

Information Processes and Threats in Social Networks. A Case Study.

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Conjoint Scientific Seminar

"Modelling & Control of Information Processes"



Sofia, Bulgaria

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OUTLINE

- ICT Infrastructure Threats
- Why to Address Social Networks?
- Methodology of the Study
- The Model
- Future Work

ICT INFRASTRUCTURE THREATS

forward▶▶

Managing Emerging Threats in ICT Infrastructures

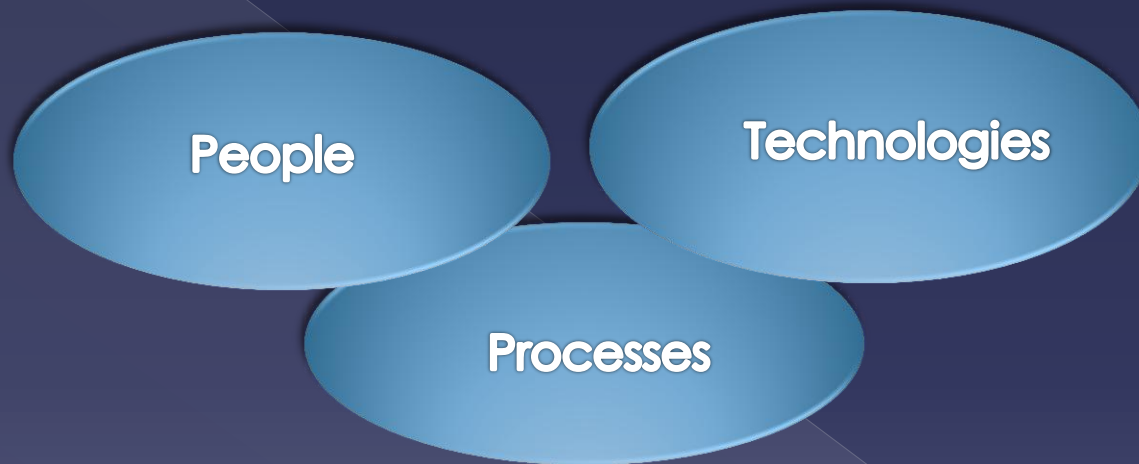
FORWARD is an initiative by the European Commission (under FP7) to promote the collaboration and partnership between Academia and Industry in their common goal of protecting Information and Communication Technology (ICT) infrastructures.

Basic Result:

FORWARD WHITEBOOK: "EMERGING ICT THREATS"

<http://www.ict-forward.eu/>

What to address today in cyber security?



Building Capabilities in All These !!!

POSSIBLE CYBER THREATS

High Priority					
#	Threat Description	Impact	Likely	Oblivious	R&D
1	Threats due to parallelism	M	M	H	M
2	Threats due to scale	H	M	H	M
3	Underground economy support structures	H	H	L	H
4	Mobile device malware	H	H	M	H
5	Threats related to social networks	H	H	M	H

Medium Priority					
#	Threat Description	Impact	Likely	Oblivious	R&D
6	Routing infrastructure	H	H	L	M
7	Denial of service	H	H	L	M
8	Wireless communication	H	H	M	M
9	Unforeseen cascading effects	H	M	H	H
10	False sensor data	H	M	H	M
11	Privacy and ubiquitous sensors	M	M	M	M
12	User interface	M	H	M	H
13	The insider threat	H	M	M	M
14	System maintainability and verifiability	M	H	M	M
15	Hidden functionality	M	M	H	M
16	New vectors to reach victims	M	H	M	H
17	Sensors and RFID	M	H	M	H
18	Advanced malware	M	H	M	M
19	Virtualization and cloud computing	H	M	H	M
20	Retrofitting security to legacy systems	M	M	M	L
21	Next generation networks	H	H	M	M

Low Priority

#	Threat Description	Impact	Likely	Oblivious	R&D
22	IPv6 and direct reachability of hosts	M	H	M	M
23	Naming (DNS) and registrars	L	H	M	L
24	Online games	L	H	M	L
25	Safety takes priority over security	L	M	H	M
26	Targeted attacks	M	H	M	M
27	Malicious hardware	M	L	H	M
28	Use of COTS components	M	H	M	M

Why to Address Social Networks?




























