



**Slovenian  
Energy and Environment  
Partnership in Defence**

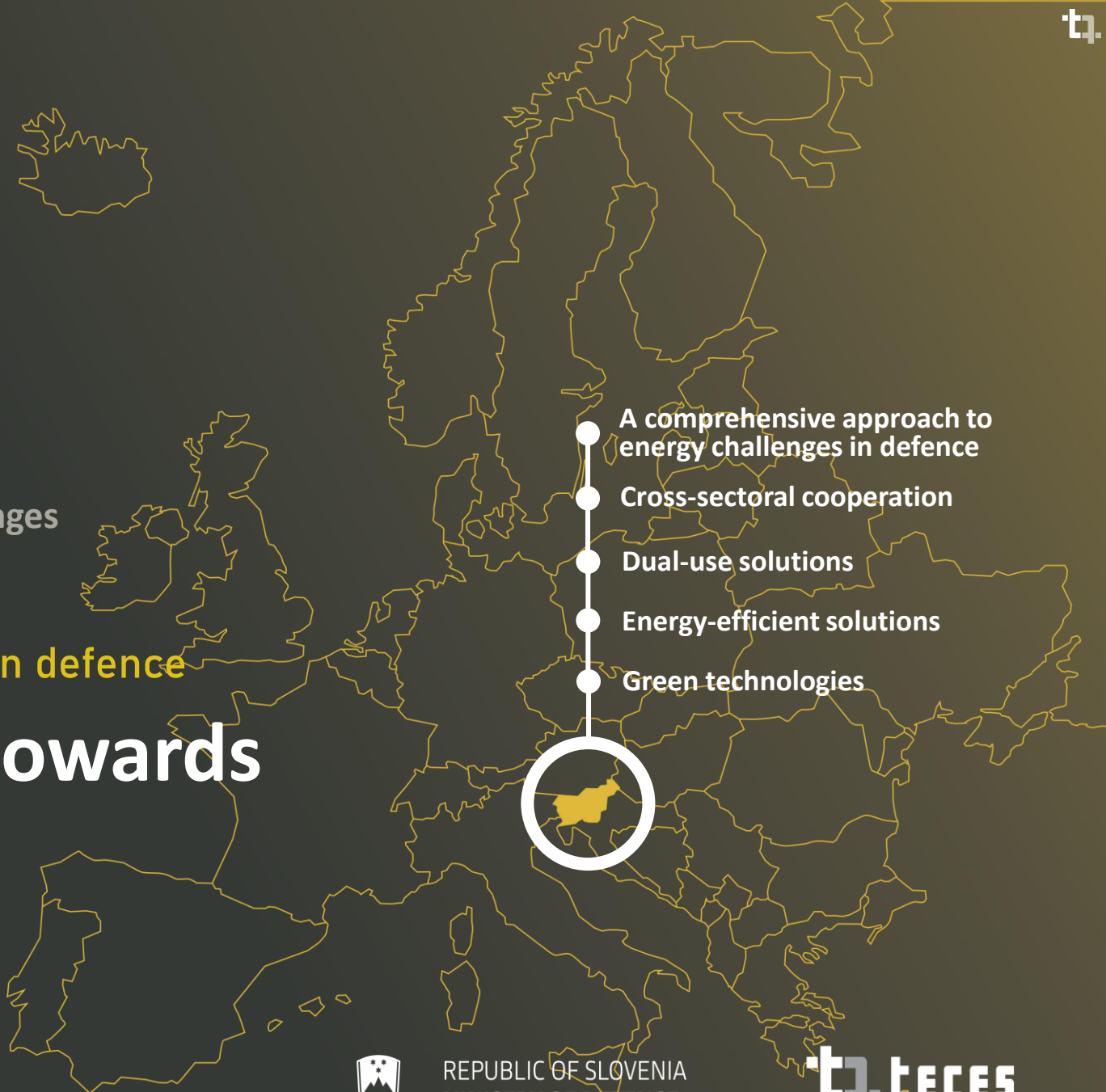
**SMEs & DEFENCE INITIATIVES:  
Unlocking Opportunities & Overcoming Challenges**  
online event, 30. 11. 2021

**Energy and environmental challenges in defence**

# **Slovenian approach towards GREENING DEFENCE**

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REPUBLIC OF SLOVENIA  
MINISTRY OF DEFENCE



SiEnE – UNCLASSIFIED



## Green Deal Implication

### Green ambitions

**What about the military?**

# WHY?




30. November 2021 | online | SMEs & DEFENCE INITIATIVES: Unlocking Opportunities & Overcoming Challenges | Slovenian approach towards GREENING DEFENCE



In July 2020, the SiEnE Slovenian Energy and Environment Partnership in Defence was established to provide a strategic and comprehensive approach for responding to energy and environmental challenges in defence.

