

EG3: Roles and Responsibilities of Actors in Smart Grids Deployment - Final Report -

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Agenda

- Expert Group 3 scope
- Achievements and recommendations
- Future prospects

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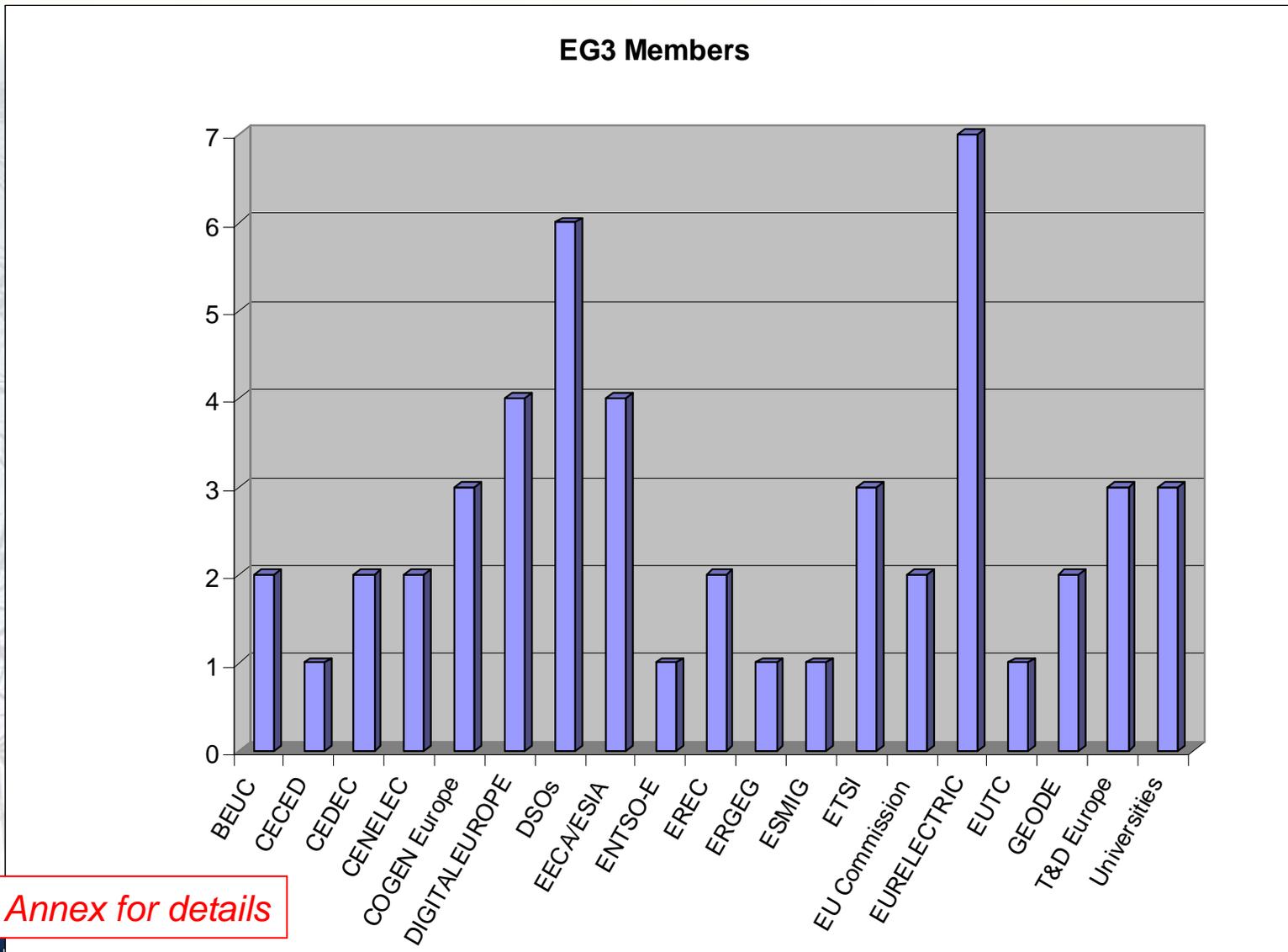
EG3 Deliverable: Key Elements

- Recommendations on the roles and responsibilities of all involved actors in the implementation of Smart Grids;
- Definition of criteria and recommendations for the funding of Smart Grids deployment;
- Recommendations to the EU Commission regarding the needs for any additional legal framework at the EU level, in support of the Smart Grids deployment.

