Utimaco Safeware AG

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Building Blocks of a Carrier Grade Data Retention Solution
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utimaco®
s a f e w a r e

Utimaco Safeware

Celebrating 25 Years in the IT security business

▶ Founded in 1983

▶ Listed on the German Stock Exchange

▶ €59.2 million (fiscal year 07/08)

▶ 300+ employees
in offices worldwide

▶ Headquarters in Germany

▶ 12 subsidiaries and established distributor and partner network around

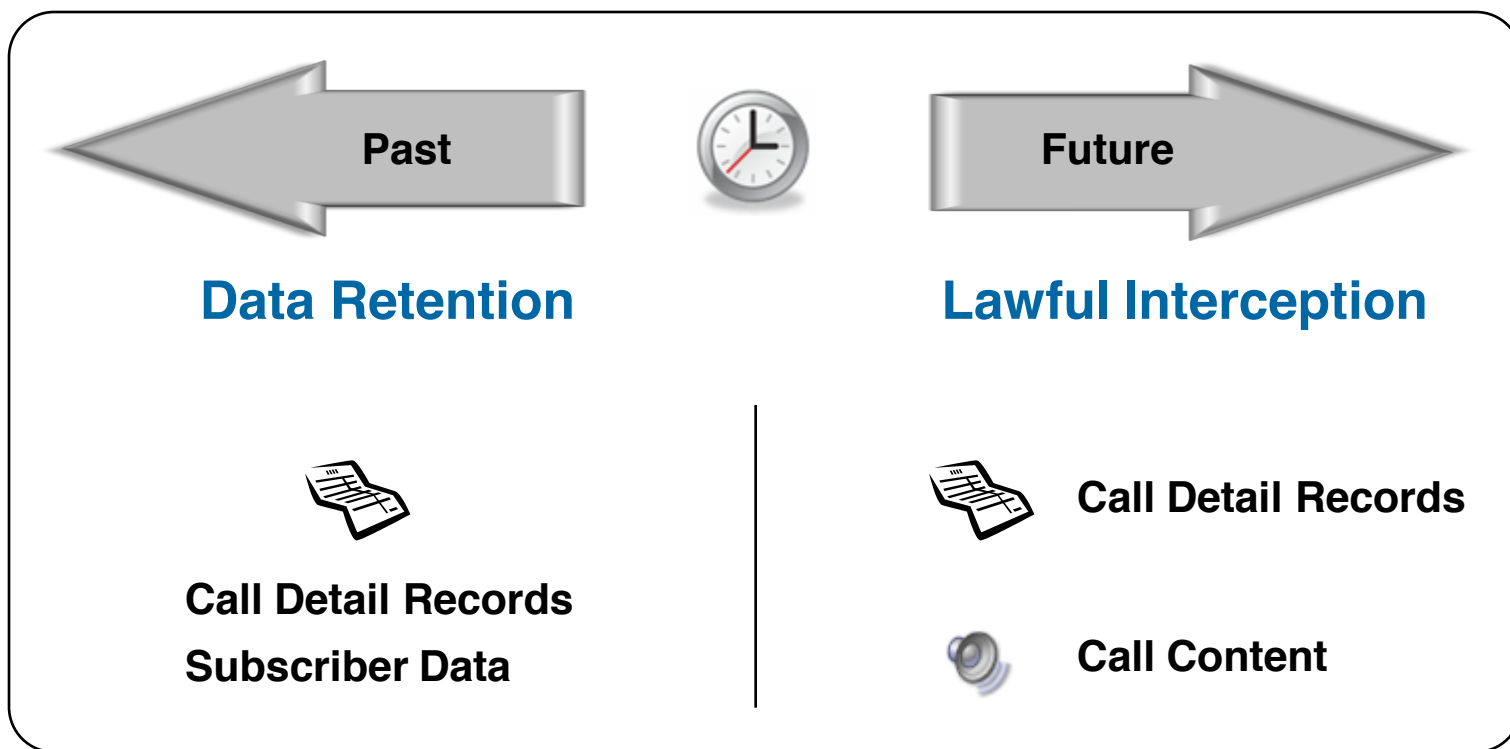▶ Since Sept 2009 part of the Sophos Group

