BOSTON, MA
JUNE 23-26, 2015

Migrating to Red Hat JBoss Middleware

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June 26th, 2015

redhat.

Image source: https://www.flickr.com/photos/cleomorgause/3887178183/

Definition : “Middleware Migration”

Major technical upgrade of an application landscape,
its runtime environments and life cycles
without functional change.

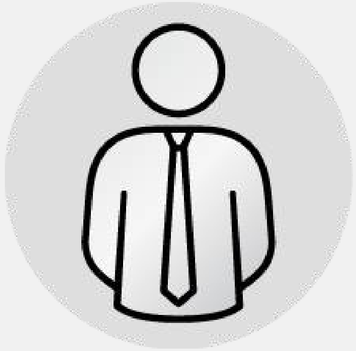
Agenda

- BENEFITS – Why migrating to JBoss Middleware?
- APPROACH – How to do it best?
- EXAMPLES – Customer success stories!

BENEFITS

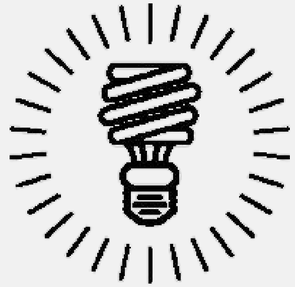
Why migrating?

WHY CHANGE?
Business Expectations become IT Challenges



- Deliver **VALUE** to the Business
- Go to market **FAST**
- Build and manage with **LIMITED RESOURCES**

WHY CHANGE?
Business Expectations become IT Challenges



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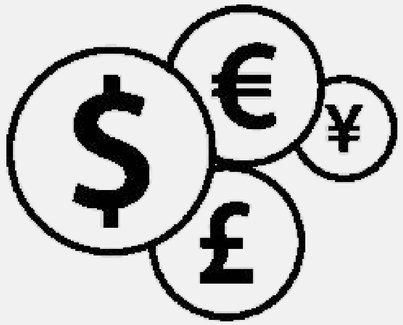

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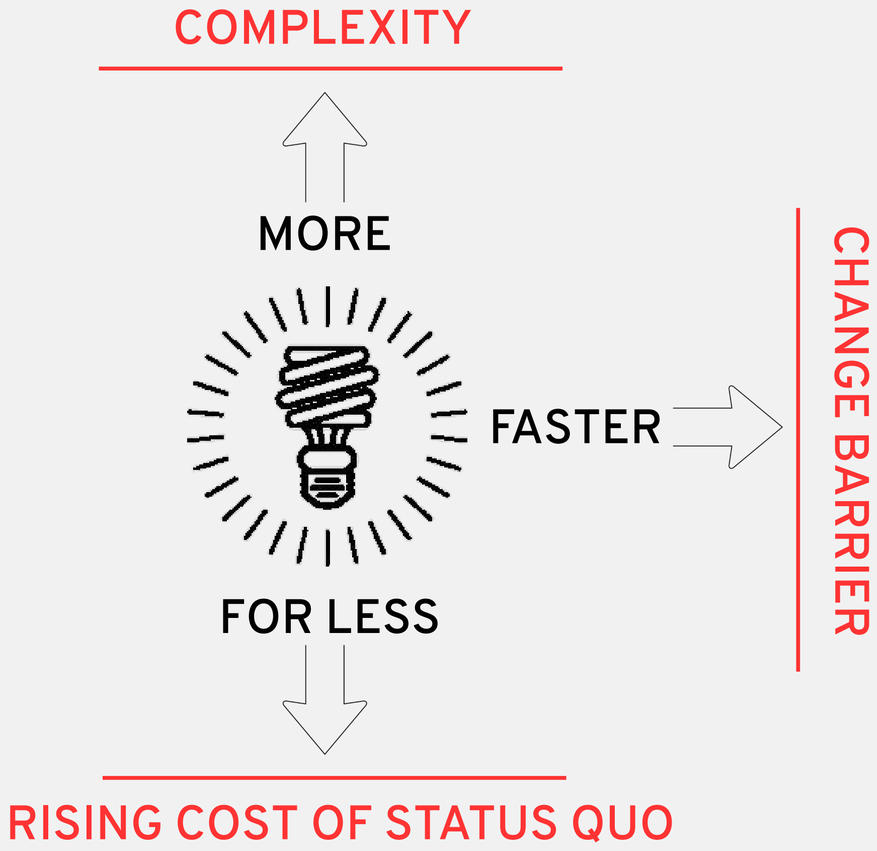
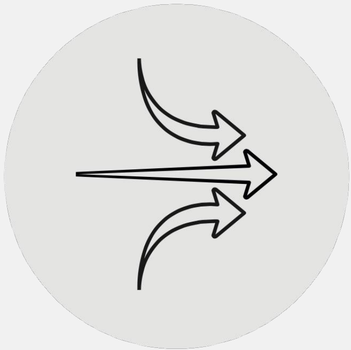
WHY CHANGE?
Business Expectations become IT Challenges

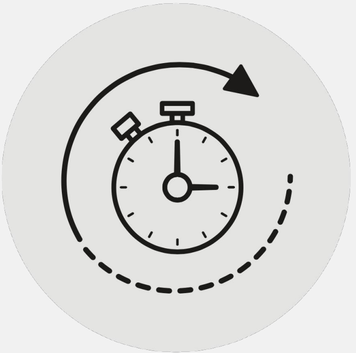


There is hope: migrate to Red Hat JBoss Middleware

RE-BALANCE
MAINTENANCE
AND INNOVATION



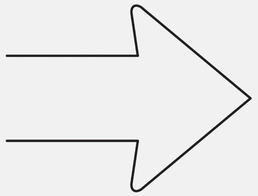
REMOVE
TECHNICAL
DEBT & RISK



BECOME
MORE
PRODUCTIVE

Balance Maintenance cost and Innovation
JBOSS MIGRATION BENEFITS

- Lower TCO
  - Customer-friendly Subscription model, simple and flexible
  - Standardize, simplify, automate
  - Lower operational cost, higher productivity.
- Cloud ready – at your pace
- Enable business innovation beyond the Application Server with the Red Hat JBoss Middleware Portfolio



