

PUBLIC SAFETY HUB PSH

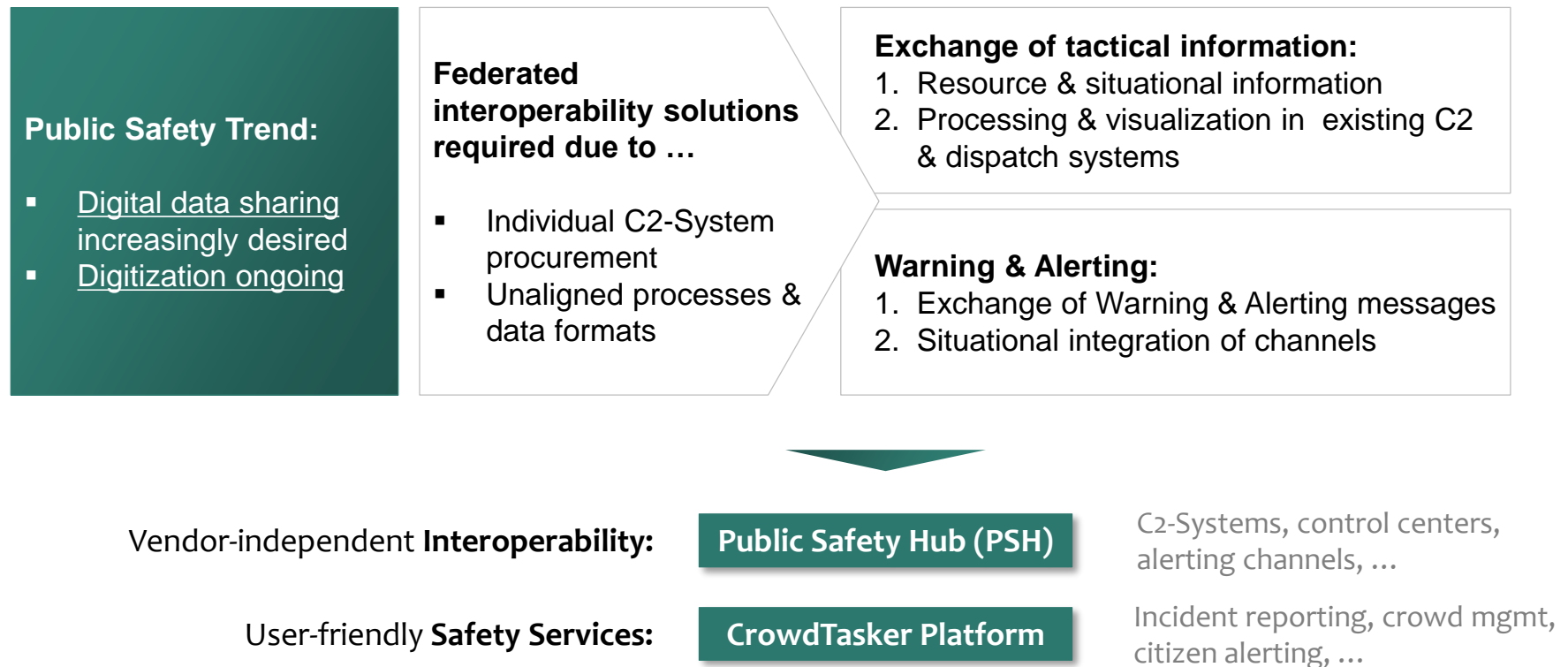
Center for Digital Safety & Security
AIT Austrian Institute of Technology