◆ Offices
◆ Reseller/Distributors

Utimaco LIMS™
Competence in Lawful Interception

- ▶ Utimaco has been providing LI solutions since 1994

- ▶ Worldwide operations: more than 140 installations in 60 countries

- ▶ LI systems for 10 thousand to 50 million subscribers, from 100 to 10,000 targets

- ▶ Strong partnerships with many of the leading telecom infrastructure vendors

- ▶ Compliant to international LI standards of ETSI, 3GPP, ANSI/ATIS, CableLabs

- ▶ Conform to numerous national telecommunication laws

Utimaco DRS
Data Retention vs. Lawful Interception

Past ⟵ | 🕐 | ⟶ **Future**

Data Retention | **Lawful Interception**

Call Detail Records
Subscriber Data

Call Detail Records

Call Content

▶ Complementary means to assist law enforcement and anti-terrorism

▶ Technically many similarities

Telecom Data Retention
a quick recap

What?

▶ Storage of subscriber traffic related data (CDRs) and subscriber data for 6-24 months, depending on country regulation

▶ Data that is generated or processed in connection with the provisioning of telecom services

▶ For telephony (fixed, mobil, VoIP), messaging, e-mail, Internet access

▶ However no content of communication

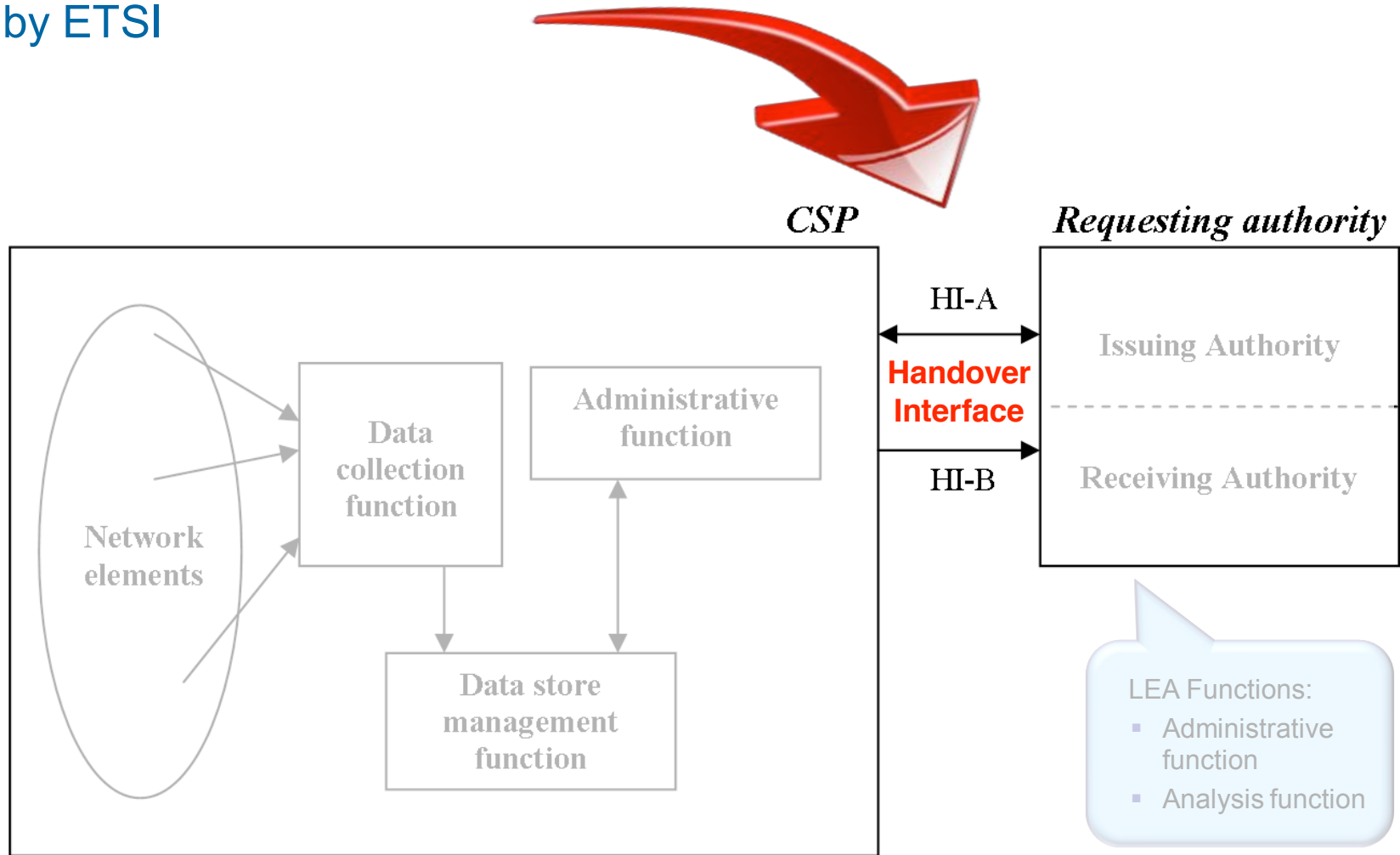▶ Delivery of data upon lawful authorization without undue delay

