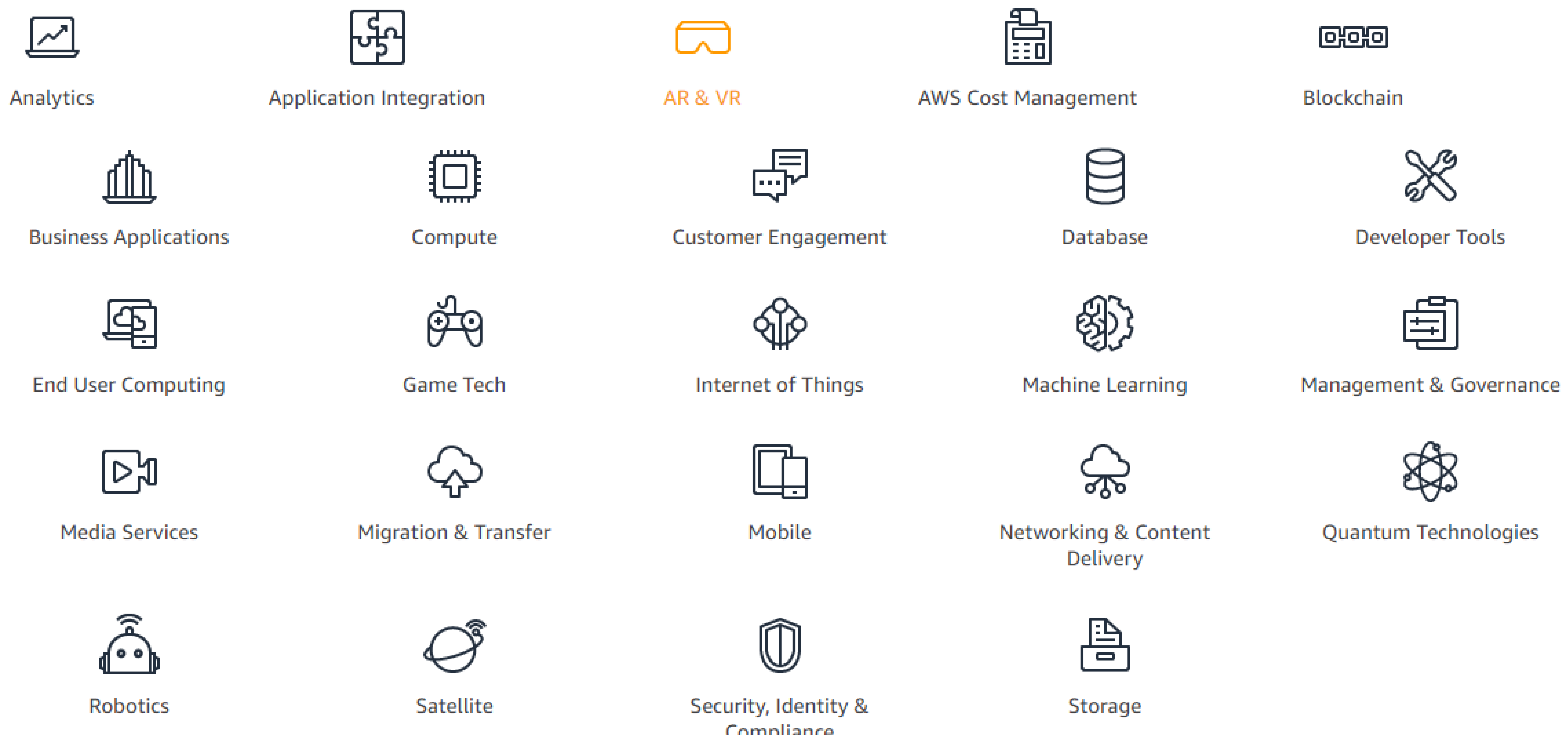
Java and beyond – How it is getting used in the industry?

What type of apps are getting developed in the industry?



Analytics

Application Integration

AR & VR

AWS Cost Management

Blockchain

Business Applications

Compute

Customer Engagement

Database

Developer Tools

End User Computing

Game Tech

Internet of Things

Machine Learning

Management & Governance

Media Services

Migration & Transfer

Mobile

Networking & Content Delivery

Quantum Technologies

Robotics

Satellite

Security, Identity & Compliance

Storage

Java trend

- Java lost to JavaScript in browser space
- JIT compiler, updated memory model and hotspot jvm
- Built further on strengths… libraries, jvm languages, etc
- Concurrent collections, Locks, NIO, etc.
- Anonymous classes, Single method interfaces… a step towards closures
- RoR, Go people returned to Java for scalability, performance (Twitter, etc.)
- Oracle kept java open… open JDK, JCP, etc And alive
- Java 7, 8, 9, 10, 11
- Functional Programming

  Programming with functions

  Behavior as data

  Repeatable result without side effects

  Order of execution not defined…

- Functions don't hold global state
- Programs can run independently, immutably, safely
- No side effects so easily parallelizable
- With the advent of multicore processors, it makes sense
- It enables better performance in high volume processing

Vitality of Java

- Java is here to stay
- Lot of enterprise applications still breathe it
- It is still popular
- Because of JVM ecosystem
- Android is also helping
- It is still open
- And evolving

- ✓ Specification-interfaces
- ✓ Run-time environment-JVM
- ✓ Standard library-java.io/nio
- ✓ Third-party libraries-commons, gson, rxjava, etc
- ✓ jvm languages-scala, closure
- ✓ Concurrency
- ✓ Reactive-RxJava
- ✓ AkkaActors
- ✓ Frameworks like Akka, Play
- ✓ JavaScript
- ✓ JavaScript is maturing-ECMAScript 6, 7, etc
- ✓ JavaScript is everywhere
- ✓ Including inside java via Nashorn
- ✓ Big Data
- ✓ Java one of the top research languages
- ✓ IoT
- ✓ Jigsaw
- ✓ Community-JUG

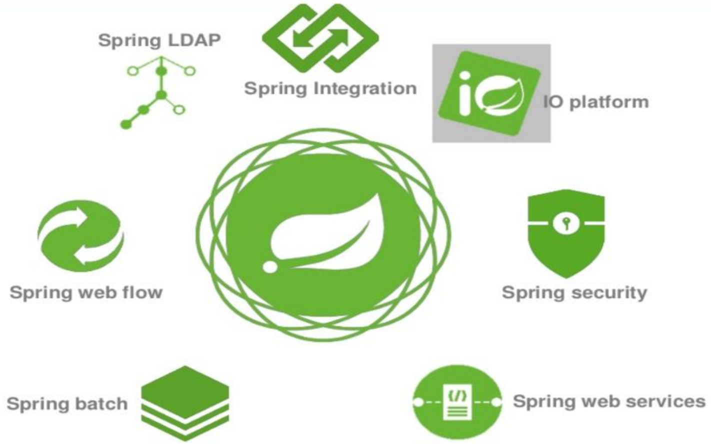
Where Java is getting used?

- Android Apps
- Middleware enterprise Apps at Services Industry
- Web applications (Servlet container, service layer and components)
- Cloud Native Apps
- Software tools (DevOps)
- Trading Applications
- Embedded system
- Big Data
- High frequency Trading
- Scientific applications

And much more….

