Data Centric Approach to...

...Open Digital Business Enablement System (OSS/BSS evolution)

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About Phill Radley

90s’ and 00’s
OSS Designs for 21CN, Global MPLS, UK Broadband, TV...

2010 Chief Data Architect – BT Group plc
Enterprise data model (SID), SOA, MDM.....

Currently working on...

- Integration of Fixed & Mobile Data Assets
  - EE acquisition (as services converge data needs to converge)

- Data Infrastructure Modernisation
  - Data Lake, Data Pipelines, NoSQL, Kafka, Spark, Flink...

- Data Services
  - Self-Service Data Catalog & Governance, Privacy for GDPR, profiling...

- Machine Learning as a Service
• What is “data centric”
  – What it’s not!
  – What I think it is
• Data aspects of ODES & ODA - “unified data plane”
• Data Centric Journey
  – Step 1: modernise data infrastructure
  – Enabled Use cases
    • 1: Data Sharing across the industry
    • 2: Anomaly Detection - nuisance calls
  – Data Centricity next steps... AI/ML enablement

About this presentation
This is not data centric!

Traditional Architecture & issues

“One Size Fits All:
An Idea Whose Time Has Come and Gone”
Michael Stonebraker – MIT 2005

Slow to change (schema design up front)
Hard to scale (volume or velocity)
Hard to integrate new data types (variety)

Process Centric
“L2C” “T2R”

Technology Centric
SNMP MIBs
This is data centric

Modern Data Infrastructure

Sanjay Ghemawhat   Jeff Dean

“We don’t have better algorithms than anyone else we just have more data”
Google Translate
Peter Norvig

Democratizing AI
- Computing
- Data
- Algorithms
- Talent

Google Cloud Next 2017
Dr. Fei-Fei Li
“ODES is the name for our vision for the OSS/BSS of the future” - Nik Willetts

...bringing together on open APIs, platform architectures and ZOOM in a single vision

- standards based, enabling a marketplace of commercial and open source innovation;
- a unified architecture for OSS and BSS;
- data centric with a single unified data plane which is fundamental to enabling automation and AI;
- platform-based and componentized using TM Forum Open APIs, flexible, open and agile by design;
- AI-capable and autonomous, which means it has event-driven adaptation
- ecosystem capable
Data Centricity Step 1: Modernise Your Data Infra-structure

BT “Hadoop as a Service” Platform

- Easy to change (schema on read)
- Easy to scale (data volume or velocity)
- Easy to integrate new data (images or video)
Data Centric Example 1: Sharing data across the eco-system

Data Driven Diagnosis of “slow internet” complaints in UK – Openreach & Communication Service Providers

In the UK
- **Openreach** owns Last Mile (so knows line length)
- CSP’s own end customers (so knows speed)!

If a CSP asks Openreach for a truck roll & the fault wasn’t in the last mile
- Engineer time was wasted 😞
- CSP is charged 😞

Shared incentive to accurately diagnosis if the problem is in the last mile (or elsewhere home CPE /backhaul/gateway)

**Speed \(\propto\) Line Length**

**Line Performance is Correlated to Engineer Success**

When customers call about slow broadband....if line is in

**VERY BAD quintile** engineer very likely to succeed

**VERY GOOD quintile** engineer very unlikely to succeed

Rate Reach Performance for ADSL2+
Data Centric Example 1: Sharing data across the eco-system

Openreach has network inventory data length = house + pole + cabinet + exchange

Every day Service Providers send Openreach speed data. Openreach uses a machine learning classifier to score each line and send scores back to providers who use it when their customers call.

Sharing data across the ecosystem Improves CX & Reduces Waste ☺

Communication Service Providers have customer speed data (DSL modem synch rates)
Data Centric Example 2:– Nuisance Call Management

when you get “unknown caller”
how do you decide if its a nuisance caller
……
or just that guy you gave your number to?
Data Centric Example 2:– Nuisance Call Management

Scan all PSTN traffic to detect anomalies, sources of: hi call volumes + short calls + …… + …….

Machine Learning Model – Gives every call a “Nuisance score”

Billions of Call detail records

“Nuisance” Calls are diverted to voicemail

Black List of Nuisance Call Sources

Junk voicemail box
Data Centric Example 2:– Nuisance Call Management

BT Call Protect example of a **knowledge driven network** feature

Enable automated decisioning by subscribing to Call Protect Service with DTMF tones (free, requires opt in)

Knowledge-Defined Networking
ACM Computer Communication Review July 2017

“Nuisance scoring”
Where next......?

- More AI/ML especially for SDN & 5G
- From daily to minutely (1440 x faster)
- Shared ML as a Service Capability
Thank you...anytime for questions?

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