Why?

▶ Support LEAs in investigations and prosecutions related to serious crime.
Objectives:

 ◆ Trace (locate)

 ◆ Identify (links, social networks)

 ◆ Evidence

References

▶ National laws and regulations

▶ EU Directive 2006/24/EC

▶ ETSI standards

 ◆ TS 102 656 (LEA requirements)

 ◆ TS 102 657 (Retained data handover interface)

DR Reference Model
by ETSI

CSP

Requesting authority

HI-A

Handover Interface

HI-B

Issuing Authority

Receiving Authority

Network elements

Data collection function

Administrative function

Data store management function

LEA Functions:
- Administrative function
- Analysis function

Source: ETSI TS 102 657

CSP = Communications Service Provider
HI = Handover Interface

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What (some) operators do …
to fulfill the DR obligations

▶ Extend their CDR data warehouse (BI system)
- ◆ To cover new data
- ◆ To handle LEA requests
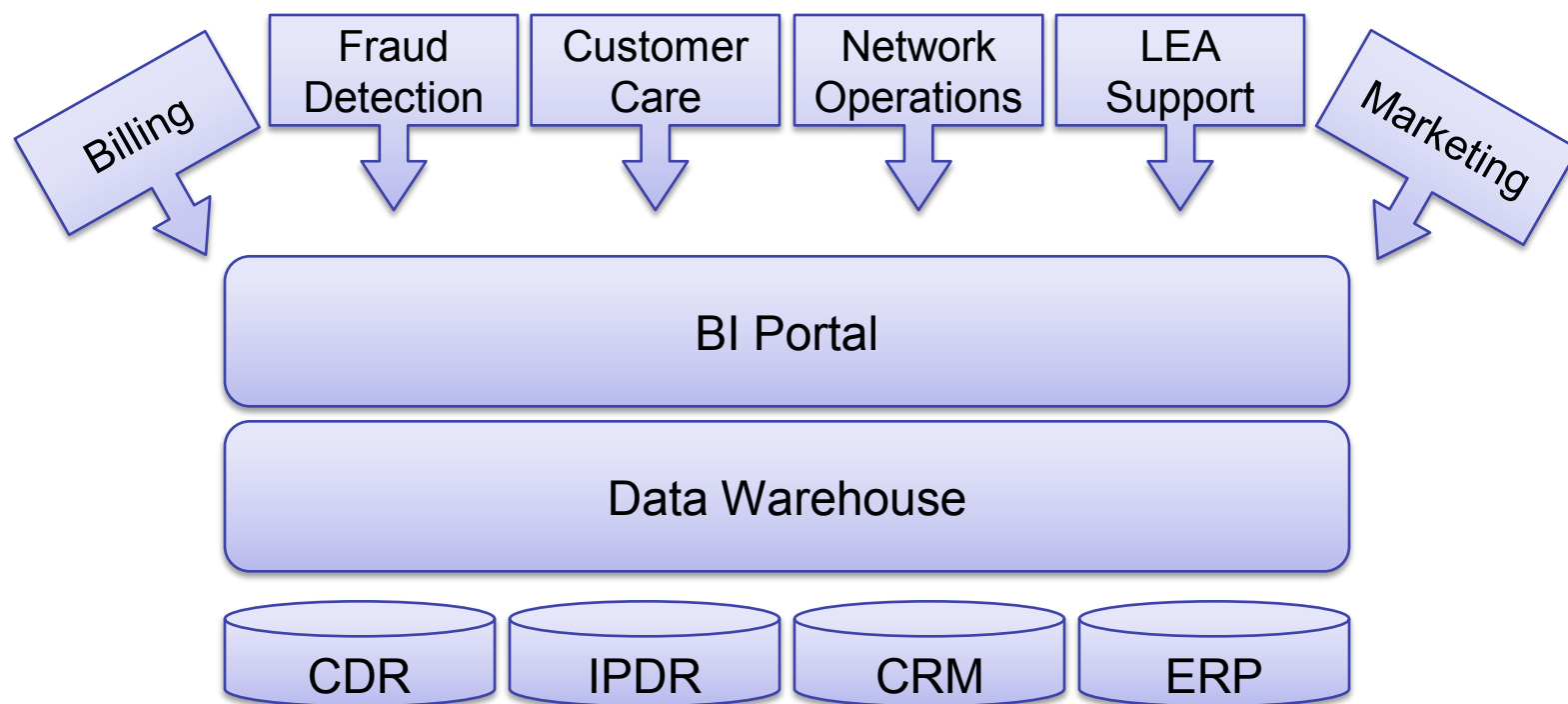
What these operators face …

