

# Laying Down the Tracks for Technical Change at Comcast



- **Jon Moore**
- **Chief Software Architect / Sr Fellow**
- **Wants to play bass in a cover band**



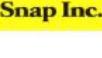
- **Michael Winslow**
- **Senior Director, Engineering**
- **I still code for management tasks**

 @jon\_moore

 @michaelswinslow

  
COMCAST  
NBCUNIVERSAL

A global media and technology company with several businesses, including Comcast, NBCUniversal, and Sky.

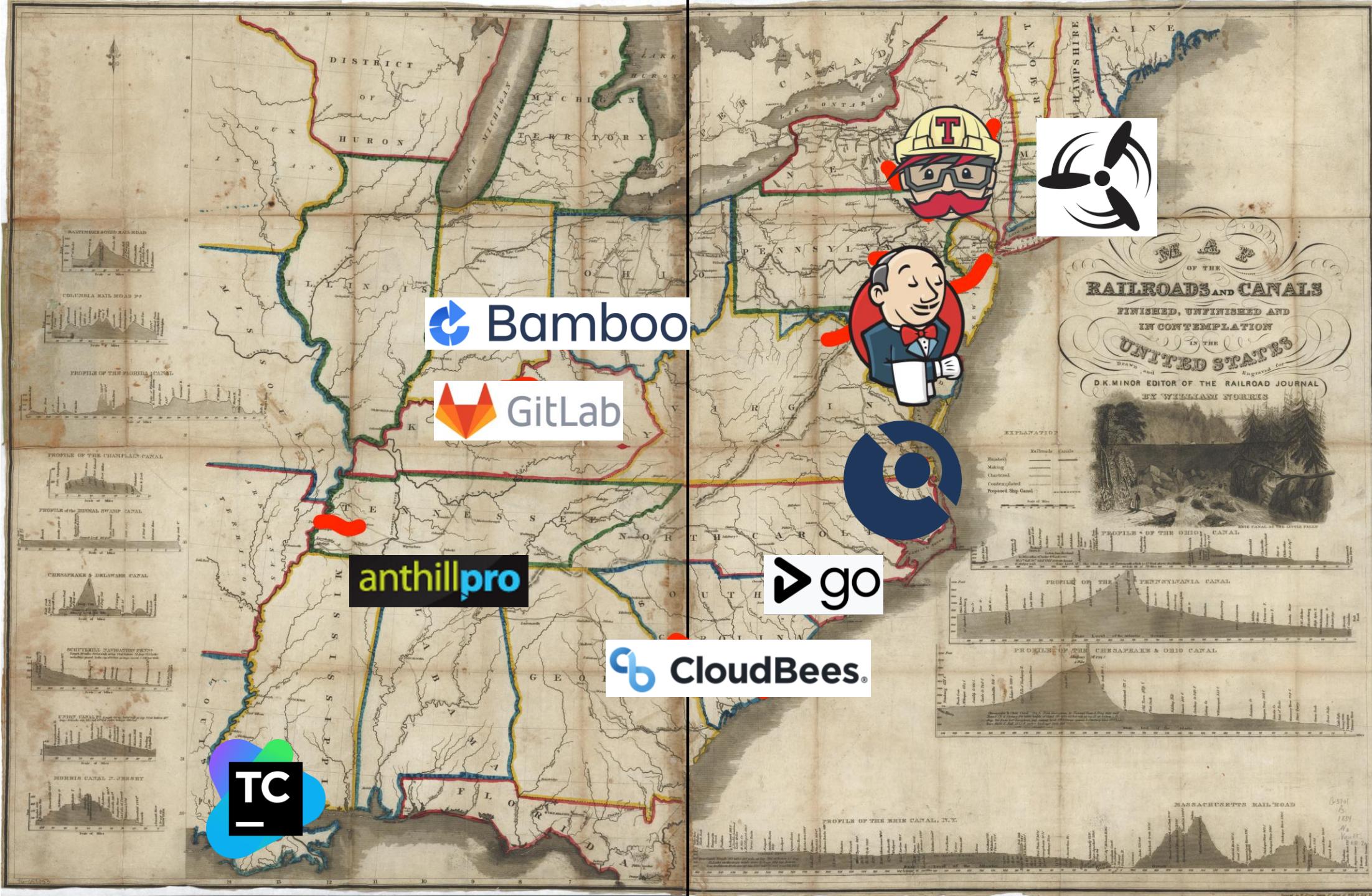
COMCAST	NBCUniversal					Sky
Products & Services	Cable Networks	Broadcast	Film	Parks	Products & Services	
xfinity xFi    xfinity xi	 	  	 	 	 	 
xfinitymobile    xfinity home			NBCUniversal Owned Television Stations <small>NBC Owned Television Stations Telemundo Station Group</small>			 
COMCAST BUSINESS    COMCAST SPOTLIGHT <sup>®</sup>	 	 	 	 	 	 
Comcast Spectacor	    					Channels & Content
COMCAST SPECTACOR    SPECTRA BY COMCAST SPECTACOR    Wells Fargo Center		 				   
FRESHWHEEL <sup>™</sup> A COMCAST COMPANY						 
	Digital & Other					  
COMCAST VENTURES <sup>®</sup>	 *    *        					

\*Minority interest and/or non-controlling interest.

Slide is not comprehensive of all Comcast NBCUniversal assets

Updated: December 03, 2018





# Royal Commission on Railway Gauges

United Kingdom, 1845

the said District of  
levied :

whereby the same may be

Now therefore, &c. [Proceed as in Form N° 79, from the Words  
"Now therefore" to the End.]

