SPEAR NEWSLETTER

Third newsletter   **December 2019**

The third SPEAR newsletter

Dear reader,

You are reading the third issue of the newsletter, published by the SPEAR project, a Horizon 2020 program funded by European Union.

In this issue we inform you about the following dissemination and communication activities of the SPEAR consortium, that took place during the past three months:

- **European Utility Week 2019/POWERGEN:** The SPEAR project and its progress was presented during the European Utility Week 2019 (co-located with POWERGEN), the premier landmark event in Europe for the entire smart utility sector, accumulating over 12.000 international smart energy stakeholders and 650 exhibitors.

- **Creating synergies in EE-ISAC:** SPEAR participated in the 12th plenary meeting of EE-ISAC by presenting the SPEAR project, towards creating synergies with EE-ISAC and stakeholders from the smart grid ecosystem.

- **Presentations and workshops in the IEEE CAMAD conference:** SPEAR had a strong representation in the IEEE CAMAD conference by presenting three diverse research papers around honeypots and anomaly detection.

- **Hack4Energy**: A joint hackathon, co-organized by SPEAR and Sit4Energy, consisted of 4 challenges in the areas of cybersecurity and smart energy management.

- **Go4Green Open Day**: SPEAR was presented in an open discussion of the Greek Ministry of Energy regarding the preparation for the Go4Green Crowdhackathon and the necessity of open data for developers and the research community.

Project Details

- **Project no.** 787011

- **Research and Innovation Action:** Co-funded by the Horizon 2020 Framework Programme of the European Union

- **Call identifier:** H2020-DS-2016-2017 (Digital Security Focus Area)

- **Topic: DS-07-2017:** Cybersecurity PPP: Addressing Advanced Cyber Security Threats and Threat Actors

- **Project Start date:** May 1st, 2018 (36 months duration)

Communication

Website
https://www.spear2020.eu

LinkedIn
https://www.linkedin.com/company/spear2020

YouTube
https://www.youtube.com/channel/UCw6-d5G01ToBhCmaUnHIcpw

Project Coordinator:
Dr. Panagiotis Sarigiannidis
University Of Western Macedonia, Greece

**E-mail:** psarigannidis@uowm.gr

SPEAR Architecture

The SPEAR project aims to introduce a three-tier platform architecture that is able to ensure confidentiality, integrity and availability of smart-grid oriented data and services. The SPEAR architecture consists of the following major layers:

SPEAR SIEM: The SPEAR system information and event management framework aims at detecting and illustrating anomalies on operational data and network traffic that could indicate a cyber-attack or any kind of anomaly that needs immediate action.

SPEAR FRF: The SPEAR Forensic Readiness Framework encompasses tools that process forensic data and prepare evidences which can be used in courts. In addition, FRF realizes the optimal deployment of honeypots to trap attackers and collect precious evidences.

Anonymous SPEAR-RI: The SPEAR Anonymous Repository of Incidents enables communication and transaction of security incidents among energy providers and operators in Europe. Anonymisation techniques guarantee that the participating organisations will not get exposed.
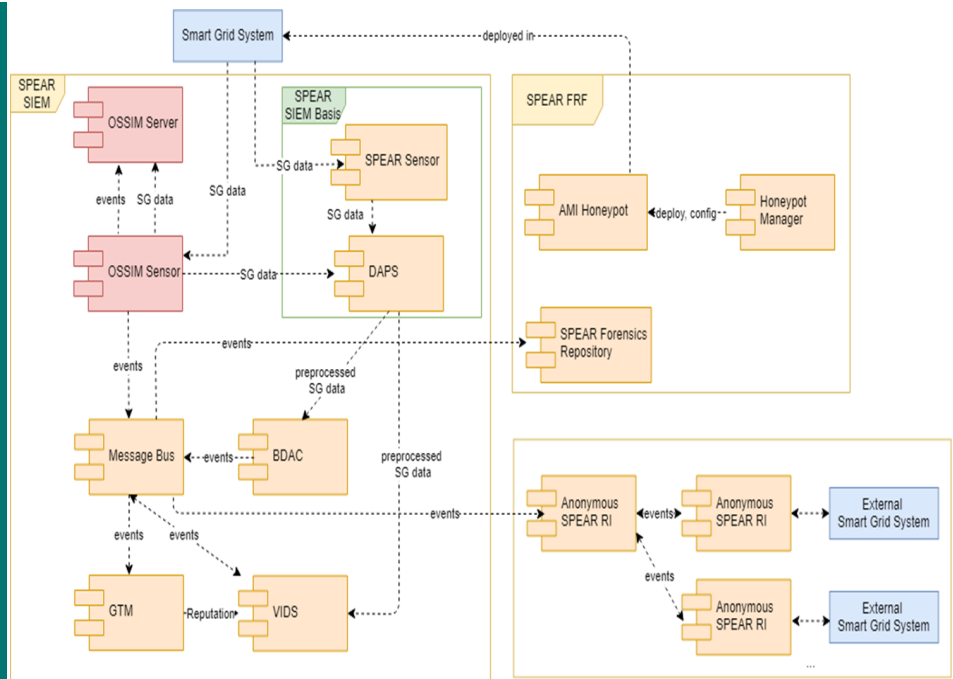

SPEAR Architecture

SPEAR in the IEEE CAMAD conference

The SPEAR consortium participated in the International Workshop on Computer Aided Modeling and Design of Communication Links and Networks (CAMAD) conference, held in Limassol, Cyprus, during 11-13 September 2019. In this event, SPEAR researchers from UOWM, CERTH, 0INFINITY, PPC and SIDROCO showcased a significant variety of research work that was performed in the context of the SPEAR project.