▶ Missing data

  ◆ e.g. e-mail, IP data, location information, incoming calls, unsuccessful calls, …

▶ High investments

  ◆ Customized software adaptations

  ◆ More storage

  ◆ More servers

▶ High operational costs

  ◆ More personnel due to little automation for request processing

▶ Security threads

  ◆ No segregation between data for different purposes

  ◆ Insufficient protection against misuse

  ◆ Penalties and bad publicity

What operators should consider …

▶ Use of a purpose-built system

- ◆ Secure access and strong misuse protection
- ◆ Automated and assisted handling of LEA requests
- ◆ Smooth integration into existing network
- ◆ Inexpensive
- ◆ Charging capabilities

▶ Outsourcing opportunities

- ◆ Operation of a DR system
- ◆ Handling LEA requests (incl. billing)
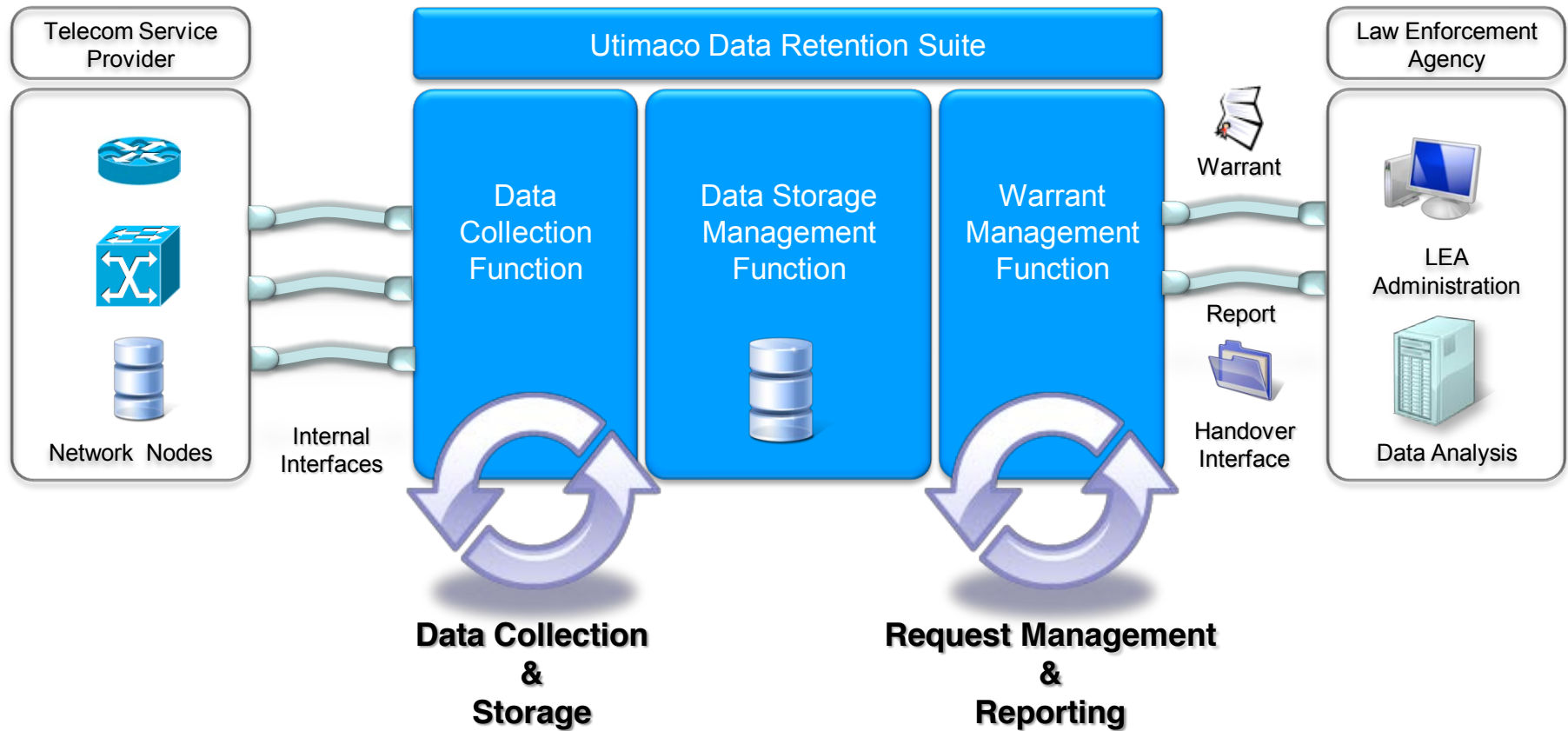
Utimaco DRS
a carrier grade data retention solution

