Cost Structures and Cost Analysis in Grid Infrastructures - MediGRID as a Use Case

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Objectives of this contribution - agenda

1. Presenting an approach to identify and analyze cost in grid infrastructures

2. Identify challenges and needs by applying this approach to MediGRID

Agenda

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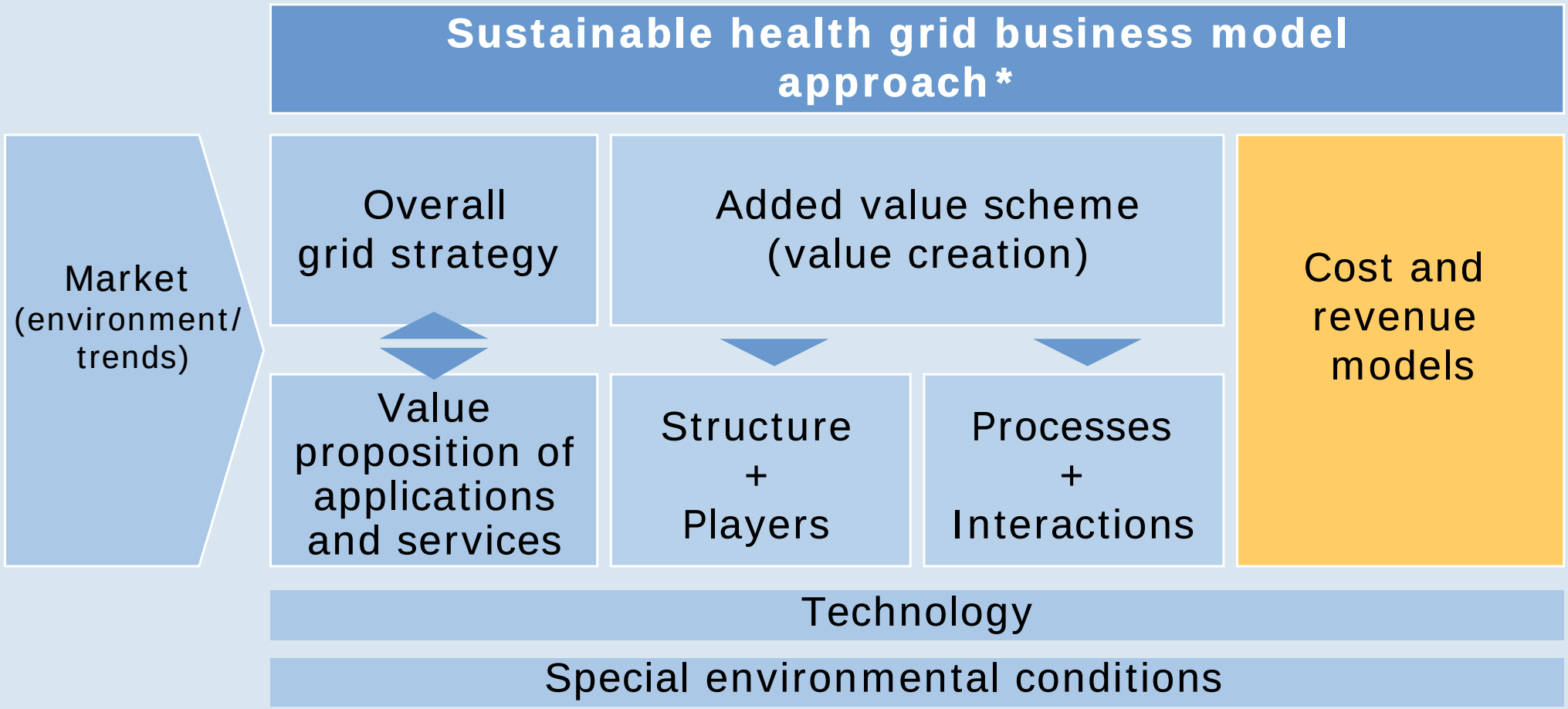
Health Grid Business Model Approach



