

Interdisciplinary Centre for Security, Reliability and Trust

10 December, 2014

Prof. Björn Ottersten, Director

Big Data, Privacy and Data Protection

organised by ISACA Luxembourg, CLUSIL, ALRIM and SnT

Program

18:00 Welcome address on behalf of ISACA Luxembourg, **Mr. Vincent Villers**, PwC

18:05 Introduction and Presentation of SnT, **Prof. Bjorn Ottersten**, SnT Director

18:35 Law and technology – The need for a holistic approach to privacy and data protection, **Dr. Andra Giurgiu**, SnT Research Associate

18:55 Methods and Models for Automated Analysis of Compliance to Laws and Regulations, **Dr. Mehrdad Sabetzadeh**, SnT Research Scientist

19:15 Emerging paradigms for cyber-security: From virtualised Scada honeypots to streaming analytics in the time of Big Data, **Dr. Radu State**, SnT Senior Research Scientist

19:35 Question and answer question

19:45 Networking cocktail

University of Luxembourg



Young but expanding University

- Founded August 2003
- Bologna process right from the start (Bachelor, Master, PhD)
- Global budget 2012: 150 Mio €
- thereof external funding: 33 Mio €

International Research University

Academic staff from 60 countries

- 213 prof, ass-prof, lecturers
- 670 adjunct faculty

**6200 students from 100 nationalities
(47% Luxembourgish)**

450 doctoral candidates

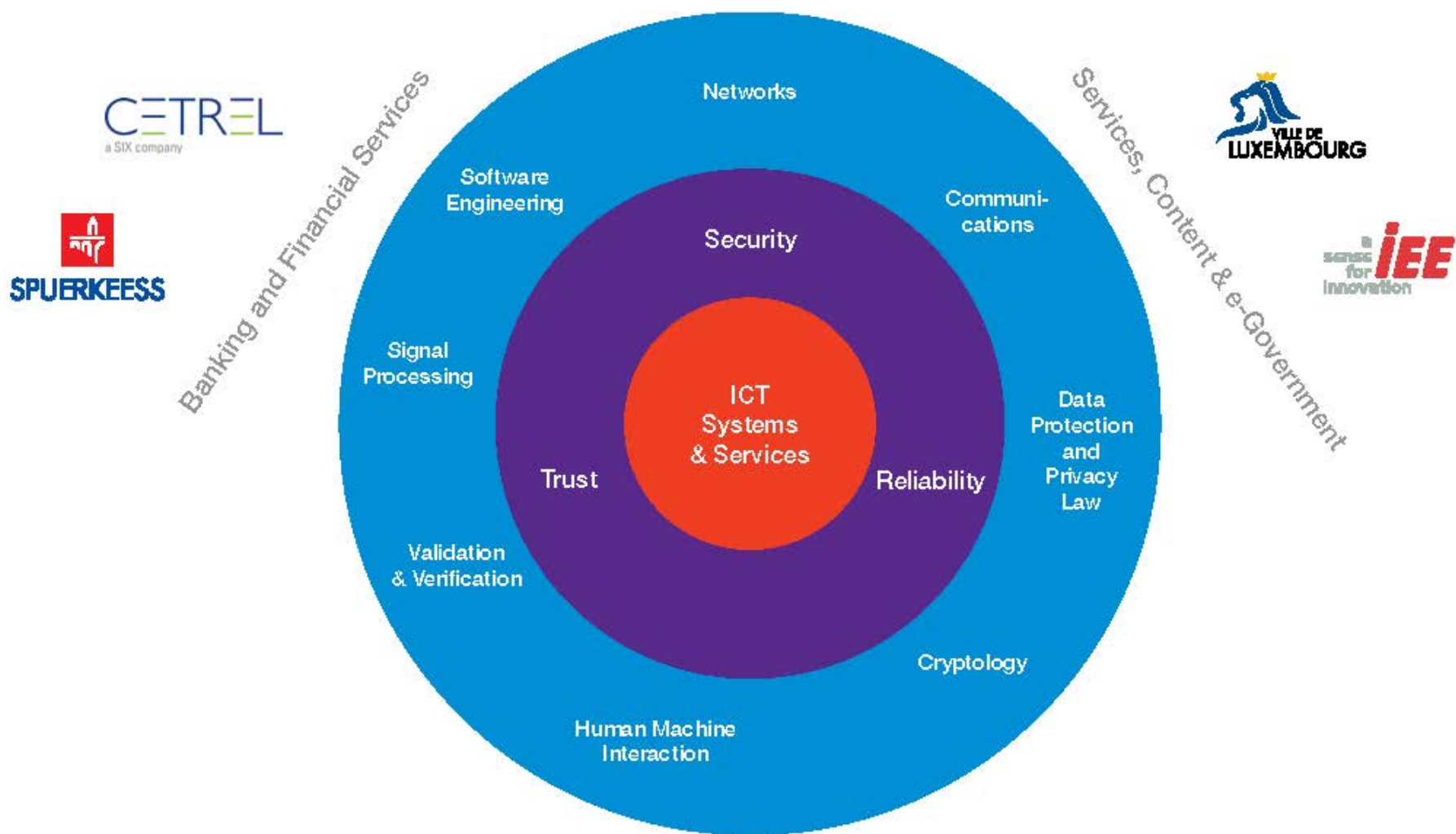
**60 partner universities in Europe,
USA, Canada, China, Japan ...**

Luxembourg – Environment for ICT Industry?

