Energy Management System Survey Results

KICK-OFF WORKSHOP: 2ND PHASE OF COC IOP ESA

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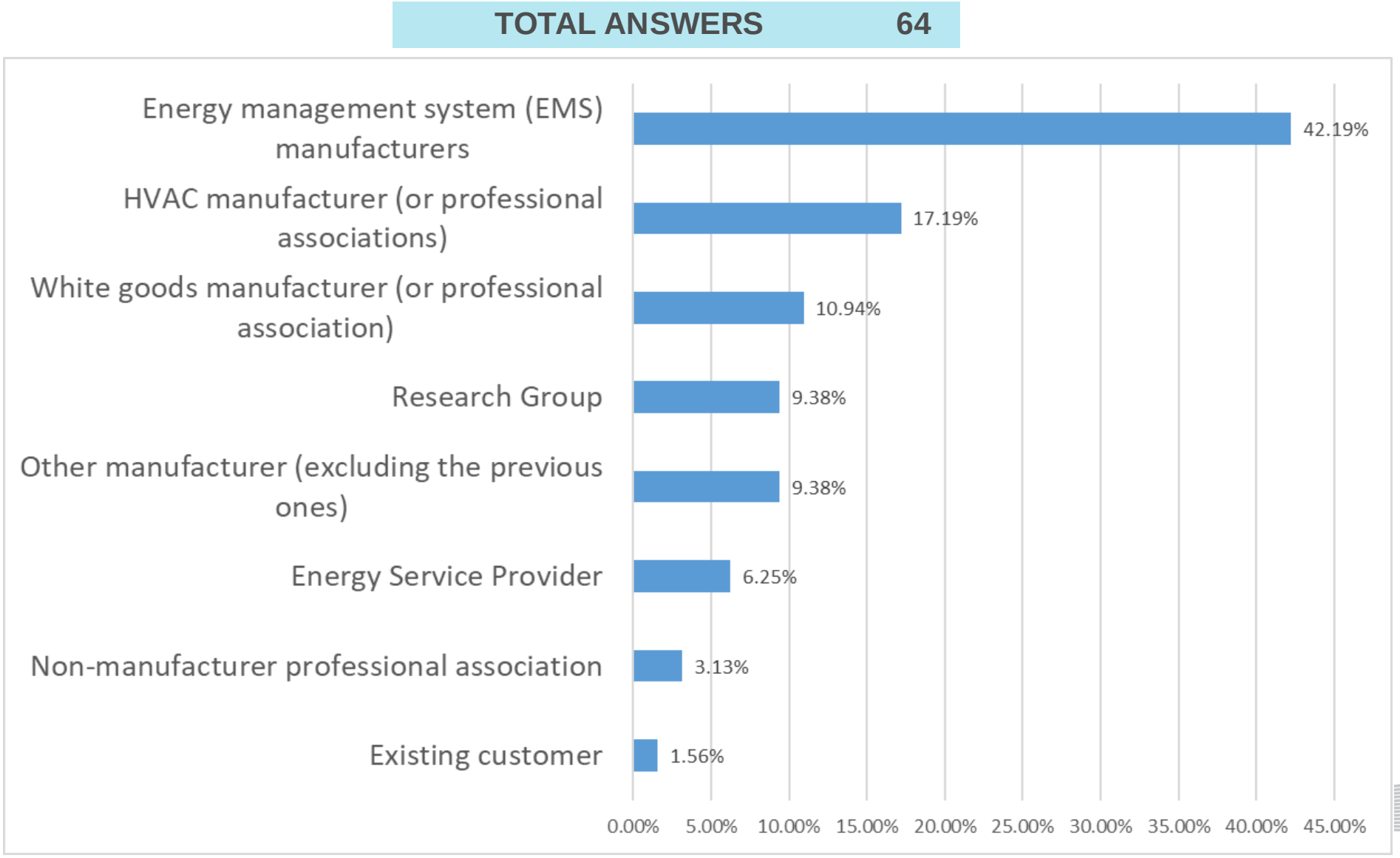
EMS Survey

Survey results Period	31 JULY 2024 – 09 SEPTEMBER 2024
Participants Identification	4 FIELDS OF GENERAL DATA
Number of Questions	19 QUESTIONS, INCLUDING SOME FOLLOW UPS
Question from 1 to 14	MULTIPLE CHOICE
Question from 15 to 19	OPEN TEXT

Participants



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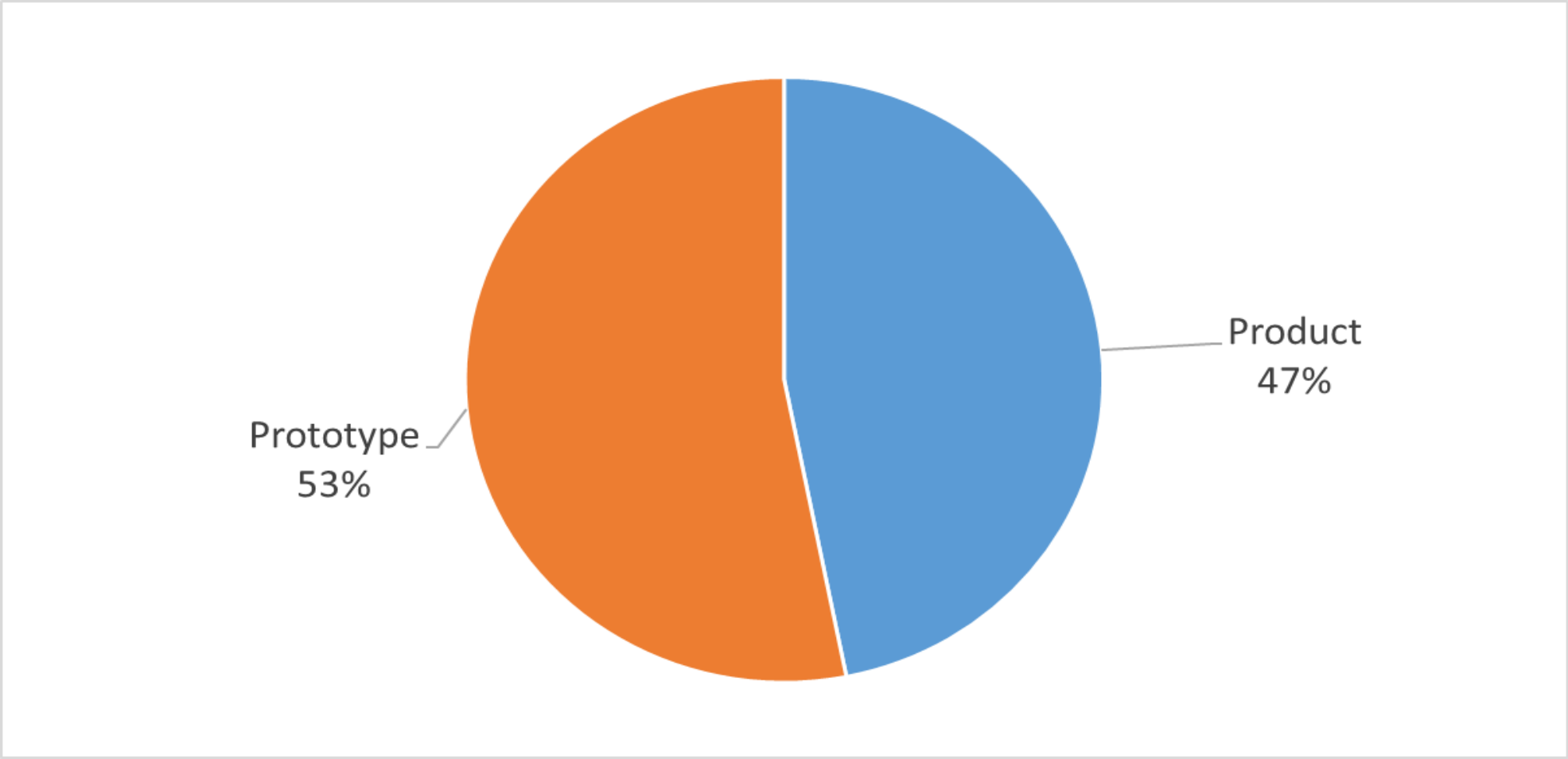
Q1. Prototype vs Product

Is the EMS solution you use/provide a mature product or is it a prototype under development?



