



SCIENTIFIC SOLUTIONS FOR SECURE SOCIETY

An all-Ireland, world-leading Research Centre, performing research on protecting our increasingly interconnected society from both digital and physical threats.

S4 will develop disruptive solutions to prepare for, respond to, assess, and recover from threat events so as to:

- Protect human life
- Safeguard cyber ecosystems
- Improve individuals' security
- Safeguard individuals' privacy from undue intrusiveness, and give users control over sharing their information with others



CURRENT STATUS OF IRELAND FOR CYBERSECURITY AND PHYSICAL SECURITY:



MOTIVATION

Over **600 people** reported to have been killed in terrorist attacks on European soil in past 20 years

Huge **reputation risks and potential for damage** to FDI, tourism, and agriculture

One in five Irish companies have fallen victim to some form of malicious external attack, from denial of service attacks to bomb threats

More than **half of Irish companies** have reported a data breach in past 12 months

Cybercrime cost Irish companies **€600m** in 2015; projected to reach **€1bn** by 2020

Large scale data breaches experienced by MNCs internationally such as Sony and JP Morgan

OPPORTUNITIES

New industry clusters and in-company units emerging in cybersecurity in Ireland

Potential for new FDI and indigenous **employment growth**

Industry and R&D demand is not comprehensively served by existing research centres

Current academic research activity in Ireland is strong but dispersed and lacks visibility

Harness synergy between academics, industry, state agencies, NGOs, and international collaborators

WHY INVEST IN SECURITY RESEARCH?

Global insecurity increasing

Terrorism

Deaths from terrorism increased **80%** in 2014 to the highest level ever, with **32,658** people killed, compared to 18,111 in 2013. (Global Terrorism Index)

Improve resilience of cyber physical security

Events, attacks & incidents defined as:

- Healthcare was the **No. 1** target
- Manufacturing **No. 2**
- Financial services **No. 3**
- Government **No. 4**
- Transportation **No. 5** (IBM 2015)

Transport

- Surrounded by sea, land border with UK
- **5** main sea ports
- **3** main Airports
- **96,100** flights handled in 2016
- **25 million** passengers a year Dublin Airport
- **2,733km** rail system length

Exports & Tourism

Tourism could be susceptible to repeated shock events such as occurred in Turkey due to terrorism (dropped 40%)

Cybercrime

Cybercrime costs Irish economy **€630m** a year (Grant Thornton)

- Top 3** economic crimes in Ireland
- Cybercrime 44% (Global 32%)
 - Asset Misappropriation 53%,
 - Accounting Fraud 18% (PwC)

