



sodacon 2020

DATA CONNECTED

#sodacon2020

Data and Storage Challenges : End Users Perspectives

Yuji Yazawa

Vice Chair of Governing board & Chair of EUAC SODA Foundation
Principal Architect / Group Manager of Toyota Motor Corporation



Introduction – Yuji Yazawa

- Principal Architect / Group Manager at Toyota Motor Corporation.
- What do I do in the company?
 - R&D for next generation IT environment which dedicated for Connected vehicle.
 - IT infrastructure related researching for Smart cities.
 - Drive simulator environment development & operation for ADS.
- Born & Grew up at Storage related environment.

<https://www.linkedin.com/in/storageops/> for more detail.

YAHOO!
JAPAN

FUSION-iO

SanDisk

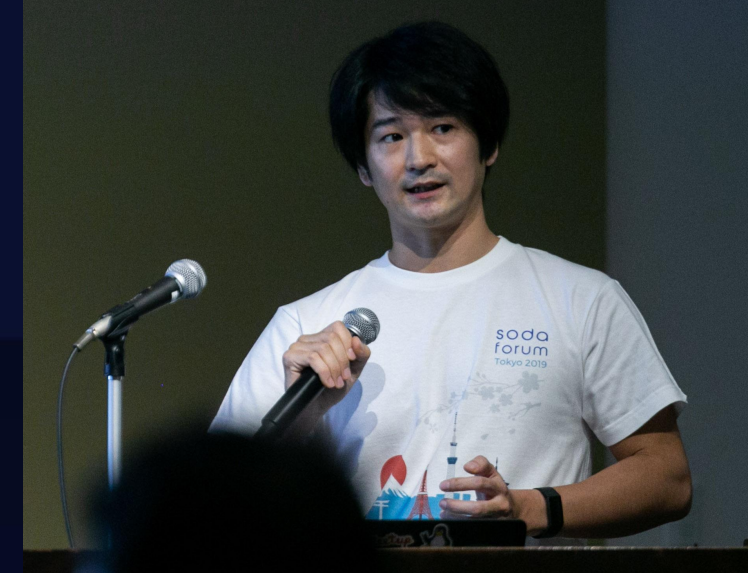
SCALITY

TOYOTA

TRI-AD

sodacon 2020

#sodacon2020



Data capacity which we are expecting as preliminary assumption.

System Requirements *		V2Cloud cruise assist	High-definition Map generation & distribution	Intelligent driving
Major Data Source		Video Stream	Still Image (road surface image)	ECU data
Data Generation in vehicle		~ 1215EB/month ¹	~ 375EB/month ²	~ 22.5EB/month ³
Target Data Traffic Rate		1 ~ 10EB/month in total (cost constraint might limit this number)		
Response Time	Uplink	< 10 seconds	< 1 week	< 1 week
	Downlink	< 10 seconds	< 1 week	< 10 minutes
Required Availability	Uplink	Continuous	Occasional	Occasional
	Downlink	Continuous	Occasional	Continuous

* The numbers in Table 1 are total values for 100 million connected cars.

