



CERTH
CENTRE FOR
RESEARCH &
TECHNOLOGY-HELLAS



**Information
Technologies
Institute**

Successful Proposal Submission: Practical Advices and Experience from Participating in Projects

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Center for Research & Technology Hellas (CERTH)

Founded in 2000 and is one of the leading R&D centers in Greece

Includes five (5) institutes:

- Chemical Process & Energy Resources Institute (CPERI)
- **Information Technologies Institute (ITI)**
- Hellenic Institute of Transport (HIT)
- Institute of Applied Bioscience (INAB)
- Institute of Bio-Economy and Agri-Technology (iBO)

>800 employees

>1500 research projects

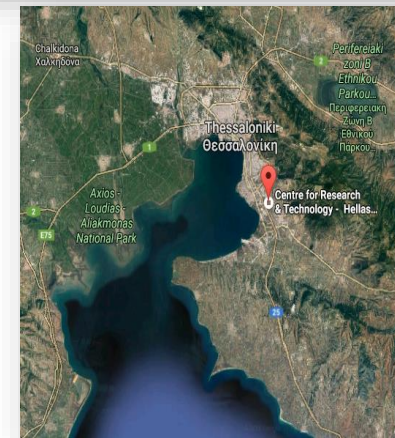
>1500 international partners

Annual financing ~ € 25M:

- 25% industrial research contracts
- 60% research projects
- 15% government institutional funding



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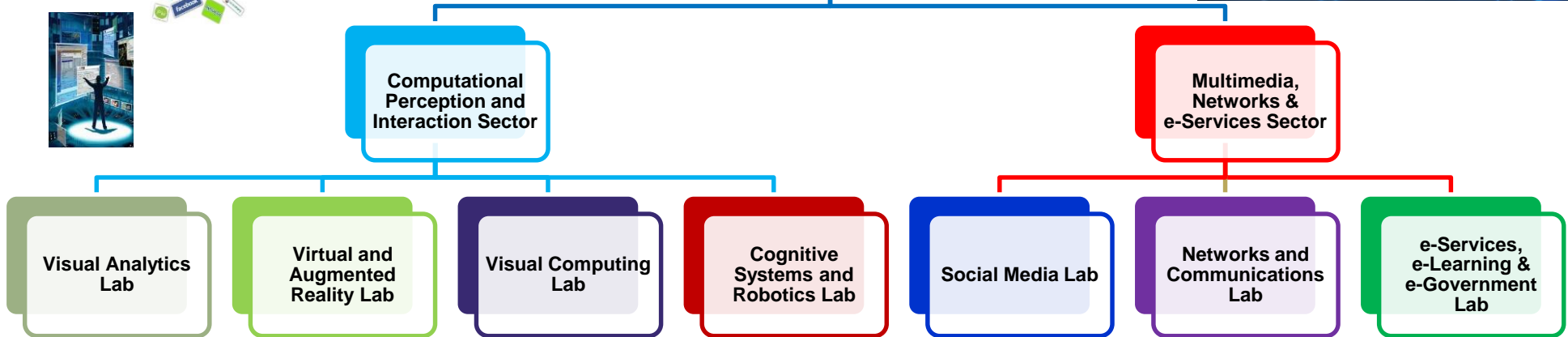
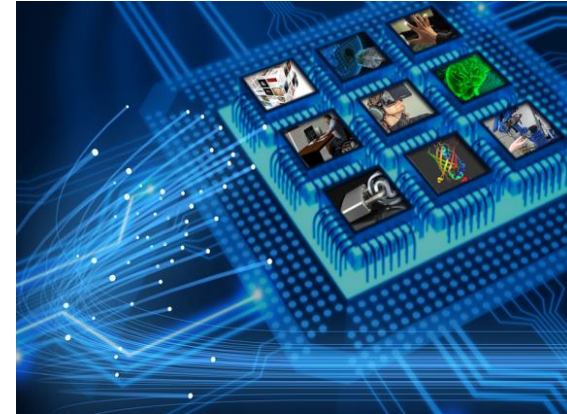
Listed among **TOP-20 E.U. institutions** with the highest participation in competitive research grants

CERTH/ITI Addressing Major Challenges ...

CERTH/ITI is currently running...

100 Horizon2020

EC co-funded Research Projects



7 Research Labs

CERTH/ITI Experience in Energy Efficiency projects



Adapt4EE - Occupant Aware, Intelligent and Adaptive Enterprises

Call: FP7 ICT STREP, Duration: 11/2011 - 10/2014

Role: Project Coordinator



INERTIA - Integrating Active, Flexible and Responsive Tertiary Prosumers into a Smart Distribution Grid

Call: FP7 ICT STREP, Duration: 10/2012 - 9/2015

Role: Project Coordinator



GreenSoul - Eco-aware Persuasive Networked Data Devices for User Engagement in Energy Efficiency

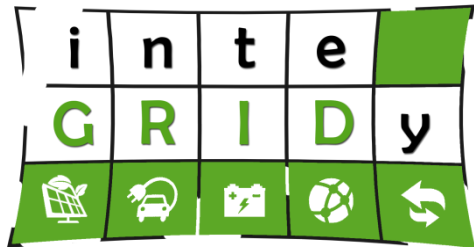
Call: H2020-EE-2015-2-RIA, Duration: 4/2016 - 3/2019



enCOMPASS - Collaborative Recommendations, Visualisation and Adaptive Control for Personalised Energy Saving

Call: H2020-EE-2016-7-IA, Duration: 11/2016 - 10/2019

CERTH/ITI Experience in Energy Efficiency projects



InteGRIDy - Integrated Smart GRID Cross-Functional Solutions for Optimized Synergetic Energy Distribution, Utilization Storage Technologies

Call: H2020-LCE-02-2016-IA, Duration: 01/2017 - 12/2020



SMILE - Smart IsLand Energy systems

Call: H2020-LCE-2-2016-RIA, Duration: 05/2017 - 04/2021



Plug-N-Harvest - PLUG-N-play passive and active multi-modal energy HARVESTing systems, circular economy by design, with high replicability for Self-sufficient Districts Near-Zero Buildings

Call: H2020-EEB-07-2017-IA, Duration: 09/2017 - 11/2021

Role: Project Coordinator



IRIS - Integrated and Replicable Solutions for Co-Creation in Sustainable Cities

Call: H2020-SCC-01-2017-IA, Duration: 10/2017 - 09/2022

CERTH/ITI Experience in Energy Efficiency projects



PLANET - Planning and operational tools for optimising energy flows and synergies between energy networks
Call: LCE-2017-SGS, Duration: 11/2017 - 10/2020



eDREAM - Enabling new Demand REsponse Advanced, Market oriented and secure technologies, solutions and business models
Call: H2020-LCE-01-2017-RIA, Duration: 01/2018 - 12/2020



