

# Notices and disclaimers

© 2018 International Business Machines Corporation. No part of this document may be reproduced or transmitted in any form without written permission from IBM.

## **U.S. Government Users Restricted Rights – use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM.**

Information in these presentations (including information relating to products that have not yet been announced by IBM) has been reviewed for accuracy as of the date of initial publication and could include unintentional technical or typographical errors. IBM shall have no responsibility to update this information. **This document is distributed “as is” without any warranty, either express or implied. In no event, shall IBM be liable for any damage arising from the use of this information, including but not limited to, loss of data, business interruption, loss of profit or loss of opportunity.** IBM products and services are warranted per the terms and conditions of the agreements under which they are provided.

IBM products are manufactured from new parts or new and used parts. In some cases, a product may not be new and may have been previously installed. Regardless, our warranty terms apply.”

**Any statements regarding IBM's future direction, intent or product plans are subject to change or withdrawal without notice.**

Performance data contained herein was generally obtained in a controlled, isolated environments. Customer examples are presented as illustrations of how those

customers have used IBM products and the results they may have achieved. Actual performance, cost, savings or other results in other operating environments may vary.

References in this document to IBM products, programs, or services does not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business.

Workshops, sessions and associated materials may have been prepared by independent session speakers, and do not necessarily reflect the views of IBM. All materials and discussions are provided for informational purposes only, and are neither intended to, nor shall constitute legal or other guidance or advice to any individual participant or their specific situation.

It is the customer's responsibility to insure its own compliance with legal requirements and to obtain advice of competent legal counsel as to the identification and interpretation of any relevant laws and regulatory requirements that may affect the customer's business and any actions the customer may need to take to comply with such laws. IBM does not provide legal advice or represent or warrant that its services or products will ensure that the customer follows any law.

# Notices and disclaimers continued

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products about this publication and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products. IBM does not warrant the quality of any third-party products, or the ability of any such third-party products to interoperate with IBM's products. **IBM expressly disclaims all warranties, expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a purpose.**

The provision of the information contained herein is not intended to, and does not, grant any right or license under any IBM patents, copyrights, trademarks or other intellectual property right.

IBM, the IBM logo, ibm.com and [names of other referenced IBM products and services used in the presentation] are trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at: [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).

.

# From Flintstone to Jetson: Modern Development Practices for Modern Enterprises

—  
Andrea C. Crawford  
DevOps & Cloud Native Development

LK Swift  
Distinguished Engineer



# Contents

## **Conventional & Modern Applications      05**

Conventional Applications	05
Modern Applications	06

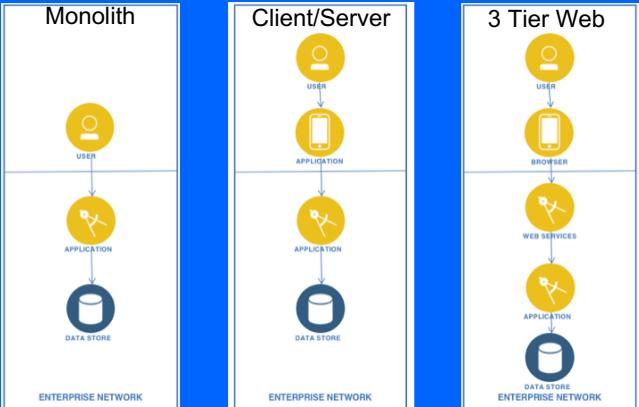
## **Modernization      07**

Principles of Modernization	07
Modernization Entry Points	08
Modernization Benefits	09
Service Characteristics Driving Business Agility	10

