

DevOps for Mainframe or the Tale of the Unicorns

Yuliya Varonina | Tatsiana Ihnashchenka
IBA GROUP

November 2019
Session AB



25+ years
of experience in z app development
and support.

80+ teams
work on mainframe-based apps

200+ million
lines of code written



100+ products
compatible with z platform
are in development and support

25+ people
are trained and employed every year

500+ new ideas
proposed for implementation on z platform

Miki z structure

**C / ASM /
Cobol / PLI
code**

**Db2&CICS
&MQ**

Java



Pain of Mainframe-Based Apps

Manual operations (build, environments setup and customization, installation, all levels of testing ...)

Long deployment cycle ~ 1 week to 1 month

Version control

Limited set of automation tools

Poor visibility and control at all stages



Solution



IBM Urban Code
mainframe/non-mainframe CI/CD

IBM Rational family as
product dev/test management tools

Limit use of open source
technology and tools

Automatic Code Review

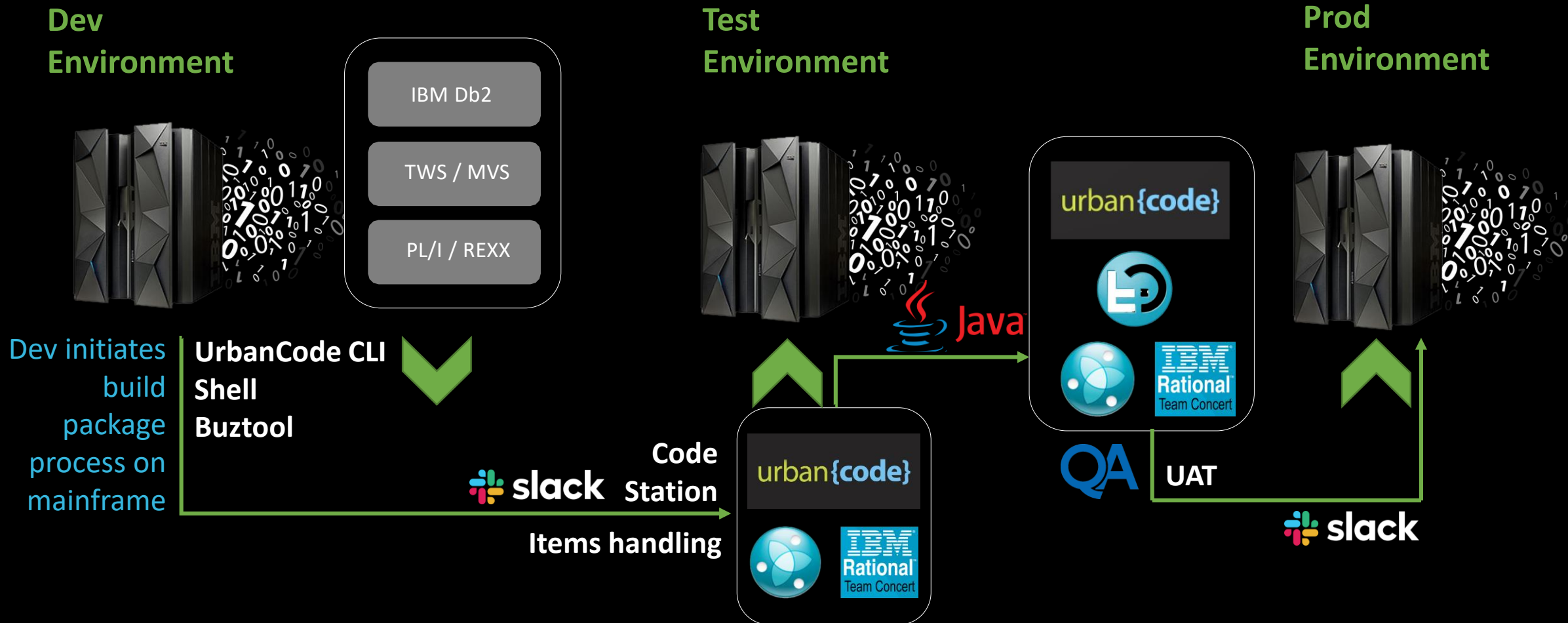
Scalable pipeline constructor

Value

DevOps pipeline constructor to
deploy mainframe based
applications and more



Architecture



Buztool

```
***** ***** Top of Data *****
==MSG> -Warning- The UNDO command is not available until you change
==MSG> your edit profile using the command RECOVERY ON.
000001 <?xml version="1.0" encoding="CP037"?>
000002 <manifest type="MANIFEST_SHIPLIST">
000003   <container name="APPL.APPLPACK.LOAD" type="PDS">
000004     <resource name="*" type="PDSMember" deployType="COPY"/>
000005   </container>
000006   <container name="APPL.APPLPACK.DBRM" type="PDS">
000007     <resource name="*" type="PDSMember" deployType="COPY"/>
000008   </container>
000009   <container name="APPL.APPLPACK.BIND" type="PDS">
000010     <resource name="*" type="PDSMember" deployType="COPY"/>
000011   </container>
000012   <container name="APPL.APPLPACK.CNTL" type="PDS">
000013     <resource name="*" type="PDSMember" deployType="COPY"/>
000014   </container>
000015   <container name="APPL.APPLPACK.SAMPLE" type="PDS">
000016     <resource name="*" type="PDSMember" deployType="COPY"/>
000017   </container>
000018   <container name="APPL.APPLPACK.CLISTD" type="PDS">
