



# Controlant

Jaimie Fryer and Heiðar Eldberg Eiríksson

DevOps technology in isolation is pointless



# Heidar

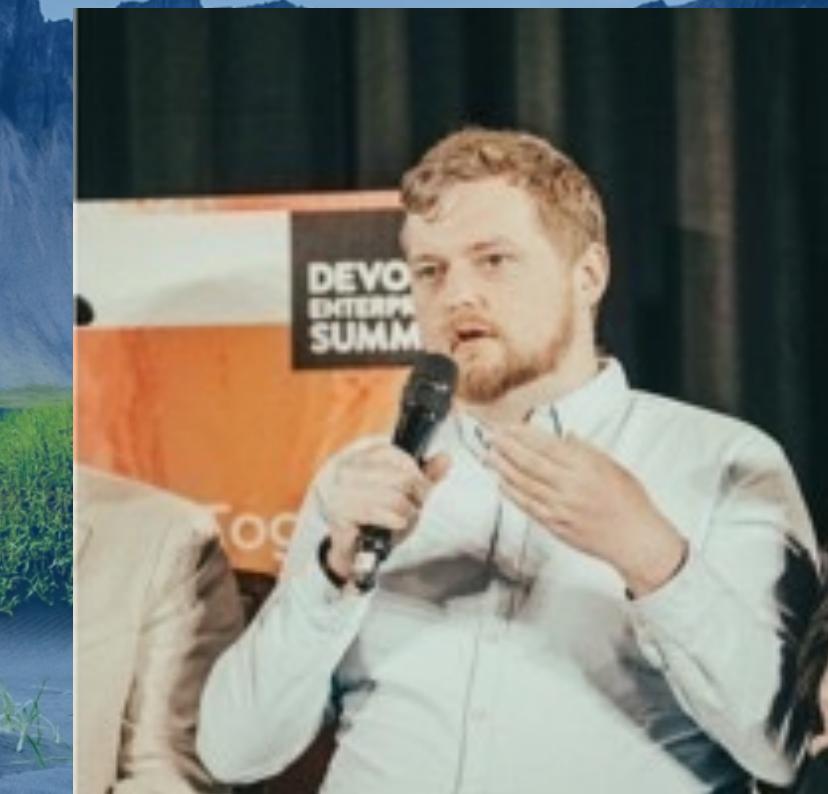


**DevOps Engineering Manager**

Worked in tech since mid 2000s.  
**QA, Developer, SysAdmin, Cloud Ops, DevOps.**

**DevOps Evangelist and thought leader.**

# Jaimie



**QA Engineering Manager**

13 years in QA, Games, BI, Cloud tech, Cold Chain.

Leads the QA Chapter at Controlant.

Leads implementation of Automated Governance at  
Controlant.