Security and Trust a Key Element!

- Part of Government's strategy coupled to the *Digital Agenda for Europe*
- Investments in
 - High bandwidth connectivity to major hubs
 - Data centres with competitive offers
 - Commercial internet exchanges
 - Cloud computing and services
- Investment in competence and research
- EU strategic research programs
- Luxembourg an ideal European and vendor neutral “test bed”





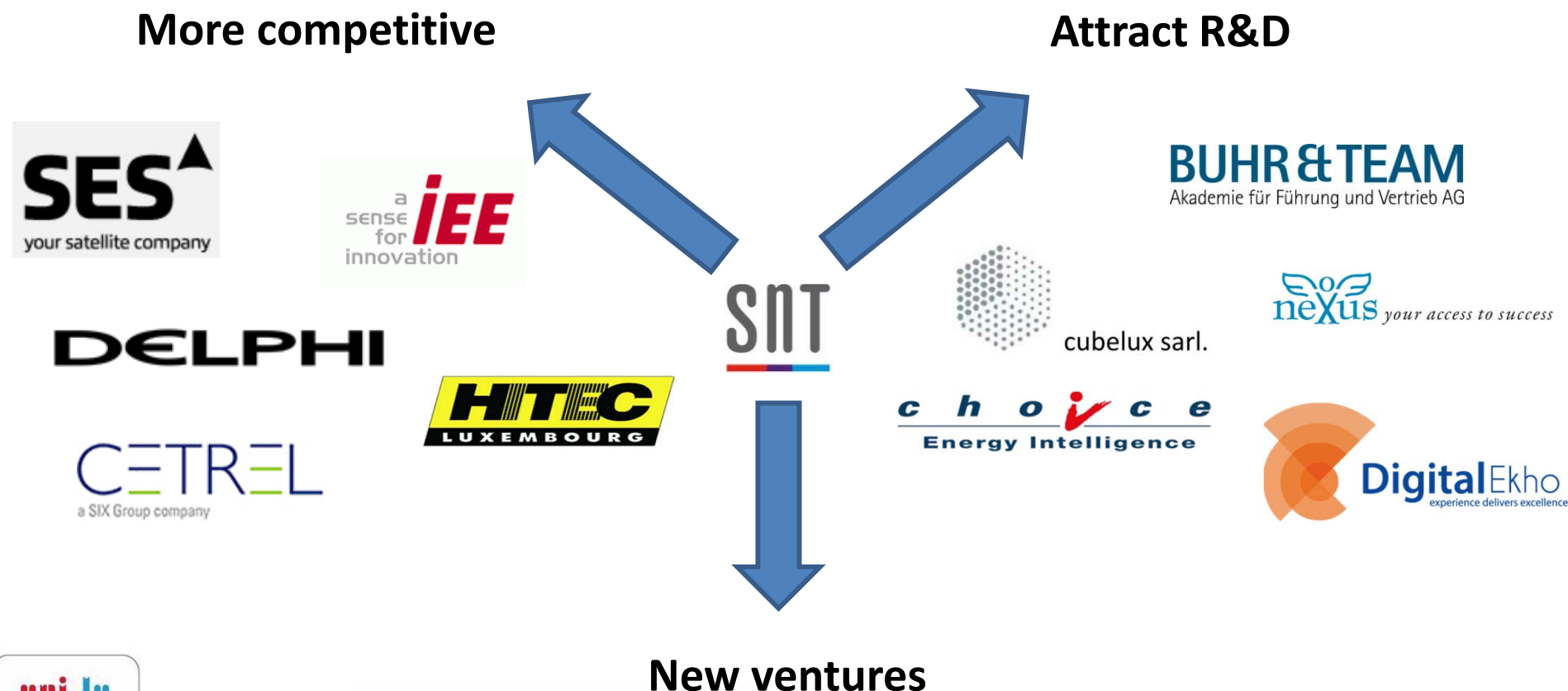
Communications & Network Infrastructures



Part of Luxembourg Innovation System

Create impact well beyond the academic community!

Increase R&D investment in Luxembourg!