Shift budgets from “keeping lights on” to innovation

Balance Maintenance cost and innovation
JBOSS MIGRATION BENEFITS - COST

Use the JBoss EAP platform cost comparison calculator:

- Available at http://www.redhat.com/promo/eap_calculator/
- 3 year cost comparison – license and support
- Fully customizable for your situation

Oracle **IBM**

	Year 1		Year 2		Year 3	
	IBM Websphere Application Server ND	JBoss Enterprise EAP Platform	IBM Websphere Aplication Server ND	JBoss Enterprise EAP Platform	IBM Websphere Application Server ND	JBoss Enterprise EAP Platform
Existing Processors	32	n/a	40	n/a	48	n/a
New Processors	8		8		8	
Cores per Processor	4		4		4	
Total Cores	160	160	192	192	224	224
IBM Value Units per Core *	100	n/a	100	n/a	100	n/a
New Value Units	3200		3200		3200	
Total Value Units	16000		19200		22400	
IBM List License Cost / Value Unit	$202		$202		$202	
License Discount	0%		0%		0%	
Total License Costs	$646,400		$646,400		$646,400	
Production Support (% of License Net)	20%	n/a	20%	n/a	20%	n/a
Total Support Costs	$517,120		$646,400		$775,680	
Total License + Support -or- Subscription Cost	$1,163,520	$120,000	$1,292,800	$144,000	$1,422,080	$168,000
JBoss Savings per Year	$1,043,520		$1,148,800		$1,254,080	
JBoss Savings Over 3 Years	$3,446,400					
JBoss Savings % Over 3 Years	89%					

Notes

*Values for IBM PVUs per core range from 50-120. The default is set for a middle-range processor which has 100 PVUs/core. When customizing, please be specific as to which processor you are using and adjust the PVU value accordingly.

Disclaimers

Oracle/IBM prices are up-to-date as of January 19, 2014.

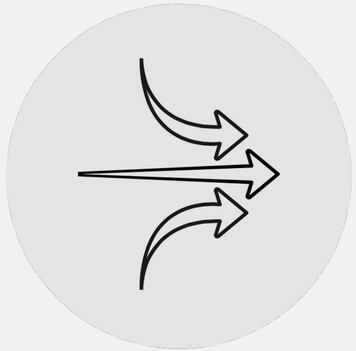
- JBoss Enterprise Middleware pricing is for demonstration purposes only and DOES NOT constitute an official price quote. Red Hat reserves the right to change prices in this calculator without notice. JBoss Middleware pricing in this calculator does not include volume discounts. For an official quote with pricing customized for your business, please contact your Red Hat sales representative.
- Calculator assumes the same number of cores/processor and same Oracle core factor or the same number of IBM Value Units per core for all years.
- IBM and Oracle pricing and support costs are derived from publicly available data. See above links for details.

Balance Maintenance cost and innovation
JBOSS MIGRATION BENEFITS - ROI

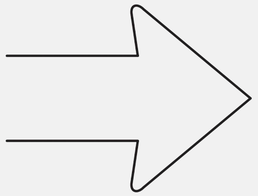
IDC Study - Financial benefits of moving from a proprietary platform to JBoss EAP

- IDC interviewed 6 large, US-based companies using JBoss EAP to develop and run custom applications for at least 12 months.
- Financial benefits experienced moving from IBM WebSphere and Oracle WebLogic to Red Hat JBoss EAP included:
  - **39% shorter development time** for new applications (avg. 16 weeks!)
  - **24% less developer hours** per application
  - **65% less infrastructure costs** supporting development
  - **89% less cost to manage**
  - **51% more applications** developed in 1 year
  - **569% ROI** over 3 years, payback of initial investment in less than 6 months after deploying the platform
- Study available at https://engage.redhat.com/content/jboss-eap-businessvalue-s-201401170935

Technical Debt and Risk
JBOSS MIGRATION BENEFITS

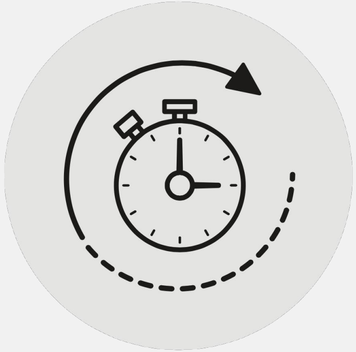


- Eliminate lock-in: embrace Open Source and open standards
- Reduce technical and business risks
  - Technology and framework updates, standard components
  - Security, audit-ability, maintainability, modularity, scalability
- Spend less time dealing with technical debt, focus energies on new initiatives

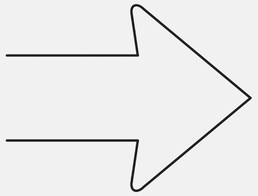


Standardize and modernize applications for lower maintenance, integration cost and lower risk.

Productivity to develop, deploy and operate
JBOSS MIGRATION BENEFITS



- **Simplify and streamline application environments**
  - Reduce operational complexity
  - High degree of automation
  - Infrastructure to support better process, not get in the way
- **Enable business agility, align IT and business**
  - Boost developer productivity
  - Cloud / DevOps / PaaS readiness

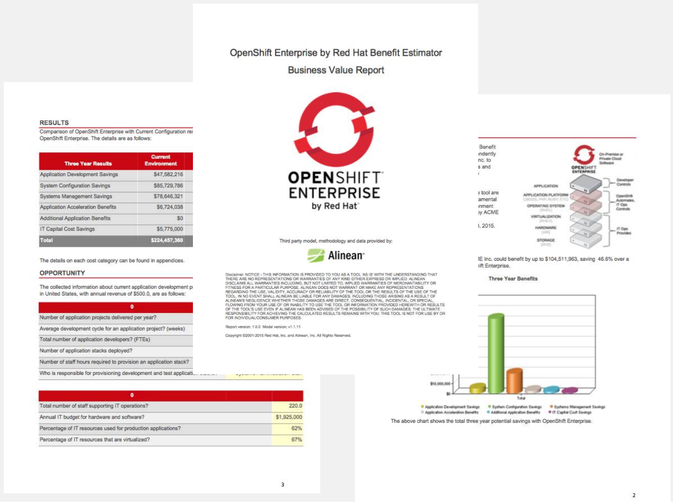


New apps and features faster, focus creative energies on innovations that make a difference.

