

# a Security ECONomics service platform for smart security investments and cyber insurance pricing in the beyond 2020 era



## SECONDO: A Platform for Cybersecurity Investments and Cyber Insurance Decisions

The 17th International Conference on Trust, Privacy and  
Security in Digital Business  
TrustBus2020  
Virtual Event, 14-17 September 2020



Horizon 2020  
European Union funding  
for Research & Innovation

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- Since COVID-19, the US FBI reported an increase of **300%** in reported cybercrimes.
- Cybercrime damage may cost the world **\$6 trillion** annually by 2021.
- **67%** increase in security breaches in the last five years.
- Cost of ransomware to businesses will top **\$20 billion** in 2021.
- A ransomware attack every **14 seconds**.

- Social media logins is available for **\$2.73** each in the Dark Web.
- For sale in the Dark Web **20 billion passwords & emails**.

**Data** is the  
new **oil** of the  
**21st century**



<https://blog.s4rb.com>

- NotPetya, Worldwide, 2017

- **Ransomware**
- \$300 to regain access on each computer
- Mondelez: \$100M
- Maersk: \$300M
- Merck: \$300M
- **Insurers had denied claims**



<https://industryanalysts.com>

- Shen-attack scenario

- **Ransomware hypothesis**
- Cost of Cyber Attack on Asia-Pacific Ports Could Reach \$110B.
- **92%** of all losses resulting from a cyber attack would not be insured

- Marriott Cyberattack, 2018

- Since 2014
- 500M guest records exposed
- Reimbursements: \$71M
- **\$120M** fined under GDPR

- **Simon Weckert Causes Google Maps “Traffic Jams” By Carrying 99 Cell Phones, February 2020**

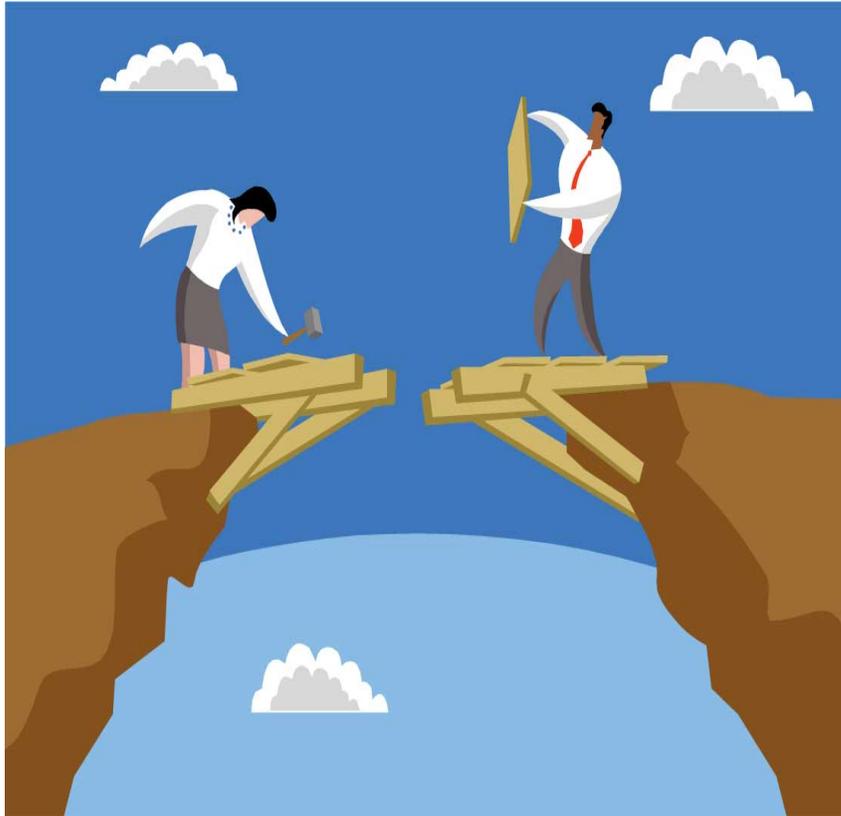
- Allocate adequate **budget**
- Data **sources**
  - Validation
  - Quality
  - Speed
  - Correlation
- **Human** error
- **Credibility**