In order to build sustainable grid infrastructures, a comprehensive understanding of cost structures is necessary - however, it is only one piece of a sustainable business model

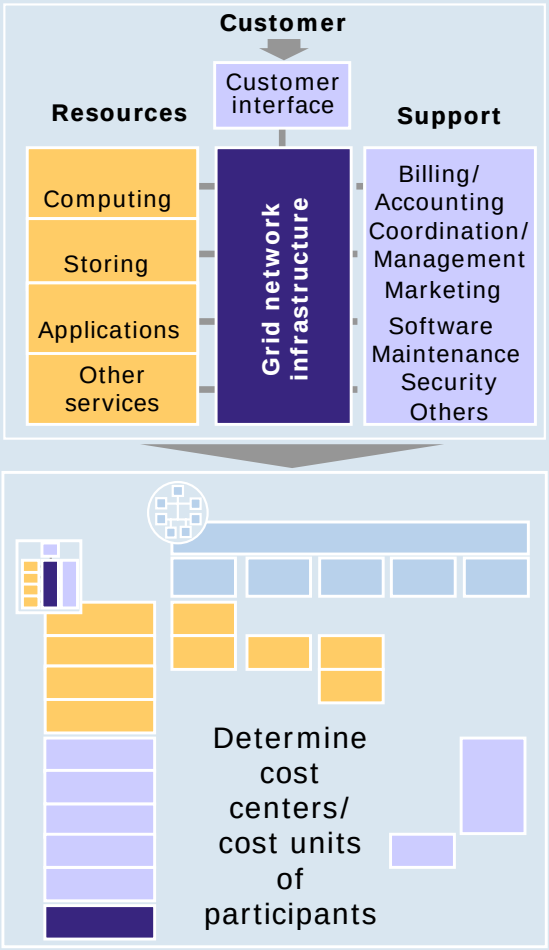
* Based on Stähler (2002) und Alt/Zimmermann (2001)

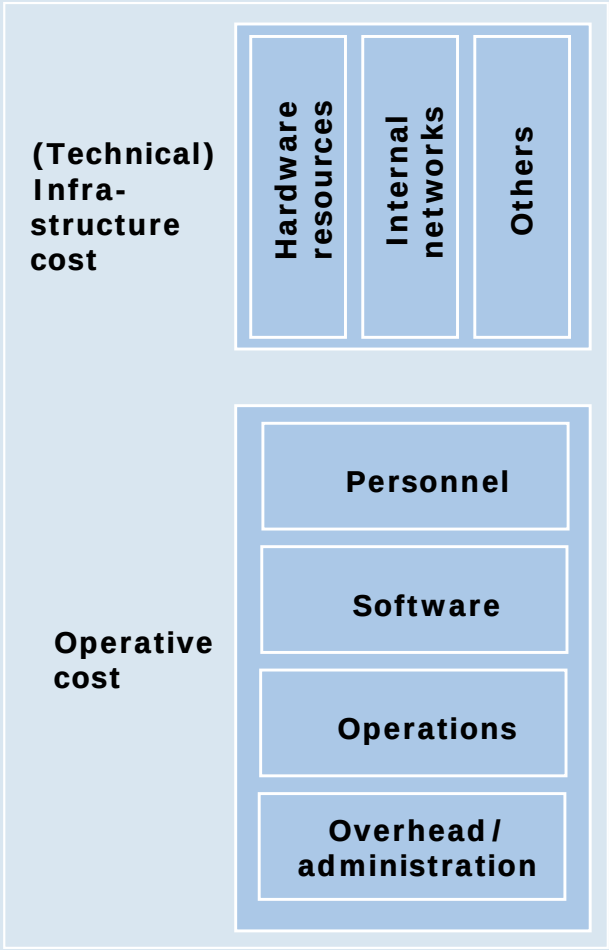
Approach to identify cost in (health) grids