## **Optional      13**

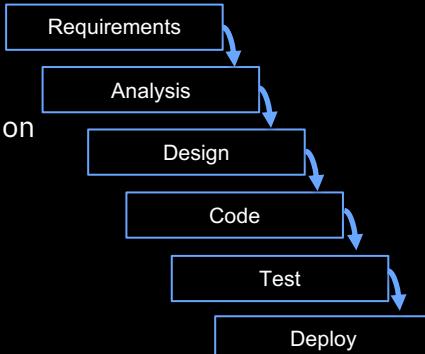
Case Study	13
------------	----

# Conventional Applications



## Delivery Method

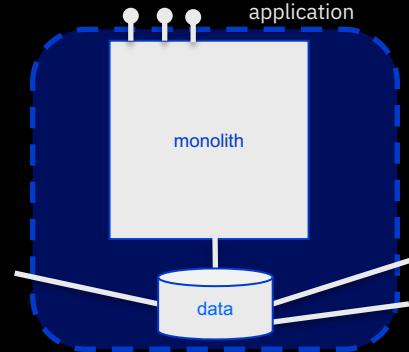
- Predictable/repeatable
- Comprehensive documentation
- Detail
- Linear Delivery Process
- Tools
- Manual delivery practices
- Siloed teams



## Conventional Tenants

- Centralized
- Client/Server
- Three-tier
- Data access control
- Point to point integration
- Platform/vendor dependent
- Proprietary interfaces
- HW scaled
- App-centric vs Consumer-centric
- Complex/integrated test, deployment plans

## Conventional Applications



Systems Analysis Life Cycle  
Requirements System Development Test Maintenance Design Preliminary User Interviews Disposal Pros Cons Pros Cons Disposal Deployment Security

# Modern Applications

## Live in the Cloud

- Low barrier entry
- Elasticity
- Pay as you go

## Leverage HW, OS commoditization

- Containerization

## Exhibit high resiliency, scalability, fault tolerance

- Container Management and service level fabrics



## 12 Factor App [i](#)

- I. Codebase  
One codebase tracked in revision control, many deploys
- II. Dependencies  
Explicitly declare and isolate dependencies
- III. Config  
Store config in the environment
- IV. Backing services  
Treat backing services as attached resources
- V. Build, release, run  
Strictly separate build and run stages
- VI. Processes  
Execute the app as one or more stateless processes
- VII. Port binding  
Export services via port binding
- VIII. Concurrency  
Scale out via the process model
- IX. Disposability  
Maximize robustness with fast startup and graceful shutdown
- X. Dev/prod parity  
Keep development, staging, and production as similar as possible
- XI. Logs  
Treat logs as event streams
- XII. Admin processes  
Run admin/management tasks as one-off processes

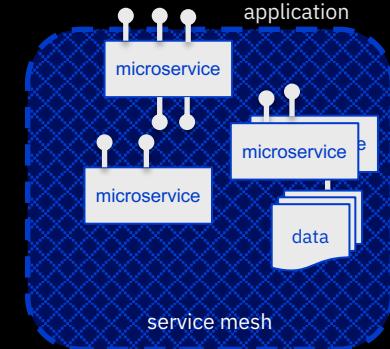
## IBM Cloud Garage Method [i](#)



Highly collaborative squads  
IBM Design Thinking  
Continuous Delivery  
Test Driven Development  
Pair Programming  
DevOps  
Integrated tool chain automation  
Service management monitoring/analytics  
*and much more...*

**Ultimately, enabling business agility**

## Cloud Native Applications



Pair Programming  
Spring Boot  
Istio  
Microprofile  
API Economy  
Test Driven Development  
Microservices  
Collaboration  
Squads  
DevOps  
Containers  
Agile  
Cluster Management  
Continuous Delivery  
Cloud-native  
Serverless  
PaaS  
MVP  
12 Factor App  
Docker  
Kubernetes  
REST API  
IBM Design Thinking  
Auto Scaling

# Successful IBM Application Modernization strategies embrace three principles

## Modernize where it matters

Use business value as the lens through which modernization options are viewed.

Set the goals to enable growth, improve customer experience, reduce costs, and speed delivery. The business case is therefore more compelling.

