Definition of "core, extended, future" BBs

Josef Noll on behalf of SCOTT-NO team

secure connected trustable things

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Outline

- SCOTT high level vision
  - and its impact on implementation plans (how it refers to assumptions established during project preparation and described in DoW)

SCOTT Achievements
"elevator pitch"

SCOTT will deliver Technology and Use Cases for advancing security, privacy and trustability of IoT connected systems:

- **20+ Use cases will demonstrate the Impact**
  - security, privacy and trustability
  - technology demonstrators
  - market

- **Building Blocks as technology basis for advanced IoT connectivity**
  - support the use cases
  - create components for future business

- **Fulfil the need of European Industries for trustable IoT systems and communications**

SCOTT BUILDING BLOCKS

BB23.A Dependable Wireless Sensor Network, Leader: **Teresa Riesgo**, partners: INDRA, Universidad Politécnica de Madrid, Telenor, Wolffia (BB23.A)

BB23.B End-to-end assured QoE, Leader: **Xavier Alberti**, partners: INDRA, CIT, KLAS, VEMCO (BB23.B)

BB23.C HW supported security mechanisms, Leader: **Marco Steger**, partners: VTT, AVL, Johannes Kepler Universität, TUG, UiO, F-SECURE, TU Delft, IMEC, AIT, FEV, Nokia, Virtual Vehicle Research Center (BB23.C)

BB23.D Integrated Safety&Security Development, Leader: **Silke Holtmanns**, partners: AVL, KTH, INDRA, VEMCO, Universidad Politécnica de Madrid, Politechnika Gdanska, IT, Nokia, Virtual Vehicle Research Center (BB23.D)

~~BB23.E Safety critical applications via Satcom~~, Leader: **Xavier Alberti**, partners: INDRA (BB23.E)

BB23.F Out of Band Security, Leader: **Achim Berger**, partners: AVL, Johannes Kepler Universität, SBA (BB23.F)

BB23.G PHY layer security, Leader: **Andreas Springer**, partners: Johannes Kepler Universität, Linz Center of Mechatronics GmbH, AVL, Politechnika Gdanska (BB23.G)

BB23.H Real-time configuration of secure zones, Leader: **Ken Brown**, partners: University College Cork, Tyco, VEMCO, Politechnika Gdanska (BB23.H)

BB23.I Reinforcement of safety for traffic infrastructures, Leader: **Francisco Parrilla**, partners: INDRA, Universidad Politécnica de Madrid, Instituto Tecnologico de Informatica, IK4-TEK, SAGOE (BB23.I)

BB23.J Reliable Wireless Multi-hop Communications, Leader: **Salvador Santonja**, partners: Instituto Tecnologico de Informatica, AVL, INDRA (BB23.J)

BB23.K Realiable Wireless PHY and MAC, Leader: **Egoitz Arruti**, partners: INDRA, AIT (BB23.K)

BB23.L Routing and scheduling in real-time WSN, Leader: **Rafael C. Socorro Hernández**, partners: Tecnalia, Acciona (BB23.L)

BB23.M Safety WSN Adapter, Leader: **Salvador Santonja**, partners: Instituto Tecnologico de Informatica, INDRA (BB23.M)

