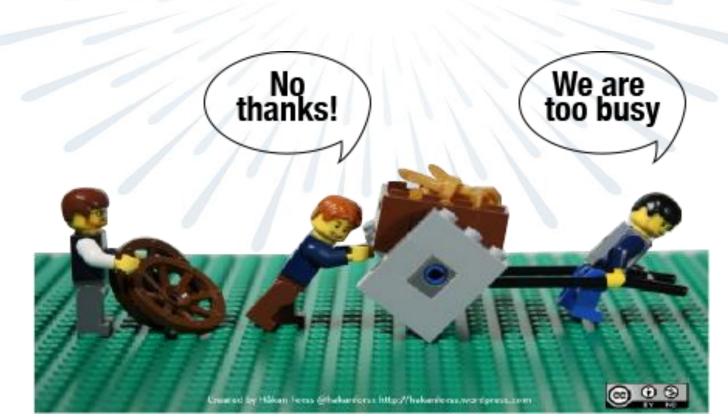# Fundamentals of Modernization: Analyze, Structure and Transform

iTour Poland

November 13, 2017

Wisla, Poland

Modernization

The Application Modernization Redbook

An innovative approach, combining general best practices of modernization along with the solutions, tools, and ISVs that can help make it happen

Redbook Residency

Write detailed chapters describing best practices for all aspects of Application Modernization

- Database
- Modern RPG
- Web Services
- Communication between applications
- Graphical User Interfaces
- Development tools
- Development best practices
- Flexible applications
- Languages Mobile
- Many other possible topics

Solution Guides

ISV, Partners, and Solution providers write a technical solution guide describing how they can help accomplish application modernization
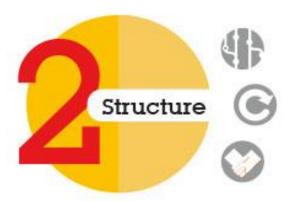
Publish 2Q 2014

Modernization Roadmap
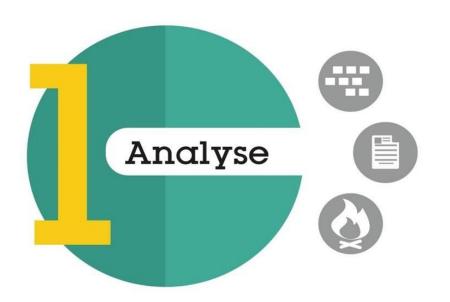
Automating IBM i Modernization, in 3 Steps…

1 Analyse — Analyze your Existing System

2 Structure — Structure your Development

3 Transform — Transform your Application

Analyse

Discover dependency map

Retrieve business rules

Reveal data architecture

Generate technical documentation

Identify complexity hotspots

IBM Announcement

Cognitive Systems   IBM

Time to start understanding your code

April 2017 Announce...
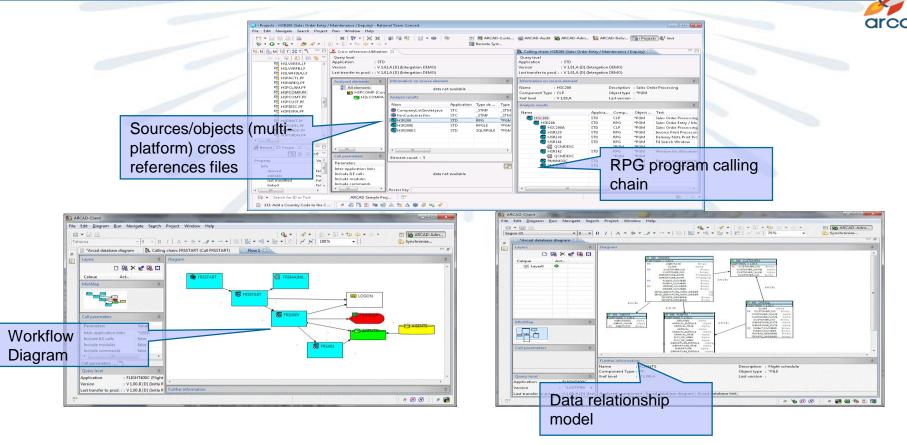
ARCAD Observer is now included in EES
   ARCAD Observer for i - 5733-AO1

