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ICT Interoperability

Recommendation of interoperability platforms and data exchange for TSO-
DSO-customer coordination



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Agenda

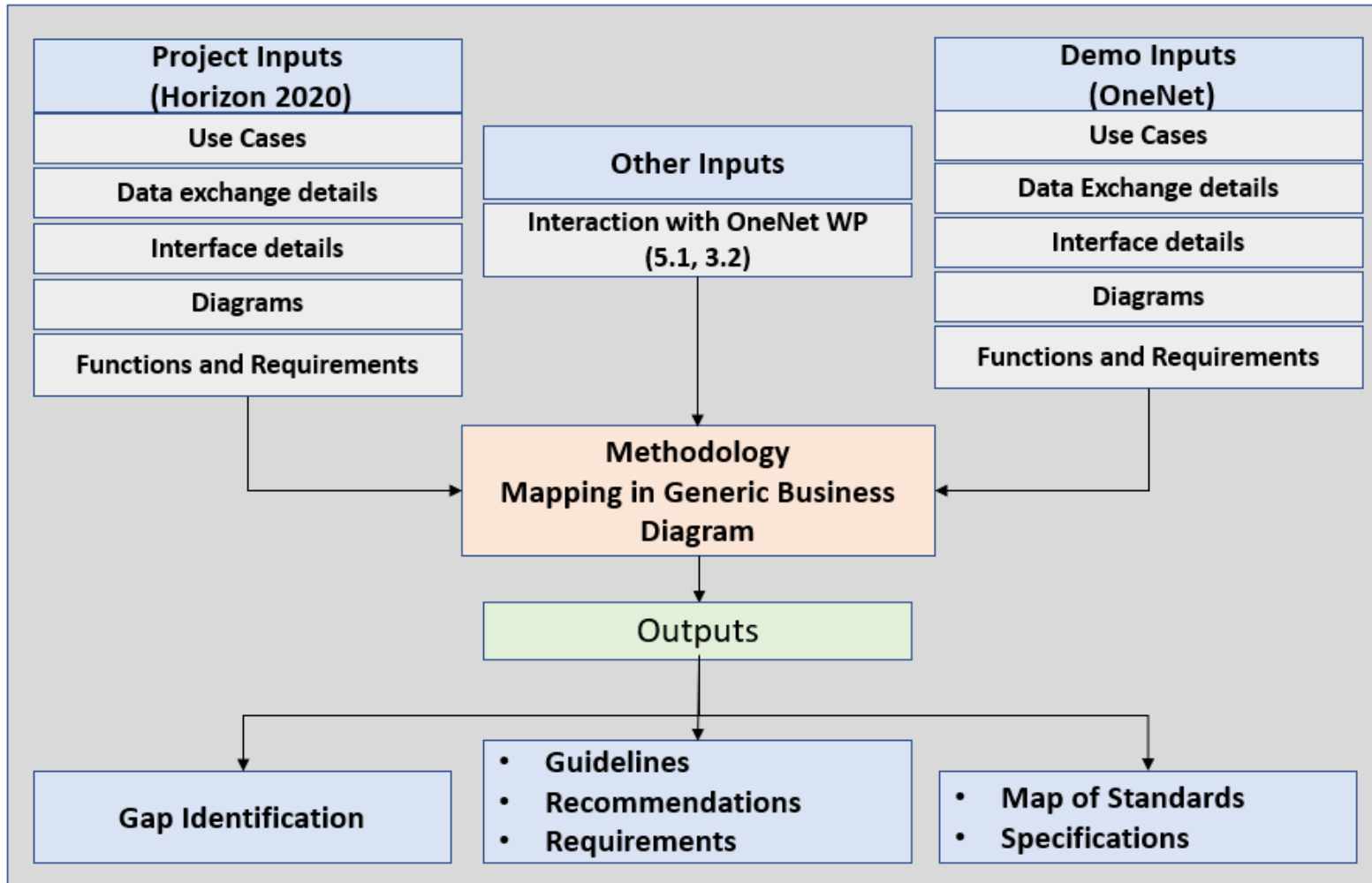
- Aspects of Data Exchange
- Methodology
- Recommendations TSO-DSO-customer interoperability
- Harmonization Actions
- Prioritization

