SOFTWARE DEFINED SERVICE PROVIDER CLOUDS

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DIGITAL DISRUPTION IS CHANGING OUR LIVES
INNOVATIONS POWERED BY OPEN SOURCE

ARTIFICIAL INTELLIGENCE

EDGE / 5G

SERVERLESS

IOT

AR/VR

BLOCKCHAIN
5G EXPANDS OUR WORLD TO THE EDGE

Building ultra-reliable experiences for people and objects when and where it matters

- Broadband & Media Everywhere (EMBB)
- Smart Vehicles & Transport
- Telehealth
- Critical Control & Public Safety
- Machine Enhanced Human Learning
# OPEN SOURCE INNOVATION LANDSCAPE
## ACCELERATING INDUSTRY REQUIREMENTS

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<th>Integration</th>
<th>OPNFV</th>
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- **Integration**
  - OPNFV
  - VIRTUAL CENTRAL OFFICE (VCO)
  - EDGE CLOUD
  - VERIFICATION PROGRAM
  - CNTT

- **Serverless**
  - OpenWhisk
  - KNATIVE

- **Management**
  - ONAP
  - ANSIBLE
  - Apache ActiveMQ
  - Apache Kafka

- **Cloud**
  - 97% ▲
  - 95% ▲
  - openstack
  - Ceph
  - Kubernetes
  - RM
  - NP
  - OPERATORS
  - MULTUS
  - AKRAINO EDGE STACK
  - PROVIDER ACCESS EDGE

- **Infrastructure**
  - TELECOM INFRA PROJECT
  - OPEN Compute Project
  - OPEN AIR INTERFACE
  - O-RAN ALLIANCE
  - OTII
  - DISTRIBUTED TELECOM INFRA

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SERVERLESS (FAAS)
OPEN HYBRID EDGE CLOUD

DEVELOPER
EXPERIENCE

SERVERLESS
BUILDING BLOCKS

BUILD AND RUN
ANYWHERE
INCREASED GROWTH OF BLOCKCHAIN USEAGE

Financial  Manufacturing  Insurance  Telco  IoT
Marketplace  Contracts  Energy  Government

ERP  Supply Chain Management  Workflow Management  Enterprise Performance Management

Ethereum  Hyperledger

Azure / AWS / Google

KEY USE CASES

DIGITAL IDENTITY MANAGEMENT
IOT CHARGING
FRAUD REDUCTION
GLOBAL ROAMING
TELEHEALTH
SMART CITIES
MOBILE PAYMENTS
DIGITAL ASSETS
OSS/BSS PROCESSES
PROVISIONING
NUMBER PORTABILITY
BANDWIDTH SERVICES
“X-AS-A-SERVICE”

60 % SERVICE PROVIDERS PLAN TO USE BLOCKCHAIN TECHNOLOGY.. CAICT

DT/SKT DIGITAL IDENTITY TRIAL @ MWC 2019

ALLIPAY AND TELENOR PAKISTAN – CROSS BORDER PAYMENTS

PCCW/COLT BT/TELEFONICA/TELSTRA CONTINUE BANDWIDTH SETTLEMENT TRIAL

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SOFTWARE DEFINED VIRTUAL CENTRAL OFFICE (VCO)

https://wiki.opnfv.org/display/OSDD/VCO+Demo+3.0+Home
“We chose Red Hat OpenShift Container Platform for the freedom it gives us on top of different public clouds, all rooted in Kubernetes-native APIs and experience.”
AJPC OPERATOR - CLOUD-NATIVE APPLICATIONS

NETWORK
- VNF
- Virtualization
- EPC
- IMS

IT
- Microservices
- Virtualization
- OSS
- BSS

DISTRIBUTED CLOUD-NATIVE DEPLOYMENT

MICROSERVICES APPLICATIONS
- VOICE ASSISTANTS
- VOICE TRANSLATE
- PROVISIONING
- IMS VOICE INTEGRATION
- MEDIA RESOURCE ROUTING
**IN-CAR DIGITAL SERVICES**
How an organization can embrace agile methodologies and modern container technologies to deliver business value and an enhanced customer experience.

**12 Million Cars**
1 Billion Requests / Week
3M New Cars Added / Year

**Data Lakes**
- Data Science
- Rules Engine
- Authorization

**APPLICATIONS PLATFORM**
- 1000+ Applications
- 12000 Containers
- 300 Microservices
- 19 Clusters
DEEP LEARNING
NEURAL NETWORK

MACHINE LEARNING
- Statistic techniques
- Smaller amount of data required
- Low end systems [No GPUs required]
- Labelling, features extraction
- Problem /Task break down
- Faster training, Slower testing
- Easier explanation

DEEP LEARNING
- Artificial Neural networks
- Larger amount of data to train models
- High performance GPUs
- Unlabelled data
- End to end problem solving
- Slower training, faster testing
- Black box
“Access to more data and compute provides faster targeted therapy and improves children’s lives.”

DR. ELLEN GRANT – DIRECTOR NEUROTHERAPY, BOSTON CHILDREN’S HOSPITAL
OPEN PLATFORMS
ENABLING INNOVATIVE APPLICATIONS / SERVICES
AI/ML EDGE - THE OPEN DATA HUB PROJECT

Collaborate on a Data & AI platform for the Hybrid Cloud - [https://opendatahub.io/](https://opendatahub.io/)

- Meta-Project to integrate Open Source projects into a practical usage pattern for OpenShift
- Red Hat’s internal Data Science and AI platform.
- Reference architecture to collaborate w/ customers and vendors within the project

AI Workflow - Open Data Hub
[https://opendatahub.io/arch.html](https://opendatahub.io/arch.html)

FREEDOM OF CHOICE – Vendor and Upstream Projects
EXPANDING INNOVATION AT THE EDGE
THE VALUE OF OPEN PLATFORMS

35%  LOWER COSTS
66%  FASTER TO MARKET
21%  MORE PRODUCTIVE

REDUCE YOUR RISK
GROW YOUR REVENUES

FREEDOM TO DEPLOY ANY APPLICATION ANYWHERE
CONFIDENCE TO ACCELERATE SERVICE DEPLOYMENTS
CONTROL TO SECURE AND MANAGE SERVICES AT SCALE

CUSTOMER PORTAL  KNOWLEDGE  SUPPORT  CERTIFICATION  SECURITY  LIFE CYCLE

SOURCES: ACG Analytics, IDC, BGK, Red Hat @ 2019


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THANK YOU

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