- Plugs into RDi
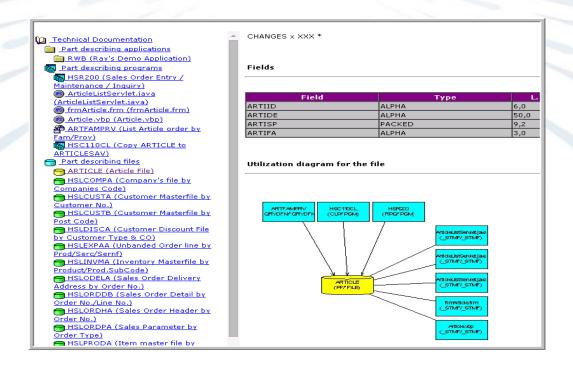
https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=AN&subtype=CA&htmlfid=897/ENUS217-151&appname=lenovous&language=en

Analysis and Documentation

Sources/objects (multi-platform) cross references files

RPG program calling chain

Workflow Diagram

Data relationship model

Analysis and Documentation
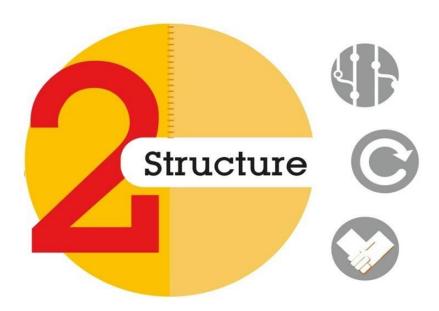
Version Control

Agile Delivery

DevOps

Continuous Test
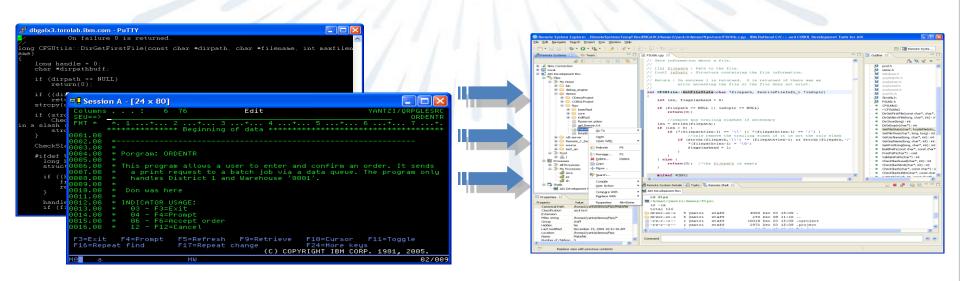
Rational Developer for i (RDi)

Modern, Eclipse-based, development tools for IBM i

- Git –Version Control
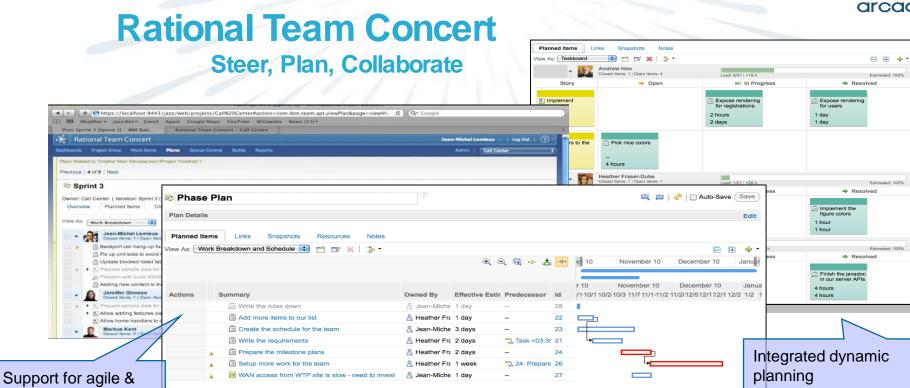
- Support RPG source stored in IFS
- Provides an alternative to other source control
- Would allow the same source control for both open source and RPG