▶ Purpose-built system for compliance with the EU DR Directive (and national implementations of it)

Key Features

▶ <u>Collects</u> communications data (CDR, IPDR) and subscriber data from any telecommunications network

▶ <u>Retains</u> large amounts of data in a powerful and secure data warehouse

▶ Provides very <u>fast search</u> and analytics in billions of data records

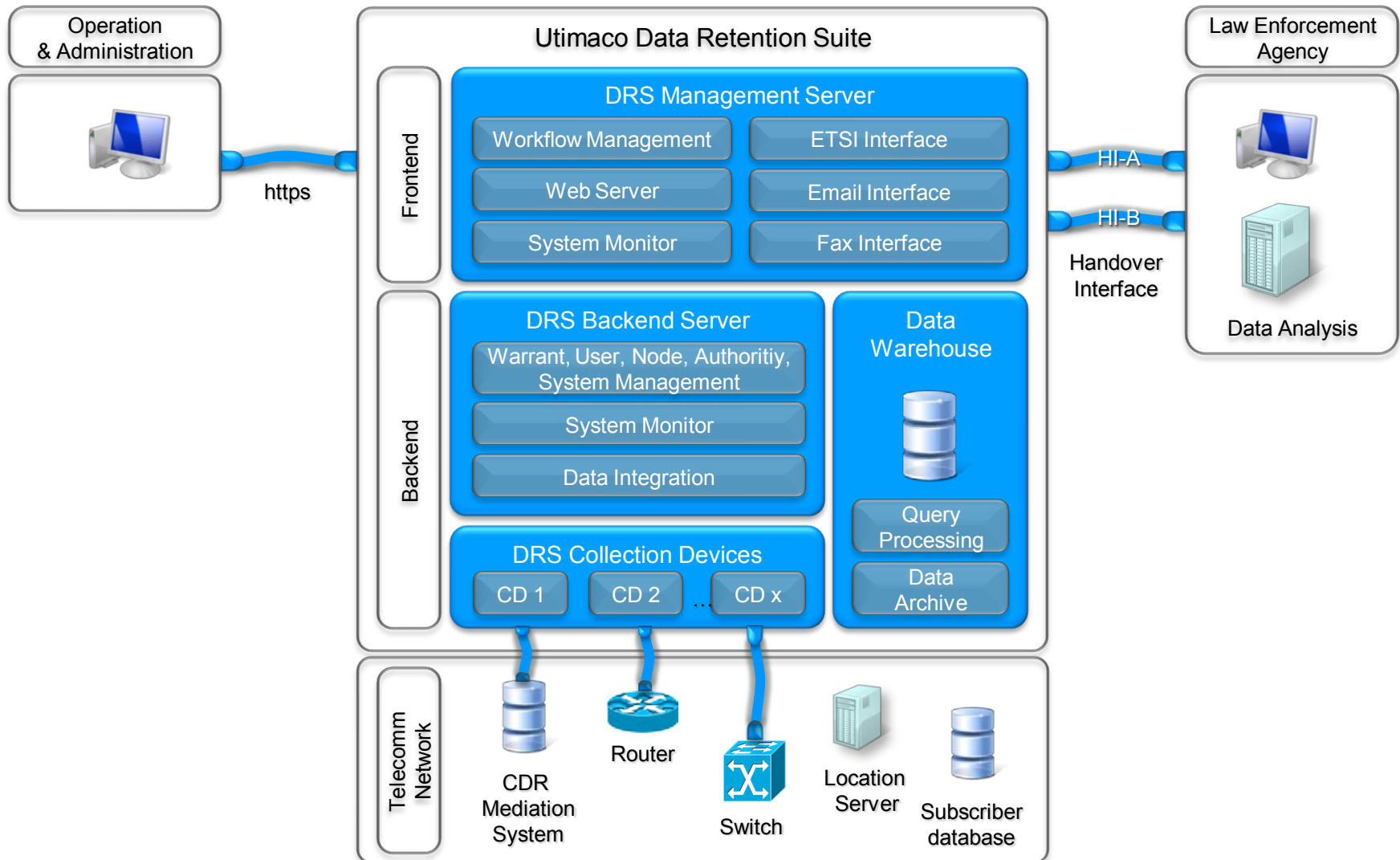▶ <u>Automates</u> request processing and delivers data to authorized agencies by fax, e-mail, or secure IP interfaces