Power

55 power generating stations in Ireland

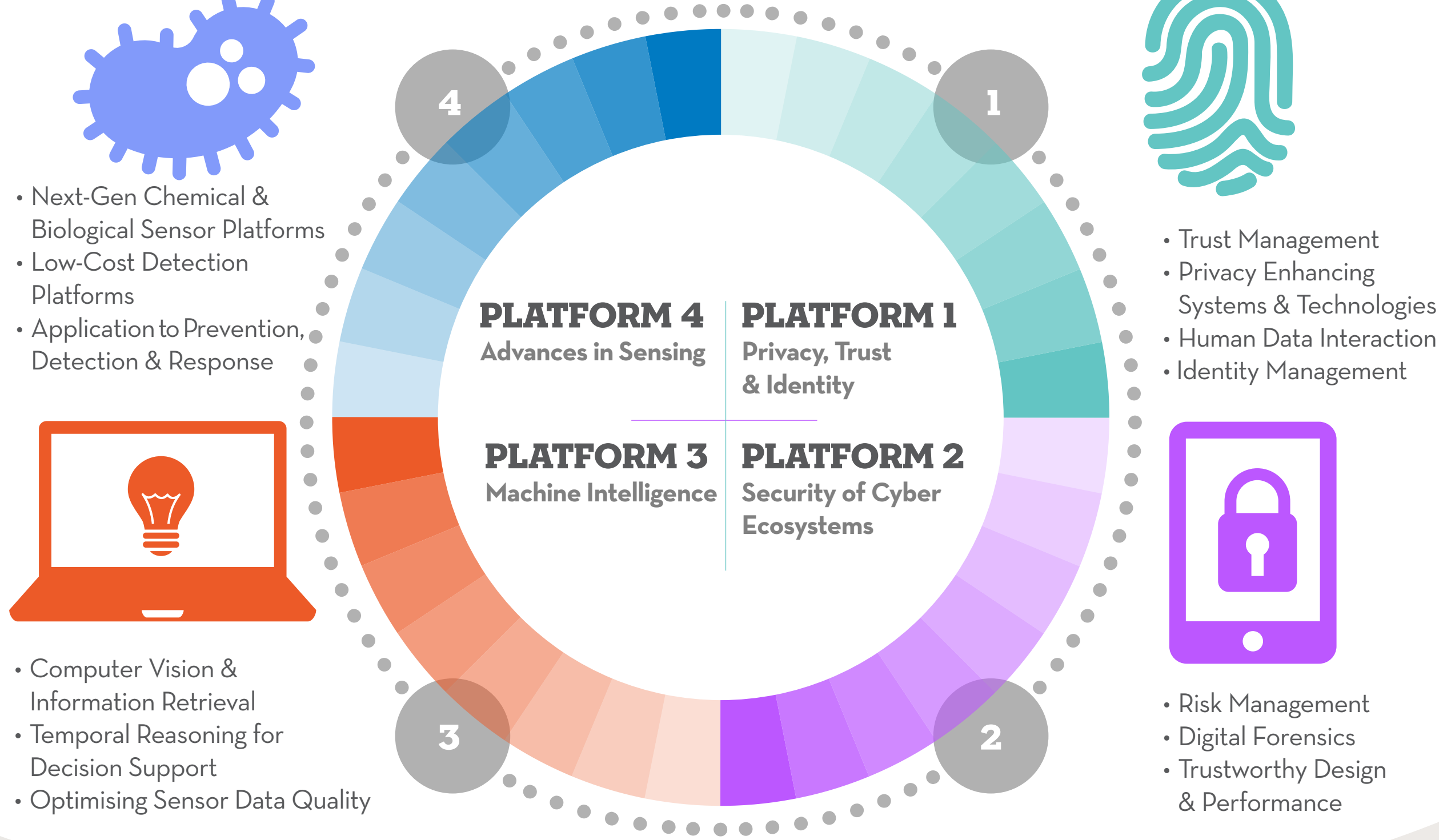
Just 7 of them generate 50% of Ireland's power

Moneypoint alone supplies 12% - twice the output of the next largest

WHAT S4 WILL ACHIEVE

- R&D to secure our hyperconnected society from both digital and physical threats, often asymmetric and distributed
- All-Ireland network of international research excellence with impact
- Consolidate and grow the existing Irish security ecosystem
- Harness synergy between academics, industry, state agencies, NGOs, and international collaborators
- Mitigate the impact of threats on critical physical and digital infrastructure, and on the population
- Embed industry, create products, create employment, create spin-outs, attract FDI

