INTRASOFT INTERNATIONAL

TREK development

TECHNOLOGY SERVICES
redefining / service

CYBECO

Supporting cyberinsurance from a behavioral choice perspective.

H2020 Project 740920. Digital Security

Aitor Couce-Vieira, ICMAT-CSIC

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CSIC
Consejo Superior de Investigaciones Científicas

TU Delft

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northumbria
UNIVERSITY NEWCASTLE

Cybersecurity risk. The context

- Systems increasingly connected and relying on ICT
  - Cars, planes, medical systems, investing platforms, …
- Increasing variety, number and sophistication of attacks and attackers
  - Virus, worms, trojans, spyware, APTs, ransomware, …
  - Countries, cybercriminals, internal actors, …
- Potential to cause immense damage
  - Economic, operational, national security, reputation, …

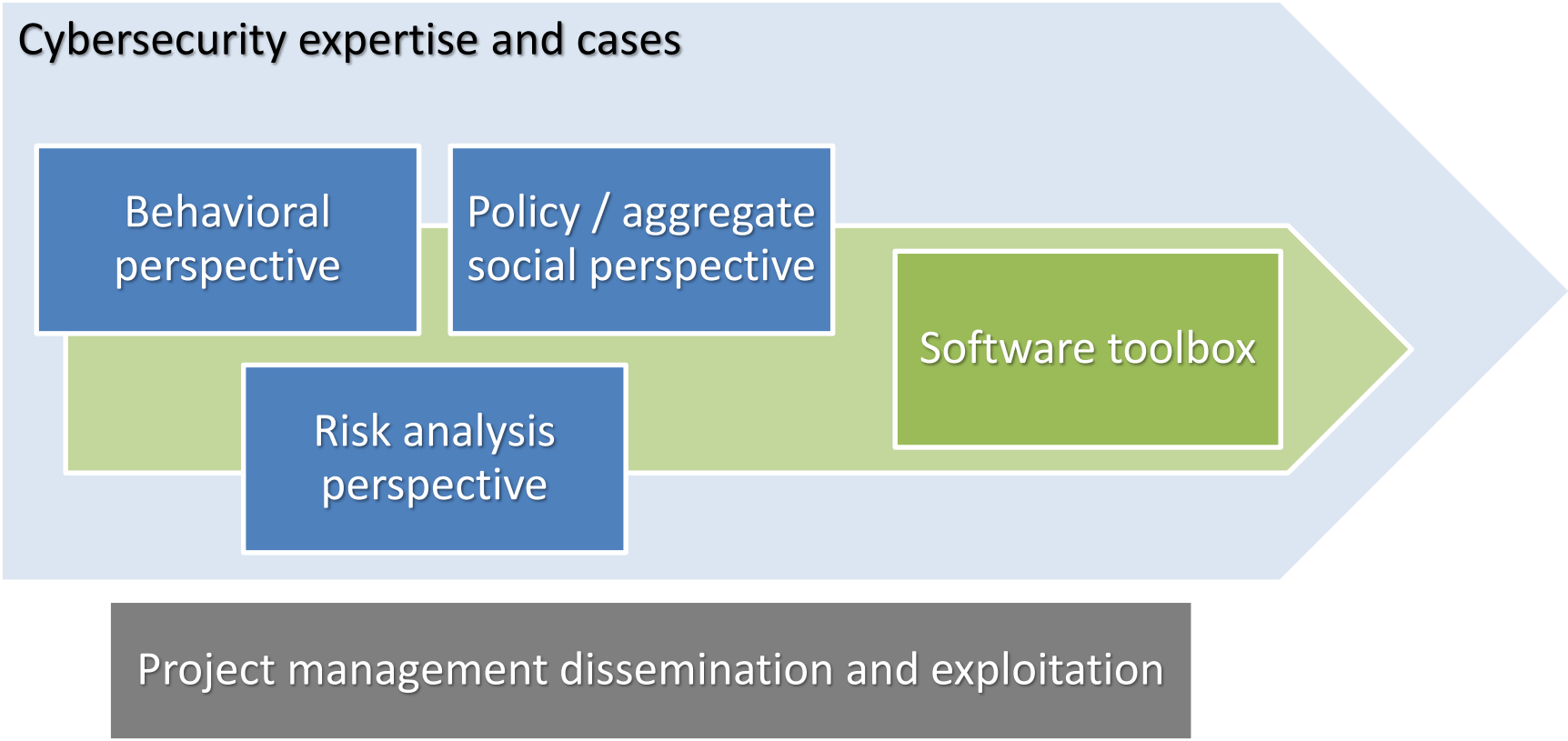
Cybersecurity risks and cyber insurance. Relevant considerations