Productivity to develop, deploy and operate JBOSS EAP ON OPENSHIFT BENEFITS

Calculate the business benefits and impacts of PaaS:

- Accelerated application development
- Automated application provisioning and config
- Web-scale application operations
- Increased hardware utilization efficiency


OpenShift Enterprise by Red Hat Benefit Estimator

Business Value Report

OPENSHIFT ENTERPRISE by Red Hat

Third party model, methodology and data provided by:

Alinean

RESULTS

Three Year Results	Current Environment
Application Development Savings	$47,582,216
System Configuration Savings	$85,729,786
Systems Management Savings	$78,646,321
Application Acceleration Benefits	$5,724,038
Additional Application Benefits	$0
IT Capital Cost Savings	$5,775,000
Total	$224,457,360

OPPORTUNITY

	0
Number of application projects delivered per year?	
Average development cycle for an application project? (weeks)	
Total number of application developers? (FTEs)	
Number of application stacks deployed?	
Number of staff hours required to provision an application stack?	
Who is responsible for provisioning development and test applicat...	

	0
Total number of staff supporting IT operations?	220.0
Annual IT budget for hardware and software?	$1,325,000
Percentage of IT resources used for production applications?	62%
Percentage of IT resources that are virtualized?	67%

Three Year Benefits

The above chart shows the total three year potential savings with OpenShift Enterprise.

Results

OpenShift Enterprise by Red Hat, as an on-premise private PaaS solution, provides an automated, self-service platform for application environment provisioning, hosting and scaling. This allows IT teams to more easily meet the growing demand for new application services coming from the business. The Results table below shows the potential savings and benefits you can achieve from implementing the OpenShift Enterprise by Red Hat solution over a three year analysis period.

Three Year Benefits with OpenShift Enterprise by Red Hat: $103,940,976 46.3%

HOW WILL THESE SAVINGS BE ALLOCATED?

The OpenShift Enterprise by Red Hat can improve application development efficiency. Indicate what percentage of these savings should be applied to reduce application development costs, versus used to develop more applications.

REDUCE DEVELOPMENT COSTS — INCREASE APPLICATION DEVELOPMENT

THREE YEAR RESULTS

Click on the links to view details.

Three Year Results	Benefits with OpenShift Enterprise Solution	
Application Development Savings	$4,758,222	10.0%
System Configuration Savings	$72,870,318	85.0%
Systems Management Savings	$19,661,580	25.0%
Application Acceleration Benefits	$3,025,817	45.0%
Additional Application Benefits	$2,353,384	N/A
IT Capital Cost Savings	$1,271,655	22.0%
Total	**$103,940,976**	**46.3%**

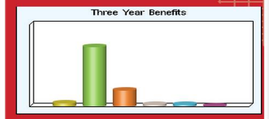
Accelerate Application Delivery by
45.0%

Lower System Configuration Costs by
$72,870,318

Reduce Application Development Costs by
$4,758,222

Improve Resource Utilization by
22.0%

THREE YEAR BENEFITS



- Application Development Savings
- System Configuration Savings
- Systems Management Savings
- Application Acceleration Benefits
- Additional Application Benefits
- IT Capital Cost Savings

Dimmed categories are not applicable for this analysis

redhat.

Productivity to develop, deploy and operate JBOSS EAP ON OPENSHIFT BENEFITS

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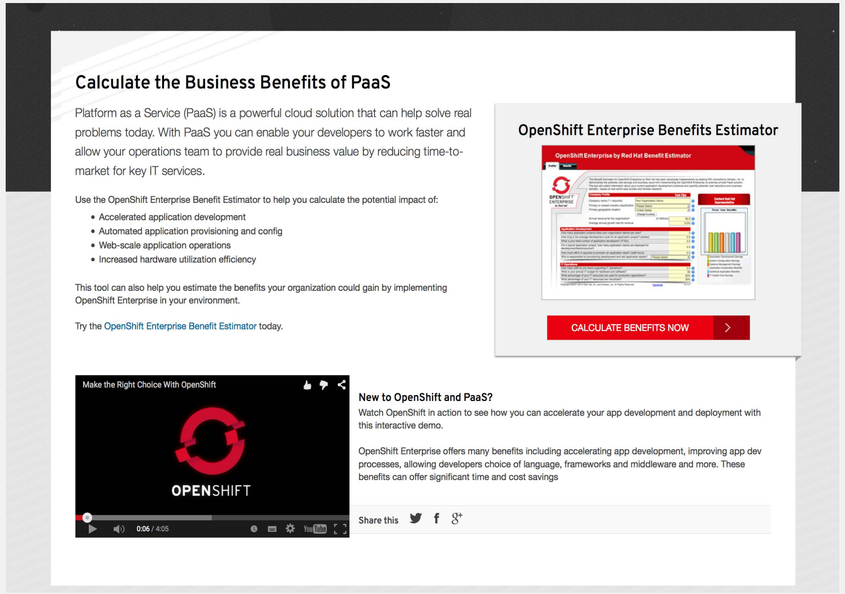
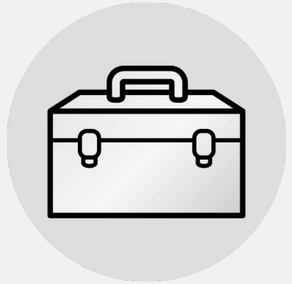


