

Accelerating and Managing Mobile Application Delivery

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5 February 2013
Session Number 12633

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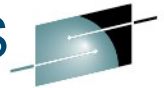
Abstract

With the explosion in mobile device usage, businesses are embracing mobile applications as a strategic means of reaching their customers. At the same time, the mobile device space is evolving quickly with new devices and capabilities being introduced at a rapid pace.

Organizations face challenges to be quick to market to support mobile users and at the same time meet business objectives. To meet their customer's needs from these mobile devices, clients must succeed in integrating these applications with their enterprise systems and business critical data, accessing the information and services in their back-end systems. Successful integration of their back-end systems with their mobile applications is a game-changer for their mobile delivery. In this session learn about the major challenges and opportunities of managing an enterprise mobile strategy which integrates mobile applications with enterprise systems and the applications and data running your business.

If you only remember 3 things ...

- Mobile is an inevitable transformation
- Mobile creates unique application development and delivery challenges
- Rational provides an integrated set of capabilities to address these challenges



Mobile apps will drive additional application development on z/OS



Opportunity: Business to Employee

- Increase worker productivity
- Improve processing times
- Extend existing apps to mobile workers and customers
- Increase employee and business partner responsiveness and decisions
- Resolve internal IT issues faster
- Reduce personnel cost utilizing personal devices



Opportunity: Business to Consumer

- Improve customer satisfaction
- Build deeper engagement and loyalty
- Increase sales with personalized offers
- Streamline customer service
- Differentiate from competition
- Improve brand perception
- Create deeper insight into customer buying behavior for up sell and cross sell



z/OS Effects/Implications:

- New services will be required to answer questions that mobile applications ask
- Need for access to more data insights, and more often relying on Big Data analysis in backend systems
- Evolution of "dashboard" as executives and knowledge workers adopt mobile devices
- Anyone, Anywhere, Any time
 - ... and that will drive even more workload.

Enterprise customers are looking for platforms for developing multiple **second generation** apps

- **Typical characteristics of first generation apps:**
 - Glitzy, native, likely for iOS
 - Outsourced to a design shop
 - Expensive to build and maintain
- **Needed characteristics of second generation apps:**
 - Standards and open technology-based
 - Support for multiple platforms and in-house development
 - Full leverage of current middleware infrastructure and connectivity



Top Mobile Adoption Concerns:

1. Security/privacy (53%)
2. Cost of developing for multiple mobile platforms (52%)
3. Integrating cloud services to mobile devices (51%)

Source: 2011 IBM Tech Trends Report
https://www.ibm.com/developerworks/mydeveloperworks/blogs/tech_trends/entry/home?lang=en

Mobile application development and delivery challenges

Developing for multiple mobile platforms

- Highly fragmented set of platforms, devices, languages, APIs, and tools
- Native programming models not portable across platforms



Delivering apps that engage users and meet business objectives

- Users have higher user experience expectations compared to traditional apps
- Quality influenced as much by design as it is by function

Customer Ratings



Integrating with enterprise systems

- Existing services typically need to be adapted and extended for mobile
- Development teams typically operate in silos with limited collaboration due to different processes and tools



Meeting accelerated time to market requirements

- Higher frequency of releases and updates
- Added pressure on teams to deliver on time and with quality



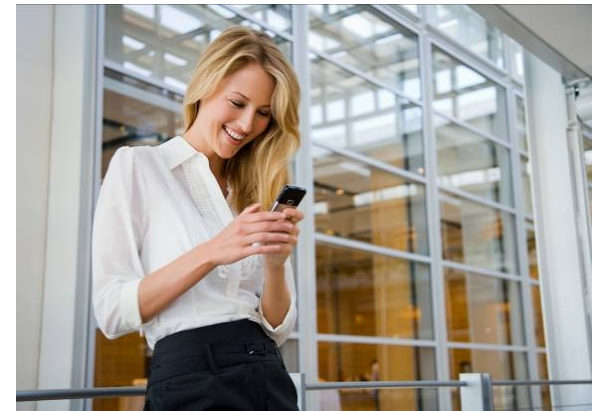
Challenge 1: Fragmentation and developing for multiple mobile platforms