Rational Team Concert
Steer, Plan, Collaborate

Support for agile & traditional methods

Integrated dynamic planning

Proven & Secured Development Process

RDi + Rational Team Concert

ARCAD Pack for Rational

ARCAD Pack for Rational

DEVELOP

DEPLOY

BUILD

VALIDATE

TEST

Test Automation

DevOps for i

DevOps for i
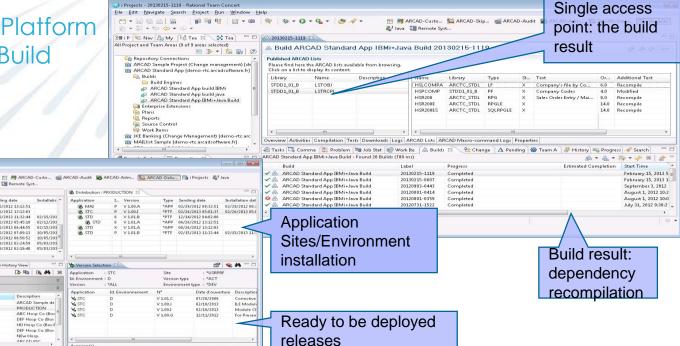
- IBM i Analysis Cross-Platform
- IBM i Dependency Build
- IBM i Deployment
- IBM i Rollback
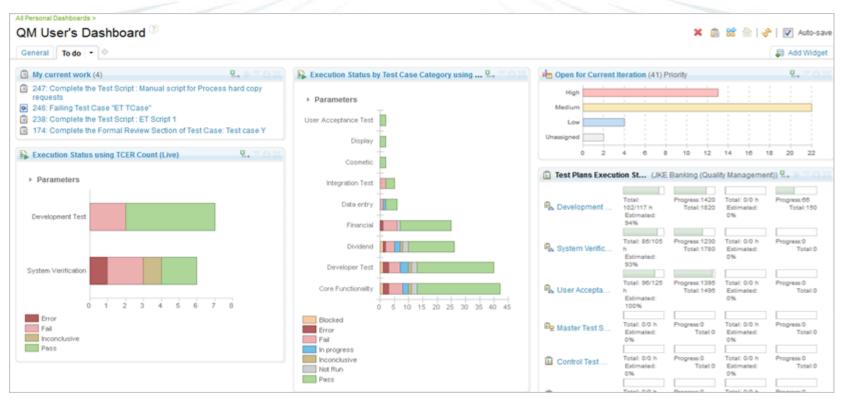
Single access point: the build result

Application Sites/Environment installation

Build result: dependency recompilation

Ready to be deployed releases

1

Project and personal dashboards
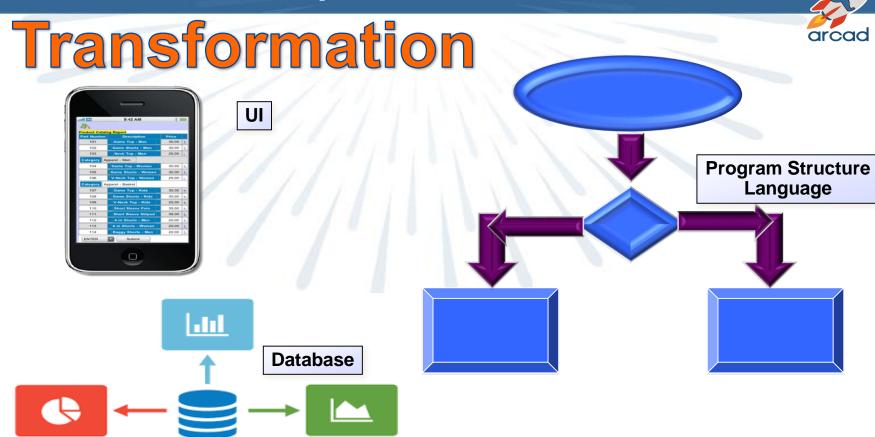
User Interface

Source Code

Relational database
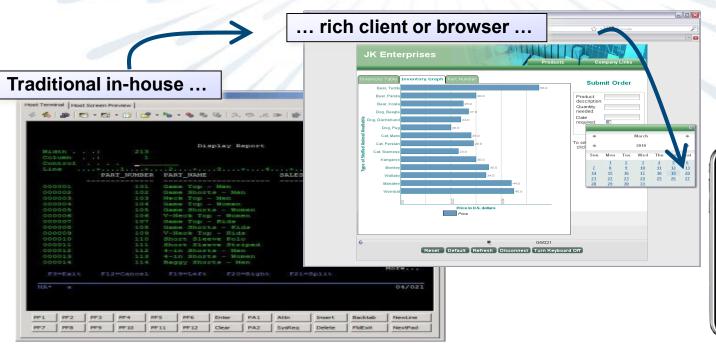
Application architecture (SOA, ILE, Webservices)

Transformation

User Interface

Transformation

… rich client or browser …

Traditional in-house …

… mobile

Database : Why SQL?

