior.

Try to deploy more often so the number of commits is kept low.

You should ensure that your team has experience performing a rollback of an application.



The change we have seen

% of deployments Q1 vs. Q3



0.1%

9%



7%

45%



52%



42%

What is next?



Next steps



Next steps



Calculate before deployment and stop teams from deploying if Major or Critical.

- ▶ CAB approval needed.



Tweak the scoring models.

- ▶ Different models that can be based on a team's experience of the platform.
- ▶ Learn from incidents.



Including more measurements.



As teams on the platform mature lower the threshold of Major or Critical.

Andromeda rocket

Breaking the glass to reach the physical world





A wide-angle, low-angle shot of a desolate, reddish-orange landscape under a hazy sky. In the center, a massive, dark pyramid-shaped structure rises from a field of rubble and debris. Two large, metallic, angular structures, resembling collapsed wings or collapsed ships, are positioned on either side of the pyramid's base. A lone, small figure stands in the foreground, looking towards the pyramid. The sky is filled with large, billowing clouds of smoke and dust, and several smaller, reddish-orange spheres, possibly planets or moons, are visible in the distance and upper sky.

Questions?

Swedbank

