WebSphere in a hybrid cloud environment

With Demonstrations

"The Art of the Possible"

Kevin Postreich
IBM World Wide Technical Sales

Learning Objectives
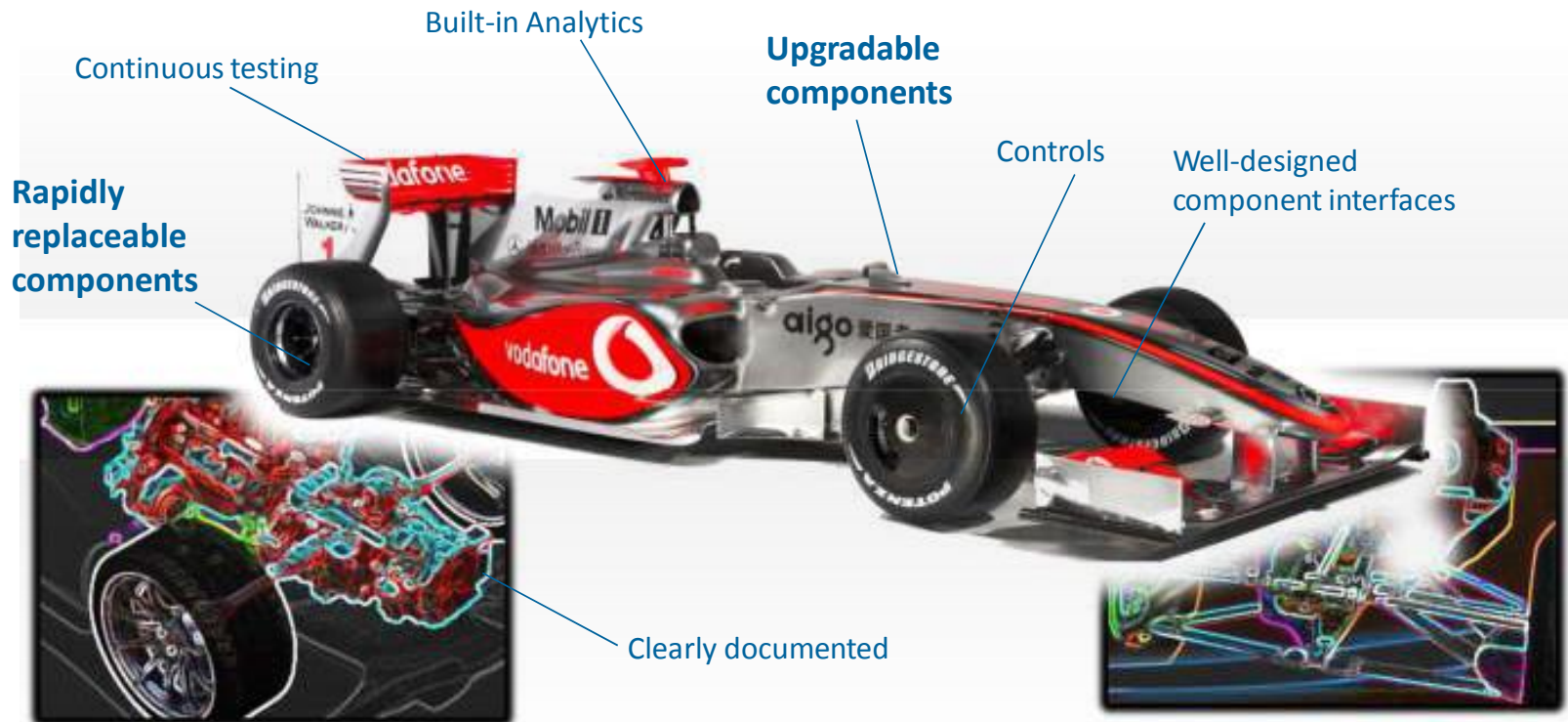
At the conclusion of this session, the participant will be able to…

❑ Have basic understanding of WebSphere Middleware in a Hybrid Cloud

❑ Understand why Bluemix is important in the IBM hybrid cloud world

❑ Realize the 'Art of the possible" of how to leverage WebSphere middleware services in Bluemix to quickly develop engaging applications

1. **Build and deploy** applications to Bluemix
2. **Caching** service integration
3. **Messaging** service integration
4. **API management** integration to on-premis systems of record services
5. **Twitter** for **Social Media** service integration
6. **WebSphere Real-Time Communications (WebRTC)** service integration
7. **Internet of Things (IoT)** service integration

Importance of Rapid Innovation

- Each Formula One car is considered a prototype solution
  (it is never "finished")

⇨ Design objective is to enable rapid and continuous evolution

  ⇨ Comprised of **composable units** that can quickly evolve and be rapidly replaced to stay ahead of the competition.