- Several major platforms with their own
 - Tools
 - Languages, APIs, and programming models
 - App stores
 - Ecosystems
- Fragmentation within platforms, including
 - Physical device differences
 - Version incompatibilities
 - Vendor customizations
- And this market is moving very fast – new things are introduced all the time
- **Worklight addresses this challenge by supporting an open, hybrid mobile application architecture**



Challenge 2: Design and functional quality are both critical to the success of a mobile application

- Customers now know better – they know what good user experience is and they demand it
- Business-to-Consumer (B2C) applications
 - Line of Business wants these applications to improve customer satisfaction, drive customer engagement and loyalty
 - These apps are the new faces of the business
 - User experience is key to brand perception
- Business-to-Employee (B2E) applications
 - Increase worker productivity, improve responsiveness and decision making speed
 - Poor user experience directly compromises the value of the application



Customer Ratings

► Average rating for the current version: ★★★★★ 18 Ratings

▼ Average rating for all versions: ★★★★★ 1903 Ratings



Perceived app quality is influenced as much by design quality as it is by functional quality

Design Quality

- User experience is critical for mobile applications
- Mobile applications typically require you to rethink how your customers interact with your business
- Line of business expects these applications to improve customer satisfaction, drive engagements, and loyalty

Functional Quality

- Planning tests against all combinations of devices, OSes, carriers in fragmented market yields exponential number of test cases
- Testing is complicated by unconventional ways of interacting with mobile devices (camera, accelerometer, gestures, speech)
- Maintaining large library of devices in-house is cost prohibitive

Goal: deliver apps that align with business goals and are perceived as high quality – both from a user experience and functional point of view

Ensuring high app quality – both design and functional

Integrated requirements, planning, and quality management with Rational Requirements Composer and Rational Quality Manager



Mobile Device Cloud

Client Challenge

Delivering apps that align with business goals and are perceived as high quality – both from a user experience and functional point of view.

Key Capabilities

- ✓ End-to-end integration across the development lifecycle, including design and test phases
- ✓ UI sketching and storyboarding
- ✓ Design requirements management
- ✓ Collaborative reviews and approvals
- ✓ Test plan optimization to minimize number of tests required to be executed
- ✓ Integration with mobile “Device-cloud” testing services (e.g. DeviceAnywhere and Perfecto Mobile) and automated testing

Challenge 3: Integrating with existing systems

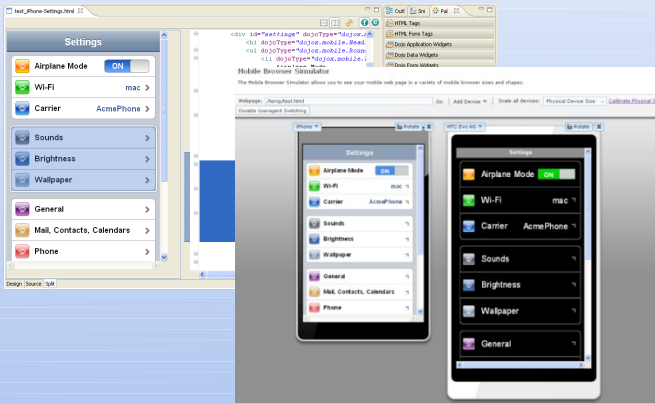
- Mobile applications need to connect to enterprise back-end data and services
 - Existing programs and services may need to be refactored to be made mobile-consumable
 - Mobile-optimized services have different characteristics than traditional web services (payload size, incremental data access, etc.)
- Mobile application development lifecycle needs to bridge the multiple teams responsible for different parts of the mobile application
- Testing multi-tiered mobile applications can be slowed due to:
 - All integrations with back-end must be available to test entire app through the UI
 - Test environments are expensive, difficult and time consuming to configure
 - Difficult and time consuming to isolate defect root cause
 - Agile methodologies need fast iterations but testing delays are becoming a bottleneck



Rational IDEs with IBM Worklight

Design, code, build, test, and deploy mobile apps that run on a wide variety of mobile platforms; extend existing back-end services and data to mobile apps