**an effective approach towards the integration of Slovenian partners in international defence programmes and global defence value chains.**

# WHAT?



**teces** established by **REPUBLIC OF SLOVENIA MINISTRY OF DEFENCE**



## 2021 → STRATEGIC FOCUS AREAS

# FOCUS?

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### Energy and environmental challenges in defence

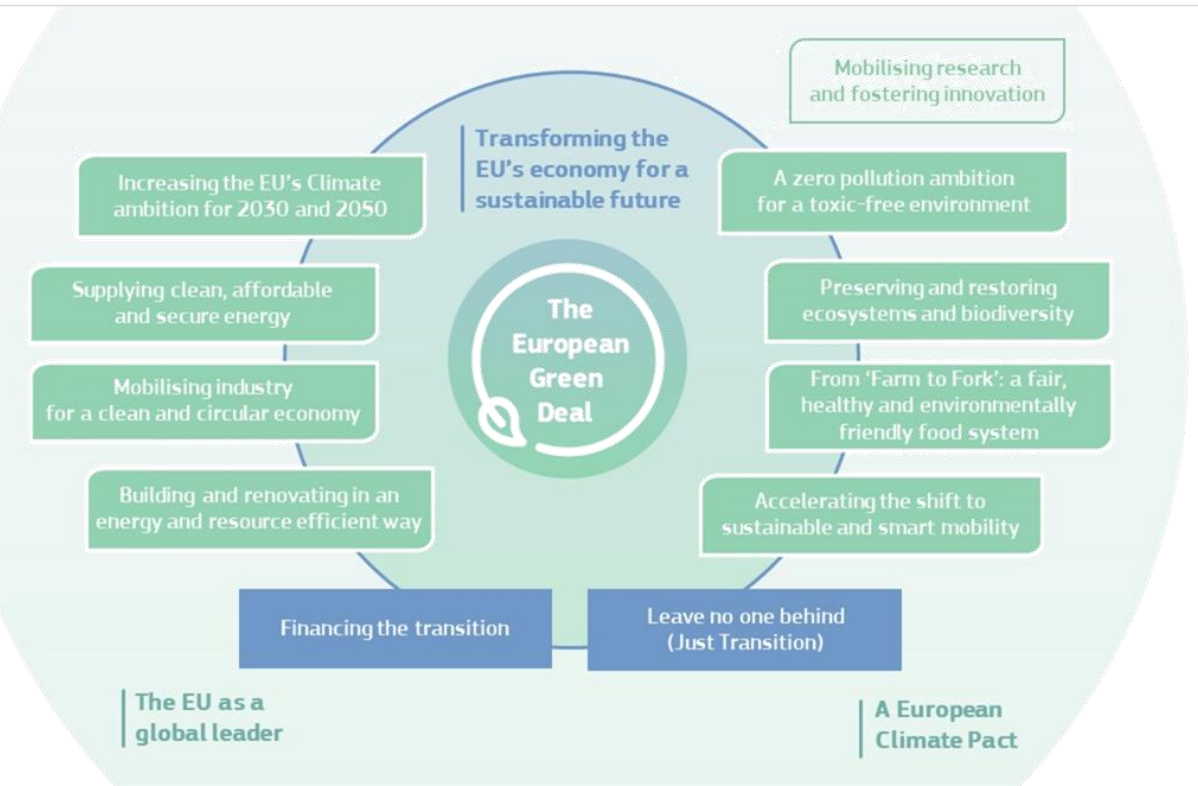
## SLOVENIA as a DEMO PILOT COUNTRY for international collaboration on energy related topics

- Strengthening of collaborative innovation defence capacities of EU countries
- Promotion of green military industries and dual-use energy-related and energy-efficient solutions.
- Supporting the greening transition of the security and defence sector.

**in defence**

# WHY NOT?

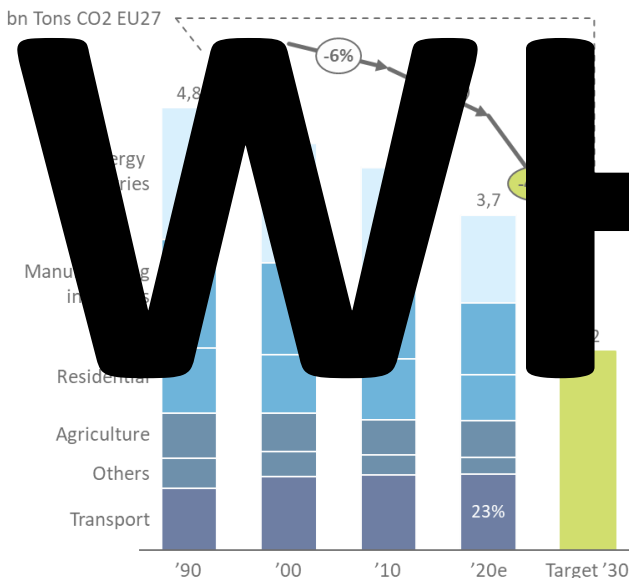




# Green Deal Implication Green ambitions



## What about the military?



# WHY?





*‘Energy efficiency, renewables and environmental protection are probably not the first attributes springing to people’s minds when they think of the military. Times are changing though: with Member States’ Armed Forces being among the largest energy consumers in Europe and energy becoming an Achilles heel of military operations if incorrectly managed, the impact of energy consumption on defence budgets and military effectiveness is growing drastically’; EDA 2016, EDA Webzine, Issue 11, Sustaining Europe’s Armed Forces*

## GREENING DEFENCE & ENERGY TRANSITION

(lowering costs, energy independency, energy resilience, energy efficiency, lowering emissions...)

## THE INCREASED NEED FOR CIVIL SOLUTIONS FOR DUAL USE

## FIXED and DEPLOYABLE INFRASTRUCTURE

(renovation of fixed infrastructure, digitalisation...)

## STRENGTHENING INTERNATIONAL COLLABORATION

(strategic development partnership, joint research and development, value chains, demo pilots...)





- Slovenia – small country ( 2,1 million population)
- An export oriented industry – in 2018 Exports accounted for 76.5% of the country's GDP
- Slovenia's **export is oriented towards other EU countries**, mainly Germany, Austria, Italy and France.
- Slovenian companies are highly reliable and **efficient suppliers and sub-contractors in global value chains**.
- Strong collaboration industry ↔ research technology organisations / universities
- **extensive knowledge and long history** of SI governmental support to various **collaboration & innovation measures** (Industrial Clusters, Technology Centres, Centres of Excellence, Competence Centres, Research Development Centres, Technology Platforms, Strategic Research Partnerships...)