  ⇨ Components are ready for immediate use!

Built-in Analytics

Continuous testing

Upgradable components

Controls

Well-designed component interfaces

Rapidly replaceable components

Clearly documented

Rapid Innovation: Becoming a Composable Business

- Dynamic, flexible, responsive, agile

- Built on blocks of capability that can be rapidly changed

    - Quickly prototype, evolve, change, throw away, if needed, while achieving the goals outlined below:

    - **Use of managed infrastructure, IBM and 3rd party ready to use services, IoT, APIs , ect to develop something unimaginable!**

Cloud   Mobile   Social   Big Data

Internet of Things

The Composable Business

Business
- Faster time to market

- More responsive to changing business needs

IT Operations
- Failure ready infrastructure

- Reduced risk during changes

Developers
- Can focus on innovation

- More freedom and choice

There is no faster way to get there!

- There is no faster way to get there than WebSphere middleware on IBM Cloud (Bluemix)

- No messy infrastructure concerns
- No installation / configuration of middleware
- No downloads
- Just write code!

Built for Developers

About today's development landscape
It starts with a line of code!

- Move quickly, see results fast.

- Needs to learn new skills through playing and experimenting safely.

- Needs freedom to experiment without worrying about pricing right away.

- Needs to be able to prototype quickly, and throw away if necessary

- Needs to be able to use multiple language and runtimes in a single project, not only Java, but JavaScript, Ruby, etc

- IBM Bluemix is an ideal platform to meet these customer needs

  - No middleware to install and configure

  - No upfront costs to get started

  - Quick time to explore, prototype and validate fresh ideas

  - Mutli-language and runtime built-in
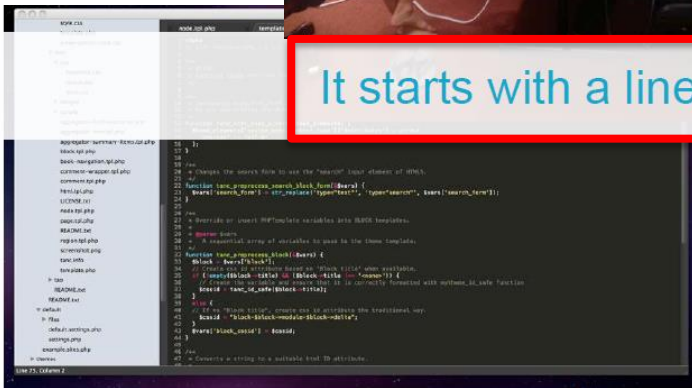
What is Bluemix? Delivering PaaS Composable Services

Bluemix is an **open-standard**, cloud-based platform (PaaS) for building, managing, and **running applications of all types** (web, mobile, big data, new smart devices, and so on).

Quickly build and deploy innovative applications using a rich set of composable services from IBM and the growing ecosystem of 3rd party services

Instant Environments
The developer can choose any language runtime or bring your own. Zero to production in one command.

DevOps
Development, monitoring, deployment, and logging tools allow the developer to run the entire application.

APIs and Services
A catalog of IBM, third party, and open source API services allow the developer to stitch an application together in minutes.

Layered Security
IBM secures the platform and infrastructure and provides you with the tools to secure your apps.

On-Premises Integration
Build hybrid environments. Connect to on-premises assets plus other public and private clouds.

Flexible Pricing
Sign up in minutes. Pay as you go and subscription models offer choice and flexibility. Only pay for what you use!