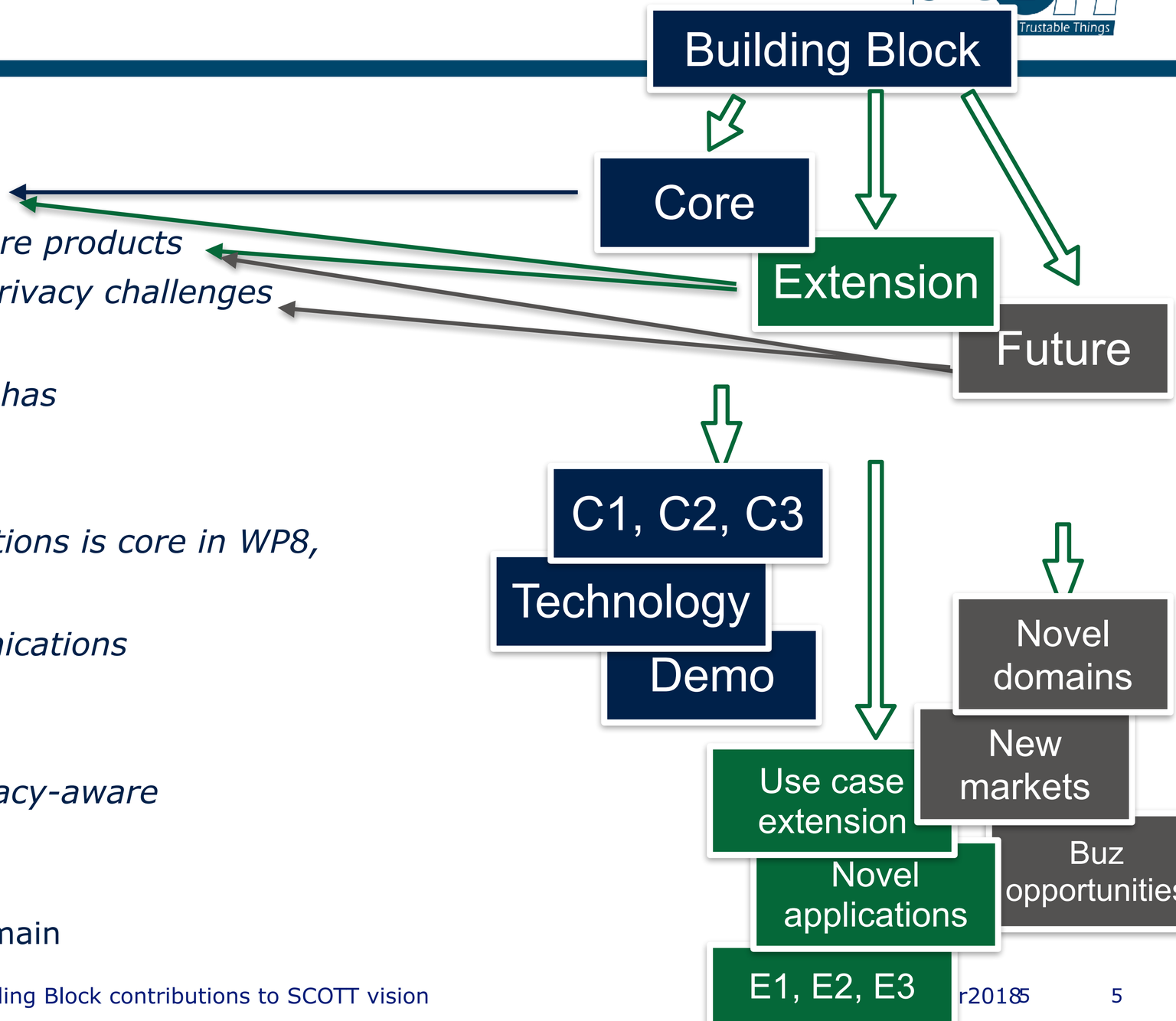
BB23.N SCOTT Security Library, Leader: **Marco Steger**, partners: AVL, VEMCO, Politechnika Gdanska, INDRA, UIO, TUG, Johannes Kepler Universität, F-SECURE, SBA, OsloMet, TU Delft, EyeNetworks, Virtual Vehicle Research Center (BB23.N)

BB23.O Security Core - Identification, Authentication and Communication, Leader: **Silke Holtmanns**, partners: CISC, EAB, F-SECURE, Linz Center of Mechatronics GmbH, PRE, UiO, SBA, VTT, VEMCO, Nokia, Virtual Vehicle Research Center (BB23.O)