2019



CREATION OF A DATA SHARING HUB FOR CIVIL (AND MILITARY) APPLICATIONS

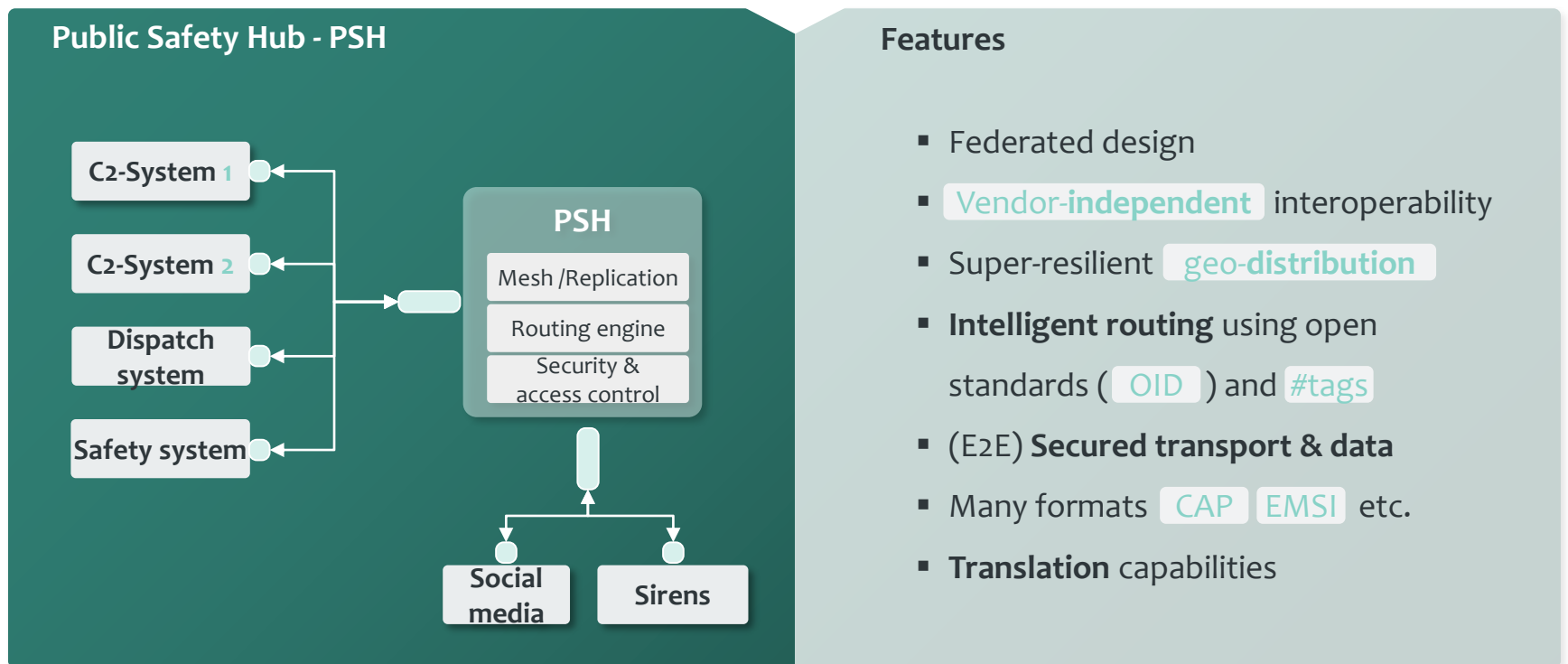
There is a need for interoperability solutions for the public safety domain that enable the synergetic sharing of data with various kinds of organizations.



THINKING C2-INTEROPERABILITY AS FEDERATED “INFRASTRUCTURE”

PSH provides control, resilience and performance

Interoperability for



THINKING C2-INTEROPERABILITY AS FEDERATED “INFRASTRUCTURE”