A Novel and Interactive ICS honeypot for Critical Smart Grid Infrastructure
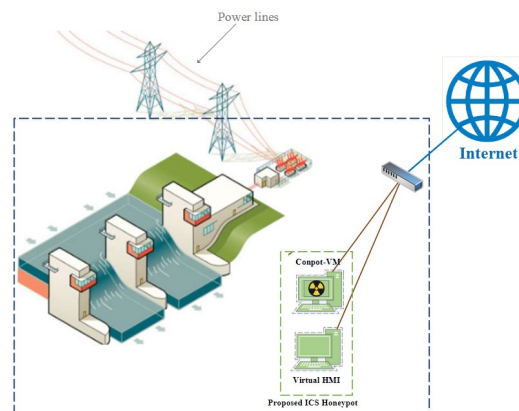
Honeypots are considered a computer security mechanism, that is used by industries and researchers to attract cyber-attackers, thus preventing them from attacking the production assets, whilst collecting information and evidence of their malicious activities. In this papers, authors from UOWM presented a novel ICS honeypot that is deployed in the VETS hydro-plant and is able to replicate real operational data, thus improving its changes to attract potential attackers. The full-text is available on the SPEAR website:

https://www.spear2020.eu/cmsMedia/Uploads/Publications/CAMAD_Paper_2019.pdf

Cybersecurity in SMEs: The Smart-Home/Office Use Case

Researchers from CERTH presented a paper concerning the different datasets (network flows traffic, application layer protocols, smart devices and sensor measurements) deriving from the Smart Home use case of SPEAR and the initial anomaly detection methods based on those datasets.

You can access the full-text of this publication by visiting the following link: https://www.spear2020.eu/cmsMedia/Uploads/Publications/vakakis2019.pdf

Operational Data Based Intrusion Detection System for Smart Grid

This paper, a joint effort of researchers and industry partners of SPEAR, received the best-paper award and introduces an intrusion detection system that leverages deep learning and representation methods on real data in order to identify operational anomalies in a power plant.

You can access the full-text of this publication by visiting the following link: https://www.spear2020.eu/cmsMedia/Uploads/Publications/SPEAR_Awarded_Paper.pdf

Creating Synergies in EE-ISAC

The European Energy—Information Sharing and Analysis Centre (EE-ISAC) is an information sharing network about security incidents and breaches, powered by major European utilities, industries and technology providers as well as academia, research institutes, governmental and non-profit organisations.

SPEAR participated in the 12th plenary meeting of EE-ISAC by presenting the SPEAR project, focusing on the project's repository of incidents, SPEAR-MISP, and towards the creation of new synergies with EE-ISAC and stakeholders from the smart grid ecosystem.

SPEAR Hacks4Energy

SPEAR and SIT4Energy (https://sit4energy.eu) projects joined forces on 23-24 October 2019 towards co-organizing the hackathon event "Hack4Energy", focused on innovative approaches on energy-related cyber-security and end-user engagement, respectively.

The hackathon event consisted of 4 challenges, including the development of visualisation and machine learning mechanisms for anomaly detection on network traffic and operational data.

The event was kindly sponsored by UBITECH, WATT+VOLT and MLS.

SPEAR Goes4Green

The Greek Ministry of Environment and Energy organized in 22nd October 2019 the Open Day Go 4 Green event, inviting start-ups, programmers, researchers, students and stakeholders to contribute in an open discussion about open data and how they can be used to develop new innovative solutions around green solutions and digital transformation.

The SPEAR project participated by presenting the innovative solutions that SPEAR introduces through its architecture, towards digital transformation and secured modern smart grids. SPEAR tried to inspire the audience by providing specific ideas for the hackathon that were based on the AI technologies utilised by the project. Last, the initiatives of European Commission to foster R&D efforts were also presented, like the H2020 framework and the EC Open Research Data Pilot.

European Utility Week 2019

The SPEAR project and its progress was presented during the European Utility Week (EUW) 2019. EUW is the premier landmark event in Europe for the entire smart utility sector, accumulating over 12.000 international smart energy stakeholders and 650 exhibitors. An innovation and information platform in the form of a conference-led exhibition, the event facilitates greater networking and content sharing opportunities across the entire energy spectrum from generation to end use.
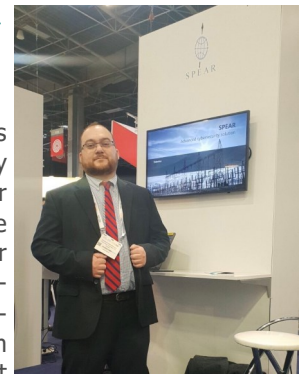
SPEAR took part in a very inspiring panel discussion of the session: "Digitalising the energy sector ' the greening by design paradigm", about the European goal for low carbon emissions and the role of concepts like smart grids, digitalisation and cybersecurity towards a Green Energy transition.

A great event with massive turn-up took place in Paris during 12-14 November 2019 and SPEAR's pod in the EU project's zone gained a lot of attention presenting the project's innovative solutions. In numbers, 18000 visitors and 800 exhibitors participated in this event from 100 countries.