- BB23.P Spatial-based authorization and authentication, Leader: **Mateusz Rzymowski**, partners: VEMCO, Politechnika Gdanska, PRE, TYCO, University College Cork (BB23.P)
- BB23.Q Towards a Safe Virtual Coupling, Leader: **Francisco Parrilla**, partners: INDRA, Universidad Politécnica de Madrid, SAGOE(BB23.Q)
- BB23.R Trust Trust Anchor and Trust Indicators, Leader: **Marco Steger**, partners: AVL, Politechnika Gdanska, TUG, UiO, F-SECURE, AIT, IMEC, Johannes Kepler Universität, SBA, Nokia, Virtual Vehicle Research Center (BB23.R)
- BB24.A Remote Configuration of Infrastructure, Leader: **Linda Firveld**, partners: UiO, Smart Innovation Norway, EyeNetworks(BB24.A)
- BB24.B Addressing and Mobility Management of Devices, Leader: **Joachim Hillebrand**, partners: F-SECURE, PRE, TU Delft, CISC, Nokia, Virtual Vehicle Research Center (BB24.B)
- BB24.C Application Layer Protocols and Cloud Architectures, Leader: **Pedro Ruiz**, partners: Telenor, PRE, RTE, VTT, VEMCO(BB24.C)
- BB24.D Big Data Analytics, Leader: **Antonio Lagarda**, partners: Instituto Tecnologico de Informatica (BB24.D)
- BB24.E Cloud computing services for mobility applications, Leader: **N.n.**, partners: JUG, AVL, CISC, IMEC, INDRA, JIG, PRE, University College Cork, VTT, VEMCO, SICS, Virtual Vehicle Research Center (BB24.E)
- BB24.F Cross-technology synchronisation, Leader: **Peter Priller**, partners: UiO (BB24.F)
- BB24.G Mobile Edge Computing, Leader: **Lucasz Kawolski**, partners: PRE, Telenor, UiO, VEMCO (BB24.G)
- BB24.H Mobility Prediction, Leader: **Ken Brown**, partners: University College Cork, Tyco (BB24.H)
- BB24.I Semantic Attribute Based Access Control (S-ABAC), Leader: **Christian Johansen**, partners: UiO, Wolffia, Smart Innovation Norway (BB24.I)
- BB24.J Wireless Vehicle Interface, Leader: **Pawel Czernecki**, partners: FEV PL, AVL, FEV, Virtual Vehicle Research Center (BB24.J)
- BB24.K Trustable Passenger Vehicle Data Logging System, Leader: **Alexander Stocker**, partners: VEMCO, Virtual Vehicle Research Center (BB24.K)
- BB24.L Adaptable network slicing, Leader: **Do van Thanh**, partners: Telenor, OsloMet, Wolffia, UIO (BB24.L)
- BB25.A Energy efficient security implementation in WSNs, Leader: **Andreas Springer**, partners: Johannes Kepler Universität, AVL, Linz Center of Mechatronics GmbH, SBA (BB25.A)
- BB25.B Energy efficient & resource optimized component concepts for WSNs, Leader: **Stefan Drude**, partners: NXP NL, NXP AT, AVL (BB25.B)
- BB25.C Energy storage for WSNs, Leader: **Rafael C. Socorro Hernández**, partners: UiO, Acciona, Tecnalia (BB25.C)
- BB25.D Energy supply to on track segment, Leader: **Javier Uceda**, partners: Universidad Politécnica de Madrid, INDRA (BB25.D)
- BB25.E Improved energy harvesting, Leader: **Rafael C. Socorro Hernández**, partners: Acciona, Tecnalia (BB25.E)
- BB25.F In-vehicle WSN, Leader: **Achim Berger**, partners: Linz Center of Mechatronics GmbH, AVL, Johannes Kepler Universität, SBA (BB25.F)
- BB25.G System level availability, Leader: **Willem van Driel**, partners: NXP AT, HH, VEMCO, Instituto Tecnologico de Informatica, Politechnika Gdanska, AVL, Tecnalia, Acciona, CISC, VTT, Philips Lightning, Nokia (BB25.G)
- BB26.A Autonomous Wireless Network, Leader: **Francisco Parrilla**, partners: INDRA, Instituto Tecnologico de Informatica, JIG, KLAS, Universidad Politécnica de Madrid (BB26.A)
- BB26.B Cloud computing service platform, Leader: **N. n.**, partners: AIT, AVL, CISC, GMV, INDRA, JIG, SBA, University College Cork, Nokia, Virtual Vehicle Research Center (BB26.B)
- ~~BB26.C Smart routing for WSN on trains~~, Leader: **Xavier Alberti**, partners: INDRA (BB26.C)
- BB26.D Infrastructure design and security threat analysis, Leader: **Ramiro Robles**, partners: ISEP (BB26.D)
- BB26.E Interoperability and secure cross-domain application development, Leader: **Ramiro Robles**, partners: ISEP (BB26.E)
- BB26.F Measurable security and privacy, Leader: **Toktam Ramezani**, partners: UiO, Smart Innovation Norway (BB26.F)
- BB26.G Privacy labels (A-F), Leader: **Christian Johansen**, partners: UiO, Smart Innovation Norway (BB26.G)
- BB26.H Methods for wireless vehicular data links, Leader: **Thomas Zemen**, partners: AIT, INDRA, Siemens, Virtual Vehicle Research Center (BB26.H)
- BB26.I Ontology for secure wireless data transfer, Leader: **Ramiro Robles**, partners: ISEP (BB26.I)
- ~~BB26.J - IoT/M2M over satellite~~, Leader: **Xavier Alberti**, partners: INDRA (BB26.J)