Note.—The several Forms herein-before provided to be used by or under the Direction of the Commissioners of the Property and Income Tax may, in all Cases in which the same are or may be applicable, and where no other Form is specially provided for the Occasion, be adapted and applied, mutatis mutandis, to the Execution of the Acts relating to the Duties on Profits arising from Property, Professions, Trades, and Offices, by or under the Direction of the Commissioners for Offices, in relation to the Duties chargeable under Schedule E. of the Act 5 and 6 Vict. c. 35.

## C A P. LVII.

### An Act for regulating the Gauge of Railways.

[18th August 1846.]

WHEREAS it is expedient to define the Gauge on which Railways shall be constructed: Be it enacted by the Queen's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, That after the passing of this Act it shall not be lawful (except as herein-after excepted) to construct any Railway for the Conveyance of Passengers on any Gauge other than Four Feet Eight Inches and Half an Inch in *Great Britain*, and Five Feet Three Inches in *Ireland*: Provided always, that nothing herein-before contained shall be deemed to forbid the Maintenance and Repair of any Railway constructed before the passing of this Act on any Gauge other than those herein-before specified, or to forbid the laying of new Rails on the same Gauge on which such Railway is constructed within the Limits of Deviation authorized by the

On what Gauge  
Railways shall  
be made.

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## veyance of Passengers on any Gauge other than Four Feet Eight Inches and Half an Inch in Great Britain,

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## Inches in Ireland

and Five Feet Three

WHEREAS it is expedient to define the Gauge on which Railways shall be constructed: Be it enacted by the Queen's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, That after the passing of this Act it shall not be lawful (except as herein-after excepted) to construct any Railway for the Conveyance of Passengers on any Gauge other than Four Feet Eight Inches and Half an Inch in Great Britain, and Five Feet Three Inches in Ireland: Provided always, that nothing herein-before contained shall be deemed to forbid the Maintenance and Repair of any Railway constructed before the passing of this Act on any Gauge other than those herein-before specified, or to forbid the laying of new Rails on the same Gauge on which such Railway is constructed within the Limits of Deviation authorized by the

On what Gauge  
Railways shall  
be made.

# Architecture Decision Records (ADRs)

- Context
- Decision
  - Rationale
- Status
- Consequences



[Code](#)[Issues 9](#)[Pull requests 3](#)[Projects 0](#)[Wiki](#)[Insights](#)[Settings](#)

Branch: master ▾

[delivery / CHARTER.md](#)[Find file](#) [Copy path](#)

jmoore3481k Initial documentation for working group.

587af37 on Jun 5, 2018

1 contributor

41 lines (30 sloc) | 1.97 KB

[Raw](#) [Blame](#) [History](#)   

# Charter: Delivery Methods

This working group will be concerned with software delivery from end to end. This encompasses:

- Continuous Integration and Delivery platforms
- Testing methodologies and types.
- The storage of artifacts.

The group will be tasked with identifying and recommending common tools, services, and/or practices that can meet the needs of the majority of T&P software teams.

"Build" here refers to the compilation and/or packaging of source code into some kind of executable or installable artifact (e.g. a program or library). Producing a virtual machine image from a version-controlled recipe or specification SHOULD BE included in the charter.

## **Use Cases**

The following table summarizes the major use cases we want or expect a solution to be able to provide. This table is not expected to be exhaustive, but is expected to have enough variety in it that a solution that can address all of these is fairly likely to be able to support other common use cases within TPX.

<b>My code is written in...</b>	<b>And I want to build a...</b>	<b>And deploy to...</b>
Java	JAR	internal repository
Java	Container Image	internal repository
Scala	JAR	internal repository
Scala	Container Image	internal repository
Java	Virtual Machine	OpenStack

## **Solution Criteria**

1. The platform **MUST** be able to pull down source code from a repository and execute tasks against it.
2. The platform **MUST** be able to run tasks in isolation of other tasks.
3. The platform **MUST** have an authentication and authorization strategy to prevent unauthorized builds and deployments.
- ~~4. The platform **MUST** support the concept of pipelines and dependent tasks~~

## **Solutions Considered**

The following products and services were known to the working group and were considered as part of forming a recommendation:

Code

Issues 9

Pull requests 3

Projects 0

Wiki

Insights

# Static Analysis / Vulnerability Scans #18

[Edit](#)[New issue](#)

Closed

mwinsl201 opened this issue on Sep 18, 2018 · 11 comments



mwinsl201 commented on Sep 18, 2018 • edited



...

The purpose of this issue is to generate discussion around tools that can be used for Vulnerability Scans

We should discuss what the Comcast security group has tested and their recommendations. We should also discuss any tools being used not related to the Comcast security group.

Tools that have been recommended in the past:

- [REDACTED] enterprise support, but should be listed)
- [REDACTED]
- [REDACTED]
- [REDACTED] (an just vulnerability)

Assignees

No one assigned

Labels

None yet

Projects

None yet

Milestone

No milestone

“We reject kings, presidents and voting. We believe in **rough consensus and running code.**”

--David Clark

5

best solution ever

4

best option from what's available

3

not my first choice, but I get it

2

I could support it if...