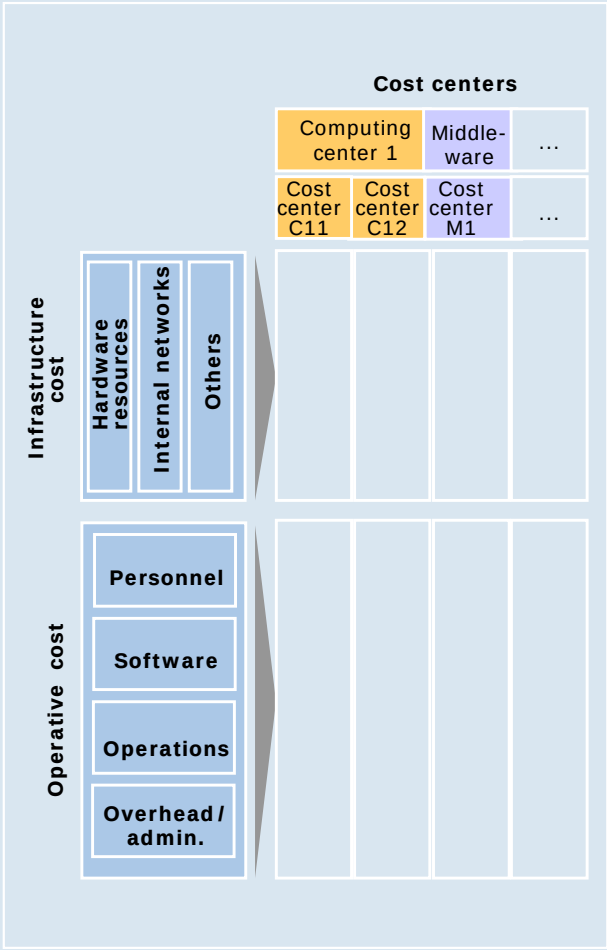
1 Identify grid participants and respective cost units