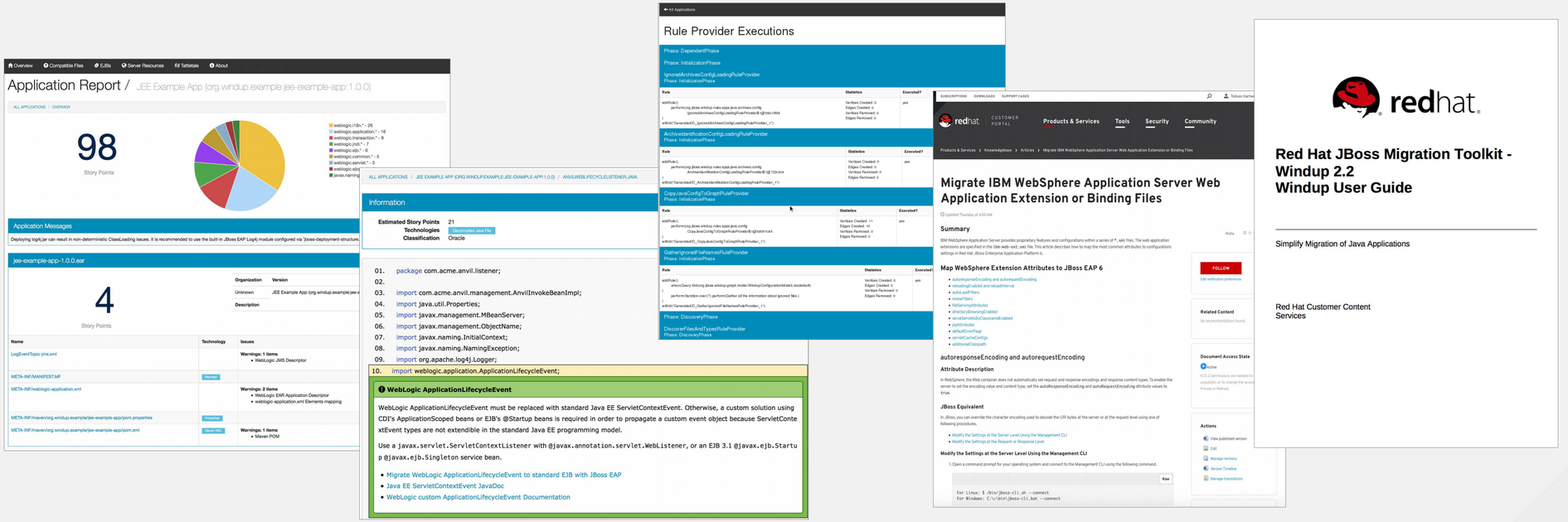
Customize to your own situation and download report:

https://www.openshift.com/enterprise-paas/paas-demo-and-benefits-estimator

Migrations to JBoss Middleware
Red Hat's Catalyzers



Red Hat JBoss Migration Toolkit



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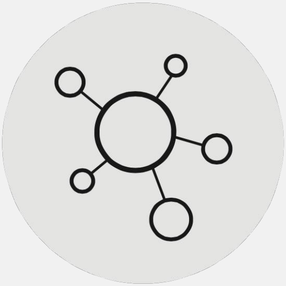

Collaboration, Sharing, Knowledge

Migrations to JBoss Middleware
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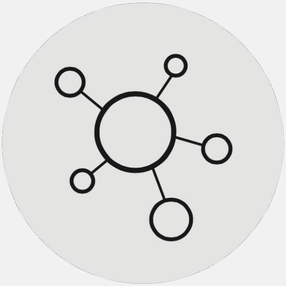


Collaboration, Sharing, Knowledge

Methodology and Approach

PROVEN APPROACH

How to?

Expect answers today!

- **How many man-days** do I need to migrate all my applications?
- What is the best approach to **identify and mitigate migration risks**?
- What are the **biggest time-savers and catalysts** for a migration?

Common Migration Challenges

MoNSTeR application

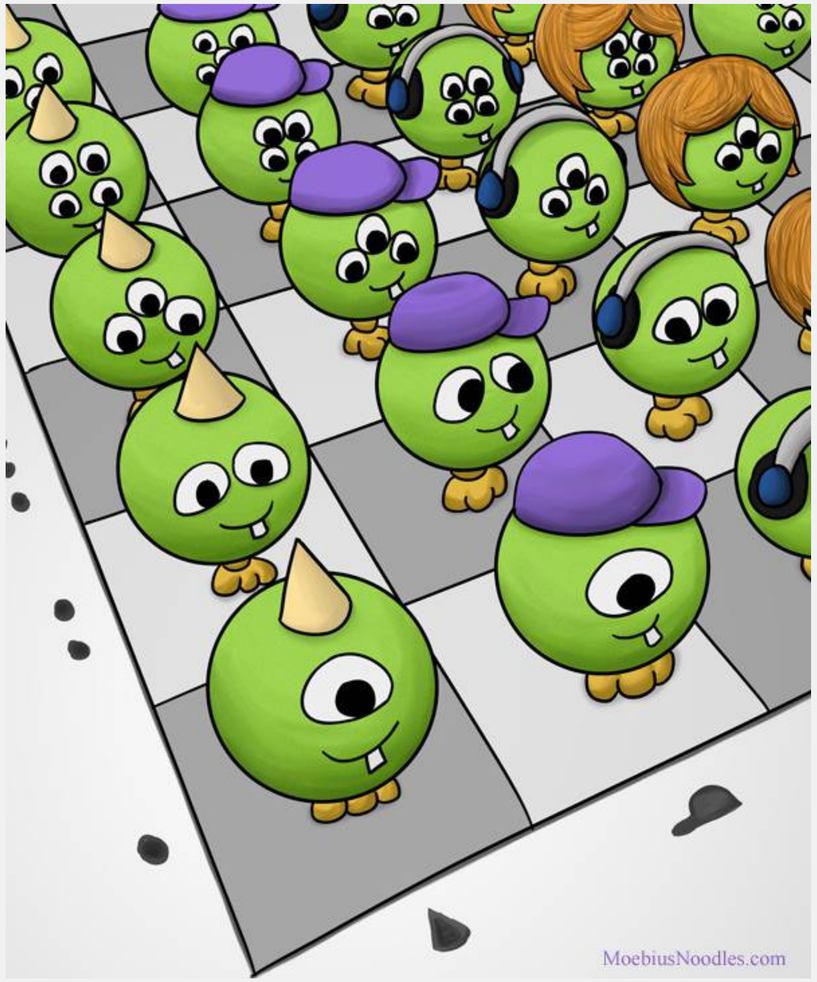
- Huge and monolithic
- Historically grown
- Tightly coupled
- Poorly documented
- Customized standards
- Horrifying tech. debt
- Highly tuned
- Company critical
- “Do not touch” sticker

stAff

- Dr. Frankenstein (SME) no longer in-house
- Missing knowledge of the target platform
- Technical and business releases combined
- Weak automation across the app. life-cycle
- No automated tests, low coverage