Spring Eco System

Classics



Spring LDAP

Spring Integration

IO platform

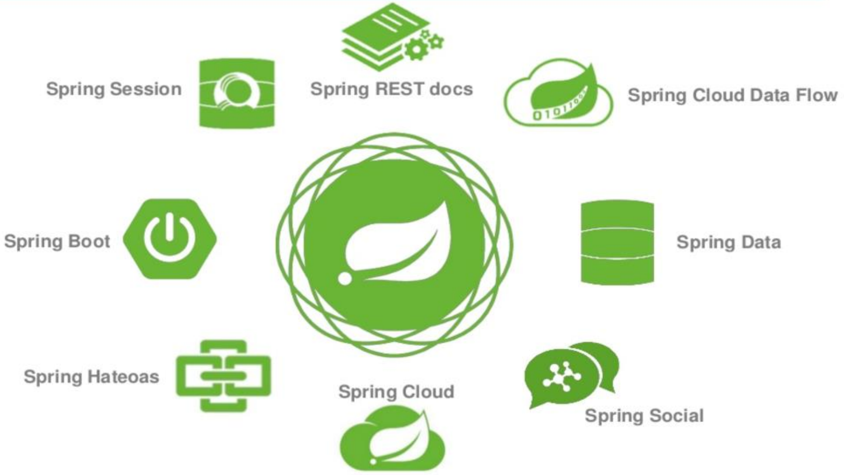
Spring web flow

Spring security

Spring batch

Spring web services

Popular



Spring Session

Spring REST docs

Spring Cloud Data Flow

Spring Boot

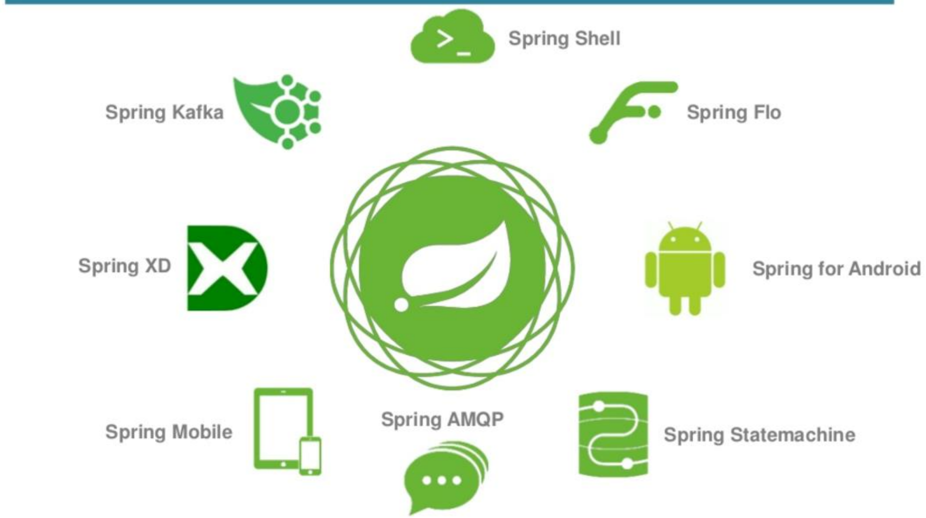
Spring Data

Spring Hateoas

Spring Cloud

Spring Social

Other projects



Spring Shell

Spring Kafka

Spring Flo

Spring XD

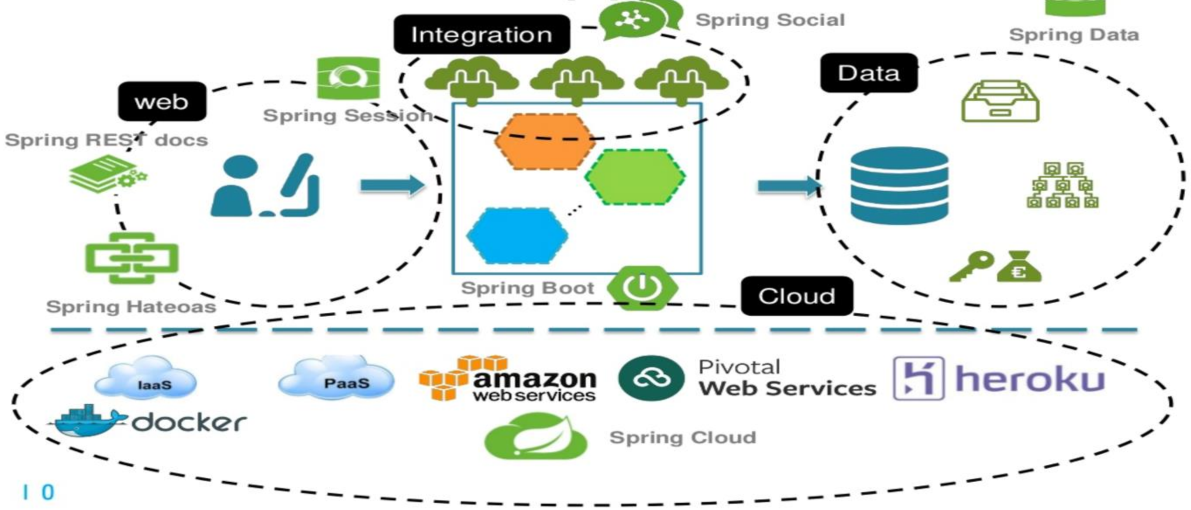
Spring for Android

Spring Mobile

