Bring Chaos Engineering to Your Organization in a Fun and Continuous Way

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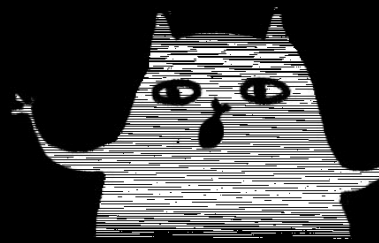
Agenda

01 Electrolux and Its IoT Systems

02 Bring Chaos Engineering Step-by-Step

03 Ongoing Work and Future Plan

Electrolux and Its IoT Systems



Taste

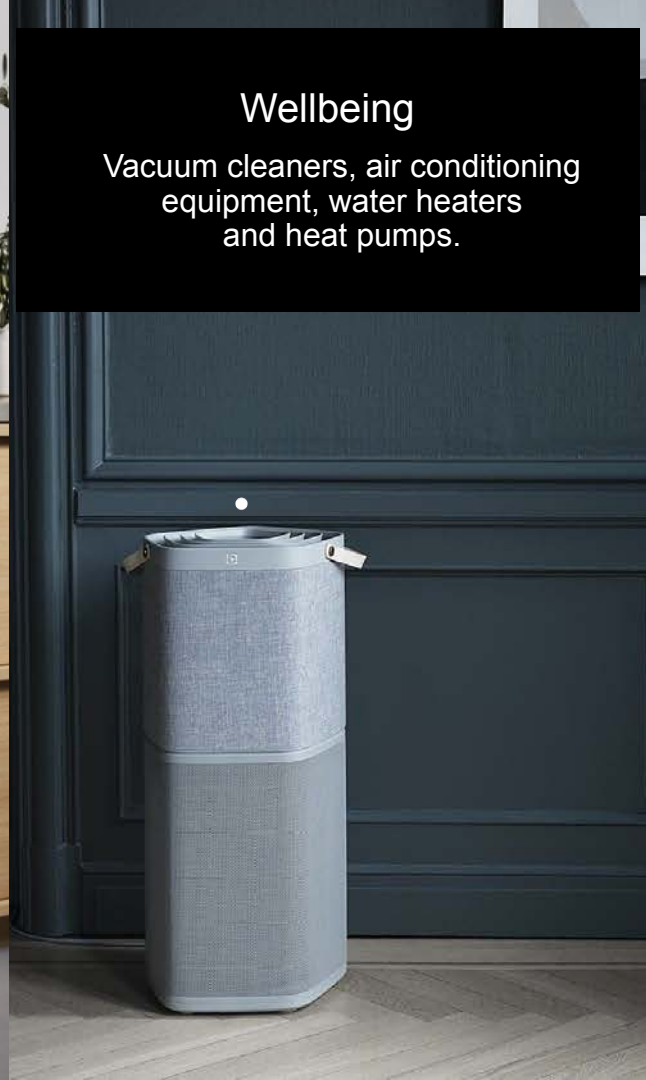
Cookers, hobs, ovens, hoods, microwave ovens, refrigerators, freezers, dishwashers and small appliances.

Care

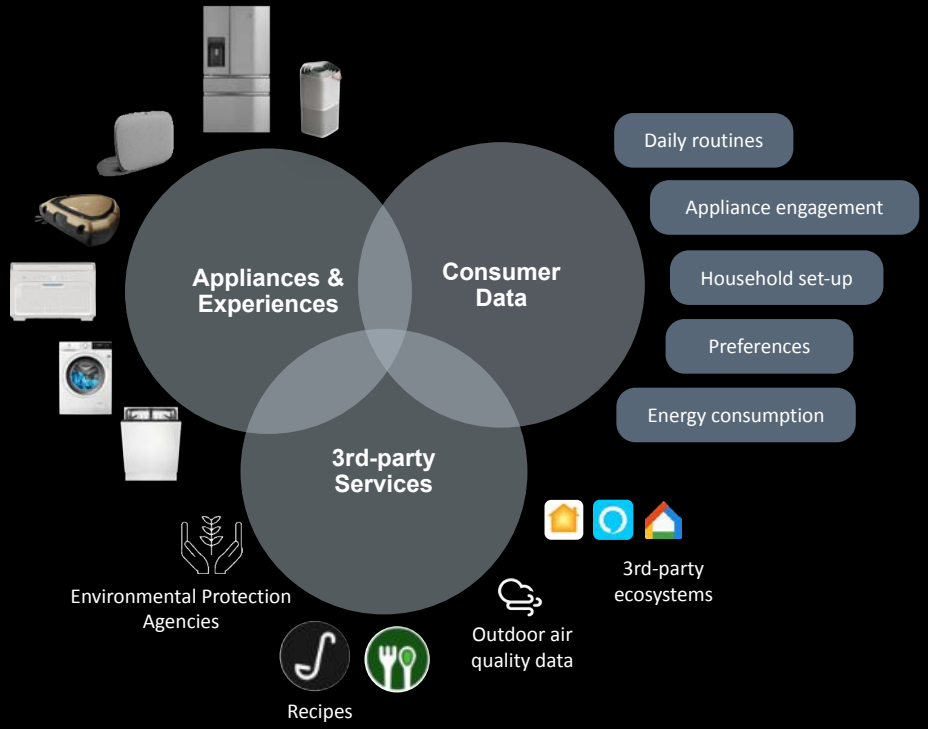
Washing machines, tumble dryers and other small appliances for fabric care, such as irons.