000019     <resource name="*" type="PDSMember" deployType="COPY"/>
000020   </container>
000021   <container name="0000001" type="GENERIC" deployType="RTC">
000022     </container>
000023   <container name="1234567" type="GENERIC" deployType="RTC">
000024     </container>
000025 </manifest>
***** ***** Bottom of Data *****
```

XML ship list stored
on UNIX part on
mainframe

JCL to run Buztool
utility

```
000012 //*
000013 //ST1 EXEC PGM=BPXBATCH
000014 //SYSPRINT DD SYSOUT=*
000015 //STDOUT DD SYSOUT=*
000016 //STDERR DD SYSOUT=*
000017 //STDPARM DD *
000018 SH /SYS/ucd/agent/bin/buztool.sh "createzosversion"
000019 "-c" "ZosComponent"
000020 "-v" "VersionDemo"
000021 "-s" "/u/userHome/packageFolder/shiplist.xml";
000022 /*
***** ***** Bottom of Data *****
```







Pipeline Description

- Development of new functions/bug fixing
- Code transmission to UrbanCode CodeStation as artifacts
- RTC items status handling
- Installation on TEST system by UrbanCode process
- Rational Quality Management test suite run
- User Acceptance Testing
- Installation on PROD system by UrbanCode process

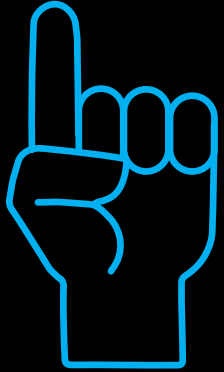
*all steps are supported by SLACK notifications

Timeline



- Jan 2019  Using existing automation REXX to automate operation tasks via Urban Code
- Mar 2019  “Two push button Urban Code” pipeline (manual testing)
- Jun 2019  “Two push button” Urban Code pipeline + automated Testing
- Aug 2019  “Two push button” Urban Code pipeline + automated Testing + automated Code Review
- Sep 2019  “One push button” Urban Code pipeline
Daily deployment

Benefit



FASTER DEPLOYMENT

DevOps pipeline accelerates deployment of new processes, systems, and applications. DevOps deployment will make your business operations more efficient. You will be able to deliver faster results because the process of development and deployment takes less time when employees are working together.



SYSTEM THINKING

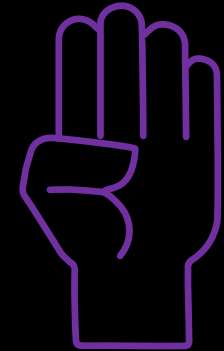
Employees adhere to system thinking, which means they are working within a culture of shared responsibility, transparency, and quick feedback. These factors are the foundation of mutual understanding, trust and, consequently, efficient collaboration, which makes a process more Agile.