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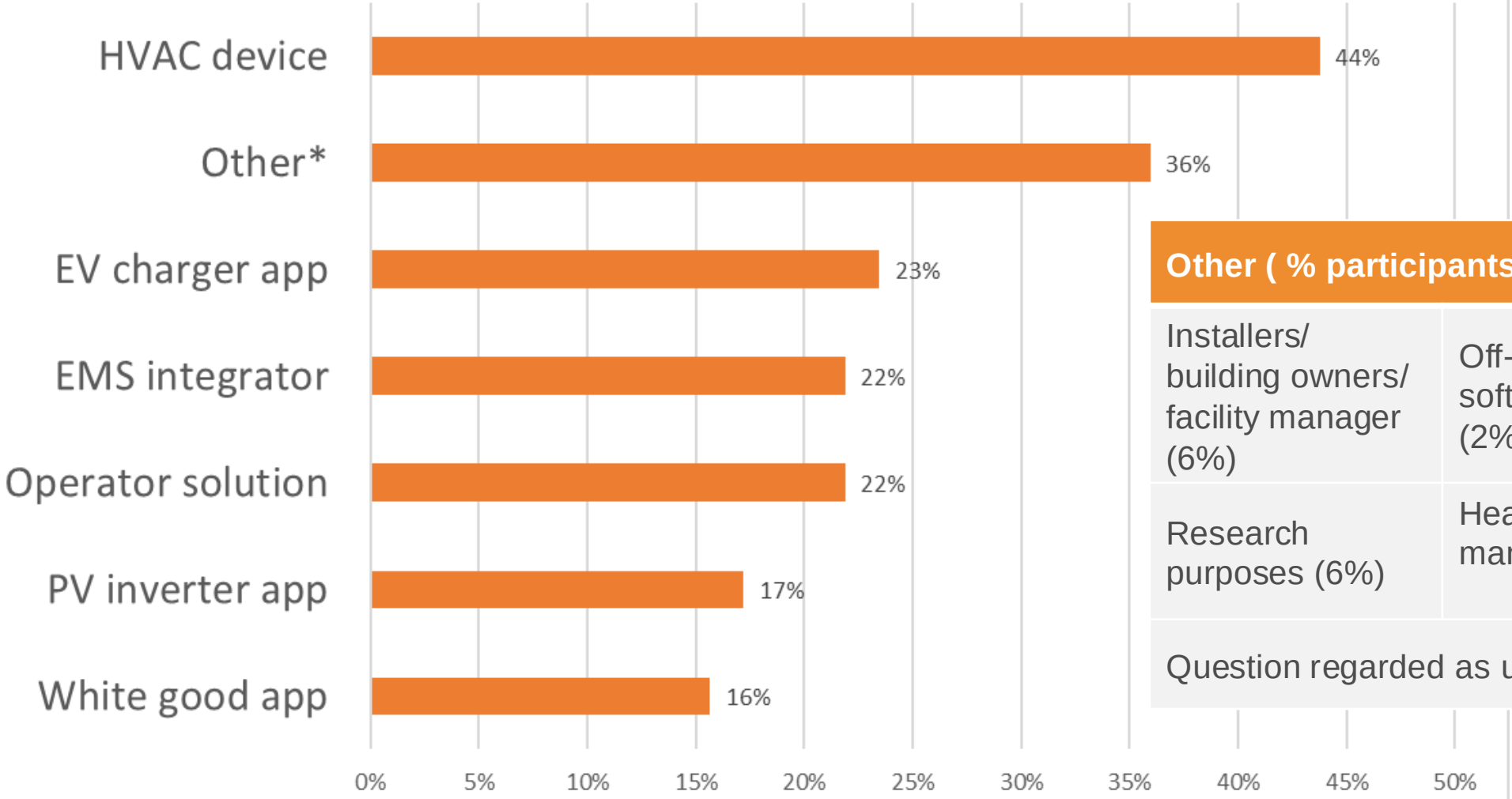
Q2. Who is offering the solution?

If you are using/manufacturing/providing a EMS solution, please, identify the type of entity who offers it.



Other (% participants)	
Installers/ building owners/ facility manager (6%)	Off-the-shelf software product (2%)
Research purposes (6%)	Heating management (2%)
Question regarded as unclear (13%)	

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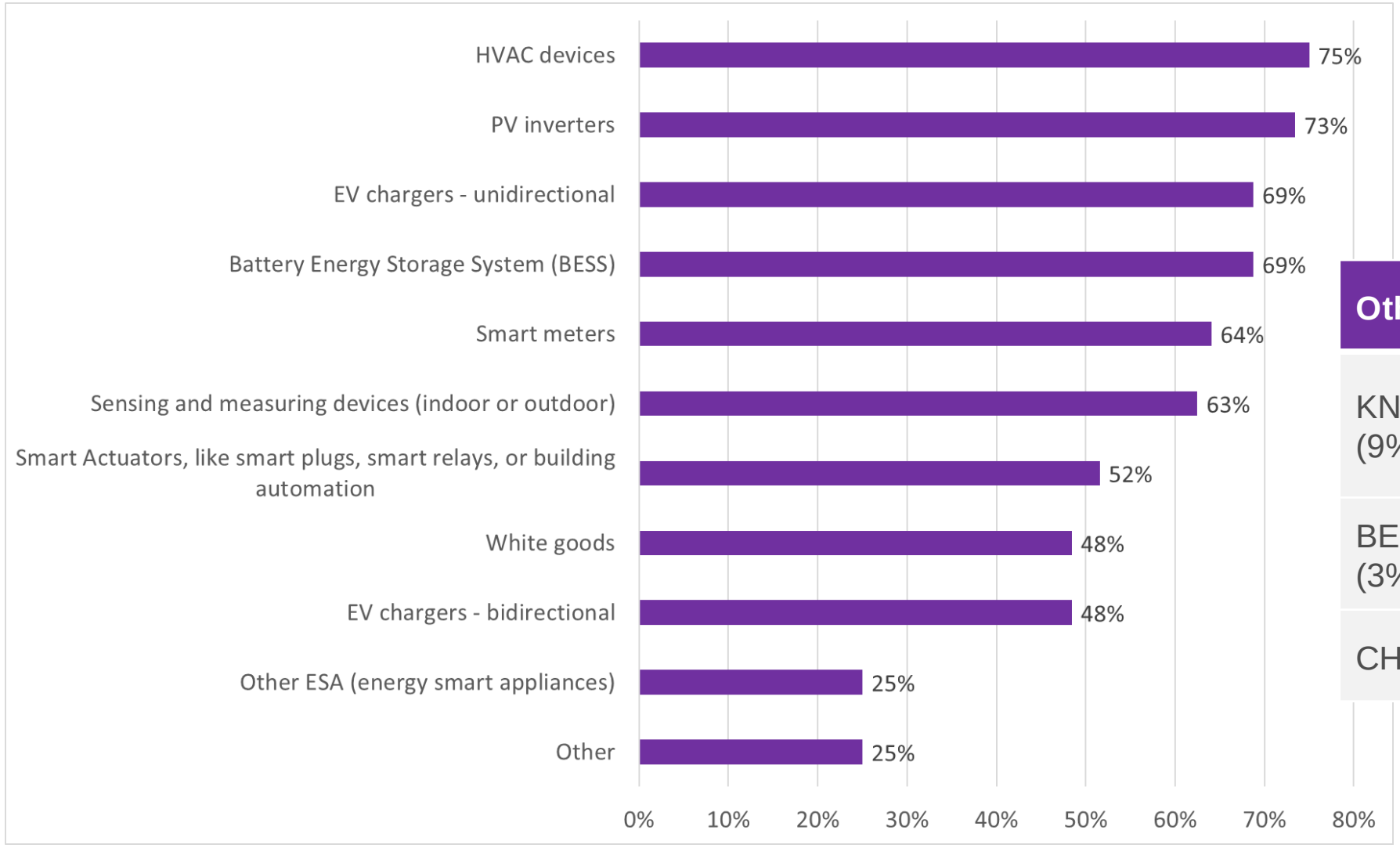
Q3. Devices integrated