**Zero-waste  
supply chains  
for our partners  
and the planet.**

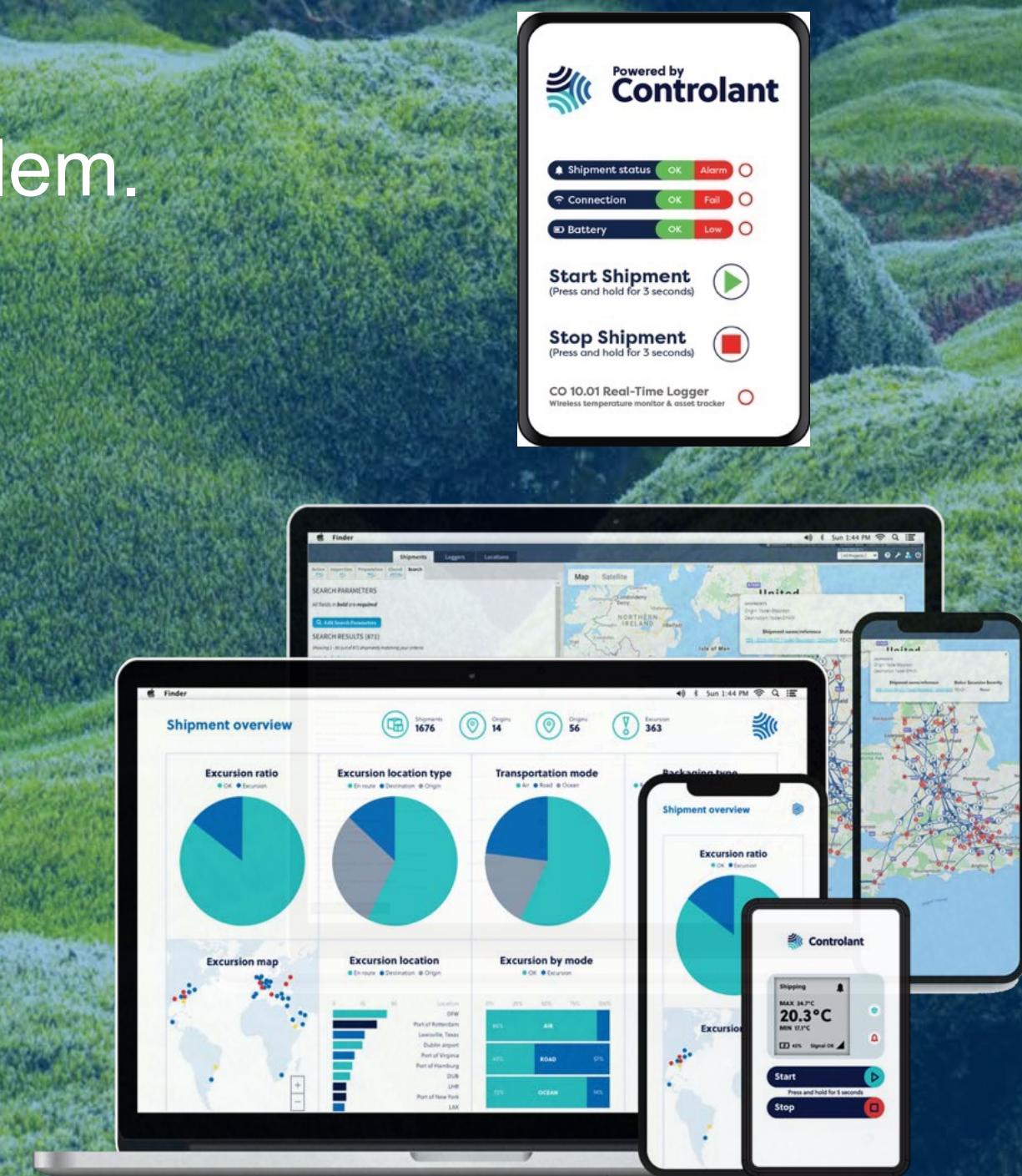
# Controlant

Founded in 2007.  
Early years developing solutions in search of a problem.

Breakthrough in 2009 - Swine flu.  
Technology to monitor vaccines in storage.

Leading to Cold Chain Monitoring.  
2015 first reusable, real-time, IoT data logger.

And the platform to collect and analyze the data.



# Underlying Challenges and Opportunities within Pharma Supply Chains

Next generation supply chains

**69%**

Increase in production of precision medicine over next 5 years - produced in small batches with increased time and temperature sensitivity<sup>1</sup>

Next generation supply chains

**+50%**

of Pharma R&D pipeline is now focused on biologics, biosimilars, precision medicine, Cell & Gene therapy<sup>2</sup>

Next generation supply chains

**\$3.7bn**

expected demand for clinical trials supply chains in 2022, with growth accelerating<sup>3</sup>

Waste

**\$35bn**

Annual pharma industry losses due to failure in temperature-controlled logistics<sup>4</sup>

Waste

**72%**

Annual pharma industry losses due to failure in temperature-controlled logistics<sup>4</sup>

Visibility

**<50%**

Annual pharma industry losses due to failure in temperature-controlled logistics<sup>4</sup>

Digitization

**27/100**

The pharmaceutical sector scores second lowest and behind the global industry average on digital maturity across all industries<sup>5</sup>

Sustainability

**1,664**

tCO2e/\$m  
Medicines are more greenhouse gas (GHG) intensive than cars (automotive industry generates 1,566 t CO2e/mUSD)<sup>6</sup>