Wellbeing

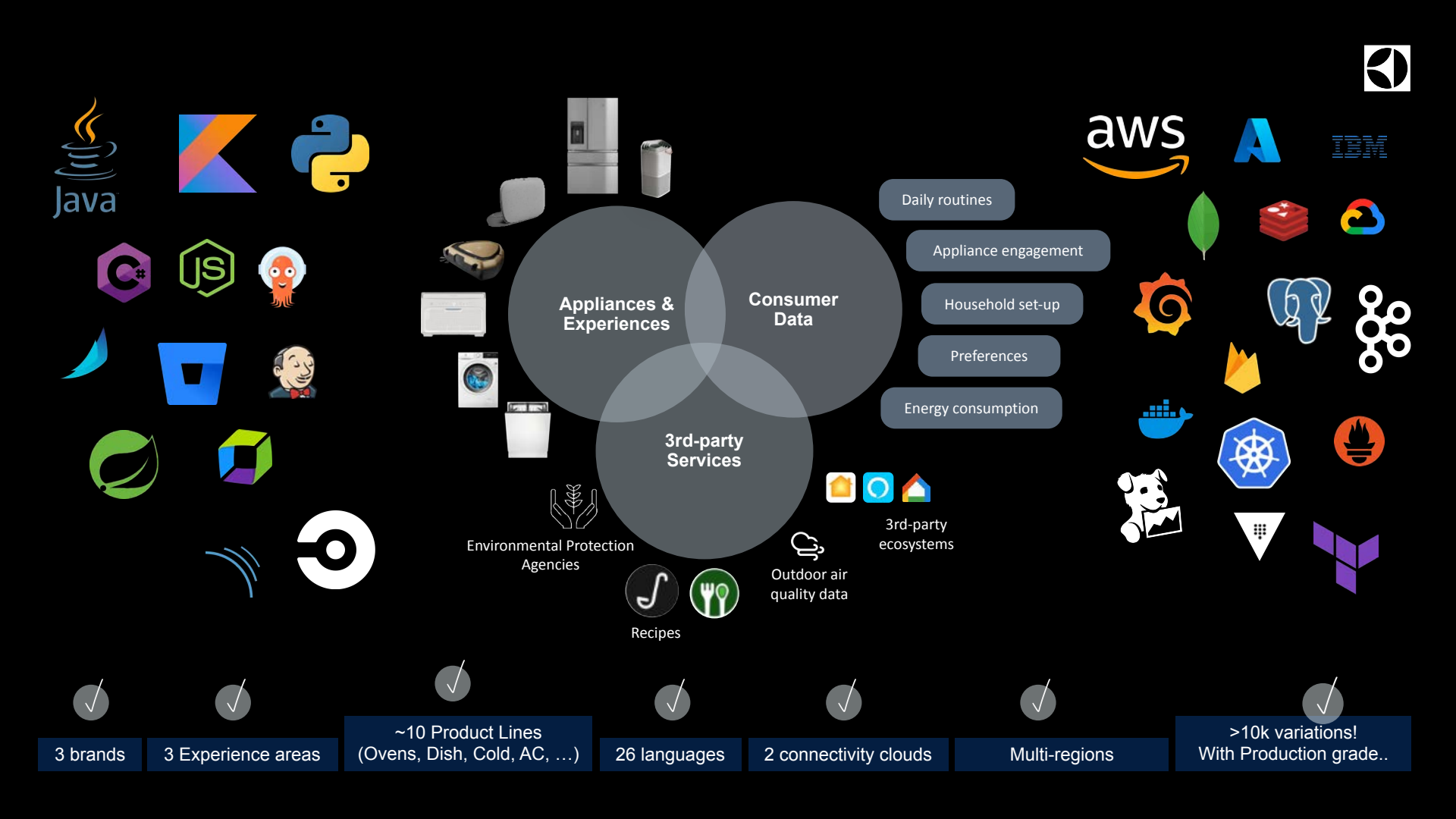
Vacuum cleaners, air conditioning equipment, water heaters and heat pumps.