**NEED FOR SYSTEMATIC APPROACH TO SUPPORT  
SI MoD green energy transition and  
strengthening international R&D&T and business collaboration in defence**





In July 2020, the SiEnE Slovenian Energy and Environment Partnership in Defence was established to provide a strategic and comprehensive approach for responding to energy and environmental challenges in defence.

an effective approach towards the integration of Slovenian partners in international defence programmes and global defence value chains.

A background image showing a handshake between a person in a white shirt and a person in a camouflage military uniform. The word "WHAT?" is overlaid in large white letters.

# WHAT?



**Supporting Ministry of Defence (Si MoD) and Slovenian Armed Forces in joining international defence programmes and projects.**



**Active inclusion of Slovenian experts in international working and project groups.**



**Steering and coordination of Slovenian stakeholders' participation in Si MoD, European Defence Agency (EDA) and NATO programmes.**



**Identification of key strategic and operative programmes, in accordance with the needs of Slovenian stakeholders.**

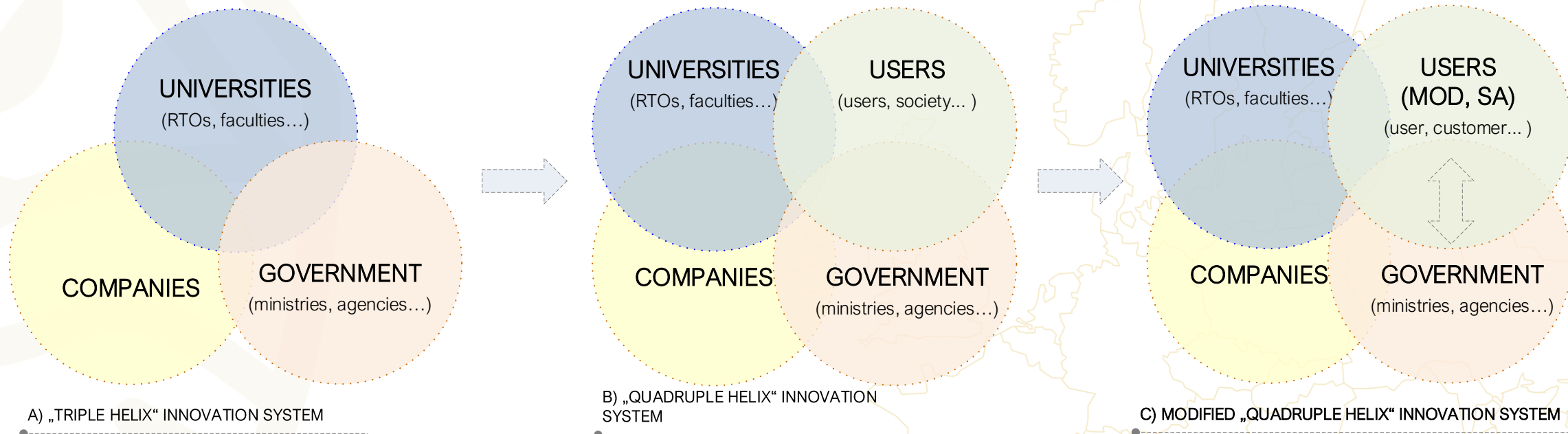


**Coordinated support for developing international research & development, technology, and demonstration projects.**



**Promoting presentation of Slovenian partners' research & development and manufacturing capabilities.**

An innovative support environment in defence in line with the "Modified Quadruple helix" innovation model



- innovation support environment/ecosystem in defence
- comprehensive support to the innovation processes targeting TRL 1-9
- support for the human resources development to raise competences of the stakeholders involved

#### LEGEND

An innovative support environment in defense in order to achieve the vision and goals of involving Slovenian stakeholders in defence development programs and value chains for the next 10 years.



REPUBLIC OF SLOVENIA  
MINISTRY OF DEFENCE

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# Based on previous experience / coordination of various strategic development partnerships & programmes