INCREASED EFFECTIVENESS

There is an enormous waste of time and effort in a typical IT environment. When people get rid of unsatisfying parts of their job and can instead spend time adding value to the organization, everyone benefits.

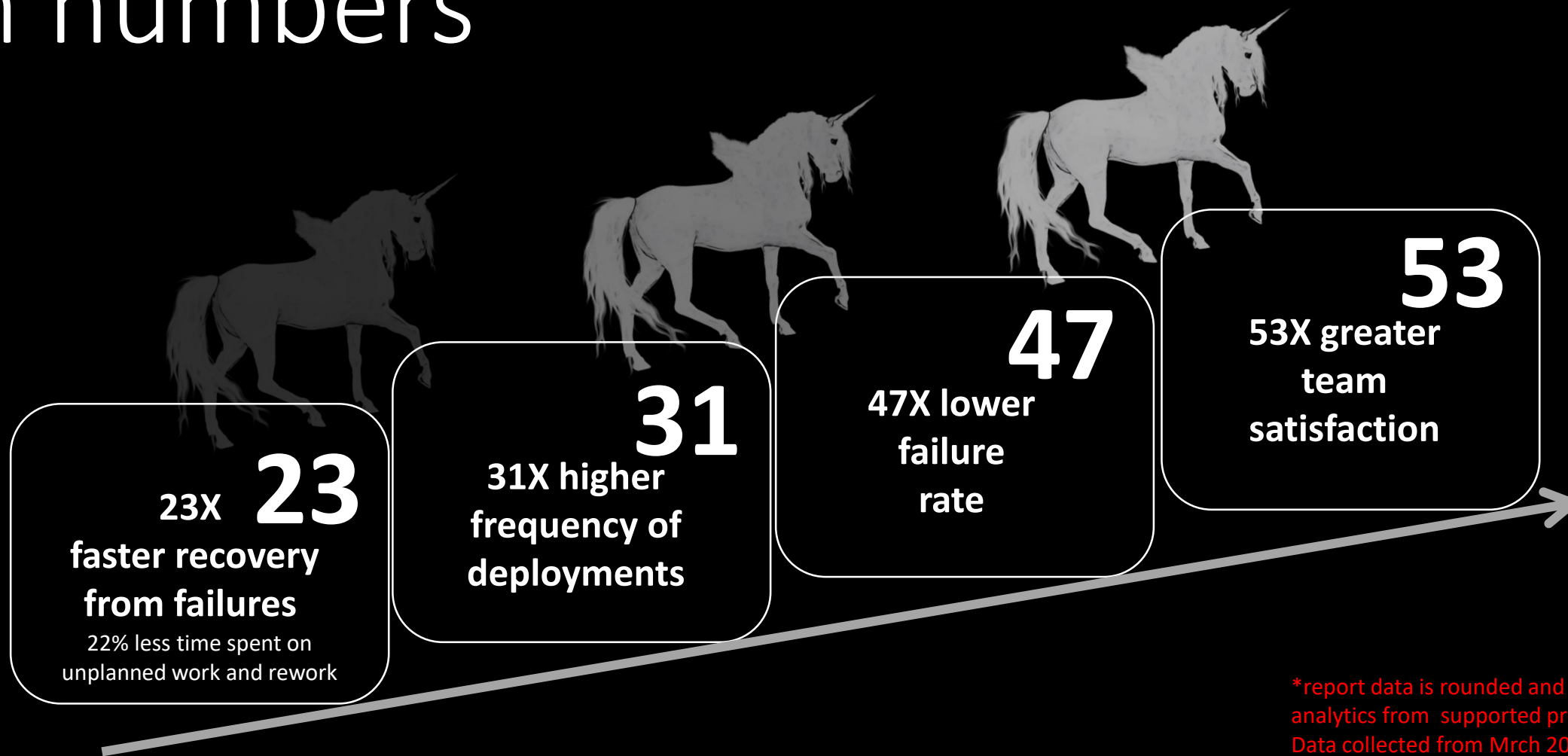
Pipeline makes deployments predictable and frees time from routine repetitive tasks for more creative things.