Integrated multi-platform development environments



Construct, debug, and test mobile UIs

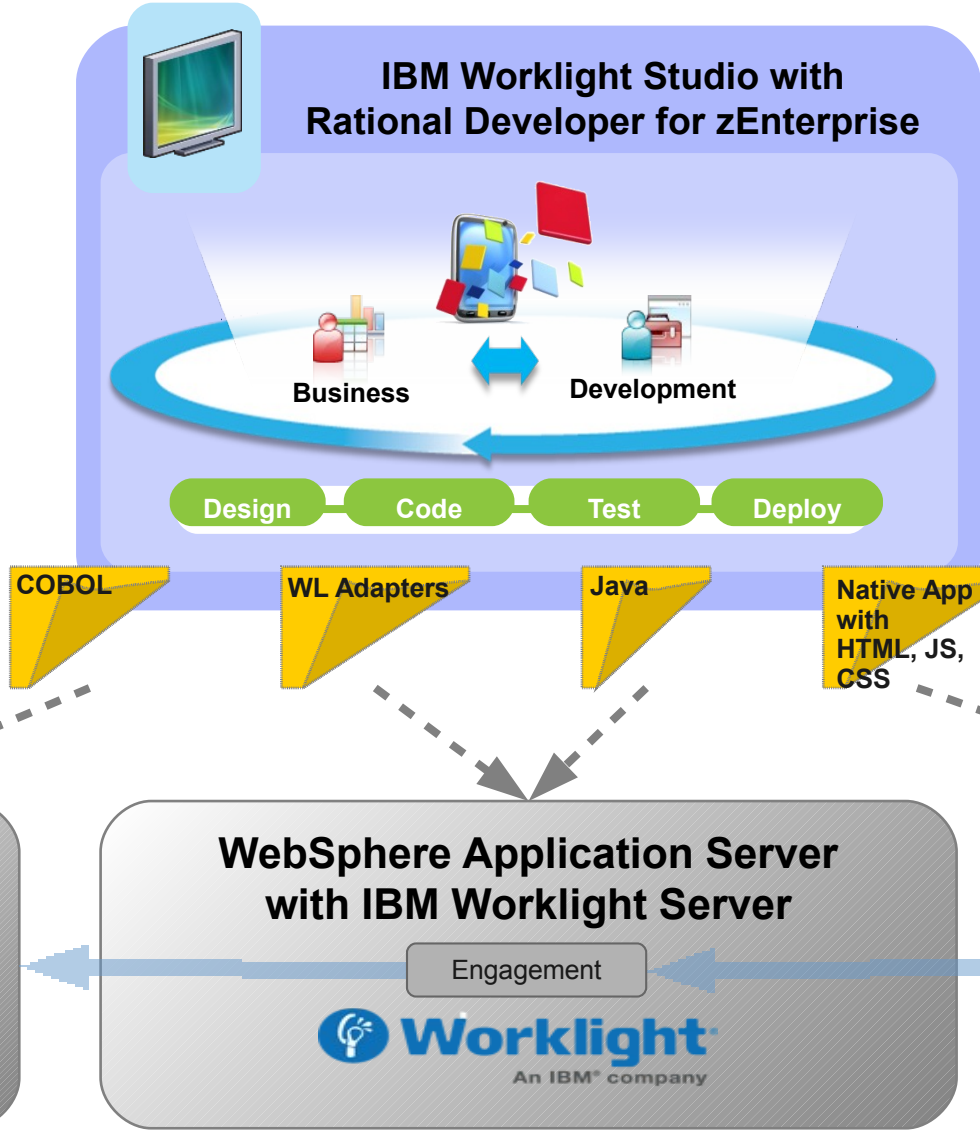


Refactor and extend existing logic on enterprise platforms (System z, Power) as mobile-consumable services

IBM Worklight 5.0 is now included in the following IDEs (for development purposes only):