Civilian partnerships



LEGEND

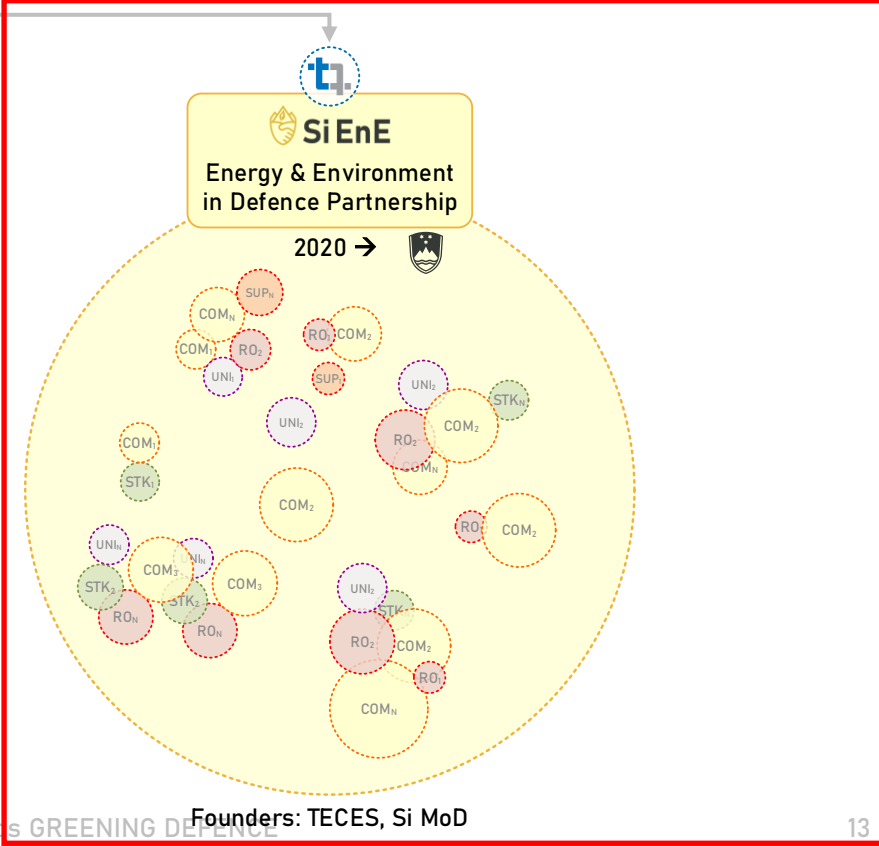
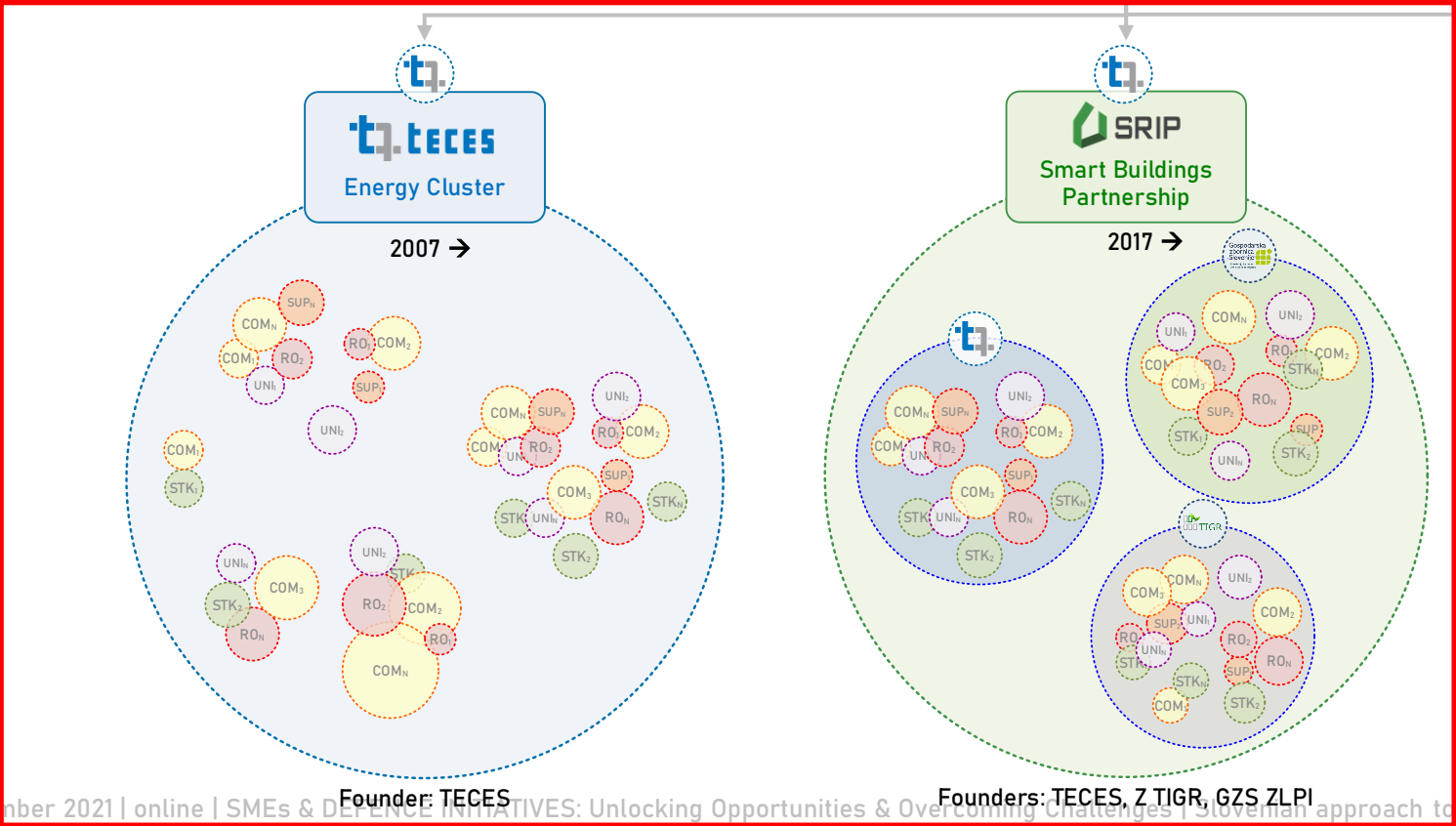
- TECES: Innovation cluster
- COM: Company
- RO: Research organisation
- UNI: Faculty / University
- SUP: Start-up company
- STK: Other stakeholders (*cities...*)

