Accounting for Service Value – an Ontological Approach

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Understanding Society

Problem definition

- Services are used in a use process, outside or at the border of the company
- Service execution builds on large fixed capacity
- Cost strategy does not work. Focus on Joint Productivity Gain
- Measuring service performance (total cost of customer, value of a customer)
- Service resource planning

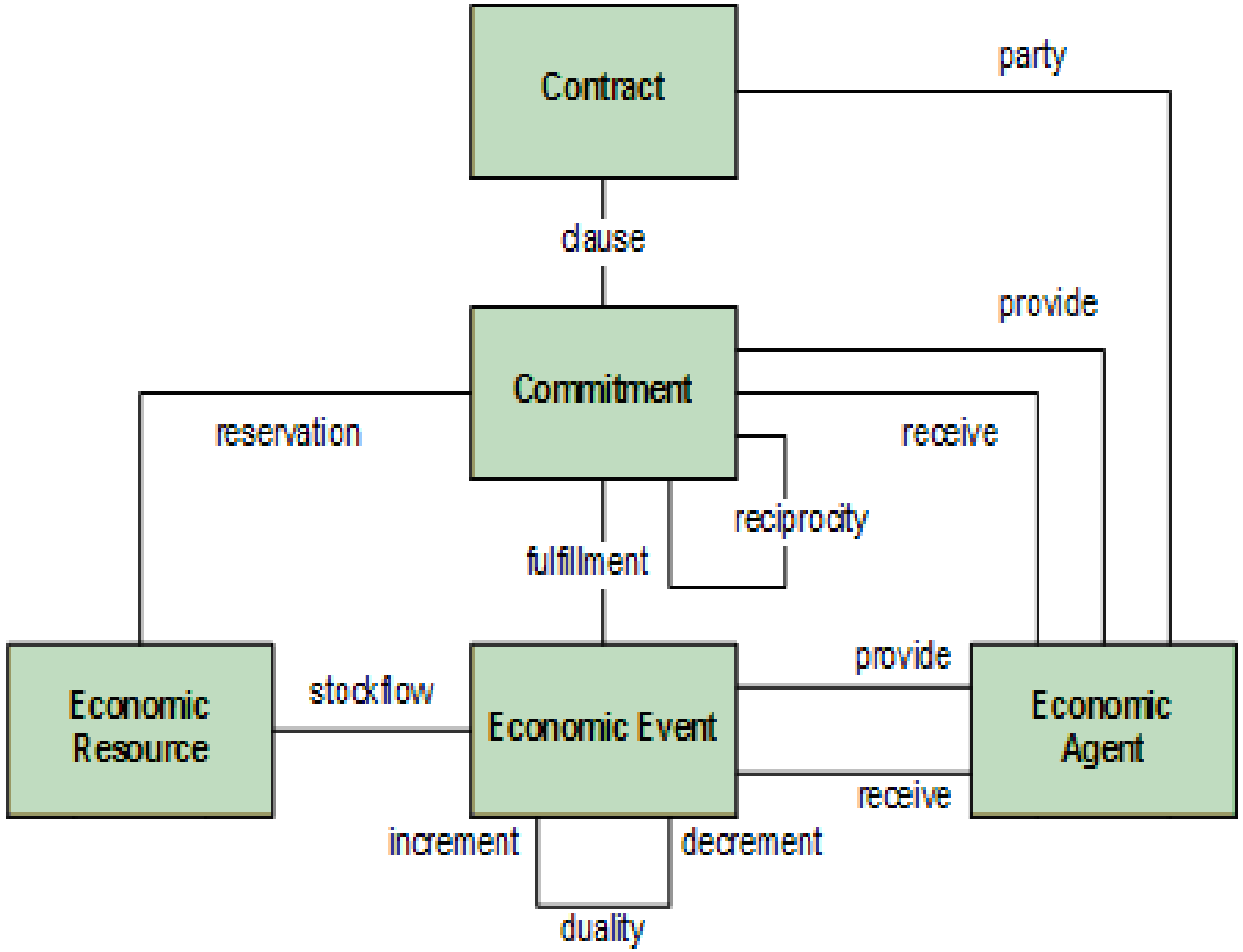
Contribution of this paper

- A service accounting framework based on the REA business ontology
- Definitions of key service accounting concepts such as total service delivery costs and value-in-use.
- A unified data model (unified for services and resources)