Goals & Strategy

- Centre of excellence in research and innovations in *Security, Reliability and Trust*
- Impact well beyond the academic community
- Increase R&D investments to Luxembourg



- Highest quality research in areas with a relevance to Luxembourg
- Strategic partnerships
- International cooperation and attract European research funding and ensure competitiveness
- Interdisciplinary approach with application area focus

Partnership Program

SES
 POST
 IEE S.A
 DELPHI
 Ville de Luxembourg
 CETREL
 CREOS
 CTIE
 Buhr&Team Akademie
 Cubelux
 BCEE
 Telindus
 RedDog
 Data Protection Agency
 HITEC
 itrust
 Ministry of Economy and Trade
 Defence department of the Ministry of Foreign Affairs
 FEDIL
 LuxInnovation
 Paul Wurth
 LuxSpace
 NeXus



securityandtrust.lu

BUHR & TEAM
Akademie für Führung und Vertrieb AG



SES
your satellite company

CETREL
a SIX Group company

a sense for **IEE**
for innovation



telindus
Belgacom ICT



DELPHI

itrust
consulting



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Économie
et du Commerce extérieur

LUXSPACE

PAUL WURTH
SMS group

Fedil
Business Federation
Luxembourg

LUXINNOVATION
National Agency for
Innovation and Research

creos



RED DOG
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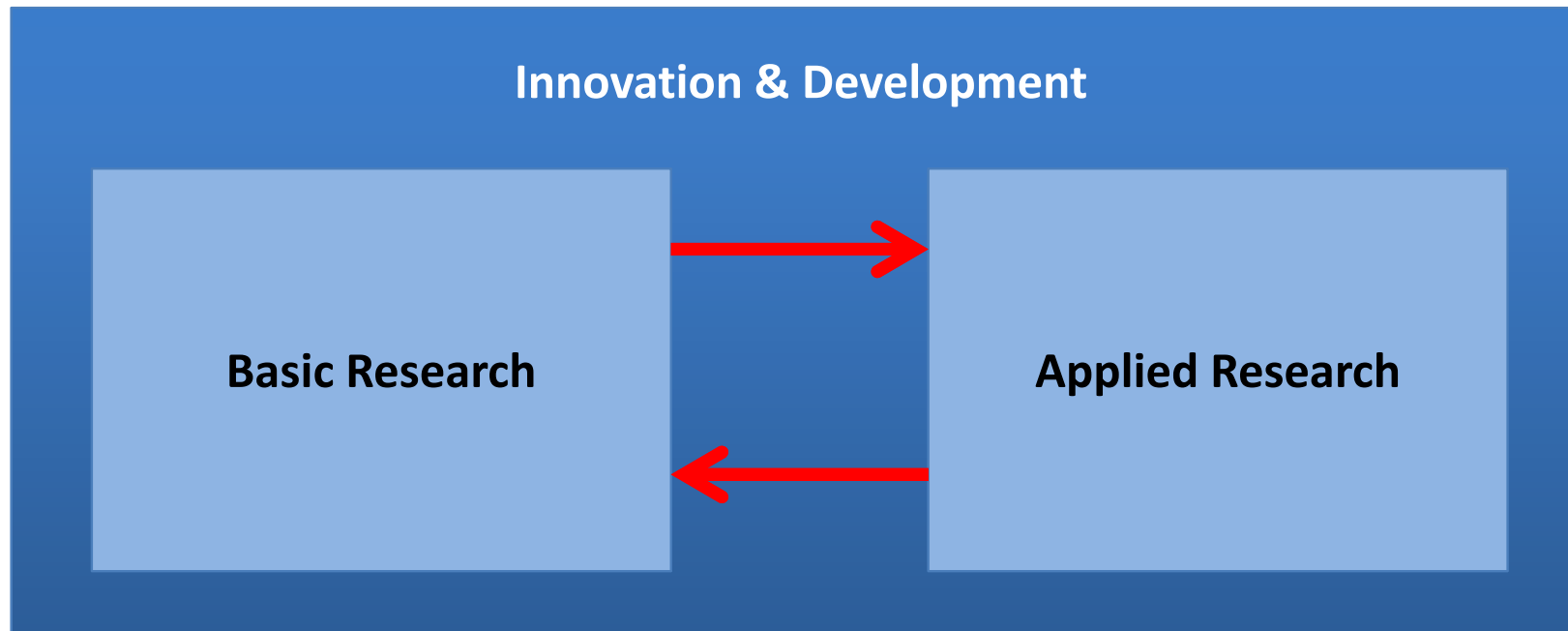
HITEC
LUXEMBOURG



cubelux sarl.