S4 RESEARCH PLATFORMS

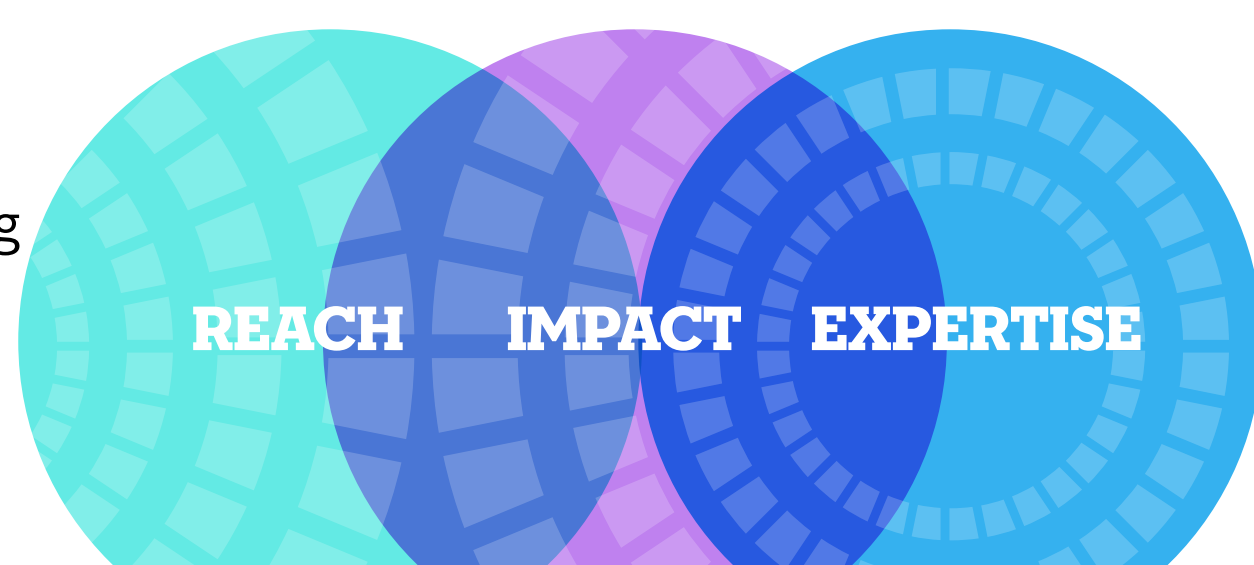


S4 TEAM ACADEMIC RESEARCH CAPABILITIES

- Platform 1**
- Privacy, Trust and Identity**
- Biometrics, Computational Imaging, Edge-Imaging Systems, Deep Learning, Blockchain, Smartphone Technology, Trust in Emerging Environments, Policy Based Management, Privacy by Design, Scalable Security
- Platform 2**
- Security of Cyber Ecosystems**
- Cloud and IoT Security and Privacy, Cyber Situational Awareness, Security Analytics, Adaptive Security/Privacy, Secure Software Engineering, Usable Security, Time Synchronisation Protocols, Real-Time Systems, Cyber Space, Digital Forensic Investigations, Digital Forensic Readiness Architectures, Data Privacy and Trust, Big Data Privacy
- Platform 3**
- Machine Intelligence**
- Multi-Modal Data Fusion, Edge Analytics in IoT, Computer Vision, Image Processing, Signal Processing, Autonomous Vehicles, Automotive Safety, Autonomic Computing, Multi Agent Systems, Machine Learning, Evolutionary Computation, Systems Modelling/Dynamics, Simulation, Deep Learning, Digital Epidemiology, Big Data, Artificial Intelligence, Data Mining, Probabilistic Reasoning, Anomaly Detection, Decision Support, News and Social Media Analytics, Semantic Web
- Platform 4**
- Advances in Sensing**
- In-Situ Autonomous Sensing, Wearables, Chemical/Biological Contamination in Water and Air, Validation of Sensors, Infectious Diseases, Immunology, Biopharmaceutical Manufacturing Processes, Cell and Molecular Biology, Biosensors, Rapid Detection Technologies, Chemical Sensors, Separation, Real Time Monitoring, CBRN, Electrochemical Detection, Miniaturization, Lab-on-Chip, Integrated Microsystems, Forensics, Bioanalytical Systems, Analytical Chemistry, Environmental Monitoring

VALUE OF COLLABORATION WITH S4

- World class academic collaboration team & international partners
- 24 FDI, Indigenous & NGO partners & increasing
- Significant business value & brand value for partner companies to be on board, participating as Targeted Project collaborators
- Hub for security research in Ireland – first point of contact for FDI and domestic industry



Academic Partner Institutions



Associated Research Centres



FIND OUT MORE, CONTACT US:

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