PSH provides control, resilience and performance

Interoperability for

C2-systems



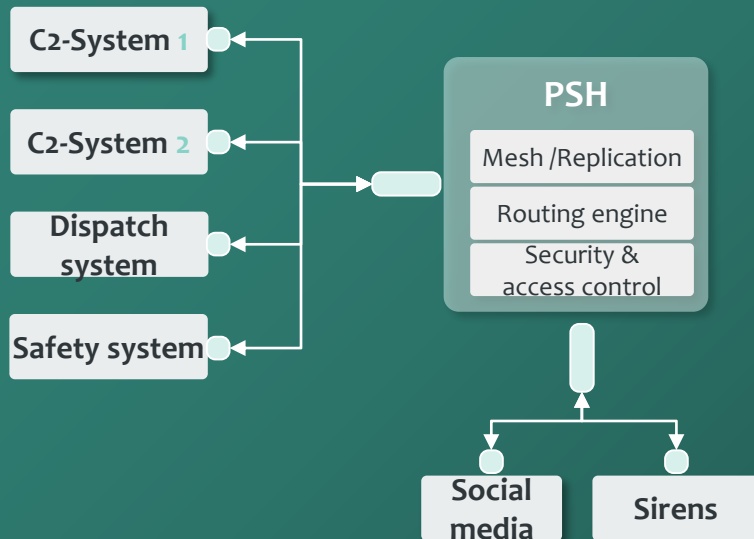
Control centers



Alerting



Public Safety Hub - PSH



Features

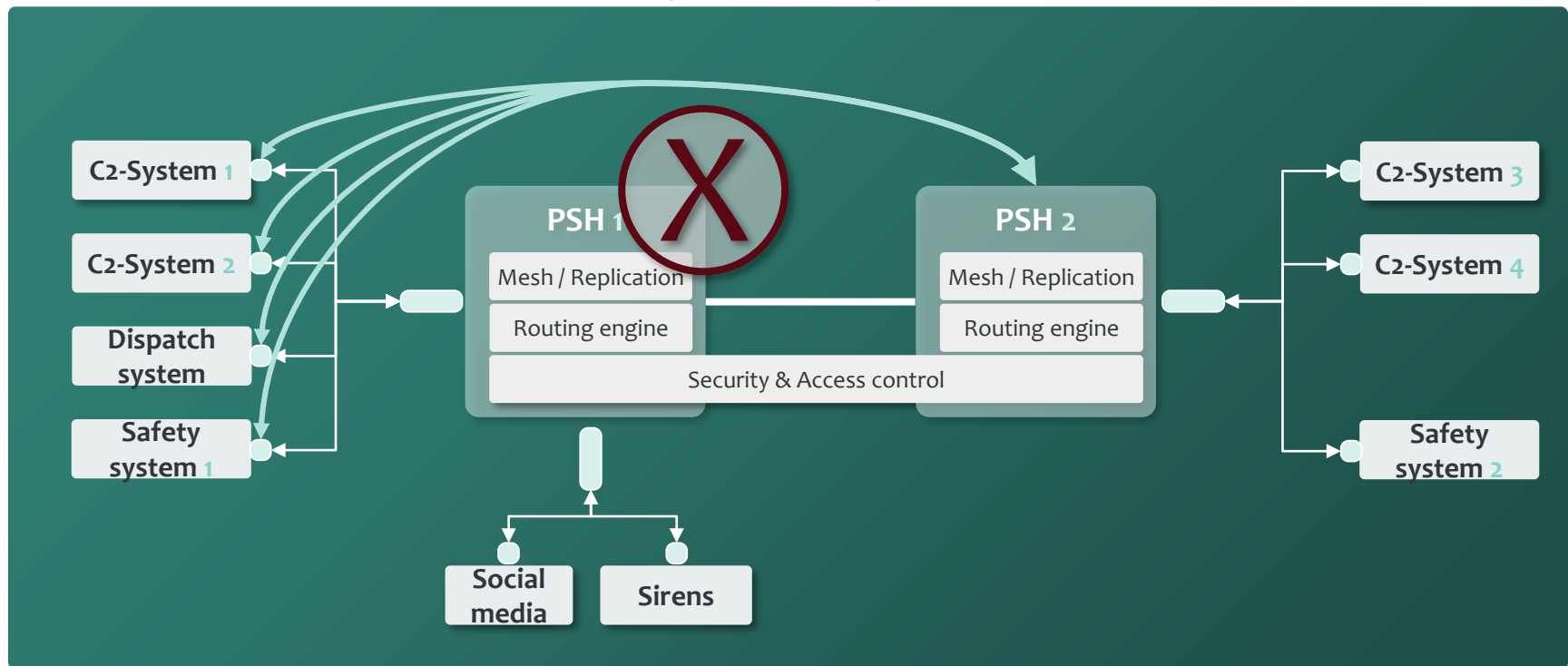
- Federated design
- **Vendor-independent** interoperability
- Super-resilient **geo-distribution**
- **Intelligent routing** using open standards (**OID**) and **#tags**
- (E2E) **Secured transport & data**
- Many formats **CAP** **EMSI** etc.
- **Translation** capabilities