Focus of Building Blocks

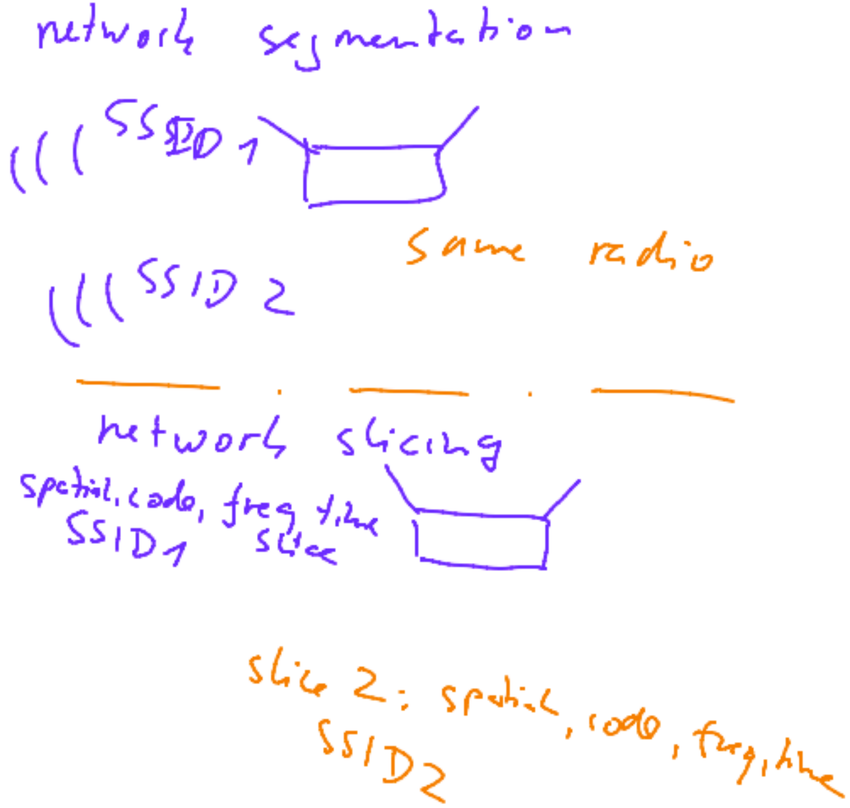
- Provide the technology basis for
  - ➡ *implementation of use cases*
  - ➡ *state-of-technology implementation of future products*
  - ➡ *state-of-science analysis for security and privacy challenges*
- Separation of core, extended, or future
  - ➡ *depends on Use case: E.g. BB24.I S-ABAC has*
    - *WP21 as core*
    - *WP14 and WP15 as extended application*
    - *WP11 and WP8 as possible future applications is core in WP8,*
- Leads to
  - ➡ *guidelines for secured and trusted communications*
  - ➡ *product lines of*
  - ➡ *services*
  - ➡ *market impact for secure, trusted and privacy-aware*
    - products and services from Europe
    - opportunities for European industries
    - European leadership in secure & privacy domain



Methodology for use cases
applied to WP8 “Managed Wireless”

Steps

- **Core use case: “Managed wireless”**
  - *Analysis of protocols for monitoring wireless access (C.1)*
  - *Provide tools for identification of “bad” wireless (C.2)*
  - *Manage wireless remotely (C.3)*
- **Extended use case: Service differentiator for future services**
  - *Routing, e.g. micro-routing (E.1)*
  - *Network segmentation (E.2) and slicing (E.3)*
- **Future services and application areas**
  - *TelCo 5G network slicing (F.1)*
  - *IoT Gateway monitoring (F.2)*
  - *IoT Management (F.3)*
- **leading to Demo and Impact**