Utimaco DRS
functional model

Utimaco DRS
system architecture

Operation & Administration

https

Utimaco Data Retention Suite

Frontend

DRS Management Server

Workflow Management	ETSI Interface
Web Server	Email Interface
System Monitor	Fax Interface

Backend

DRS Backend Server

Warrant, User, Node, Authoritiy, System Management

System Monitor

Data Integration

Data Warehouse

Query Processing

Data Archive

DRS Collection Devices

| CD 1 | CD 2 | … | CD x |

Telecomm Network

CDR Mediation System

Router

Switch

Location Server

Subscriber database

Law Enforcement Agency

HI-A

HI-B

Handover Interface

Data Analysis

Utimaco DRS
backend components

▶ **DRS Collection Devices**

- ◆ import and mediate data from various sources at Gbit speed
- ◆ easily customizable (interfaces, protocols, data formats)
- ◆ scale horizontally by adding servers
- ◆ integrated error detection, buffering
- ◆ optional redundancy

▶ **DRS backend Server**

- ◆ Encapsulates the core business logic of DRS
    - • Warrant management & Reporting
    - • User management
    - • Authority management
    - • Node management
    - • Logging
    - • System administration and alarm monitoring
- ◆ High-availability (redundancy concepts)
- ◆ Highly protected (OS hardening, encryption, ACL, …)

Utimaco DRS
backend components

▶ DRS Collection Devices

  ◆ import and mediate data from various sources at Gbit speed

  ◆ reduce data to what is needed by law

  ◆ easily customizable (interfaces, protocols, data formats)

  ◆ scale horizontally by adding servers

  ◆ integrated error detection, buffering

  ◆ optional redundancy

▶ DRS backend Server

  ◆ Encapsulates the core business logic of DRS

    • Warrant management & Reporting

    • User management

    • Authority management

    • Node management

    • Logging

    • System administration and alarm monitoring

  ◆ High-availability (redundancy concepts)

  ◆ Highly protected (OS hardening, encryption, ACL, …)

Utimaco DRS
data warehouse

- ▶ Optimized for fast search and analytics (not for transactions)

- ▶ Columnar storage

  - ◆ One data field = one column = one data type

  - ◆ typical compression rate between 40% - 80% (depending on cardinality and data type)

  - ◆ specialized indixes per data type (per column)