THINKING IN RESILIENT “MESH”-LIKE NETWORK CORE

PSH provides geo-redundancy, full data control and failover strategies

Geo-Distribution Higher resilience w/ regional replication & functional separation; authorization control per partition possible

Failure tolerance In failure cases, **several mitigation and recover strategies**, e.g., re-connection via other PSH or communications per accessible partition

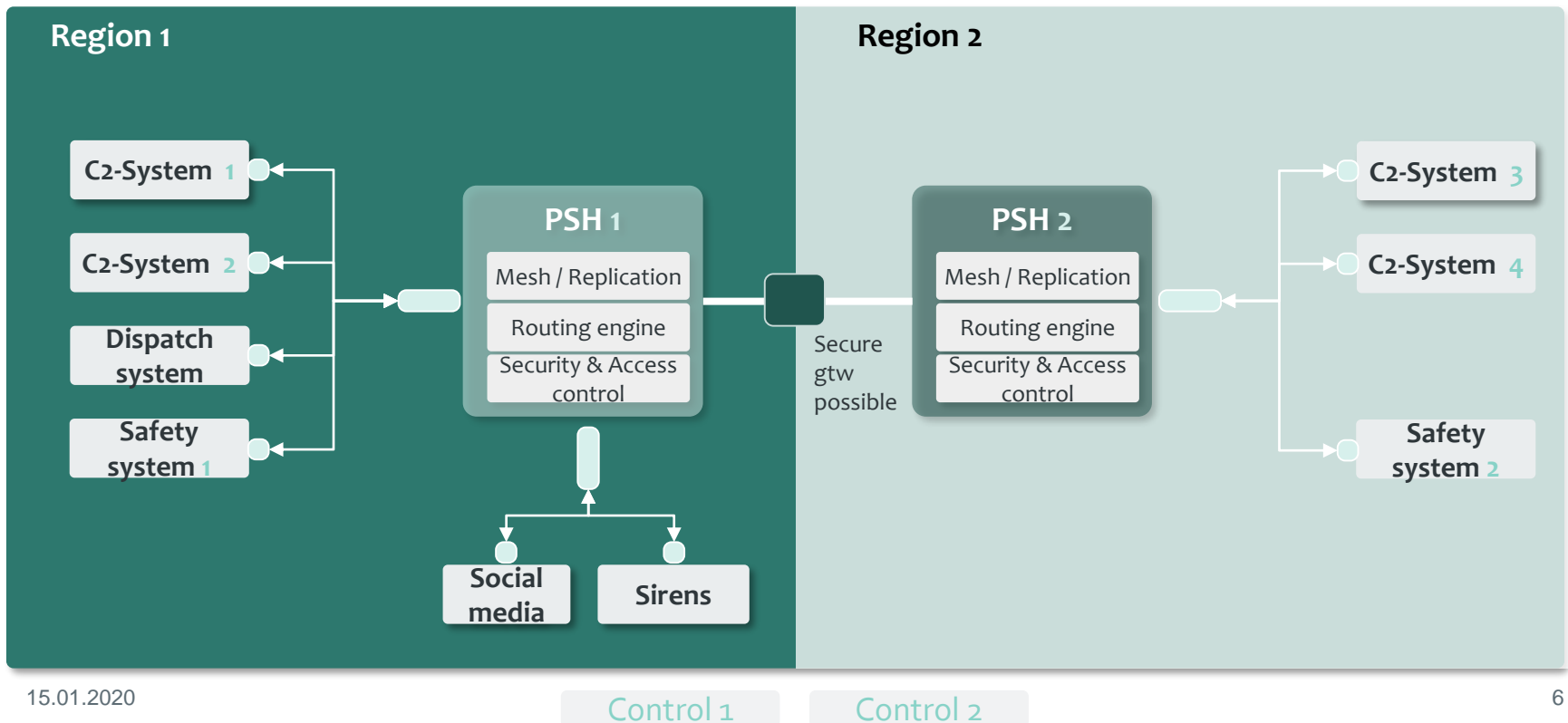