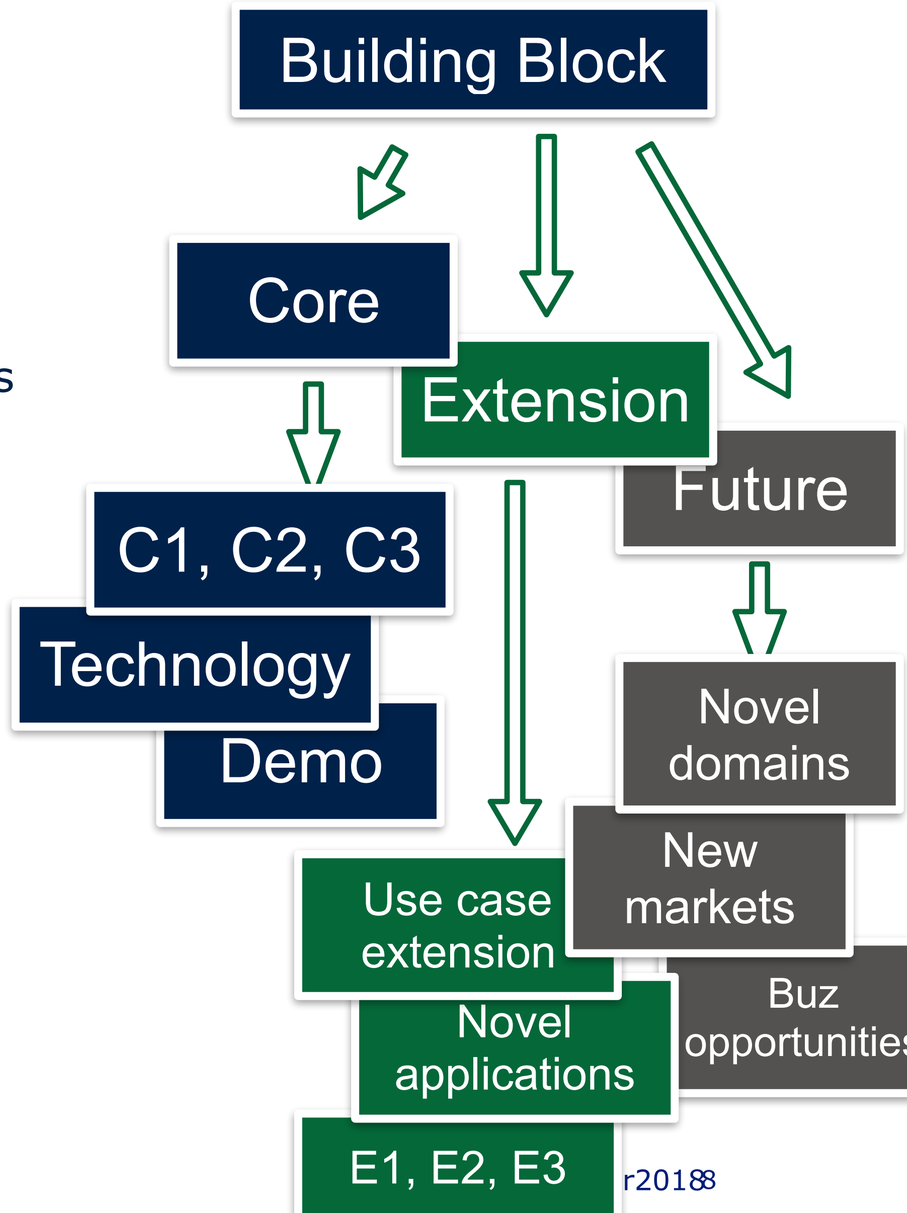
Demo and Impact of Use Case applied to WP8 “Managed Wireless”

- Demonstration
  - C.1-C.3 monitoring and management of wireless
  - demonstrate Security, Privacy enhancement
  - Collaboration with pilot installations elsewhere (applicability)
  - extended demonstration: 5G network slice (tbc), IoT gateway (tbc) - depends on technology development

