



Digital Technology and Railway Security Workshop



**4-5 MAY 2016
WASHINGTON WORLD BANK**

Ericsson

DATA-CENTRIC Security



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Digital
Technology
and Railway
Security
Workshop

4-5 MAY 2016
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Digital Transformation



HEALTH



WELLNESS

EDUCATION



LEARNING

MEDIA



CULTURE

TRANSPORT



MOBILITY

BANKING



TRANSACT

UTILITY



FUNCTION

RETAIL



EXCHANGE

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Digital Railway



Passengers



Assets



Ericsson Confidential

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Digital Railway



Passengers



- ✓ Sales & distribution
- ✓ Real time Feedback
- ✓ Disruption MgMT

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Digital Railway



- ✓ Asset Utilization
- ✓ Agility in Resource Allocation
- ✓ Maintenance Optimization
- ✓ Fault Prediction and prevention

Assets



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Digital Railway



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Digital Railway



- Production – Increased reliability, decrease downtime and increase availability.
- Cost – Reduced costs with optimized maintenance regime.
- Risk – Reduced probability of failures that impact safety and environment
- Documentation – Provides a new robust maintenance design justification file.
- Optimized list of spare parts – Improved inventory management

Ericsson Confidential

Mobile networks will enable The DigiTal Railway



5g

USE CASES



BROADBAND EXPERIENCE
EVERYWHERE, ANYTIME



MEDIA
EVERYWHERE



SMART VEHICLES,
TRANSPORT & INFRASTRUCTURE



CRITICAL CONTROL
OF REMOTE DEVICES



INTERACTION
HUMAN-IOT

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New Security requirements



- New business and Trust Models;
- New Service Delivery models,
- Evolved Threat Landscape
- Increased concern for privacy.



BROADBAND EXPERIENCE
EVERYWHERE, ANYTIME



MEDIA
EVERYWHERE



SMART VEHICLES,
TRANSPORT & INFRASTRUCTURE

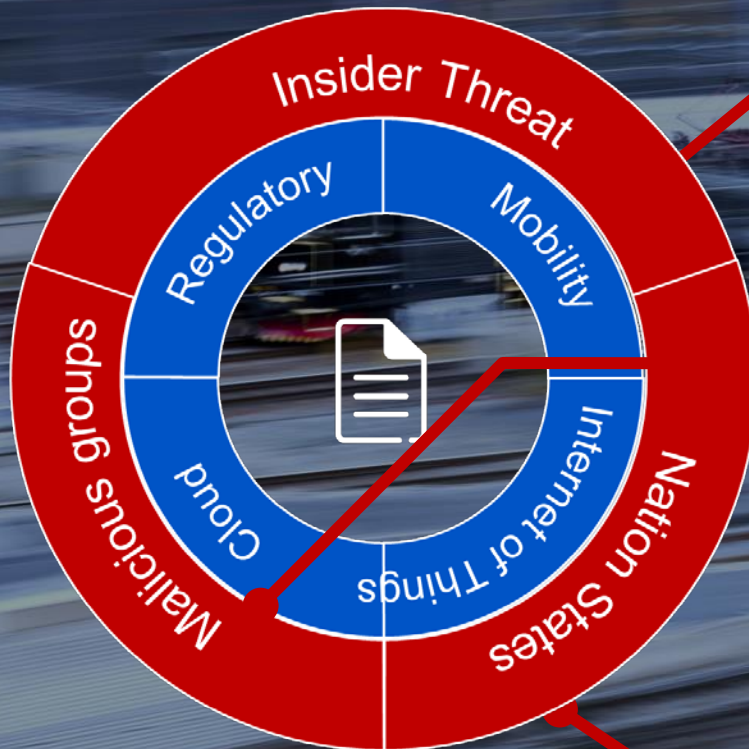


CRITICAL CONTROL
OF REMOTE DEVICES



INTERACTION
HUMAN-IOT

Advanced threats and tech landscape



Sophisticated and organized Threat Actors

- IP and Trade Secret theft
- Service bypass
- Data integrity

- Criminal darknet
- Ransomware
- App malware
- Social engineering

- Zero-day exploits
- Corporate espionage

Once Inside



- What information was accessed?
- What information was deleted ?
- What information did they manipulate ?
- How quickly can I recover?



Source Man

Today's Mitigation - Perimeter Protection



Walled Perimeter

Where is my Data?