PSH UNDERSTANDS FEDERATED STRUCTURES AND CONTROL

PSH can provide distinct access and data control to each partner, and connect them through secure gateways (optional)

Federation

Control over authorization, data and infrastructure can be distributed among equal players (e.g., states) or various organizations



REFLECTING TOPOLOGIES THAT MATTER IN THE REAL WORLD

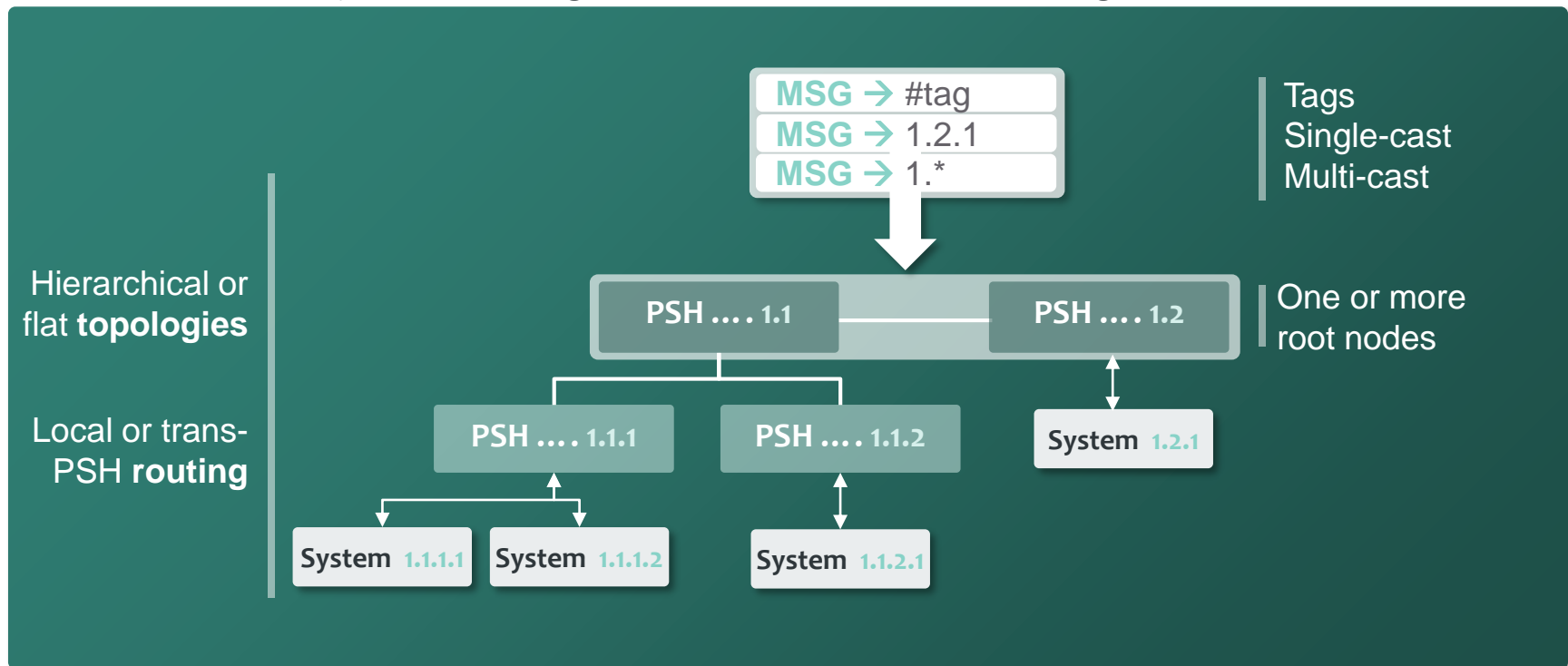
PSH provides various mechanisms for tailored message exchange schemes

