Interplanetary DevOps at NASA JPL

Dan Isla
@danisma
LISA16
Boston 2016
Building spacecraft is very different than building ground software.
The Old Way

- Legacy SQL Ground System
- Excel/Matlab
- PowerPoint
- E-Mail
_search
Recipe for greenfield success in enterprise:

Pair a *passionate* end user with a *passionate* developer
The New Way
Keeping Queries Fast with Rollups

Chanval Base Index and Rollup Document Counts

- 30m Rollup
- 10m Rollup
- 5m Rollup
- 1m Rollup
- Base Index

Document Count


2015_12-chanvals
shards: 24 * 2 | docs: 954,642,250 | size: 236.99GB

2015-chanvals-10m
shards: 12 * 2 | docs: 280,545,410 | size: 80.85GB

Base Index, 1 month

10m Index, 1 year
The API is the deliverable
Impactful low-risk greenfield projects lead to natural evolving DevOps cultures.
Mesos and Marathon

Pre-Kube days (winter 2014)
A breath of fresh air
For Developers
A nightmare
for traditional Ops
Me: You need Twelve-Factor Apps

My Org: No way, what do you know about stateless apps?

Big Time Consultant: You need Twelve-Factor Apps

My Org: Great idea!

Sometimes you just need external validation
“Failure is not an option!”

- Gene Kranz, NASA Flight Director
- No DevOps Engineer ever
-Innovation-

FAIL FASTER

FAIL OFTEN
Immutable Infrastructure

Establishes the premise for agile recovery
You will be replaced by a self-service CI/CD Pipeline
MOCCI Demo

Dan Isla  1:27 PM
@jarvis deploy disla/demoapp?branch=master

Jarvis Robot  BOT  1:27 PM  ⭐️
We have app

🚀 build for disla/demoapp?branch=master @ 3c161 skipped because it already exists. 👍
⏰ disla/demoapp?branch=master @ 3c161: canary container started, running for 10 seconds... 🤔
⏰ disla/demoapp?branch=master @ 3c161: canary tests passed, mem used: 71M / 128M 😊 continuing with deployment...
🚀 deployment started for: disla/demoapp?branch=master @ 3c161 ...
🎉 deployment complete for: disla/demoapp?branch=master @ 3c161  available at: disla-demoapp.cld.jpl.nasa.gov
Level up your Dev and Ops Skills
Staying up to date

Conferences
Meet ups
Twitter
Medium
Hacker news
Read the Changelog!
DevOps is not Rocket Science
It’s all about the people you work with
_search?q=life:universe