Has Data been changed?

Who access to Data?

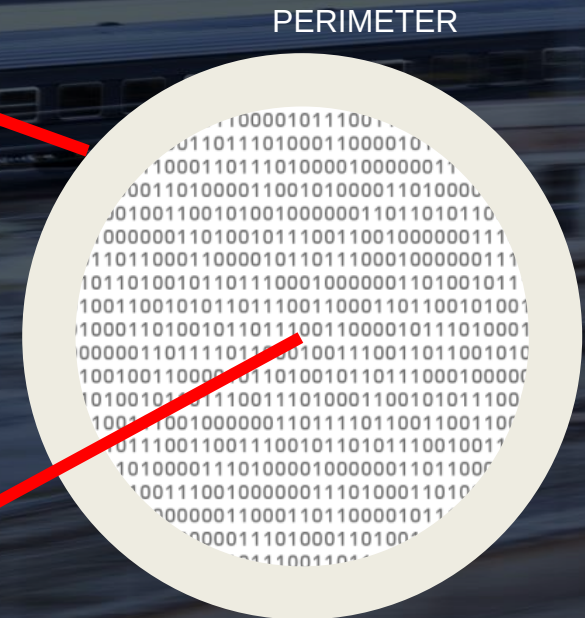
What about Cloud?



ATTACKER



INSIDER



New Focus

Executives and Boards recognize that Threats will never be completely eliminated, while regulatory and compliance requirements will become more stringent



From Perimeter and Asset Protection to Real-Time Verification

Data Centric Security



accuracy and
consistency of
systems and
data

CONFIDENTIALITY

unauthorized
parties are not
able view the
data

KSI

INTEGRITY

AVAILABILITY

information/service is
accessible to the
authorized users at all
times.

Data Centric Security



Keyless Signature Infrastructure® (KSI™) is a **block chain technology** developed by Guardtime (Estonia)

Digital Asset

KSI block chain is a public ledger that provides **proof of time, integrity** and **attribution of origin** of electronic data

KSI uses only **hash-function based cryptography** to make KSI data signature mathematically provable