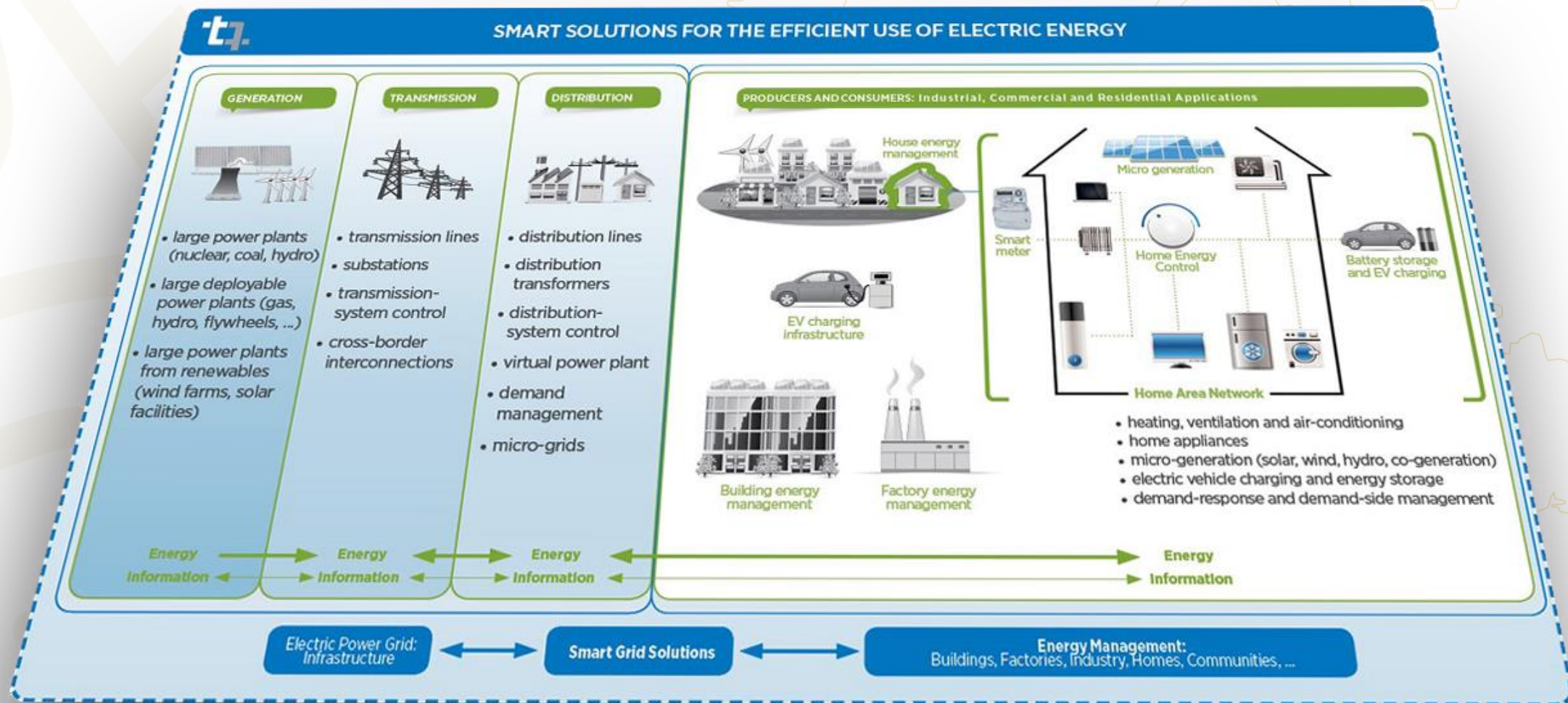
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The holder / coordinator role

Dual-use defence partnership





energy sources ↔ conversion ↔ distribution ↔ storage ↔ management ↔ usage





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Based on experience

17







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Based on experience

17



SMART NEARLY  
ZERO ENERGY  
BUILDINGS



SMART COMMUNITY  
CONNECTIVITY



LIGHTING



SENSORS



WATER  
MANAGEMENT



RENEWABLE  
ENERGY SOURCES



HEATING AND  
COOLING



SMART HOME



BUILDING  
MANAGEMENT



ENERGY  
STORAGE



E-MOBILITY



INTERIOR  
FURNITURE



VENTILATION



HOME (DOMESTIC)  
APPLIANCES



WOOD AND WOOD-BASED  
COMPOSITES



WASTE



DOORS, WINDOWS AND  
PANELLING



BUILDING  
ENVELOPE



PROTECTIVE AND  
FINISHING MATERIALS



VIDEO SURVEILLANCE  
SYSTEM

Residential building



WOOD AND  
WOOD CHAIN



HEALTHY, ECO AND  
USER-FRIENDLY LIVING  
AND WORKING  
ENVIRONMENT



RENEWABLE ENERGY SOURCES



ENERGY STORAGE



HYDROGEN AND  
H2 TECHNOLOGIES



ALTERNATIVE FUELS



DRIVE / PROPULSION SYSTEMS



WASTE TO ENERGY  
TECHNOLOGIES



WATER AND WASTE-WATER  
TECHNOLOGIES



ENERGY AND  
THE ENVIRONMENT



ENERGY HARVESTING /  
SCAVENGING



MULTI-FUEL AND  
POWER DISTRIBUTION



HEATING, VENTILATION, AND  
AIR-CONDITIONING (HVAC)



MICROGRIDS  
(ENERGY RESILIENCE)



ENERGY MANAGEMENT



SECURITY AND PROTECTION



DIGITALISATION, ICT  
(IOT, AI, BIM, SENSORS,  
ACTUATORS, INTERCONNECTION...)