EG3 Scope of Work: Details (→ Vision)

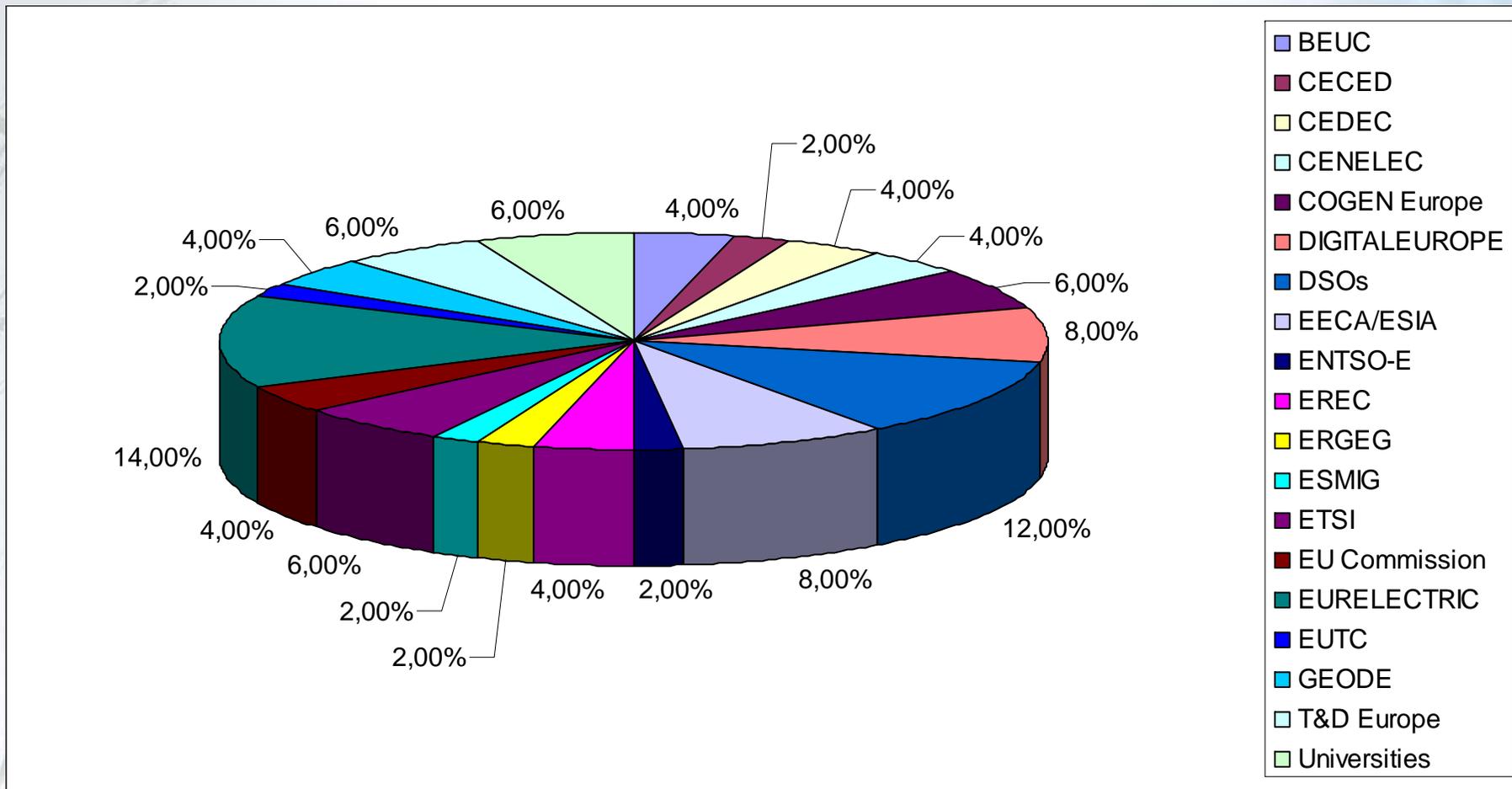
- *“Explore ways in which the deployment of Smart Grids can be encouraged or incentivised to help EU's objectives on climate change and energy policy*
- *Based on the expected services of Smart Grid, define strategic activities and duties that must be performed along the value chain by all different identified actors*
- *For various identified parties define the interaction among them, the issues and the advantages of the assigned tasks*
- *Define the interfaces that need to be regulated*
- *Recommendations on policy and regulatory directions for these interfaces*
- *Identify main barriers to the implementation of Smart Grids and explore the regulated markets involved in Smart Grids*
- *Handling of reasonable costs resulting from implementation of Smart Grids under the regulatory regime (including cost-allocation, tariff approval and roll-out plans and responsibilities)*
- *Provide regulatory recommendations for the implementation of coordinated pilot projects on Smart Grids at European-scale; identify WWW (who, how and when)*
- *Elaboration of public-private partnerships models for Smart Grid roll-out*
- *Produce a cost-benefit template to be used in future cost assessments”*