Integration among existing applications and born-on-the-web applications in Bluemix
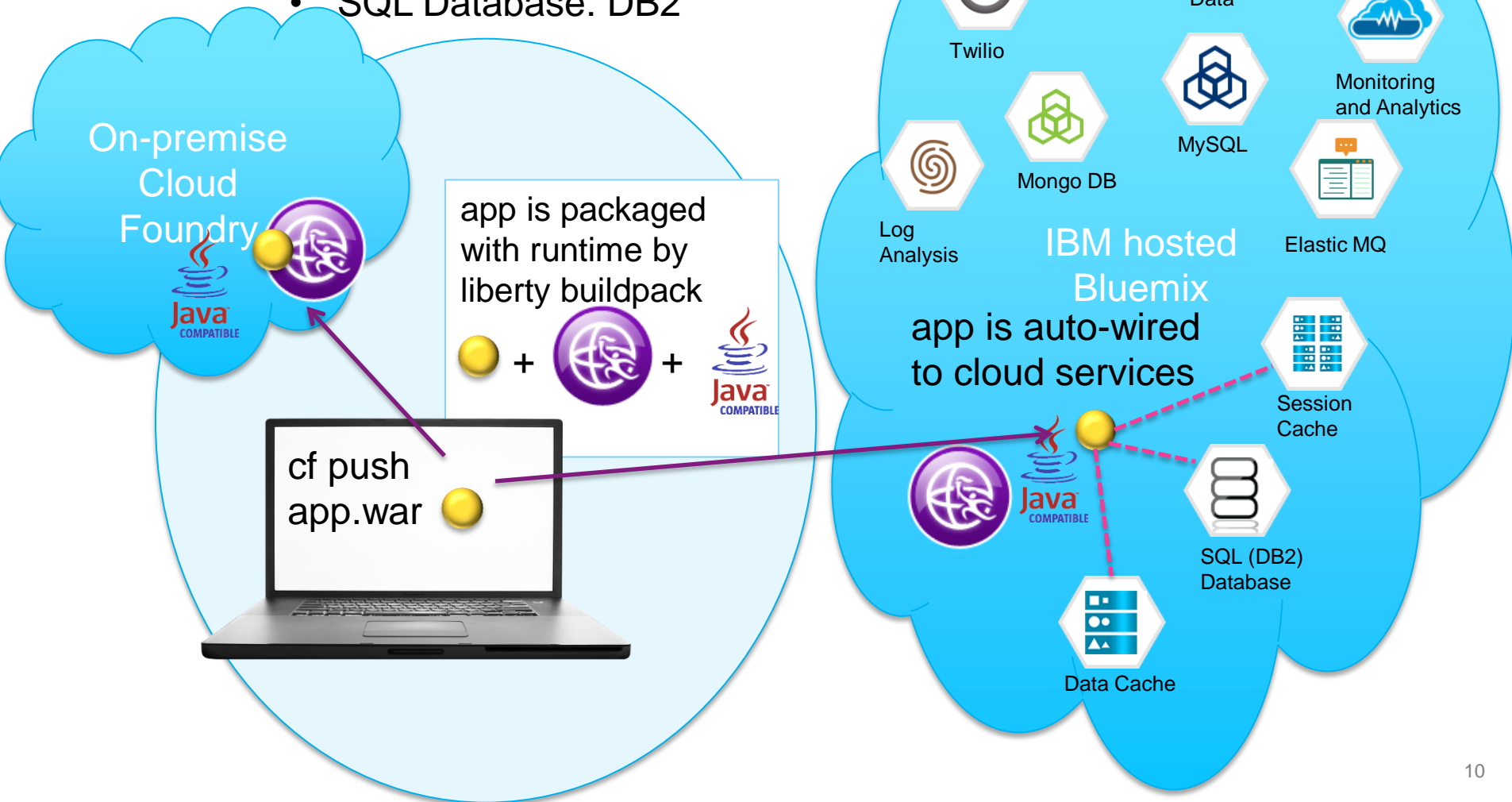
- Use cloud integration to securely expose data and applications outside of Bluemix