**MIND THE GAP**



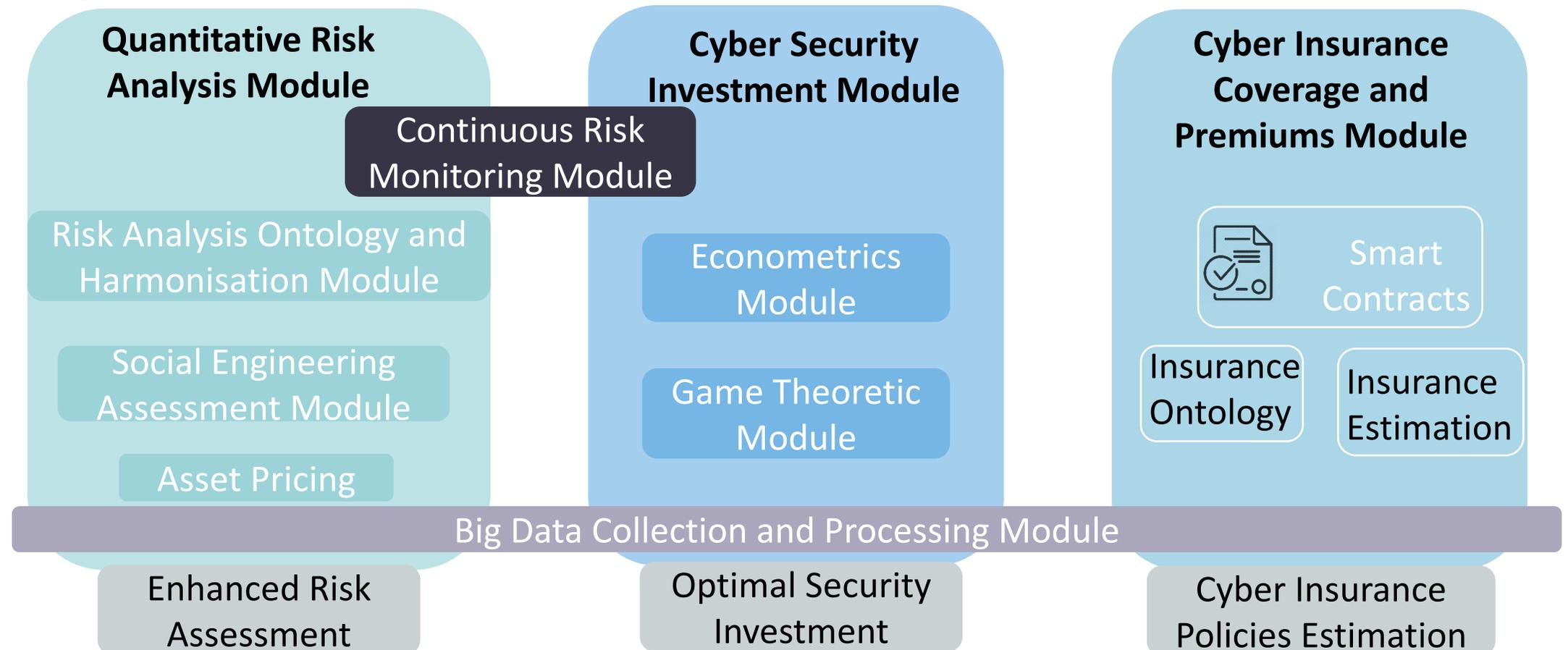
www.mindthegap.ngo

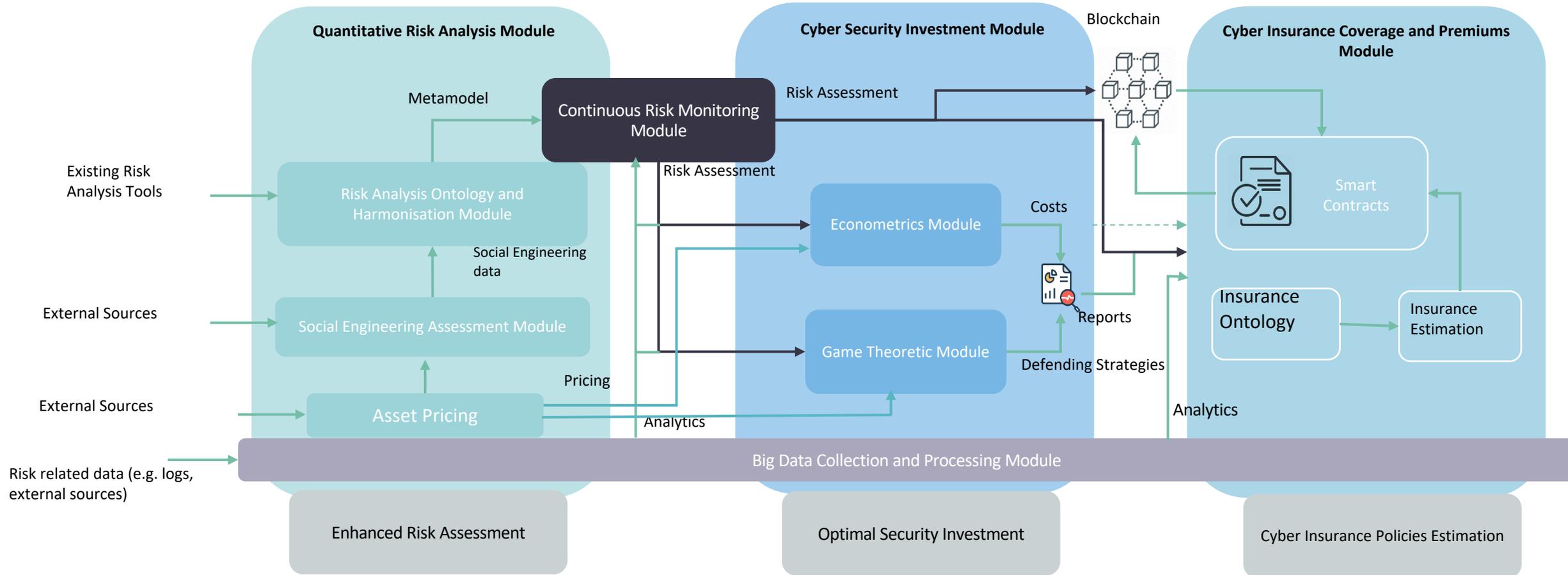
- Security Team's understanding
  - Motivation
  - Infrastructure
  - Awareness
  - Methods
- **New** Threats emerging
- **Integrate** security tools with the organization



**SECONDO** proposes an **Economics-of-Security-as-a-Service (ESaaS) platform** that encompasses a comprehensive **cost-driven** methodology for:

- estimating **cyber risks** based on a **quantitative** approach (on both **technical** and **non-technical** aspects)
- recommending **optimal investments** in cyber security for efficient **risk management**
- determining the **residual risks** and estimating the **cyber insurance premiums**