SIT4Energy - Smart IT for Energy Efficiency and Integrated Demand Management
Call: Greek-German Call, Duration: 03/2018 - 02/2021
Role: Project Coordinator



DELTA - Future tamper-proof Demand rEsponse framework through seLf-configured, self-opTimized and collAborative virtual distributed energy nodes
Call: H2020-LCE-01-2017-RIA, Duration: 04/2018 - 03/2021
Role: Project Coordinator

Adapt4EE at a Glance

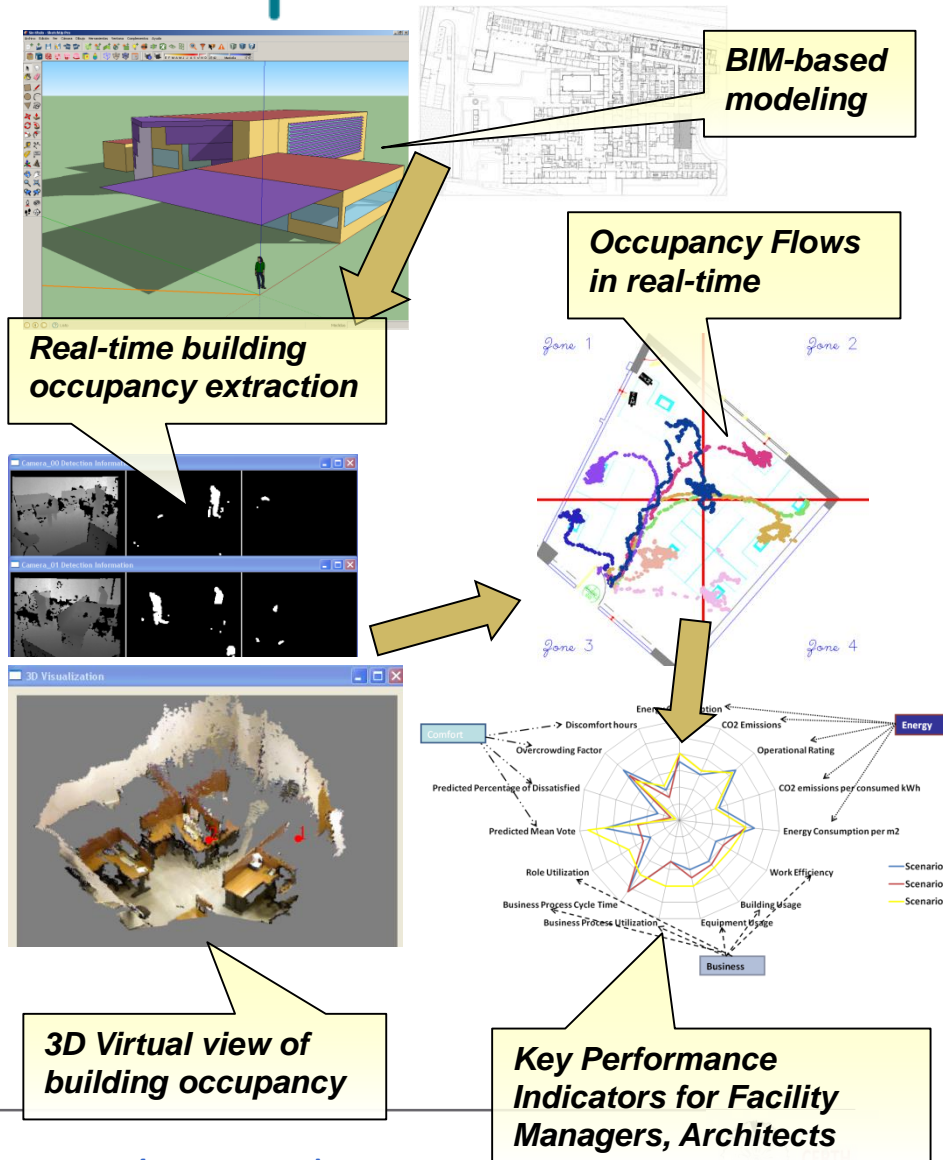


Adapt4EE aims at **augmenting the contemporary architectural envelope by incorporating business and occupancy related information** to the early construction products.

Provides a holistic approach to the **design and evaluation** of the **energy performance** of construction products at an **early stage** and prior to their realization

The group develops technologies to support Energy Efficiency in Buildings:

- **Occupancy modeling, extraction and human tracking** in building spaces
- **Visual Analytics** technologies for enriched Building Performance Simulation analysis
- Building **occupancy simulation**
- Building **energy performance simulation**