Ericsson KSI Solution



SERVICE PROVIDER

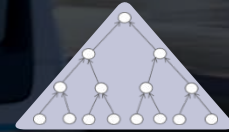


CALENDAR BLOCKCHAIN



Time

AGGREGATION



Distributed
hash-tree

CUSTOMER



GATEWAY



Access to
service

KSI CLIENT



Data owner
application

Use Cases



Virtualization



Routing Tables

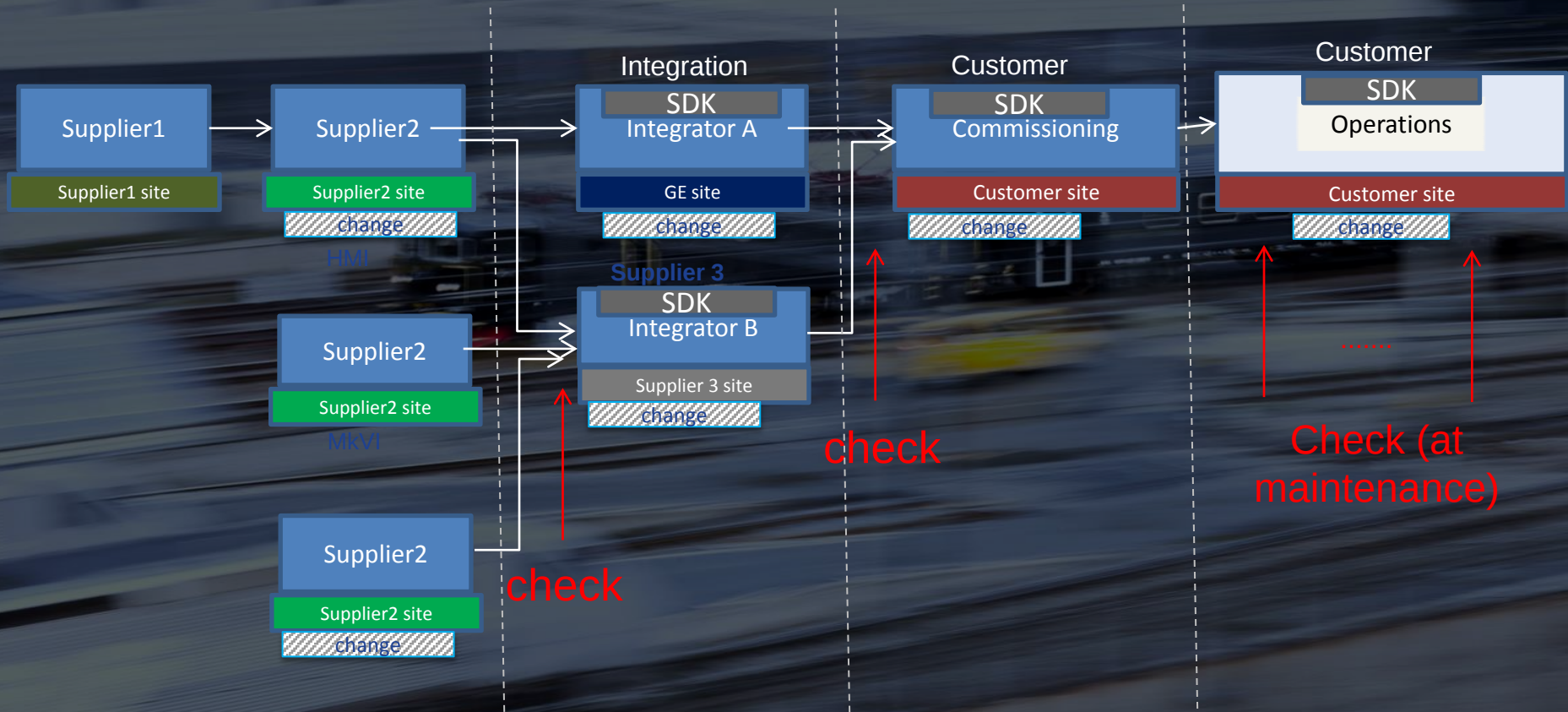


Configuration