The Web 2 Technology Challenges




DiNucci, 1999


"...The Web will be understood not as screenfulls of text and graphics but as a transport mechanism, the ether through which interactivity happens..."

Our Case Study


facebook                           

**Zlatogor Minchev**
Edit My Profile


News Feed

 Messages


7

 Events


2

 Friends


Create Group...

 Mafia Wars Game

7


 Game Requests

99

 Application Requests

1


More- 20+


 You are currently offline. To chat with your friends, go online.

Would you like to use Facebook in Български?
Facebook is available in 76 languages. Click here to switch to Български. [close](#)


News Feed [Top News](#) · [Most Recent](#) 49


What's on your mind?


**ACT's Contribution to Bulgaria's Phoenix 2010**
Talking about next year's "Energy Flame" iteration in Bulgaria, and our linkages with the UK's Defence Science and Technology Laboratory with General Consul Jon O'Shaughnessy

**ACT personnel hard at work**


2 hours ago · Like · Comment · Share

**Todor Tashev** is at SF International Auto Show with Ventsi Gaydarzhiev and 2 other people.
2 hours ago via iPhone · Like · Comment

**Maha Bakat**
1 more

**Maha needs help to complete an important mission and earn rewards!**
Maha needs help to finish the Transport Stolen Uranium mission. He is looking for 6 friends to help out!


7 hours ago via Mafia Wars Game · Like · Comment · Help Maha


**Holly Kennedy**
I am so fed up with Internet Explorer & Zynga. I wish they would play nice together. You'd think two such popular, widely used programs would work together. So tired of "not responding" every single time I try to get on FarmVille. I can't even get to FV Help. =(aacckkkkkk — Thanks for reading this little vent. You know I hardly ever complain about anything, but really...

about an hour ago · Like · Comment


Events [See All](#)


What are you planning?


 **MAFIA WARS** Happening Now
RSVP: Yes · No · Maybe


 **FV - 1 MIN. Level 70 for...**
Happening Now
RSVP: Yes · No · Maybe

Requests [See All](#)


 29 group invitations

 19 Page suggestions


 99 game requests


 1 application request


Pokes


 Maria Petkova · [Poke Back](#) ✕

Get Connected

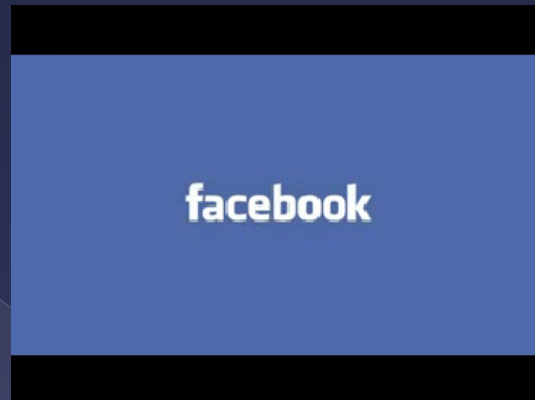
 Who's on Facebook?
[Find your friends](#)

 Who's not on Facebook?
[Invite them now](#)

 Who's here because of you?
[Track your invites](#)