Select the devices able to be integrated in the EMS



Other (% participants)	
KNX devices (9%)	Heat and natural gas devices (2%)
BEMS/ HBES (3%)	Water system pumps (2%)
CHP (3%)	Fuel cells (2%)

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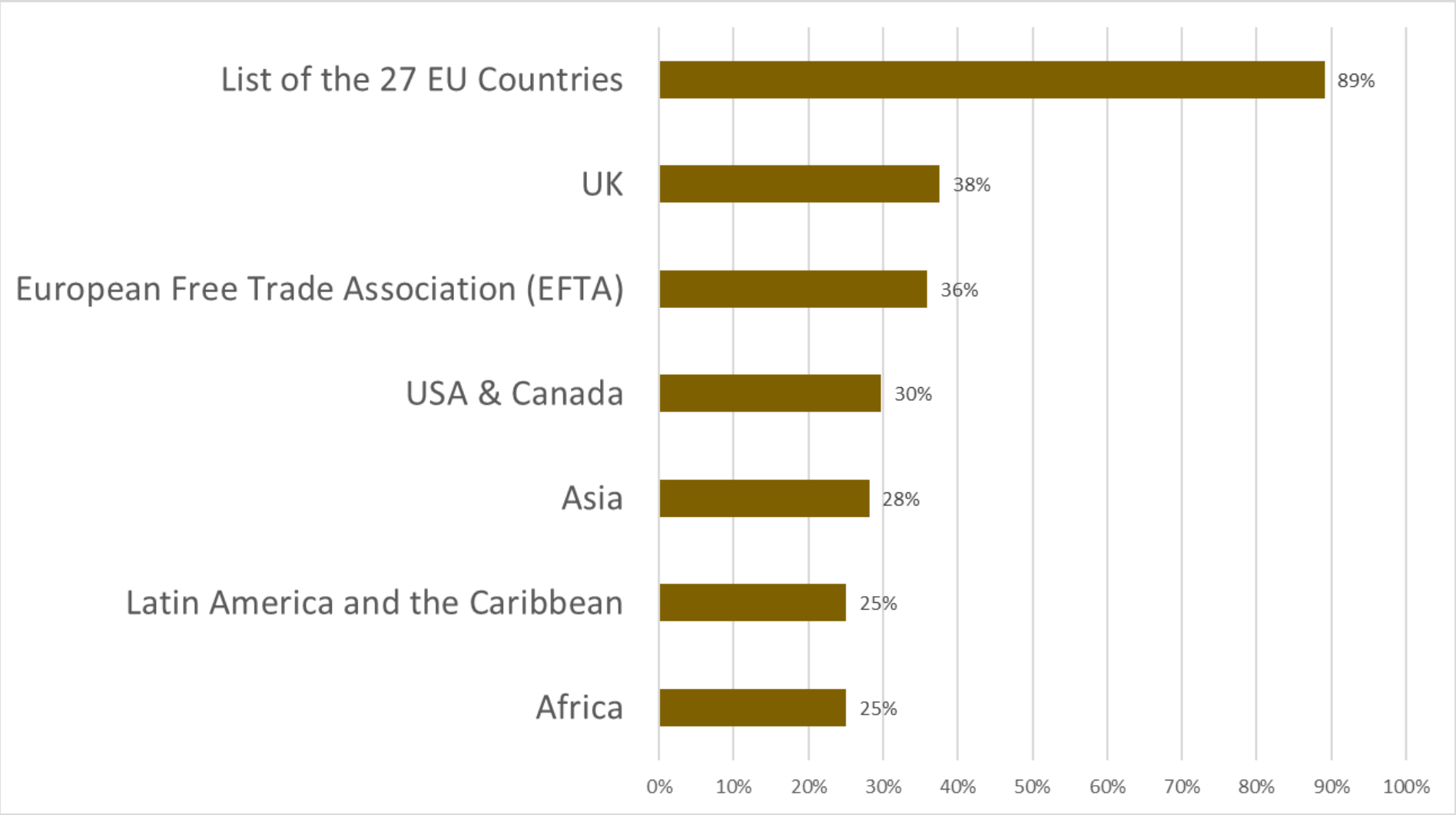
Q4. Regions/countries

In which regions/countries are implemented?



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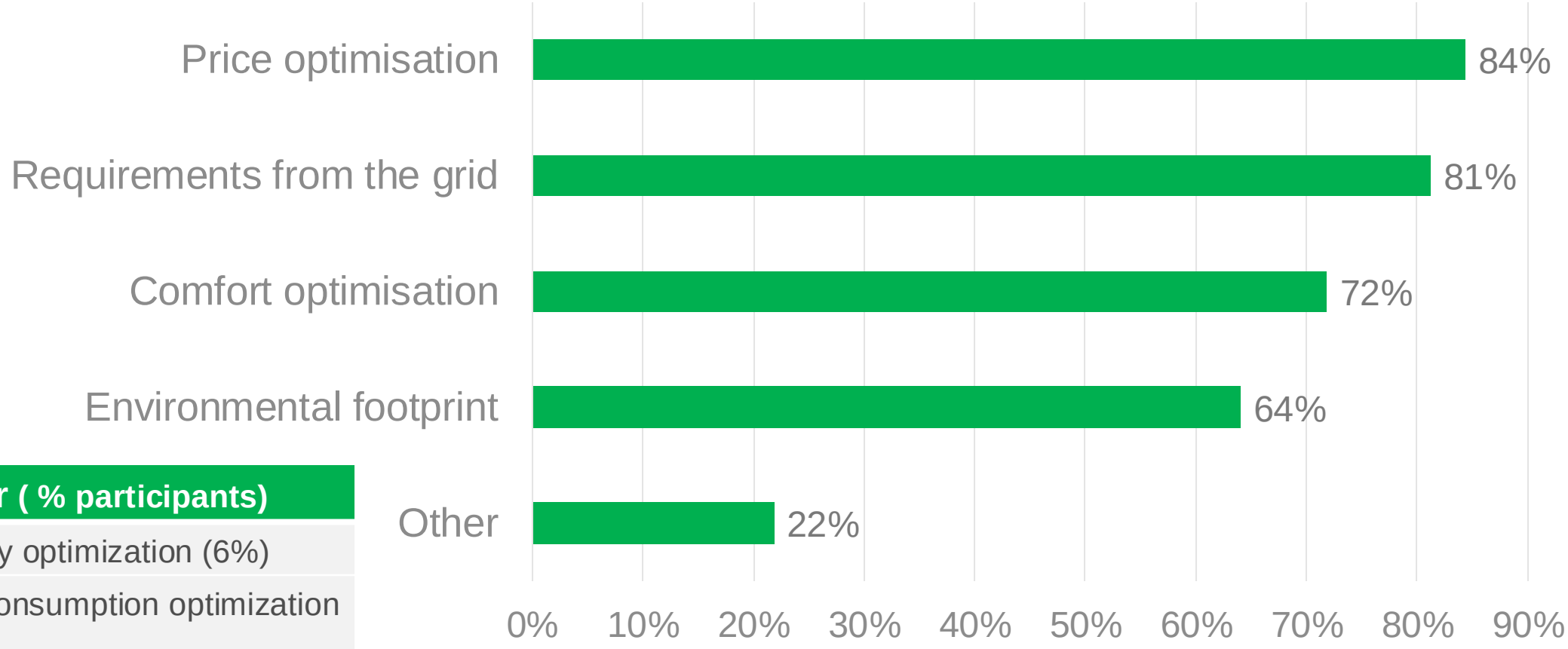
Q5. Goal pursued to manage a device

Which goal is used to manage the devices?