Spring AMQP

Spring Statemachine

Modern applications



Spring Social

Spring Data

Integration

Data

web

Spring Session

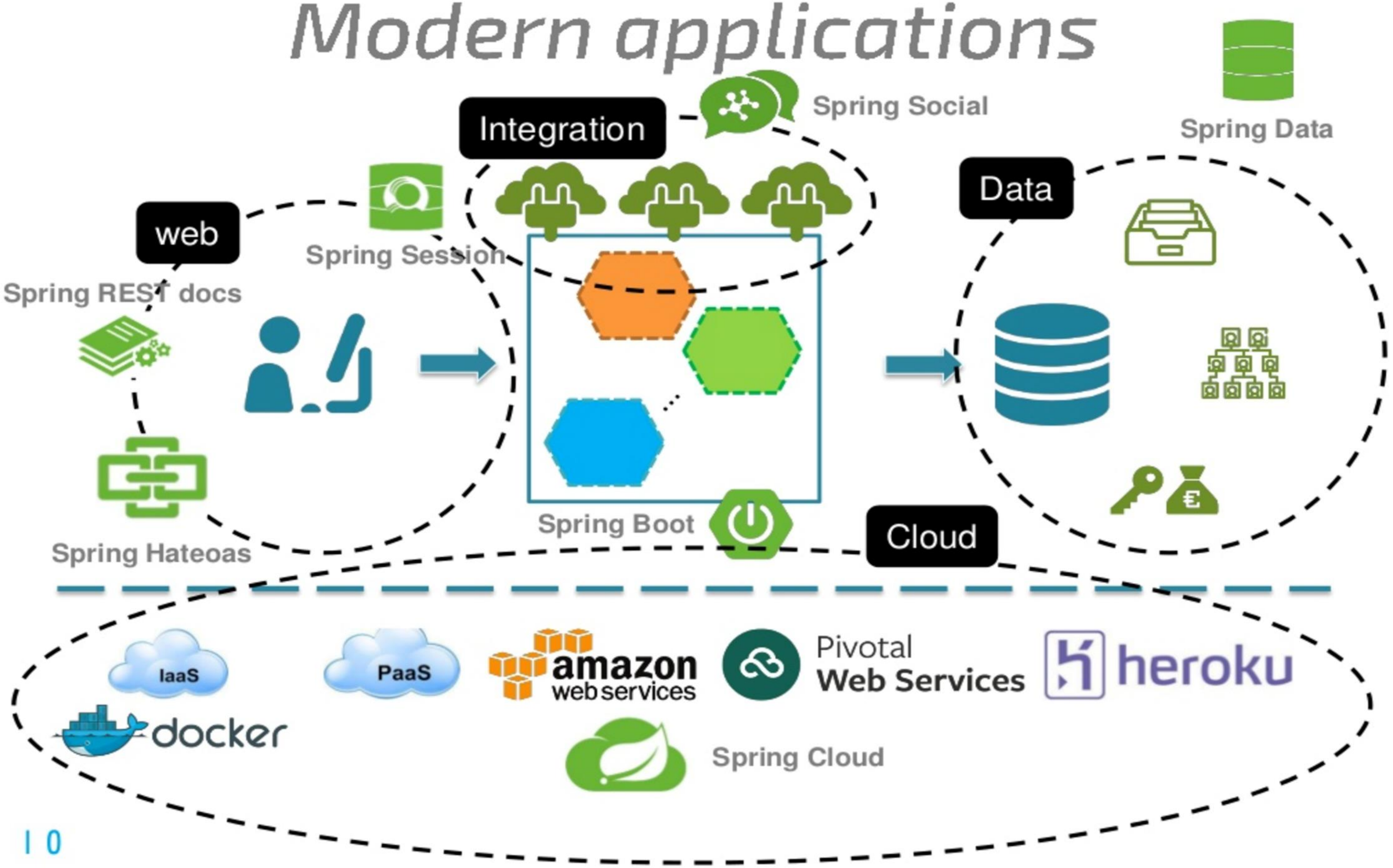
Spring REST docs

Spring Hateoas

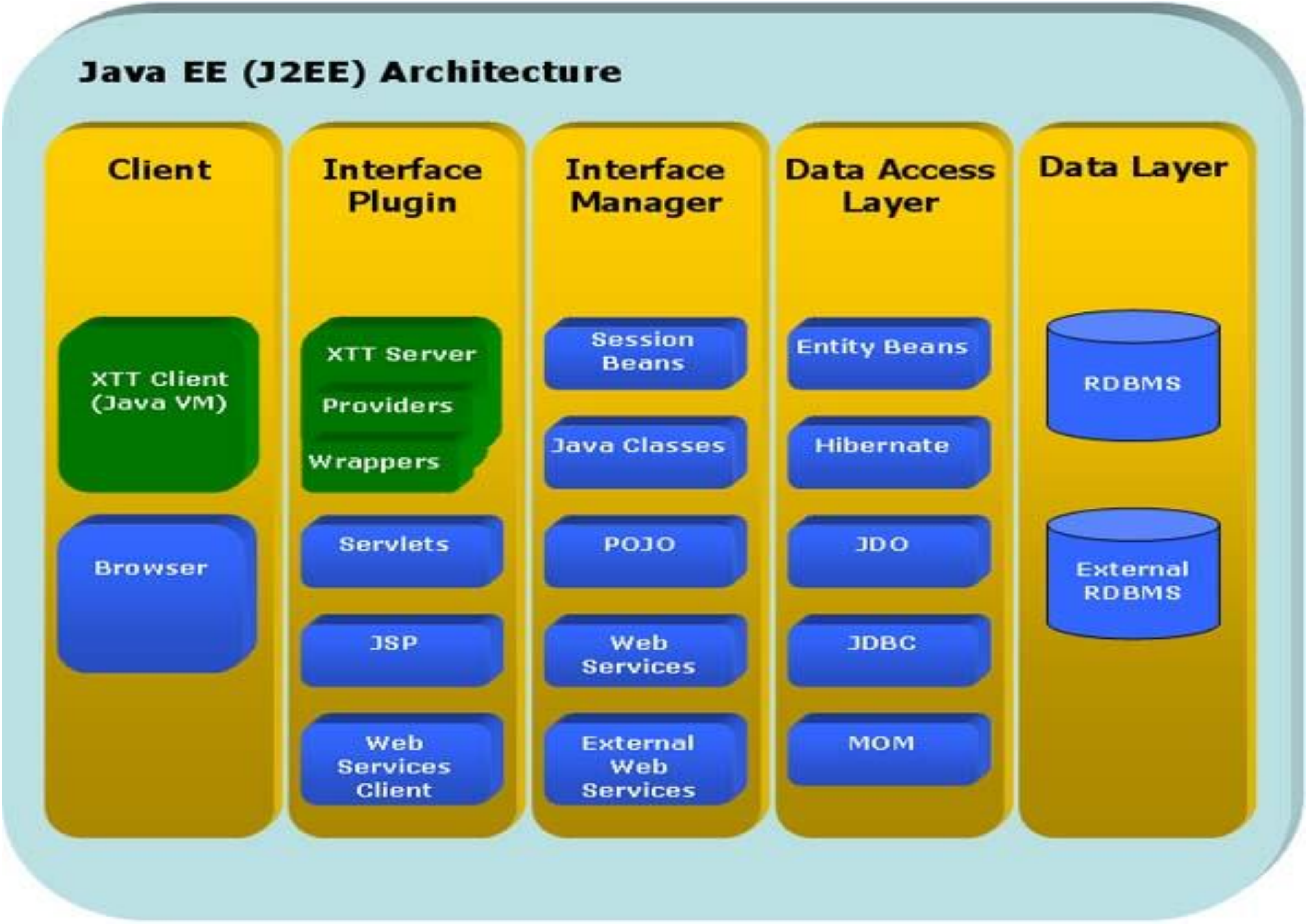
Spring Boot

Cloud

Modern applications



Typical N-Tier Architecture



Java EE (J2EE) Architecture

Client
XTT Client (Java VM)
Browser

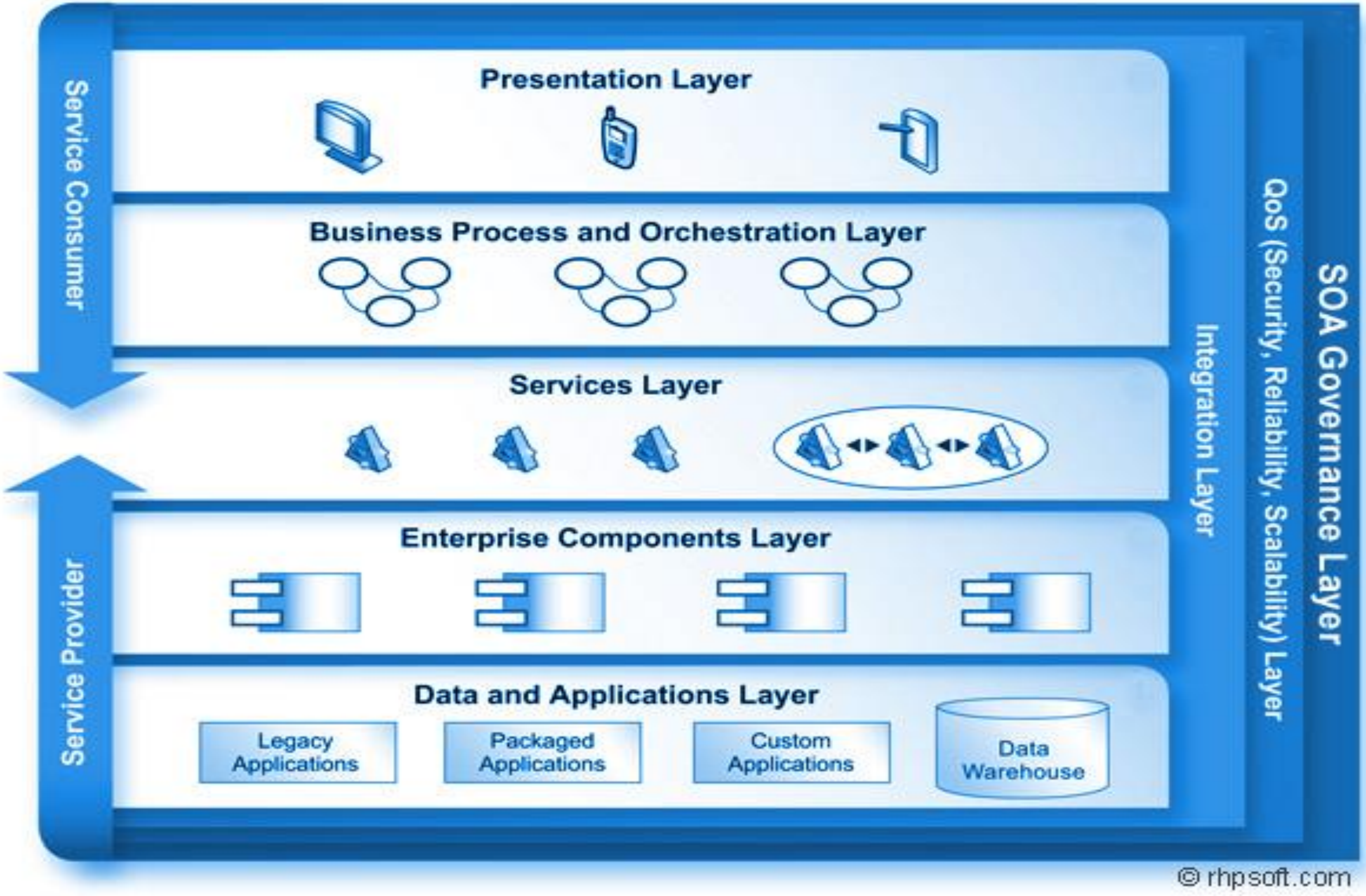
Interface Plugin
XTT Server
Providers
Wrappers
Servlets
JSP
Web Services Client