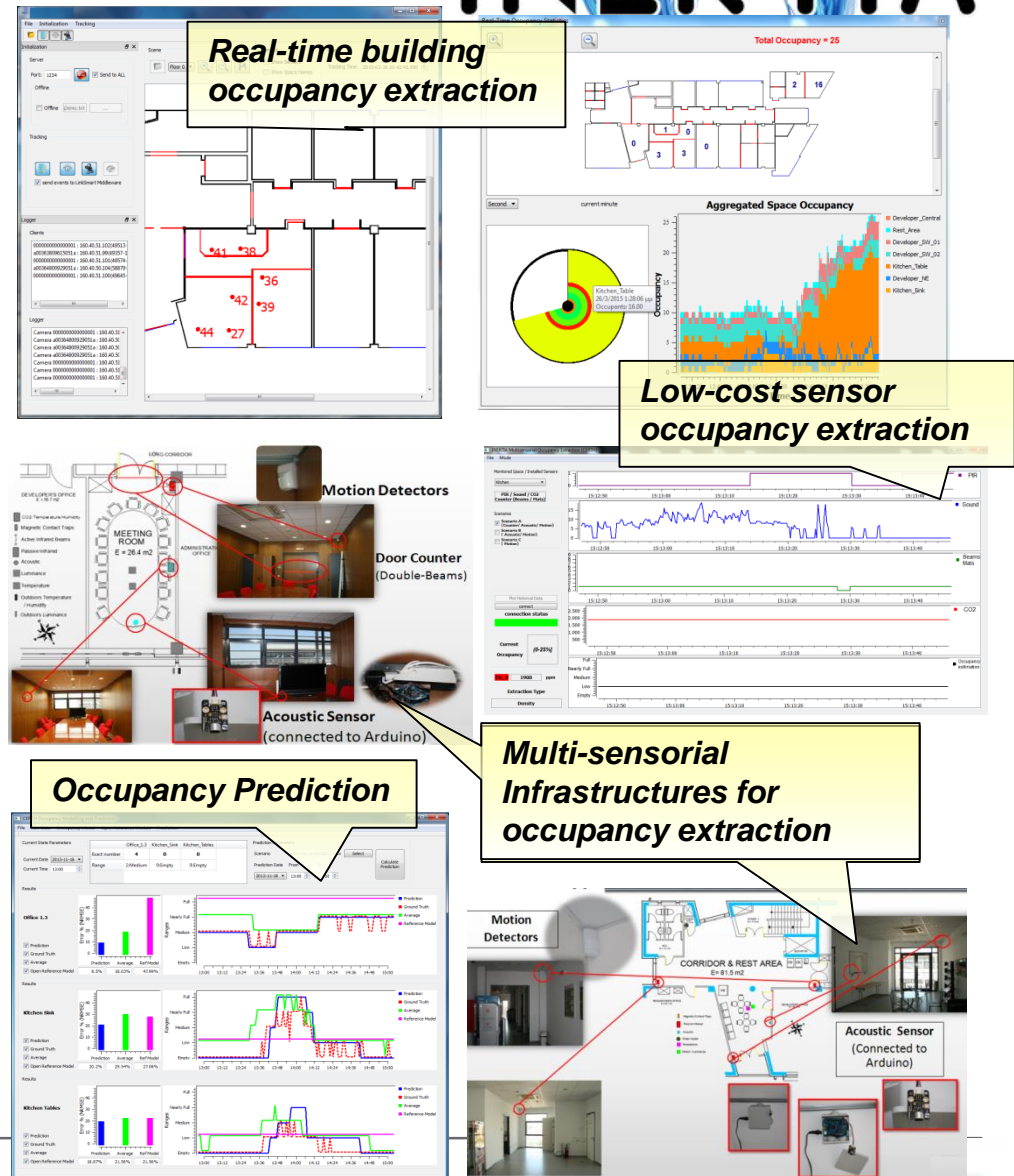
INERTIA at a Glance



Demand Side Management Framework using load flexibility «smaller» consumers (buildings) & energy distributed generation (Distributed PV/Wind Generators)

The group develops technologies to support Smart Buildings Energy Efficiency Management based on real-time context and Occupants' comfort:

- **Multi-sensorial occupancy extraction** utilizing data fusion techniques from low-cost sensors & depth-image cameras in building spaces
- **Occupancy modelling and prediction** based on real-time context
- **Building performance simulation**
- **Integrated building management system**



GreenSoul at a Glance



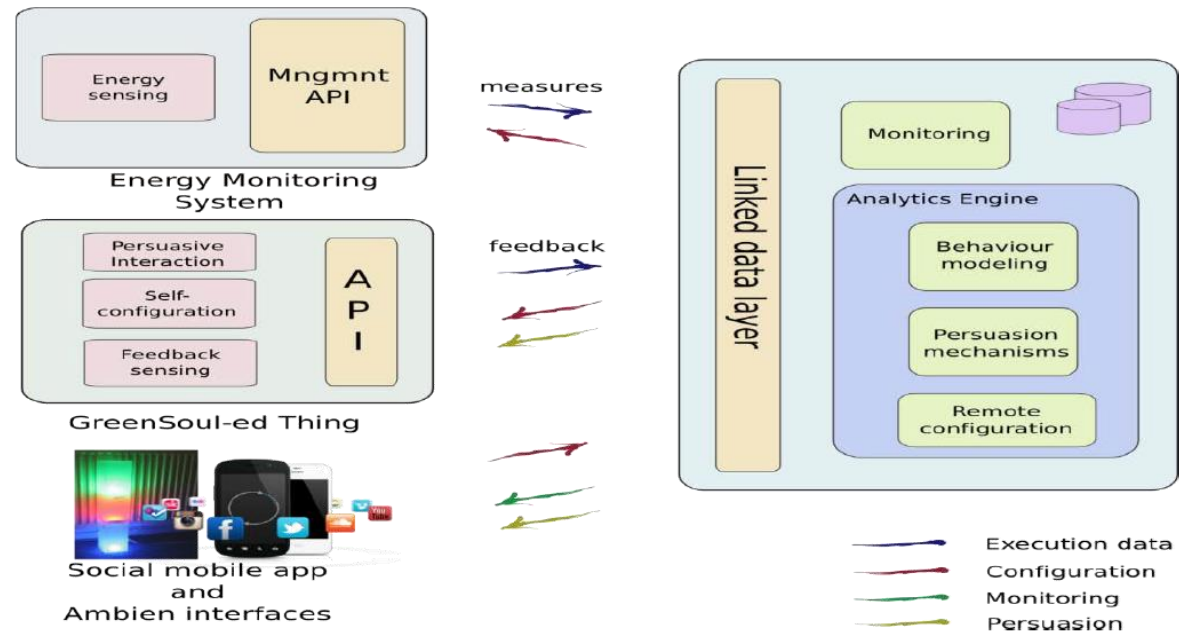
GreenSoul aims to reduce energy misuse in public spaces, by **convincing users to change their behavior** towards sustainability, through network data devices.

Its main focus is to:

- Develop a **novel socio-economic model**
- **Persuade users to increase their energy-awareness**
- **Embed intelligence** into the networked (GreenSoul-ed) devices
- Change user **energy-related behavior**

The group develops technologies to support Energy Savings in Buildings:

- **Occupancy and socio-economic modelling** of the occupants in public use buildings
- **GreenSoul-ed lighting devices** towards energy saving
- **Decision Support System** for extracting the optimal operational status of a building