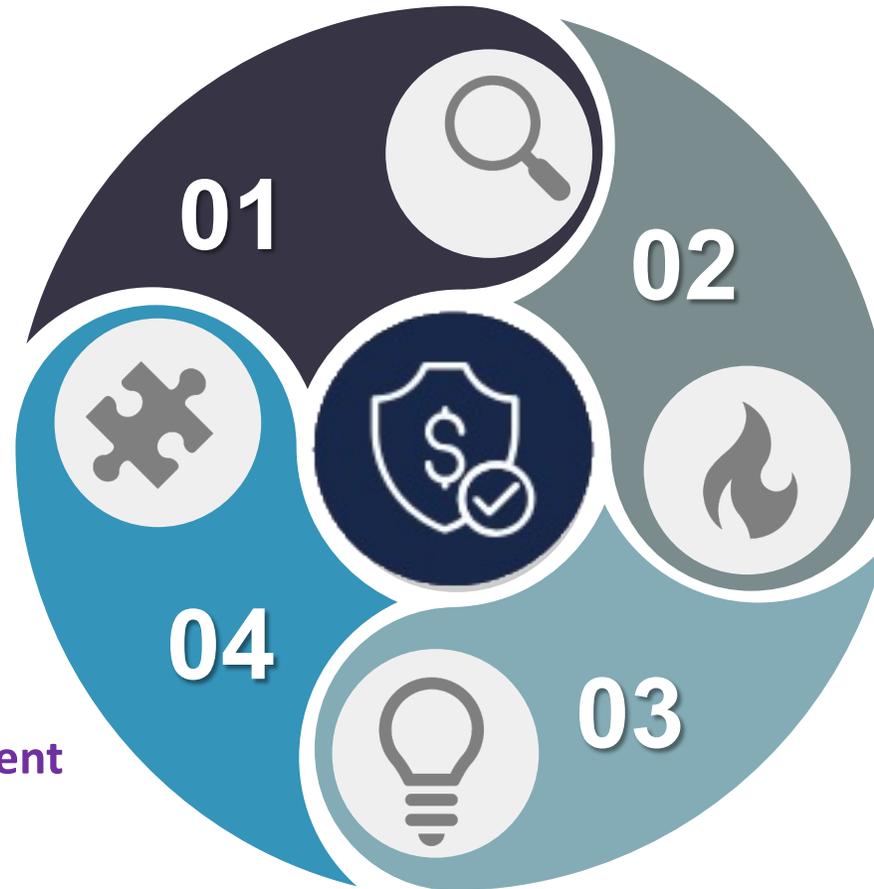


## Acquire Data

- Phishing
- SIEM
- Log files (Firewall, IDS)
- Social Media
- ELK stack
- Python
- Apache