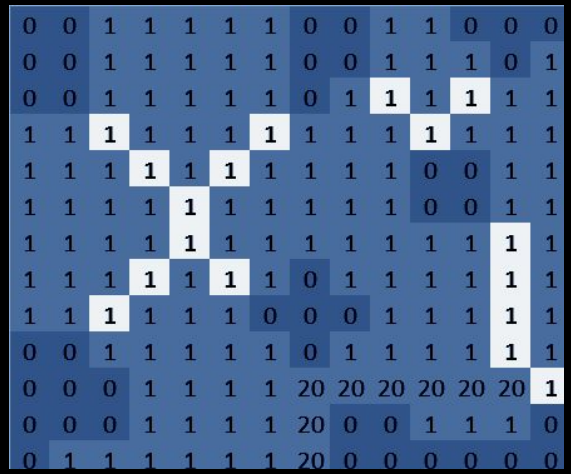

AEG
AEG
Electrolux
15:46
Home
Very good
Fan speed: 2
hallway air purifier
Mister Handy
Frigidaire
GET IT ON
Google Play
Download on the
App Store



3 brands | 3 Experience areas | ~10 Product Lines (Ovens, Dish, Cold, AC, …) | 26 languages | 2 connectivity clouds | Multi-regions | >10k variations! With Production grade..