- Cyber insurance as a complementary risk treatment in cybersecurity.
- Cybersecurity at social level: Global costs. Accumulation problems. Network effects.
- Cyber insurance: Relatively recent product and comparatively small market.
  - Development of cyber insurance products.
- Data scarce in cybersecurity and losses. Companies not disclosing data breaches.
  - Structured expert judgement. Behavioural experiments.
- Modelling intentionality in cybersecurity.
  - Adversarial risk analysis.
- Moral hazard problems. Incentives for improving cybersecurity at large. Role of reinsurers.
  - Policy nudges in cybersecurity.
  - Policy recommendations.
- Valuing information assets, reputation, …
  - Multi-attribute utility theory.
- Basic tools for cybersecurity risk analysis
  - Decision support tool for cybersecurity investments.

CYBECO: Expected impact

- Improved societal understanding of, and solutions to, cybersecurity failures.
- Improved risk-based information security investments.
- Increased social resilience to cybersecurity risks.
- Advances in cybersecurity economics models.

CYBECO at a glance



Cybersecurity and cyber insurance. Behavioural aspects

- Analyse the purchase and use of cyber insurance and how it affects ‘cybersecure behaviour’.
- Identify behavioural aspects and policy nudges and guidelines for designing cyber insurance products.
- Behavioural experiments:
  - First for analysing the behavioural aspects of cyber insurance.
  - Second for calibrating the CYBECO Toolbox.

Cybersecurity and cyber insurance. Behavioural aspects

	Payoff	Probability
No cyberattack	Payoff in case of NO cyberattack: **150 points** (100 points / 50 points)	Probability of NO cyberattack: **60%** (60%)
Cyberattack	Payoff in case of cyberattack: **50 points** (50 points)	Probability of cyberattack: **40%** (40%)

Cybersecurity Shop

Welcome to our Cybersecurity shop! Below, we present the security measures you can buy for CYBECORP. Select the measures you want to buy and press "Continue." Remember that you have a budget of **50 points** and keep in mind that once you press "Continue" you will not be able to go back.

You can reread the instructions at any point by pressing the "Instructions" button on the top right.

Antivirus Software

An antivirus software is a computer software used to prevent, detect and remove malicious software. Buying our antivirus will **reduce the probability of suffering a cyberattack from the initial 40% to 20%** (further on, other factors may change these probabilities). The price of our antivirus is **15 points**.

In addition, if you buy the antivirus you will have a 5% discount on the purchase of the cyberinsurance.

Do you want to buy it?