## Continuous Risk Monitoring

- OLISTIC Enterprise Risk Management
- Blockchain
- Ethereum private blockchain



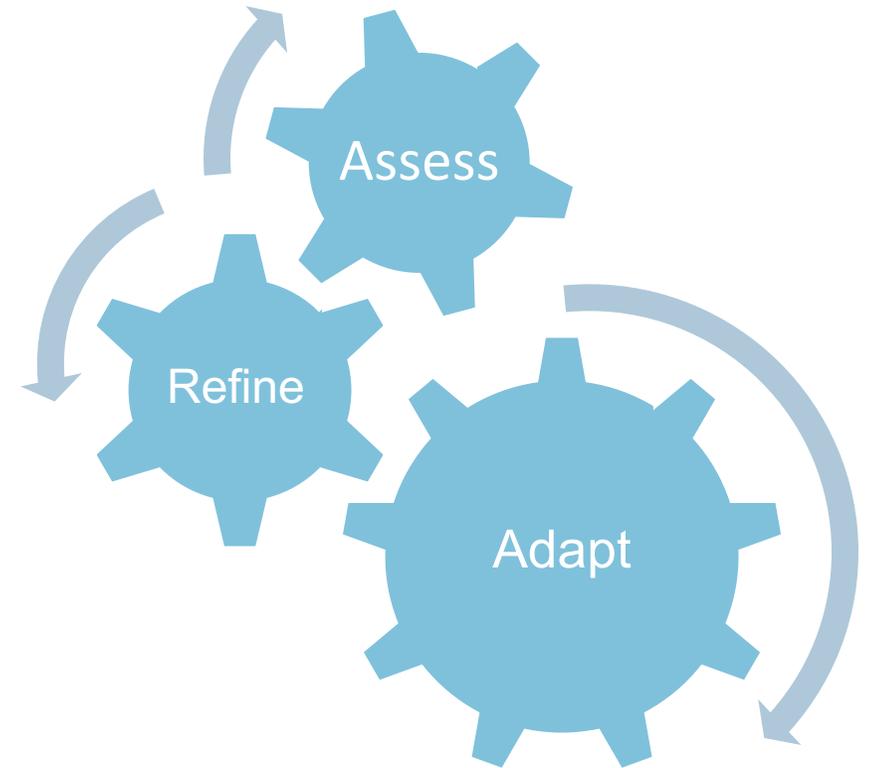
## Analyze Data

- Python
- Pandas Library
- ELK stack
- QORAS Method
- Nash Equilibria

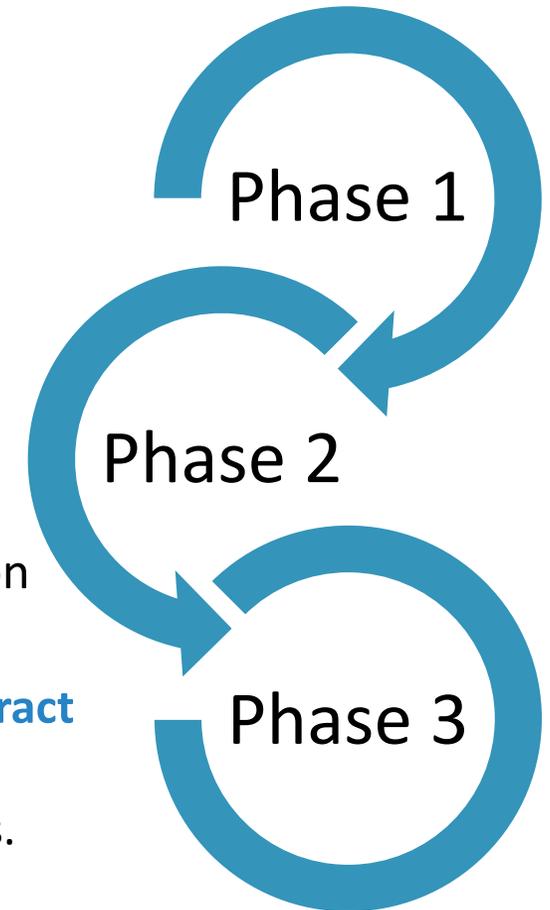
## Intelligence

- Econometric Methods
- Optimal Decisions
- Premiums and Coverages
- Privacy-preserving smart contracts
- Solidity

- Use Case 1 – **Human susceptibility to cybersecurity breaches in IoT-enabled smart home**
  - “IoT devices typically attacked within 5 minutes.”  
NETSCOUT
- Use Case 2 – **Optimal Patching of Airport Cyber Infrastructures**
  1. 66% of the airports have data exposed on the Dark Web
  2. 97% of the airport websites have outdated web software100 of the biggest international airports  
ImmuniWeb
- Use Case 3 – **Cyber insurance for Innovative SME**
  - “**28%** of data breaches in 2020 involve small businesses.”
  - *Verizon*
- Use Case 4 – **Cyber Risk Transfer in Maritime Industry**
  - “400% increase in hack attempts since February 2020.”
  - *Naval Dome*



- **Phase 1: Cyber-physical Risk assessment**
  - Identify assets, vulnerabilities and threats.
  - **RAOHM**: quantitatively compute the overall risk.
- **Phase 2: Cyber-physical Risk management**
  - Cyber-physical risk management utilizing the risk assessment results.
  - **ECM & GTM**: payoff functions and optimal controls selection strategies.