Other (% participants)
Energy optimization (6%)
Self-consumption optimization (3%)
Predictive maintenance (2%)
Revenue from ancillary services (2%)

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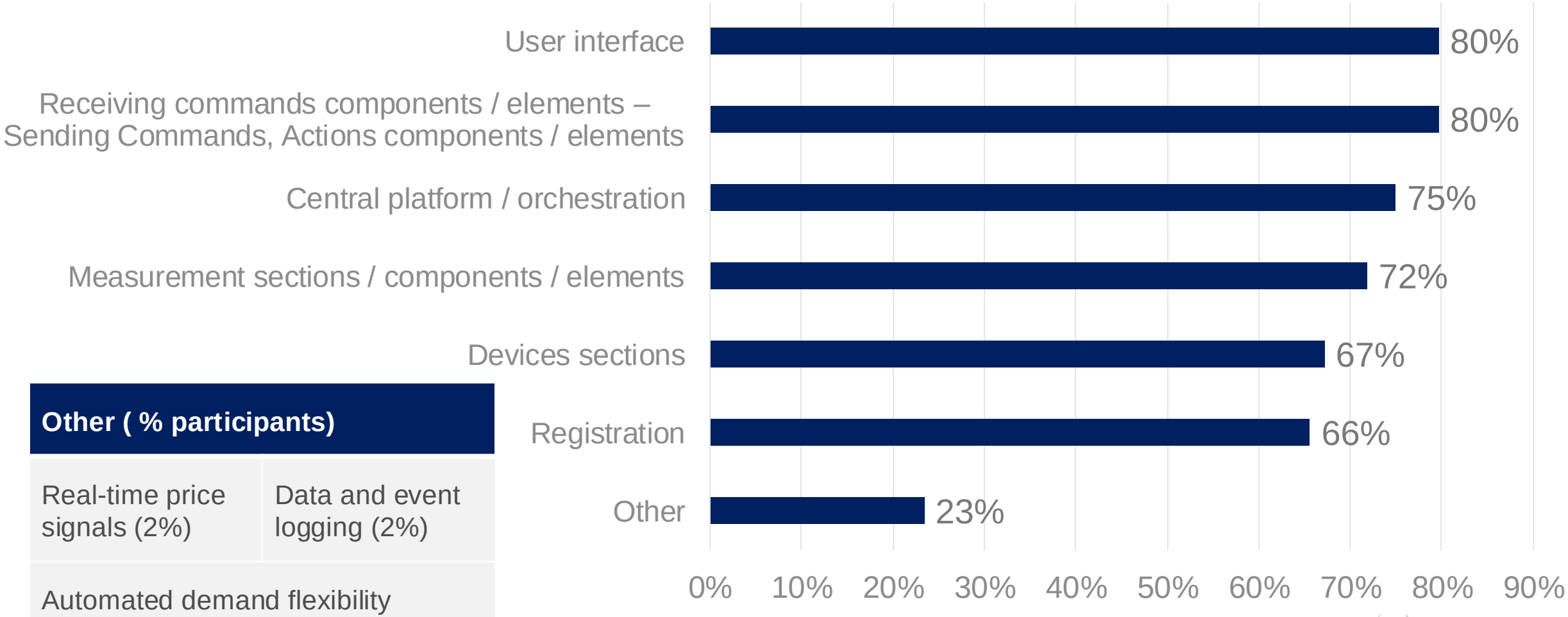
Q6. Components of the EMS Architecture

Select the components in the architecture of the EMS. Some of them can be chosen.



Other (% participants)	
Real-time price signals (2%)	Data and event logging (2%)
Automated demand flexibility reaction (2%)	

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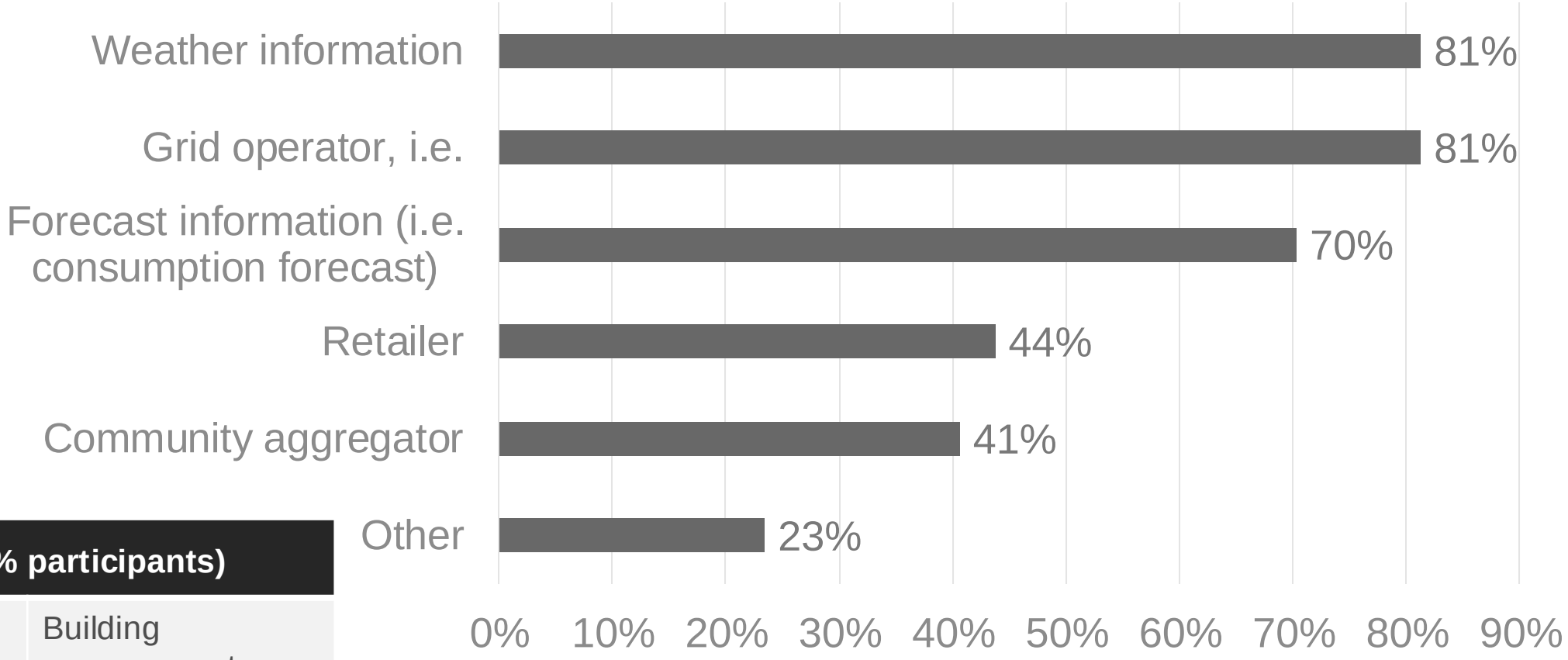
Q7. External data source linked to EMS

Is the EMS connected with external data sources? Select many as used.