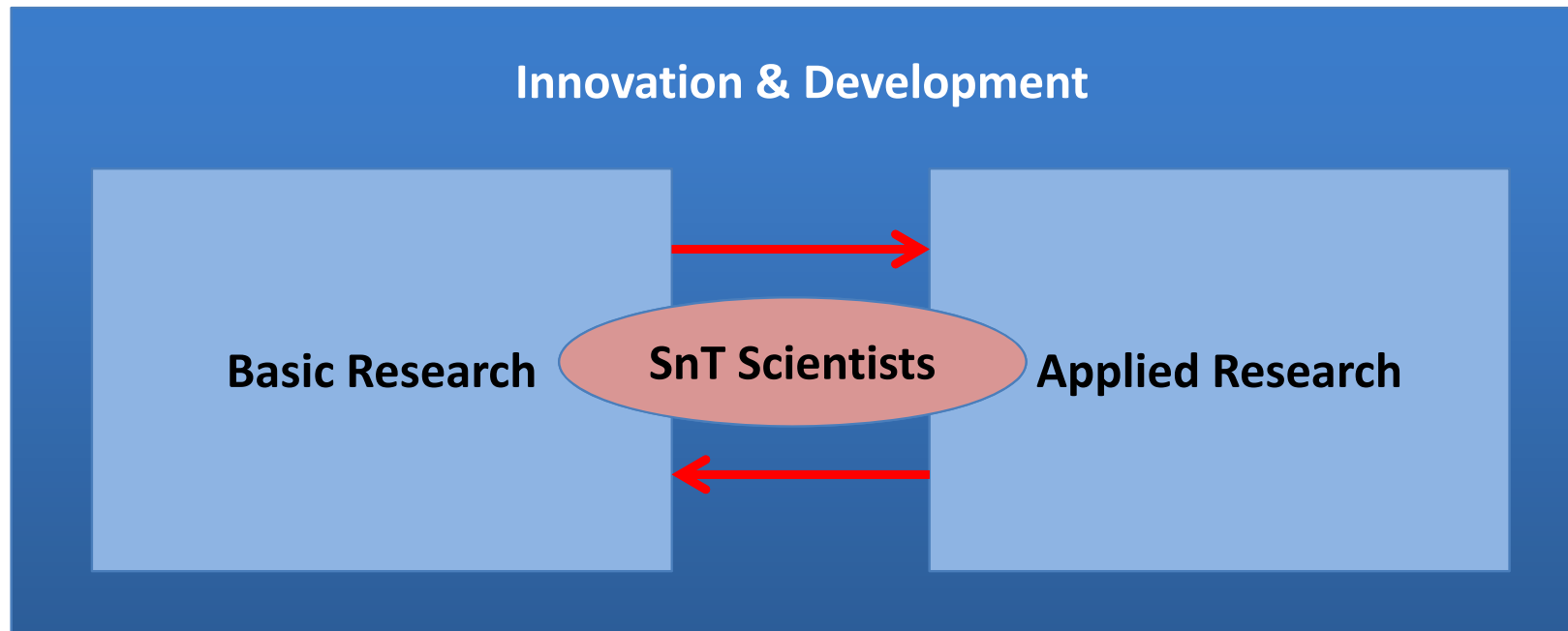


An Effective, Collaborative Model of Research and Innovation



- Basic and applied research take place in a rich context
- Basic research is also driven by problems raised by applied research
- Main motivation for SnT's partnership program

SnT's Strategy



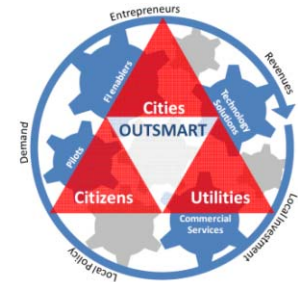
- The same people share their time among all activities
- Talented scientists and students involved in all activities of the research & innovation chain
- Better interplay between basic research, applied research, and innovation
- Research better informed by practice

SnT Participation European Programs



OUTSMART – Provisioning of urban/regional smart services and business models

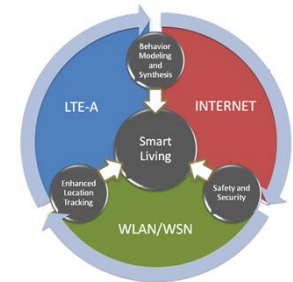
IP FI Program, usage case, start 1 April, 2011



BUTLER – uBiquitous, secUre inTernet-of-things with Location and contExt-awaReness

Pervasiveness, context-awareness and security for IoT

ICT-2011-7, IP, start 1 October, 2011



UIoT6 – Universal Integration of the Internet of Things through an IPv6-based Service Oriented Architecture enabling heterogeneous components interoperability

ICT-2011-7, STREP, 1 October, 2011



SnT Participation European Programs



CoRaSat – COgnitive RAdio for SATellite Communications

- ICT-2012-8, STREP, 2,5 MEUR funding over 3 years
- Negotiations ongoing with the EC
- Partners from Italy, France, Belgium, UK incl. Thales-Alenia France and SES ASTRA TECHCOM

TREsPASS – Technology-supported Risk Estimation by Predictive Assessment of Socio-Technical Security

- ICT-2012-8, IP 561 kEUR funding (SnT) over 4 years
- Negotiations ongoing with the EC
- Partners from The Netherlands, Denmark, Estonia, Portugal, Spain, UK, Germany, Switzerland, Luxembourg

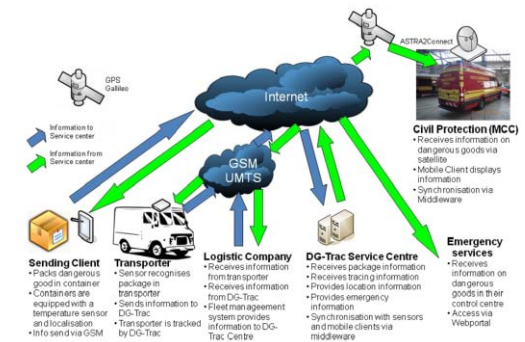


SnT Participation European Space Agency Projects

DG-Trac – Dangerous Goods Transport Tracking and Tracing in the Medical Sector

Algorithm development, assessment and implementation in demonstrator.