- Provide integration services to systems of record running on WebSphere Application Server
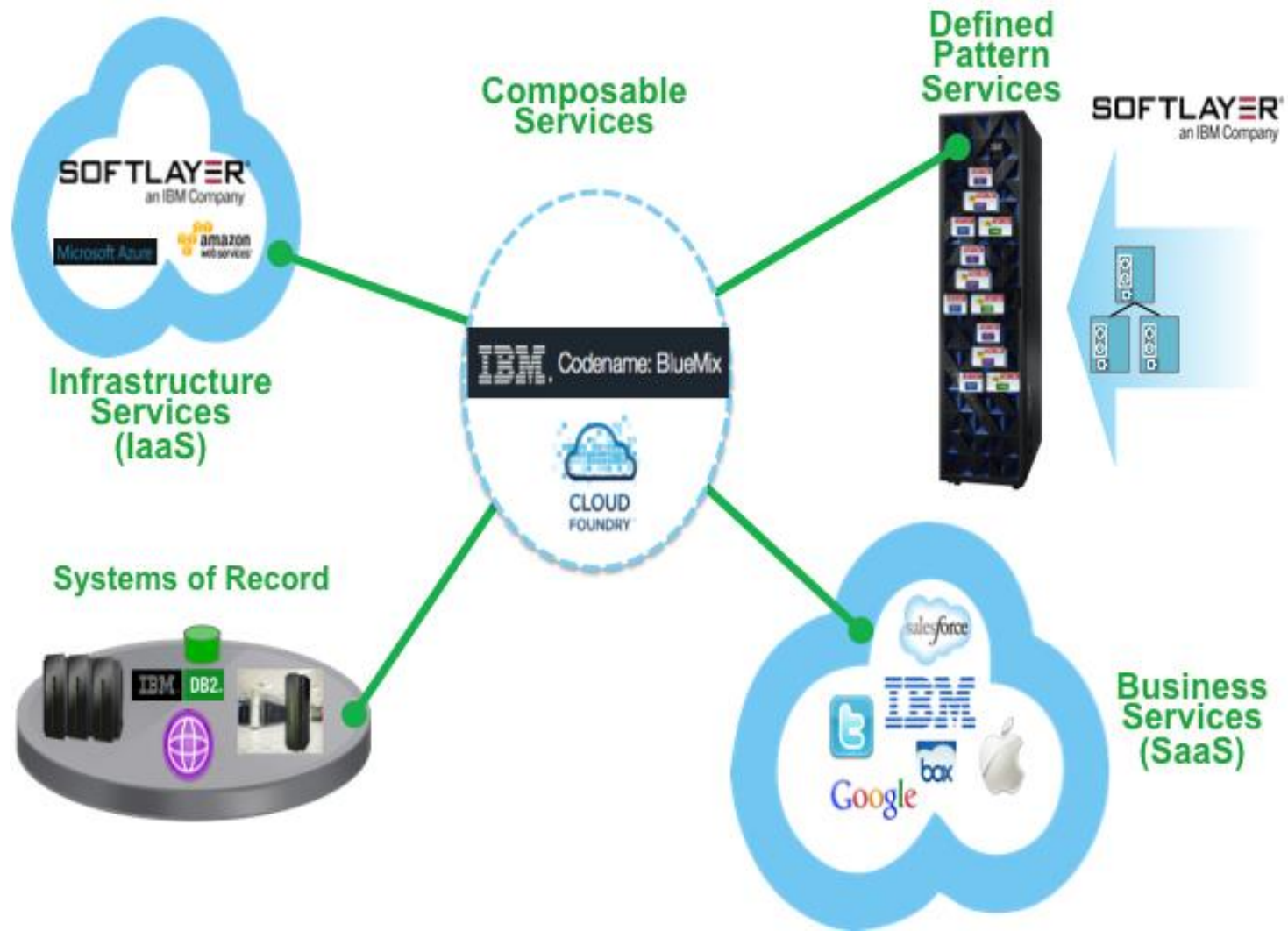
WebSphere Liberty Profile *is* the Java runtime for Bluemix

- Java: Liberty Profile
- Cache: WebSphere eXtreme Scale
- Messaging: MQ Light
- SQL Database: DB2

On-premise Cloud Foundry

app is packaged with runtime by liberty buildpack

cf push app.war

Twilio

Mobile Data

Monitoring and Analytics

MySQL

Mongo DB

Log Analysis

IBM hosted Bluemix

app is auto-wired to cloud services

Elastic MQ

Session Cache

SQL (DB2) Database

Data Cache

Deployment flexibility provides the optimal platform for apps

WebSphere Everywhere!
Write once, deploy everywhere.