- Strategic database interface for industry

- Portability of code and skills

- Strategic interface for IBM i

- Faster delivery on IT requirements

- Performance & Scalability

- Increased Data Integrity

- Image

Want More Details…
NEW White Paper on Benefits of Modernizing with SQL

ibm.com/partnerworld/wps/servlet/ContentHandler/whitepaper/ibmi/db2/sql

18

Draft Document for Review July 31, 2013 9:11 am

SG24-8185-00

Modernization of IBM i Applications from the Database Up to the User Interface

http://www.redbooks.ibm.com/abstracts/sg248185.html?Open
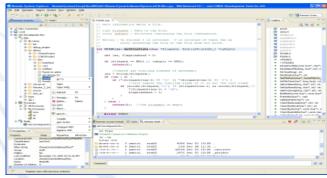
Modern RPG – Constant Transformation

Remove 8-80 Column Restriction

Today column 1-8 are reserved (goes back to the punch card days)

Max Column for content is 80 (again....punch card)

```
dou wasFound;
    //Look up the custId in the file
    custName = %LOOKUP('custKey' : custArray
                        : 1
                        : %SIZE(custArray));
    custAddress = %SUBST(fullAddress :1 :50);
C   custAddress     MOVEA                     fullAddress
    CHAIN      custId    custFile;
enddo;
```

- If column 1 of a source line contains '**FREE', the following lines contain free-form RPG code beginning in column 1 and continuing to the end of the line

- If **FREE has not appeared in the source file, or if column 1 of a source line contains **END-FREE, the following lines have RPG code in columns 6 - 80. If columns 6 and 7 are blank, the code is free-form.

IBM Announcement

Cognitive Systems IBM
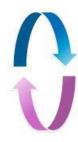
How Do I Convert to Modern RPG ??

April 2017 Announce...

ARCAD Converter is now included in EES
ARCAD Converted for i - 5733-AC1

- Plugs into RDi
- Green Screen interface for MASS conversion
  - Convert your entire source file at once

https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=AN&subtype=CA&htmlfid=897/ENUS217-151&appname=lenovous&language=en

Convert RPG: Before and After

"And any mass change brings an element of risk."

Step 3: Transform

"Relying on manual methods will simply be too time consuming."

- Jim Mitchell – United Heritage Financial Group

Optimization Benefits-Evolution not Revolution

– **A better interface**

– **A better database**

– **Easier to maintain applications**

– **More flexible and extensible applications**
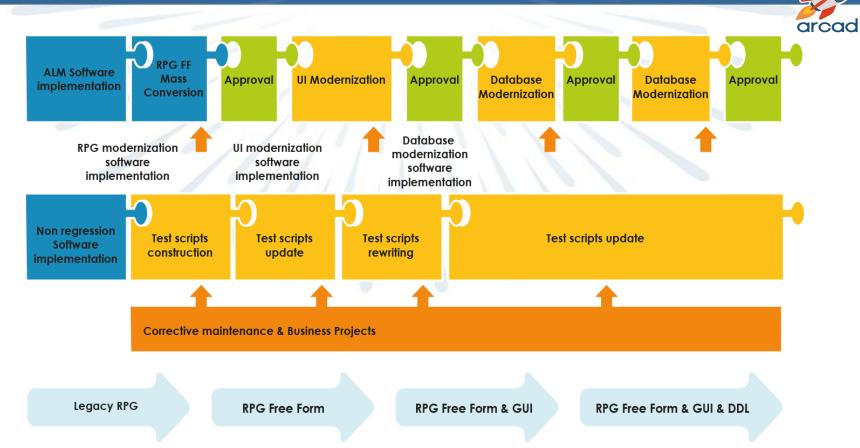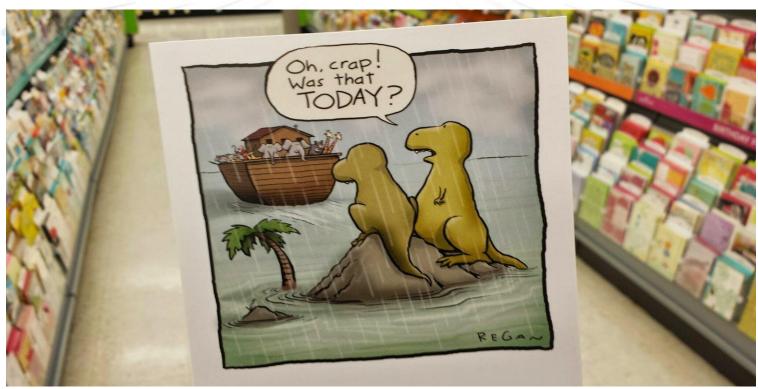
– **New business requirements are easier to implement**