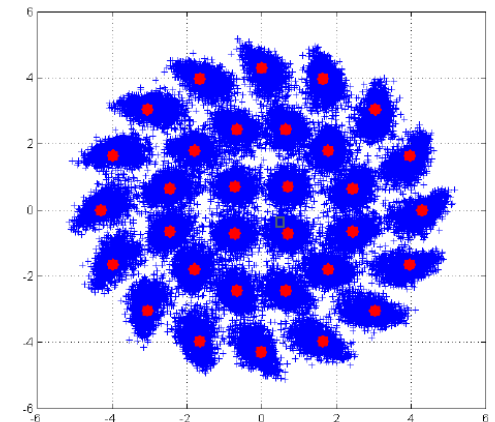
Partners: Hitec, EPT, T&E Gefahrgutlogistic, CRP Tudor



On-ground Multicarrier Digital Equalization/pre-distortion Techniques for Single or Multi Gateway Applications

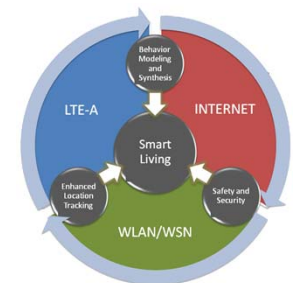
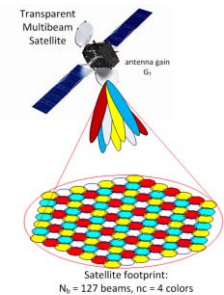
Enhanced spectral efficiency by advanced pre-distortion and non-linear equalization techniques