Interface Manager
Session Beans
Java Classes
POJO
Web Services
External Web Services

Data Access Layer
Entity Beans
Hibernate
JDO
JDBC
MOM

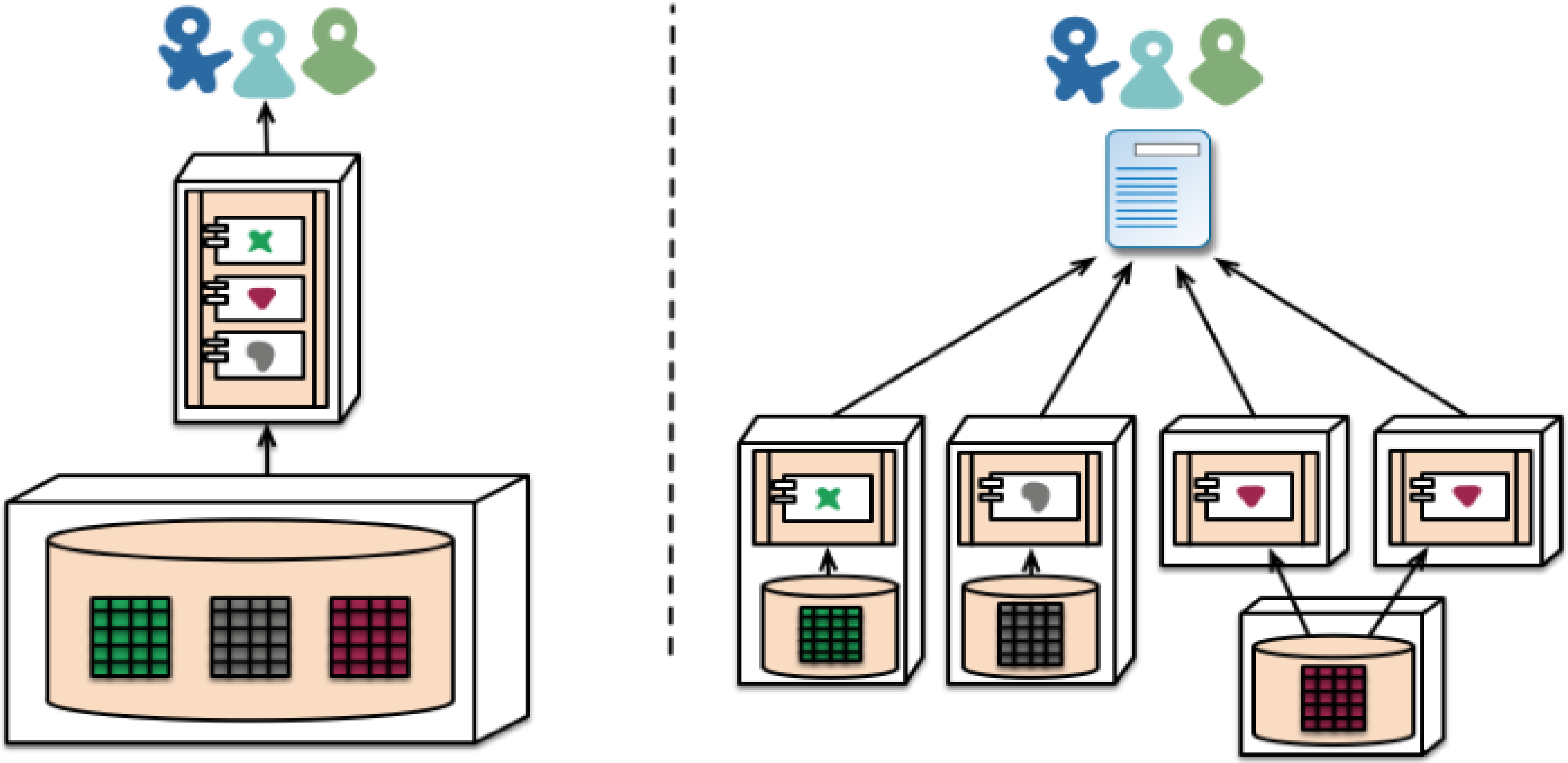
Data Layer
RDBMS
External RDBMS

Enterprise architecture landscape



Micro Services Architecture

Micro Service Architecture is a **functional decomposition** of systems into manageable and **independently deployable components**.