Yes | No

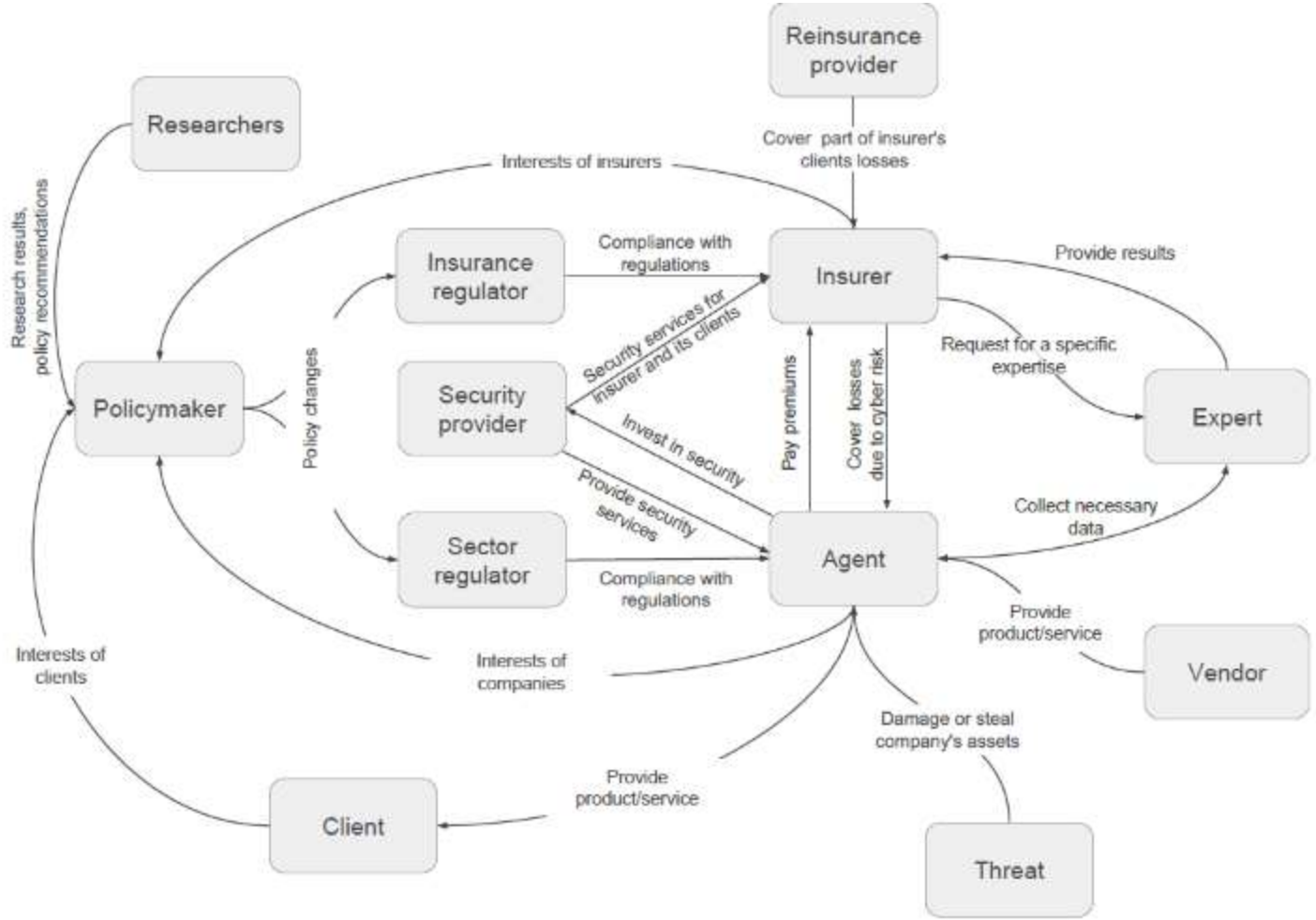
Cyberinsurance

Cyberinsurance is an insurance product used to protect businesses from Internet-based risks. We offer you three options with different level of coverage:

Cybersecurity and cyber insurance. Policy and aggregate aspects

- Identify gaps in directives, standards and cyber insurance with respect to fostering a thriving cyber insurance ecosystem.
  - In light with CYBECO findings and policy usability.
- Elaboration of policy recommendations.

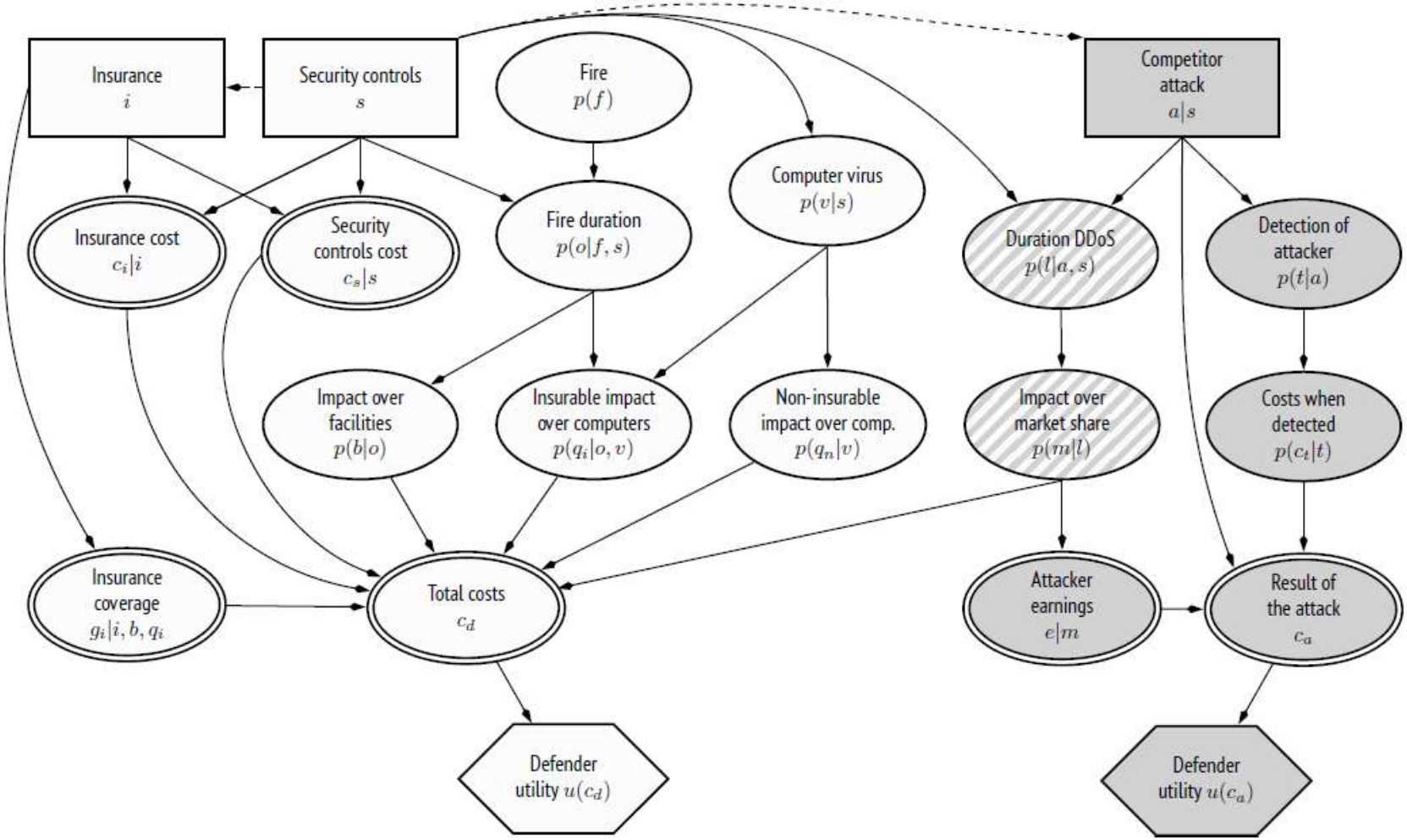
Cybersecurity and cyber insurance. Policy and aggregate aspects



