Sharing and Automation for Privacy Preserving Attack Neutralization

58th TF-CSIRT Meeting – Paphos, Cyprus

September 17th, 2019

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Co-funded by the Horizon 2020 programme of the European Union

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SAPPAN – Sharing and Automation for Privacy Preserving Attack Neutralization

- **H2020 – Call: Dynamic countering of cyber-attacks**
  - **Scope:** Cyber-attacks management – advanced response and recovery

- **Highlights from the Call:**
  - dynamic support of human operators, CSIRTs
  - controlling **response and recovery** actions, including information **visualization**.
  - best **measures** are to withstand and recover from a threat/attack (beyond cyber)
  - utilization of both **structured** (e.g. logs) and **unstructured** data
  - handling (e.g. classification, anomaly detection) of **encrypted** network traffic
  - dynamic, evidence based security and privacy risk **assessment methodologies and management** tools targeting emerging/advanced technologies

SAPPAN Concept

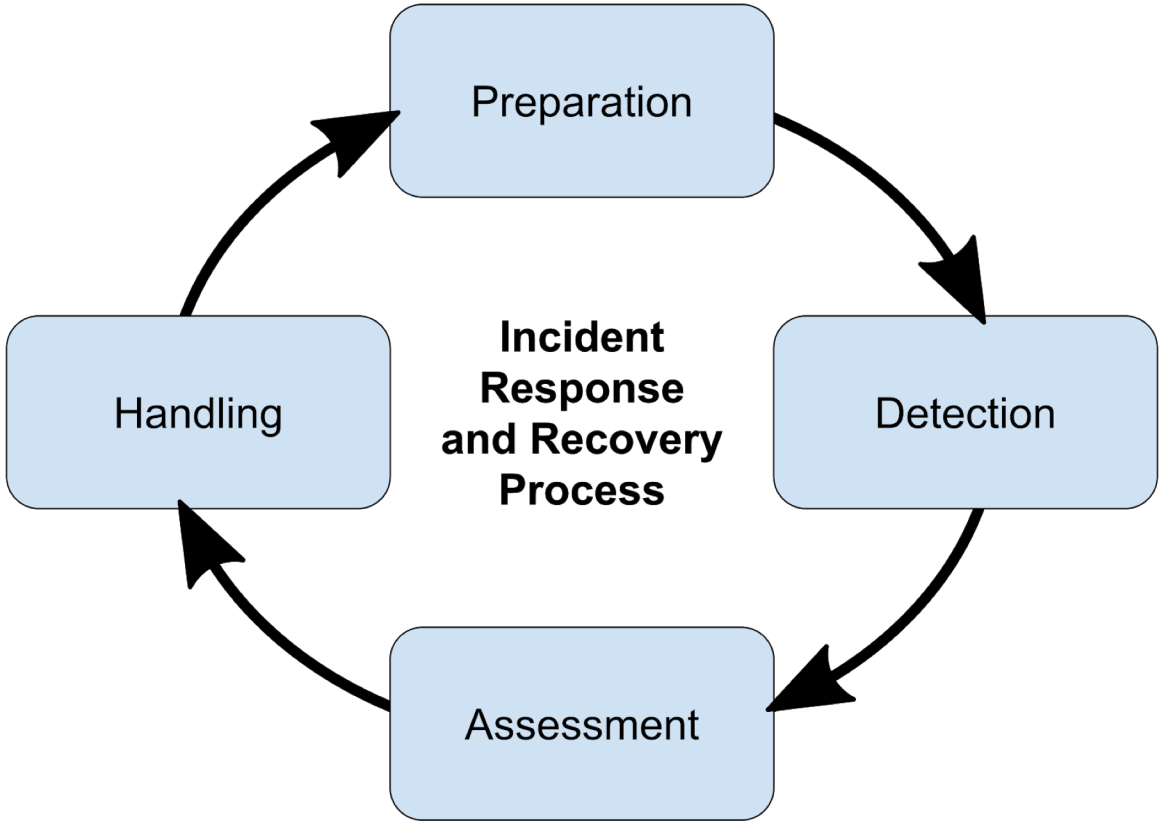
- **General Aim:**
  - develop a platform for sharing and automation …
  - … to enable privacy preserving and efficient response and recovery …
  - … utilizing advanced data analysis and machine learning.

- **Key Contributions**
  - **privacy-preserving** aggregation and data analytics including advanced client-side abstractions
  - **federated threat detection** based on sharing of anonymised data and sharing of trained machine learning models
  - **standardisation of knowledge** in the context of incident response and recovery to enable **reuse and sharing**
  - **visual, interactive support** for Security Operation Center operators.