Image source: https://www.flickr.com/photos/cleomorgause/3887178183/

Enterprise Class Challenges

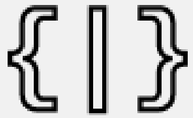


- Very heterogenous implementations across enterprise
  - Java 3, 4, 5, 6, 7
  - No standard: any version of any imaginable framework
  - Customized version of the above
- Too many tightly coupled applications
  - Hard to define a migration strategy (big bang vs. pragmatic)
  - Effort to estimate itself takes too much time
  - Unknowns creates fear to get started
- Impact on the whole application life-cycle

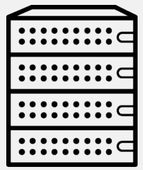
  Development → Build → Test → Operations

Image source: http://www.moebiusnoodles.com/

Scope of a migration



Application code



Infrastructure
hardware + virtualization + OS + JVM + application container

Processes
application life-cycle, build, configuration, deployment, provisioning, DevOps, environments, test, integration, continuity *, monitoring ...

Knowledge

Core recommendation

Involve Red Hat JBoss expertise
before it gets purely technical ...

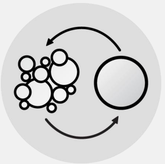
... to make your migrations
low-risk, predictable and efficient.

Image source: https://www.flickr.com/photos/usfwssoutheast/5015288134/ and https://www.flickr.com/photos/usfwshq/6777513684/

Migration Good Practices – Top 3

Information sharing based on a central collaborative platform

Least effort: no issue solved twice, no question asked twice



Reuse, automate, standardize as much as possible

- infrastructure, environment, dependencies, processes, operations
- strategy for software versioning and revision control
- functional and non-functional tests

Minimalist and pragmatic methodology

As few changes as possible to get a running functionally identical application

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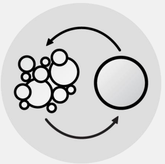

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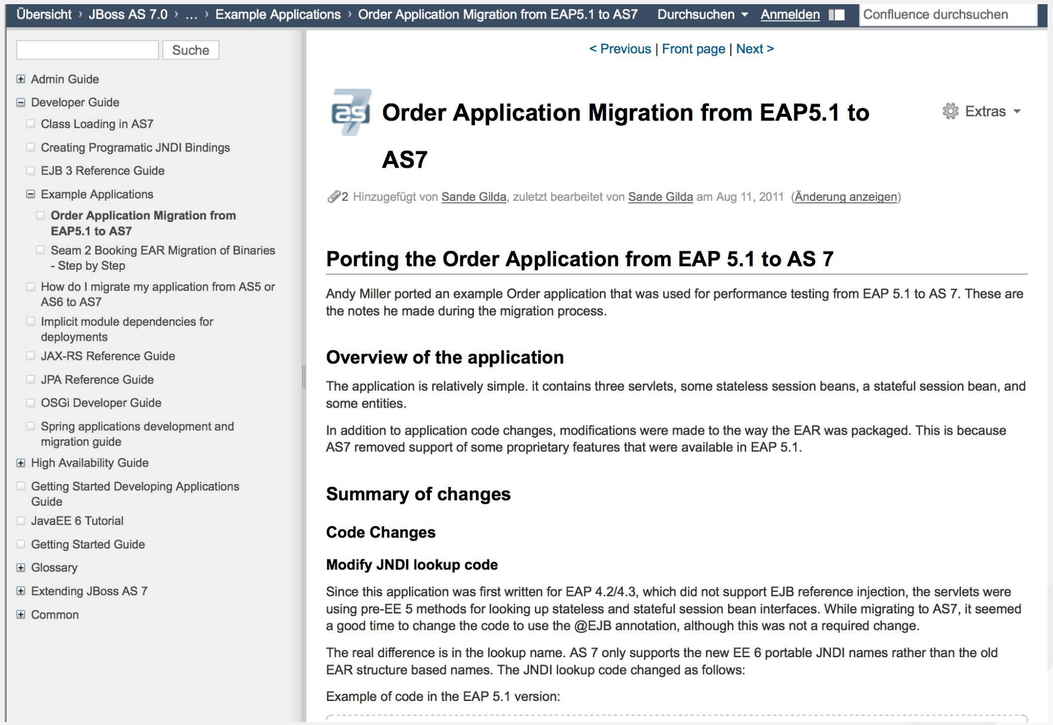
Collaboration and Information Sharing

Establish one **living collaborative documentation** platform:

- central entry point for the migration
- significant catalyst and time-saver
- exhaustive, concise, comprehensive and accurate documentation
- easy to browse and to search (tagged content, lean structure)



Collaboration Content – Example

- **Step-by-Step Migration Guide**
  Comprehensive and pragmatic approach to migrate an application from scratch

- **Migration Cookbook**
  Thematic collection of “How-to” and “Known-solution” recipes
  Recipe = article (“issue”, “resolution”, “learn more”)

- **Platform FAQ**
  Learning fast and more about the new platform

- **Pilot changes**
  Description of all changes done to specific projects

Image source: https://www.flickr.com/photos/axelhartmann/8333431340/

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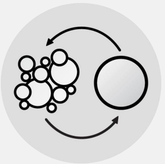