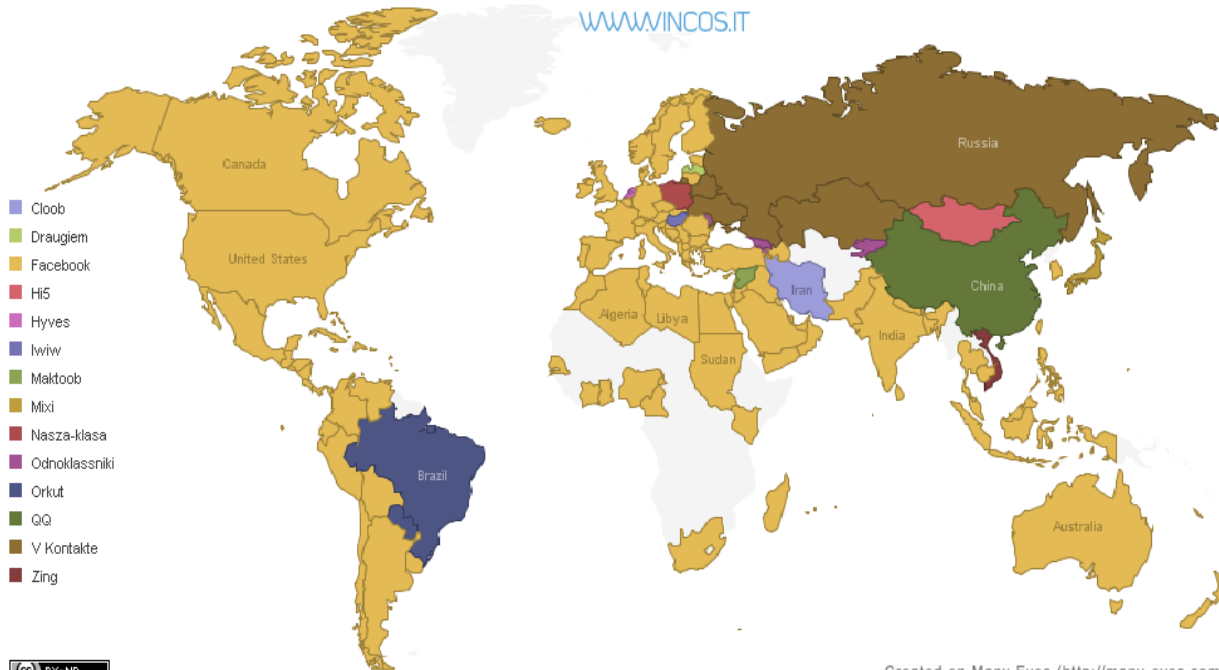
 Connect on the go
[Try Facebook Mobile](#)

Why did we choose Facebook?



WORLD MAP OF SOCIAL NETWORKS

WWW.VINCOS.IT



A map of the World, showing the most popular social networks by country, according to Alexa & Google Trends for Websites traffic data (June, 2010).