Partners: SES, TRZ, KTH, Astrium

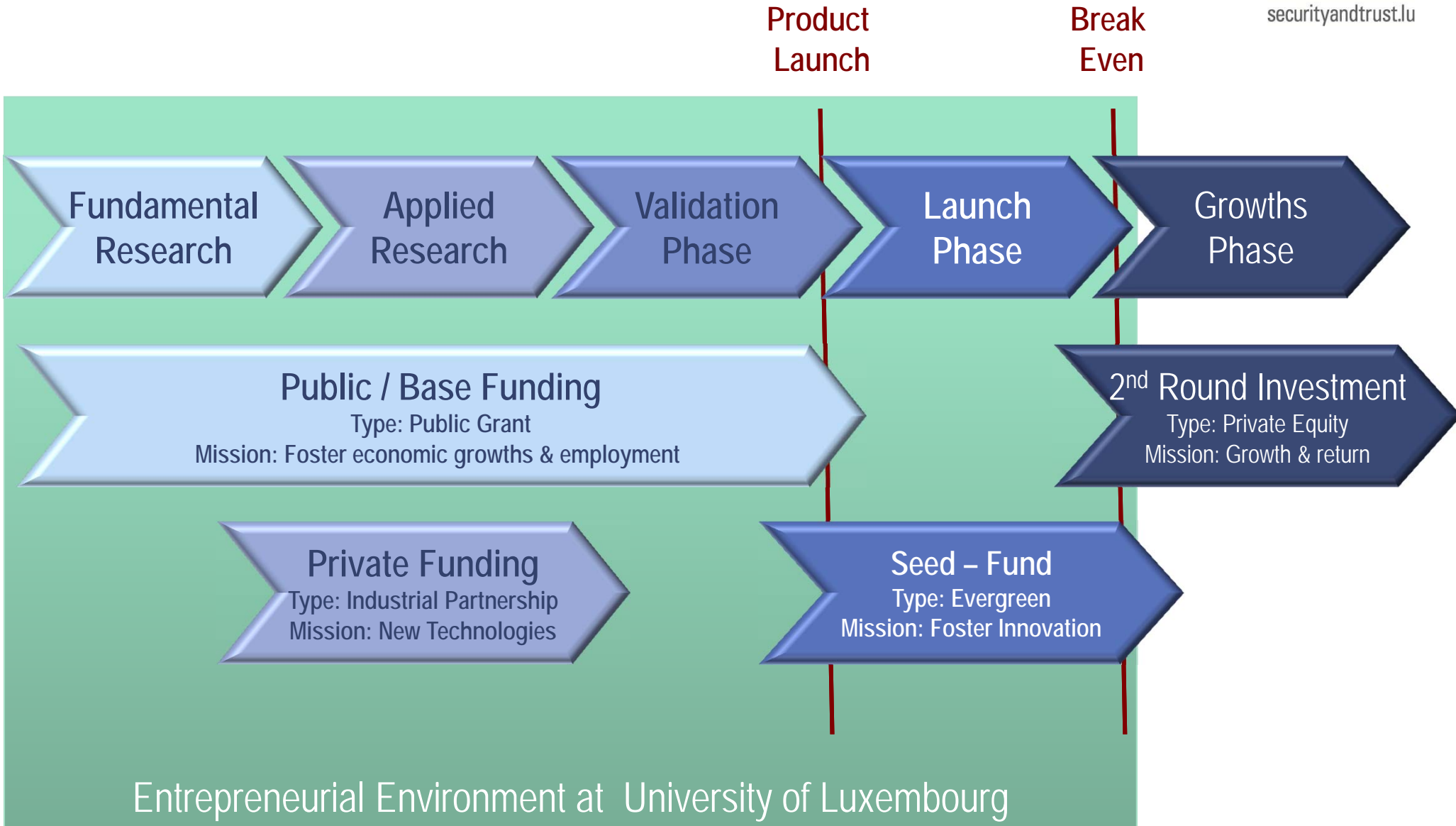


Security, Reliability and Trust

- Interdisciplinary and international research environment
- **Impact** oriented research focus and **platform** for **international** collaboration
- 16.5 MEUR turnover 2015, **>70% competitive**
 - 16 % Partnerships, 48 industrial PhD candidates
 - 7 % EC/ESA, some 30 projects launched
 - 49 % FNR
- Headcount > 230, 19 faculty members, >45 nationalities
- Over **30 paper awards** and individual awards since 2010.



Entrepreneurial Environment & Funding



SnT's Luxembourg Privacy Cluster Initiative

- Luxembourg's competitive position remains under attack: Direct & Indirect Tax / Bank Secrecy / Skill set alignment with data economy
- The emergence of data: Data Protection is the foundation of professional secrecy but today is often a principle constraint on data expropriation goals
- Emergence of the General Data Protection Regulation (GDPR): EU recognition that as a tradable commodity personal data deserves stronger regulation.
- GDPR applies most acutely to data intensive industry, and data intensive functions / processes within them. We foresee demand and supply side effects of the GDPR for the Luxembourg economy.