Sustainability

**91%**

Of Pharma business leaders believe their company has a responsibility to act on ESG issues, but are lacking data, systems, tools and insights<sup>7</sup>

1. McKinsey Pharma Research

2. McKinsey Pharma Research 3.

3. Controlant effects study

4. PWC beyond compliance consumers and employees want business to do more on ESG

5. The Association for Supply Chain Management ASCM , The Resilient Supply Chain Benchmark

Ready for Anything? Turbulence and the Resilience Imperative,

6. McKinsey Digital maturity report

7. Controlant Case Study

8. Gartner - How to Build Sustainability in Life Science Supply Chains

# Controlant's need for DevOps

Faster, Cheaper, Higher Quality



# The best laid plans...

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2019 everything in VMware, think Systemd, SCP/SSH for deployment/config etc.  
Lots of technical debt in infra, lots of work to do to.

We made plans but then WHO Declares Covid19 Pandemic and we get picked as critical supplier in Operation Warp/Light Speed.

Infrastructure modernization in 2019-2020 culminating in cloud migration to AWS.  
2 years of planned work, compressed into 2 months.

Massive improvements in DevOps outcomes – some sacrifice in engineering culture.

# The DevOps Journey

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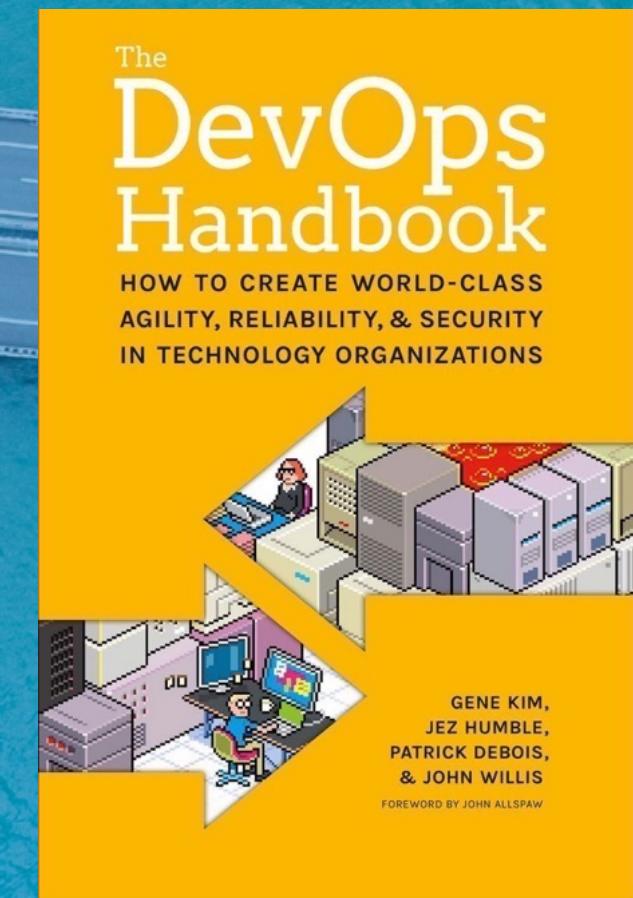
The Core Chronic Conflict of 2019 moved.

Rebranding the Ops team into DevOps didn't remove the DevOps+QA bottleneck.

Jaimie pushed me to actually read the book.

DevOps QA Whitepaper.

We came up with processes and projects to follow through  
and picked up a lot of tools.



# We're using all the nice toys...

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Java  
Python  
.Net

All built into docker for ECS/EKS  
or Lambda.

99% Terraform deployed  
via GitLab pipelines.

What is our lead time?