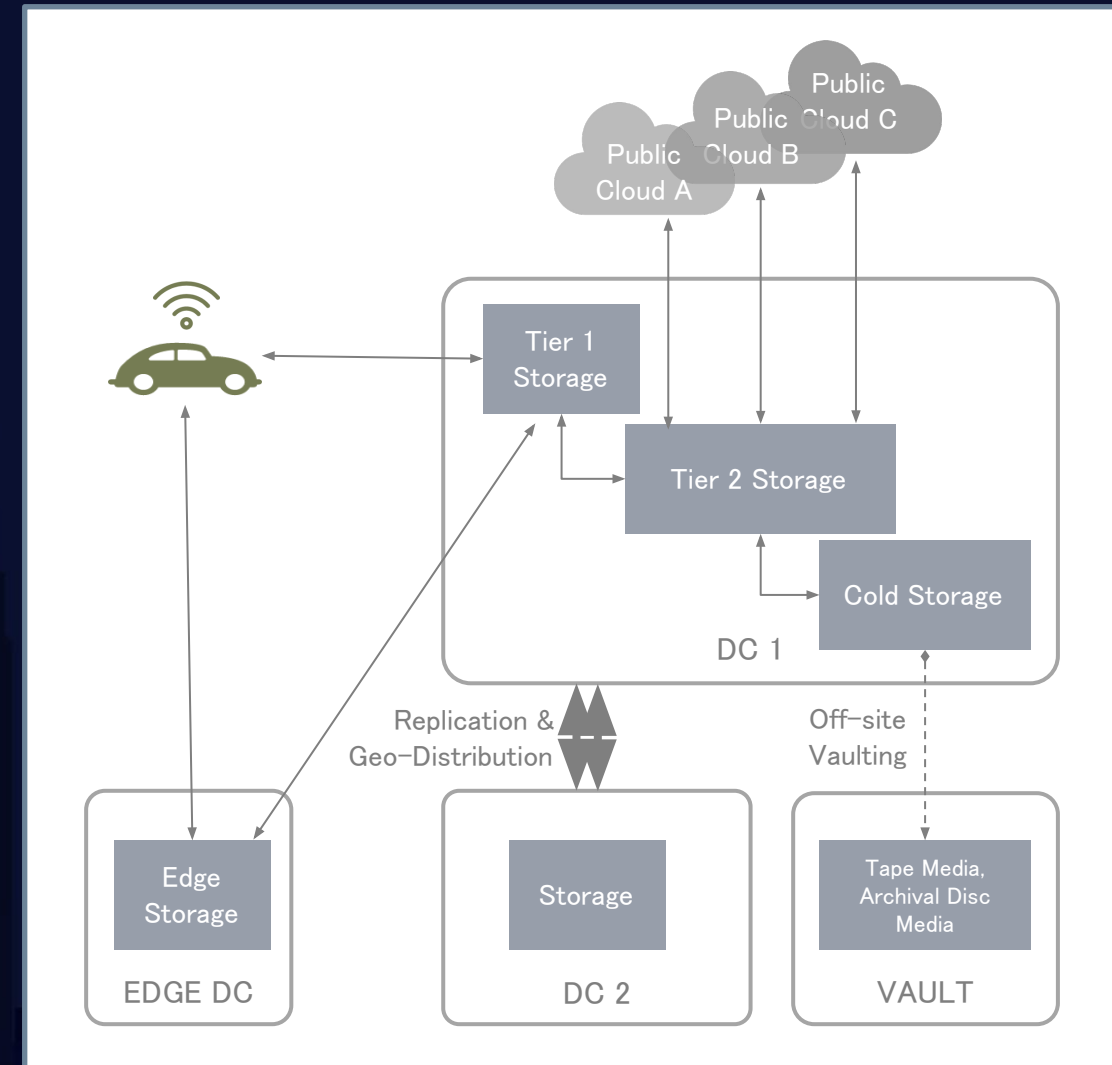
1 [Preliminary assumption] Video stream: 10Mpixel*3Byte(Color)*1/4(Lossless JPEG)*30fps, Average travel time: 30 min/day

2 [Preliminary assumption] Still image: 10Mpixel*3Byte(Color)*1/4(Lossless JPEG) at every 2 meters, Average travel distance: 1000km/month

3 [Preliminary assumption] Automotive Ethernet: 100Mbps*1/3(effective), Average travel time: 30 min/day

Use case example for Connected vehicle

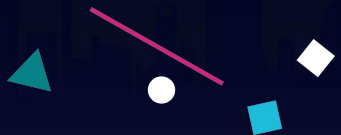
- IOT DATA SERVICES
- DATA LIFECYCLE
- DATA TIERING & MIGRATION
- LONG TERM RETENTION & ARCHIVAL
- DATA INTEGRATION FOR AI/ML & ANALYTICS
- DATA SECURITY & PRIVACY
- MULTICLOUD
- EDGE DATA – COLLECT, FILTER, AGGREGATE, CLEANSE



Data storage challenges & Expectation for SODA



- **Cold storage collaboration**
 - a. We need think about Cold storage collaboration for realize long term archiving if we think about Product Liability law new legal / rule regarding to the data came from Connected vehicle.
- **Data Migration / Life cycle**
 - a. To make the old storage replacement easily.
 - b. Cost reduction for PBs to EBs of storage pools.
- **Hybrid / Multi cloud**
 - a. To realize real “Data portability”, “Data from anywhere, compute from anywhere”.



Thank you!

sodacon 2020
DATA CONNECTED
#sodacon2020