CONSTRUCTION SYSTEMS



MODULAR BUILDING UNITS



BUILDING ENVELOPE



ENERGY EFFICIENT JOINERY

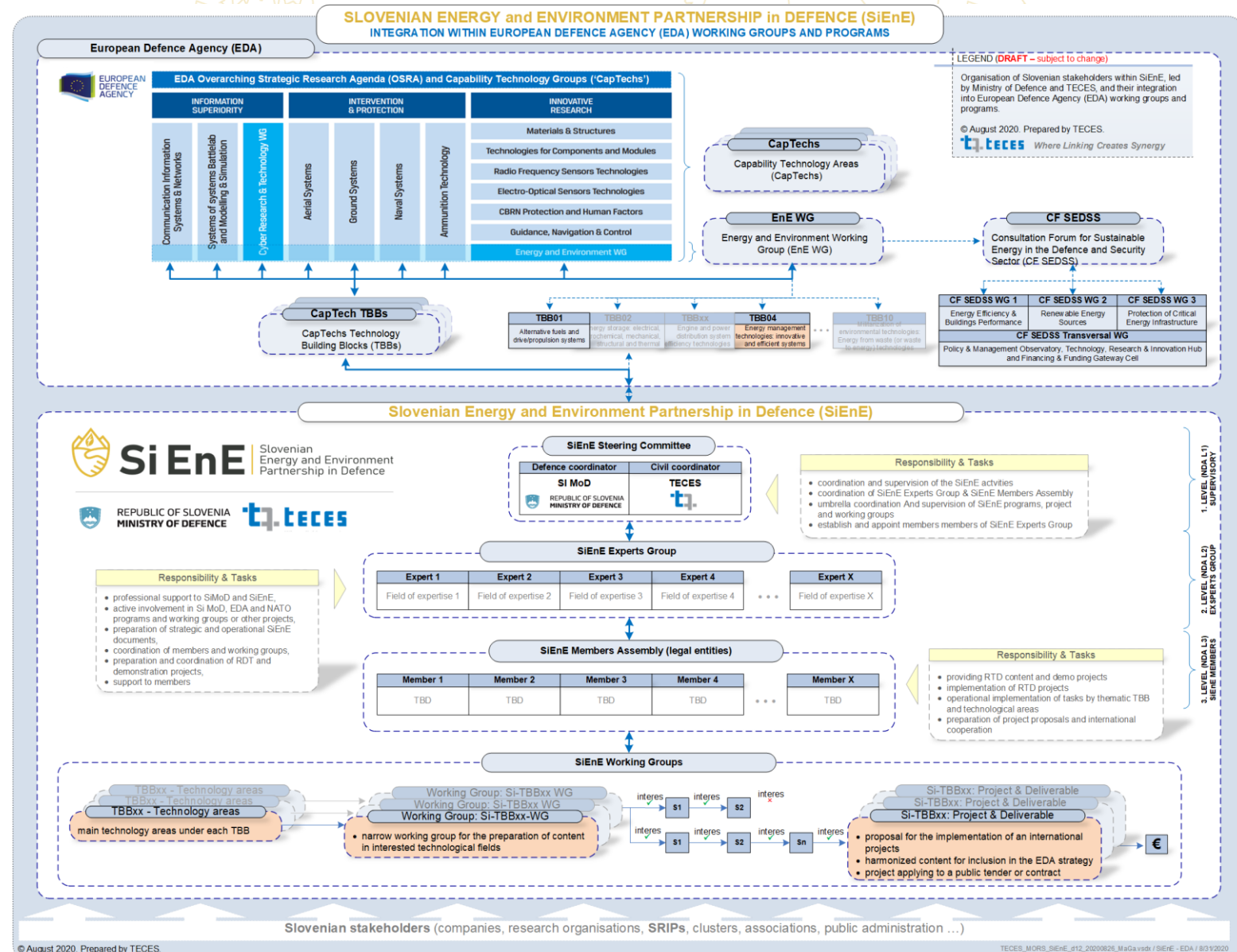


INTERIOR (AMBIENT)





- based on needs of Si MoD and members
- **optimized for collaborations** of EU member states and NATO alianse
  - EC, DG DEFIS, DG ENER, EDF, PESCO,
  - EDA, Energy and Environment Working Group,
  - CF SEDSS - Consultation Forum for Sustainable Energy in the Defence and Security Sector
  - IF CEED - Incubation Forum on Circular Economy in European Defence
  - ...