- ▶ Results in less disk I/O for queries

- ▶ provides much faster search times than traditional databases

- ▶ Designed for 1TB to hundreds of TB

- ▶ low-cost disks with RAID-5 storage

- ▶ 3 Gb/s SAS IO modules

Utimaco DRS
front end components

▶ **DRS Management Server**

- ◆ Web user interface
- ◆ Predefined and customizable workflows and reports
- ◆ Multi-user system with granular rights management
- ◆ Secure access via https
- ◆ Customizable handover interfaces and report formats
- ◆ Electronic handover interfaces:
  - • Fax server integration
  - • E-mail server
  - • ETSI RDHI
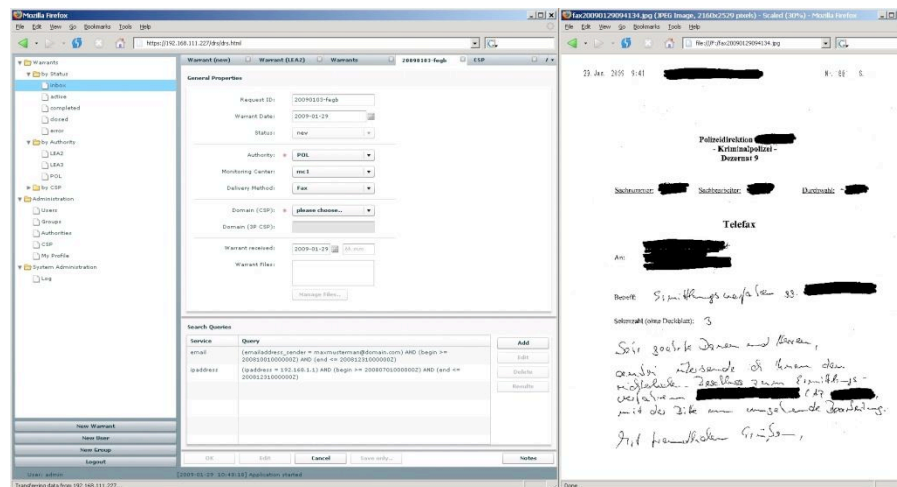
Utimaco DRS
Highlights

▶ Seamless integration into existing network infrastructures

- ◆ Multi-service, multi-vendor data import
- ◆ Online database access
- ◆ Easily customizable and extensible at predictable costs

▶ Multi-tenancy

- ◆ Supports various business models, from single operator, MVNO, hosted service models, and others
- ◆ Granular rights management to segregate between users, CSPs, authorities

▶ High performance and capacity

- ◆ Simultaneous load of massive data (>1 billion records per day)
- ◆ Average query response within seconds (<5 sec for 37 billion records)
- ◆ Scalable from 1 TB to 1000TB storage capacity

Utimaco DRS
Highlights

▶ **Automated request processing**

- ◆ Electronic interfaces for receive&send
- ◆ Warrant archive
- ◆ Predefined queries & reports

▶ **High-availability**

- ◆ Clustered server architecture
- ◆ Hardware redundancy
- ◆ RAID-5
- ◆ Real-time system monitor

▶ **Strong Security**

- ◆ Granular user rights management
- ◆ Encrypted storage and handover
- ◆ Data integrity protection
- ◆ Full audit trails

Utimaco DRS
Highlights

▶ **Cost-efficient**

  ◆ Standard X64 hardware

  ◆ Low-costs disk storage (SATA)

  ◆ High data compression rates (40-80%)

▶ **Standards based**

  ◆ Supports EU Directive 2006/EC/24

  ◆ Complies with ETSI TS 102 656, TS 102 657

Outsourcing
DR as managed service

▶ Utimaco DRS operated by a service provider

 ◆ Secure retention of data

 ◆ Request handling (communication with LEA)

 ◆ Charging to LEA

 ◆ Combination with LI possible (lawful interception)

▶ Service Partners

 ◆ Nokia Siemens Networks (Germany)

 ◆ Quante Networks (Germany)

 ◆ Other (on request)