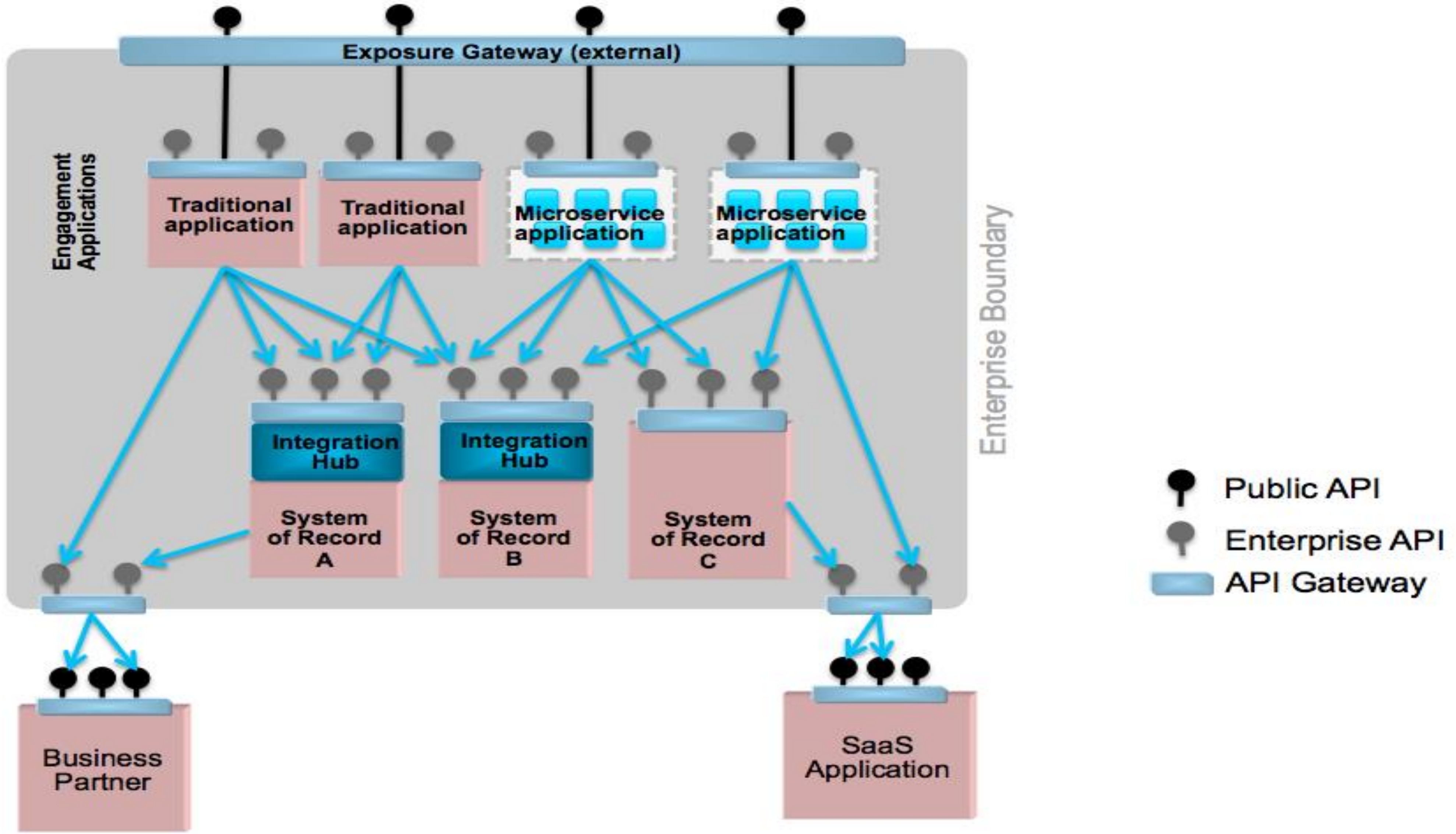


monolith - single database

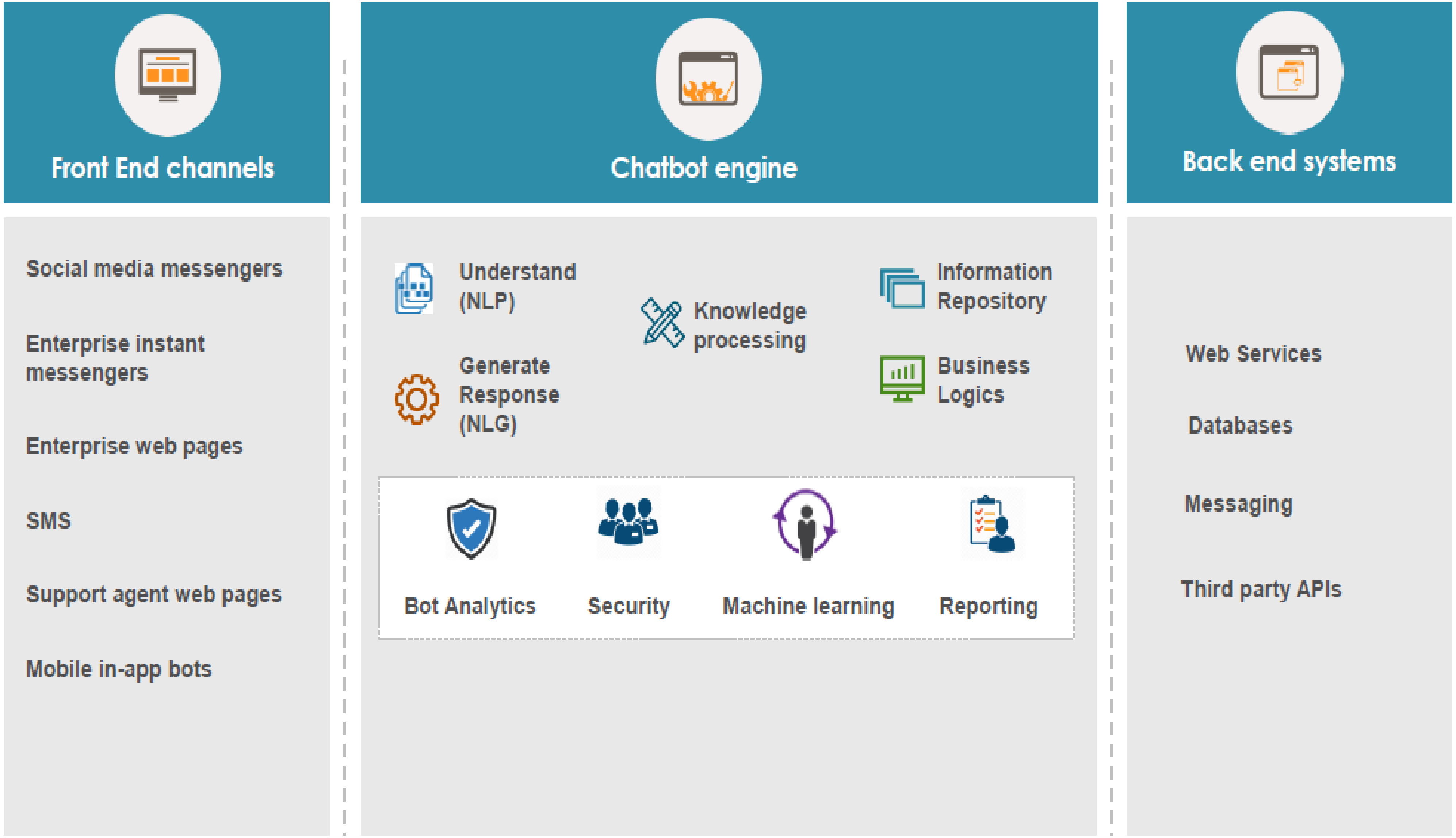
microservices - application databases

Source - http://martinfowler.com/articles/microservices.html

API instead of Applications



Applicability# Conversational User experience



Front End channels

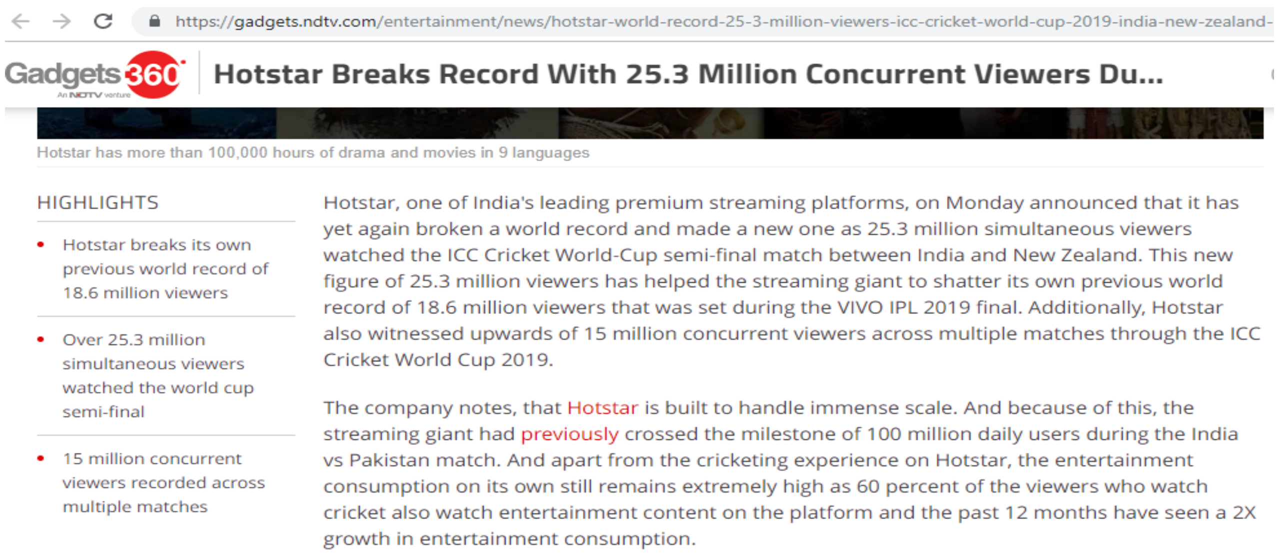
- Social media messengers
- Enterprise instant messengers
- Enterprise web pages
- SMS
- Support agent web pages
- Mobile in-app bots

Chatbot engine

- Understand (NLP)
- Generate Response (NLG)
- Knowledge processing
- Information Repository
- Business Logics
- Bot Analytics
- Security
- Machine learning
- Reporting

Back end systems

- Web Services
- Databases
- Messaging
- Third party APIs



https://gadgets.ndtv.com/entertainment/news/hotstar-world-record-25-3-million-viewers-icc-cricket-world-cup-2019-india-new-zealand-

Gadgets 360 An NDTV venture

Hotstar Breaks Record With 25.3 Million Concurrent Viewers Du...