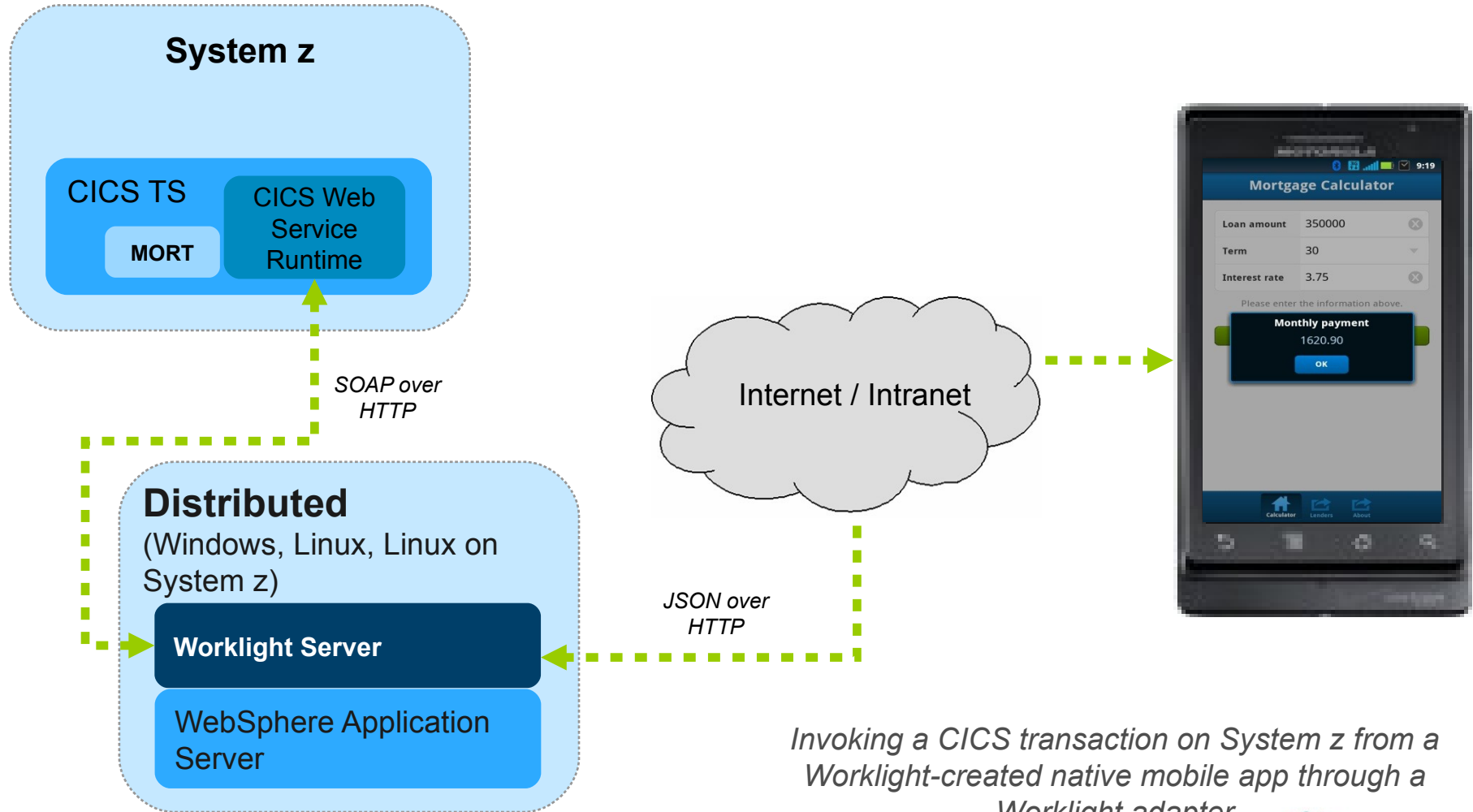
- Rational Developer for zEnterprise v8.5.1
- Rational Developer for Power Systems v8.5.1
- Rational Application Developer v8.5.1
- Rational Software Architect v8.5.1

Integrated tools for all components of the mobile solution



- Built on Eclipse
- Common code base across all mobile platforms (with ability to override at platform level)
- Build, preview, and deploy within the IDE
- Mobile simulator (for unit test)
- End-to-end debug
- Integrate with third-party SDKs (e.g. Android Development Tools)