2 Develop customized cost scheme

3 Identify cost of defined cost units

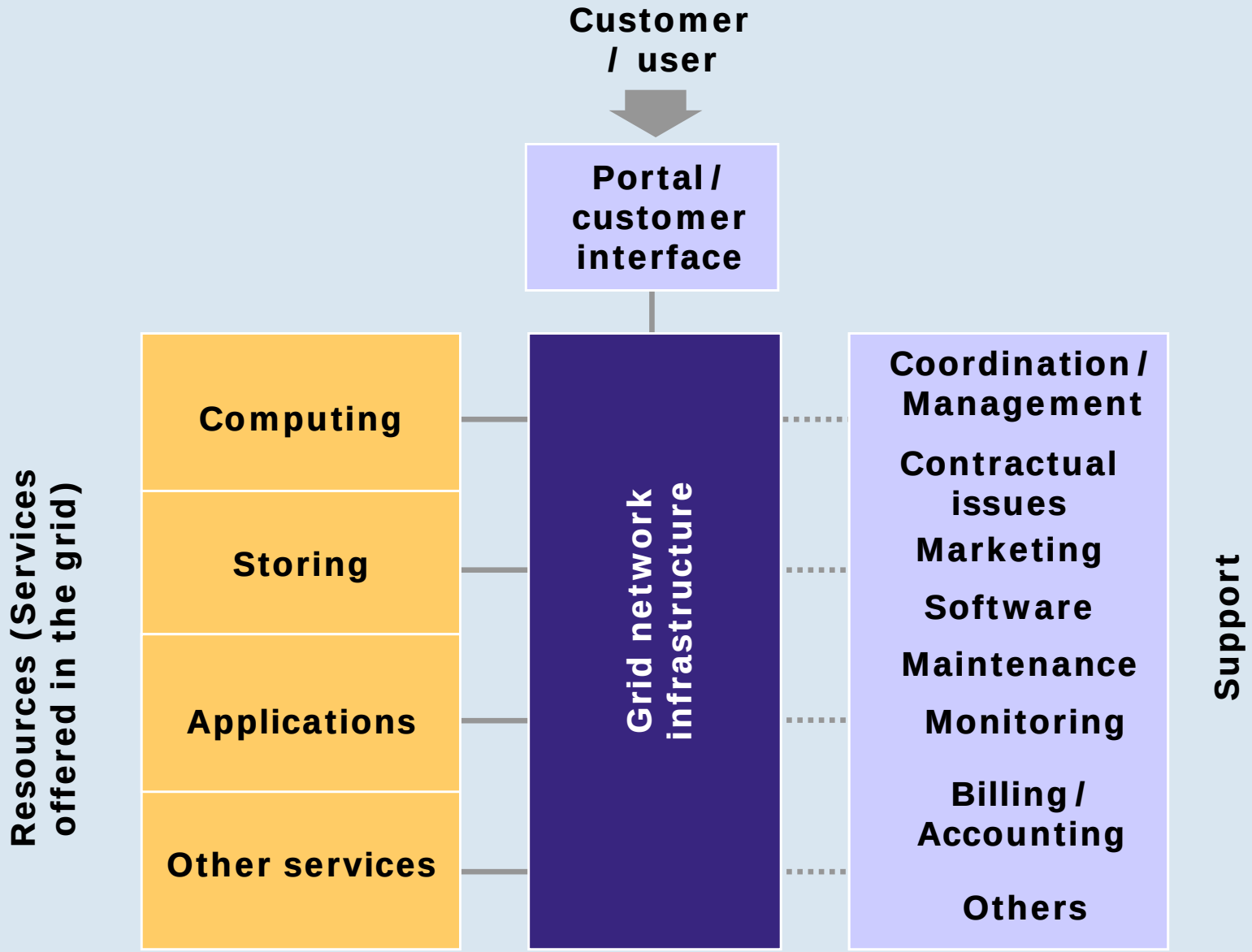






In order to identify potential grid participants, a final functional structure has to be defined

Conceptual



Cost centers have to be defined by matching functional groups and organizational units

Conceptual

Participants of a specific grid-organization

Computing center C1	Computing center C2	Application provider A1	Application provider A2	Middleware-maintenance	Coordination unit	...
Cost center C11						
Cost center C12	Cost center C21	Cost center A11				
		Cost center A12	Cost center A21			
					Cost center Co1	
				Cost center M1		

- Computing
- Storing
- Applications
- Other services
- Coordination
- Contractual issues
- Marketing
- Maintenance
- ...
- Network

Finally, identify the relevant cost of every cost center by applying the pre-defined cost scheme

Conceptual

Defined cost centers by participants‘ tasks

		Computing center 1		Computing center 2	Middleware	Coordination unit		...
		Cost center C11	Cost center C12	Cost center C21	Cost center M1	Cost center Co11	Cost center Co12	...
Infrastructure cost	Hardware resources							
	Internal networks							
	Others							
Operative cost	Personnel							
	Software							
	Operations							
	Overhead / administration							