EG3 Members*



** see Annex for details*

EG3 Structure



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- **Achievements and recommendations**
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- Key issues from the individual inputs by the EG3 → first questionnaire
 - Expected benefits from Smart Grids for the own organisation;
 - Smart Grids features provided by the own organisation;
 - Smart Grids features needed from other players;
 - Decision criteria for the deployment of specific Smart Grids features
 - Own organisation roles & responsibilities in the Smart Grids deployment;
 - Interfaces and interaction with other players
 - Funding options
- Synthesis of the detailed information (answers from above) → first deliverable draft

- EG3 meetings
 - 11. February 2010; 22. March 2010; 22. April 2010 (telephone conference); 10. May 2010 (first complete draft deliverable); 09. June 2010 (final deliverable)
- EG3 deliverable structure
 1. Introduction
 2. Roles & Responsibilities – Current Status
 3. Interfaces and Interaction
 4. Benefits, Criteria and Recommendations for Funding of Smart Grids Deployment
 5. Roles and Responsibilities – Recommendations on Scope, Policy and Regulatory Directions
 6. Conclusion
 7. Glossary and Abbreviations
 8. List of References

Roles & Responsibilities Current Status

- Grid Operators
 - TSOs
 - DSOs
- Grid Users / Customers
 - Generators
 - Customers / consumers (industrial, transportation, buildings, homes)
 - Suppliers
 - Retailers
- Energy Market Place
 - Power Exchanges
 - Balance Responsible Party
 - Clearing & Settlement *(Terms & definitions in line with the Directive 2009/72/EC) and EG1*

Roles & Responsibilities

Current Status *(cont'd)*

- Providers of Technologies, Products and Services
 - Electric power grid equipment vendors
 - Ancillary services providers
 - Metering point service providers
 - Metering point service operators
 - ICT Service providers
 - Grid communication network providers
 - Home appliances vendors
 - Building automation / energy management providers
 - Electric transportation / vehicle solution providers

(Terms & definitions in line with the Directive 2009/72/EC) and EG1

Roles & Responsibilities

Current Status *(cont'd)*

- Influencers
 - Grid users / customers / consumers
 - Regulators
 - Standardization bodies
 - EU and national legislation authorities
 - Financial sector undertakings

(Terms & definitions in line with the Directive 2009/72/EC) and EG1

Recommendations on Interfaces & Interaction

Interfaces Recommendation #1: EG3 recommends that DSOs and TSOs implement a two-fold strategy in a coordinated way, including **supply management** and **capacity expansion in regions with high generation potential**.

Interfaces Recommendation #2: EG3 recommends that the appropriate framework and incentives are introduced for **Distributed Generation (DG) to provide a range of ancillary services** (e.g. voltage-reactive power control, etc).