A Sample Mobile Architecture



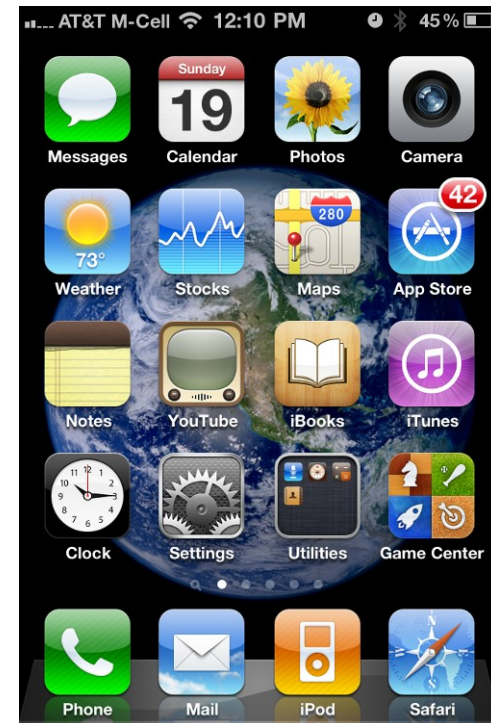
Invoking a CICS transaction on System z from a Worklight-created native mobile app through a Worklight adapter

Challenge 4: Meeting tight time-to-market requirements

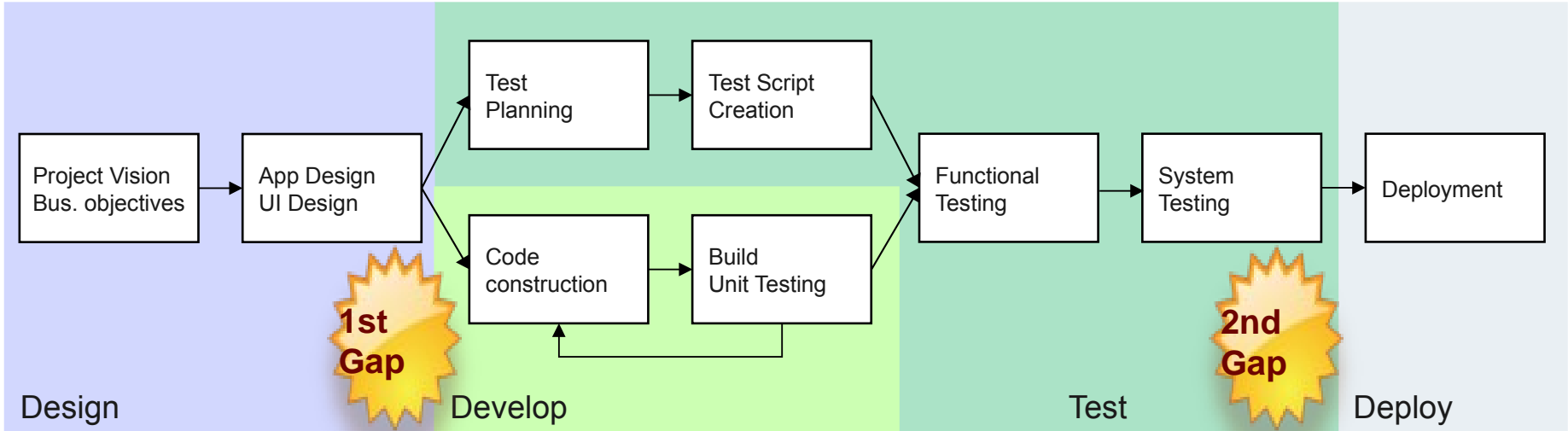
Mobile is pushing traditional delivery approaches to the breaking point



	Mobile Apps	Desktop Apps
Time-to-market	Weeks to Months	Months to Years
Frequency of updates	Once every several weeks	12-18 month cycles



Factors affecting project velocity



There are 2 key factors affecting project velocity:

Gap 1: amongst Line of Business, Development and Test teams (ALM)