Cybersecurity and cyber insurance. Risk analysis

- Develop risk analysis framework or optimal cybersecurity resource allocation:
  - Adversarial risk analysis.
  - Expert judgment, multi-objective.
  - Cyber insurance.
  - In light with CYBECO findings on behavioural and policy aspects.
  - Applied to relevant scenarios for cyber insurance.

Cybersecurity and cyber insurance. Risk analysis



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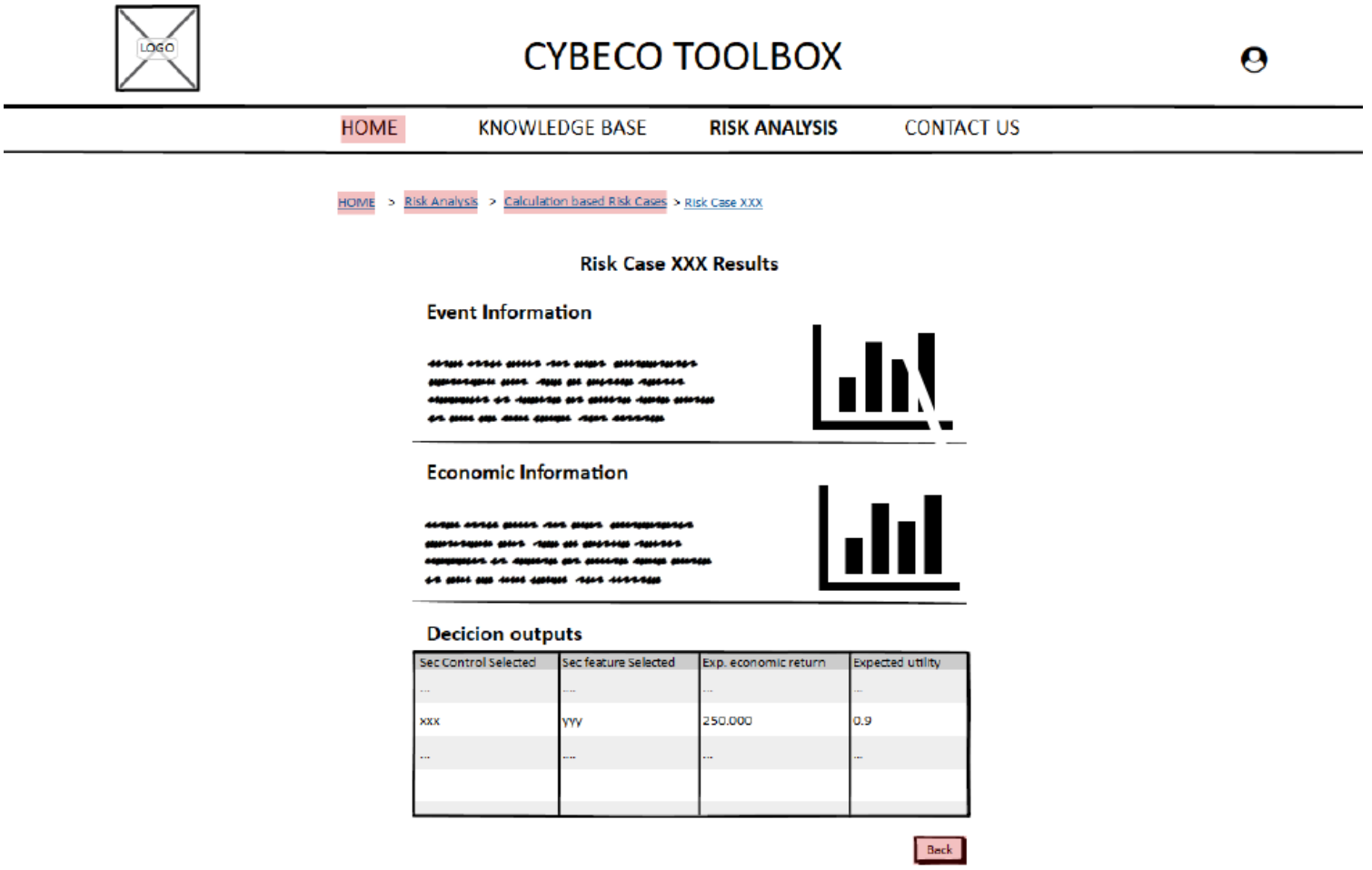
Cybersecurity and cyber insurance. Software toolbox