Addressing

Tag-based, single-cast or multi-cast message distribution – supporting wildcards

Topology

Efficient addressing and routing on top of custom hierarchical or flat topologies – dynamic switching between local and trans-PSH routing schemes



A NEW CLASS OF PUBLIC SAFETY INTEROPERABLE COMMUNICATIONS

Interoperability beyond transport – 14 qualities of the PSH design

PSH

3
qualities for



Flexibility

- Vendor independent
- Almost data format agnostic
- Incremental rollout supported

4
qualities for



Resilience

- No single point of failure
- Geo-distribution
- Dynamic failover
- Supports network partitions

4
qualities for



Security

- Transport layer security
- E2E encryption supported
- Regional control
- Code can be audited

3
qualities for



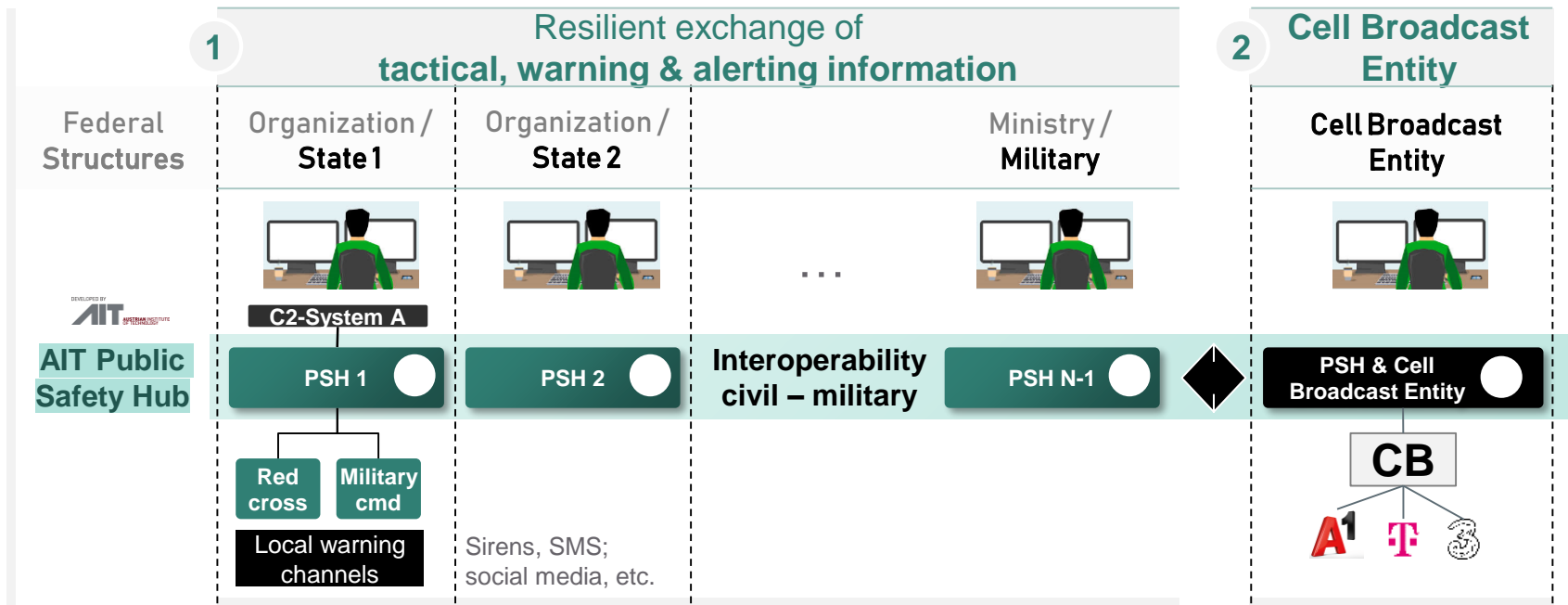
Performance

- Horizontally scalable
- Vertically scalable
- Intelligent routing w/o bottleneck

USE CASE 1 – FEDERATED TACTICAL INFORMATION: RESILIENT C2-SYSTEM INTEROPERABILITY

Public Safety Hub **Resilient interoperability hub** for existing safety systems

1 resilient infrastructure & common information space



Several public safety uses cases

- **Alerting hub** CAP Common Alerting Protocol (OASIS)
- **Tactical Information hub** EMSI Emergency Management Shared Information (ISO)
- **Connected control centers** DCI and other formats

USE CASE 2 – PUBLIC WARNING & ALERTING & CROSS-STAKEHOLDER NOTIFICATION SERVICES

Digital communication is essential for effective & efficient public warning & alerting and cross-stakeholder information exchange

Scenario

Today's tool landscape of warning & alerting and safety management systems is complex and not interoperable:

- Not entirely digital information exchange, e.g., between first responder organizations, slows down the information propagation
- Legacy systems (sirens, broadcasting services etc.) cannot restrict outreach, e.g., to geolocation-based audiences

→ Outreach to population is insufficiently digitized, slow and currently insufficiently focused on target audiences



Solution

AIT Public Safety Hub + CrowdAlerter (Notification Services)

Services

- Geo-referenced warning & alerting of the population
- Extensible multi-channel warning system, incl. AIT safety app and SMS or custom safety communication channels