– **Integrated applications. It is easier to integrate with other applications, platforms, and interfaces**

– **It is easier to find developers who can maintain modern code**

– **Gives you a competitive edge**

– **Allows you to leverage existing environments and code**

Reduce costs   Minimize risks   Future-proof Technology   Improve User Satisfaction

Optimization Workflow

ALM Software implementation → RPG FF Mass Conversion → Approval → UI Modernization → Approval → Database Modernization → Approval → Database Modernization → Approval

RPG modernization software implementation

UI modernization software implementation

Database modernization software implementation

Non regression Software implementation → Test scripts construction → Test scripts update → Test scripts rewriting → Test scripts update

Corrective maintenance & Business Projects

Legacy RPG → RPG Free Form → RPG Free Form & GUI → RPG Free Form & GUI & DDL

Modernization Evolves to DevOps
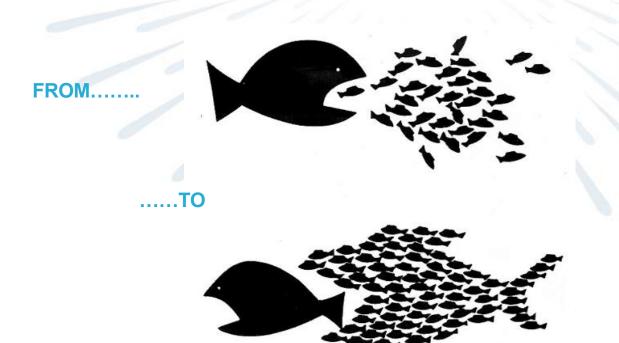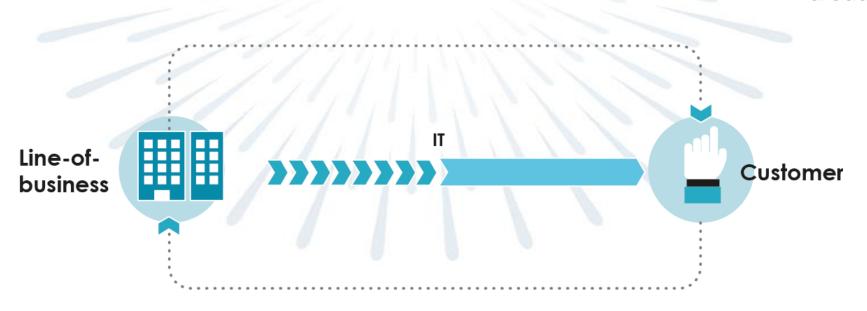
FROM……..

……TO

What does the Line of Business want from IT?