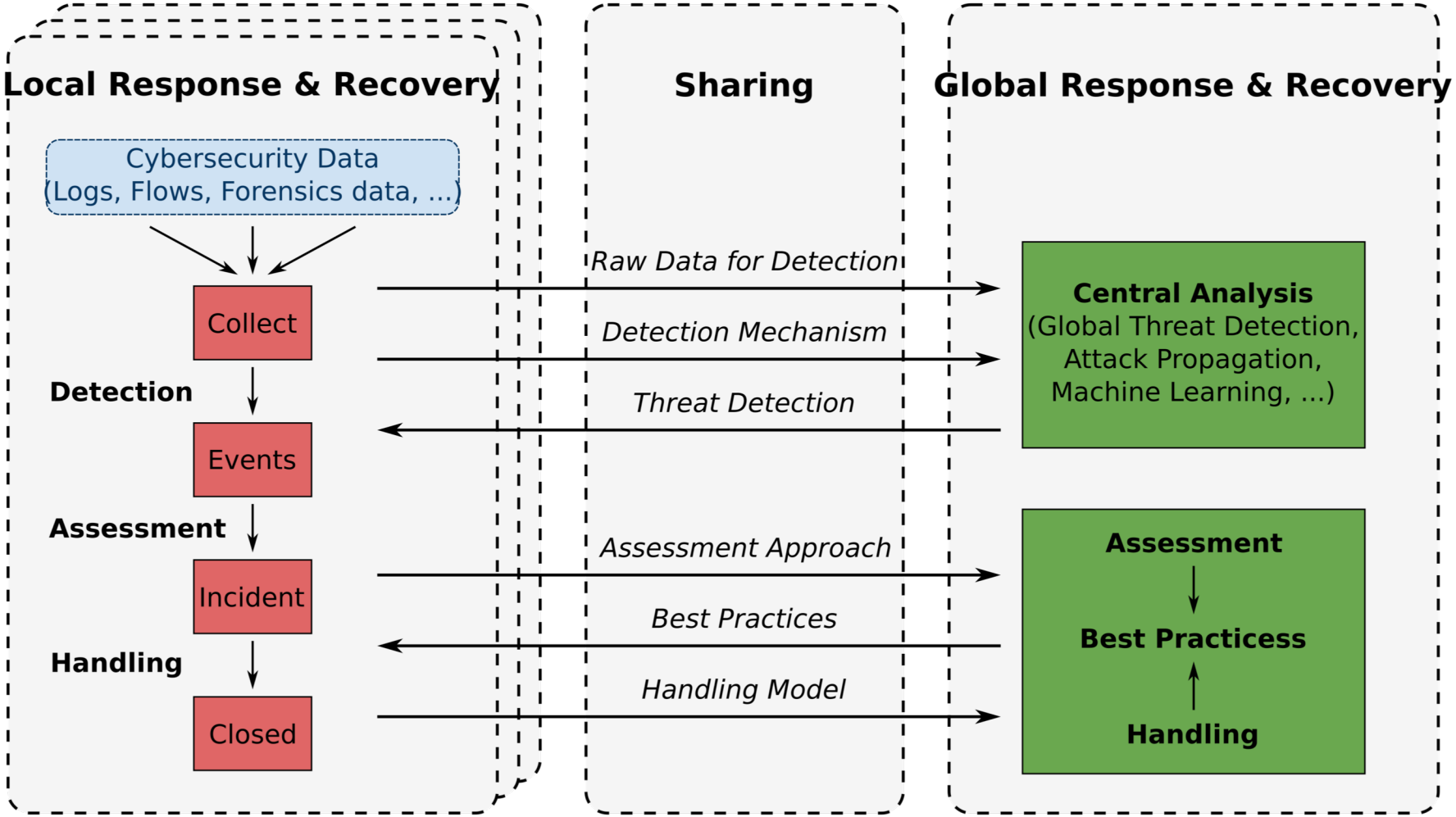
SAPPAN Consortium

- **Coordinator:** Fraunhofer FIT
- **Industrial Partners:** Hewlett Packard Enterprise, CESNET, DREAMLAB TECHNOLOGIES, F-Secure
- **Academia:** RWTH AACHEN UNIVERSITY, Universitas Masarykiana Brunensis, Universität Stuttgart