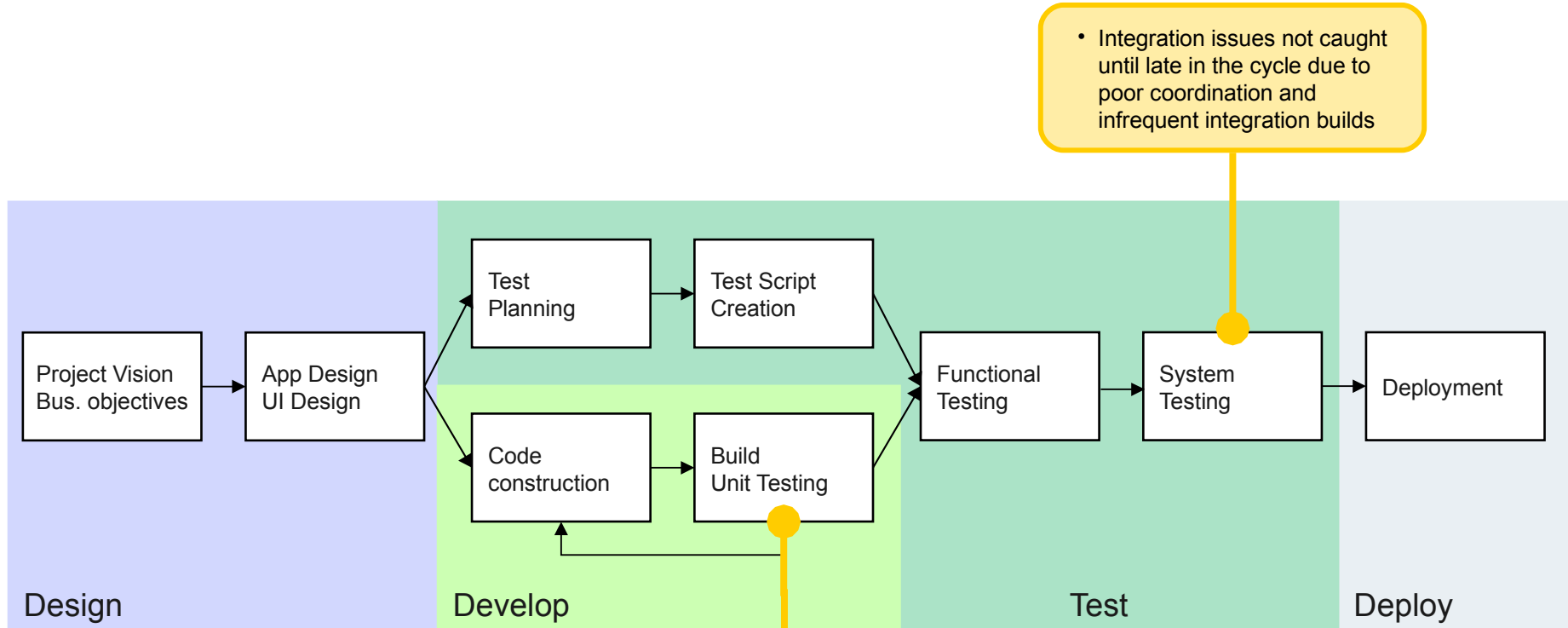
Late rework due to misalignment of stakeholders

Slow progress due to hand-off errors and delays between team roles

Gap 2: between Development/Test and Operations Team (DevOps)

Slow cycle/iteration times due to DevOps challenges

Mobile applications have unique build and delivery challenges



- Mobile platforms have unique SDKs for building and packaging apps
 - Builds must be spread across multiple environments (e.g. Mac OS, Windows, Linux, etc)
 - Impractical for developers to maintain SDKs on their workstations, which makes it difficult to test and catch potential build issues
- Managing security certificates and ensuring the app gets built with the right set
- Dealing with platform-specific constraints on the number of devices that an app can be tested on

Aligning teams across the development lifecycle

Collaborative Lifecycle Management, Rational IDEs, and Worklight



Construct, debug, and test mobile UIs



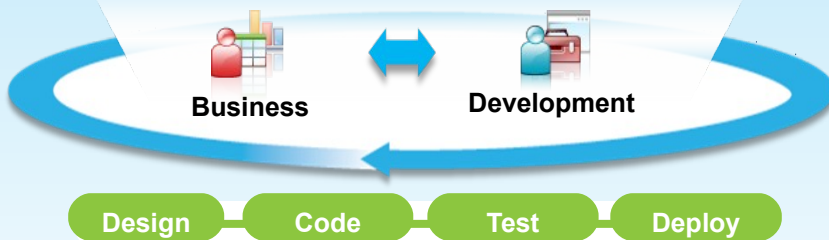
Refactor and extend existing logic as mobile-consumable services

Client Challenge

Mobile apps are typically multi-tiered and require collaboration between multiple teams, including teams responsible for design, development, test, and deployment