Aspects of Data Exchange

Data formats
Data models
Interfaces
Communication protocols
Standards

Tools

Methodology



Challenges

- Interoperability:
 - Interfacing with other systems (either legacy systems or between new platforms)
 - Lack of standards for certain interfaces
- Data handling:
 - Data availability
 - Data ownership and data access TSO-DSO Coordination
 - Data quality
 - Data Harmonization

Recommendations TSO-DSO-customer interoperability

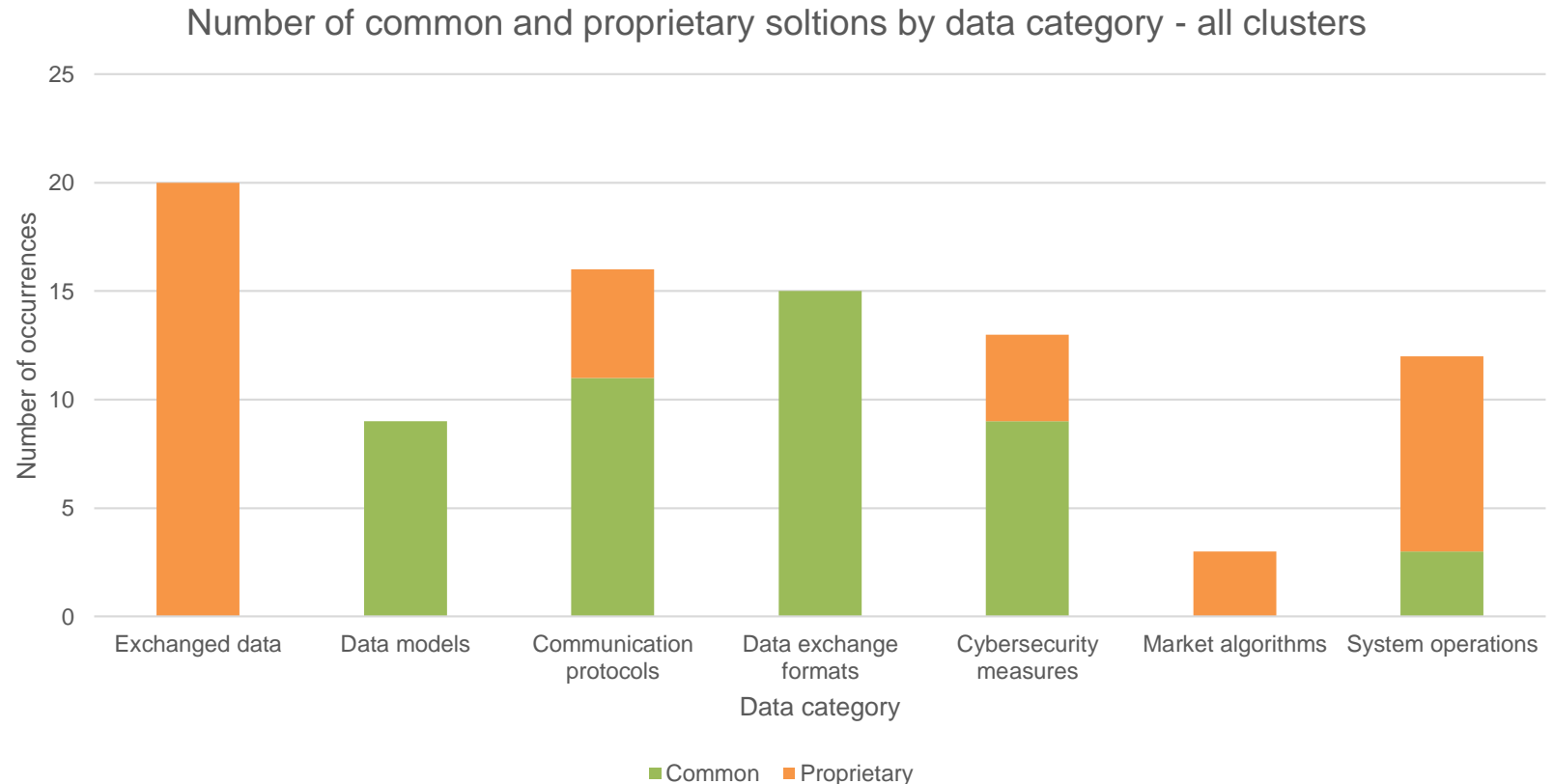
- FSP and customers
 - **Demanding communication requirements** for smart FSPs to participate in specific flexibility services is a barrier to the participation of small FSPs
 - **Data access, ownership and handling of own and personal data**, as well as consent management are not regulated enough. More harmonization is required for data aggregation and anonymization to ensure a secure and transparent data exchange
 - Data management: Consumers have difficulties understanding the difference between energy suppliers and DSO, which is a further barrier to deploying flexibility markets. Here, a single point of contact to the customer could be a solution, challenge: **better coordination between energy suppliers and DSO** and harmonized solutions needed
 - Clear data structure for TSO/DSO connected flexibility units