On-Premises	IaaS	PaaS
Total Control **Maximum Flexibility** **Maximum Security**	**Public Cloud** **Economies** **Time to Market**	**Shared Everything** **Economics** **Packaged Services**

Build Your Own Cloud
Use virtualized WebSphere App Server on your hardware

IaaS - SoftLayer
BYOS&L - WebSphere App Server

PureApplication Service
SOFTLAYER
an IBM Company

SOFTLAYER

PaaS - Blue Mix
Composable services
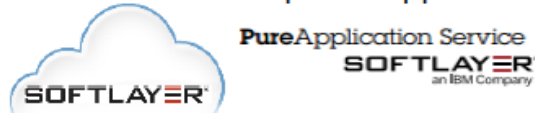Liberty Buildpack

IaaS – Amazon
BYOS&L - WebSphere App Server

amazon
webservices™

Pure Application Systems
Use either existing patterns or build your own patterns for the WebSphere App Server

IaaS – Microsoft Azure
BYOS&L - WebSphere App Server
Pay-as-you-Go WAS VMs

Microsoft Azure
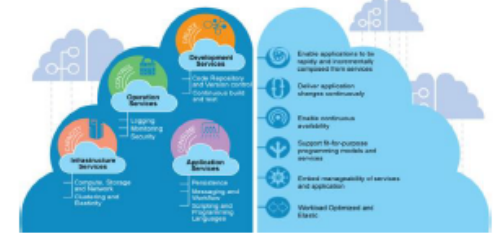
PaaS - Cloud Foundry
Liberty Buildpack