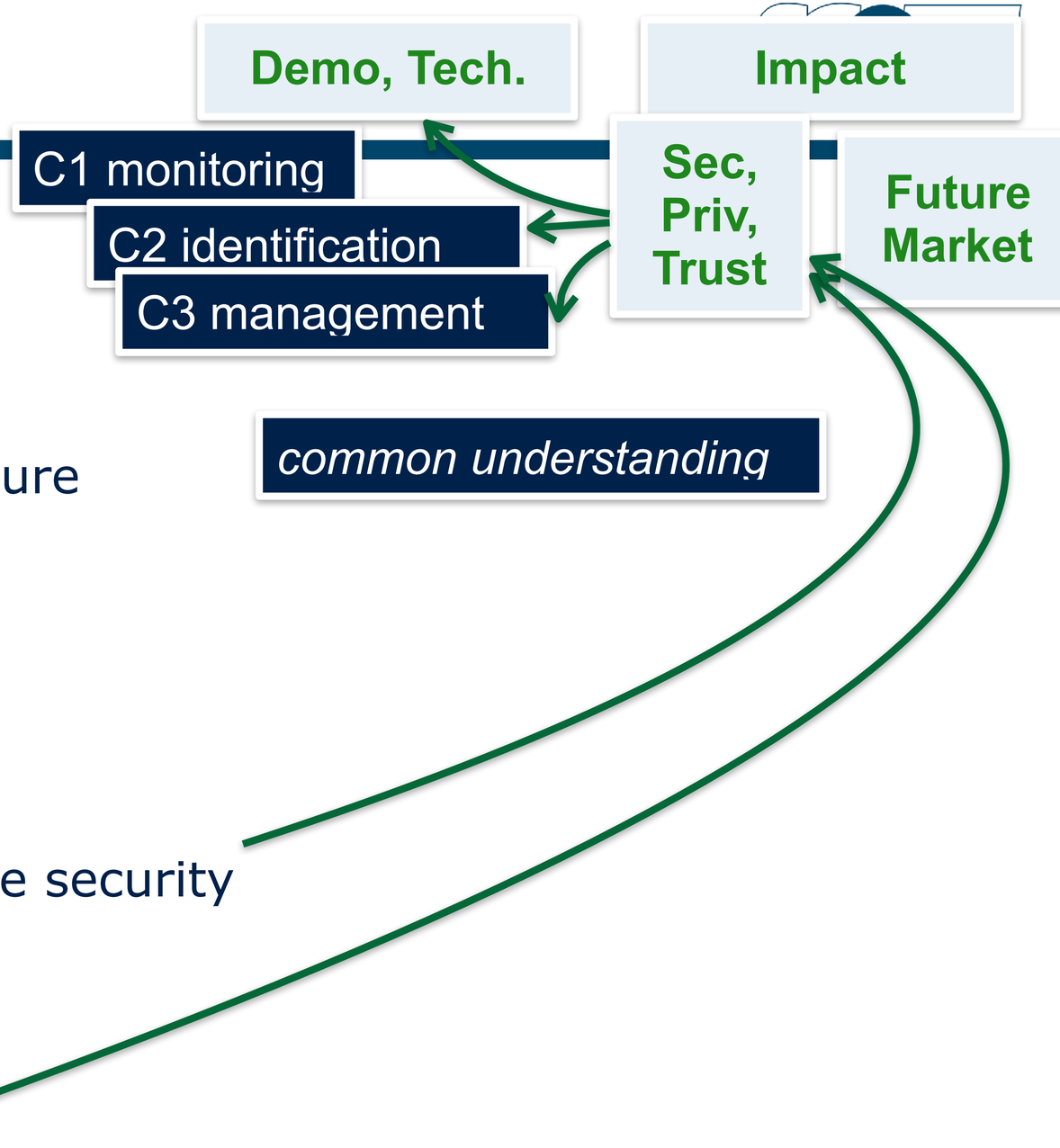
- Impact
  - Security, privacy and trustability
    - application specific routing, remotely configured secure channels
    - separation of traffic
  - Technology
    - QoS of application
    - Cloud monitoring
    - machine learning QoS tools
    - E.1-E.3
  - Market
    - enhanced efficiency in wireless
    - trustable products
    - future business line (IoT), F.1-F.3

Methodology of Building block inclusion
applied for WP8

- BB24.A - Remote configuration of infrastructure
- BB26.I - Semantic and ontology definition for secure wireless data transfer
- BB24.C -Application layer protocols and cloud architectures
- BB24.E -Cloud computing services for novel connected mobility applications
- BB24.L - Adaptable network slicing
- BB23.P - Spatial-based authorisation and authentication
- BB24.I - Semantic Attribute Based Access Control
- BB24.G - Mobile Edge Computing
- BB26.H - Measurement, modelling and emulation methods for wireless vehicular data links
- BB26.F - Multi-metrics assessment for measurable security and privacy
- BB26.G -Privacy labels (A-F)