Storage

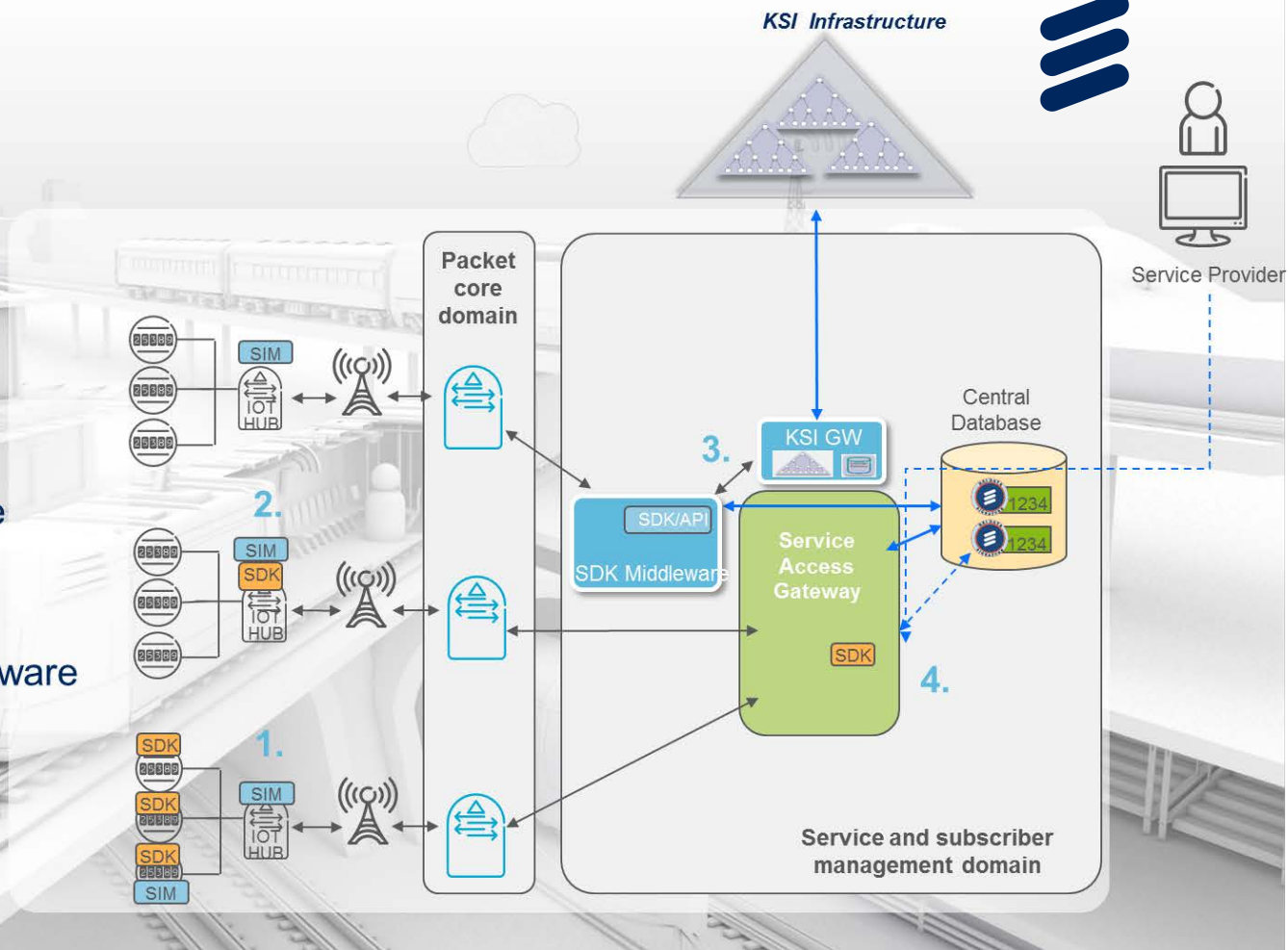
Supply Chain Integrity



IOT Device

KSI adaptation alternatives

- 1) SDK adapted IoT device
- 2) SDK adapted IoT hub
- 3) Centralized SDK Middleware
- 4) SDK adapted Service Access Gateway

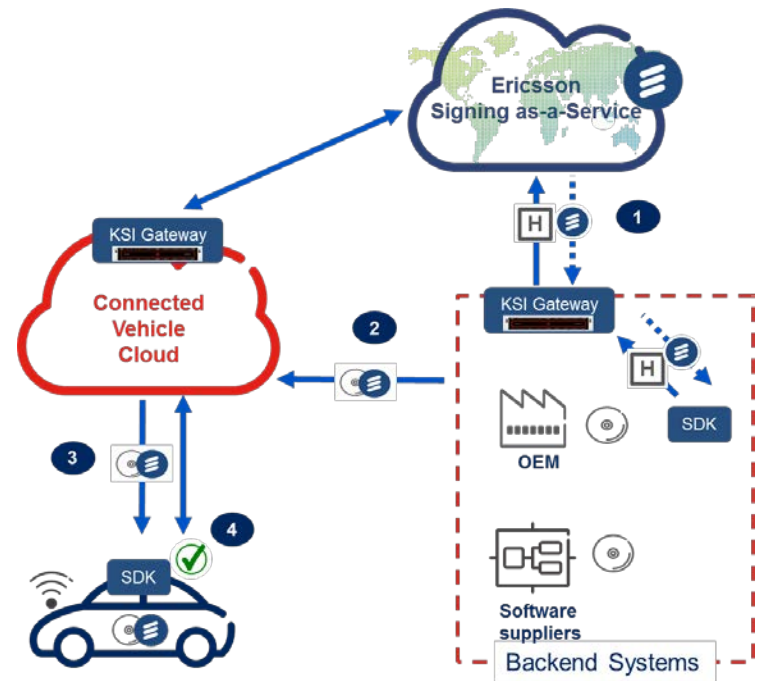


Connected vehicle software over-the-air (SOTA)