BETTER QUALITY

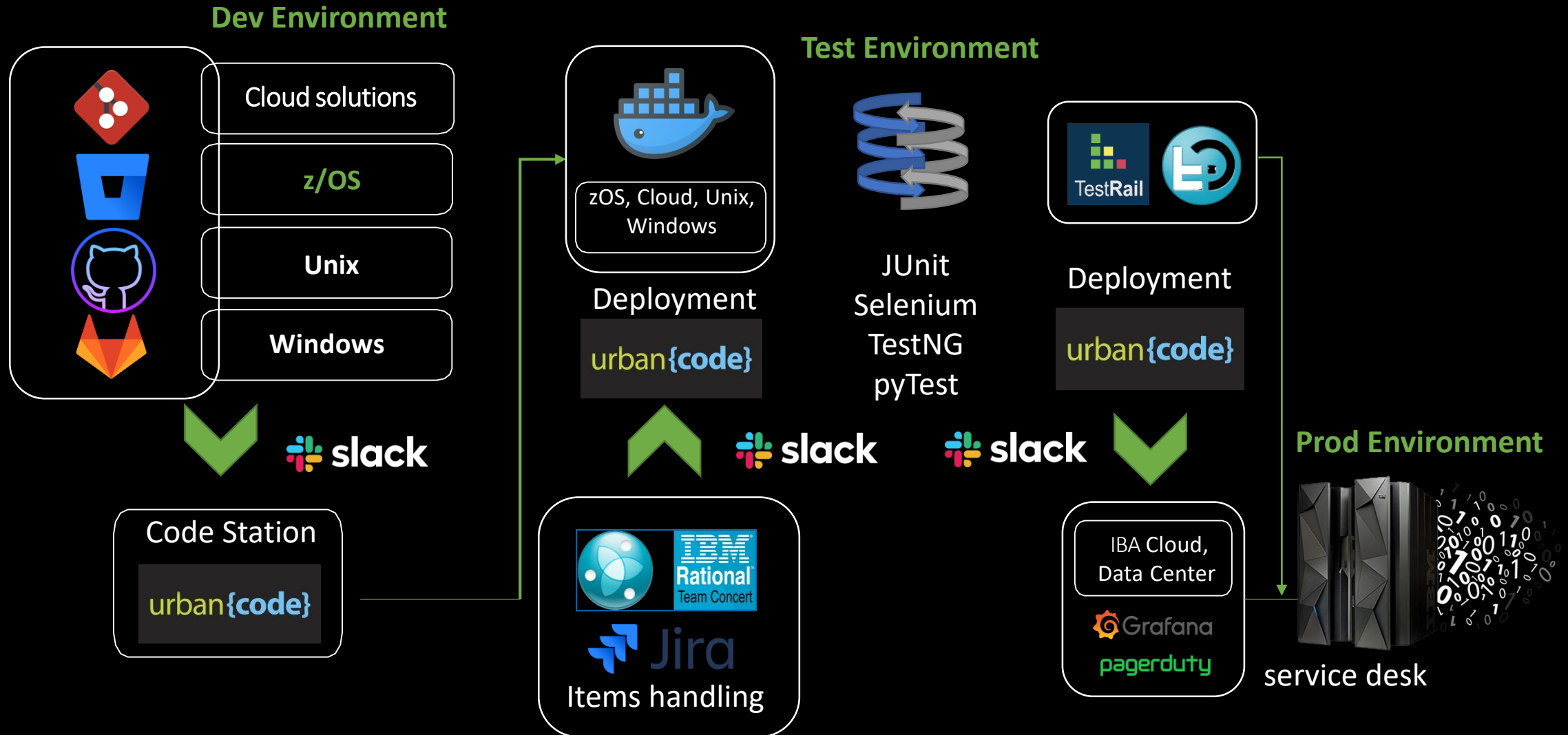
The benefits of improved performance are self-evident. Better quality means fewer defects and reduced downtime, this translates into an increased brand reputation, higher revenue, and greater trust from consumers.