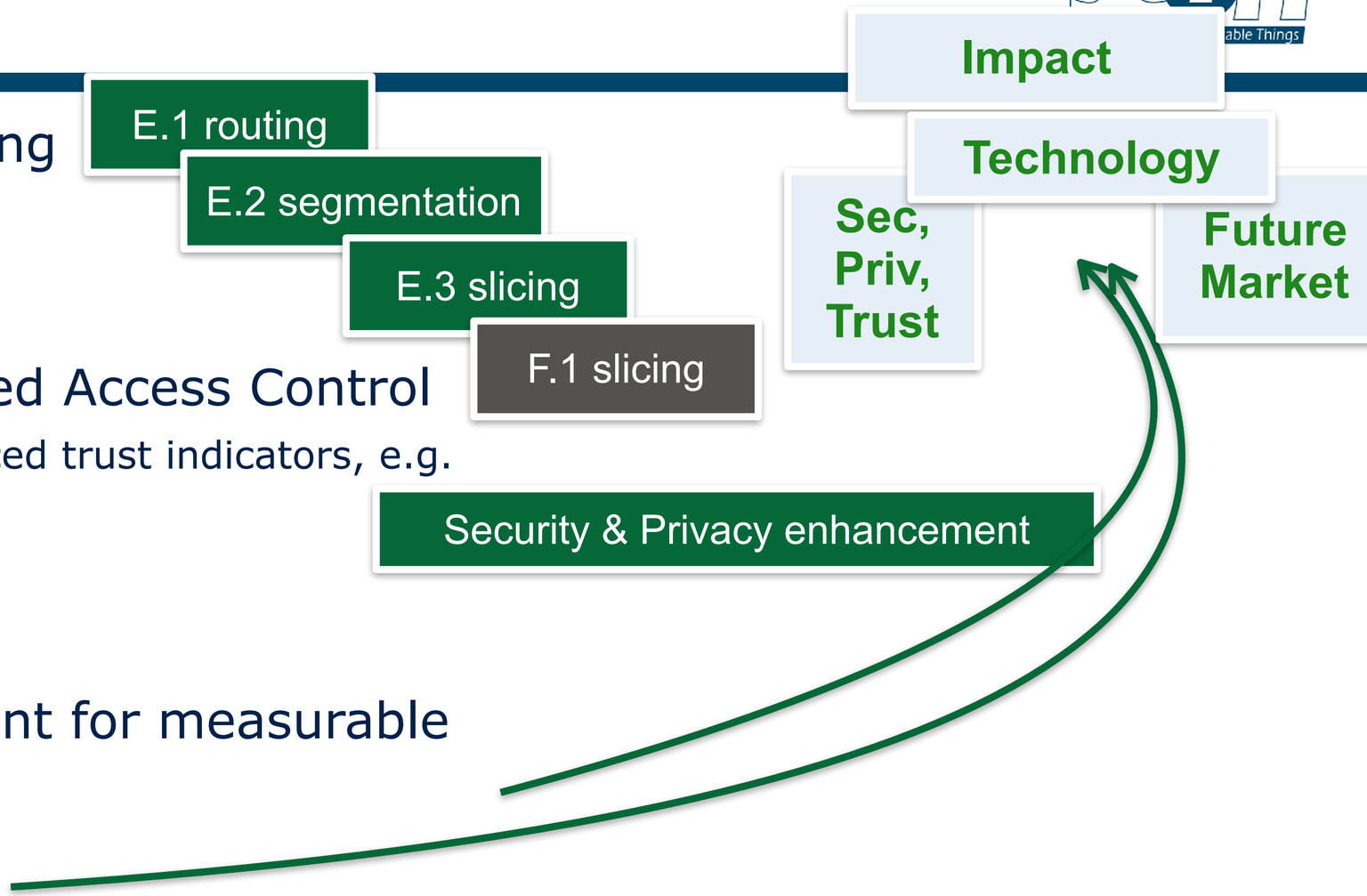
Core use case
applied for WP8



- BB24.A - Remote configuration of infrastructure
  - monitoring of home gateway
- BB26.I - Semantic and ontology definition for secure wireless data transfer
  - definition of security functionalities and attributes
- *assessed with help of*
- BB26.F - Multi-metrics assessment for measurable security and privacy
  - security classes, measurable security
- BB26.G -Privacy labels (A-F)
  - measurable privacy