1

this would be a terrible mistake

# Solution 1

This is the best solution ever

23% (13)

This is the best alternative of those available

14% (8)

This is not my preference, but I understand the rationale and am willing to support a decision to use it

32% (18)

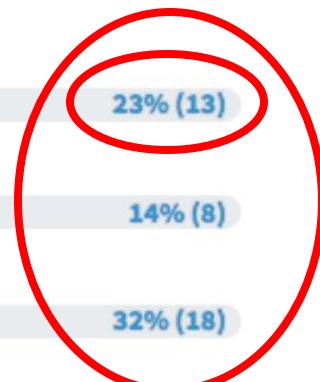
This could work, but only if we can address certain issues

23% (13)

This would be a huge mistake

7% (4)

70%



# Solution 2

This is the best solution ever

14% (6)

This is the best alternative of those available

21% (9)

This is not my preference, but I understand the rationale and am willing to support a decision to use it

33% (14)

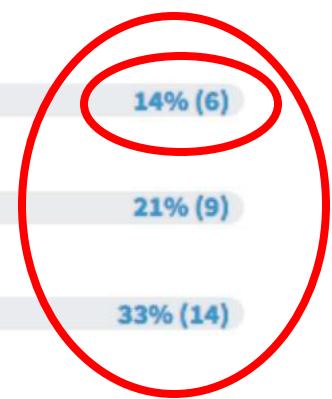
This could work, if we can address certain issues

21% (9)

This would be a huge mistake

10% (4)

69%



[Code](#)[Issues 6](#)[Pull requests 3](#)[Projects 0](#)[Wiki](#)[Insights](#)[Settings](#)

# How do I collect and store test results via xml/html with [REDACTED]?

[Edit](#)[New issue](#)[Closed](#)

[REDACTED] opened this issue on Dec 6, 2018 · 10 comments



[REDACTED] commented on Dec 6, 2018

[Contributor](#)[+ 😊](#)[...](#)

Running test suites that output reports and collected are easily done in [REDACTED] which are then reviewed and used for development/QA purposes, is there a way to do that in [REDACTED]

[1](#)

jmoore3481k commented on Dec 6, 2018

[Member](#)[+ 😊](#)[...](#)

## Assignees

No one—assign yourself

## Labels

None yet

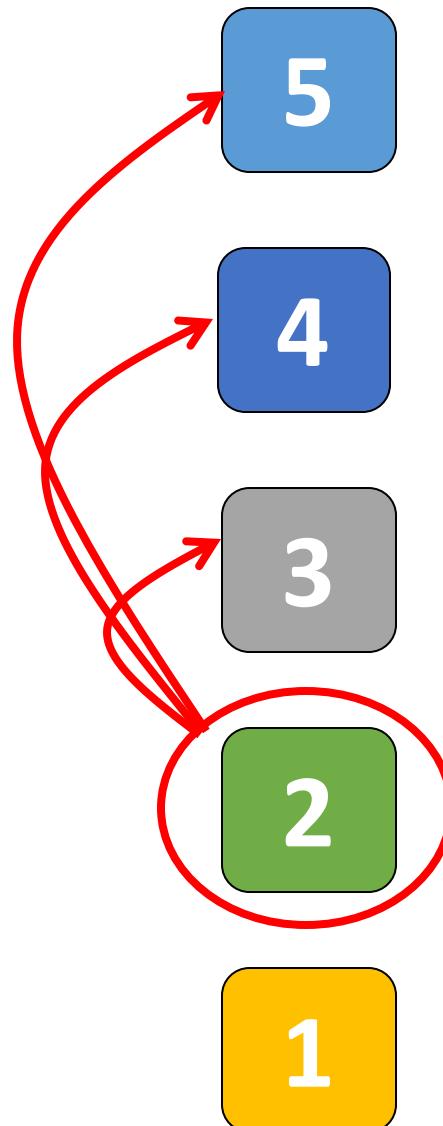
## Projects

None yet

## Milestone

No milestone

## Notifications



best solution ever

best option from what's available

not my first choice, but I get it

I could support it if...

this would be a terrible mistake



= 4' 8 $\frac{1}{2}$ "

(standard gauge)

## Consequences

---

- The selected solution and rationale effectively make a recommendation for both Continuous Delivery (CD) as well Continuous Integration (CI).
- Existing CD and CI platforms SHOULD be evaluated against the listed "Solution Criteria". If existing platforms cannot meet the above criteria then a migration SHOULD be completed.
- Candidate platforms SHOULD now be evaluated against the above criteria.

During working group discussion, there were certain capabilities or activities that were supported more natively or more conveniently in one or more of the other solutions than in [REDACTED]. Therefore, we MAY want to invest effort in developing these capabilities in [REDACTED] and in the meantime, teams reliant on these capabilities will need to "make do":

- [REDACTED] does not have a built-in way to collect and store XML or HTML test result outputs, although resources exist for publishing them to S3.
- [REDACTED] requires setting up multiple parallel pipelines in order to build commits against multiple long-lived

Branch: main ▾

[source-control](#) / ADR-011-more-inclusive-naming.md

## Find file

**Copy path**



jmoore3481k Mark inclusive naming ADR as 'accepted'

f743e6b on Jul 2

**1 contributor**

71 lines (63 sloc) | 3.51 KB

Raw

Blame

## History



## More Inclusive Naming

## Context

**WHEREAS:**

-

# The New-York Times.

VOL. XII—NO. 3571.

NEW-YORK, THURSDAY, MARCH 5, 1863.

PRICE THREE CENTS

## FOUR DAYS LATER FROM EUROPE.

The New-York at this Port and the Hibernian at Portland.

American Affairs in the British Parliament.

A Call for the Correspondence Regarding Recognition.

An Inquiry Relative to the Charleston Affair.

Great Emancipation Demonstrations in England.

Continued Spread of the Polish Insurrection.

The French Emperor Disposed to Favor the Insurgents.

The steamship *New-York*, from Southampton on the 19th ult., arrived at this port last night.

Her advices are three days later than were received by the *Kedars*.

The steamship *Hibernian*, from Liverpool at 11:30 A. M. of the 19th, via Londonderry evening of the 20th ult., arrived at Portland at 6:30 last evening.

Her advices are one day later than those by the *New-York*.

The *Arabia* arrived at Liverpool Feb. 15.