Interfaces Recommendation #3: EG3 considers that the TSOs and DSOs must significantly enhance the exchange of information and coordination, embracing activities such as **power flow management, voltage control, alarm surveillance & fault management**, in order to be able to maintain a reliable and stable system.

Interfaces Recommendation #4: **WAMS (wide area monitoring system)** are already being used by TSOs to get a view of wide-area phasor oscillations and detect dynamic instabilities. Similar systems adapted to the properties of LV and MV networks could be a benefit for the operation of DSOs in the future⁹.

Recommendations on Interfaces & Interaction *(cont'd)*

Interfaces Recommendation #5: EG3 recommends that the future cooperation between different TSOs and between TSOs and DSOs will include reporting of actual power and energy values for all participants in the new market places down to distribution level for settlement but also for data analysis for planning (active or automated). The frequency, handling time and duration for this reporting will depend of the purpose and products being offered on a given market place.

Interfaces Recommendation #6: EG3 recommends that consumers, generators and those who do both, cooperate with traders and suppliers (possibly via aggregators) and establish their participation in any kind of market places under **contractual arrangements** pre-defined with the related DSOs. This will resemble the way how the "large" market participants and generators participate in the wholesale market and cooperate with the TSOs today. They will have to deliver information on their planned market activities to the DSO and the TSO, depending on their kind of participation.

Interfaces Recommendation #7: EG3 recommends interfaces to be specified between communication service providers and the following actors: TSO, DSO, Agregators, Grid Users, BRP, Storage Owners. Theses interfaces are typical user to network interfaces and specify the agreed service level agreements which have a legal and technical part (QoS, security level, privacy, etc.).

Recommendations on Interfaces & Interaction *(cont'd)*

Interfaces Recommendation #8: EG3 recommends regulatory authorities to promote maximum standardisation and interoperability and establish level playing fields that encourage the market to work efficiently and to secure customer participation and market integrity. Regarding the interfaces among the actors, EG3 further emphasizes further the need to clarify the role of DSOs as enablers of demand-side participation in the form of neutral and transparent "information hubs".

Interfaces Recommendation #9: The manifold components of such a system are expected to give incentives for a wide variety of innovation and products for flexible demand or generation, under the condition that there exists an **economic incentive for generators, consumers and those that do both in terms of flexible energy prices**. Moreover, this might extend towards the flexible grid tariffs with Time of Use (ToU) payments.