CLOUD
FOUNDRY™

Moving Towards a Seamless & Borderless Managed IBM Cloud

Requesting Services

Users

IBM Bluemix

CLOUD FOUNDRY™

Additional Public Services

Google

salesforce

box

IBM

PureApplication
System, Service & Software

Product Patterns
for simplified middleware deployment

Deploy

docker

Expose on premise or dedicated off premise systems as services or APIs

Traditional Systems of Record

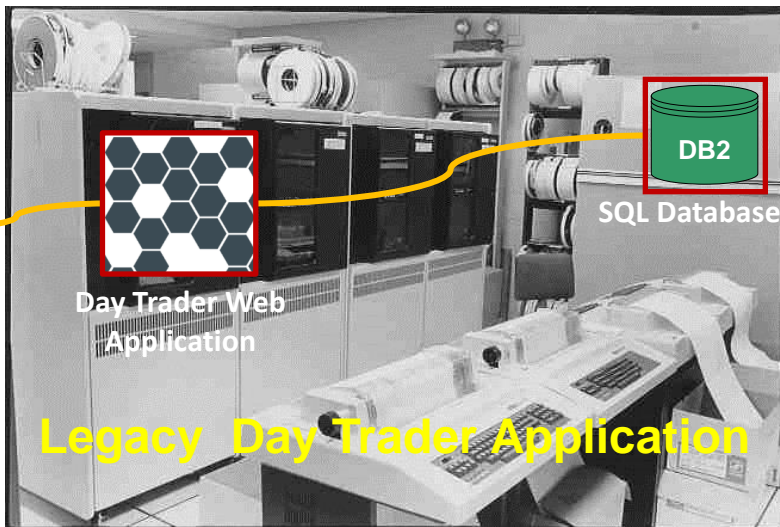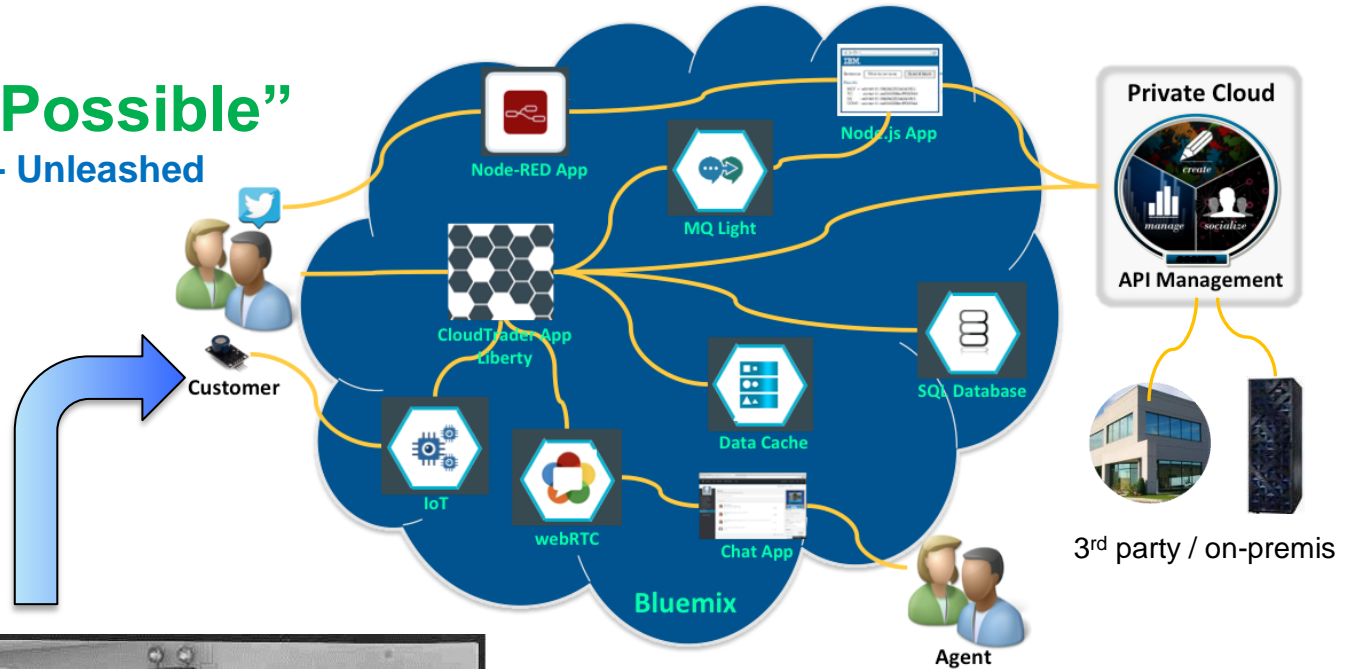IBM DB2®
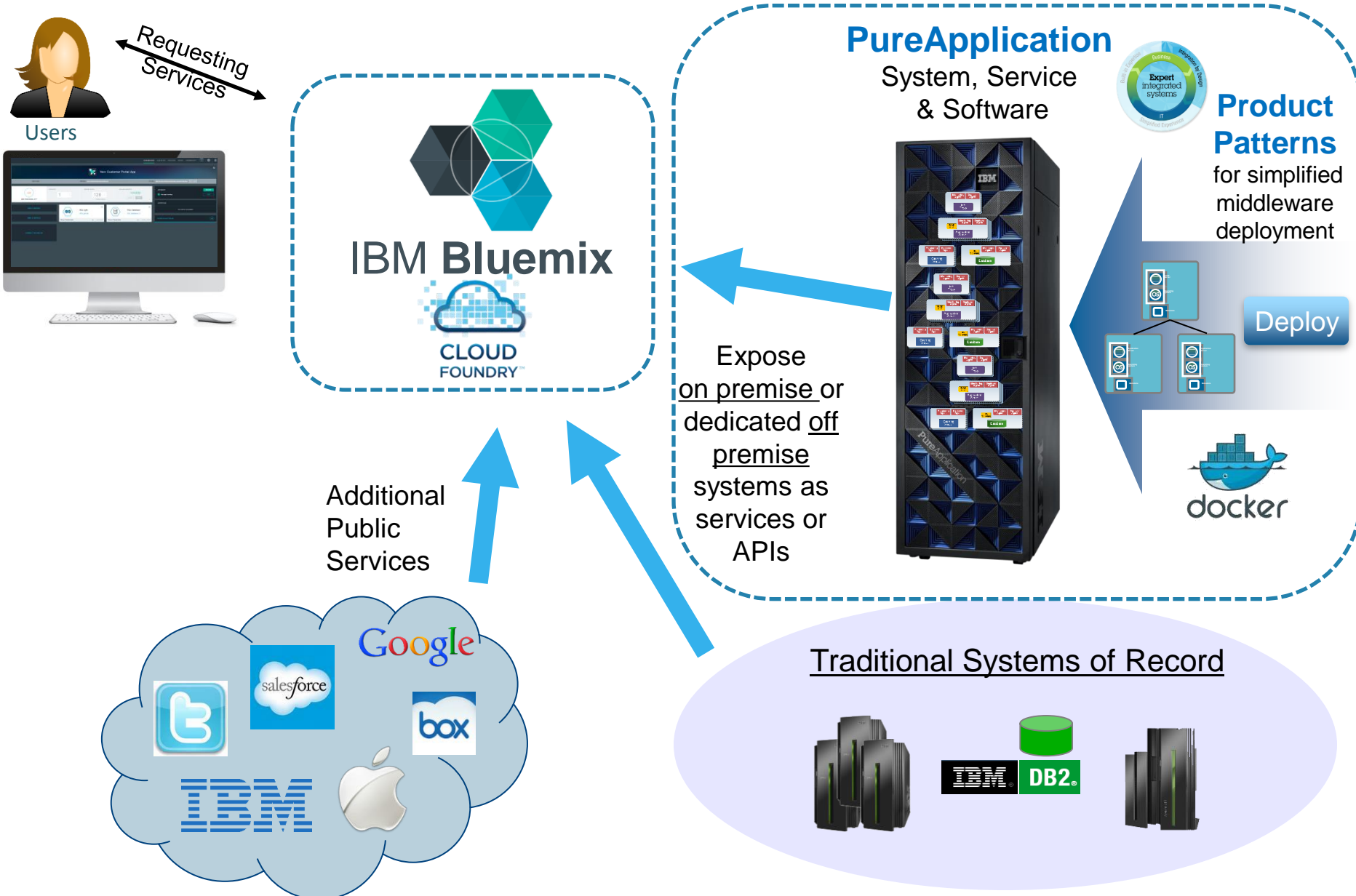
Cloud-Trader Unleashed: Making it engaging

