



# Introduction

## Welcome to the third CYBECO Newsletter!

The CYBECO project is a collaboration between seven European institutions and it is funded by the EU's H2020 RIA programme with two million Euros for two years.

During the last six months of the implementation of CYBECO project, the CYBECO team has made significant progress in critical project tasks and achieved important objectives and milestones.

The modelling framework for cybersecurity risk management has been continuously updated and along with the R algorithm that was developed, allow for the incorporation of multiple types of

uncertainty and preference modeling, as they can model discrete, continuous and mixed variables.

The first version of the CYBECO Toolbox was developed and has been updated on the basis of expert reviews and two focus groups (experimental evaluations) that took place in London and Valencia within October. Through the expert reviews and the focus groups the usability and the end-user relevance of the Toolbox have been assessed and will be improved.

Furthermore, following the design of the behavioural experiments in the previous semester, the software for the two experiments has been developed and the two experiments have been

conducted. The first experiment tested the CYBECO cybersecurity model with the participation of 4.800 individuals from Germany, UK, Poland and Spain. The second experiment was focused on evaluating the design of the CYBECO Toolbox and included 4.800 participants from the same countries.

Last but not least, during this period, CYBECO has disseminated project results through publications, participations in conferences and seminars and established contacts and collaborations with other like-minded projects.

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*CYBECO will analyse cybersecurity risks to advise major organisations in the selection of security countermeasures and cyber insurance.*

# CYBECO Events & Talks

## 4th Plenary Meeting, Madrid

The 4th Plenary Meeting of the CYBECO took place in Madrid, on November 6-7, 2018. CSIC-ICMAT hosted the meeting in the Royal Academy of Sciences while representatives from all CYBECO partners participated in it.

The general objective of the meeting was to assess the project implementation progress for the last semester and to specifically assess the progress in the evaluation of the CYBECO Toolbox through focus groups and expert reviews.



The meeting concluded with the update of the work plan for the next and last six months of the CYBECO project including the foreseen improvements of the CYBECO Toolbox identified during the experimental evaluations, the revision of the modelling framework, the development of policy recommendations and the CYBECO event at Lorentz Center, on March 25-29, 2019.

## CYBER AWARE Industry Form

Aitor Couce Vieira from ICMAT-CSIC presented the project, its objectives and results during the cyberwatching.eu webinar (www.cyberwatching.eu/cyber-risk-management-sme-point-view) which took place on October 17, 2018, with the participation of cybersecurity and cyberinsurance professionals. Webinar participants showed great interest in the CYBECO Toolbox and requested more information about the project and its results.

## CYBERWATCHING.EU project of the week

On November 2, 2018, cyberwatching.eu, the European observatory of research and innovation in the field of cybersecurity and privacy, announced CYBECO as the European project of the week in cybersecurity and privacy.



## Cyberinsurance Workshop at Lorentz Center

The CYBECO partnership will co-organize a Workshop on Cyberinsurance and its Contribution to Cyber Risk Mitigation on March 25-29, 2019, at the Lorentz Center in Leiden, Netherlands. This will be a 5-day event with lectures on Cybersecurity and Cyberinsurance, Economics of Security, Cyberinsurance Market: Challenges and Trends, Modelling Cyber Catastrophes, Responsibility and Behavioural Aspects in Cybersecurity, Cybersecurity Threat Modelling. Four working groups will take place in the frame of the workshop to discuss the cyberinsurance market, data supply for cyberinsurance, refined threat modelling and cyber resilience and responsibilities. During the third day of the workshop an open day will be organized inviting cyberinsurance and cybersecurity stakeholders to gather input, present state-of-the-art including CYBECO results and discuss new directions. Approaches, toolboxes and results of a preliminary controlled experiment on cyberinsurance decision making will be also presented and discussed.



More information about the workshop can be found at: <http://www.lorentzcenter.nl/lc/web/2019/1096/info.php3?wsid=1096&venue=Oort>

# CYBECO Results

## *CYBECO Behavioural Experiments*

The CYBECO team under the coordination and guidance of DEVSTAT and UNN completed two behavioural experiments. The aim of the first experiment was to test the CYBECO cybersecurity model while the second experiment was focused on the design of the CYBECO Toolbox.

The design and the specifications of the experiments were described in a concept note produced in April, highlighting key barriers to cyberinsurance uptake and adherence to good Information Security Protocol (ISP). The design of the experiments was based on literature review, on the CYBECO use cases, the CYBECO model and the output from a collaborative exercise in which CYBECO members were polled in regard to the key research issues and questions around cyberinsurance.

The two experiments were implemented between April and October 2018 on the basis of experimental software developed by DEVSTAT. They involved 4.800 participants from Germany, UK, Poland and Spain each. Their experimental data and have been analyzed and their results led to useful conclusions for the optimization of the CYBECO model and the design of the CYBECO Toolbox.

## *CYBECO Modelling Framework*

From the start of the project, CSIC-ICMAT, CYBECO partner, has been working on the development of the Modelling Framework for Cybersecurity Risk Management has been developed. This framework for cyber risk management, provides a comprehensive modeling of the cyber risk analysis problem, including the presence of adversarial threats and standard cyber and physical threats, as well as the use of insurance (cyber and traditional) as part of the security portfolio. More info at: <http://www.cybeco.eu/results>.