## Simplify and streamline

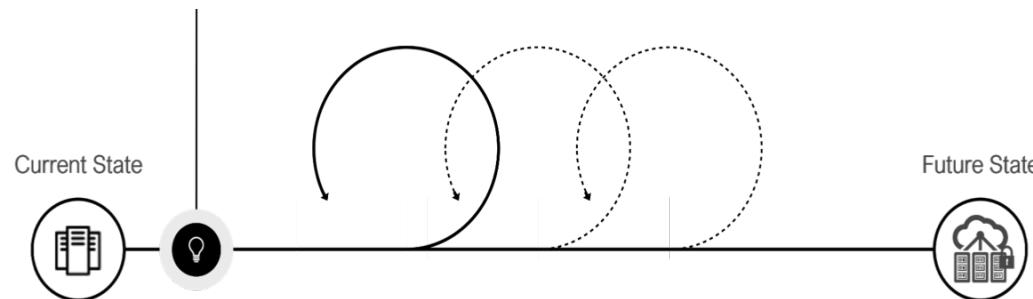
Size and complexity constrain change.

Reduce size through rationalization: consolidation and decommissioning. Reduce complexity through standardization and decoupling of interdependencies. Use Design Thinking and agile development to redefine processes based on user experience and not constrained by technology.

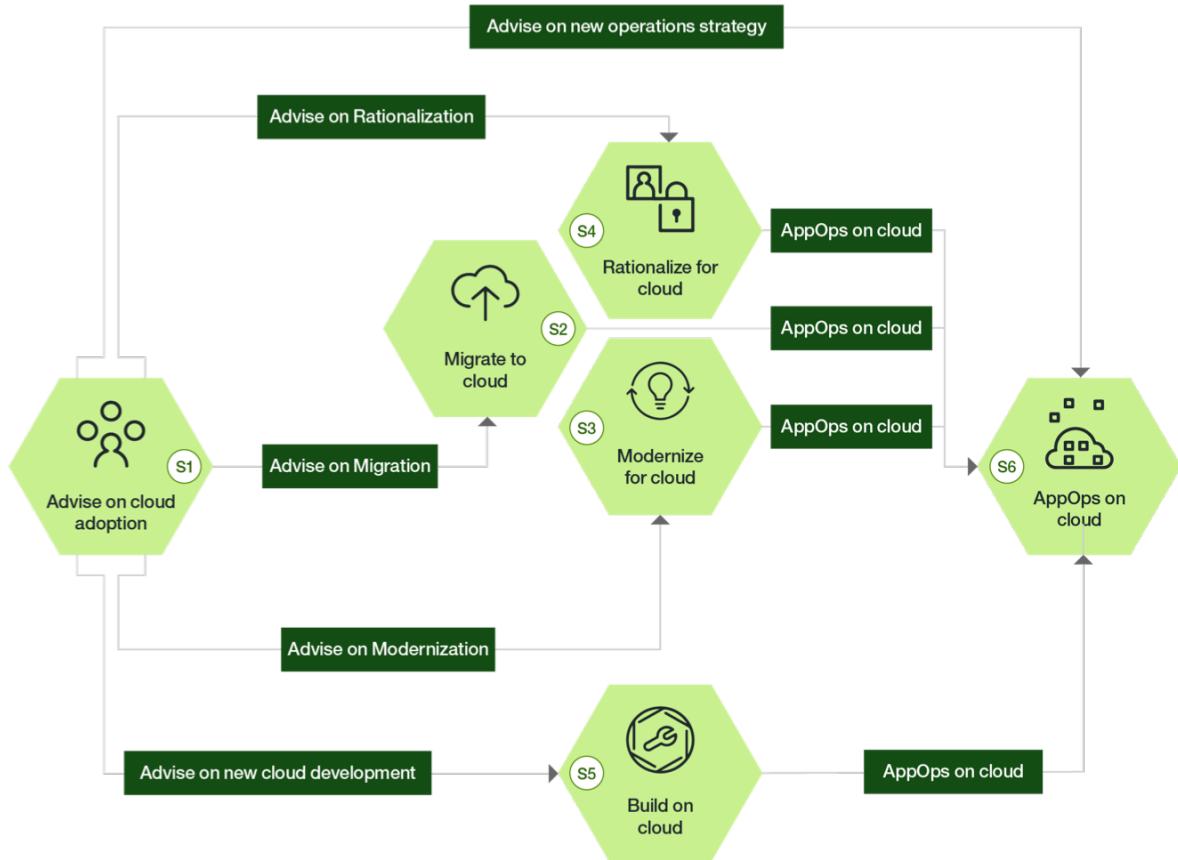
## Deliver results early and often

Big bang modernization efforts are risky. They may fail for technical reasons, or they may be cancelled before delivering results.