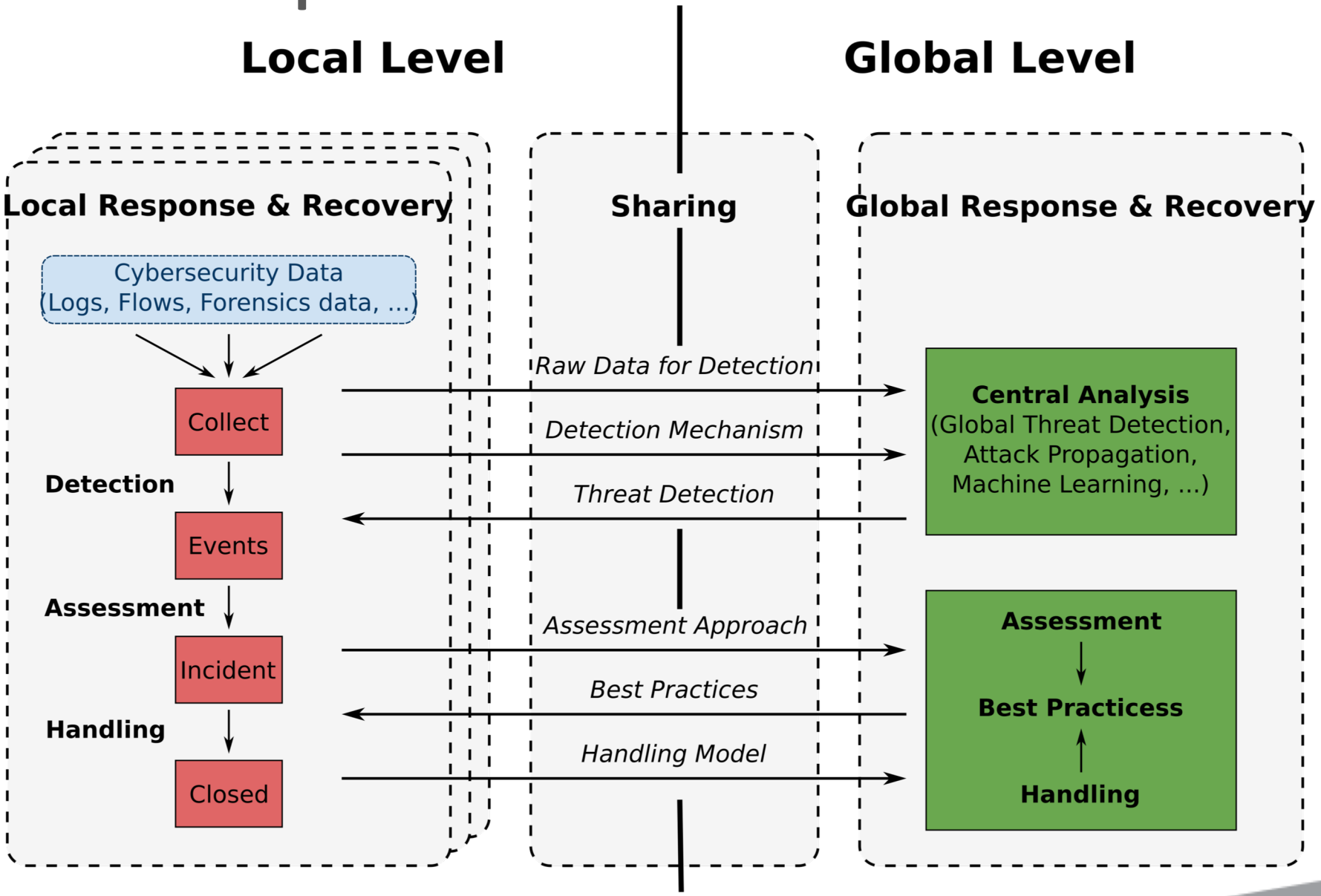
SAPPAN Concept - Cyber Incident Response and Recovery