# The Journey Continues

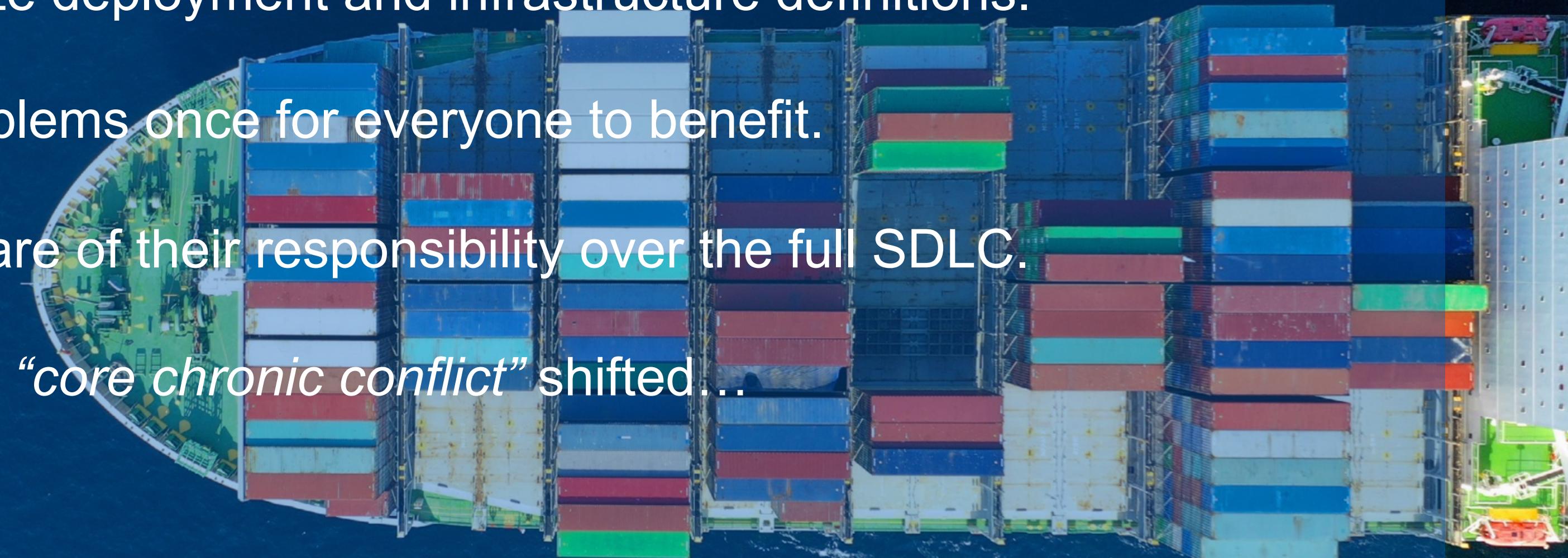
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We are trying to decentralize deployment and infrastructure definitions.

While solving the large problems once for everyone to benefit.

Making everyone more aware of their responsibility over the full SDLC.

Some improvement but the “*core chronic conflict*” shifted...



# Core Compliance Conflict

Fragile Manual Procedures.

Compliant Downward Spiral.



# Pharma Quality Management Systems

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Pharmaceuticals are consumed by people.

We safeguard the Pharmaceutical Supply Chain...

...and so do regulators.

Probably not made with DevOps in mind.