Line-of-business → IT → Customer
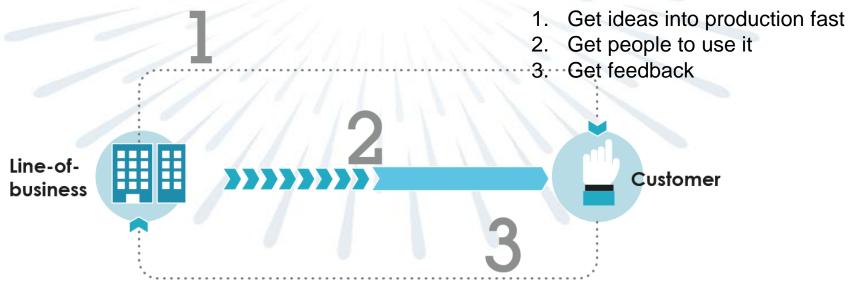
Agility - Velocity - Innovation

3

DevOps : Apply Lean and Agile

1

2

3

Line-of-business

Customer

1. Get ideas into production fast
2. Get people to use it
3. Get feedback

Continuously Improve:

I. Application Delivered

II. Environment Deployed

III. Application and Environment Delivery Process

Utopia: Unicorn fun facts

The unicorns (born on the web companies) set the bar for DevOps.

Some examples:

11.6 seconds mean time between weekday deployments, 1079 max deployments in an hour[1]

15000 engineers working on 4000+ projects, 5500 code commits/day, 75M testcases run daily

>100 releases/day

Utopia: Enterprise Unicorn Fun Facts

Yes!!! And, many large companies are leading the way.
Some examples:

TARGET — 80 deploys/week, <10 incidents/month[1]

Nationwide — 80% reduction in critical defects, 70% increase in system availability, 90% on-time delivery vs. 60% previously[2]

macy's — reduced dev cost from 100M to 55M/year, 140% increase in number of products under development[3]

ticketmaster — resale up 30% first half of 2014, 24% YoY increase in customer service rating[4]
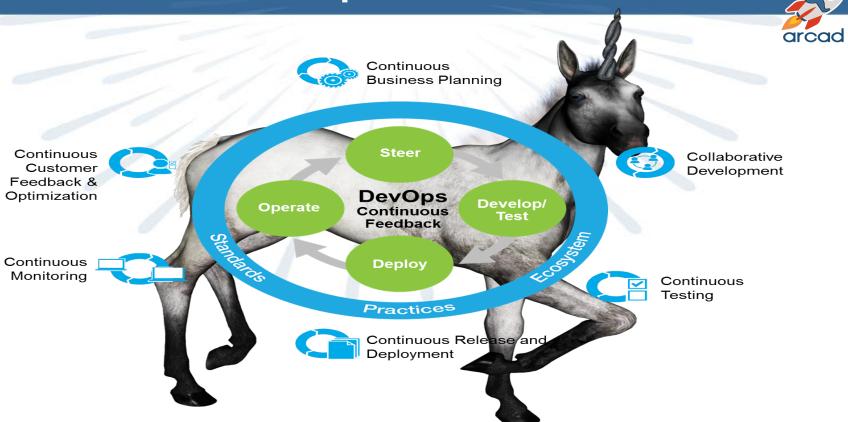
[1] http://www.slideshare.net/DevOpsEnterpriseSummit/does14-ross-clanton-and-heather-mickman-devops-at-target-41869677
[2] http://www.slideshare.net/DevOpsEnterpriseSummit/tuesday-400-hayden-lindsey-and-carmen-de-ardo-final
[3] http://www.slideshare.net/DevOpsEnterpriseSummit/does14-gary-gruver-macys-transforming-traditional-enterprise-software-development-processes
[4] http://www.slideshare.net/DevOpsEnterpriseSummit/tuesday-330-shakeel-sorathia-final?gid=d758c122-8df0-4e03-b2da-4ba4c7271897&v=qf1&b=&from_search=11