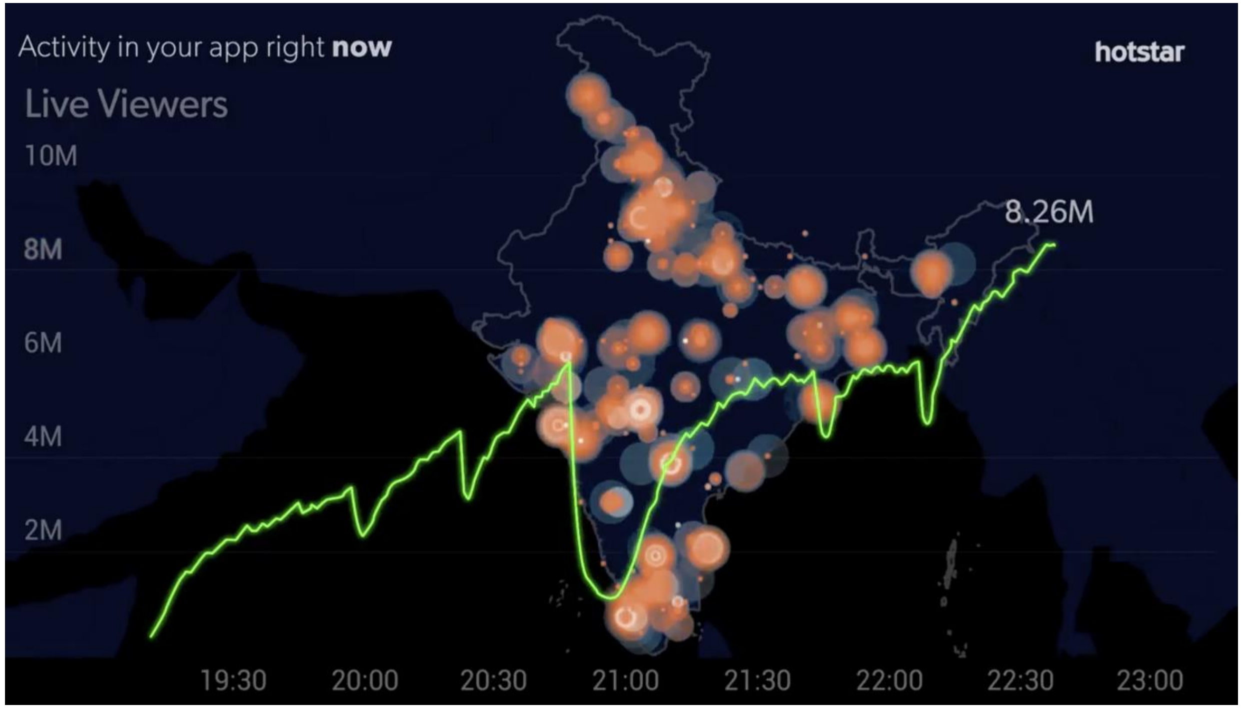
Hotstar has more than 100,000 hours of drama and movies in 9 languages

HIGHLIGHTS

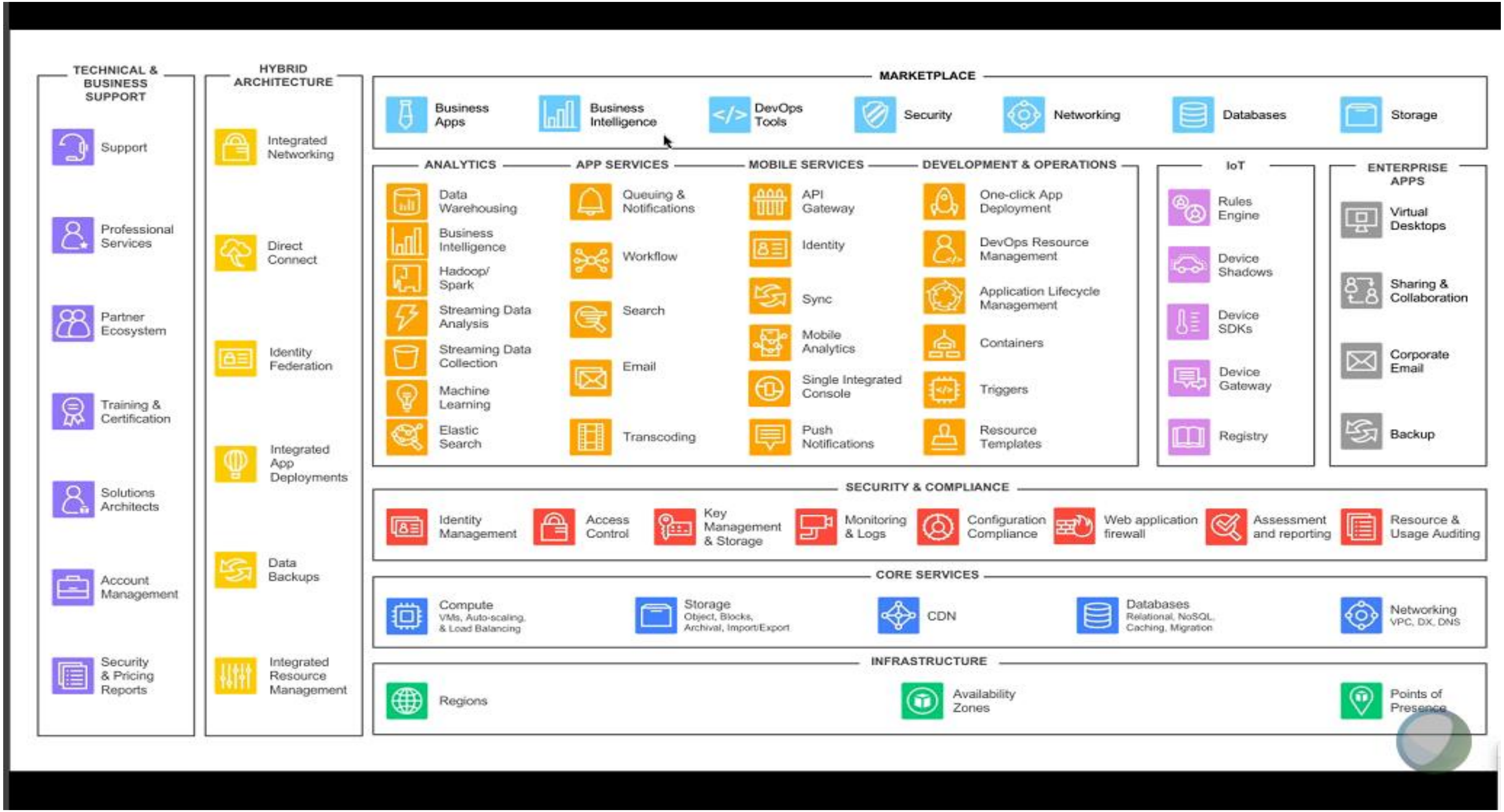
- Hotstar breaks its own previous world record of 18.6 million viewers
- Over 25.3 million simultaneous viewers watched the world cup semi-final
- 15 million concurrent viewers recorded across multiple matches

Hotstar, one of India's leading premium streaming platforms, on Monday announced that it has yet again broken a world record and made a new one as 25.3 million simultaneous viewers watched the ICC Cricket World-Cup semi-final match between India and New Zealand. This new figure of 25.3 million viewers has helped the streaming giant to shatter its own previous world record of 18.6 million viewers that was set during the VIVO IPL 2019 final. Additionally, Hotstar also witnessed upwards of 15 million concurrent viewers across multiple matches through the ICC Cricket World Cup 2019.

The company notes, that Hotstar is built to handle immense scale. And because of this, the streaming giant had previously crossed the milestone of 100 million daily users during the India vs Pakistan match. And apart from the cricketing experience on Hotstar, the entertainment consumption on its own still remains extremely high as 60 percent of the viewers who watch cricket also watch entertainment content on the platform and the past 12 months have seen a 2X growth in entertainment consumption.