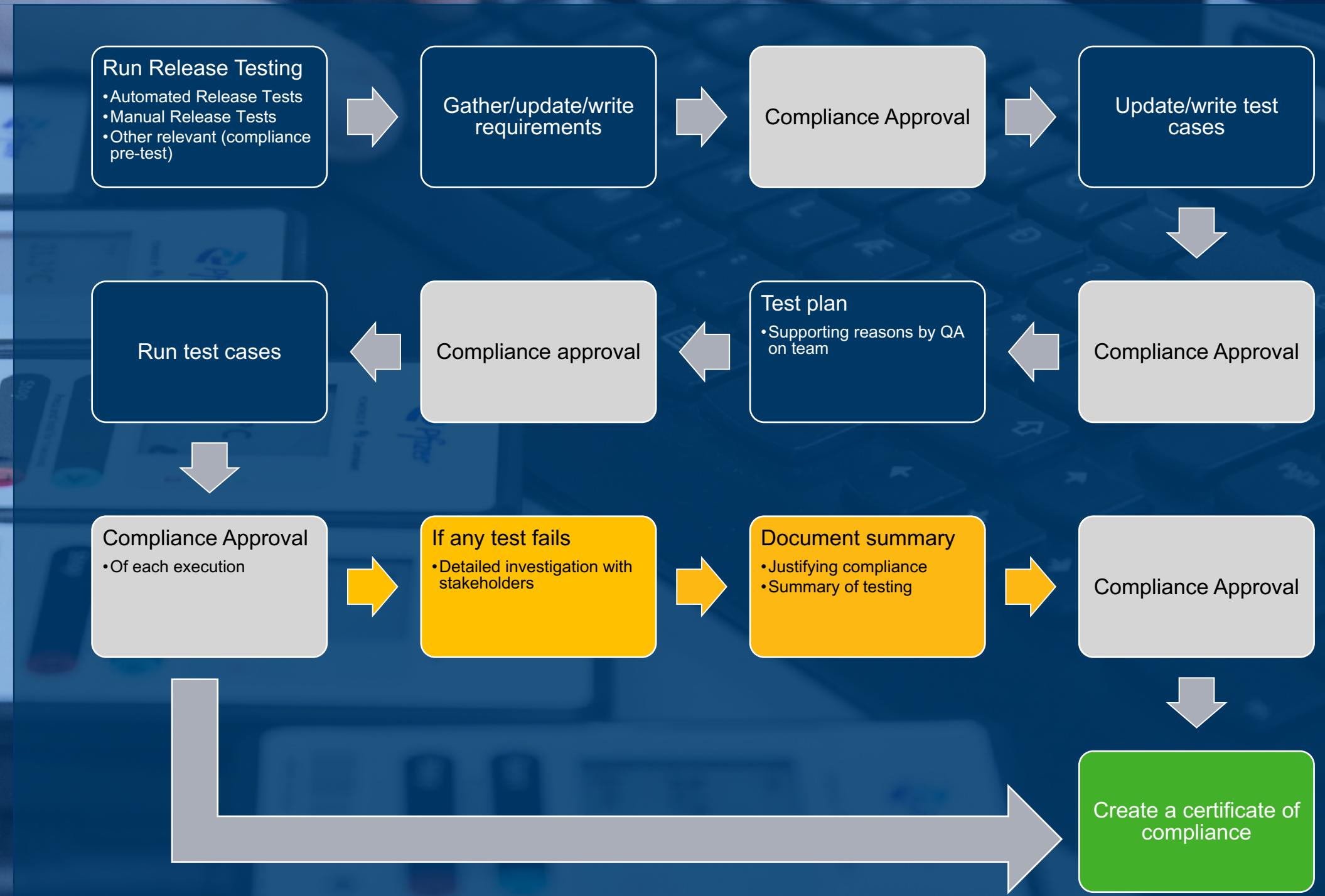
# Release and Validation

Run a "traditional" release.

Then we validate.

Not very Devopsy.

Fragile Procedure.



# QA Supporting DevOps

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Execute Compliance Testing

Flow: Automated test transformation.

Feedback: Confidence to ship.

Learning: Tests exhibit behaviours.

Renovating heavy bottlenecks in current value streams.





A wide-angle aerial photograph of a bustling port at sunset. The sky is filled with warm orange and pink hues, with large clouds reflecting the light. In the foreground, a large cargo ship is docked at a terminal with several industrial cranes. A massive green diagonal shape, resembling a stylized 'X', covers the left side of the image, partially obscuring the port area. The city skyline of Bangkok is visible in the background across a river.

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Enough excuses, Let's fix it.

# Learn the compliance language

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Understand the needs of your compliance organisation.

Use them as requirements for automation.

Reading CSA started our automated compliance.

# Network with Stakeholders

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Find your grassroots crowd.

Find your Sponsors.

Must be Multidisciplinary.

# Identify your Core Compliance Conflict

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Look into your value stream map.

Stand by the water cooler.

Listen to the negative feedback of your plans.

# Kickstart your solution project

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Now that you've befriended your sponsor.

Pitch your project.

Use metrics.

Pitch to automate as much as possible.

Be Relentless.

# Build in your QA Standards

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QA mitigates risk in development.