enCOMPASS at a Glance

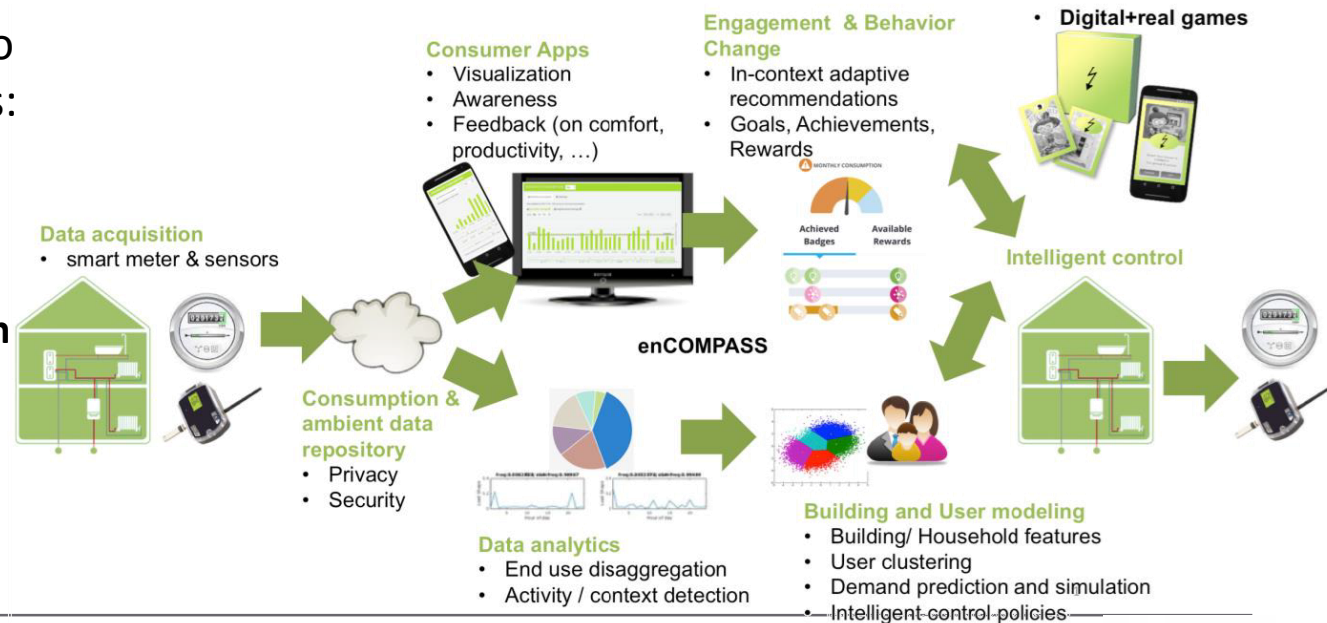


enCOMPASS will implement and validate an integrated socio-technical approach to **behavioral change** for energy saving:

- **Design innovative user-friendly digital tools**
- making **energy data consumption available and understandable**
- **empowering users to collaborate** to achieve **energy savings**
- **manage users' energy needs** in energy efficient, **cost-effective** and **comfort-preserving** ways

The group develops technologies to support Energy Savings in Buildings:

- **Building occupancy and comfort levels inference** based on energy consumption in building spaces
- **Energy consumption disaggregation** technologies
- **Activity detection** algorithms



inteGRIDy at a Glance

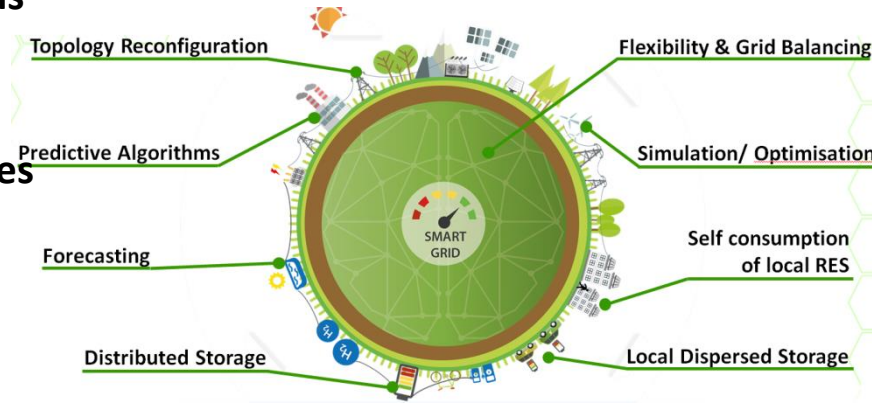



inteGRIDy aims:

- to **integrate** cutting-edge **technologies, solutions & mechanisms**
- in a **scalable Cross-Functional Platform** of replicable solutions
- to **connect** existing energy networks with diverse stakeholders with enhanced observability of **generation/consumption profiles**

which will facilitate:

- the **optimal** and **dynamic** operation of the Distribution Grid,
- fostering grid **stability** and **coordinating Distributed Energy Resources (DERs), Virtual Power Plants (VPPs)** and collaborative **Storage schemes**
- within a continuously **increased** share of Renewable Energy (RES)



Powerful Visual Analytics & HMI's			Security, standardization, privacy, protection	 <p>Optimal & Dynamic operation of the Distribution Grid</p>
Modelling and profiling mechanisms	Predictive algorithms and forecasting tools	Dynamic scenario-based simulation		
Creation of a reference scalable Cross-Functional Platform (CMP)				
Integration (of) cutting-edge technologies, solutions, mechanisms (with) smart-metering/automation systems , IoT infrastructures				

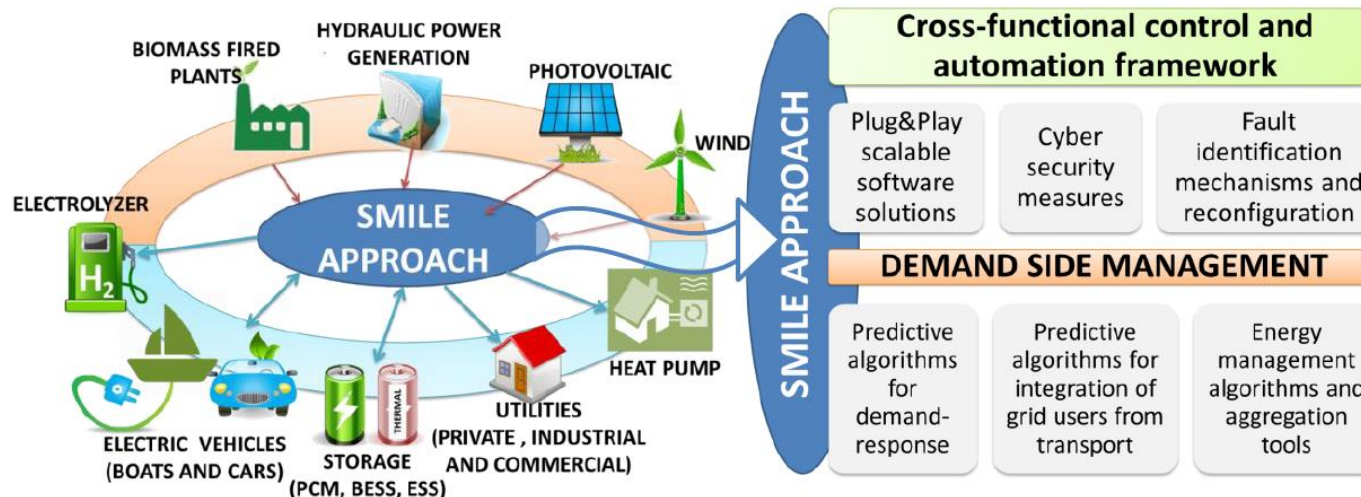
SMILE at a Glance



SMILE aims to develop a stable and secure system for **grid demand side management** integrating **battery technology, power to heat, power to fuel, pumped hydro, EVs, electricity stored on board of boats.**