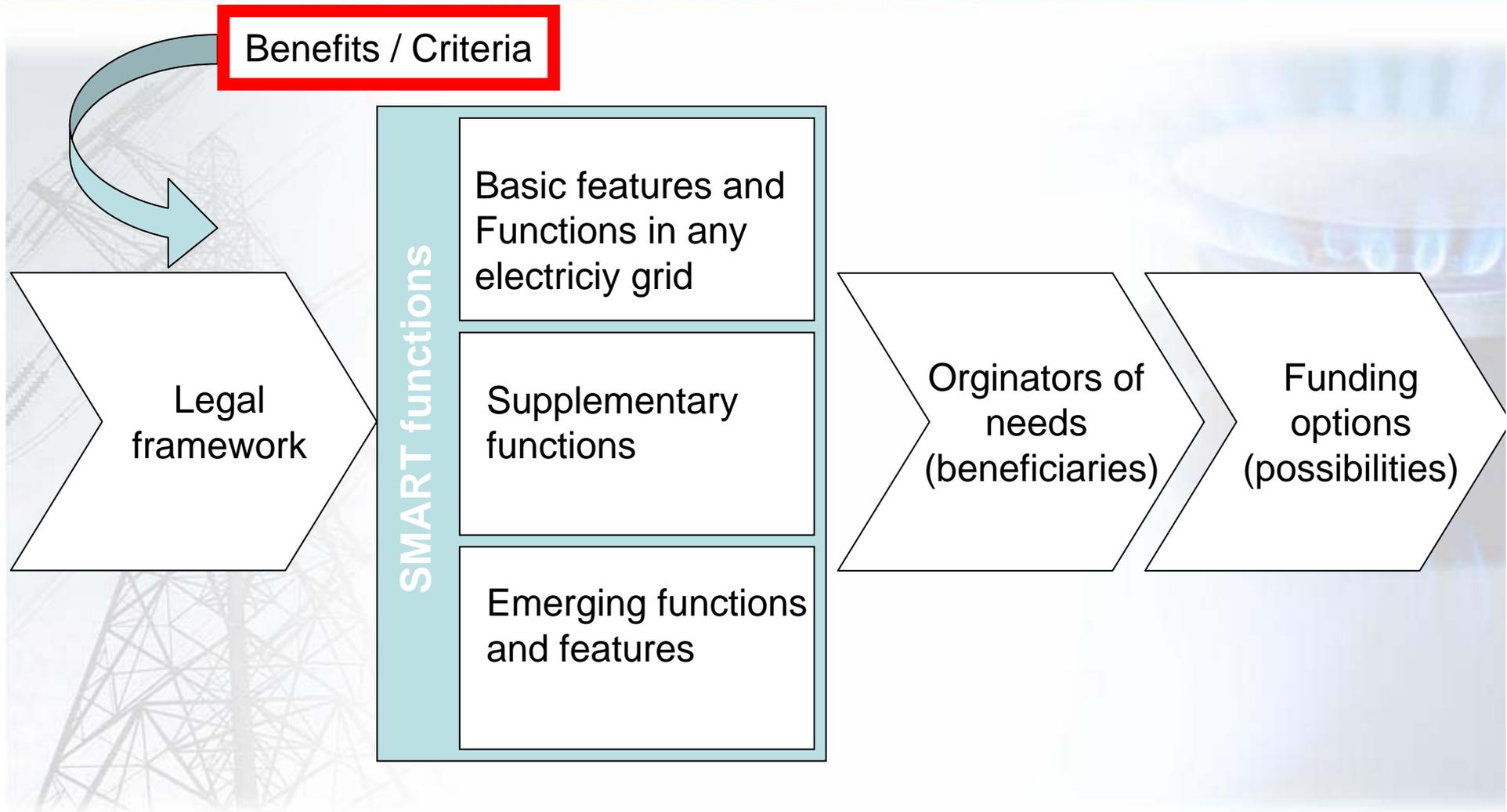
Benefits (& Criteria)

1. Increased sustainability
2. Adequate transmission and distribution grid capacity
3. Adequate grid connection and access
4. Satisfactory levels of security and quality of supply
5. Enhanced efficiency and better service
6. Effective market support
7. Coordinated grid development
8. Enhanced consumer awareness
9. Enabling consumers' informed decisions
10. Market mechanism for new energy services
11. Reduction / mitigating of upward pressure of consumer bills

Regulatory Recommendations

1. Long-term stable regulatory framework and reasonable RoR for cost-efficient grid investments
2. Consider decoupling between profits and volumes of electricity in grids
3. Regulation of outputs to ensure value for money paid by grid users
4. Promote mechanisms favouring consumer awareness of electricity use
5. Encourage the deployment of cost-efficient Smart Grid solutions as alternative for existing ones
6. Evaluate costs / benefits of possible demonstration project taking into account all stakeholders and society as a whole
7. Ensure dissemination of the result and lessons learned
8. Participate in Smart Grids discussions and cooperation activities, especially considering active cooperation with standardization organisations, grid operators and manufacturers
9. Clarify differences between regulated activities and market opportunities for new services
10. Continue the exchange of expertise at European level for best regulatory practices

Benefits, Criteria & Recc. for Funding - Process



Recommendations for Funding

Funding Recommendation #1: EG3 recommends that basic functions need to be provided by Transmission or Distribution System Operators within the scope of the applicable regulation and tariffs - considering legal provisions (Section 4.3). In the distribution grids of today, this is often one kind of incentive regulation, combined with quality regulation.

Funding Recommendation #2: EG3 emphasises the importance to avoid cross-subsidizing or double financing. If some additional funding beyond the regulated tariffs is used, this needs to be considered in relation to any regulatory incentives, to avoid any cross subsidies.

