

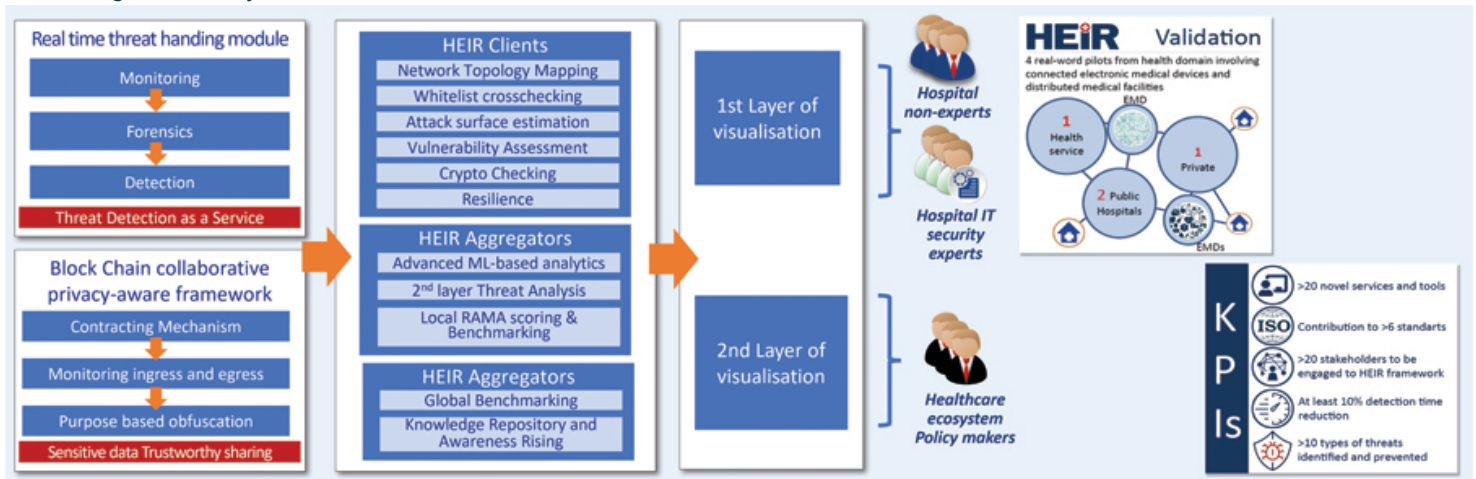


## A SECURE HEALTHCARE ENVIRONMENT FOR INFORMATICS RESILIENCE





HEIR aims at developing a thorough threat identification and cybersecurity knowledge base system both local (hospital/medical center) and global (including different stakeholders) levels. To serve the ambitious objectives, the HEIR framework adopts a modular design that integrates the following functionalities:

- Real time intelligent threat hunting services, facilitated by advanced machine learning technologies, supporting the identification of the most common threats in electronic medical systems;
- Sensitive data trustworthiness sharing facilitated by the HEIR privacy aware framework;
- Innovative Benchmarking based on the calculation of the Risk Assessment of Medical Applications (RAMA) score, that will measure the security status of every medical device and provide thorough vulnerability assessment of hospitals and medical centers;
- The delivery of an Observatory for the Security of Electronic Medical Devices; an intelligent knowledge base providing advanced visualizations for each threat identified in RAMA and facilitating global awareness on EMD-related threats.

### HEIR High-Level System Architecture



### Use Cases

<p><b>UC #1</b> </p> <p>HYGEIA is using its healthcare information system (including the Laboratory intelligent system (SAP, RIS/PACS, LIS) by integrating and interconnecting all the clinic patients and the associated internal and external doctors/physicians as an entire unit. HEIR will enhance the current HYGEIA information system by assessing the overall security status of the hospital.</p>	<p><b>UC #2</b> </p> <p>PAGNI is using an integrated information system called as OPSI platform. This is an eHealth IT infrastructure that currently links the hospital medical care, the pharmacy, the patient flows and records. HEIR will enhance the OPSI platform in respect to its data privacy and cybersecurity by measuring and evaluating the overall security status of the hospital IT system.</p>	<p><b>UC #3</b> </p> <p>NSE/NOKLUS examines the cross-domain aspect of data exchange between patient representatives (NSE), health data registry representatives (NOKLUS) and researchers (NSE/NOKLUS). HEIR will facilitate the secure data exchange and storage as well as the interaction between citizens, research institutions, the Norwegian Diabetes Registry and other stakeholders.</p>	<p><b>UC #4</b> </p> <p>Croydon health services NHS trust (CUH) is using two differing electronic systems: Cerner for the acute hospital and EMIS for primary care. HEIR will boost the Croydon NHS IT system in respect to the a) secure access/transfer of patient files, b) patients' ownership to their health data history c) threat and attacks identification and analysis d) big data management and control.</p>
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