The *Edinburgh* arrived at Queenstown at 8 A. M.

a disputed point whether the blockade has been legally raised, so as to require a formal notice of renewal, the facts are of some interest to the commercial community. As no declaration is sufficient to constitute a blockade without an actual force on the spot to maintain it, we apprehend a "declaration" is not enough to destroy it. A mere document is not valid either way. A blockade must be raised as well as constituted *de facto*. In this case there was no such intervention. It is supposed that any neutral ship could have got into Charleston at any hour of the day on the 31st of January; and on the 1st of February there were no less than twenty Federal vessels of the port. The action was damaging to the Federal claim of superiority on the ocean, and a daring attempt in the face of so large a force; but we doubt if the sixty days of unrestricted importation have been gained by it.

The *Shipping Gazette* points out that the accounts of the Charleston affair per *Arabia* are far too meagre to justify any Government in taking decided action. It thinks the absence of the blockading squadron must have been more extended than represented.

The rumors that France considers the Charleston blockade was raised, still lack confirmation.

### The Anti-Slavery Demonstrations.

Meetings, lectures, &c., in favor of President LINCOLN's emancipation policy, were of daily occurrence in various parts of England, and an imposing demonstration was expected at the Amphitheatre at Liverpool, the day the *Hibernian* sailed. The resolutions and addresses to President LINCOLN, which are to be proposed, emphatically approve of his Anti-Slavery policy. A crowded meeting on the subject was held at St. James Hall, London, on the 18th. The speakers indulged in bitter invectives against the Lord Mayor and Mr. Mason, for the late affair at the Mansion House banquet, and a resolution condemning the Lord Mayor was unanimously carried.

A COMPLAINT FROM THE LONDON TIMES.

It is a matter of very serious import that the grand old cause of the Anti-Slave-trade and Anti-Slavery movement should be thought to have degenerated into a mere cat's-paw to Mr. Seward, and that one of the most glorious bands of disinterested philanthropists which this or any other country has produced, should be thought to have sunk into a few dupes of President LINCOLN, advocating a measure which is not freedom to the blacks, but is, as far as possible, massacre to the women and children of the whites. We ask, therefore, publicly, whether there is the least truth in the suggestion that these people have ever received the authority of Lord Brougham, or the Bishop of Oxford, or Sir J. BUXTON, or any other man of any national connection with the question to attach the name of BROUGHAM, WILBERFORCE, or BUXTON with their present doings. If they have, let us have the proofs; if they have not, it is only honest to the public to let it be known that these Northern political demonstrations are but cuckoo eggs, fraudulently laid in the old

measures to insure the public safety wherever it was endangered."

The *Nord Deutsche Zeitung* says:

"The intervention of Prussia in Polish affairs has compelled the authorities to retreat to the fugitive Russian troops. An actual invasion of Polish territory was not intended by Prussia. Such a proceeding would require a Convention between Prussia and Russia, which at present is not heard of. The same paper states that Lord RUSSELL had cautiously expressed himself in terms which are neither for nor against such an intervention. The *Dziennik* publishes an ordinance of the Governor of Warsaw, addressed to the military commanders, on the maintenance of military discipline. Common offenses are to be tried by Court-martial. Another ordinance forbids the insurgents to keep arms and revolutionary writings. Any force from which the military may have been fired upon is to be pulled down."

A telegram from Breslau of February 16, says: "A circular of the Chief of Police, issued to-day, requests the Editors of newspapers not to publish any statement in reference to military measures, or to the transport of troops."

A French courier had arrived in Paris from Russia. He was stopped on the way by the insurgents in Lithuania, and was subjected to a regular examination. His dispatches were given back to him without being opened. He was conducted to the camp of the insurgents in order that he might see them, and report from personal observation. He was dismissed with this instruction: "You have seen us, and now you may tell your Government that we are not Socialists nor Communists, but that we are fighting simply for independence and for our nationality."

The French Emperor and the Insurrection. *Paris Correspondence of the London Times.*

PARIS, Wednesday, Feb. 18.—7 A. M.

There is an impression abroad that the Emperor views the Polish insurrection with some favor, and that he may, in conjunction with England, even remonstrate with Russia on her treatment of that unfortunate country. The grounds for that opinion are certainly slight, though perhaps not without significance. For instance, it is remarked that the students who were arrested a few days back for treason, Prince CHODKIEWICZ, a horse and mounting for Poland were set at liberty soon after, without fine, imprisonment or prosecution. Prince NAPOLEON, too, has had an interview with the Emperor, supposed to be about Poland; and, what is especially noticed, his Imperial Highness is said to have been much pleased, and to be in good humor ever since. This, I believe, is all; but I am not sure whether the Poles themselves found any great expectations of intervention on it.

GENERAL INTELLIGENCE.

Great Britain.

In the House of Lords on Monday, Feb. 16, Lord DEAN commented on the want of business before the House, and asked whether the Government would give a list of the important measures dimly shadowed in the *House* which had been introduced during the week. The *Times* says:

available for shipment to Europe. The price at which bonds are to be issued has not transpired.

RECENT DEATHS.

The deaths of Marquis CHESTERFIELD and Lord RABY are announced.

THE EMANCIPATION MOVEMENT.

The Secretary of the Emancipation Society says no letter or telegram was received from Lord Brougham, imploring them not to present their address to Mr. ADAMS.

The meeting at Liverpool in favor of emancipation was very enthusiastic.

FINANCIAL AND COMMERCIAL NEWS.

By the New-York.

LONDON, Monday Evening, Feb. 16.

Consols quiet at Saturday's prices.

Consols are quoted 92½@½% for money, and 92½@¾ for the account.

According to China telegrams, Exchange at Hong Kong shows a movement in favor of England of 2 ½ cent., and 1 ½ cent. at Shanghai.