Break large initiatives into smaller projects with measurable impact. Accelerate value delivery and reduce risk. Adopt Agile and Dev Ops methods to minimize time between releases.

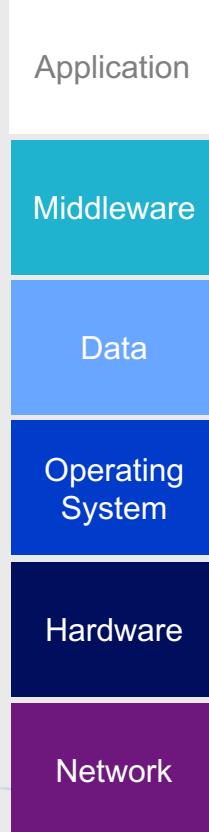


Modernization has many entry points, but ultimately the outcome is applications that are run and managed on the cloud.



# Modernization Benefits

Modernization has progressed "bottoms up" yielding increased business agility



## Benefits

Deploy anywhere, multi-speed IT, service consumption, "bolt on" service qualities,

"Easy to use" software, API integration, Fit-for-purpose middleware

Transactional data enriched with non-structured information, unprecedented context; near real-time insights

Open source platforms, containers

Pay-as-you-go, self-service, low barrier entry

Hybrid Cloud

## Modernization Impact

### Application

- Rise of "simple" languages, frameworks bring built-in service characteristics, polyglot programming
- Monolithic breakdown into microservices, lots of moving parts (rise in complexity, flexibility), DevOps

### Middleware

- Simplicity with open source "equivalents"; integration with heterogeneous middleware becomes an imperative;
- Rise of the "API Economy" and SaaS, spurs stack abstraction

### Data

- Data warehouses give way to data "lakes"; streaming analytics; actionable insights nearer to real-time
- Structured data must co-exist with non-structured, time-series, geo-spatial information to build context, insights

### Operating System

- Large market adoption of open source & Linux (runs on commodity hardware); "fit-for-purpose" OS flavors
- Freedom, choice, public innovation spurs rich open source software movement (disrupts enterprise license models)

### Hardware (storage, compute)

- Commodity hardware virtualized for max utilization
- Hypervisors provide operations ability to manage VM's
- Cloud Computing enables self-service provision/deprovision