2021 →

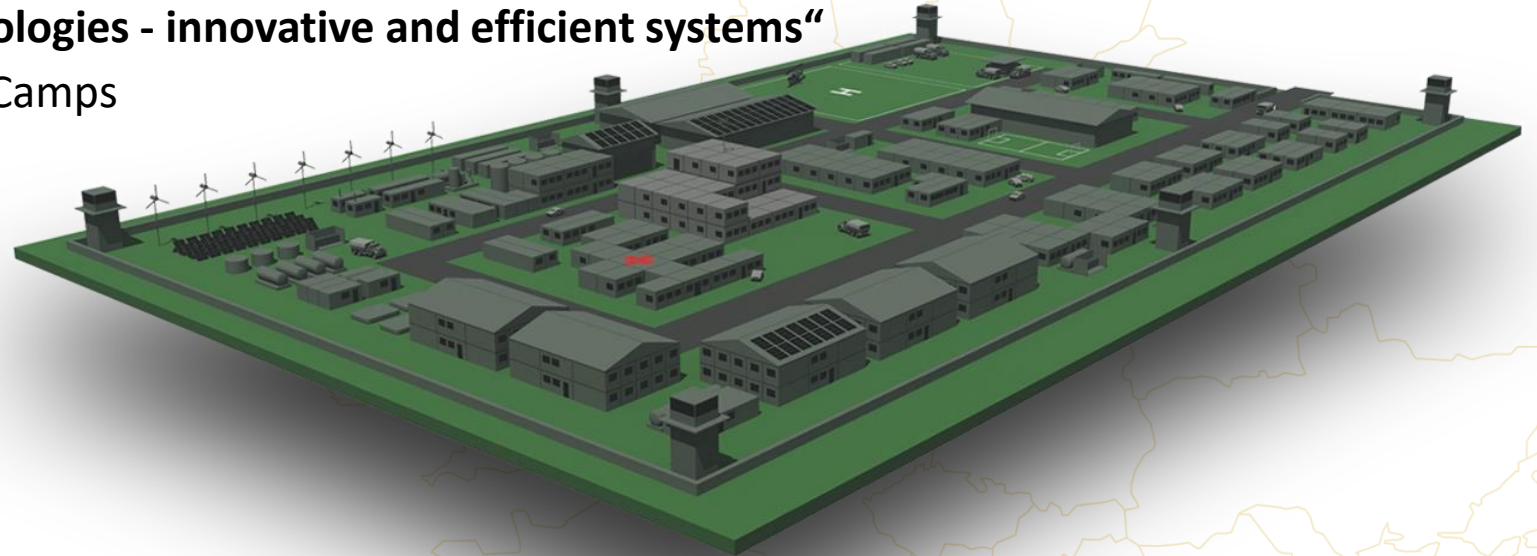
STRATEGIC FOCUS AREAS

FOCUS?



- **January – April 2020:**

- **EDA Energy and Environment Working Group**
- Slovenian working group was responsible for **preparation of technology areas, projects and projects roadmap**, topic „**TBB04 - Energy management technologies - innovative and efficient systems**“
- Focus was on Smart Energy Efficient Camps



- **October 2020 – August 2021:**

- the **R&D feasibility study on ways of developing smart deployable infrastructure in Slovenia has been concluded for the Ministry of Defence of the Republic of Slovenia (Si MoD)** (Smart Energy Efficient Deployable Camps - SEEC)
- to analyse the state of **technologies** and **relevant global trends**, focus on **R&D**,
- to analyse the **technological** and **innovation capacities** of Slovenian civil stakeholders,
- to analyse a **potential** for slovenian civil stakeholders in international defence programs,
- to define **vision, development strategy** and the **concept of SEECs** for the next 10 years.



# Smart Energy Efficient Camps



(CO)PRODUCTION  
AND STORAGE OF  
ENERGY

DIGITAL TWIN

PREDICTIVE  
MANAGEMENT AND  
MAINTENANCE

HYDROGEN AND  
HYDROGEN  
TECHNOLOGIES

NEARLY ZERO ENERGY  
MODULES / BUILDINGS

MODULES / BUILDINGS  
INTERIOR

RENEWABLE  
ENERGY SOURCES

INTEROPERABILITY

SELF-HEALING  
MICROGRIDS  
(ENERGY RESILIENCE)

AUTONOMOUS  
UNITS / MODULES

ENERGY EFFICIENCY

WATER AND WASTE  
MANAGEMENT

ENERGY  
MANAGEMENT  
SYSTEMS

HEATING, VENTILATION,  
AIR-CONDITIONING, COOLING,  
REFRIGERATION (HVACR)