Illinois Central ordinary and paid-up Shares, received 1 ½ and 1 respectively; Erie, paid-up and Preference Shares, further declined ¾ and 1, and New-York Central Shares a further ¼.

London, Tuesday Evening, Feb. 17.

The English funds remain without animation. Consols are quoted 92½@½% for money, and 92½@¾ for March 5.

The demand for discount at the Bank is slight. French Rentes declined a quarter and are quoted 70c. 20c.

LONDON COLONIAL MARKET—FEB. 17.

SUGAR steady. COFFEE unaltered. RICE firm. TALWIR firm.

Maryland and Pennsylvania Railroad (second mortgage) advanced and 1 ¼ respectively.

LIVERPOOL COTTON MARKET—FEB. 16 AND 17.

The market is very dull, and sales for the two days do not exceed 5,000 bales—2,500 on speculation and export. Prices declining.

LIVERPOOL CORN MARKET—FEB. 17.

WHEAT met with a limited retail demand, at barely the prices of this day week. FLOUR neglected, but unchanged. INDIAN CORN—Mixed American 29s. @ 29s. 6d.; Prime Egyptian freely offered at 26s. @ 28s. 6d.

LONDON CORN MARKET—MONDAY, FEB. 16.

The rates of Monday last were with difficulty obtained.

By the Hibernian.

LONDON MONEY MARKET.

Funds without variation. The demand for discount at the bank was wholly unimportant, and as gold continued to flow to the bank, the expectations of reduction in the rate of discount were increasing.

SATTERTHWAITE's Mid-week Circular says:

Extra Session, July, 1861, about \$264,000,000. Long Session, ending 17th July, 1862, \$913,000,000. Short Session, ending March 4, 1863, \$1,180,000,000. Receipts from duties on imports, Internal Revenue, direct taxes, sale of public lands, &c., and estimates

expenditure of \$2,500,000 for the construction of the line.

### DEBATING A REQUEST.

Capt. LEVY's will, bequeathing to Government an estate in Monticello, Va., came up before the Senate on Tuesday, and after some debate was laid on the table. Senator DOUGLASS and others did not wish to accept the gift until the matter had been thoroughly investigated, for fear they might draw an elephant. The will provides that Government shall establish an agricultural school on the estate, for the benefit of dependent young men.

### THE JUDICIARY REFORM IN THE DISTRICT.

The bill reorganizing the Courts of the District of Columbia, which has now become a law, provides for the establishment of a Supreme Court for the District of Columbia, to consist of four Justices, who shall have general jurisdiction in law and equity, and exercise the same jurisdiction as is now possessed and exercised by the Judges of the Circuit Court. Any final judgment, order or decree of the Court may be reexamined, and reversed or affirmed by the Supreme Courts of the United States. The bill further provides that all writs and proceedings pending in the Courts that are abolished shall be transferred to the Courts to be established by the bill. The salary of the Justices is fixed at \$3,000 per annum. The Orphans' Court is only Court excepted in the bill. The bill also authorizes the President to appoint a "suitable person, learned in the law, to revise and codify the laws of the District," to receive \$10 per day for his services while so employed, and shall render a final report of his revision and codification to Congress by the 1st of January next.

### THE PACIFIC RAILROAD GAUGE.

The bill has passed, over-riding the President's decision of the Pacific Railroad gauge, and fixing it at 4 feet 8 ½ inches. The President's compromise at 5 feet made a gauge almost unknown to the railroads of the North. It is the California gauge.

### THE SIGNAL CORPS.

The Signal Corps has at last been recognized by legislative enactment as a separate and distinct corps of the army, like the Engineers or the Ordnance corps. Its ranks will be mainly opened to volunteers.

### AN ASSISTANT TREASURER.

An Assistant Treasurer of the United States, at an annual salary of \$2,500, is authorized by a bill which has passed both Houses.

### TEASERABLE MATTER IN THE MAILS.

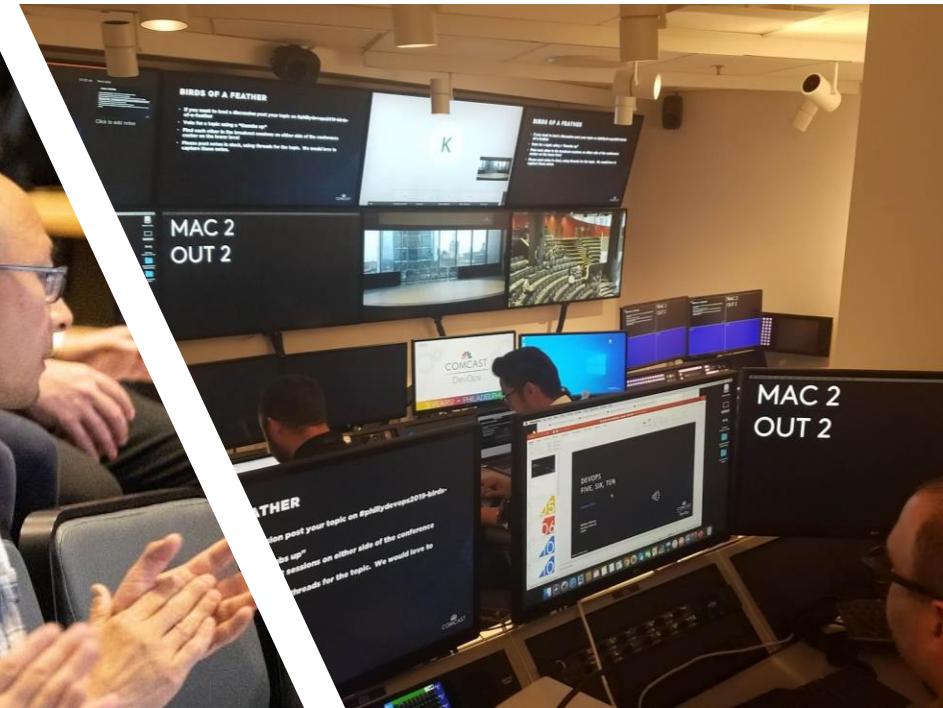
The report of the House Judiciary Committee sustains the action of the Postmaster-General in excluding from the mails certain treasonable newspapers, and other printed matter of like character.