Embellish Java EE application showcasing key WebSphere portfolio integration capabilities in the cloud

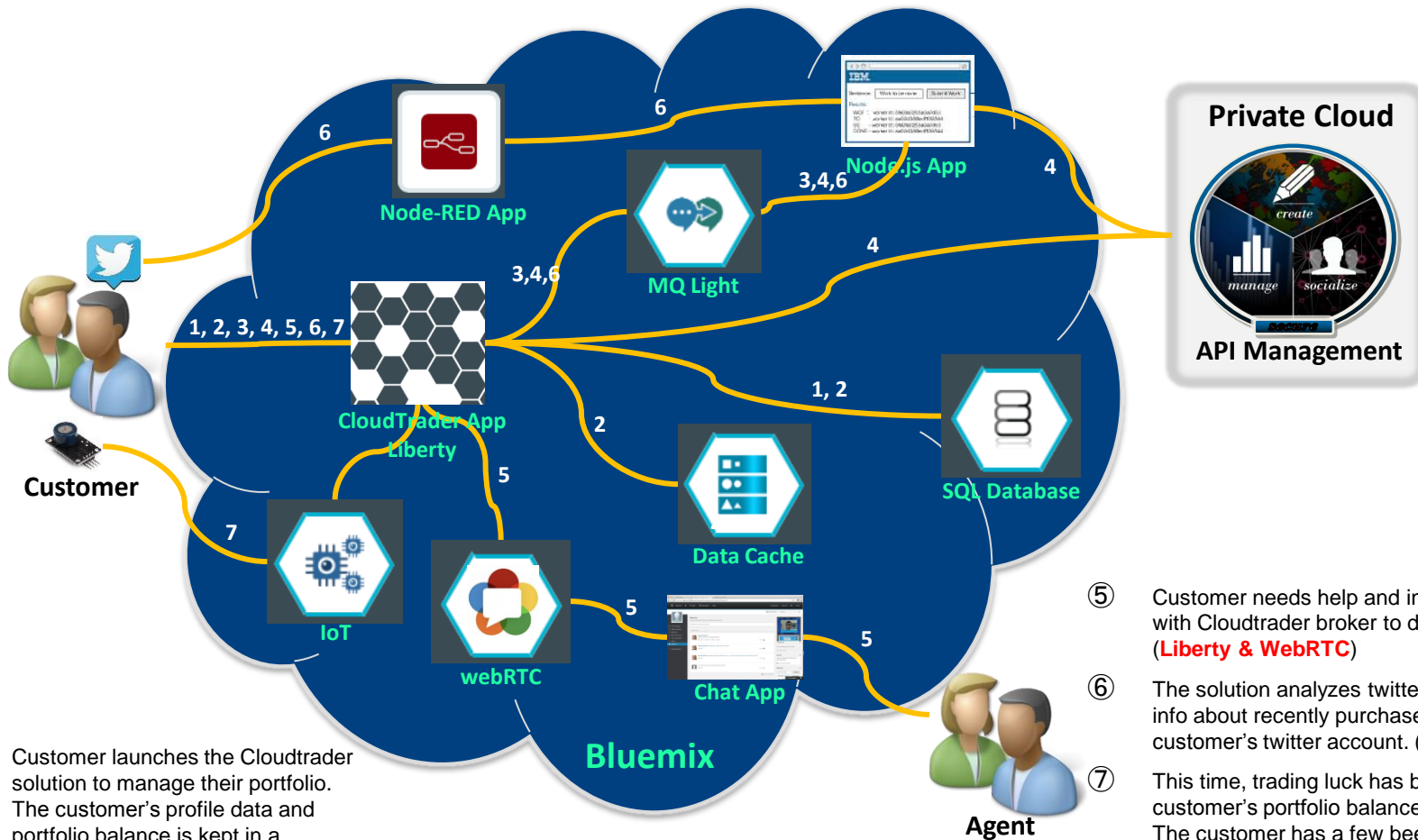## "Art of the Possible"
Cloud Trader - Unleashed