- Knowledge base with relevant concepts and information regarding cyber insurance.
- Software implementation of cybersecurity risk analysis templates.
- Calibrated through behavioural experiment.

Cybersecurity and cyber insurance. Software toolbox



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Cybersecurity and cyber insurance. Cyber insurance expertise

- Definition of cyber insurance use cases.
- Definition of risk scenarios from the cyber insurance perspective.
- Input to behavioural, policy and risk models as well as to the toolbox contents.

Cybersecurity and cyber insurance. Project management

- Project management.
- Financial management.
- Data management.
- Advisory board.
- Ethical aspects.
- Dissemination. Event.
- Exploitation.

THANKS!

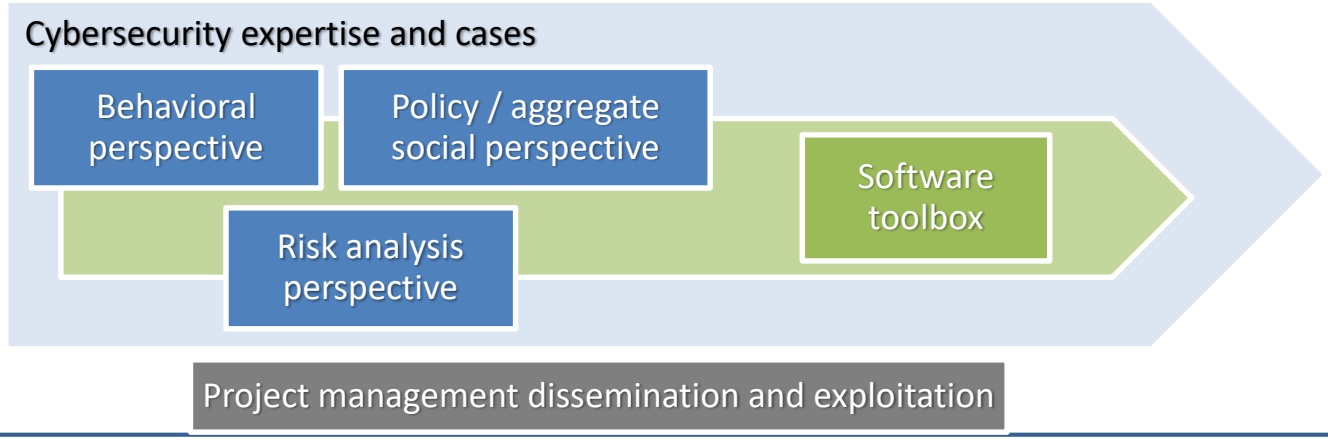
www.cybeco.eu

Twitter:@CYBECO_project

Linkedin: www.linkedin.com/company/cybeco

Project Manager: Nikos Vasileiadis, n.vasileiadis@trek-development.eu

Scientific Director: David Rios, david.rios@icmat.es



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