DevOps Unicorn

Continuous Business Planning

Collaborative Development

Continuous Customer Feedback & Optimization

Continuous Monitoring

Continuous Testing

Continuous Release and Deployment

DevOps Continuous Feedback

Steer

Operate

Develop/Test

Deploy

Standards

Ecosystem

Practices

A Bank ... *to deliver easy, secure mobile banking to clients*

Systems of Record On-Prem	Systems of Engagement On-Prem or Cloud
Legacy Core Banking	**Mobile Banking / Mobile Analytics**
Benefits to the Bank	**Benefits for the Consumer**
▪ Optimize client experience	▪ Easy access
▪ Rapid development	▪ Convenience
▪ Rapid deployment	▪ Mobile banking
▪ Mobile analytics	▪ Mobile payments
▪ Secure the bank	▪ Secure transactions
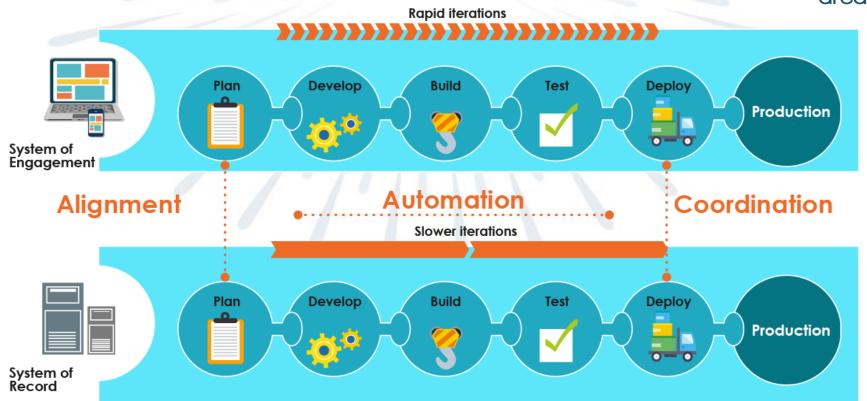
IBM i Two Speed IT strategy
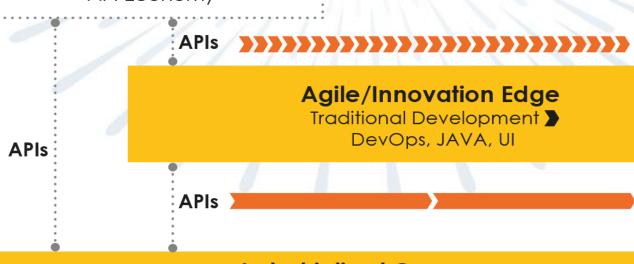
Adopting Multi-Speed IT World – Transformation

Partner Ecosystem
Point to point Integration ❯
API Economy

APIs

Agile/Innovation Edge
Traditional Development ❯
DevOps, JAVA, UI

APIs

APIs
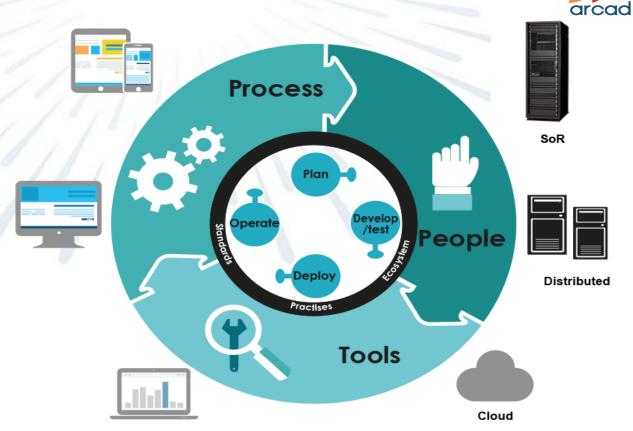
Industrialized Core
Traditional Development ❯ DevOps, Legacy -> Hybrid-ready
Traditional Middleware -> APIs
Free form RPG, DDL

DevOps 101
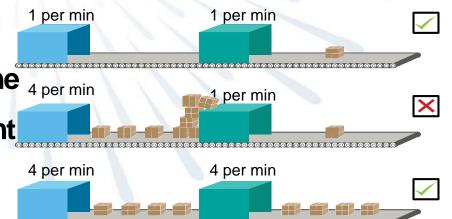
- DevOps is not one of these things… It's all of them!