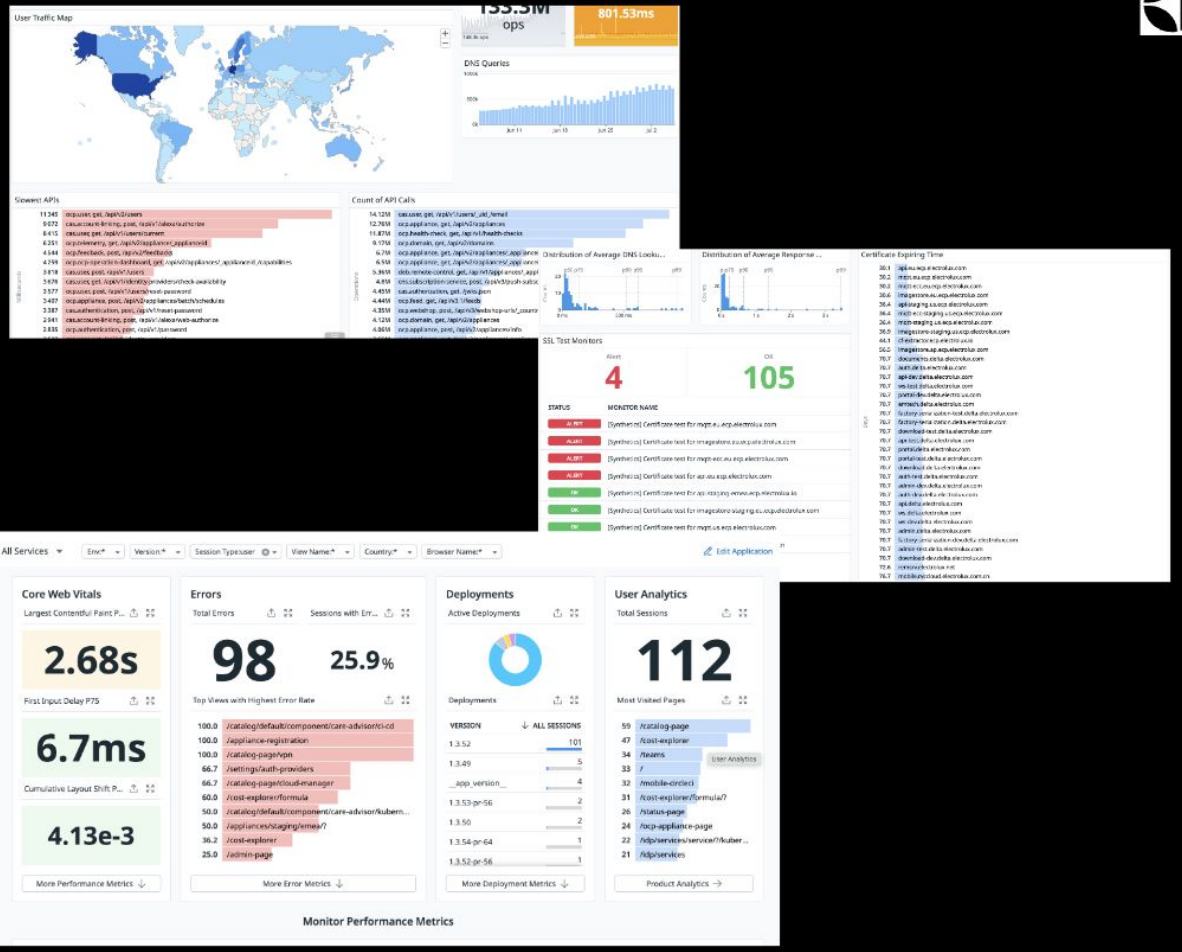

Appliances & Experiences
Consumer Data
3rd-party Services
Daily routines
Appliance engagement
Household set-up
Preferences
Energy consumption
Environmental Protection Agencies
Outdoor air quality data
3rd-party ecosystems
Recipes
3 brands
3 Experience areas
~10 Product Lines (Ovens, Dish, Cold, AC, …)
26 languages
2 connectivity clouds
Multi-regions
>10k variations! With Production grade..

Bring Chaos Engineering Step-by-Step



Step 1: Connect the ‘islands’

One Observability Platform

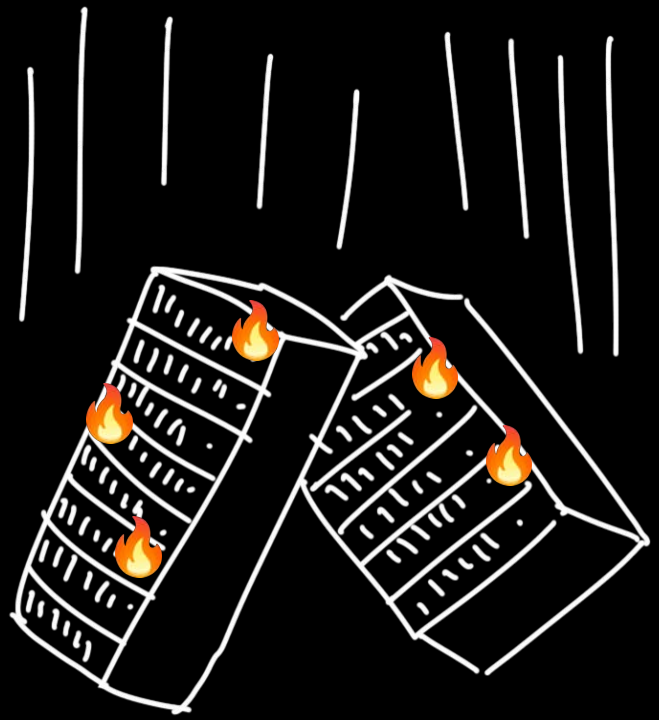

User Traffic Map
ops
801.53ms
DNS Queries
Slowest APIs
Count of API Calls
Distribution of Average DNS Looku...
Distribution of Average Response ...
Certificate Expiring Time
SSL Test Monitors
4
105
STATUS
MONITOR NAME
All Services
Edit Application
Core Web Vitals
Largest Contentful Paint P...
2.68s
First Input Delay P75
6.7ms
Cumulative Layout Shift P...
4.13e-3
More Performance Metrics
Errors
Total Errors
Sessions with Err...
98
25.9%
Top Views with Highest Error Rate
/catalog/default/component/care-advisor/ci-cd
/appliance-registration
/catalog-page/vpn
/settings/auth-providers
/catalog-page/cloud-manager
/cost-explorer/formula
/catalog/default/component/care-advisor/kubern...
/appliances/staging/emea/?
/cost-explorer
/admin-page
More Error Metrics
Deployments
Active Deployments
Deployments
VERSION
ALL SESSIONS
1.3.52
101
1.3.49
5
__app_version__
4
1.3.53-pr-56
2
1.3.50
2
1.3.54-pr-64
1
1.3.52-pr-56
1
More Deployment Metrics
User Analytics
Total Sessions
112
Most Visited Pages
/catalog-page
/cost-explorer
/teams
/
/mobile-circleci
/cost-explorer/formula/?
/status-page
/ocp-appliance-page
/idp/services/service/?kuber...
/idp/services
User Analytics
Product Analytics
Monitor Performance Metrics

Team	Logging	Tracing	Metrics	Alerting	Dashboard	Incident mngmnt	SLO
Team 1	★						
Team 2	★	★					
Team 3	★						
Team 4							
Team 5	★★★	★★★	★	★★	★★		
Team 6	★★★	★★★	★	★★	★★		★
Team 7	★★	★★	★	★★★	★★		★
Team 8	★	★	★				
Team 9	★						