DayTrader

- Java EE 6
- Database for persistence
- System of Record
- Nothing "Cloud" about it

Customer

Node-RED App

MQ Light

Node.js App

CloudTrader App Liberty

SQL Database

Data Cache

IoT

webRTC

Chat App

Bluemix

Agent

Private Cloud

create

manage   socialize

API Management

3rd party / on-premis

customer

DB2

SQL Database

Day Trader Web Application

Legacy Day Trader Application

- As a developer, you now have a hand in creating the future
- Whatever your task, we've got you covered:
  - With all of the instant services, runtimes, and infrastructure you need to **unleash** your ideas into the present

Cloud Trader – Unleashed Scenario overview

Private Cloud

API Management

Node-RED App

6

6

Node.js App

3,4,6

4

MQ Light

3,4,6

4

CloudTrader App Liberty

1, 2, 3, 4, 5, 6, 7

2

5

SQL Database

1, 2

Customer

7

IoT

webRTC

5

Chat App

5

5

Data Cache

Bluemix

Agent

① Customer launches the Cloudtrader solution to manage their portfolio. The customer's profile data and portfolio balance is kept in a database **(Liberty & SQL Database)**

② Customer data is cached to improve solution's performance **(Data Cache)** and customer initiates trades

③ Because of customer's trading volume, a "Incentives and Offers" service sends the customer a voucher for discounted / trades (**Node.js & MQ Light**).

④ Bad luck with trades results in a low portfolio balance. Incentives and Offers app then invokes external 3rd party API and responds to customer with bank offers for a line of credit (**APIM**). Customer should be able to view the offers in the notifications on home page

⑤ Customer needs help and initiates video chat with Cloudtrader broker to discuss his portfolio (**Liberty & WebRTC**)

⑥ The solution analyzes twitter feed for trending info about recently purchased stocks and alerts customer's twitter account. (**Node-Red**)

⑦ This time, trading luck has been very good and customer's portfolio balance increases nicely. The customer has a few beers to celebrate! After a few drinks, customer attempts another trade, but the Cloudtrader rejects this trade based on the blood alcohol level detected by the solution's sobriety assurance (> .08) (**IOT**)

Demonstration

1. **Build and deploy** Java JEE application to Bluemix
2. **Messaging** service integration
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