AWS – Amazon Web services - https://roryp.github.io/og-aws/#tools-and-services-market-landscape



TECHNICAL & BUSINESS SUPPORT

- Support
- Professional Services
- Partner Ecosystem
- Training & Certification
- Solutions Architects
- Account Management
- Security & Pricing Reports

HYBRID ARCHITECTURE

- Integrated Networking
- Direct Connect
- Identity Federation
- Integrated App Deployments
- Data Backups
- Integrated Resource Management

MARKETPLACE

- Business Apps
- Business Intelligence
- DevOps Tools
- Security
- Networking
- Databases
- Storage

ANALYTICS

- Data Warehousing
- Business Intelligence
- Hadoop/ Spark
- Streaming Data Analysis
- Streaming Data Collection
- Machine Learning
- Elastic Search

APP SERVICES

- Queuing & Notifications
- Workflow
- Search
- Email
- Transcoding

MOBILE SERVICES

- API Gateway
- Identity
- Sync
- Mobile Analytics
- Single Integrated Console
- Push Notifications

DEVELOPMENT & OPERATIONS

- One-click App Deployment
- DevOps Resource Management
- Application Lifecycle Management
- Containers
- Triggers
- Resource Templates

IoT

- Rules Engine
- Device Shadows
- Device SDKs
- Device Gateway
- Registry

ENTERPRISE APPS

- Virtual Desktops
- Sharing & Collaboration
- Corporate Email
- Backup

SECURITY & COMPLIANCE

- Identity Management
- Access Control
- Key Management & Storage
- Monitoring & Logs
- Configuration Compliance
- Web application firewall
- Assessment and reporting
- Resource & Usage Auditing

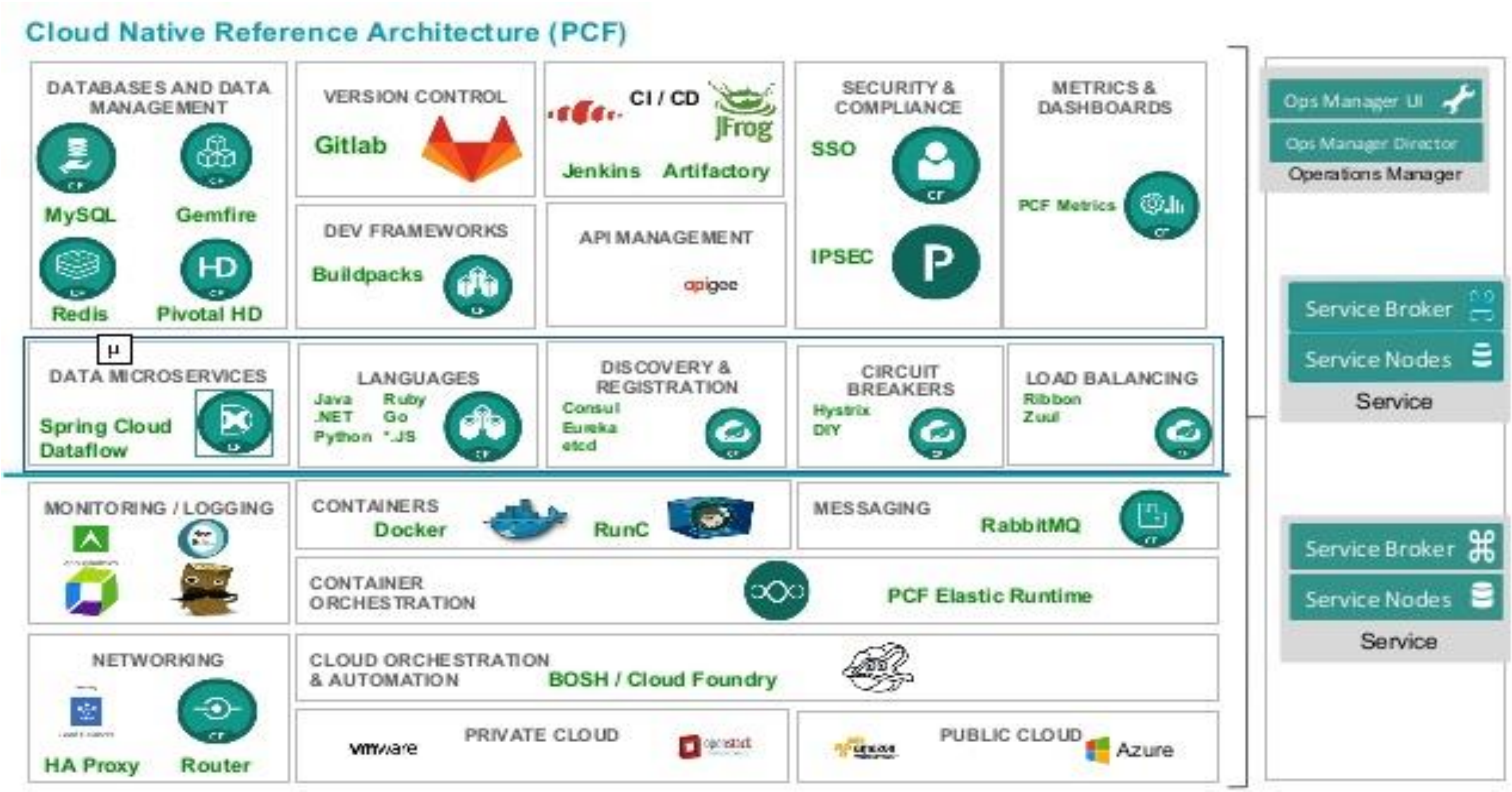
CORE SERVICES

- Compute VMs, Auto-scaling, & Load Balancing
- Storage Object, Blocks, Archival, Import/Export
- CDN
- Databases Relational, NoSQL, Caching, Migration
- Networking VPC, DX, DNS

INFRASTRUCTURE

- Regions
- Availability Zones
- Points of Presence

Enterprise Reference Architecture - Cloud



Cloud Native Reference Architecture (PCF)