Recommendations TSO-DSO-customer interoperability

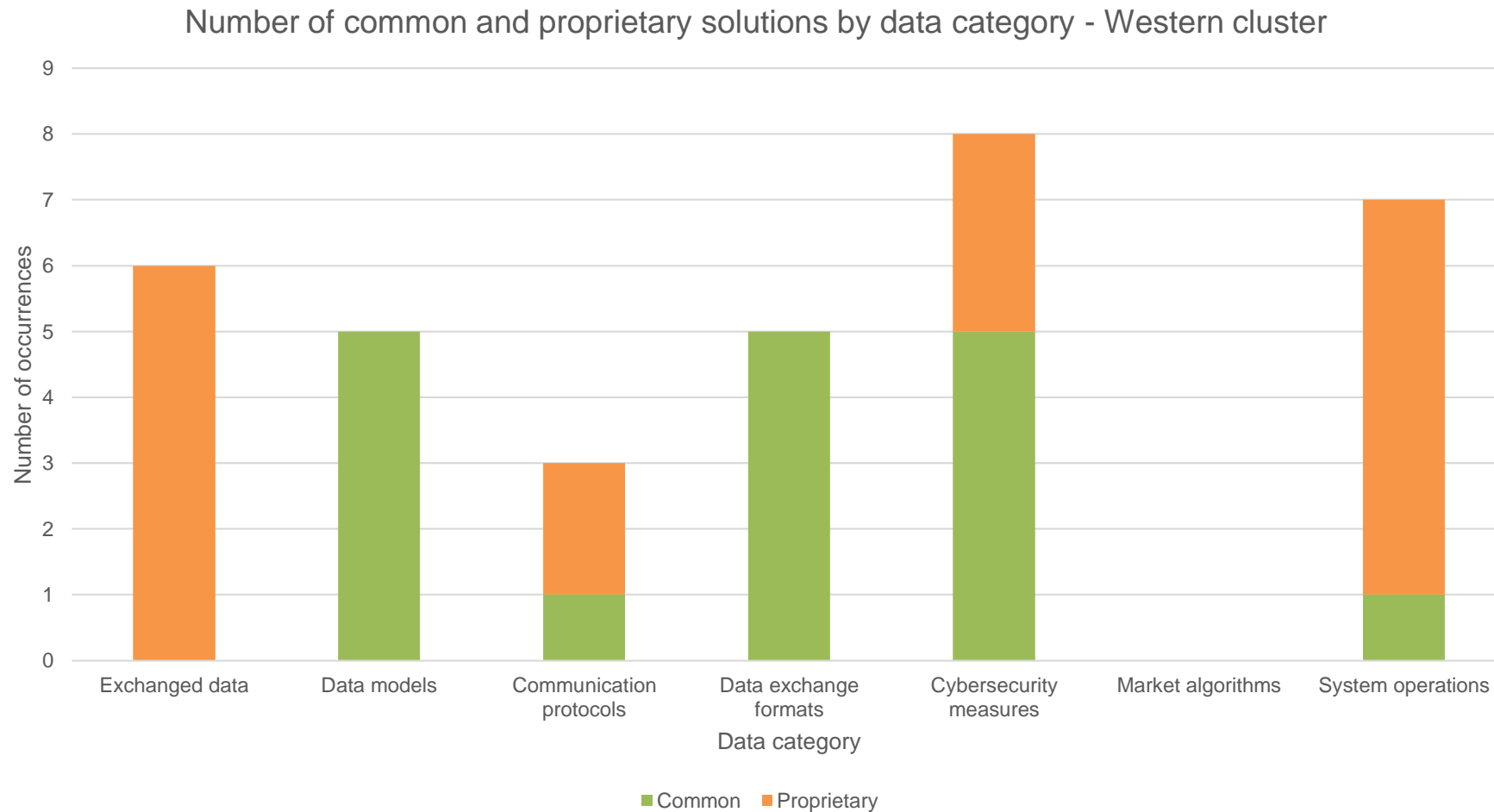
- Standardization and regulatory
 - The mainly used standards in the electric sector **CIM and IEC 61850 should be extended** for the distribution side, for smaller DER and FSP and for end customer requirements
 - Standards have to be extended by market **baseline calculations, bids selection and forecasting computation**
 - Standardisation work on **data models** to cover **DSO-specific use cases**
 - **Smart meter rollout** is still lagging in some countries -> barrier to data availability, better regulatory framework needed
 - Data interoperability implementing acts including **security and privacy aspects**
- Cyber security
 - **Definition of cybersecurity rules** due to the increased decentralization and digitalization of power systems