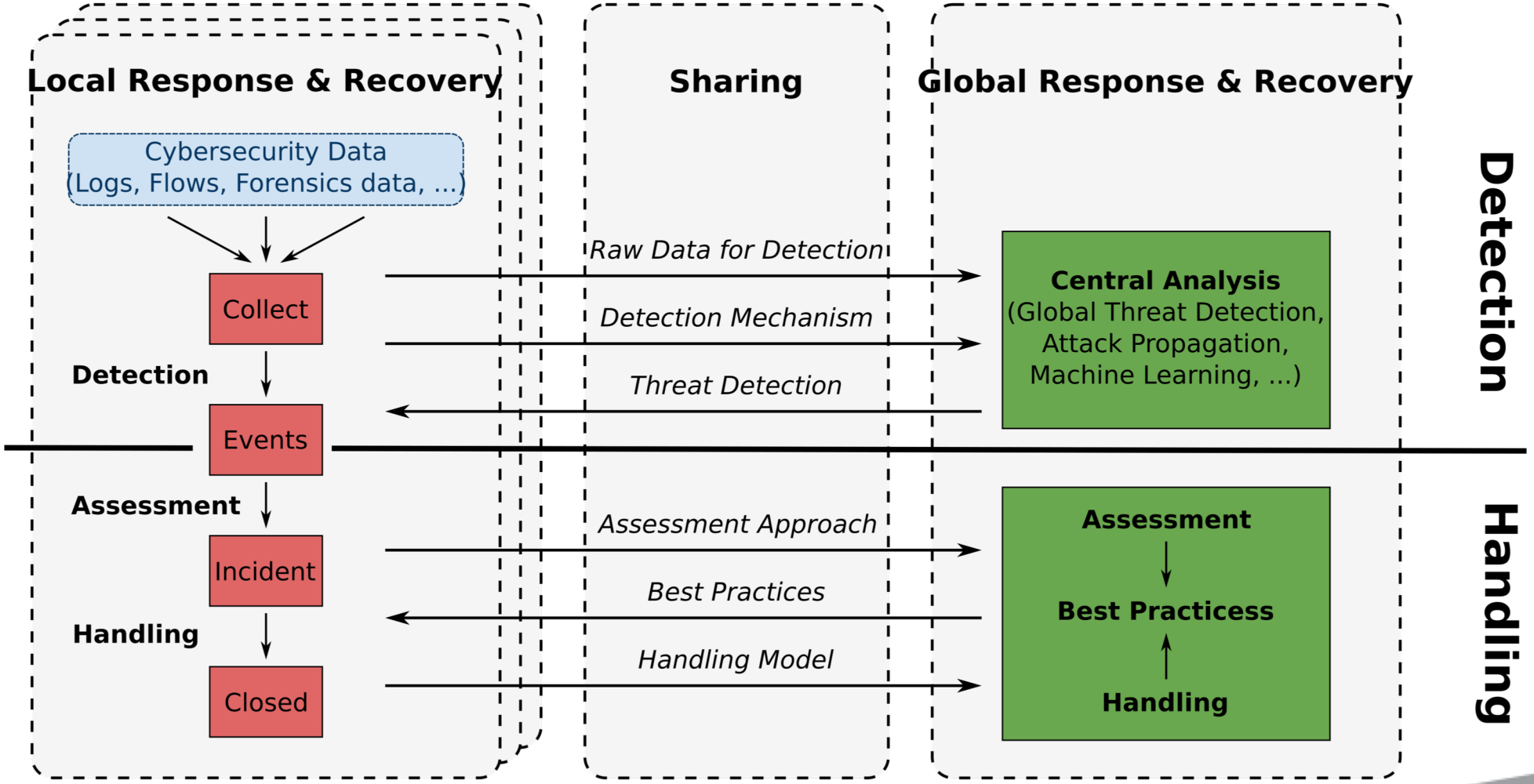
SAPPAN Concept



SAPPAN Concept



SAPPAN Concept



WP: Use Cases and Requirements Analysis

- Analysis and specification of response and recovery use-cases
- Privacy requirements
- Presentation requirements
- Functional specification and architecture definition
- Evaluation methodology

WP: Massive Data Acquisition and Local Attack Detection

- Data selection and data processing design
- Fast and scalable processing of cybersecurity data
- Analysis of encrypted and anonymised cybersecurity data
- Development of cybersecurity data abstractions that allow for anonymous data transit
- Visualisation support for the design of attack and anomaly detection models

WP: Managing and Automating Threat Intelligence

- Develop a methodology for formalising and modeling response and recovery actions and their triggers
- Develop approach for capturing and expressing incident response and recovery steps with involvement of human operators
- Develop approach for automatically recommending response and recovery actions to human operators
- Develop approach to automate response and recovery actions without human operators
- Tracking of analytical provenance

WP: Sharing and Federation for Cyber Threat Detection and Response

- Distributed Learning of a global model based on shared anonymized data
- Federated learning of a global model based on shared locally trained models
- Federated learning of a global model without sharing local models
- Sharing response handling information
- Visualisation support for distributed and federated learning of models

WP: Integration, Validation, and Visualization

- Dashboard for response and recovery awareness
- SAPPAN demonstrator
- Validation of response and recovery capabilities

Your comments are welcome

Advisory board member wanted

https://sappan-project.eu

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This project has received funding from the European Union's Horizon 2020 Research and Innovation programme, under the Grant Agreement number 833418.