Utimaco DRS – a carrier grade data retention solution
summary

▶ integrates seamlessly with existing network infrastructure

▶ integrates with business processes

▶ respects and supports security policies

▶ automates request processing

▶ automates data collection

▶ is highly resilient against common failures by redundancy

▶ scales from millions to billions of records per day

▶ is extensible at predictable costs

▶ is cost-efficient

Benefits

confident compliance

secure

scalable

future-proof
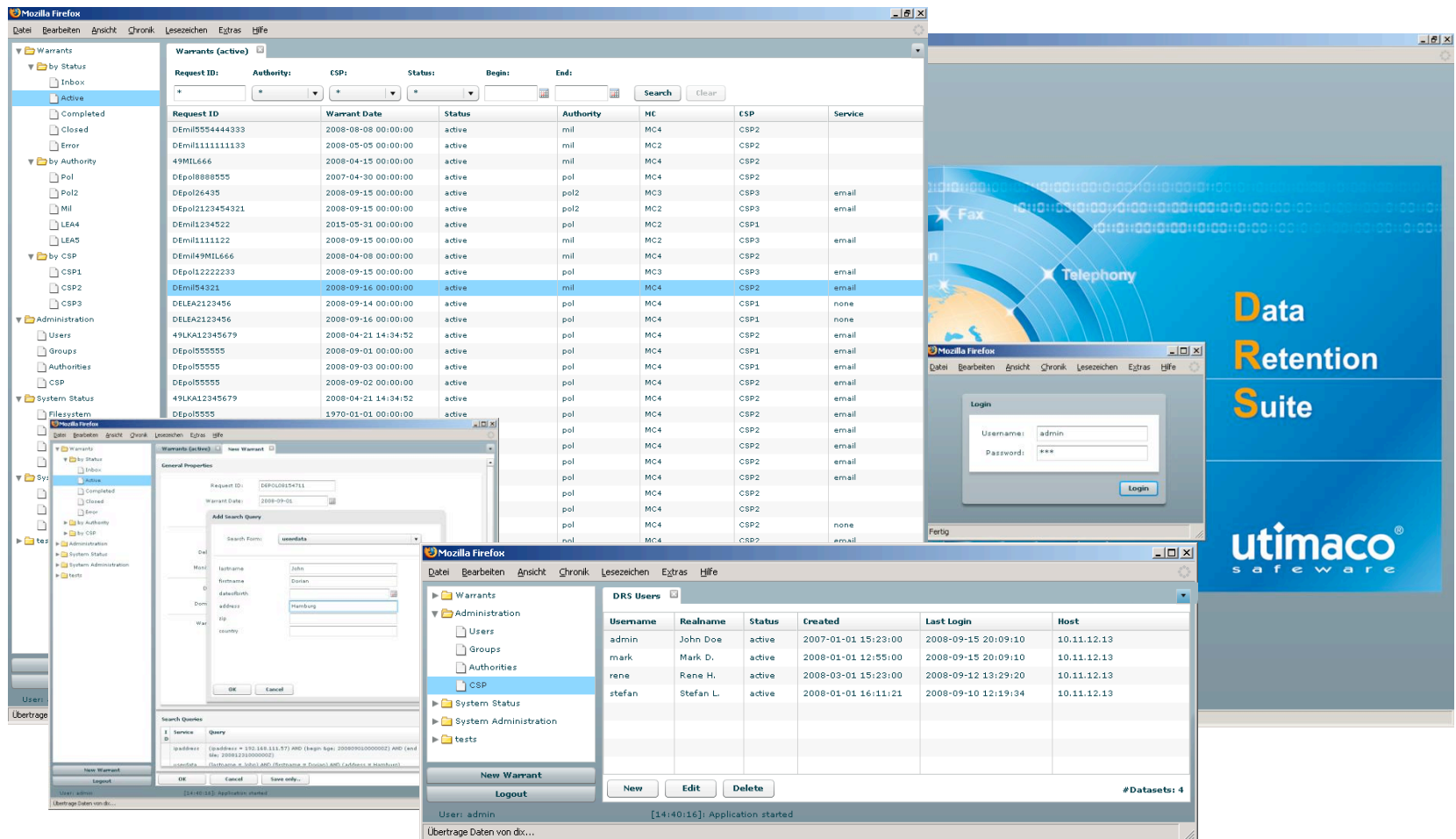
highly available

predictable CAPEX

minimized OPEX

Demo please!

▶ If you want to learn more about carrier grade Data Retention solutions, please visit us at booth 19 (Thursday to Friday)

thank you!
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děkuji!
gracias!
Вы!
merci!
tacka dig!
grazie!
σας ευχαριστούμε!
danke!

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