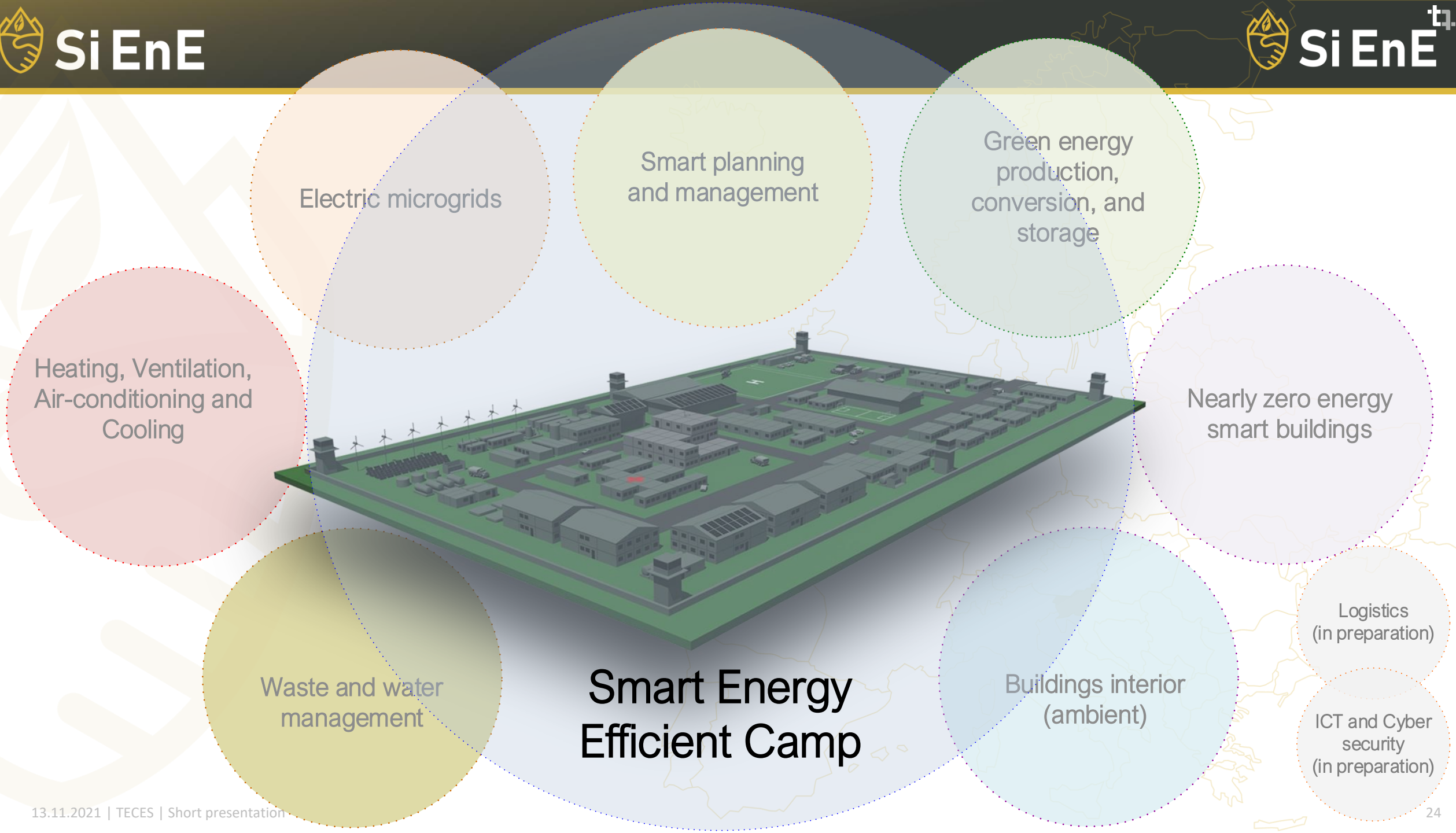
MODULARITY

CYBER SECURITY AND  
PROTECTION

SELF-DIAGNOSTICS

SMART PLANNING,  
DESIGN AND  
DIGITALISATION





Electric microgrids

Smart planning  
and management

Green energy  
production,  
conversion, and  
storage

Nearly zero energy  
smart buildings

Heating, Ventilation,  
Air-conditioning and  
Cooling

Waste and water  
management

Buildings interior  
(ambient)



Electric microgrids

Smart planning  
and management

Green energy  
production,  
conversion, and  
storage

Heating, Ventilation,  
Air-conditioning and  
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Nearly zero energy  
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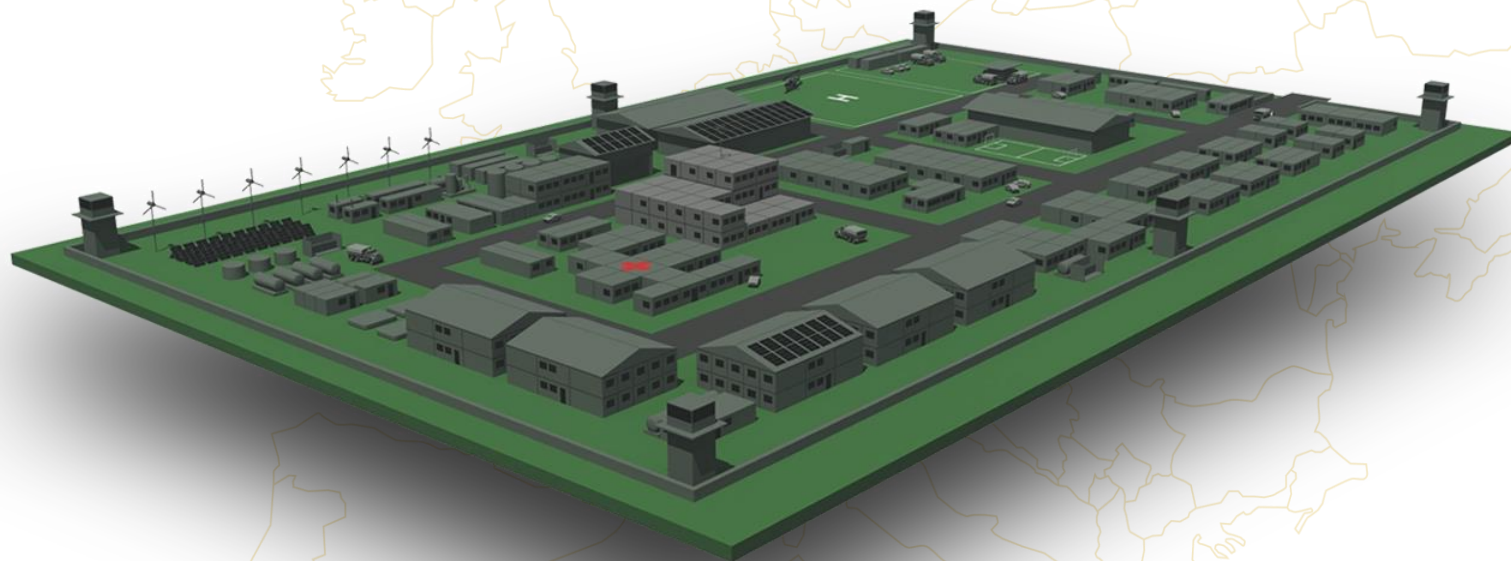
Waste and water  
management

Buildings interior  
(ambient)





- **Strengthening international presence of Slovenian civilian stakeholders with support of the SI MoD**
- **Strengthening international collaboration**
- **Identification of interests to establish an EU innovation cluster (innovation hub) on military and dual-use energy-related and energy-efficient.**
- **Active involvement in coordination and preparation of strategic roadmaps with other EU countries (active in all energy environment related topics / EDF calls.**





**Si EnE**

Energy and environmental challenges in defence

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- Supporting the greening transition of the security and defence sector.

**in defence**

# **WHY NOT?**



**SiEnE** | Slovenian  
Energy and Environment  
Partnership in Defence

ONE CONTACT POINT

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