Funding Recommendation #3: EG3 recommends that funding for the supplementary functions (depending on each individual case) is also within the scope of the applicable regulation and tariffs - under the conditions that the overall benefits are passed to all customers paying those tariffs and that transparent and economically efficient deployment is ensured.

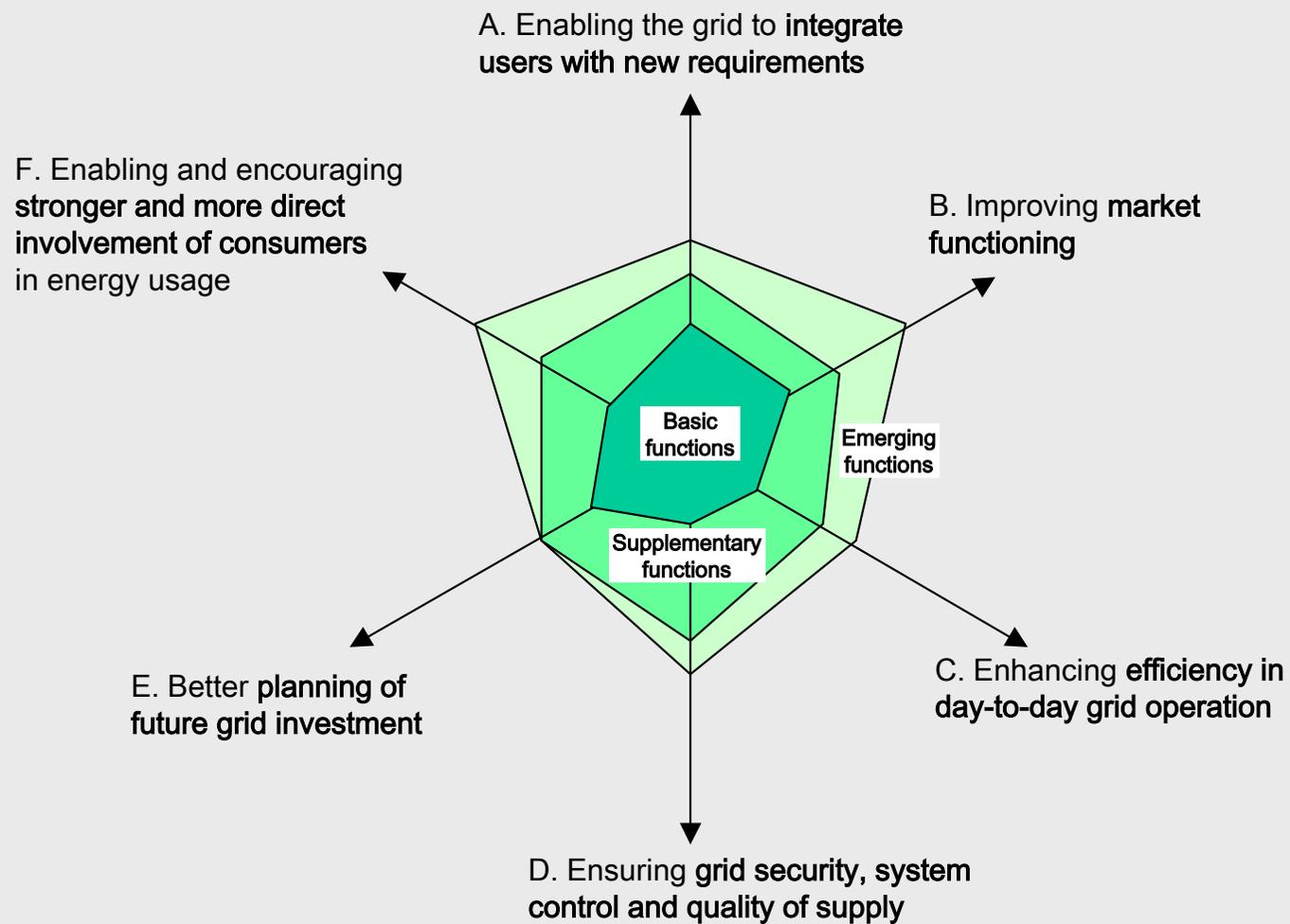
Recommendations for Funding *(cont'd)*

Funding Recommendation #4: In relation to the listed (and possible new, or presently yet unknown) emerging features in combination with the supplementary and basic ones, EG3 recommends to establish a multi-dimensional mapping where the area "spanned" as illustrated in Figure 2 is maximized in terms of Smart Grids benefits and criteria elaborated in Section 4.2.