PSH

- Interconnect isolated safety information systems (standard protocols like CAP, MIP or legacy system wrappers)
- Address resolution (DNS-like) with Object Identifiers

Deployments

Upcoming real-world professional trials:

- **Vorarlberg:** Dam break at the Rhein
- **Upper Austria:** Chemical accident
- **Burgenland:** Storm warning

USE CASE 2 – PUBLIC SAFETY SERVICES: CROWD-TASKING & -REPORTING

Involvement and interaction with the general public in safety-related activities

Scenario

Today, involvement of the community during a crisis or disaster is primarily non-digitally organized:

- **Society not yet effectively involved in public safety activities**
 - Efficient volunteer management & involvement often neglected
 - Information need of the society often not sufficiently covered
- **No support for self-organized communities available**
 - Uncoordinated, inefficient crisis response & relief efforts



Solution

CrowdTasker: Gather structured support from the field

- Effective location & skill-based mgmt of large volunteer crowds
- Modern interaction concept with volunteers

CrowdReporter: Receive pro-active relevant feedback / reports

- Information channel from the citizens to responder organizations, e.g., report blocked pathways or danger points

Deployments

National & European Demos + Trials:

Austria:

Earthquake relief help
Refugee supply demand
Student awareness

Israel & Netherlands:

Chemical accident
Imminent flood scenario

(PUBLIC) SAFETY SOLUTIONS OFFERING

Making the world safer together - building a strong joint digital safety offering

AIT Offer

- AIT is a reliable and flexible partner with extensive public & private safety service experience
- Customization and integration options for partners / clients

(Non-)Exclusive licensing	<i>Exclusive or non-exclusive</i> licensing of AIT's solutions <i>(based on agreement)</i>
Branding	Possibility to sell AIT's public safety solutions with <u>industrial brands</u> <i>(based on agreement)</i>
Integration	Integration with other <u>commercial solutions</u> <i>(based on chosen business model)</i>
Client customization	Adaptation of solutions to the client's needs
Comprehensive roadmap	Comprehensive technical product development roadmap

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