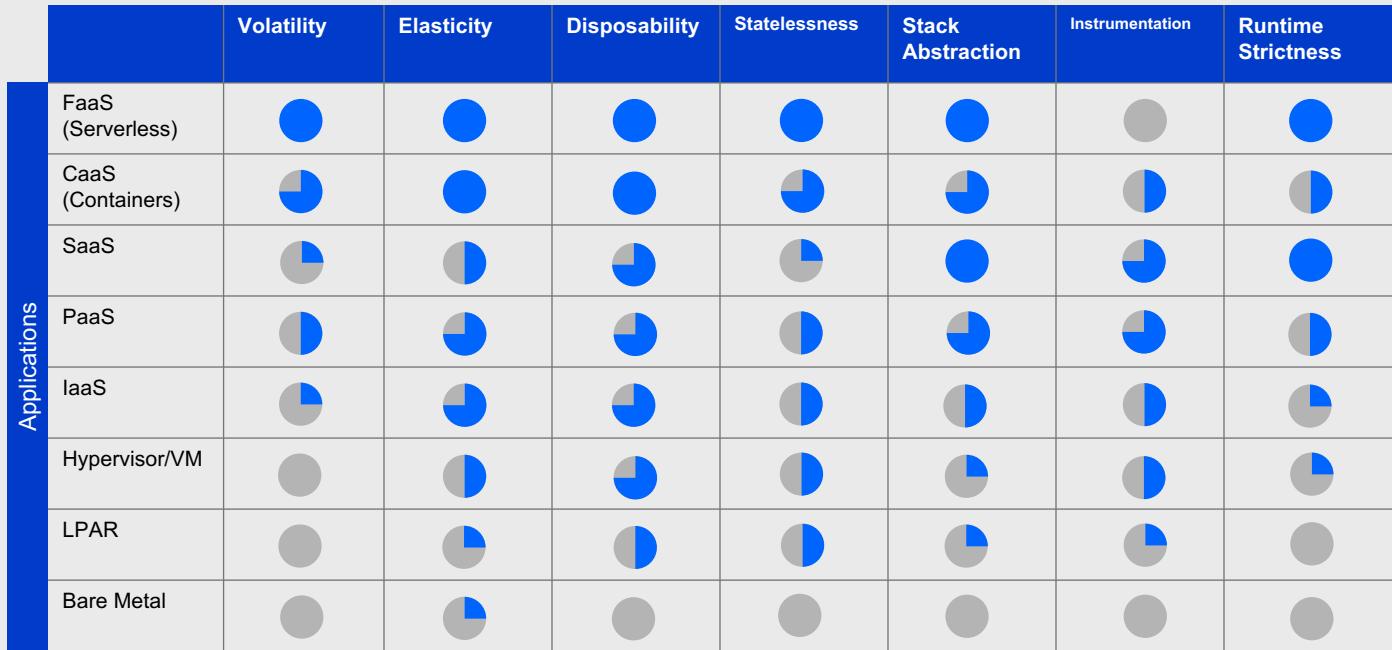
### Network

- Virtual, intelligent, secure networks provide proper connectivity, security, and isolation for workloads with the least amount of risk
- Connecting on-premise traditional data centers with public cloud and private cloud.

# Service Characteristics Driving Business Agility & Modernization

- Applications must evolve with the steady commoditization of the solution stack
- New architectural styles, frameworks, technologies, and methods enable modernization

1. Get to cloud
2. Modernize applications to be “Cloud-ready”
3. New applications should be “Cloud Native”



# Thank you

Andrea C. Crawford  
DevOps & Cloud Native Development

—  
acm@us.ibm.com  
@acmThinks

LK Swift  
Distinguished Engineer, CTO for Cloud Application Modernization Services

—  
swift@us.ibm.com  
ibm.com



# Major European bank:

We committed to the bank a significant increase in agility, an industrialized approach to solve the technology currency debt **in the next three years** and a significant savings in the agreed scope of the cost base transferred to IBM. By partnering with us the bank will gain certainty on the transformation and gain immediate cost savings which will help fund joint innovations in a business transformation program that will exceed a traditional sourcing partnership.

## Business problem

- IT has been successful in implementing a development framework for born-in-the-cloud applications based on IBM Cloud PaaS, wrapped into a rapid DevOps iterative development process. This platform now **needs to be scaled and made ready for production workloads**.
- Business units need to **reduce time to market and avoid inhibitors which stop the bank getting the best provider at the best price** from a diverse set of suppliers.

## Solution

- Make a big leap forward in the Bank's IT capability, to lay the right foundations to benefit from the digital economy through this cloud journey and to drastically reduce the cost base in order to enhance the bank's position. Our solution will make IT a simpler, more efficient and agile operation which will enable delivery of the best customer experience.

1. Committed migration of >80% of the in scope applications (~over 20 hosts) over 3 years to a **flexible hybrid cloud environment** for systems of records and systems of engagement with customers (e.g. through IBM Cloud PaaS, APA, Integrated Discovery, **Hybrid Cloud Migration**, Application Remediation Support, Decommission, **API currency**, **DevOps**)
2. Creation of an open service brokerage framework for use by the bank's business units to leverage the best platform for their workload in an integrated manner
3. Provision of an expanded **rapid application development platform in the cloud**.
4. Enabling **everything as a Service** and implementing **self-service** with industrialized Straight Through Processing in IT
5. Effective partnering in a new **streamlined target operating model**, with a shared end-to-end vision, where we brings its global financial sector expertise and experienced A-team to the bank
6. Embracing change with a cultural and HR program to enhance talent and capabilities for colleagues inside and outside the Bank within IBM.
7. Drive revenue growth by increased speed to market for your front- end applications enabled by a new development platform
8. **Significantly reduced cost base through** running front and back- end workload on **agile centralized and industrialized platforms** with a committed target cost benefit over of 40%
9. Continuously leading the digital era through joint innovation of new products, services and business models.