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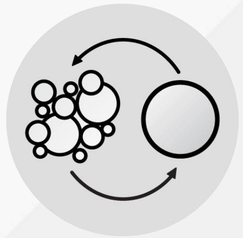
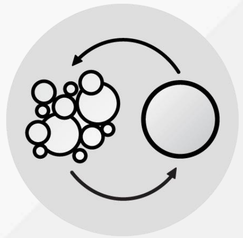


Automation: Wind-up your applications

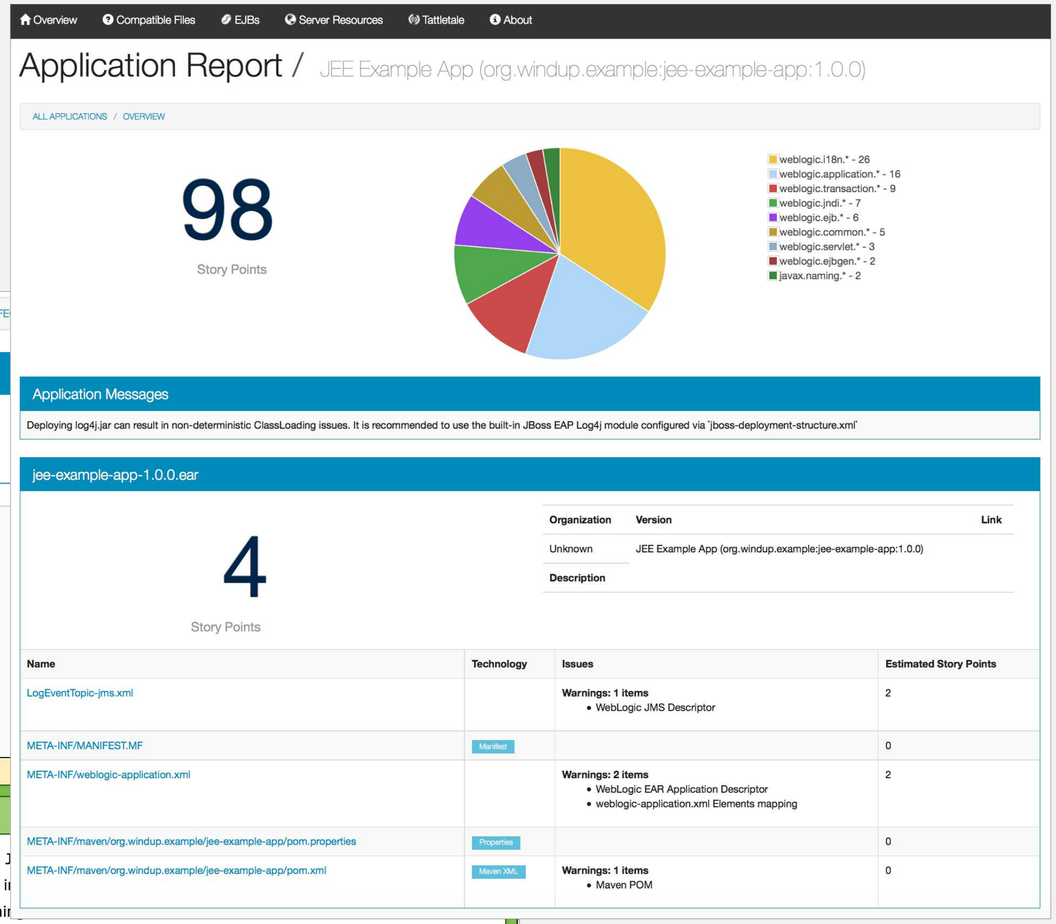
Windup = open source reverse-engineering tool generating top-down HTML report foreseeing migration changes

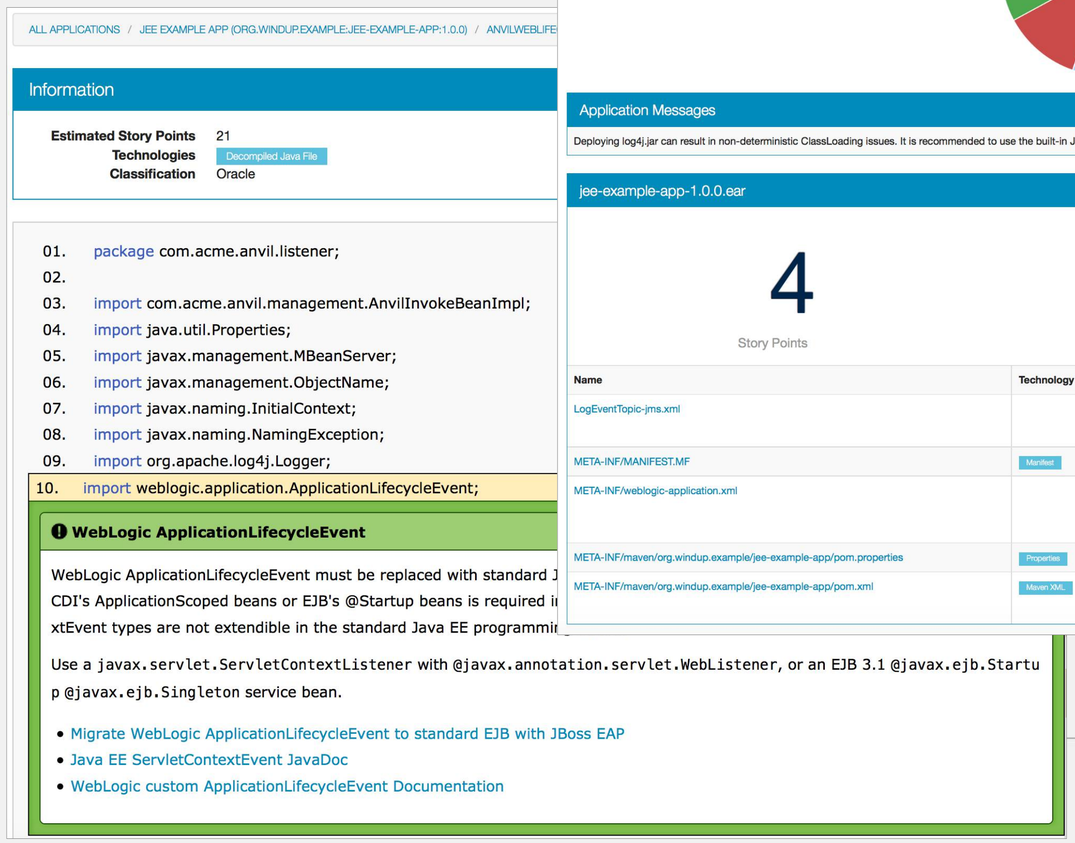
- Shows a holistic picture of the Level of Effort in story points needed to migrate or upgrade applications to Red Hat JBoss EAP
  - → Application complexity not taken into account.
- Decompiles and analyzes specific packages and files
  - → No source code required. Only the JAR / WAR / EAR files.
- Rule-based estimation, listing potential changes for the migration



Windup – Usage Example

Some generated HTML reports ...