Benefit in numbers



*report data is rounded and based on IBA analytics from supported projects. Data collected from Mrch 2018 – Jun 2019 using DevOps approach.

DevOps constructor



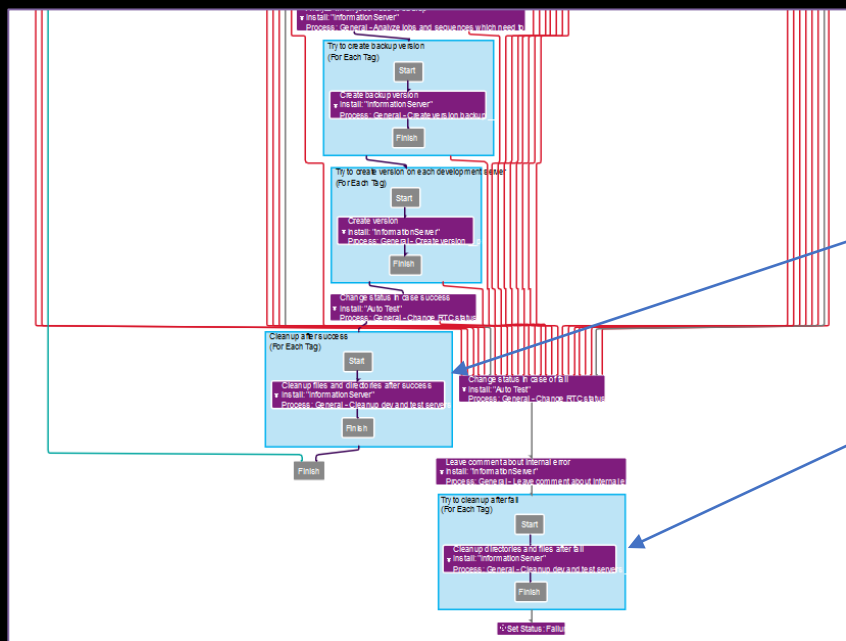
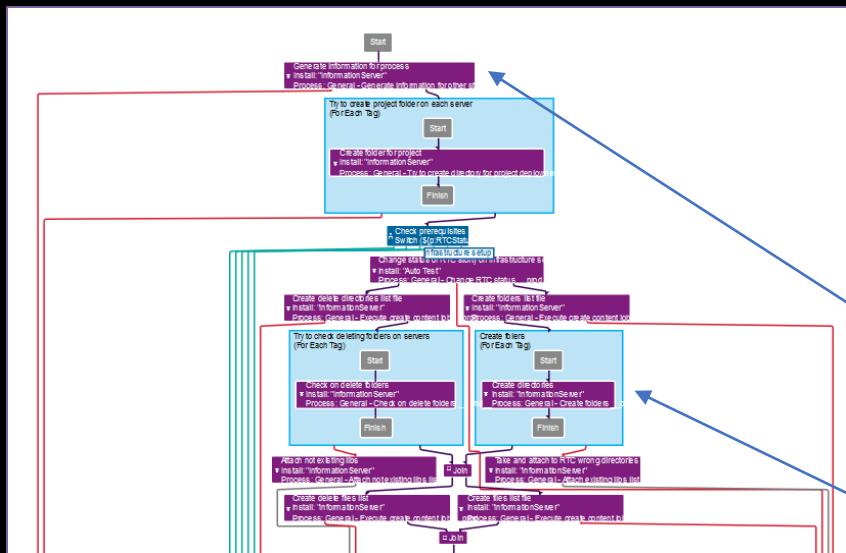
DevOps constructor in Details

- Development of new functions/bug fixing (using Unix, z/OS, Win, and supported VCS)
- Code transmitted to UrbanCode CodeStation as artifacts (Buztool, Shell, and uBuild)
- RTC or Jira items status handling
- Deployment on TEST system using UrbanCode (zOS, IBA Cloud, Unix, WIN, and Containers)
- Run of Rational Quality Management or TestRail test suite (based on Junit, Selenium, TestNG, and pytest)
- User Acceptance Testing
- Deployment on PROD system using UrbanCode