DATABASES AND DATA MANAGEMENT
MySQL
Gemfire
Redis
Pivotal HD

VERSION CONTROL
Gitlab

CI / CD
Jenkins
Artifactory

SECURITY & COMPLIANCE
SSO
IPSEC

METRICS & DASHBOARDS
PCF Metrics

DEV FRAMEWORKS
Buildpacks

API MANAGEMENT
apigee

μ

DATA MICROSERVICES
Spring Cloud Dataflow

LANGUAGES
Java
Ruby
.NET
Go
Python
*.JS

DISCOVERY & REGISTRATION
Consul
Eureka
etcd

CIRCUIT BREAKERS
Hystrix
DIY

LOAD BALANCING
Ribbon
Zuul

MONITORING / LOGGING

CONTAINERS
Docker
RunC

MESSAGING
RabbitMQ

CONTAINER ORCHESTRATION
PCF Elastic Runtime

NETWORKING
HA Proxy
Router

CLOUD ORCHESTRATION & AUTOMATION
BOSH / Cloud Foundry

PRIVATE CLOUD
vmware
openstack

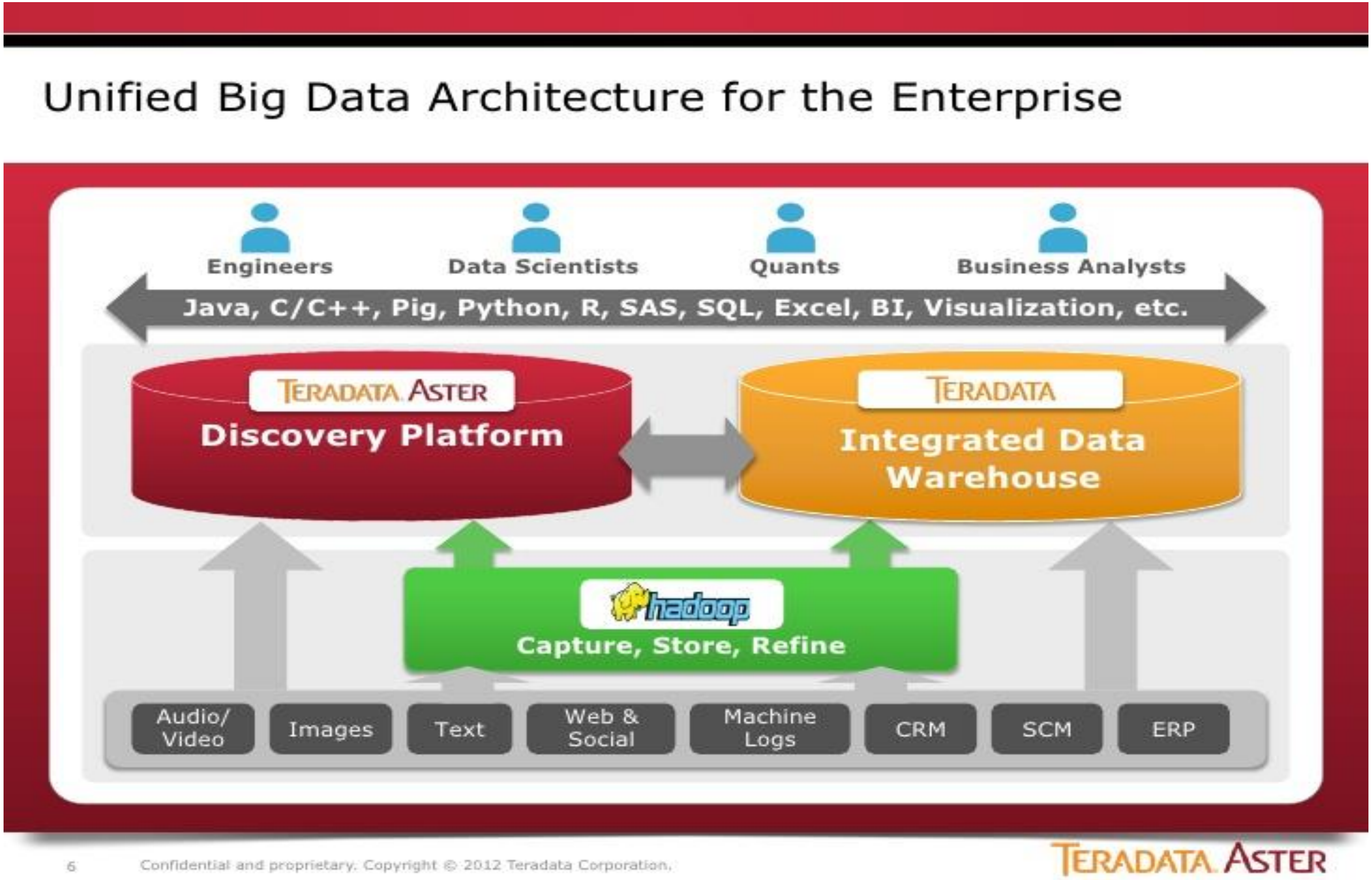
PUBLIC CLOUD
Azure

Ops Manager UI
Ops Manager Director
Operations Manager

Service Broker
Service Nodes
Service

Service Broker
Service Nodes
Service

Enterprise Data Architecture



Unified Big Data Architecture for the Enterprise

Engineers

Data Scientists

Quants

Business Analysts

Java, C/C++, Pig, Python, R, SAS, SQL, Excel, BI, Visualization, etc.

TERADATA ASTER

Discovery Platform

TERADATA

Integrated Data Warehouse

hadoop

Capture, Store, Refine

Audio/ Video

Images

Text

Web & Social

Machine Logs

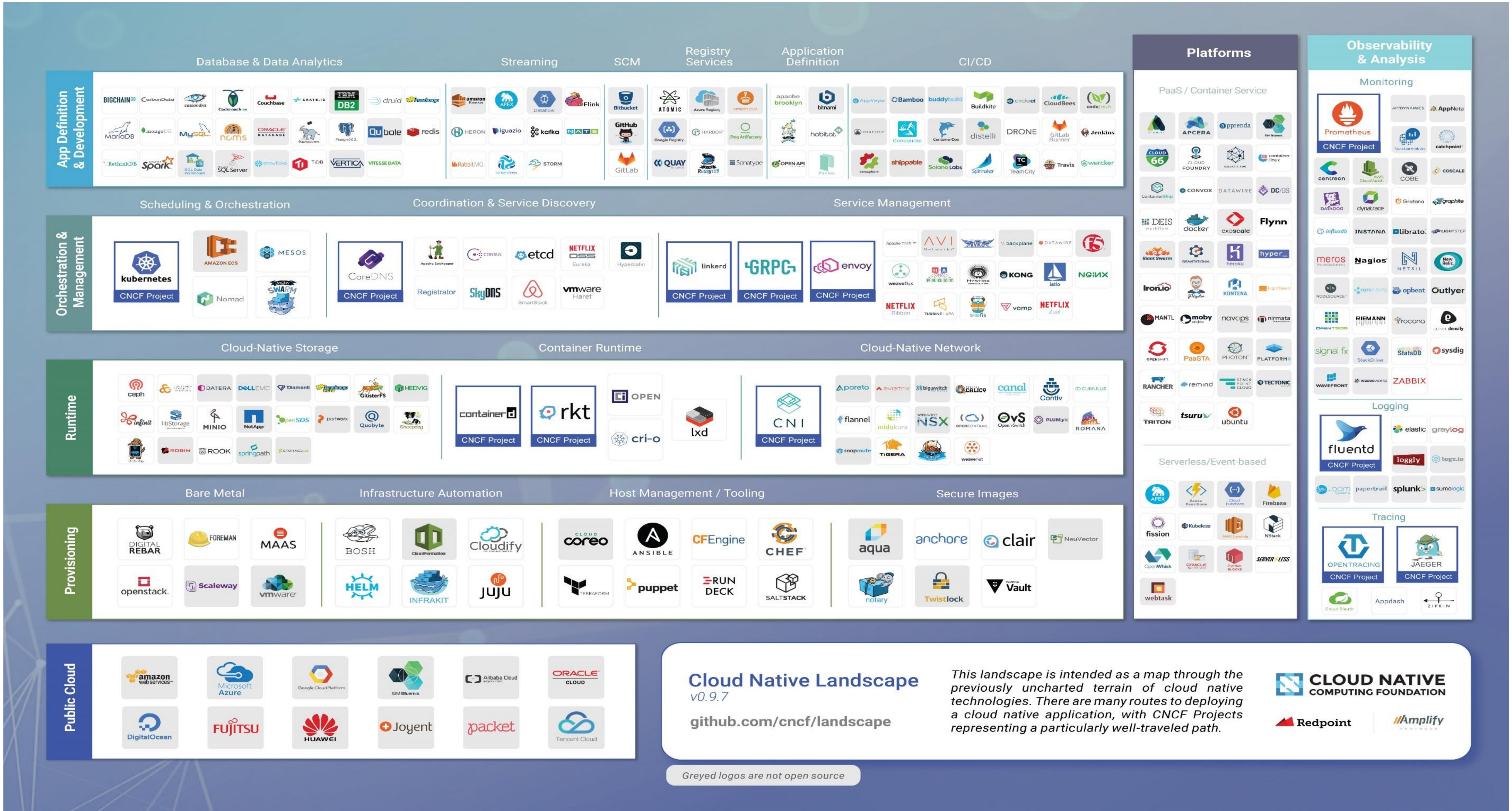
CRM

SCM

ERP

TERADATA ASTER

Cloud Native Landscape – GitHub → https://landscape.cncf.io/



Cloud Native Landscape

v0.9.7

github.com/cncf/landscape

This landscape is intended as a map through the previously uncharted terrain of cloud native technologies. There are many routes to deploying a cloud native application, with CNCF Projects representing a particularly well-traveled path.

Greyed logos are not open source

What skills we need to develop?

Infrastructure Platforms	The capability on SaaS, PaaS & IaaS platforms from providers like AWS, Azure, Open Stack, Cloud Foundry etc.
Software Platforms	The capability of one or more software platform such as JEE, DotNet, LAMP/WAMP, MEAN, Cloud Native, HPC, Big Data etc.
Architectural Patterns	Architecture patterns like MVC, MicroServices, Event Driven, Micro Kernel etc.
Layers	Understanding the layered architecture and associated design patterns, realization frameworks/products, best practices, tools, IDEs etc.
Languages	One or more contemporary programming languages like Java, C#, C/C++, Python, PHP, Scala, JavaScript, HTML/CSS, SQL, Scripting (Shell, Power Shell, Perl) etc.
Ancillary Capabilities	Ancillary Aspects of software development like IDE, Source Control, Build/Deploy, Collaboration, Tooling, Testing etc.
Development Methodologies	Capability on software development methodologies like Agile – XP/Scrum/Kanban, Waterfall, Iterative, Lean etc.

Q & A