Methodology of the Study

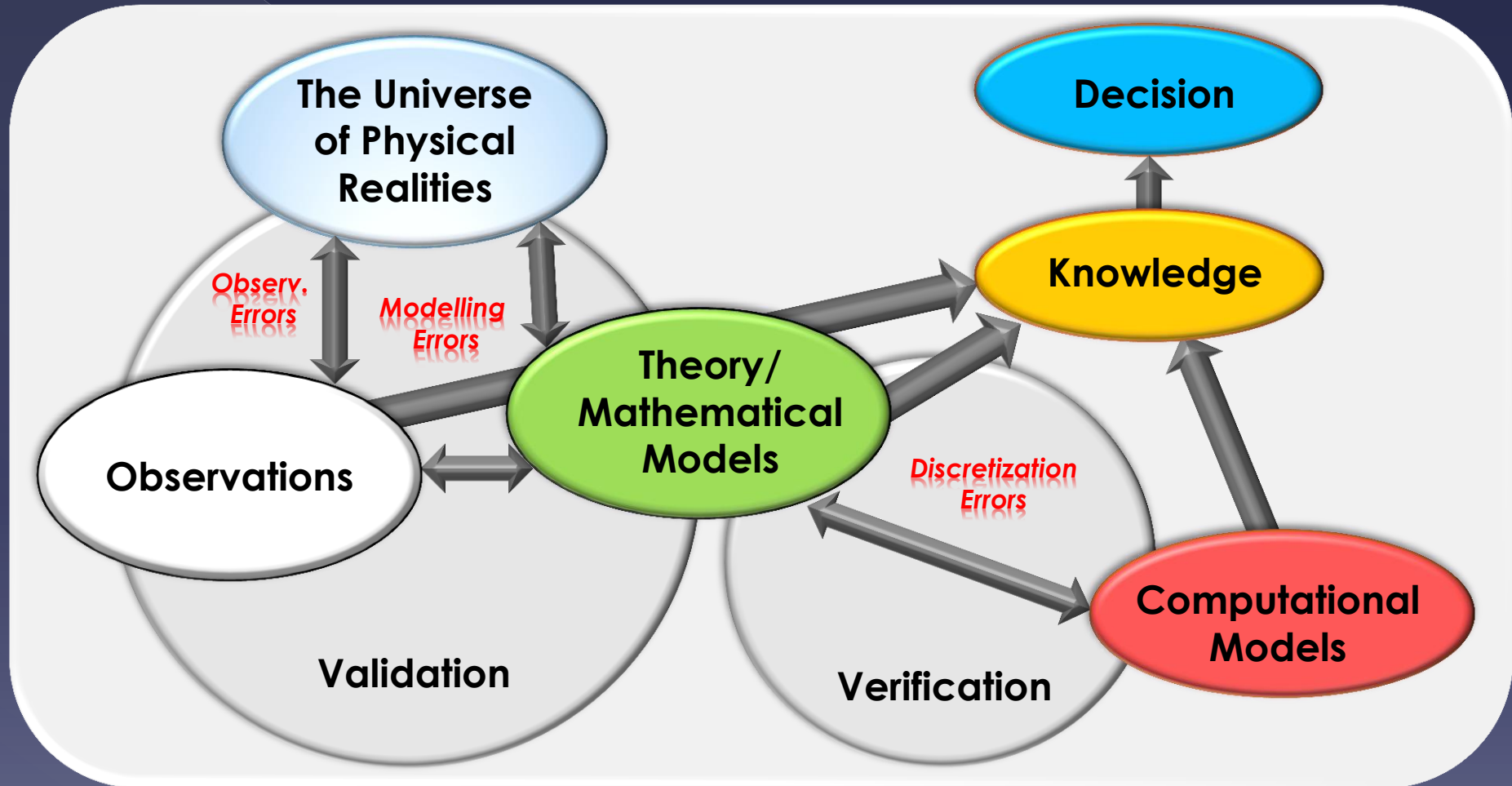
System Analysis

- Intuitive entity-relationship notation;
- Details' consideration in I-SCIP*;
- Familiar to the scientific world for more than half a century.