## *CYBECO Toolbox*

During the last year, the CYBECO team with the coordination of INTRA-SOFT, has been developing the CYBECO Toolbox. The Toolbox aims to provide cyber insurance clients and insurance companies, research actors, policy makers and market stakeholders with a framework of analysis and assessment of the preferred cybersecurity and cyber insurance choices regarding their specific needs and enquiries. The Toolbox is has also been evaluated by end-users and is currently being finalized.

## *CYBECO Focus Groups*

In the frame of the CYBECO Toolbox evaluation, two focus groups were organized by CYBECO in London and Valencia. The objective of the evaluations was to improve the usability and end-user relevance of the Toolbox.

The sessions involved cognitive walkthroughs of the CYBECO toolbox, i.e. participants worked through the different screens of the toolbox in order to see whether they would be able to input relevant information and understand how the tool might facilitate cybersecurity decisions for their SME.

In terms of the more specific outcome of the focus groups evaluations, the end-users considered the toolbox to be a useful initiative, noting that SMEs are not usually aware of the actual implication of cyber-risks, meaning that they would not be able to articulate threats effectively.

They noted areas for improvement in terms of better tailoring the toolbox to their own businesses such as the improvement of usability of the risk analysis dashboard, the removal of some concepts that are complex for SMEs and the clarification of the framing of 'costs'.

# Cyberinsurance & Cybersecurity Events

## LORENTZ CYBER-INSURANCE OPEN DAY

The Cyber insurance Day is an open day of the Lorentz workshop on "Cyber Insurance and its Contribution to Cyber Risk Mitigation".

The idea of the event, which is part of the Cyberinsurance Workshop, is to share the experience of the workshop participants and exchange ideas with a broader audience regarding opportunities and challenges in cyber insurance.

**Date:** March 27, 2019.

**Place:** Leiden, Netherlands. The venue details will be provided later.

### Program

09:00 - 09:15 Introduction

09:15 - 10:00 Keynote 1 - [tbd]

10:00 - 10:15 Presentation of the roundtable themes

10:15 - 11:15 Roundtables: Session 1

11:15 - 11:45 Coffee/tea break

11:45 - 13:00 Roundtables: Session 2

13:00 - 14:00 Networking break and lunch

14:00 - 14:40 Keynote 2 - [tbd]

14:40 - 16.00 CYBECO session (approach description; controlled experiment on cyber insurance decision making; toolbox demo)

16:00 - 16:30 Coffee/tea break

16:30 - 17.30 Results of the roundtables and discussion

17:30 - 17:45 Closing of event

18:00 Networking dinner

### Registration process

A request for participation can be submitted using the online form which can be found at <https://www.cybeco.eu/news>. An invitation will be sent to applicants by the organizers after reviewing the registration information. Registration will be closing on Friday, March 1, 2018.

## WEIS 2019

The 2019 Workshop on the Economics of Information Security (WEIS) will be held at the Harvard School of Engineering and Applied Sciences, Boston-USA, on June 3-4, 2019.

WEIS is the leading forum for interdisciplinary scholarship on information security and privacy, combining expertise from the fields of economics, social science, business, law, policy, and computer science.

Cyber-risk quantification and cyber-insurance are

among the topics of the 2019 workshop.

## CIRC 2019

The 2019 International Workshop on Cyber Insurance and Risk Controls (CIRC) will take place at University of Oxford, on June 3-4, 2019. It will be co-located with the IEEE International Conference on Cyber Situational Awareness, Data Analytics and Assessment (CyberSA 2019).

The 2019 CIRC is focused on the latest research and advances in cyber insurance, as well as on case analyses that examine the effectiveness of current security controls.

Topics of interest include, but are not limited to the following:

- Cyber Insurance
- Cyber Risk Assessment
- Cyber Risk Propagation
- Security Controls and Standards
- Cybersecurity Metrics and their Measurements
- Maturity Models and Frameworks
- Cyber Value-at-Risk (CVaR)
- Cyber Economics
- Economics Approaches for Cybersecurity
- Cyber Harm.

# CYBECO Partners

The project is a collaboration between seven European institutions, namely TREK Development S.A. from Greece, Instituto de Ciencias Matemáticas (ICMAT - CSIC) from Spain, Intrasoft International S.A. (INTRASOFT) from Luxembourg, Devstat Servicios de Consultoría Estadística S.L. (DEVSTAT) from Spain, AXA Technology Services (AXA) from France, Technische Universiteit Delft (TU DELFT) from Netherlands and the University of Northumbria at Newcastle (UNN) from the United Kingdom.

CYBECO partners combine different types of expertise in the fields of mathematics, risk management, behavioural sciences, software engineering and technology policy.



**TREK DEVELOPMENT SA, Greece**



**AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS - INSTITUTO DE CIENCIAS MATEMÁTICAS, Spain**



**INTRASOFT International SA, Luxembourg**



**DEVSTAT SERVICIOS DE CONSULTORIA ESTADISTICA SL, Spain**



**AXA TECHNOLOGY SERVICES, France**



**TECHNISCHE UNIVERSITEIT DELFT, Netherlands**



**UNIVERSITY OF NORTHUMBRIA AT NEWCASTLE, United Kingdom**

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