**THE PACIFIC RAILROAD GAUGE.**

The bill has passed, over-riding the President's decision of the Pacific Railroad gauge, and fixing it at 4 feet 8½ inches.

“Never let a good crisis  
go to waste.”

--Winston Churchill





## Key Focus Areas

- Support Comcast CI/CD Service (Concourse)
- Containerize and Transition Telecom Applications
- Containerization
- Containerized Application Implementations
- Develop plan to create Kubernetes as a Service

TPX

# Erie and North East RR

Gauge: 6'

# Franklin Canal Company

Gauge: 4'10"

# Buffalo and State Line RR

Gauge: 4'10"  
(Ohio Gauge)

## The Railroad Excitement at Erie.

Erie, Thursday, Dec. 8—10 A. M.

Last night the citizens of Harbor Creek, part of Erie, held a meeting and resolved to remove the track of the Railroad running on the public highway; consequently about  $\frac{1}{2}$  miles of the track is to be removed by 2 o'clock this afternoon.

It is reported that the Attorney General of the State has signed a petition for an injunction against running trains from Ohio State Line to Erie, but this probably is incorrect.

The Railroad Company are confident in their legal rights, and it is said strong measures will be taken at once by the State Government to enforce the law.

The rowdies who have been engaged in breaking the law, this morning, entered the House Telegraph Office in a body, and threatened the young lad who had charge of the office with personal violence, for sending your correspondent's dispatches, addressed to the Associated Press, giving a faithful account of their proceedings. The mob made him sign a paper denying that he sent any dispatches of his own will—threatening him and the office with demolition if he refused. They demanded to see copies of the dispatches sent, which he resolutely refused.

“rowdies”



A  
D  
K  
A  
R

# Awareness

# Desire

# Knowledge

# Ability

# Reinforcement



## Change in a Successful Organization

Avoid Complacency  
by Making a Case for  
Continuous Improvement



- Michael Winslow
- Tamara Ledbetter
- Adam Zimman
- John Esser
- Tim Judge
- Carmen DeArdo