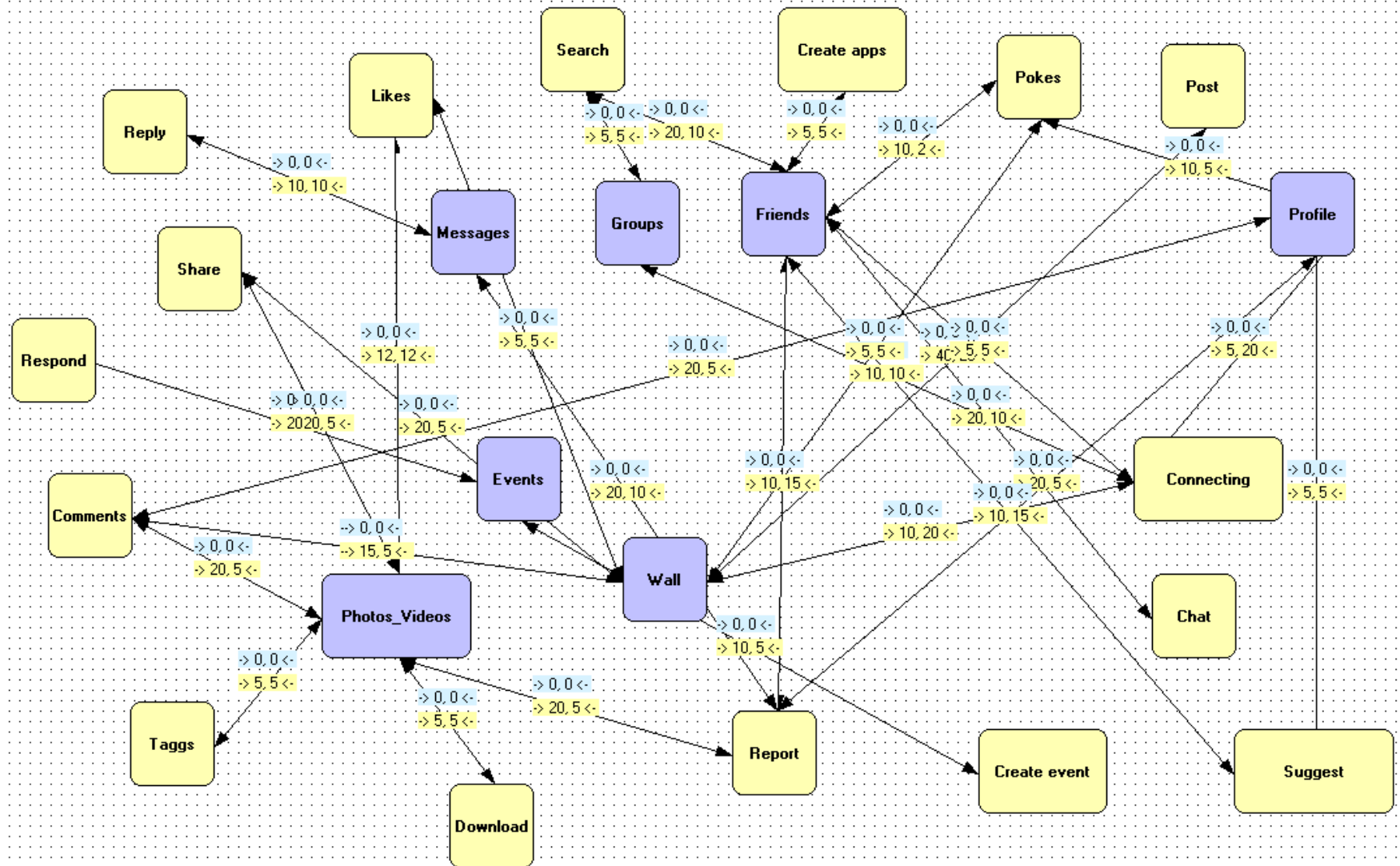
* I-SCIP software environment general description is available in “Minchev, Z., Shalamanov, V., Scenario Generation and Assessment Framework Solution in Support of the Comprehensive Approach, In Proceedings of SAS-081 Symposium on “Analytical Support to Defence Transformation”, RTO-MP-SAS-081, Sofia, Boyana, April 26 – 28, 22-1 – 22-16, 2010”.

Why to use modelling in the digital world and are there any limits?