  - **CISM**: optimal ways to invest in cybersecurity controls.
- **Phase 3: Insurance exposure estimation, coverage and premium calculation**
  - **CICPM**: collect data and produce optimal insurance premium.
  - Optimal deal with policies of the agreement being stored as a **smart contract** on a blockchain.
  - **CRMM**: Continuously monitor for possible violation of the agreed policies.



1. Optimal Risk Assessment
2. Smart Contracts
3. Cyber Threat Mitigation
4. Predict Attacking Scenarios
5. Adapt to new changes and needs



6. Adjust to organization topology
7. Accurate Data
8. Continuous Risk Monitoring
9. Detect-Prepare-Prevent-Protect
10. Reduce cyber security budget

## Project Information

SECONDO

Grant agreement ID: 823997

Status

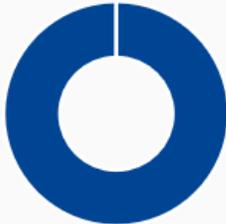
Ongoing project

Start date

1 January 2019

End date

31 December 2022

Funded under  
H2020-EU.1.3.3.Overall budget  
€ 1 600 800EU contribution  
€ 1 600 800Coordinated by  
UNIVERSITY OF PIRAEUS RESEARCH CENTER Greece

## 4 Universities and 4 SMEs

University of Piraeus Research Center - Greece University of Surrey - United Kingdom Cyprus University of Technology - Cyprus University of Greenwich - United Kingdom Ubitech Limited - Cyprus LSTECH Espana SL - Spain KROMAR EPE, Greece Fogus Innovations & Services P.C., Greece 

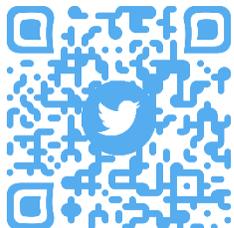


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