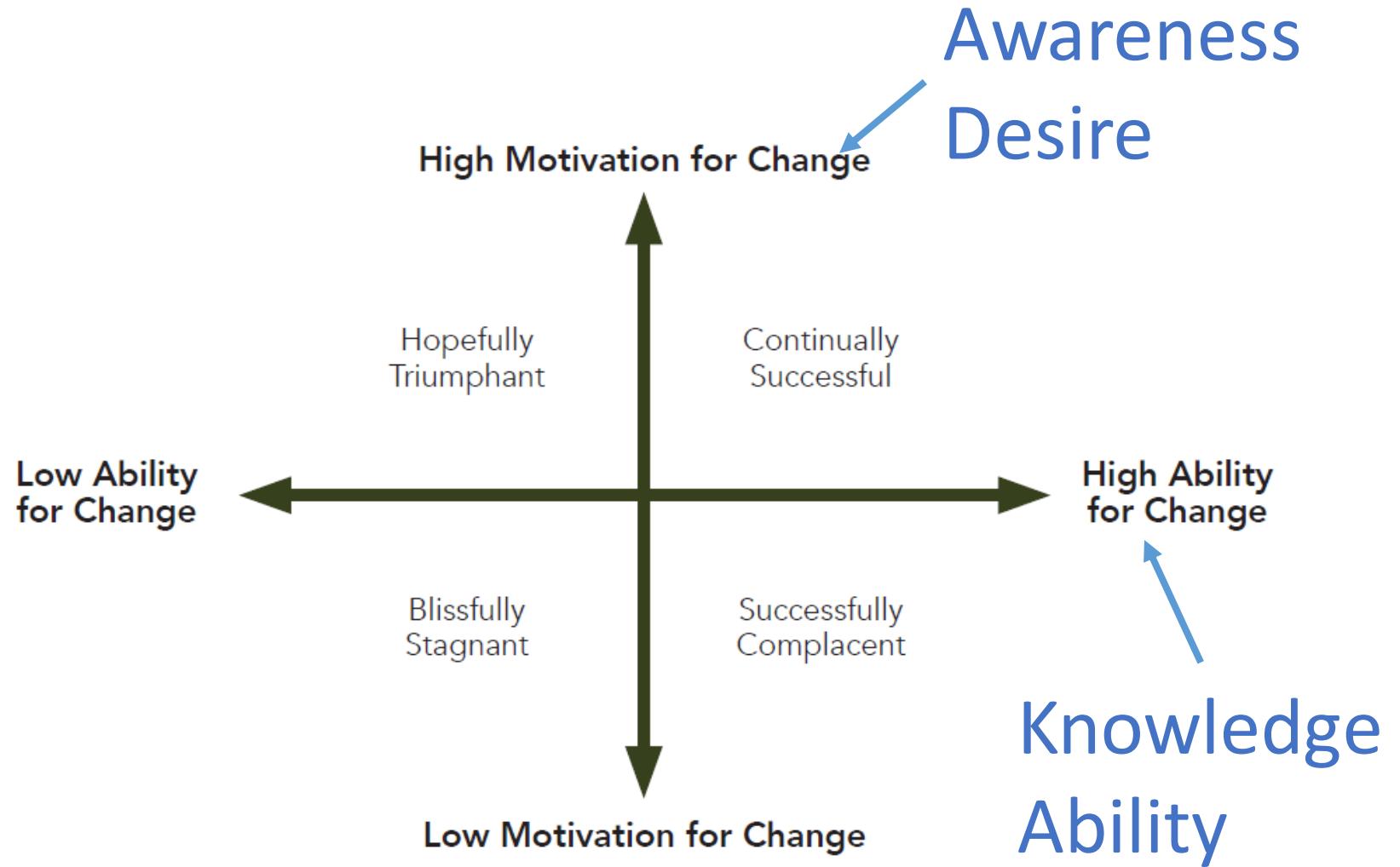


Figure 1: The Axis of Change



# CONCEPTS OF CONCOURSE



CI/CD

Continuous  
Integration /  
Continuous  
Delivery

**Concourse @ Comcast Tutorial**[Introduction](#)

Onboarding ▾

Setting Up CI ▾

Deployment ▾

# Introduction to Concourse at Comcast

**Table of contents**[Why Concourse?](#)[Okay. But Why Concourse?](#)[Further Reading](#)

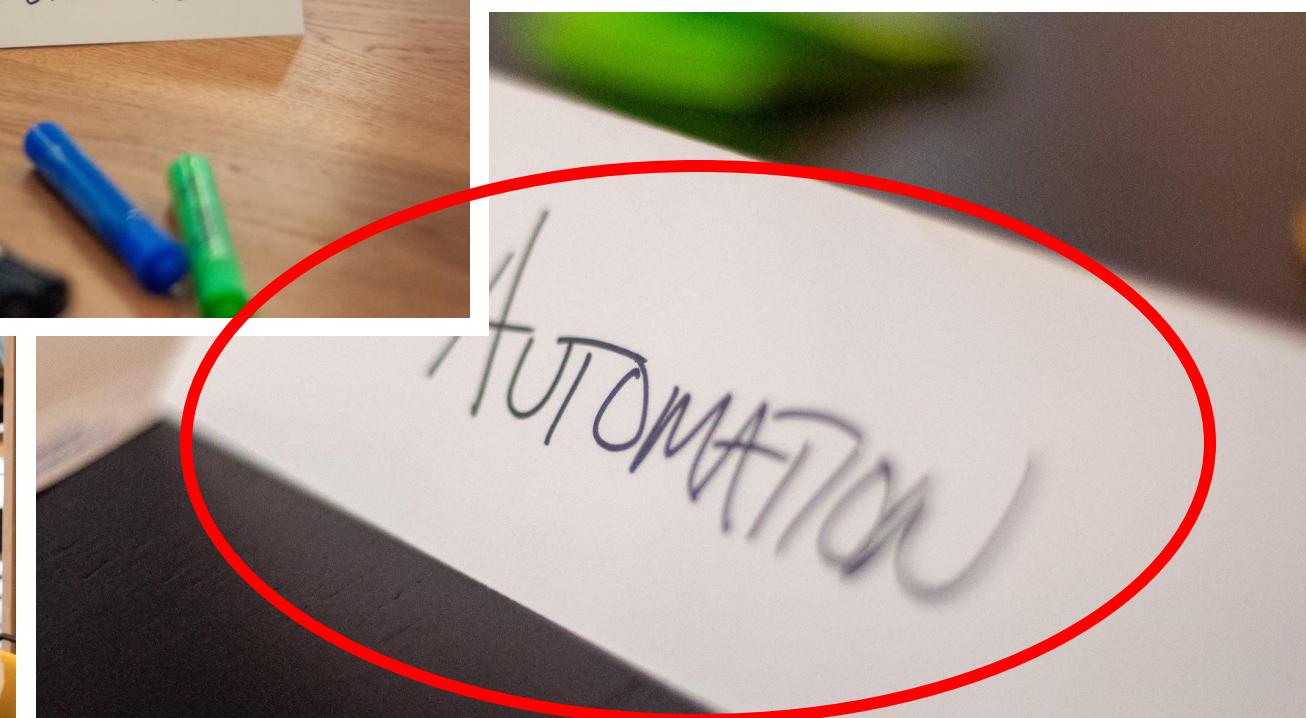
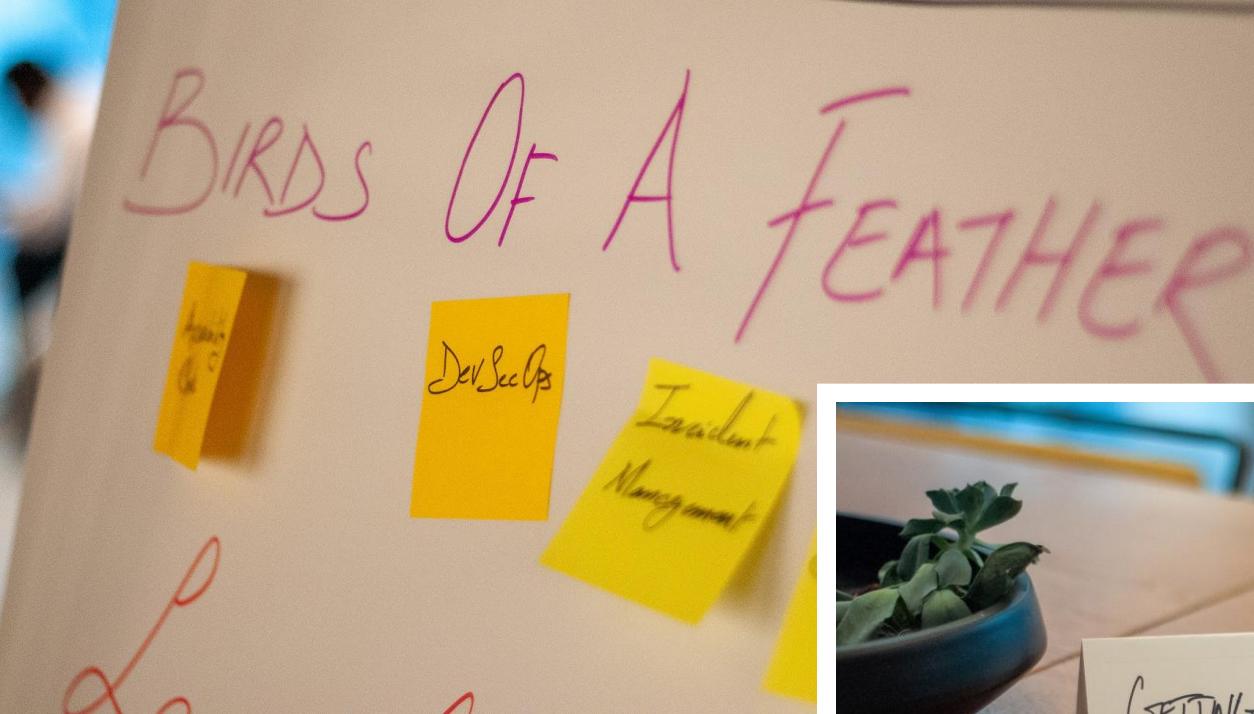
Howdy. Let's build on what you learned in [concoursetutorial.com](#) to do some Comcast-specific stuff in some Comcasty ways not covered by [concoursetutorial.com](#). If [concoursetutorial.com](#) is "Concourse 101 - Intro to Concourse," this is "Concourse 102 - Concourse At Comcast." If you have haven't completed [concoursetutorial.com](#), you'll want to do so before proceeding.