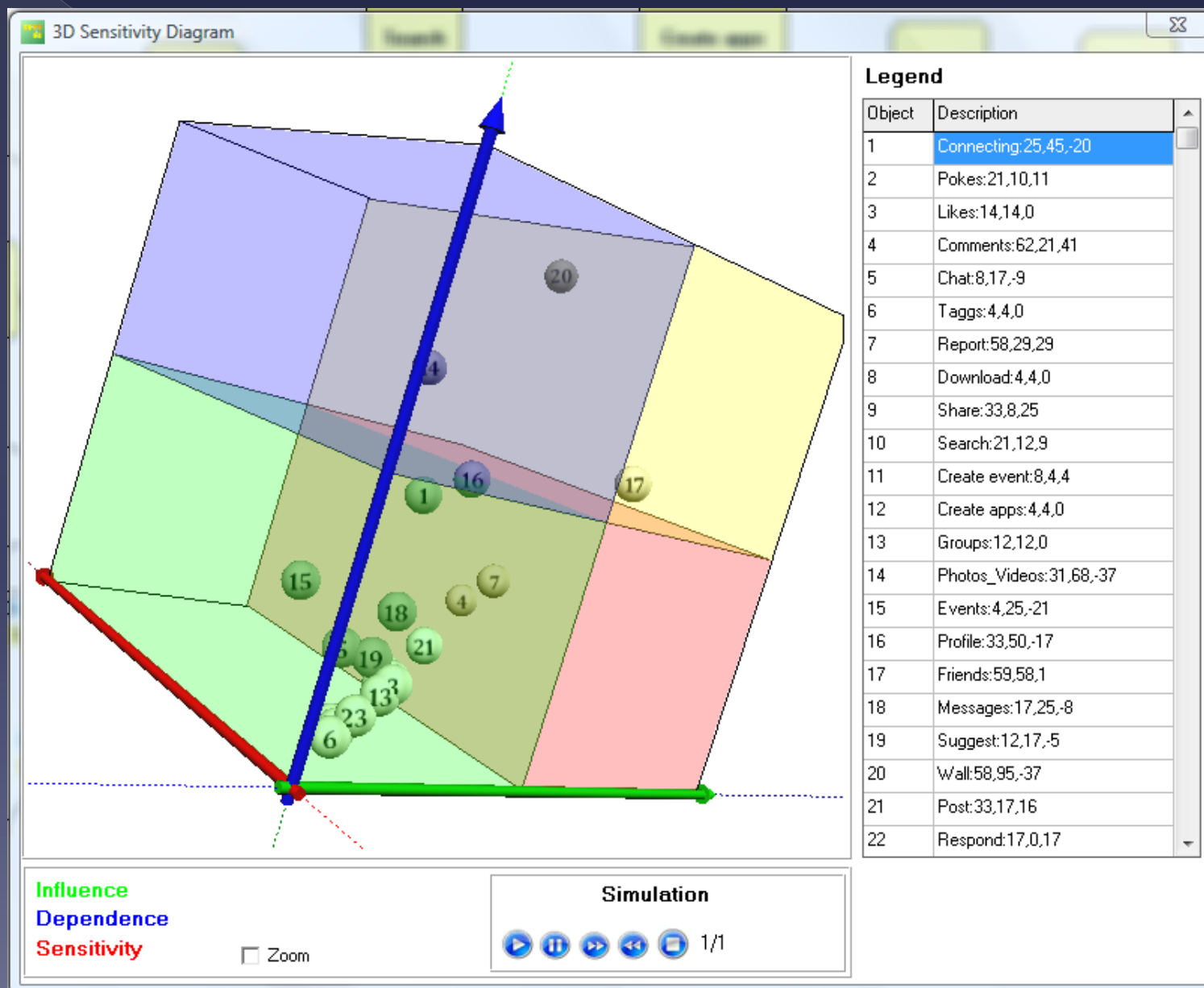


After Oden, Moser & Ghattas "Computer Predictions with Quantified Uncertainty", SIAM NEWS, November 12, 2010

The Model



Results of Sensitivity Analysis



Future Work

“A European Network of Excellence in Managing Threats and Vulnerabilities in the Future Internet: Europe for the World”,