Common and proprietary solutions

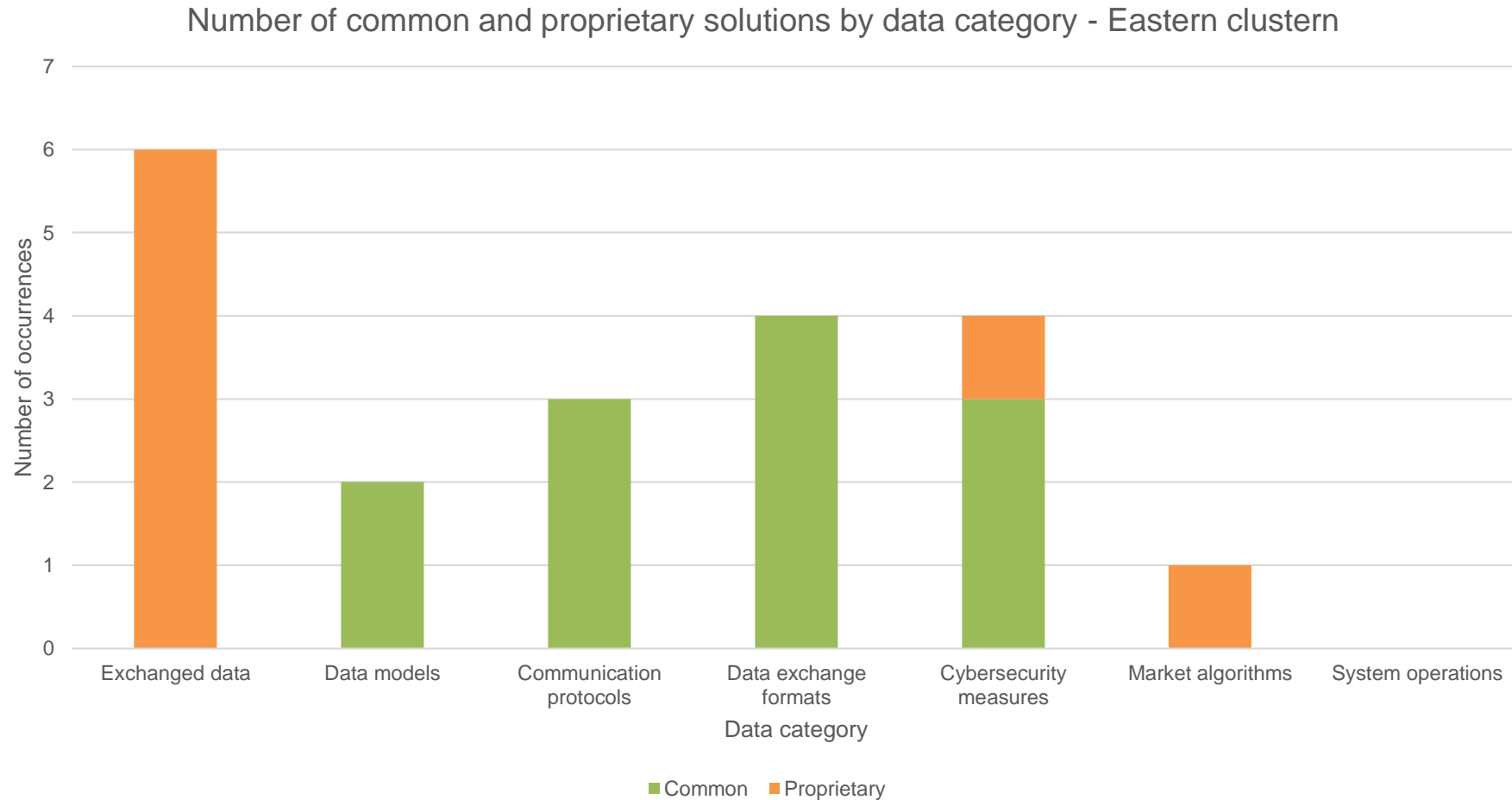
- Common vs proprietary solutions
- Reasoning behind proprietary solution
 - Path dependency
 - Requirements
 - Support
 - Legal barriers
 - Cyber security
 - Cost of adoption
- Recommendations for the extension and harmonization of common solutions