Other sources (% participants)	
Price information (3%)	Building management system areas (2%)
Feedback of usage (2%)	TSO congestion stimuli(2%)

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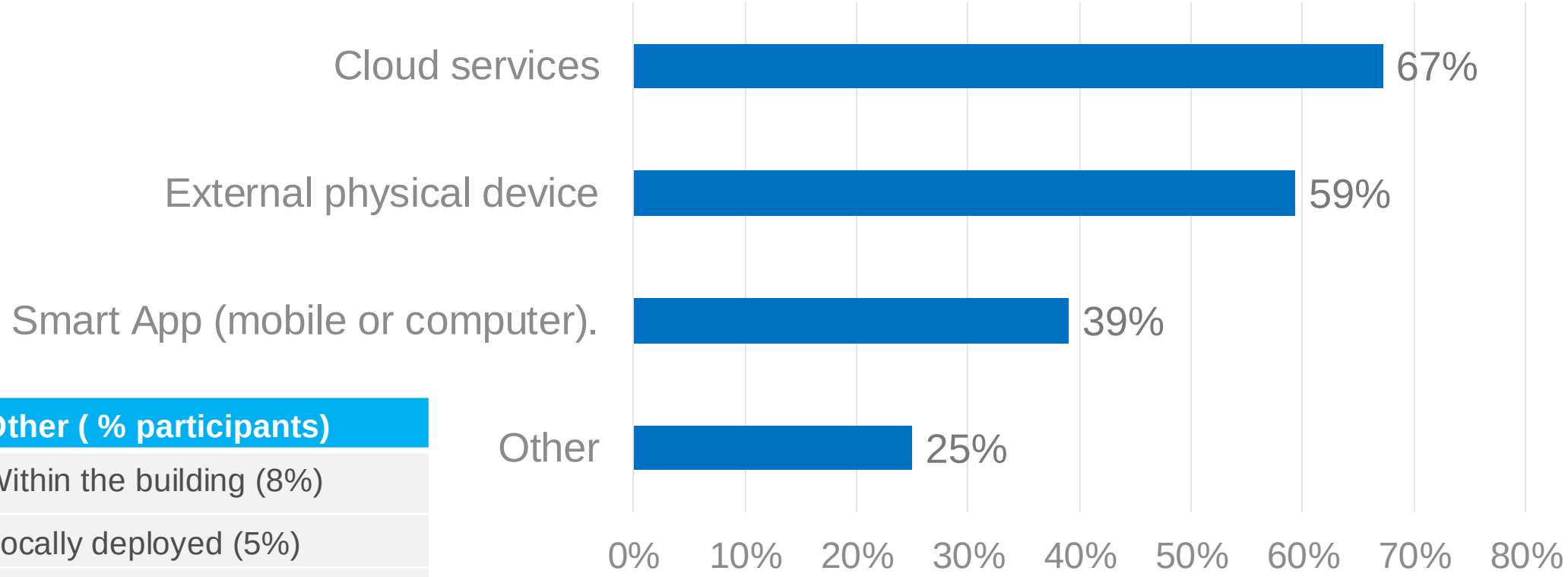
Q8. EMS allocation

Where is the EMS allocated?



Other (% participants)
Within the building (8%)
Locally deployed (5%)
Integrated within BESS or HVAC devices (3%)
Within the smart meter (2%)

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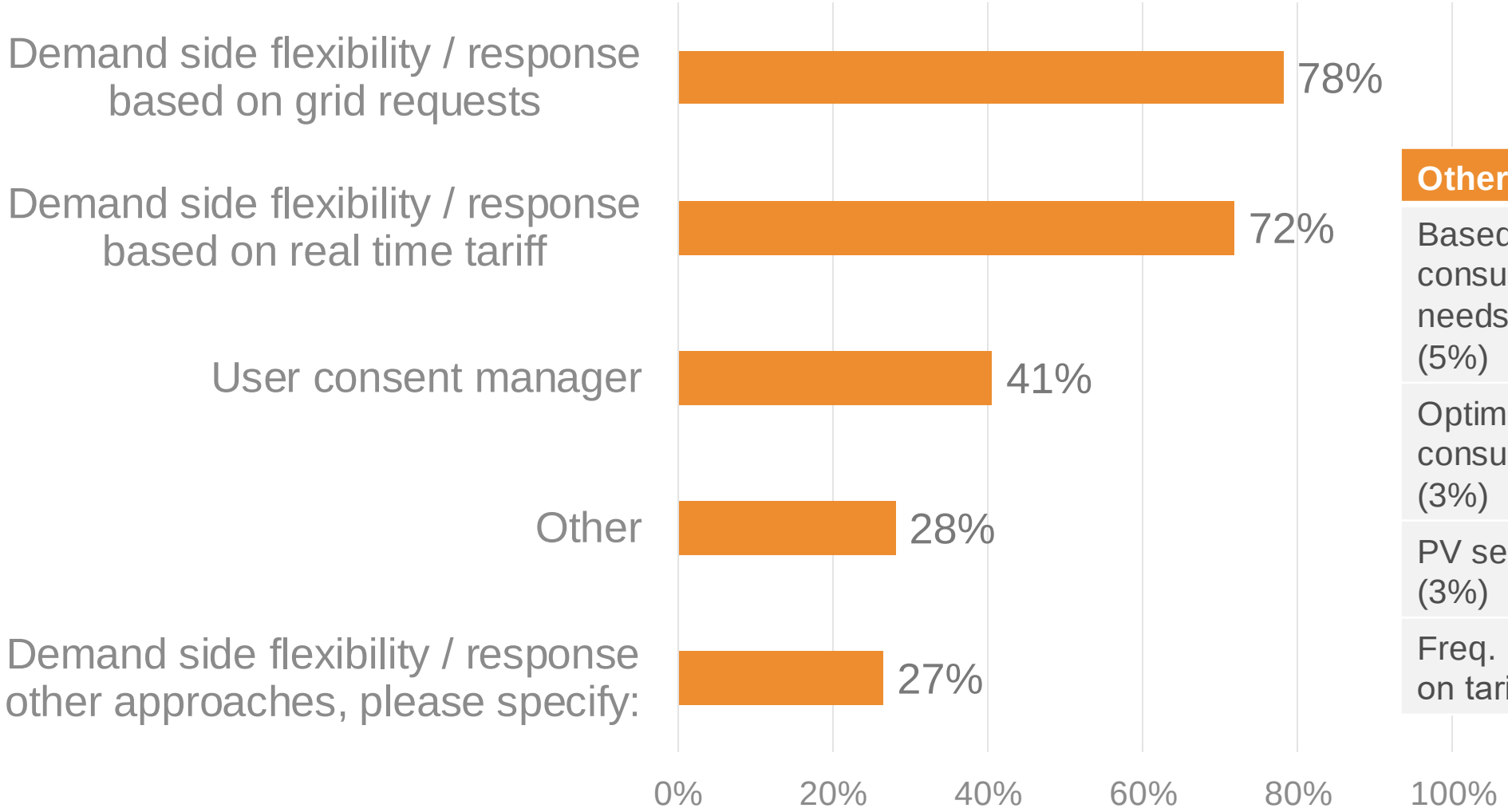
Q9. Functionalities included in the EMS

Are the following functionalities included?



Other (% participants)
Based on consumer consumption decisions/ needs/ flexibility offers (5%)
Optimization of self-consumption/ production (3%)
PV self-consumption (3%)
Freq. regulation / based on tariffs… (2%)