EU FP7

SySSec 2010 -2014



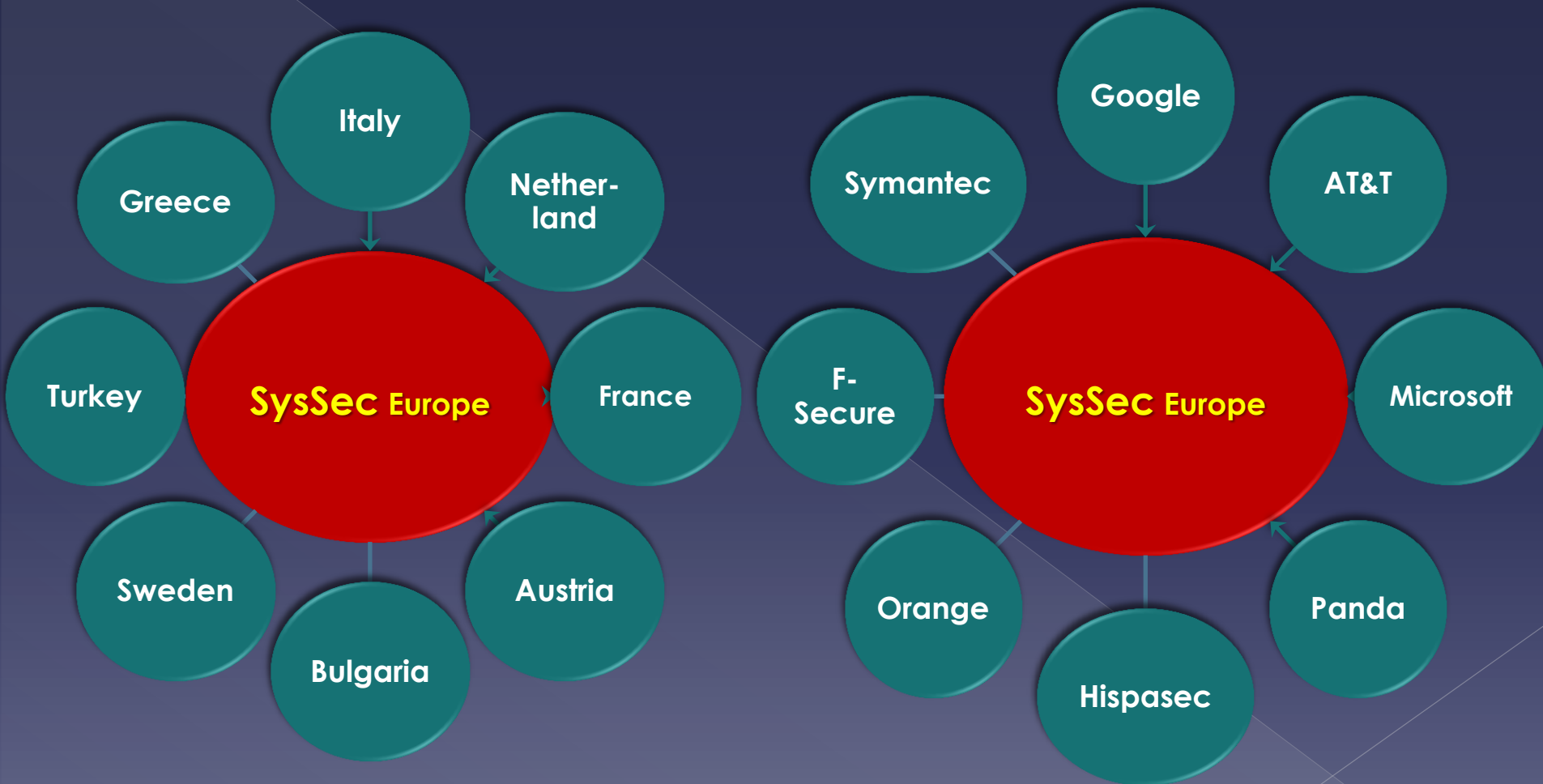
<http://www.syssec-project.eu/>

**... Instead of reactively chasing after attackers,
we should start working proactively and think
about emerging threats and vulnerabilities...**

The Consortia



Participating Countries & Industry



THANK YOU FOR THE ATTENTION!