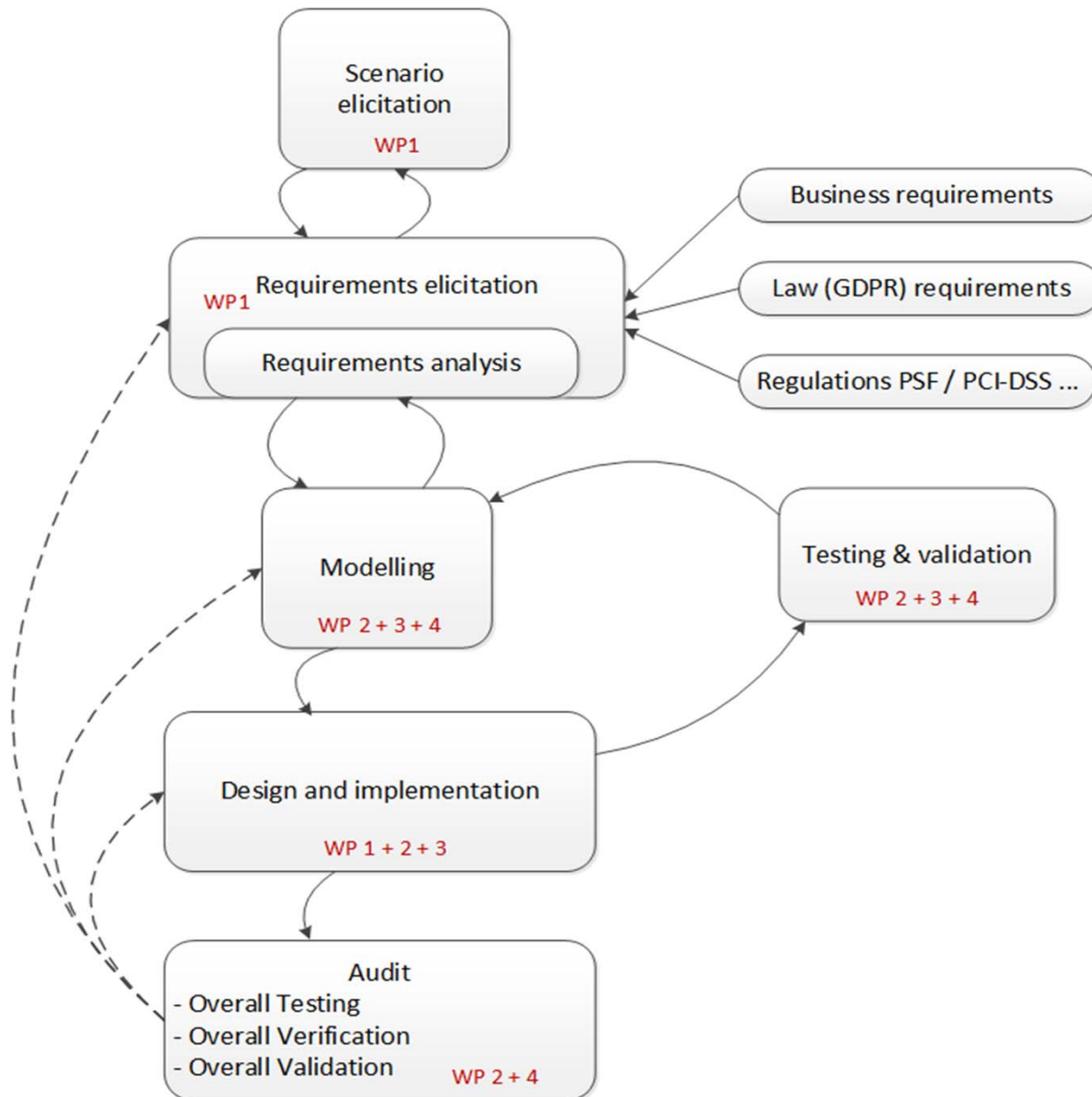
Regulatory effects

- GDPR presents a collision of technological complexity & legal concepts lacking precedent => high uncertainty environment.
- GDPR mandates new interfaces to be drawn between FS, Telco & Privacy regulations => work out interactions and overlapping responsibilities.
- In the context of massive fining powers & use of a single member state's courts, World class regulatory intermediation can act as a inward FDI driver because it **increases business planning certainty.**
- ***We view LPC:*** *as a framework through which our regulators can attain further international recognition in:*
 - *Cloud / analytics - an ideal domain to focus competency development*
 - *Establishing a sustainable process linking scientific inquiry to regulatory guidance.*

Clustering

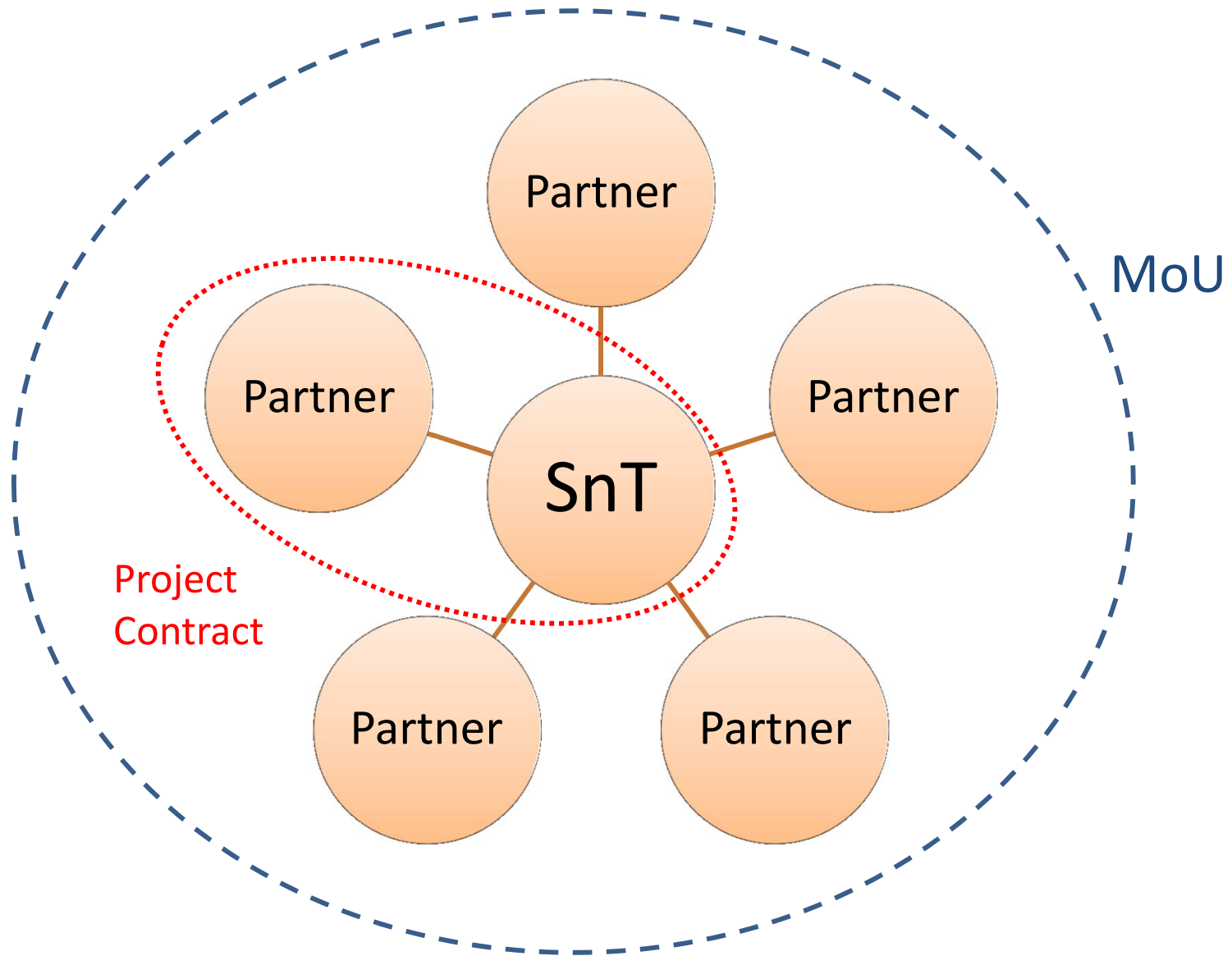
- All world class organizations have GDPR capability gaps they act upon.
- LPC is set up as a cluster of bi-lateral contracts to plug specific gaps. Plugging gaps across multiple stakeholders concurrently gives rise to synergy and insight.
- Bi-lateral contracts also provide for collective outcomes through clustering shared goals, & the establishment of an SteerCo to spot & align on opportunities.
- At partner level, SnT's vision enables Lux partners to rapidly exploit new capabilities in GDPR & data, focused initially on Cloud & Monetization.
- At national level, we provide a framework for partner synergy & joined up propositions. Collectively this serves as a defense against capital flight and acts as a driver for skill and capital inflow.