Its main focus is to:

- Design and develop a **cross-functional control and automation framework**
- Integrate technological solutions for **grid smartness improvement**
- Implement **predictive algorithms** enabling effective **DR** and **smart integration of transport**
- Implement **Energy Management algorithms** and **aggregation tools**
- Demonstrate **Phase Change Material (PCM) thermal, storage** and **electrochemical energy storage systems**
- Develop a **multi-criteria decision tool** for ranking of solutions
- Develop Business Models and Investment Plans



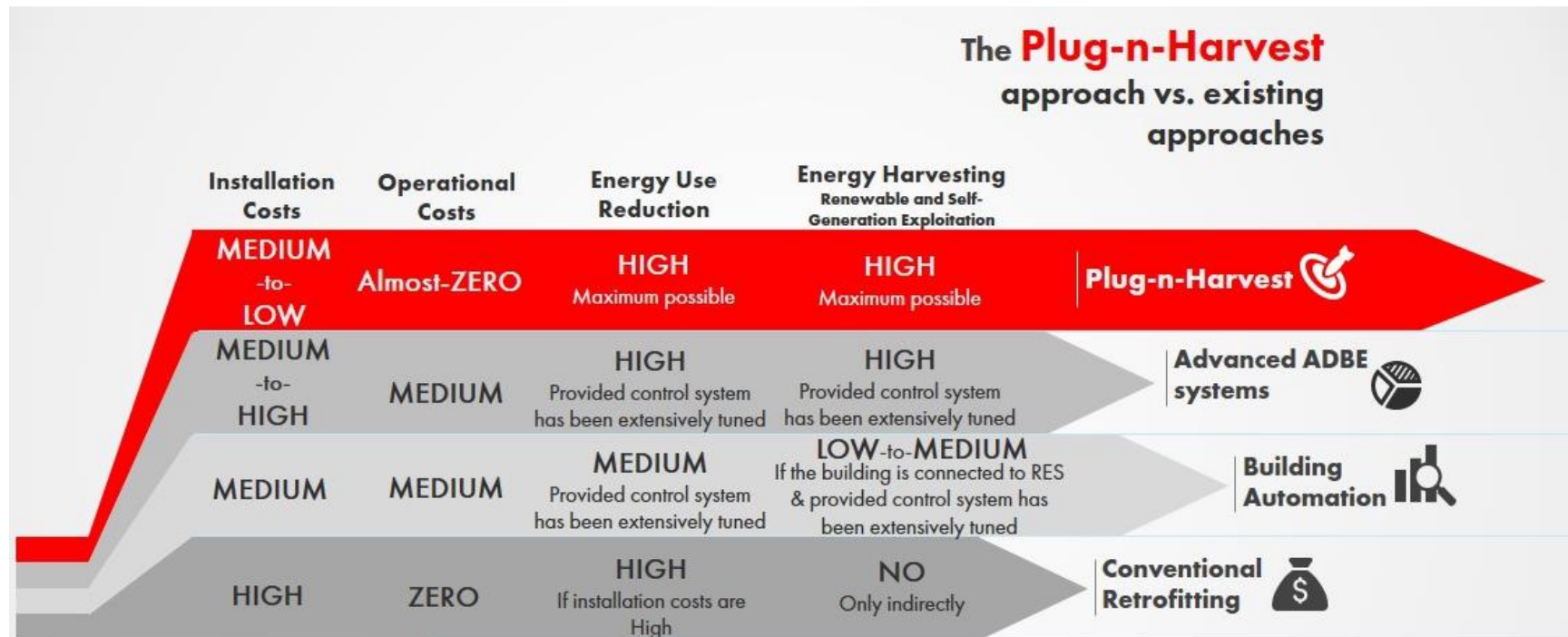
Plug-N-Harvest at a Glance



PLUG-N-HARVEST aims to design, develop, demonstrate and exploit a new *modular, plug-n-play* concept/product for **Adaptable/Dynamic Building Envelopes (ADBE)** - deployable to both residential and non-residential buildings

PLUG-N-HARVEST will provide:

- high energy use reductions
- high energy harvesting from RES
- medium-to-low installation costs
- almost-zero operational costs



IRIS at a Glance

IRIS Smart Cities project aims to demonstrate **Innovative Smart Cities Solutions** in 3 Lighthouse cities (Utrecht-NL, Göteborg-SE and Nice-FR) and 4 Follower cities -> deliver **energy, mobility** and **ICT** services that are **cheaper**, better **accessible**, **reliable**, and that contribute to a better and more **sustainable urban quality of life**.

5 interdependent Transition Tracks: enabling transition towards **reduced energy demand** and **increased shares of renewables** and **e-mobility** in the urban energy and mobility systems:

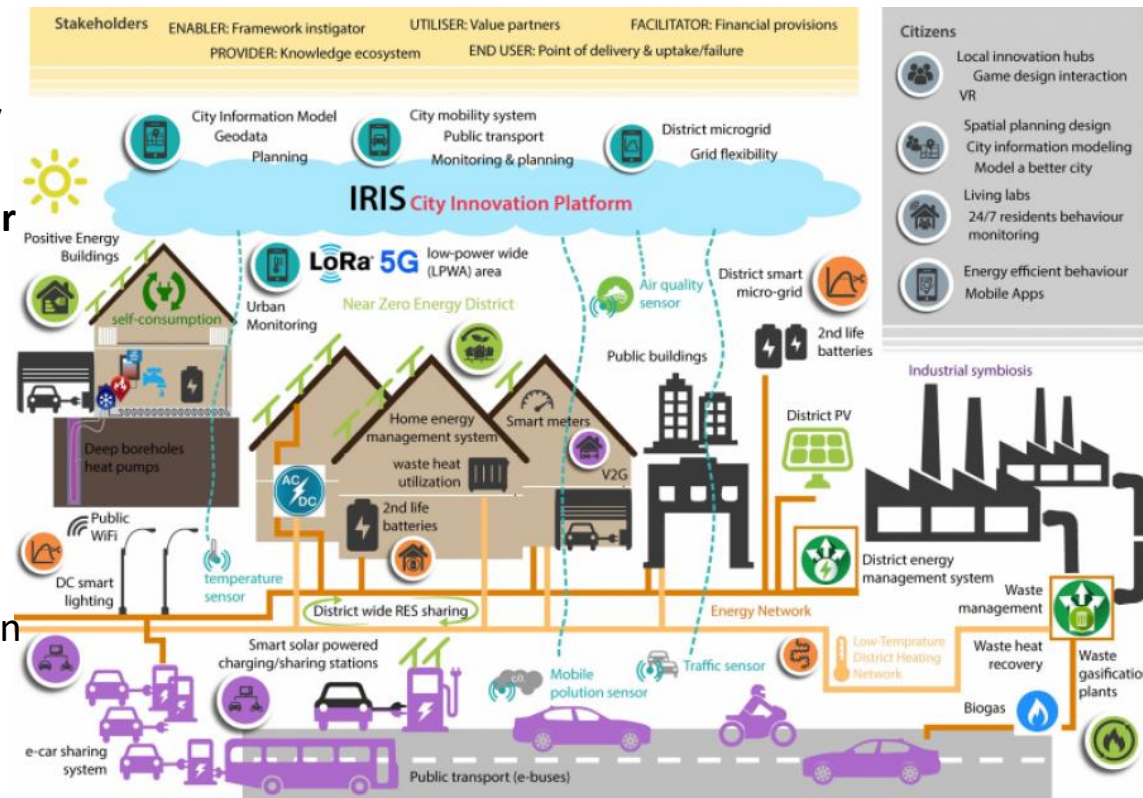
T.T. #1: Smart renewables and closed-loop energy positive districts: savings at building / district level (e.g. PV/ biomass district heating, near zero energy housing retrofit)

T.T. #2: Smart Energy Management and Storage for Grid Flexibility: Smart energy management/ renewable energy storage (e.g. self-consumption, grid flexibility, V2G storage).

T.T. #3: Smart e-Mobility: EVs & e-car sharing systems in the urban mobility system offering (e.g. zero-emission mobility, V2G charging stations)

T.T. #4: City Innovation Platform: Cutting edge information technology & data framework based on open standards / APIs

T.T. #5: Citizen engagement and Co-Creation: Inclusive services for citizens (save energy, shift energy consumption, use electric vehicles etc.)



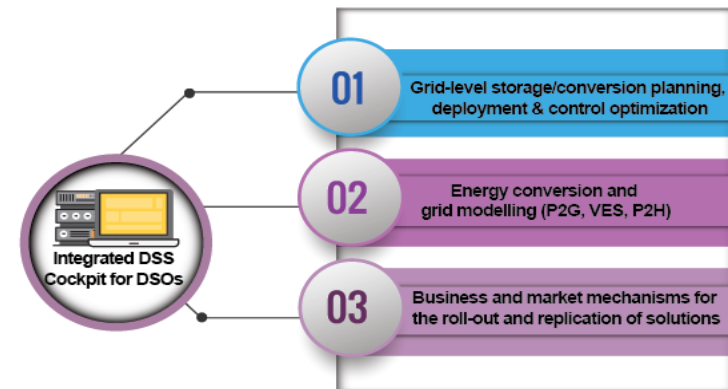
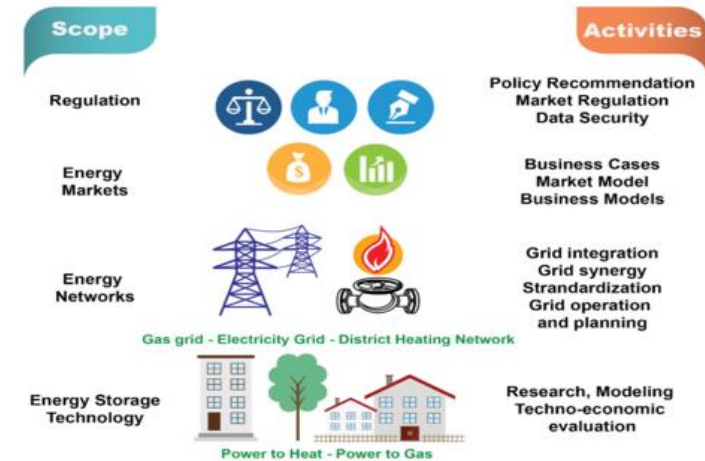
PLANET at a Glance



PLANET aims to design and develop a holistic **Decision Support System** for grid operational planning and management in order to explore, identify, evaluate and quantitatively assess optimal strategies to **deploy, integrate and operate conversion/storage systems on the distribution grid** of several energy carriers within boundary constraints of real deployments outlined in the **future energy system** scenarios.

The group develops technologies for:

- Common Information Model definition
- Communication Middleware development & configuration
- Integrated DSS and Monitoring/Orchestration Cockpit (IDOC)
- District-level storage/conversion management & coordination engine for grid stabilization
- Simulation Model Generator & configuration of simulation suite
- System validation and impact assessment