Key Capabilities

- Common, integrated tool set across all phases of development and components of the mobile solution
- Integration with Worklight Studio to ensure developers have access to plans, tasks, builds, and code from within their development IDE
- Traceability across the entire mobile application development lifecycle – all teams are aware of changes (for example, a changing requirement)



Traceability across the entire development lifecycle

Open Lifecycle Integration Platform

Jazz

End-to-end Lifecycle Management for Mobile Application Development

Accelerating build and deployment time

Orchestrating native mobile app builds with Rational Team Concert



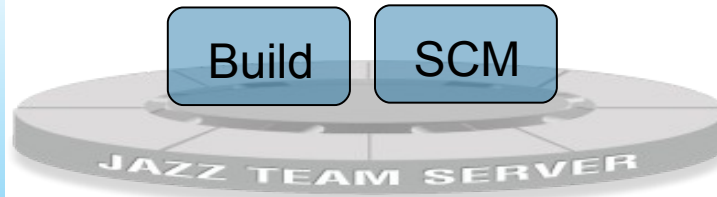
Developer



Mobile devices & emulators



RTC build engine and Worklight mobile build utility provide a controlled build environment for mobile apps – both native and hybrid



Team repository of apps

sources

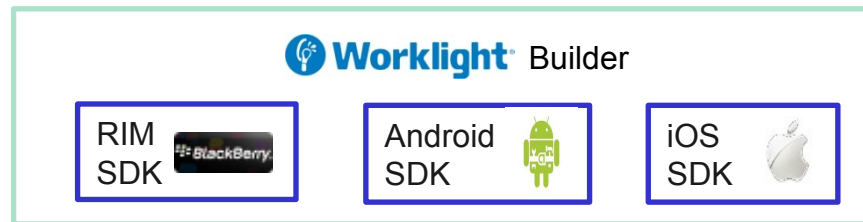
executables, logfiles



App stores



Mobile build server farm



Enact a collaborative, multi-platform mobile development lifecycle

IBM Mobile Development Lifecycle Solution (IMDLS)

How?

Is a comprehensive mobile development solution combining:

- **Enterprise-grade, standard-based mobile application platform** supporting native, hybrid and mobile web programming models
- **Best-of-class** collaborative mobile application development lifecycle capabilities

What's new?

- **Reduce costs, cycle times and deliver consistent quality** with end-to-end mobile development capabilities, advanced IDE, mobile testing and support for Agile methodologies
- **Improve project outcome** with mobile development best practices and tested integrations
- **Get started with mobile development quickly** with a unique offering delivering both development tools and application platform for development and test with installation launch-pad

IBM Mobile Development Lifecycle Solution (IMDLS)



App Design and Construction



IBM Worklight

Open Lifecycle Integration

IBM Mobile Development Lifecycle Solution (IMDLS)

Provides

- **Advanced IDE** for native, hybrid and mobile web applications
- **Distributed team build and test** integrations with the IBM Mobile Platform
- “Mobile device-cloud” service **integration for on-device testing**
- **Mobile development best practices** and tested integrations to accelerate productivity
- **Support for Agile methodologies** for dealing with fast-paced development for mobile

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Supporting the full mobile development lifecycle

Rational Collaborative Lifecycle Management and Worklight



Developing for multiple mobile platforms

- ✓ Develop cross-platform mobile web and hybrid apps with Worklight
- ✓ Manage plans, tasks, code, builds from a common development environment (Worklight Studio with RTC Eclipse Client)



Delivering apps that engage users and meet business objectives

- ✓ Create linkage and traceability across design, planning, code, and test artifacts
- ✓ UI sketching and storyboarding
- ✓ Test plan optimization and management
- ✓ Integrate with “Device-cloud” testing services to perform automated tests



Integrating with enterprise systems

- ✓ Integrate Worklight Studio with the Rational IDEs to create a comprehensive IDE for all parts of the app (UI, mid tier, back-end)
- ✓ Extend enterprise assets as mobile-consumable services and connect via Worklight adapters



Meeting accelerated time to market requirements

- ✓ Automate and manage end-to-end build and deployment process with RTC and command line tools from Worklight and Native SDKs
- ✓ Package and deploy automatically to App Center



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