★ - basic level

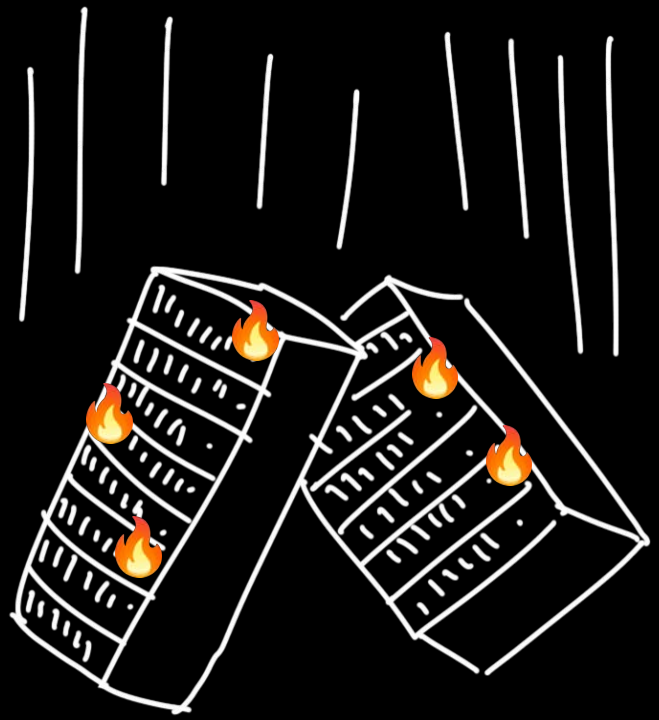
★★ - intermediate

★★★ - advanced



We want our developers to do self-troubleshooting, set up monitors and alerts

Teach developers to use the tool✍️



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~~Teach developers to use the tool~~ ✍️

Bring Chaos Engineering ✨

Step 2: Play and learn

Chaos Game Day

PREPARATION

- Communication and target environment
- Decide the form: capture the flags (CTF)
- Design the flags (experiments) and do an internal trial
  - Exp 1 - Super Intelligent Service
  - Exp 2 - Who Raised The Error
  - Exp 3 - Which API Was Attacked
  - ...
- Player registration and access control

Flow for experiment execution

Prepare the experiment (place the flag)

Release the experiment

Release the hint

Close the experiment

Tricks of experiment design

- Consider the goal or the hypothesis
- Trigger a failure at different levels
- Take advantages of various frameworks

Exp 2 - Who Raised The Error

Around Mar 15, 22:05 CET, a user was trying to get an appliance's profile using profile ID XX_YY_ZZ. She got a 404 error. Find out the name of the method that raised the error in the trace.

41 developer

12 teams

7 experiments

181 submissions

Valuable findings: 7

Feedback from players

- Knowledge of the tool of
- Knowledge of the connectivity platforms of
- Team bonding
- Interest and evaluation of new features

SRE team results:

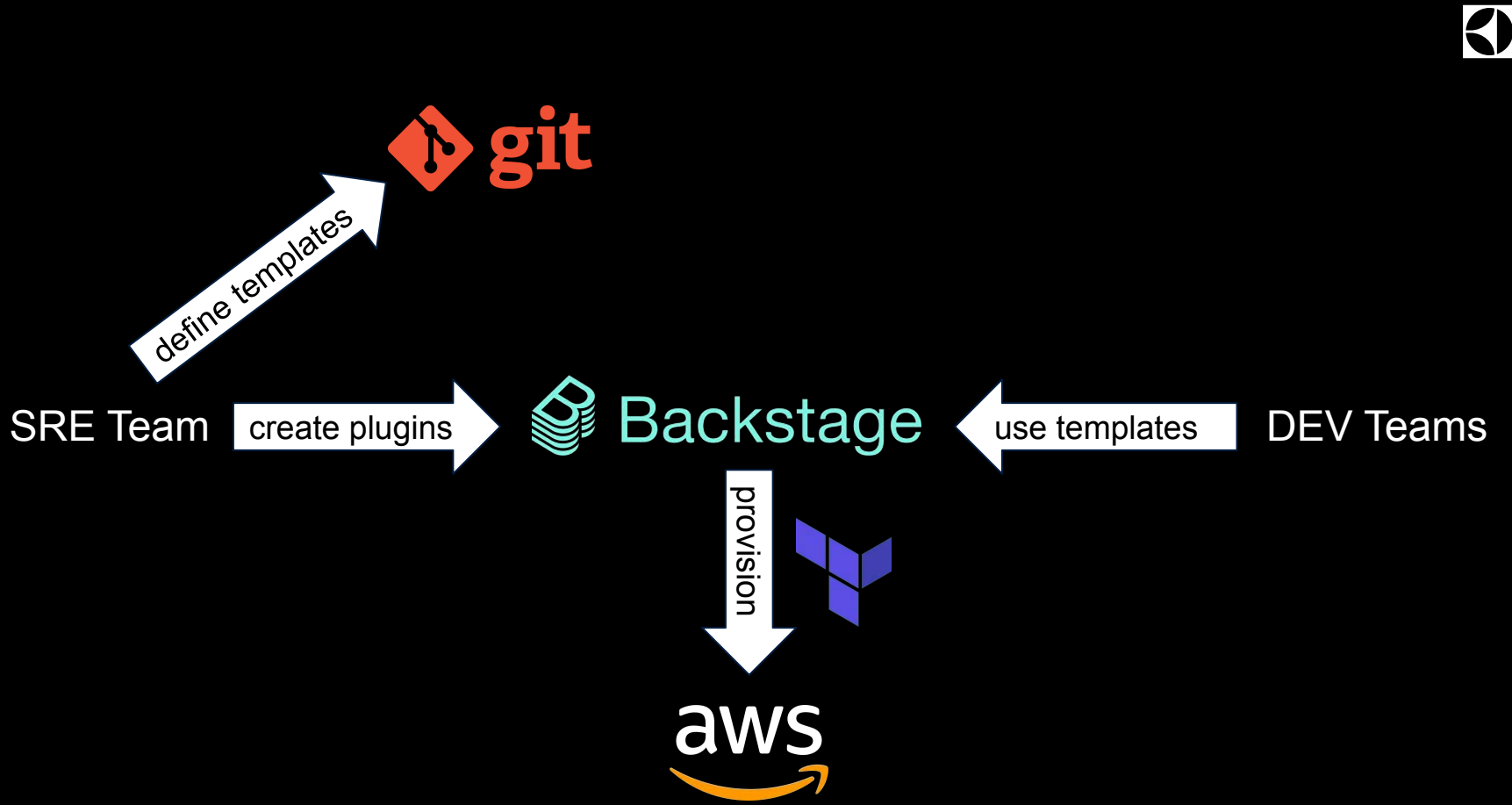
- Shipping ops responsibilities
- Incidents: 33% less
- Incident management process

How to reduce effort / things that can be improved?

- Many things around experiments are not automated
  - SREs spend lots of time on experiments design while developers should be able to design their own experiments
  - Manual review of submissions is challenging
  - Effort for internal trials
- Organize, promote and schedule the event require logistic