## Why Concourse?

The [architecture delivery working group](#) and Comcast leadership want to help you build *better software faster*. We think stuff like the following are crucial to building first in class products and making our users happy:

- code review
- continuous integration (automated testing, automated security scans, etc.)
- continuous delivery
- automated deployments

## Okay. But Why Concourse?



## Process Labels

Ready  
Abandon  
Duplicate  
(RQ)

## EPICS

Application Labels  
Vinyl

BP #1

#2

#3

PR #1  
PR #2

## Sprint Milestones

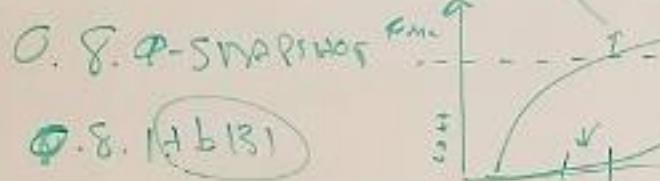
Sprint A-Z

## Backlog

Done Blocked Closed

- 2 Fixing of Draining
- 2 Do not give an error from PUBLIC GIT AND

20180422-0198cc



0.8.1-H131

Step 1a - CHANGE BUILD TO SNAPSHOT  
b - IN JENKINS, CREATE NEW VERSION (+ buildnum)

Step 2 - [create tag] in Jenkins

1) Check out correct Submodule based on tag  
2) Run Jenkins Tests

MAJOR

MINOR

PATCH

+ BUILD? (Smart CI build)



0.8.1-SNAPSHOT

0.8.1-H131  
-0.8.1-H2  
0.8.1-H3

- 1) FIN version (TAG) of version
- 2) Pull right version HEAD on tag

## PUBLIC

- (Under Construction)

- 0.0.0  
- 3rd client

- PUBLIC API

- vanguardapi: 0.2.1  
- vanguardapi: 0.2.2

publicapi/vanguardapi: 0.2.1.1.1

- vanguard

- vanguardapi

- 0.0.2

- 0.0.3

- 0.1

- go.vanguard.go

- 1

- 20180422-0198cc

- 1.0.0

- 1.0.1

- 1.0.2

- 1.0.3

- 1.0.4

- 1.0.5

- 1.0.6

- 1.0.7

- 1.0.8

- 1.0.9

- 1.0.10

- 1.0.11

- 1.0.12

- 1.0.13

- 1.0.14

- 1.0.15

- 1.0.16

- 1.0.17

- 1.0.18

- 1.0.19

- 1.0.20

- 1.0.21

- 1.0.22

- 1.0.23



20180422-0198cc  
- 1.0.0  
- 1.0.1  
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1.0.21  
1.0.22  
1.0.23

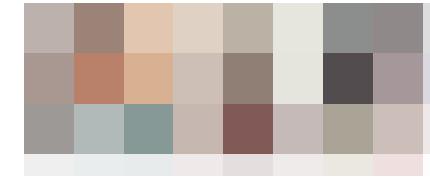
- 1.0.24

- 1.0.25

- 1.0.26

#concourse ⚭ ☆

☆ 15 | Emergency support: [REDACTED]



2,040



# Here's the Help We're Looking For...

- Are you also trying to induce technical commonality across independent, empowered teams?
- What's worked for you?
- We want to swap stories and collaborate!

# Laying Down the Tracks for Technical Change at Comcast

- Empowering teams to choose the right tool for the job can result in choosing **every** tool for the job in large enterprises.
- Variety creates friction when changing teams or collaborating across teams.
- The global benefits of standardization are not always apparent locally.
- Structured approaches can work!
  - Have practitioners participate in technical decisions.
  - Create buy-in at all levels of the organization.
  - Provide training and support through the change.

 @jon\_moore

 @michaelwinslow