Use-cases

- Migration assessment
  - → Identify critical issues
  - → Do estimates
  - → Build application clusters
  - → Select pilots
- Exhaustive migration support
- Extend with new/custom rules
  - – Linking collaboration platform
  - – Specific pattern detection

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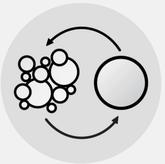

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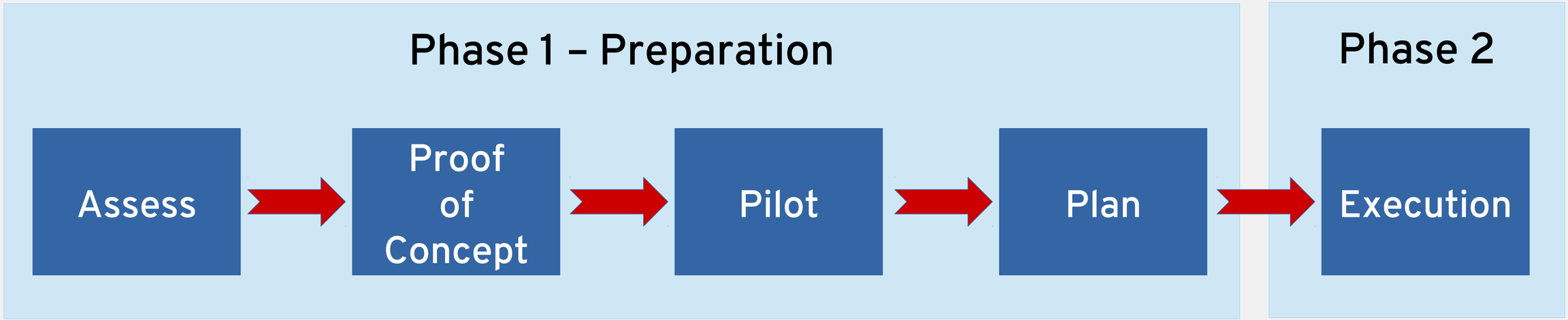
Migration Methodology



Migration Assessment

Assess → Proof → Pilot → Plan → Exec

Migration Assessment

AS - IS

TO - BE

Migration

Analysis

- infrastructure, architecture, technologies and application landscape
- dependencies, interfaces, non-functional constraints
- knowledge, processes and life-cycles

Definition

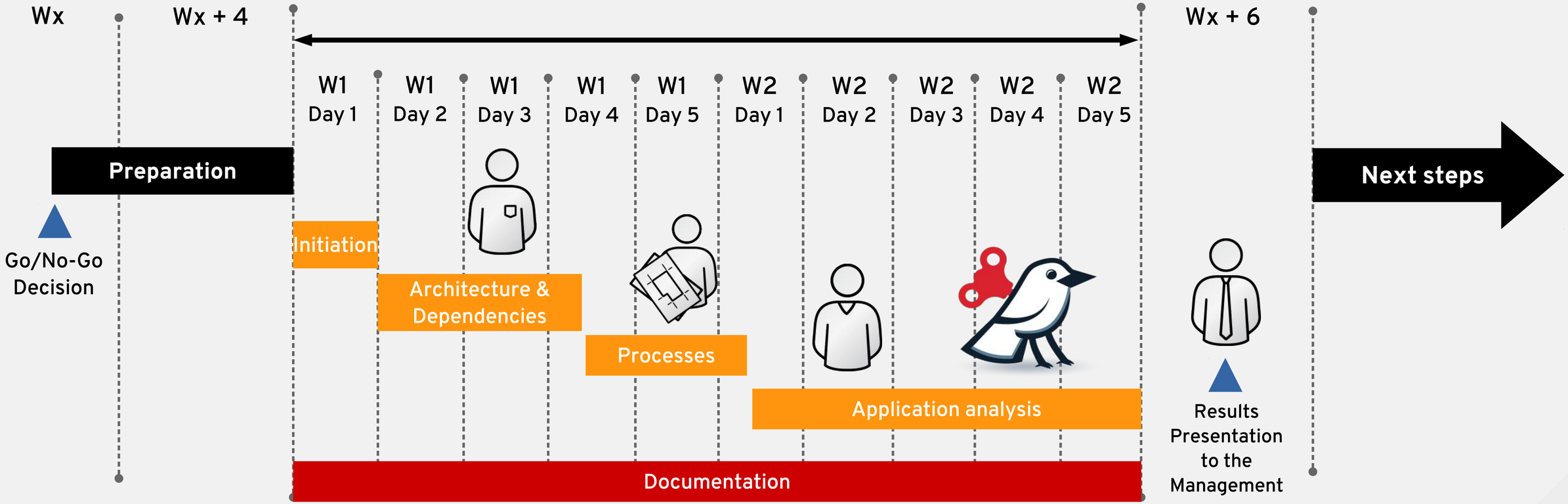
Report and management presentation

- Feasibility and early identification of potential risks (PoC)
- Migration plan draft and gross estimates

Assess → Proof → Pilot → Plan → Exec

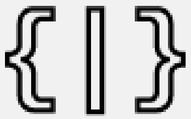
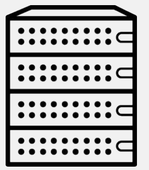
Assessment Time Plan – Example