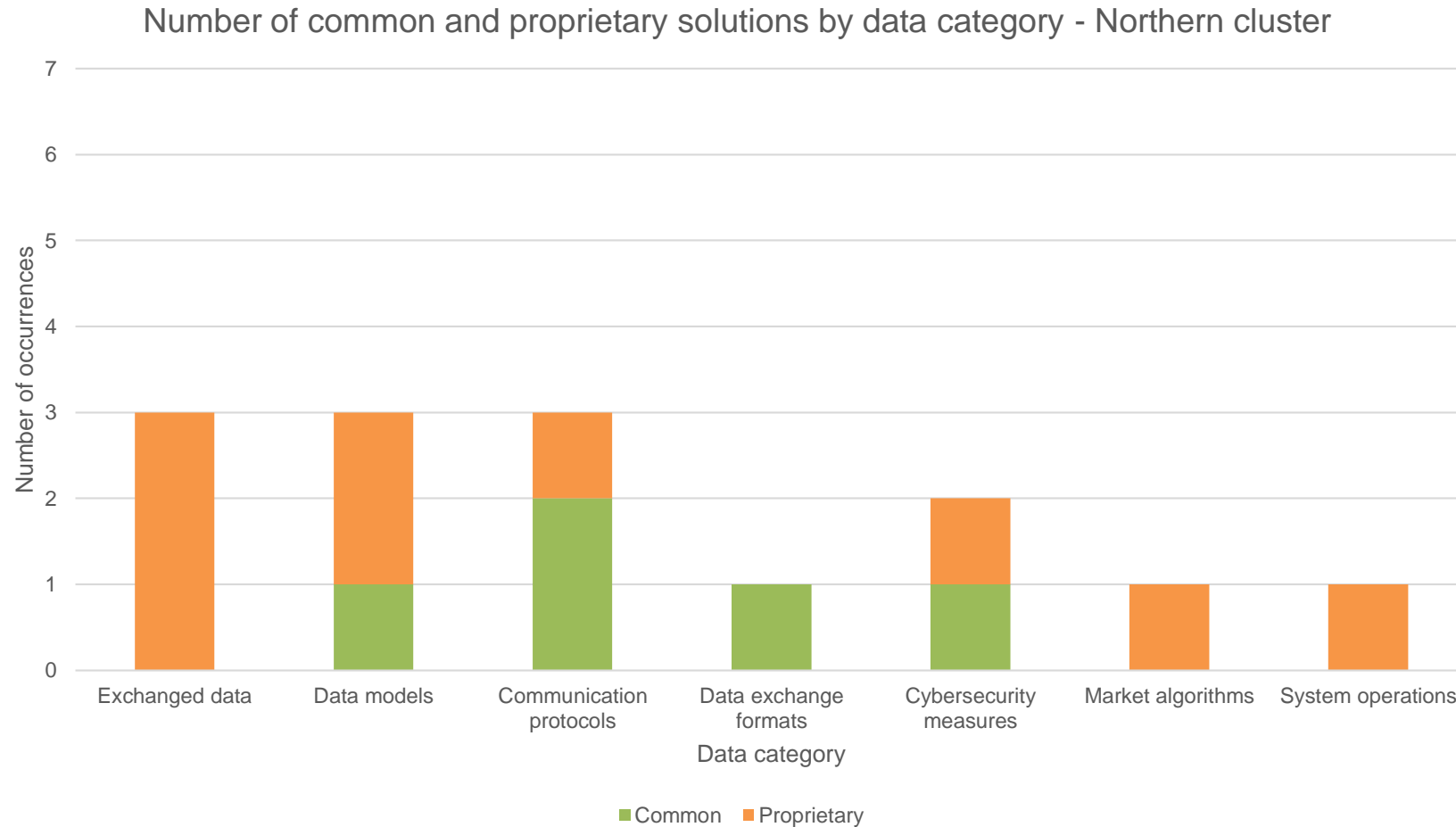
Common and proprietary solutions: Western Cluster