Step 3: Chaos Ops

Platform Engineering

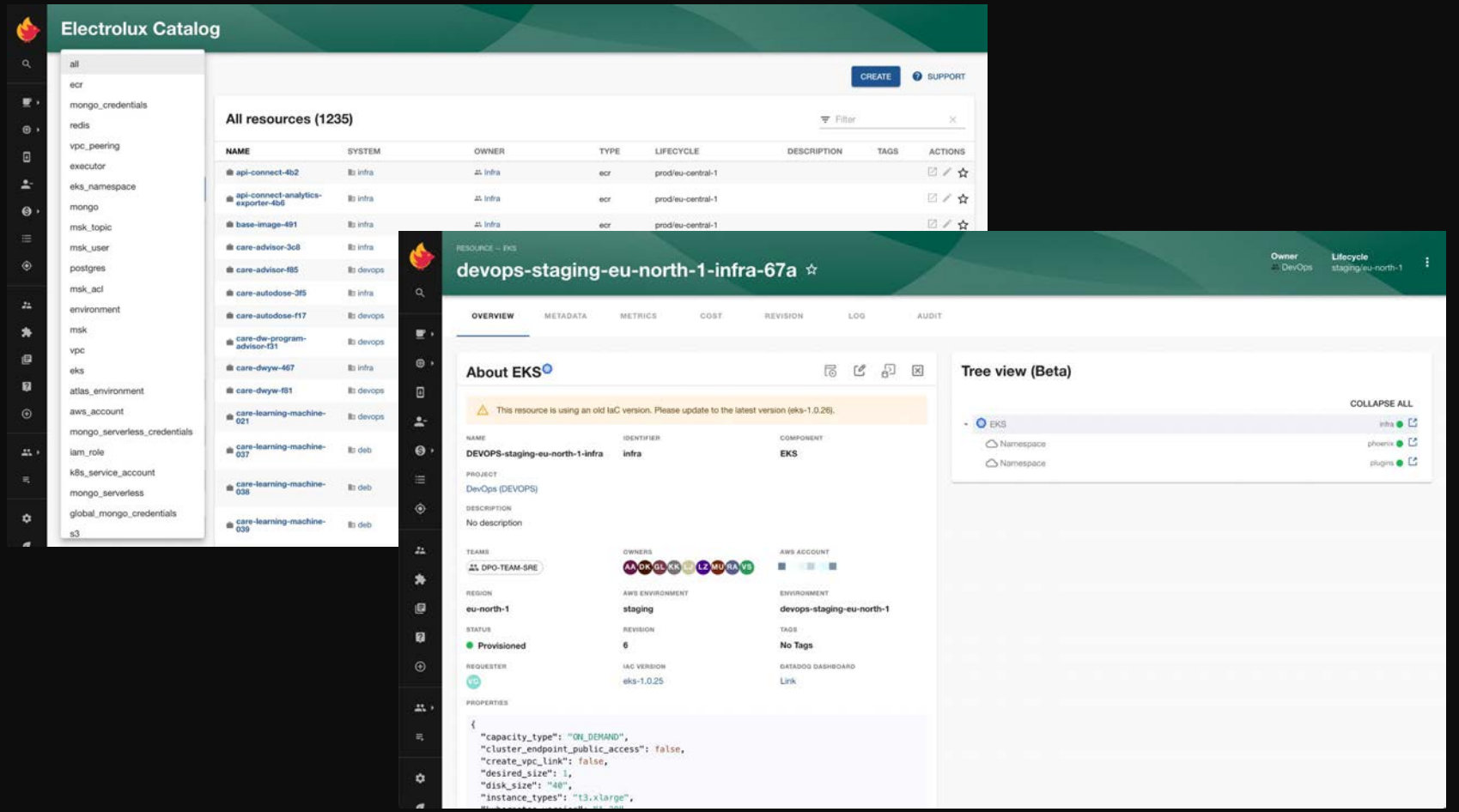

git
define templates
SRE Team
create plugins
Backstage
use templates
DEV Teams
provision
aws