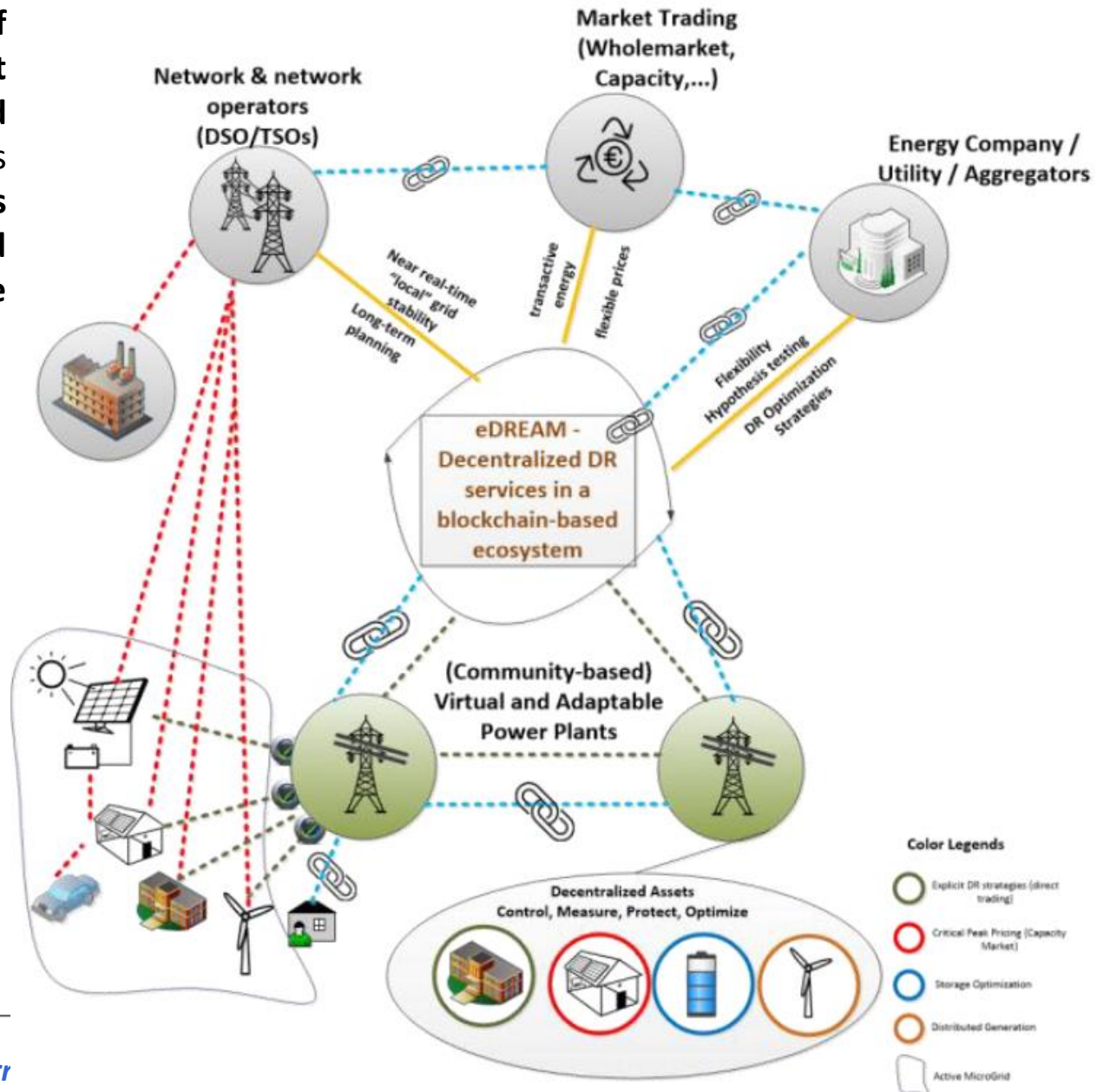
eDREAM at a Glance



eDREAM aims to the transfiguration of traditional market approaches and smart grid operations into novel decentralized and community-driven energy systems fully exploring local capacities, constraints and Virtual Power Plants-oriented optimization in terms of local and secure grid nodes stabilization.

eDREAM will conduct pioneer research at:

- closed-loop DR environment
- novel blockchain based NRT distributed ledger for notifying the DSOs about the effective amount of service delivered
- novel big data clustering and segmentation techniques
- new techniques for assessing DR capabilities
- a multi-scale and interactive visualization platform based on graph analytics
- innovative business models



DELTA at a Glance



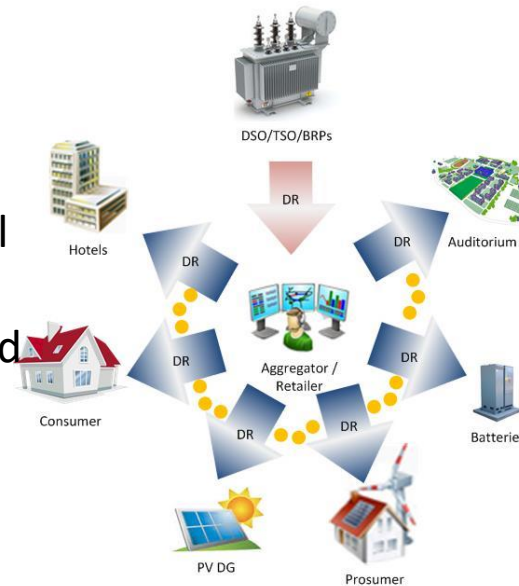
DELTA

DELTA proposes a demand-response management platform that **distributes parts of the Aggregator's intelligence** into lower layers of its architecture, in order to establish a more easily manageable and computationally efficient DR solution.

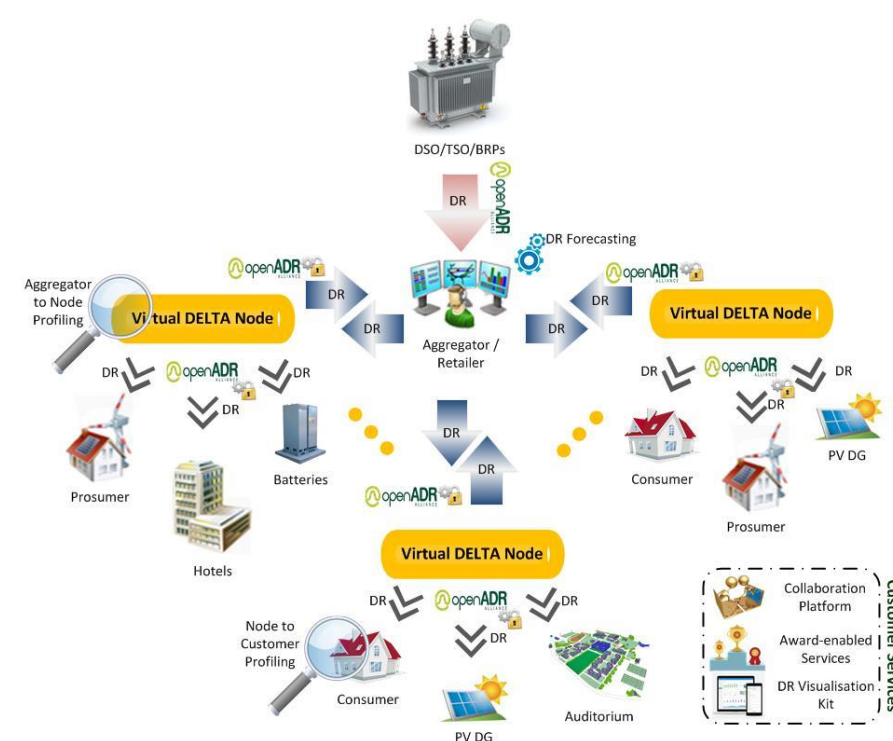
Main technologies are:

- A fully **autonomous architectural design**
- A **social collaboration platform** and **personalized UIs**
- Novel **multi-agent based, self-learning algorithms** to enable **aggregation, segmentation and coordination** of several diverse clusters, consisting of supply and demand assets.
- **Novel block-chain methods and authentication mechanisms**

Current DR in the GRID



DELTA Framework DR



H2020 Proposal Preparation Planning



Good Practices

Horizon 2020: Three priorities



What is new in 2017-2019 Calls

- Increased support to **cross-cutting activities**
- Consolidation and strengthening of the **SME instrument**
- Fewer and broader topics, with higher budget per topic and overall
- Reinforcement of **international cooperation**
- More **precision, focus and clarity** in the topic descriptions (notably the **expected impacts**)...while keeping up an open and non-prescriptive approach

H2020 requirements

- At least Every Word in the Scope is IMPORTANT! Emphasize in every Word...