Funding Recommendation #5: EG3 is of the opinion that in terms of benefits from section 4.2 the key criteria in deciding on possible funding through the additional socialization within grid tariffs, shall be based on the optimized (maximized) area in the Figure 2

Funding Recommendation #6: EG3 recommends that the evaluation of applicable and recommended funding options for the given features in Smart Grids deployment shall be based on completing the template for evaluation of which is described in the following Section 4.6

Evaluation Template



- For each function / feature, search the maximum „area“
- Possibly additionally weight the various parameters
- Key users: grid users + grid operators
- Approach: external / output oriented (rather than internal / detailed / prescriptive)
- Building upon incentives for investments and criteria for the (expected) outcome
- Ex ante decision / ex post evaluation / continued process

Needs for any additional EU Legal Framework

1. **Standardized** approach with focus on interoperability.
2. There is **no need for new Directives or Regulation** but there is a need for a harmonized and effective implementation of the 3rd Package
3. A range of **consumer related issues** need to be addressed
4. Strengthen support for **right and smart investment** and ensure adequate return
5. **Legally enable TSOs and DSOs to fulfil their duties** (also relying on the implementation of the 3rd legislative package and, if necessary correcting a national framework).

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Interfaces Recommendation #10: EG3 recommends that the elements requiring further analysis in terms of interfaces and interactions in Smart Grids deployment include:

- Interfaces between the “storage owners” and the DSOs
- Future down stream interfaces and interaction
- Flexible energy prices, flexible grid tariffs and their impact on the interfaces
- Clearing & settlement systems interfaces and interaction with data collection, data exchange, and electricity flows
- Products and features fostering producers and consumers’ flexibility
- Overview and comparison between flexibility demand and potential on different grid / voltage levels
- Experiences from existing intraday markets
- Efficient ways to communicate with customers
- A higher contribution of DG to the system stability and operational security

Evaluation & Template

- „Practical tool for practical use“
- Dynamic and flexible approach → priorities might change
- EG3 can assist in application
- Adjustments and practical improvements as necessary

Roles & Responsibilities Recommendations

- Technical issues
- Market design issues
- Necessary changes (ICT)
- Regulatory measures (active participation of small players)
- Customer engagement
- Societal issues
- Specific issues for: grid operators, grid users, energy market place, technology & services providers, influencers

Thank you for your attention!

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Annex: EG3 Members - Details

- **BEUC** – European Consumers' Organisation, www.beuc.org
- **CECED** – European Committee of Domestic Equipment Manufacturers, www.cecet.org
- **CEDEC** – European Federation of Local Energy Companies, www.cedec.com
- **CENELEC** – European Committee for Electrotechnical Standardization, www.cenelec.eu
- **COGEN Europe** – European Trade Association for the Promotion of Cogeneration, www.cogeneurope.eu
- **DIGITALEUROPE** – Digital Technology Industry in Europe, www.digitaleurope.org
- **EECA / ESIA** – European Electronic Components and Semiconductors Manufacturers Association, www.eeca.eu
- **ENTSO-E** – European Network of Transmission System Operators – Electricity, www.entsoe.eu
- **EREC** – European Renewable Energy Council, www.erec.org
- **ERGEG** – European Regulators Group for Electricity and Gas, www.energy-regulators.eu
- **ESMIG** – European Smart Metering Industry Group, www.esmig.eu
- **EURELECTRIC** – Union of the Electricity Industry, www.eurelectric.org
- **EUTC** – European Utilities Telecom Council, www.eutc.org
- **GEODE** – European Independent Distribution Companies of Gas and Electricity, www.geode-eu.org
- **Transmission & Distribution Europe** – European Association of the Electricity Transmission and Distribution Equipment and Services Industry, www.tdeurope.eu