Estimated assessment duration: 2 weeks



Assess → Proof → Pilot → Plan → Exec

Proofs of Concepts


- **How**
  - Isolate and solve previously identified technical risk
  - Focus on feasibility and documentation – no (pilot) application migrated

- **Why**
  - Risk mitigation – Find and crack the hardest nuts first!
  - Prepare and seed the target infrastructure
- **Examples**
  - Replacement strategy for proprietary code and libs (OS native, WebSphere, Weblogic…)
  - Integration with 3rd party components (WebSphere TAM, TAI, LogFaces…)
  - Infrastructure, management, provisioning, monitoring and security implementations

Pilot

- **How**
  - Finalize the infrastructure (CI/CD/PaaS)
  - Define application clusters / types
  - Select representative applications
  - Technically migrate and document
  - Move applications through their life-cycle

- **Why**
  - Sharpen estimates and minimize risks
  - Prepare large-scale migrations (infrastructure, processes, documentation)

Image source: https://www.flickr.com/photos/sidereal/76724710/

Plan and Prepare

- Define the **migration execution strategy**
  Phases / Order / Teams / Documentation / Code / Infrastructure / Processes

- Make **estimates** based on …
  Assessment / Windup reports / Proof of Concept / Pilot

- Refine the **project plan**

- Finalize all **preparations**
  Structured documentation / Guidance / Knowledge transfer

Execution

- Developer and administrator enablement courses
    1. Understanding the new Application Platform
    2. Using the new infrastructure (PaaS)
    3. Migrating your applications

- Step-by-step application migration

- Dedicated technical support

- Continuous improvement loop: infrastructure, standards, documentation (DevOps)

Image source: https://www.flickr.com/photos/sidereal/76724710/

Assess → Proof → Pilot → Plan → Exec

Step-by-Step Migration

1. Initial server configuration
2. Pre-emptive changes

   … use Windup report, migration guide, Java standards …
3. Iterative deployments and modifications until the application runs

   … do **as few changes as possible**, document all changes
4. Optional changes
   a. Standardization / Cloudification
   b. Framework updates / Refactoring / Optimizations
5. Staging, quality and functional as non-functional tests
6. Go-live

EXAMPLES

Customer successes...

Some JBoss Migration Customers

50-60% cost savings; increased performance, deployment speed, streamlined processes; faster development cycles, improved security

Saved 50%+ by migrating
Gained flexibility, accommodate new customer requests faster
Free from HW and SW lock-in

Replaced aging and costly IT infrastructure. Scale to growth and respond agilely to changing market dynamics.
Improved reliability and scalability, cut costs, new financial services and products to market faster

Saves $4 million annually in licensing and maintenance fees, improved developer productivity, reduced time to market

More flexibility at lower cost, better separation of Dev and Ops considerations, save time deploying, provisioning, managing.
WebLogic to JBoss EAP

Reduced cost, developer workload and time-to-market, faster provisioning, optimized operations, high automation. Approx. 600 Java applications. EAP, Data Services, OpenShift (POC).

http://customers.redhat.com/

Customer Story:
Dienst Uitvoering Onderwijs (DUO)

Dienst Uitvoering Onderwijs
Ministerie van Onderwijs, Cultuur en Wetenschap

- Executive agency of the Dutch ministry of education
- Finances and informs all participants in education
- Manages student grants and loans
- Organizes examinations
- 2700 employees, over 500 IT specialists

Migration motivation

Dienst Uitvoering Onderwijs
Ministerie van Onderwijs, Cultuur en Wetenschap

- IBM WebSphere costs too high
- Update to Java EE 6
- Unsatisfied business needs: quality and time-to-market

Selection Criteria

Dienst Uitvoering Onderwijs
Ministerie van Onderwijs, Cultuur en Wetenschap

- **Functional**
  Java EE 6 certified full profile with management tooling

- **Support**
  Enterprise-class support with a long life-cycle

- **Experience**
  Proven platform with many relevant public references

- **Cost**
  Lower cost than WebSphere, free version available

Scope

Processes

Applications

IBM WebSphere software

GlassFish

Application Platform

RED HAT® JBOSS® MIDDLEWARE

Java EE™ 5

JDK

Java EE™ 6

Migration

Microsoft® Windows

OS

RED HAT® ENTERPRISE LINUX®

Migration Roadmap

Dienst Uitvoering Onderwijs
Ministerie van Onderwijs, Cultuur en Wetenschap

- **Phase 1 (2014) – Preparation Phase**
  - Migration assessment
  - Proof of Concepts
  - Pilot projects
  - Preparation, planning and documentation

- **Phase 2 (2015/2016) – Large scale migration**
  - Enablement workshops for developers
  - Application migration and dedicated support
  - Improvement loop: infrastructure, standards, documentation

- **End of 2016 – IBM WebSphere decommissioned**

Experience so far …

Dienst Uitvoering Onderwijs
Ministerie van Onderwijs, Cultuur en Wetenschap

- Catalyzed migration, high-quality outcome
  - Standardized and automated everything
  - Paradigm shift to DevOps and PaaS
  - Early involved Red Hat knowledge and expertise
- Financially scalable model
- Flexible choice of products and suppliers (no lock-in)
- Business department is excited!

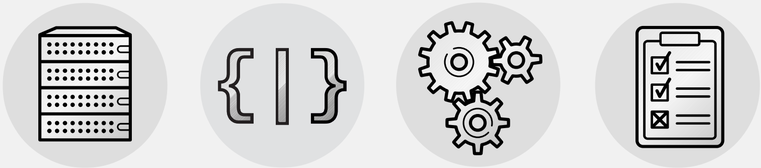
SUMMARY

Wrap-up

Benefits

Challenges

Scope



Approach

- Early engage Red Hat JBoss expertise
- Central collaborative platform
- Reuse, automate, standardize
- Minimalist and pragmatic methodology

LEARN. NETWORK.
EXPERIENCE OPEN SOURCE.