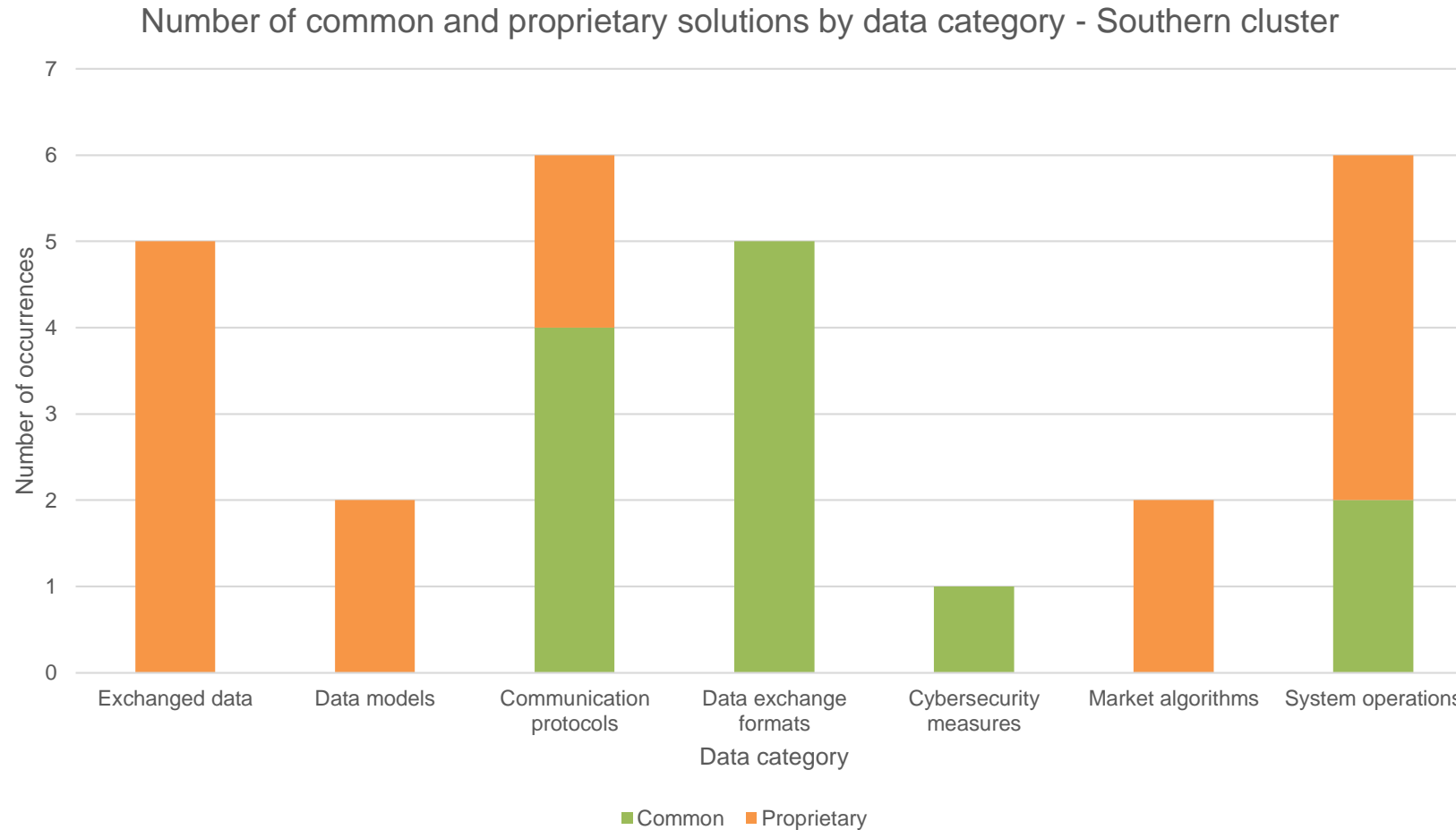
Common and proprietary solutions: Eastern Cluster