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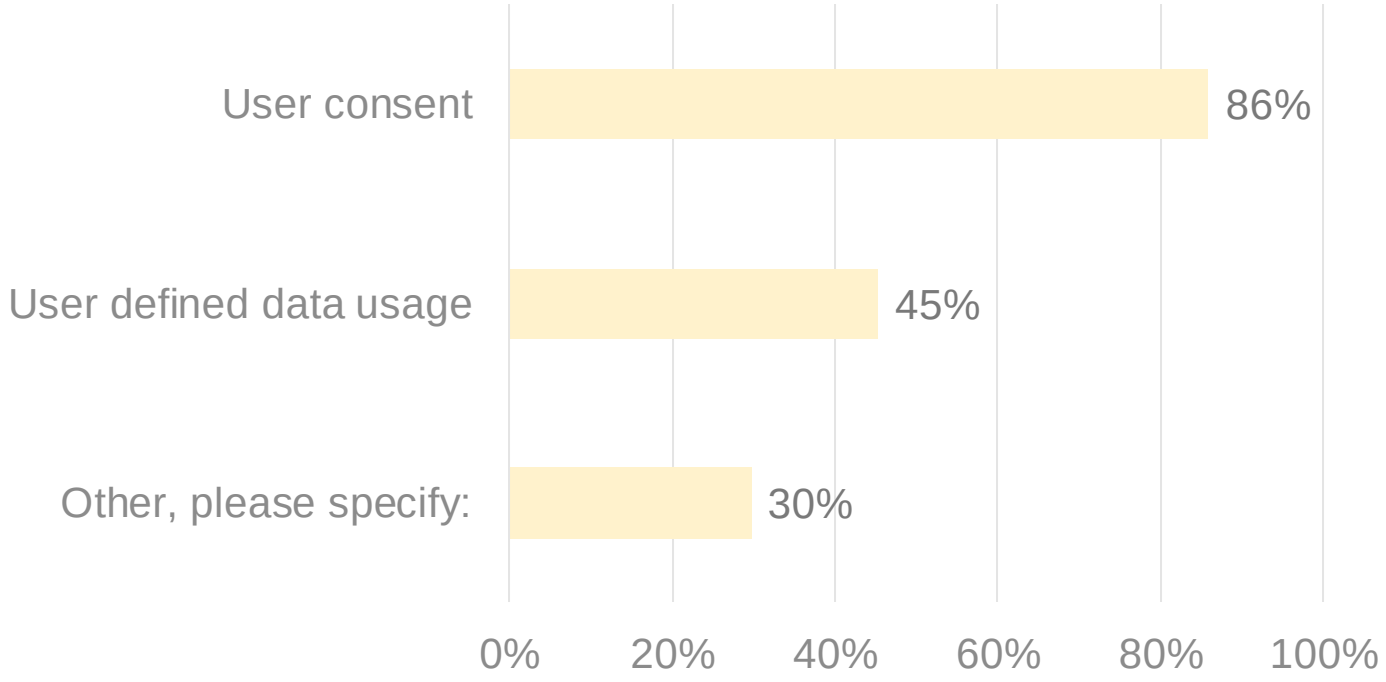
Q10. Security and Privacy

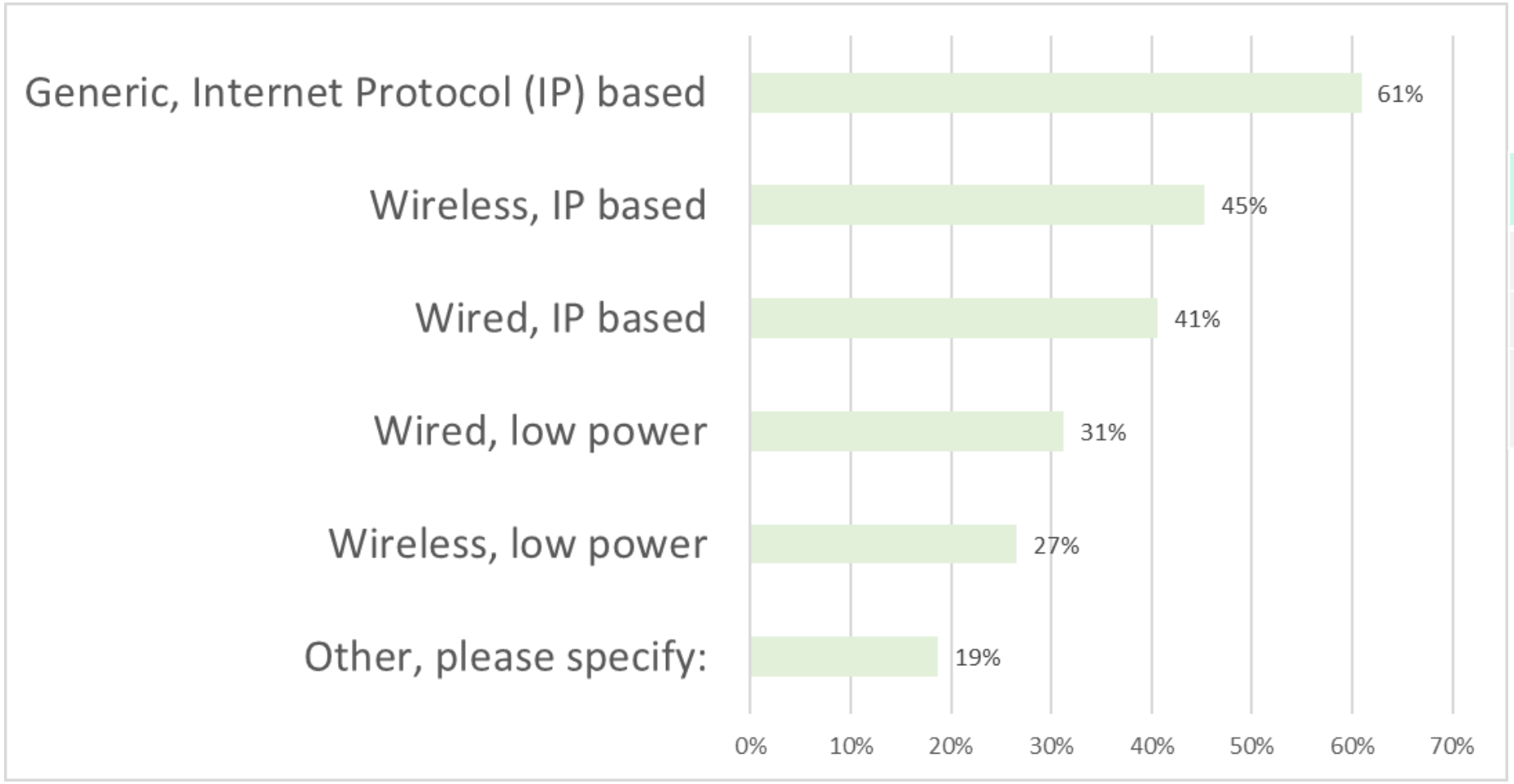
Explain how security and privacy are addressed.



Other (% participants)	
EU Regulations and IEC standards (5%)	BSI Government regulated(2%)
Cyber security standards (2%)	RED Directive (2%)
Data Encryption – TLS (2%)	MID Directive (2%)
IEC 62443 – Hardening (2%)	International standards (2%)

Q11. Communication technology

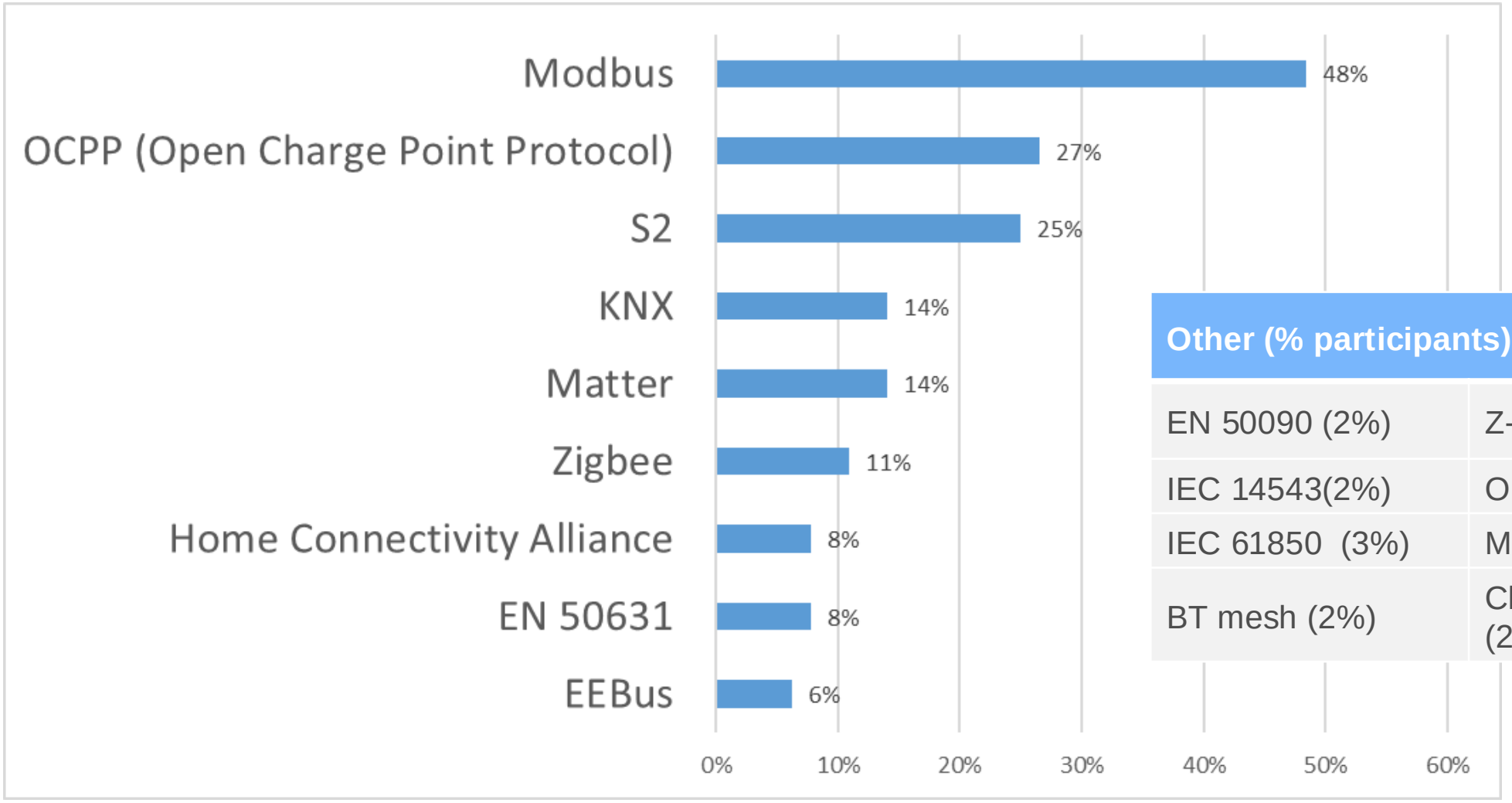
Does the EMS communicate with the appliances directly using specific communication technology?