Developer

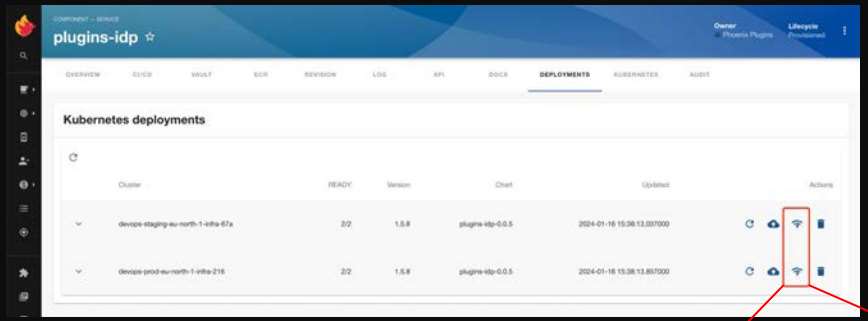
create EKS

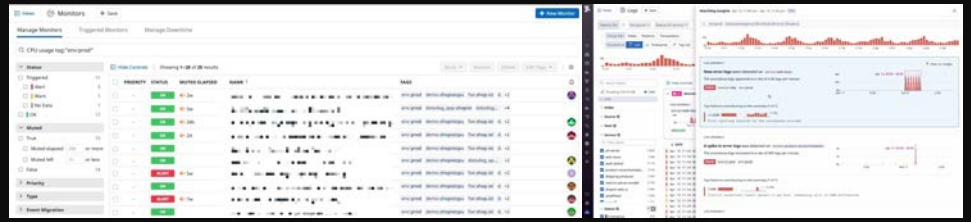
Backstage

- VPC
- EKS cluster
- Autoscaler
- Ingress controller
- Datadog
- Cost exporter

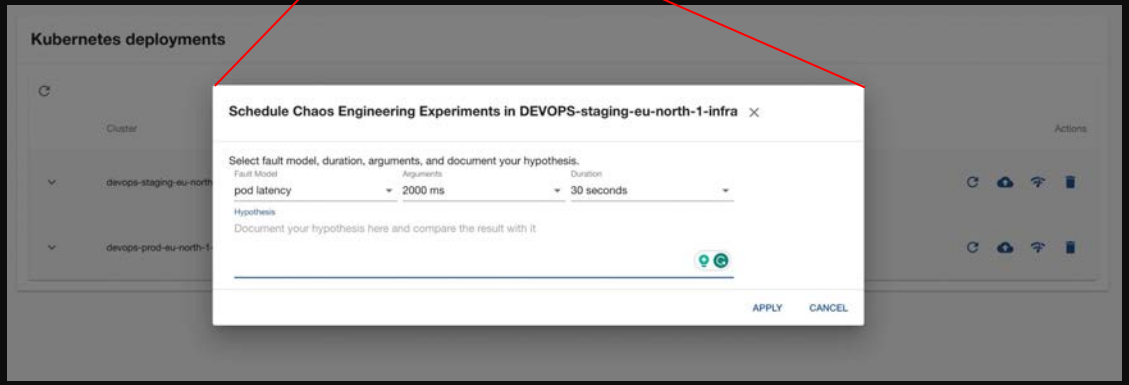


Chaos Ops MVP - embedded in IDP

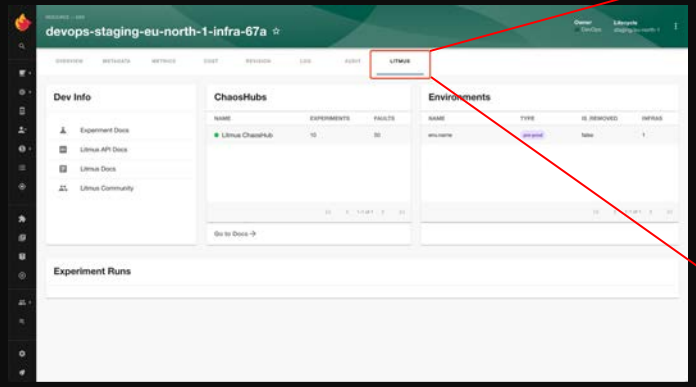




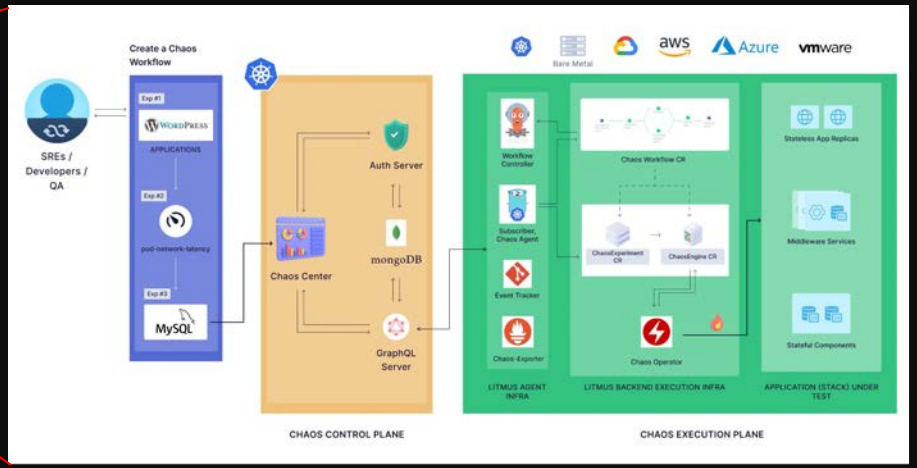
(example screenshots taken from Datadog)



Scalable approach with Litmus Chaos 3.0



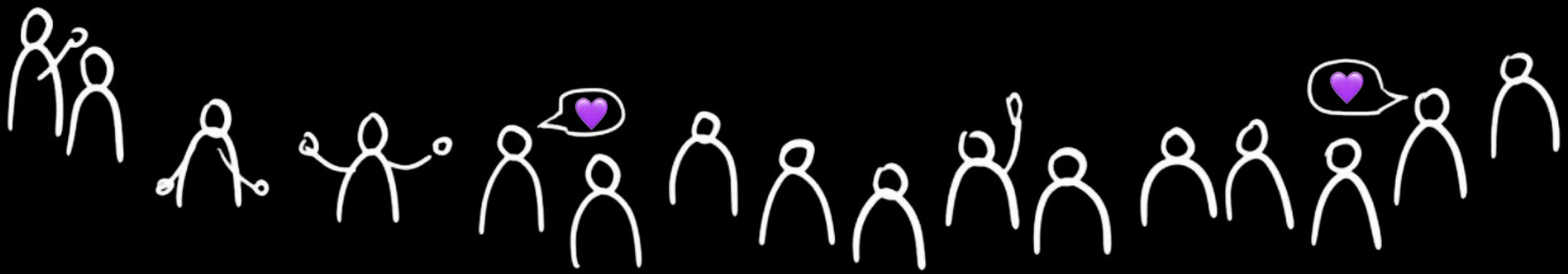
https://github.com/litmuschaos/backstage-plugin



https://docs.litmuschaos.io/docs/architecture/architecture-summary

Next steps:

- multi-level and automated experiments
- Full feedback loop with the help of IDP

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