Common and proprietary solutions: Northern Cluster



Common and proprietary solutions: Southern Cluster



Harmonization

The effort to harmonize TSO-DSO-consumer interactions to achieve interoperability should acknowledge that there will remain a **certain level of variety** in the implemented solutions

The actors implementing proprietary solutions should make sure that it makes sense also in a **long-term** perspective taking into account the whole **energy system**

If **proprietary solutions** are implemented, they should be made **open source**. While it might be still difficult for other actors to adapt to the proprietary solution, at least this way there will be an avenue how to do so, and it will help to remedy some of the drawbacks of proprietary solutions, such as vendor lock-in and software opacity

Develop further the common standards so that they can offer a working solution for the needs of newly developed use cases

Criteria for the Evaluation of Harmonization Measures

- EU impact
- Time frame and urgency
- Implementation cost

Recommendations for Harmonization Actions: Priority

- Platform communication
 - High
 - DSO Data Hubs
 - Standardized communication interface
 - Medium
 - Middleware
- Flexibility
 - High
 - Flexibility aggregation API and UI
 - Communication with FSP
 - Definition of a common framework

Recommendations for Harmonization Actions: Priority

- Interfaces
 - High
 - Middleware between different actors' platforms
 - Common flexibility interface to facilitate FSPs and aggregators participation
- Data exchange
 - High
 - Standardized process for sharing market results (similar to Onenet connector)
 - Schedule of processes harmonized with the other energy markets to be fully integrated
 - Medium
 - Pre-agreed data format and schema

Recommendations for Harmonization Actions: Priority

- Cyber security
 - High
 - Cyber-Protected communication between the platforms/components of the same entity (i.e. TSO,DSO, etc) as well as the cross-layer communication (TSO-DSO, DSO-FSP, etc)
 - Implementation of token-based authentication
 - Digital certificate authentication
 - Medium
 - Use of HTTPS for secure communication
- System operations
 - Medium
 - Information exchange between DSO and TSO for better operational planning activities
 - Settlement and activation provided through market platform



Thank You

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