Agenda

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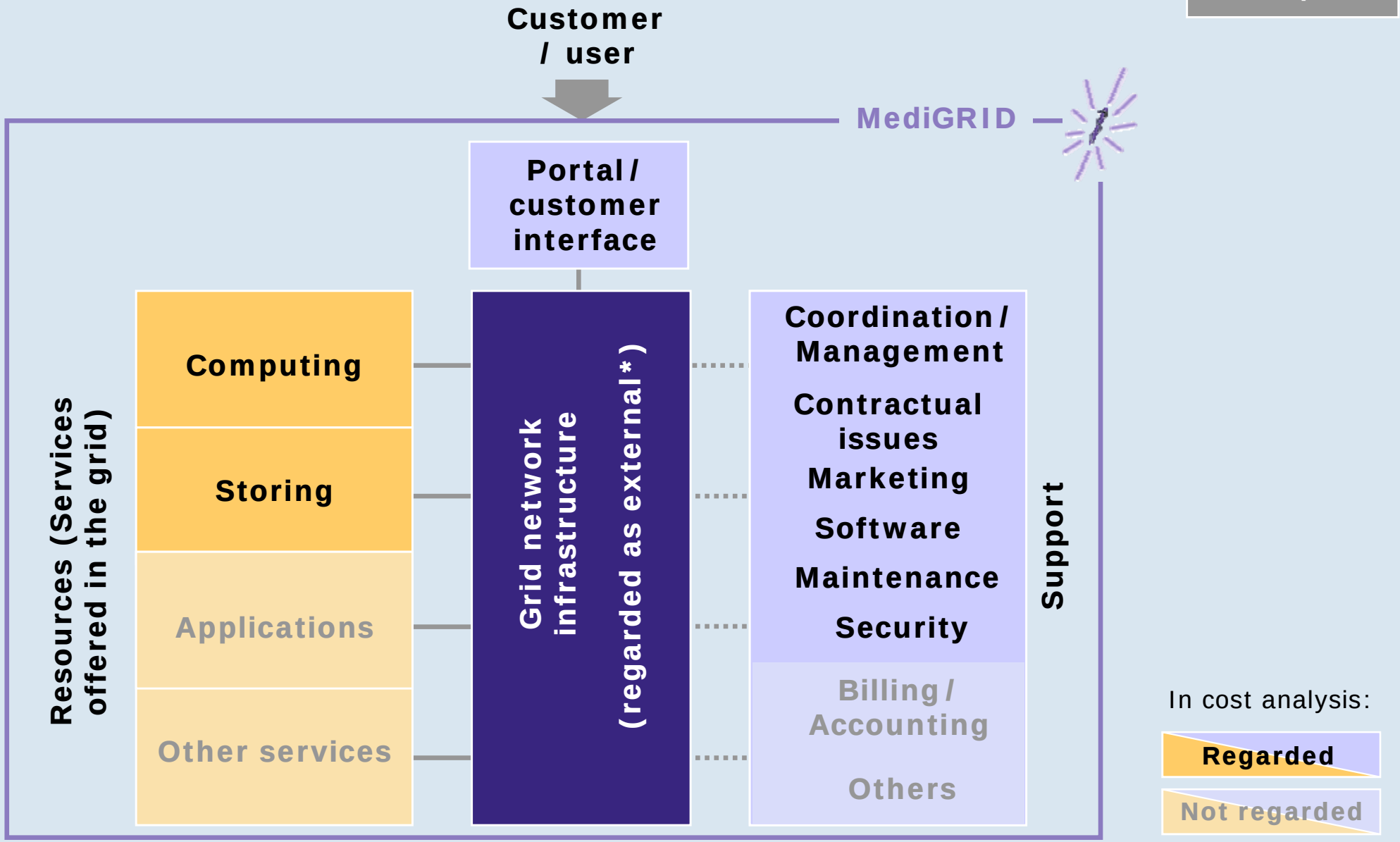
Analyzing the cost structure of MediGRID, not all functional units could be considered

Conceptual



* Cost approach based on DFN-Grid infrastructure and its respective prices

Identify cost of every cost center by applying the pre-defined cost scheme

Preliminary!

	Rough estimate annual cost	Computing Centers (GWDG, ZIB, ZIH) – Computing	Computing Centers (GWDG, ZIB, ZIH) – Storing	Management (incl. marketing and contractual issues)	Middleware & support (middleware, security, portal, ontologies, user support)	
Infrastructure cost	Hardware resources, Internal networks, Others	100 kEuro	120 kEuro	Mainly in operating cost	Mainly in operating cost	220 kEuro
Operative cost	Personnel, Software, Operations, Overhead / administration	200 kEuro	120 kEuro	180 kEuro	230 kEuro	730 kEuro
		300 kEuro	240 kEuro	180 kEuro	230 kEuro	Total: 950 kEuro

Challenges and needs

- To identify cost in grids, a well-defined business-driven approach is strongly recommended
- Feasible estimates of future capacity utilization are strongly needed
- A perennial forecast will be needed for all relevant resources
- A further challenge will be a transparent and plausible costing of academic participants
- In order to guarantee long-term sustainability of health grids, funding issues may play a significant role due to possible difficulties in adapting appropriate business models in the short- and mid-term

Thank you for your kind attention!

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MediGRID