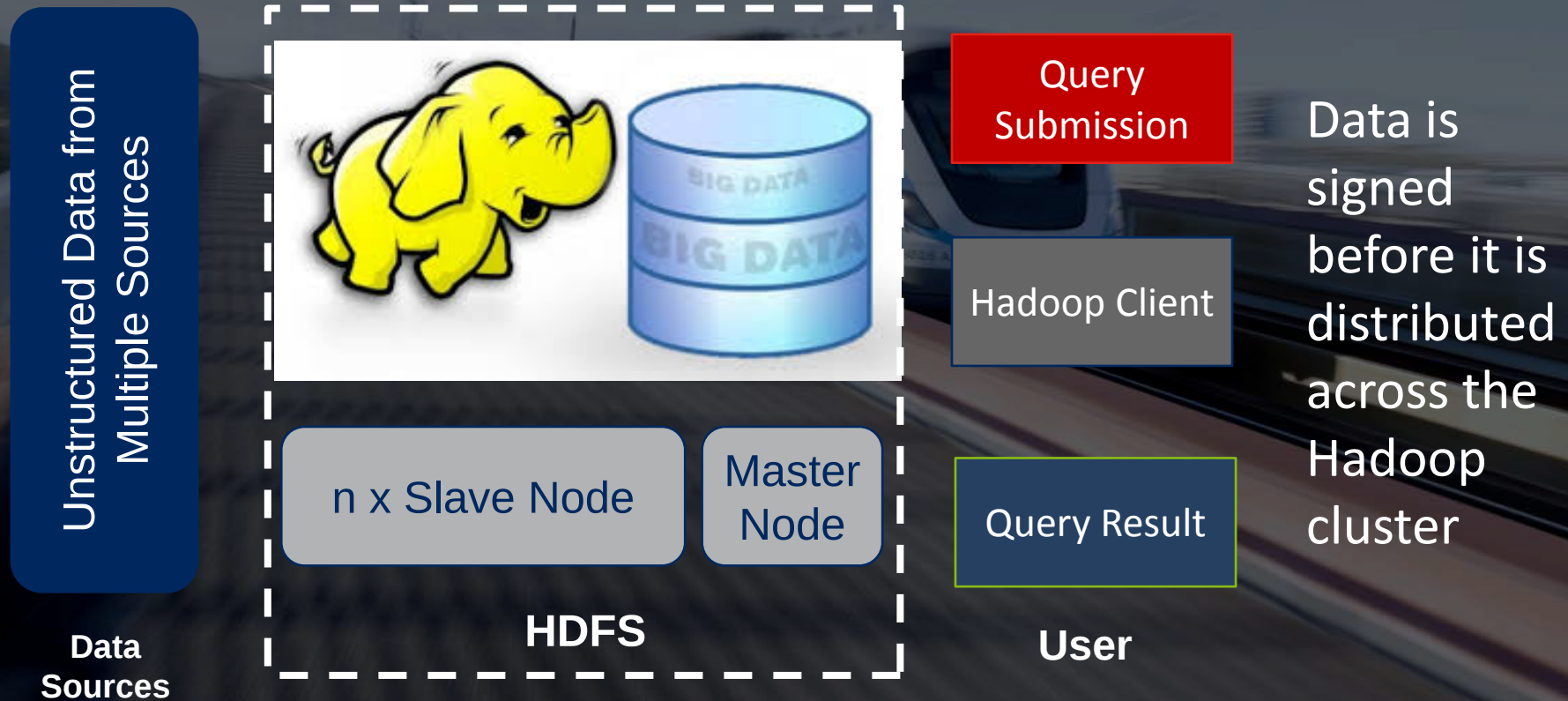
- Chain of custody and traceability of the SOTA deliveries over the whole SW supply chain
- Capability to detect **malicious SOTA deliverables**
- Capability to assure the **legitimacy of the installed software**

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Big Data Regulatory Compliance



Trusted Data Sharing

Exchange and Sharing of
Digital Assets among
independent parties
without Trusted Authority or
Clearing House functions



KSI Benefits

- **Prove**
Proof of time and integrity of electronic data as well as attribution of origin
- **Massively scalable**
System performance is practically independent of the number of clients
- **Open verification**
One needs to trust publicly available information only
- **Portable**
Data can be verified even after that has crossed organizational boundaries
- **Long term validity**
Proof is based only on the properties of hash functions
- **Supports near real-time protection**
KSI verifications require only milliseconds which allows clients to perform continuous monitoring and tamper detection
- **Offline**
The system does not require network connectivity for verification
- **Carrier Grade**
KSI infrastructure is able to deliver 99,999% availability
- **Post-Quantum**
The proof stays valid even assuming functioning quantum computers

Ericsson Security Offering

TRUTH IN
NETWORK SOCIETY



Ericsson Internet-of-Things Security

TRUTH IN YOUR
BUSINESS



Ericsson Cybersecurity

TRUTH IN
YOUR DATA



Ericsson Big Data
Regulatory Compliance

TRUTH IN YOUR
INFRASTRUCTURE



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