*all steps are supported by SLACK notifications

Process to build version

Process included more than 60ty component processes:



Step 1: Check RTC status, generate deployment information

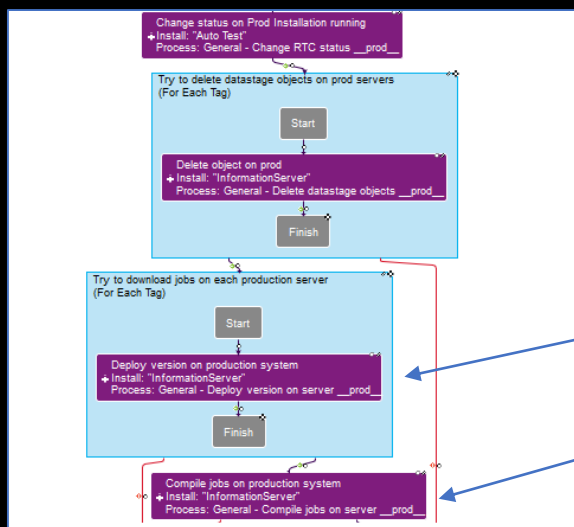
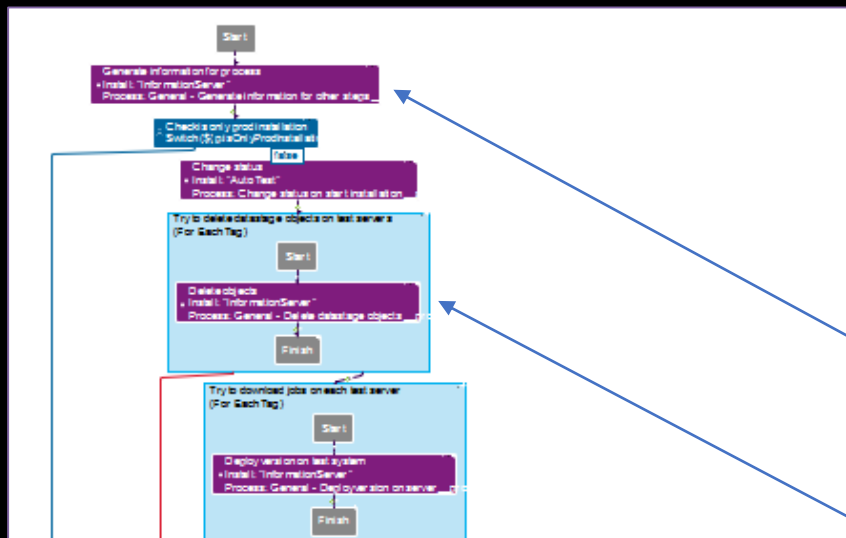
Step 2: Create infrastructure backup version

Step 3: Infrastructure deployment

Step 4: Create app backup version

Step 5: Create app version in Urban Code code station

Step 6: Cleanup of infrastructure

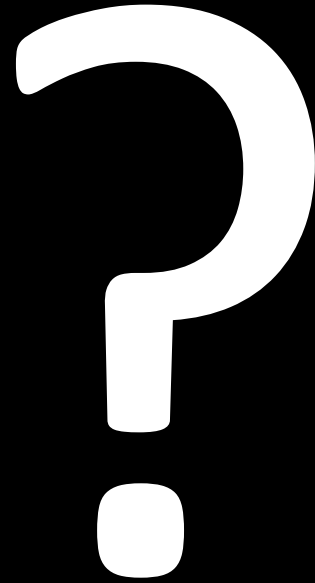


Process to deploy version

Process included more than 20ty component processes:

- Step 1** Check RTC statuses, generate deployment information
- Step 2:** Code customization
- Step 3:** Deploy app to TEST system
- Step 4:** Execute code review
- Step 5:** Execute test automation suite
- Step 6:** Deploy app to PROD system
- Step 7:** Notification

Questions



Please submit your session feedback!

- Do it online at <http://conferences.gse.org.uk/2019/feedback/AB>
- This session is AB