Other (% participants)
Modbus (5 %)
KNX (3 %
HomePlug Green Phy PLC (2%)

Q12. Protocols

What protocol is integrated?



Other (% participants)	
EN 50090 (2%)	Z-wave (2%)
IEC 14543(2%)	OpenADR(2%)
IEC 61850 (3%)	MQTT(2%)
BT mesh (2%)	Cloud Based API (2%)

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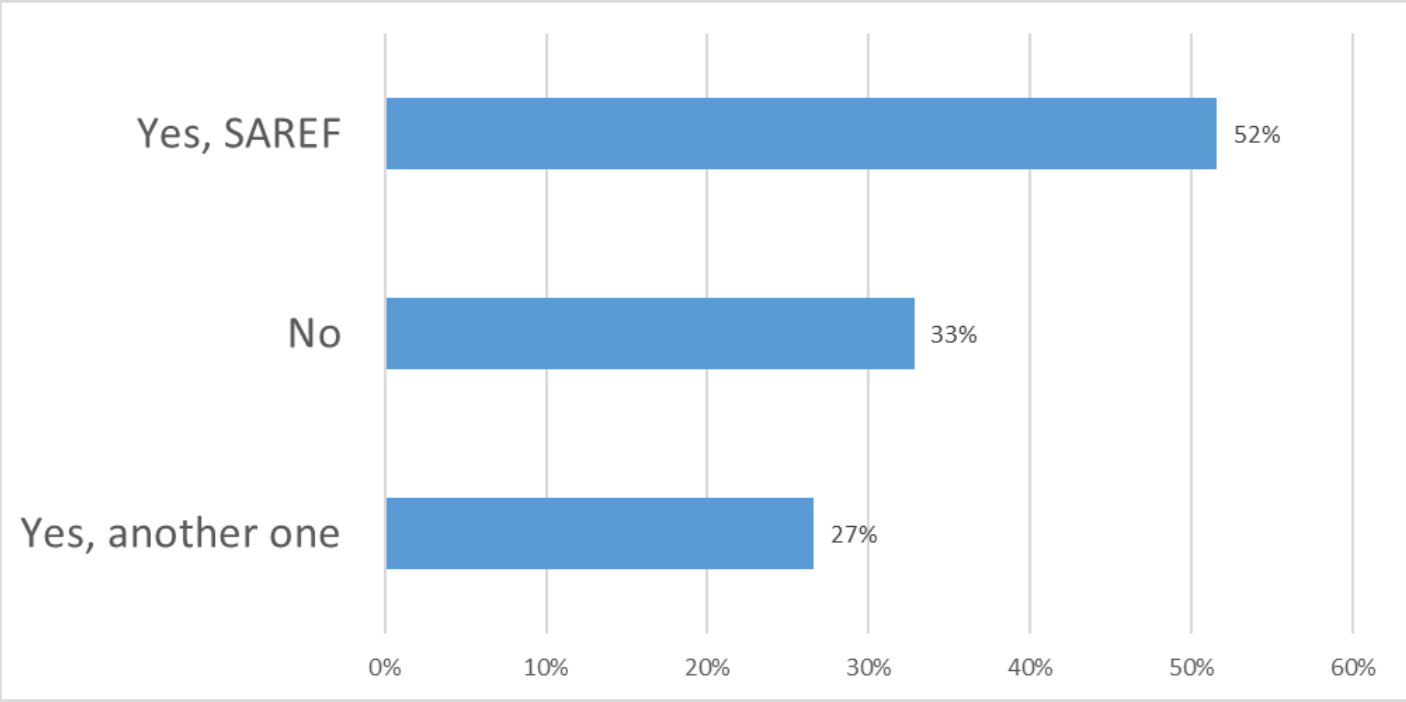
Q13. Ontologies

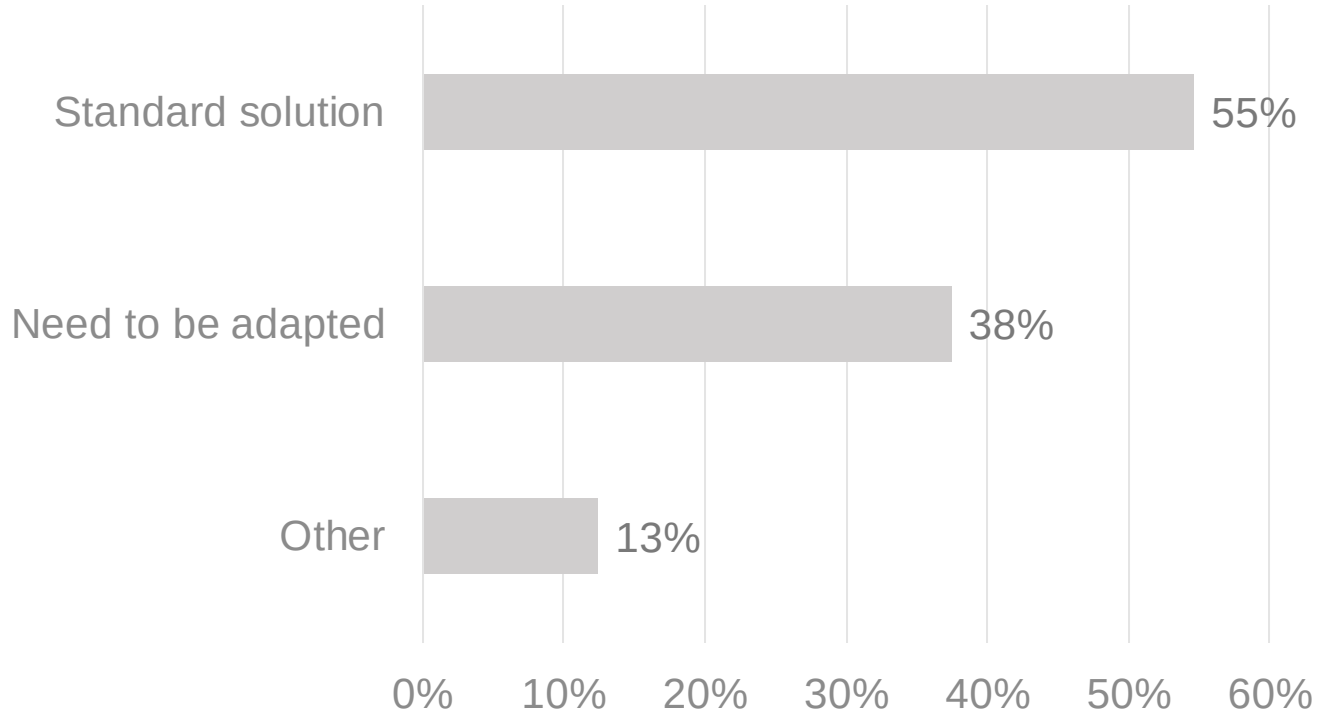
Is the EMS based or is able to support an ontology?