- …across the entire lifecycle… for all technologies and platforms

Creating a 'Lean' Delivery Pipeline
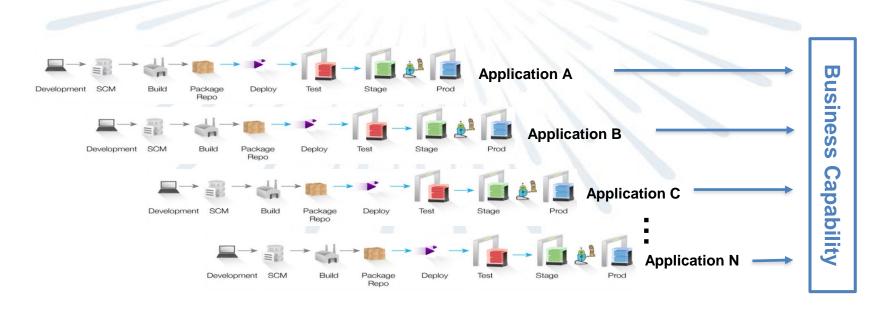
- Reduce Batch size

- **Integrated Delivery Pipeline**

- **Agile Product Management**

- 'Continuous Funding'

- **Right Architecture**

- **Continuous Improvement**
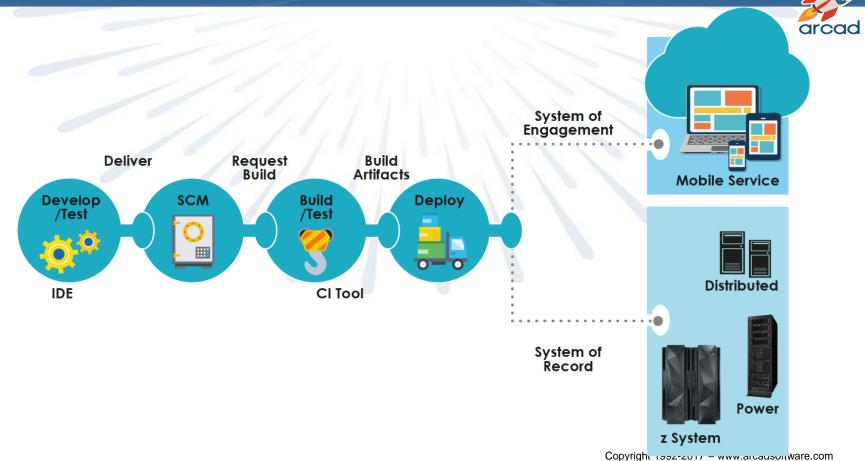
Application Deployment to Multi-Platform Environments

Full Stack Deployment

Composite Applications

Re-usable Workflows

The «Where»

Environment Management

The «How»

The «What»

Components

Deployment Automation

SIT

PROD

arcad

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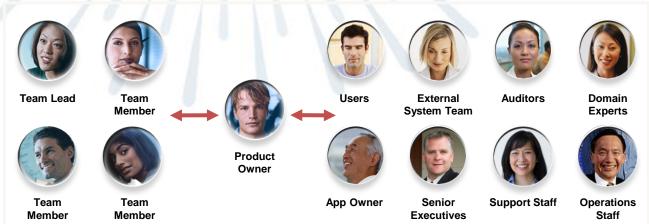
Building a DevOps Culture grounded in lean and agile principles:

- It's all about
- the people

- **Everyone is responsible for Delivery**
- Common measures of Success
- Empower your teams
- Don't under-estimate the value of training and skills enablement!

Not available on the App Store

Team Lead

Team Member

Team Member

Team Member

Product Owner

Users

External System Team

Auditors

Domain Experts

App Owner

Senior Executives

Support Staff

Operations Staff

Building a DevOps Culture

- ***Center of Excellence-DevOps***
- ***Everyone-Team*** is responsible for Delivery, including external Stakeholders
- Common Measures of Success
- Tools Automate Pipeline
- Processes-Compliance

It's about the people!

- DevOps for IBM i – Key Takeaways

1. **DevOps is about transforming application development and delivery in order to accelerate digital innovation.** *So DevOps is a topic for both business and IT roles in the organization.*

2. **You don't <u>buy</u> DevOps, you <u>do</u> DevOps.** *DevOps is an approach, a mindset – a combination of culture, process and technology (including infrastructure, tools and services).*

3. **DevOps is not only about the hand-off between Development and Operations.** *DevOps is about applying <u>lean and agile</u> principles across the application delivery lifecycle (biz-dev-test-deploy-operate) to achieve <u>continuous delivery</u> of digital innovation. Key concepts: automation, feedback loops.*

Questions?

Contact: fdelmuro@arcadsoftware.com

www.arcadsoftware.com

www.github.com

Thank you!