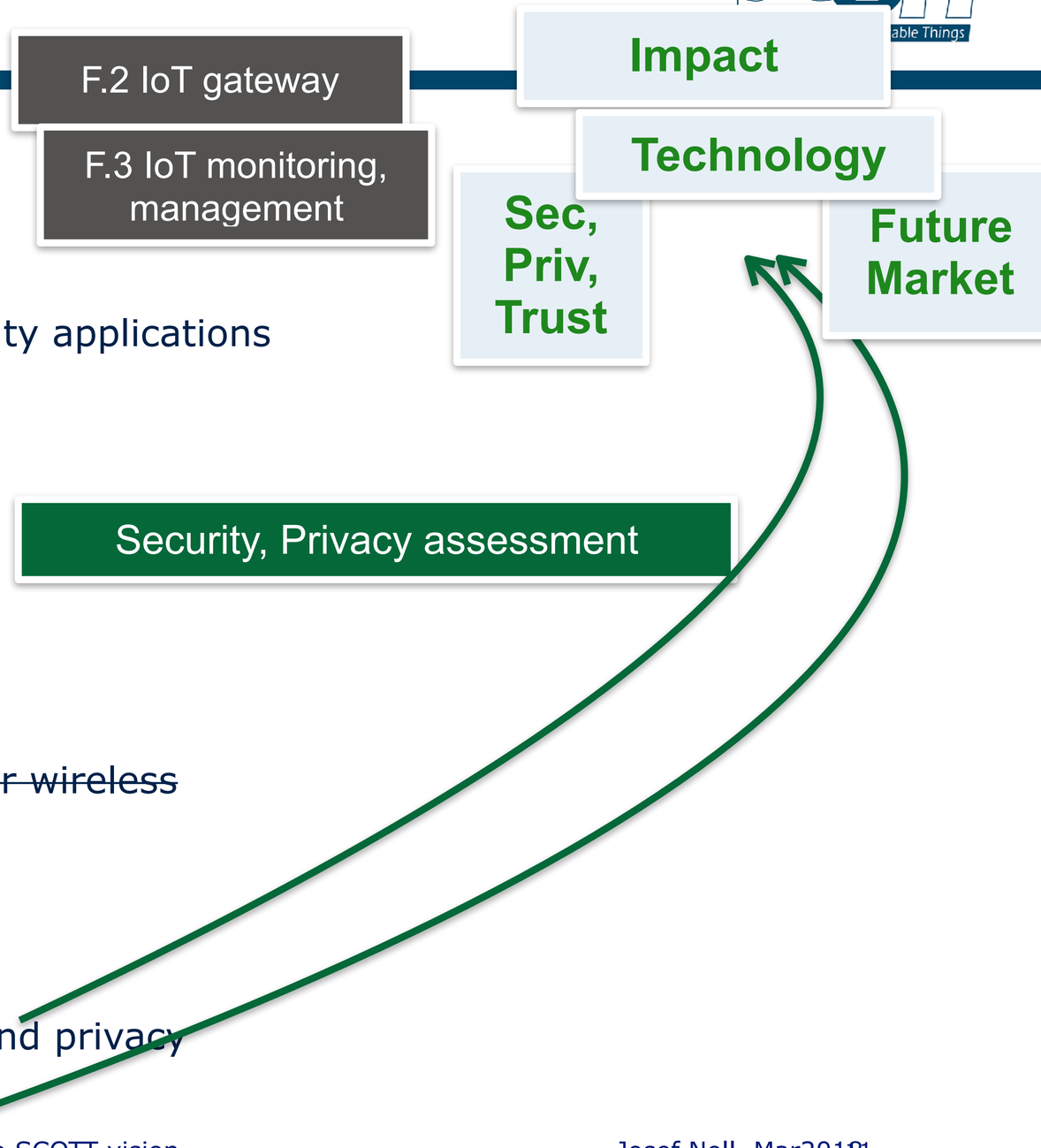
Extended technologies
applied for WP8

- BB24.L - Adaptable network slicing
  - 5G Slicing, service integration, service differentiation
- BB24.I - Semantic Attribute Based Access Control
  - increase of security class through enhanced trust indicators, e.g. network ID
- *assessed by*
- BB26.F - Multi-metrics assessment for measurable security and privacy
- BB26.G -Privacy labels (A-F)



Future Technologies
applied for WP8

- BB24.C -Application layer protocols and cloud architectures
  - guidelines for communication protocols of sensors
- BB24.E -Cloud computing services for novel connected mobility applications
  - cloud based monitoring of sensors
- BB24.G - Mobile Edge Computing
  - edge computing for Wireless Sensor Networks
- BB23.P - Spatial-based authorisation and authentication
  - object identification and authorisation, e.g. handover and routing, safety
- ~~BB26.H - Measurement, modelling and emulation methods for wireless vehicular data links~~
  - ~~communication link measurements between vehicles~~
- *assessed by*
- BB26.F - Multi-metrics assessment for measurable security and privacy
- BB26.G -Privacy labels (A-F)



Conclusion:
Methodology for including Building Blocks into Use Cases

- SP2 Focus: Use cases (*refined 1Mar2018*)
  - focus on core use cases to demonstrate technology and market opportunities
  - use spotlight use cases for focus on impact
  - Identification of core BB, e.g. monitoring and management of wireless (C.1-C.3 in WP8)
  - Enhanced technologies for making the use case stronger (E.1-E.3 in WP8), evtl. use case step 2,3
  - Future technologies for trustable products and future business (F.1-F.3 in WP8)
  - demonstrate Security, Privacy enhancement
  - Market focus and Impact
    - based on spotlight use cases
    - enhanced efficiency in wireless
    - trustable products
    - future business line (IoT), F.1-F.3
- SP3: Technology (Building Block dev.)
  - Focus on building block development
  - Addressing security enhancement of use cases
  - Creating enhanced technologies
  - Enabling future services and business
  - Technology examples
    - QoS of application
    - Cloud monitoring
    - machine learning QoS tools