Research Program

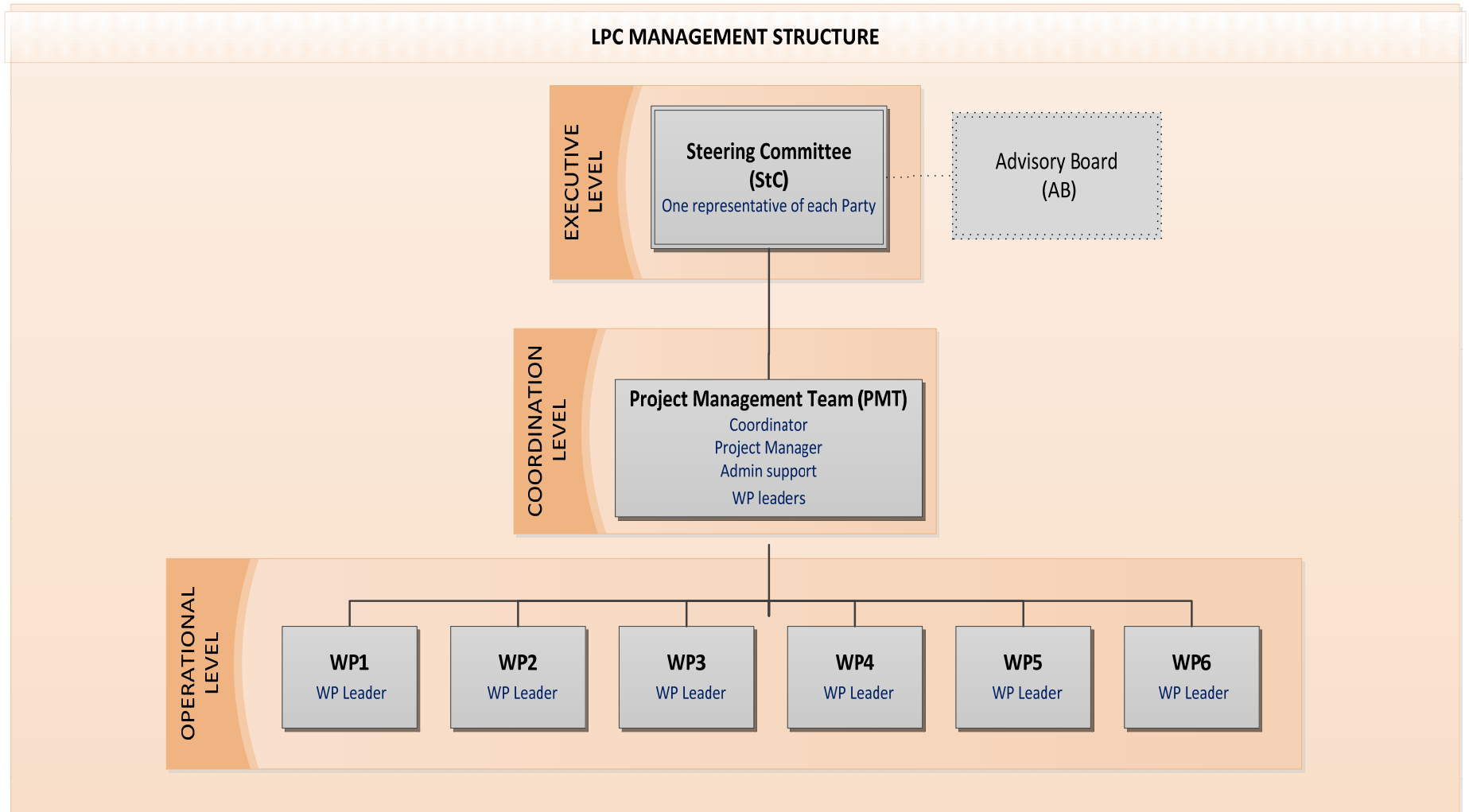


- **Scenarios:** Use cases define the domain
- **Requirements:** Elicitation & formalization
- **Models:** (WP 2 UML.); (WP3 process algebra) (WP4 ontological)
- **Design / implementation:** code designs / protocols / enforcement tools
- **Test:** conformity to design & implementation
- **Iteration:** Changes may be required to either models or design
- **V&V:** Validate compliance with the requirements

LPC Governance



LPC Management Structure



SnT + Clustering

- Privacy fits consistently within SnT research agenda & is a young ‘discipline’ with opportunities for partnerships and spin offs.
- SnT’s aspires to host Europe’s best applied research capability in privacy and we continue to invest in this capability.
- We continue to align our existing assets with privacy topics & for LPC we map 4 key research teams to specific Work Packages for our initial cloud / data focus:

Research group	WP	Role
NETLAB + Law	1	Requirements engineering
SERVAL	2	Integration
APSIA	3	Enforcement
SVV	4	Attestation

SnT – Contacts

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