Other (% participants)
EN 50090-6-2 (14%)
IEC Common Information Model (2%)
domOS Common Ontology (2%)
Matter (2%)

Q14. Standard solution Vs adaptation

Is it a standard solution or does the component installation require any specific adjustment within the ecosystem?



Other (% participants)
Depending on protocols/ interfaces in use (3%)
Open to be integrated in all building management solutions (2%)
Some protocols still proprietary (2%)
Plug-n-play for end users (2%)

Q15. Explain how security and privacy are addressed. Do you see any security and privacy related difficulties related to EMS? Please explain:

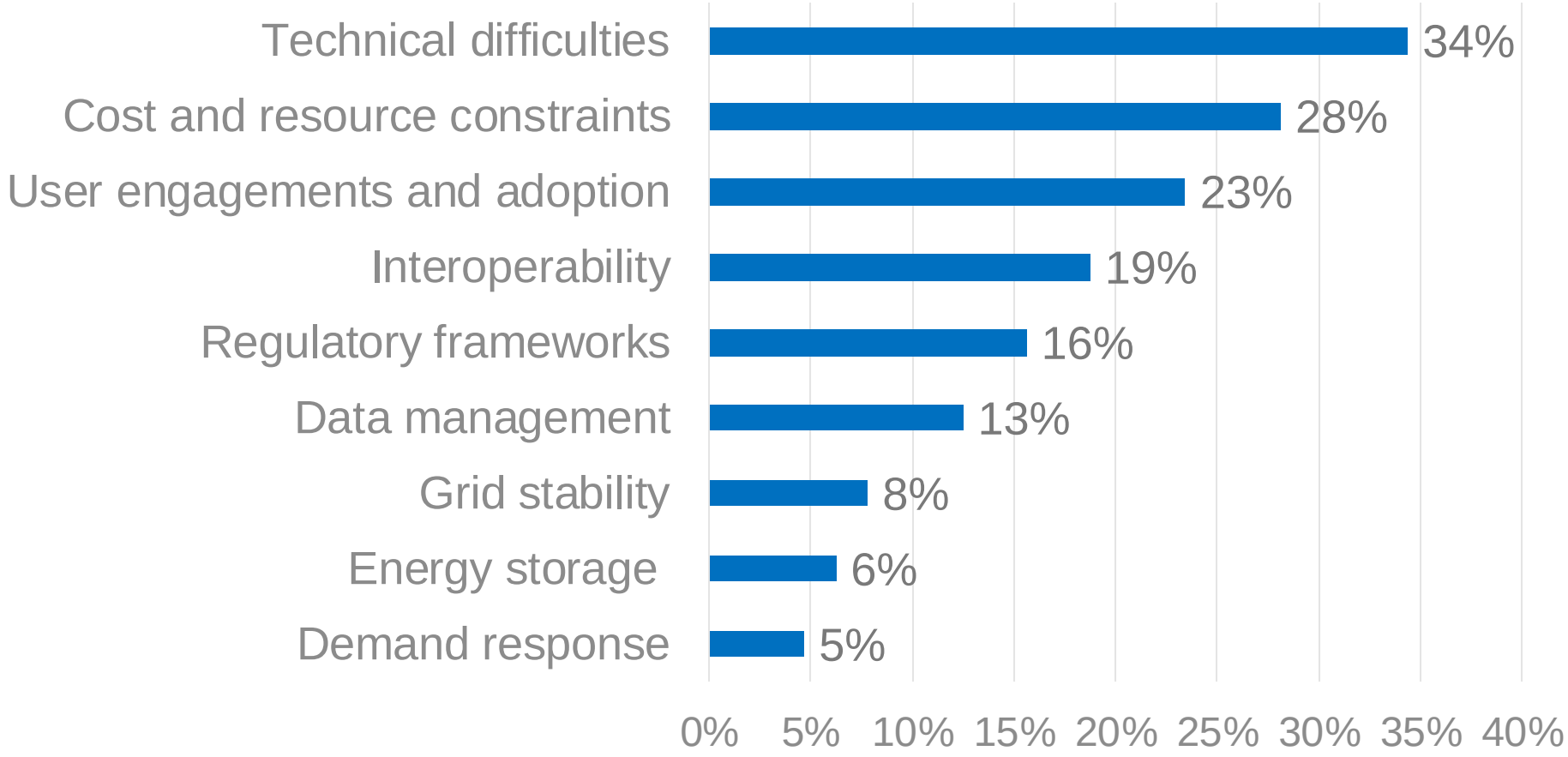
Security measures	% participants
Encryption (including end-to-end encryption, HTTPS, TLS, VPNs)	23%
Authentication and Authorization (for authorized access to EMS data)	19%
Compliance with Regulations (i.e. GDPR, NIS Directive, ISO 27001)	16%
Secure Communication Protocols (TCP/IP, TLS, Modbus TLS)	13%

Privacy considerations	% Participants
User Consent (for data collection and processing)	23%
Data minimization (data collection and processing to reduce privacy risks)	13%
Anonymization and Pseudonymization (to protect sensitive data)	6%

Q16. Explain the main difficulties you foresee or have experienced while implementing the EMS

Main difficulties with the EMS implementation	
Interoperability (due to diversity of protocols, interfaces and data models)	User Engagement and Education (for the benefits of flexibility and EMS)
Standardization absence (i.e. for EMS, devices, communication protocols)	Regulatory Frameworks (the volatily and fragmentation of regulatory frameworks across countries)
Harmonization with Grid (including standardized interfaces for grid info)	Technical Challenges (difficulties with communication protocols, the need for robust security measures)
Integration Complexity (i.e. lack of open IOP systems, different signal types)	Scalability and updatability (i.e. for cloud-based solutions)
Limited Access to Information (i.e. appliance use case coverage, live appliance metadata, device documentation)	Lack of certification (for ensuring interoperability and compliance)

Q17. Main challenges for the future



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Q18. Inclusion in the CoC

The scope of the CoC will eventually include EV chargers and PV inverters. What other functionalities, profiles, services or use cases should be considered for the EMS?

Inclusion in the CoC	% participants
Inclusion of EV chargers and PV inverters	23%
Demand Response and Load Management (for efficient use of energy)	16%
Energy Storage Systems (i.e. batteries)	13%
Smart Home Devices (i.e. thermostats, lighting systems)	8%
Grid Services (i.e. frequency regulation, voltage support)	8%
User Centric approach (prioritize the needs of end-users)	6%
Interoperability and standardization (for seamless communication)	6%

Question 19. Other remarks

Other remarks	% participants
Importance of Interoperability (need for standardized communication)	23%
Need for clear Regulations (especially for the EMS)	16%
User centric approach (prioritize needs of end-users	13%
Inclusion of energy Storage Systems	8%
Grid services (inclusion in the CoC)	8%
Cybersecurity (protect user data)	6%
Education and Awareness (educate users for the benefits and risks of EMS)	6%

Project CoC Website

Project Functional Mailbox:

JRC-ENERGY-SMART-APPLIANCES@ec.europa.eu

Check also the JRC Smart Electricity Systems website: http://ses.jrc.ec.europa.eu/

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