FDA Validation is Risk based.

# Keep selling your solution internally

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Repeat the business case.

Message about how it will transform your place in the market.

Find early internal customers

# Demo your automation

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Demo from the first feature.

Show **everyone** (who wants to see).

Record demos.



When you're on  
the right path...

# From this

Arduously Documented.

Low Flow.

Low Feedback.

Low learning.

DocuSign Envelope ID: D999C368-2DCA-461A-9426-D32B25DFFD34

SCM Validation	Version 2.24.0
Completed on 2023-03-02T12:45:39	T611560

**Controlant**

T611560 - When creating a shipment, a delivery-by time can be set

Test Case ID C49383	Type Validation	Test Case Status Approved	References SCMRS-268
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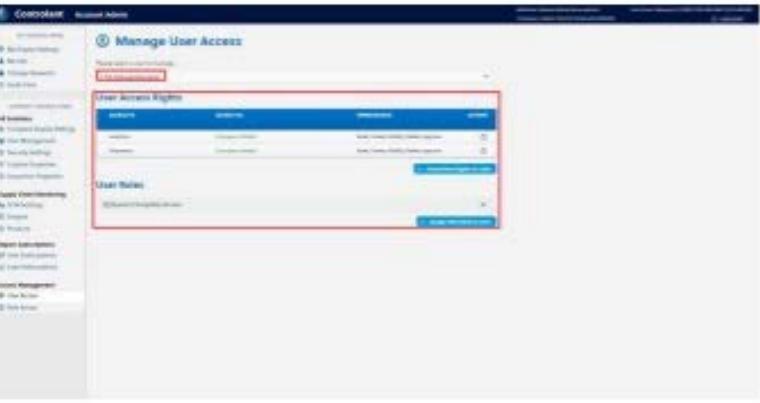
**Description**  
A user should be able to set a preferred deliver-by timestamp for a shipment when it is being created.

**Preconditions**  
• Have a user with all global access to shipments, locations, and templates  
• Log into the SCM web interface with that user  
• Have at least one free logger available in the system

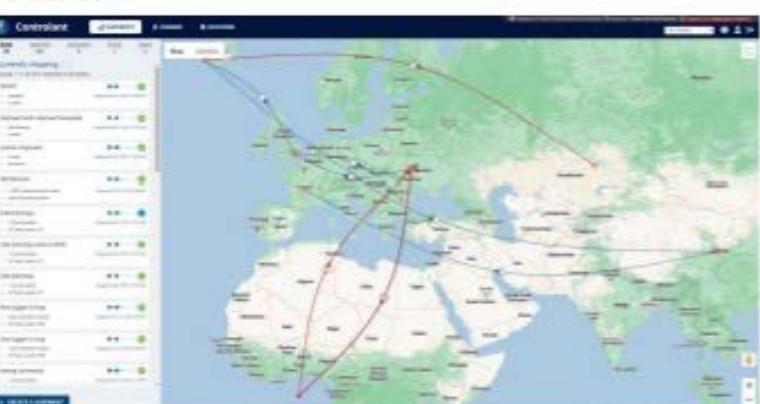
**Execution Approval**  
Test execution was approved at 2023-02-23T15:03:11

**Test Execution**  
**2023-02-23T12:49:43 Passed**

**Precondition Evidence:**



T611560-001



T611560-002  
Continues on next page

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T611560-014

T611560-015

T611560-016

Controlant

# To the start of success

Automated compliance.

Compliance org becomes ambassadors.

Don't start with the tools.

The screenshot shows a compliance status interface with the following details:

- User: QA @qa1 · just now
- Role: Maintainer
- Icon: Scales of justice icon
- Section: Compliance Status
- Item: medium-risk-QA-3169 compliant
- Section: Attestation Details
- Items: features compliant, merge request approval compliant, unit test compliant, version control compliant, code style compliant, test coverage compliant, dependency scanning compliant, sast compliant



We still have a ways to go – help us...

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Bringing about the culture shift in conservative, safety critical industry.

Spread DevOps mentality and Governance Engineering  
until the core compliance conflict is gone.

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