HORIZON 2020 – WORK PROGRAMME 2014-2015
LEIT – Information and Communication Technologies

Scope:

a. Research & Innovation Actions

Application driven core photonic technology developments for a new generation of **photonic devices** (including components, modules and sub-systems). Focus is on the following topics:

- **Optical communication for data centres:** **Low-cost, energy-efficient** photonic devices supporting radically new system and network architectures driven by the emergence of exa-scale cloud datacentres. Actions should focus on optical inter- and intra-data centre **transmission, switching and interconnects** facilitating Tb/s interface speeds and **Pb/s network throughput.**

H2020 requirements

- The Expected Impact is also a good starting point!

Expected impact:

a. Research & Innovation Actions

- Improved business opportunities and value creation in Europe by reinforced cooperation along the value chain.
- Secured and reinforced industrial technology leadership and substantially increased market presence in high-bitrate optical communications for data centres and in laser-based manufacturing of high-quality products.
- At least 10-factor reduction of power consumption and cost in communication technologies for (exa-scale) data centres.
- Significant productivity increase and substantial leverage effects to many industries using laser-based manufacturing.
- Measurable productivity increase in the manufacturing of complex PICs and sustained break-through innovations in new photonic products fabricated in Europe.

Project planning – first steps

Develop project idea

- ✓ Define objectives
- ✓ Strategic planning
- ✓ Select suitable type of project/funding scheme

Select partners

- ✓ Detailed project outline
- ✓ Resource planning
- ✓ “Brain-storming”- meetings
- ✓ Lobbying (?)

Project planning – first steps

Ask yourself:

- ... is the idea innovative?
- ... call published?
- ... deadline?
- ... do I *know* all formal requirements?
- ... do I *meet* all formal requirements?
- ... composition of consortium in line with requirements?
- ... is my budget calculation in line with the funding limit?
- ... laboratory/office properly equipped for planned work?
- ... (bio)ethical limitations?
- ... all resources available to implement the project?
- ... keywords?
- ...

Indicative Time Schedule

<p>1st stage</p> <p>Preparation Phase Core Group Discussions</p>	<p>Aim of the project, research question, identification of the Core group, Distribution of work to the core group, potential partners</p> <p>(Science, Management and Editors!!)</p>	<p>At least 3-4 months before deadline</p>
<p>2nd stage</p> <p>Preparation of first draft of Proposal (Objective, Workplan)</p>	<p>Proposal writing</p> <p>(inputs from partners – WP leaders and coordinator!)</p>	<p>At least 3 months before Deadline</p>
<p>3rd stage</p> <p>Close the partnership/ Preparation of first draft of Proposal</p>	<p>First proposal draft</p> <p>(summarised by lead scientist and support service: science, impact, implementation)</p>	<p>At least 2 months before Deadline</p>
<p>4th stage</p> <p>Whole group meeting</p>	<p>Final agreement</p> <p>(aim and research question, WP, timeline, outputs/deliverables, budget, etc.)</p>	<p>1-2 months before deadline</p>
<p>5th stage</p> <p>Full proposal completion</p>	<p>Final Proposal writing (including editing, proof reading and external review)</p> <p>(Lead scientist, Support service, External experts)</p>	<p>Last month</p>

Lessons Learned - H2020 Calls

- **EC Recommendations:** *Start early, a good proposal needs time and evolution. Keep partners active during the whole proposal preparation procedure.*
- *Set up a winning proposal preparation team*
- *One or maximum two editors of the main document*
- *Organise telcos with key contributors*
- *Read background documents (refer to text from those documents in the Motivation/Positioning of the Project and Impact Sessions)*
- *Identify key partners in the specific Call*
- *Do not reinvent the wheel: Check what has been funded in the area in FP6, FP7 and in the first H2020 Calls*
- **Key!!! Do not start proposal set up before you convince yourself and at least one more key participant in the project that the idea is innovative!**

Lessons Learned - H2020 Calls

- **Excellence:** *your chance for your selling points. Make choices, focus, have a clear direction, remove unnecessary elements, innovate. Win by explaining, not by hiding information.*
- **First 10 pages** of the proposal → **Crucial for the success!!!**
- **Objectives:** *Be ambitious, be concise, focus, do not forget evaluation/testing, do not forget the business aspect.*
- **Relevance to the Call:** *Very important! Needs thorough thinking*
- **Progress beyond SoA** → **Highlight it!**
- **List of references** → **Up to date!**

Lessons Learned - H2020 Calls

- **Impact:** *Be ambitious. Quantify, plan activities to monitor your performance. Keep links to your actual workplan.*

Impact: Beyond State of the Art and time to market!

- *Focus on impact identified in the WorkProgramme: **Link text from the background documents with text from your objectives.***
- *Do not forget, societal/economic impact, Impact on SMEs.*
- *Show the complementarity and European added value of the consortium*
- *List of indicative products! **Swot Analysis also Important***
- *List of targeted events!*
- *Business Plan!*
- ***IPR issues!***



Lessons Learned - H2020 Calls

- **Implementation:** Invest time into your work plan – this is the opportunity to convince evaluators that you can materialise your vision. Invest time into your resource planning, bottom-up.
- Use your **lobbying skills** to identify which is the optimal funding that the proposal should target (depending on the call it could range from the minimum to the maximum or the average of the indicative figures provided by the EC)
- Be as **realistic** as possible with cost calculations
- Justify, justify, justify → personnel involvement, equipment, travel costs, other costs
- **Workpan:** Do not exaggerate!!! It is not realistic to assign 36 PMs per partner for a specific 1-year task
- **WorkPackage** descriptions should be very carefully written to summarize the work to be done but not repeat what is written in other sections

Thank you for your attention!

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