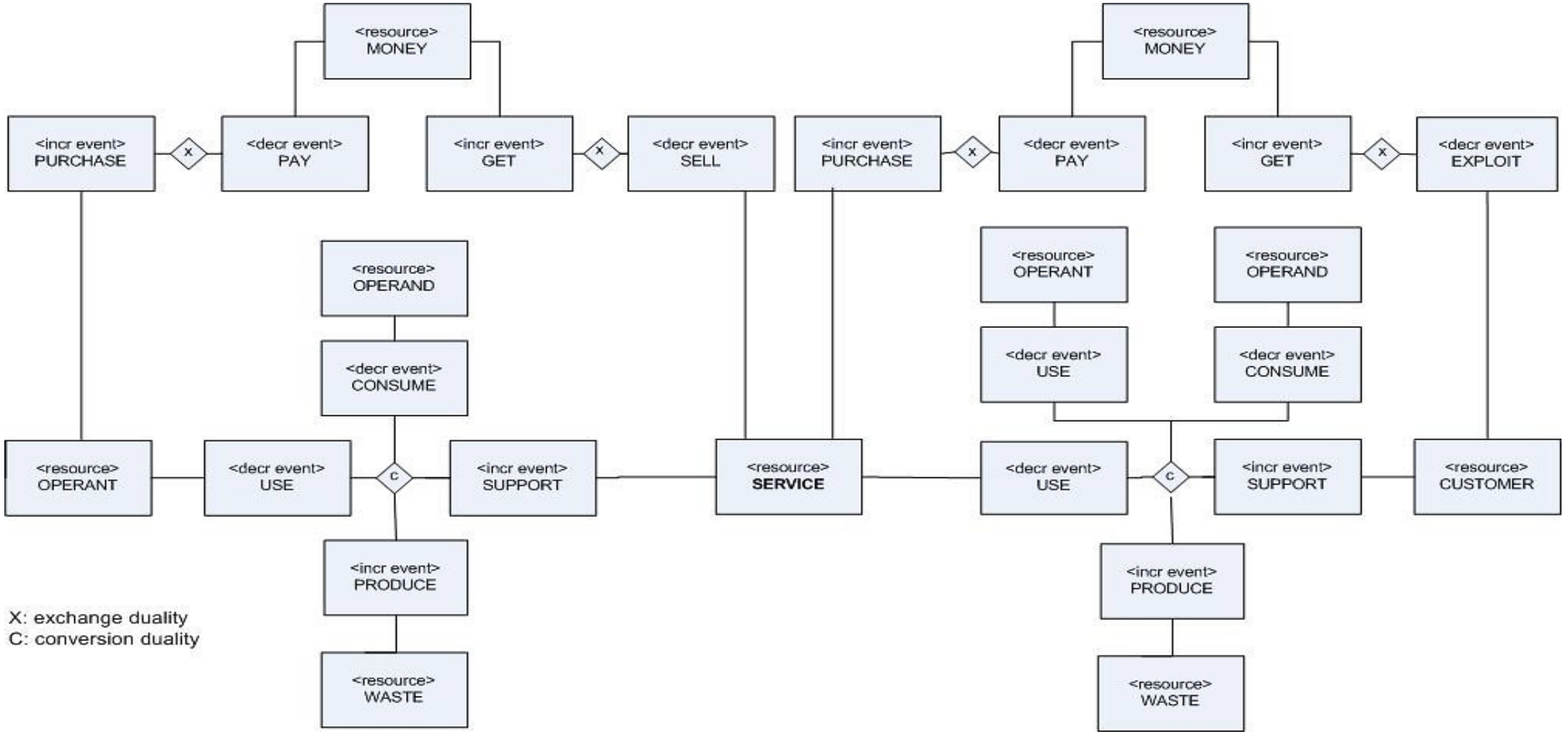
What is a service?

- “Service is a process” (GDL vs SDL) (service science)
- “Service is a resource” (economics)
- “Service is a commitment” (Guarino)
- “Service is an interface” (computer science)

Basic REA concepts



Service process pattern



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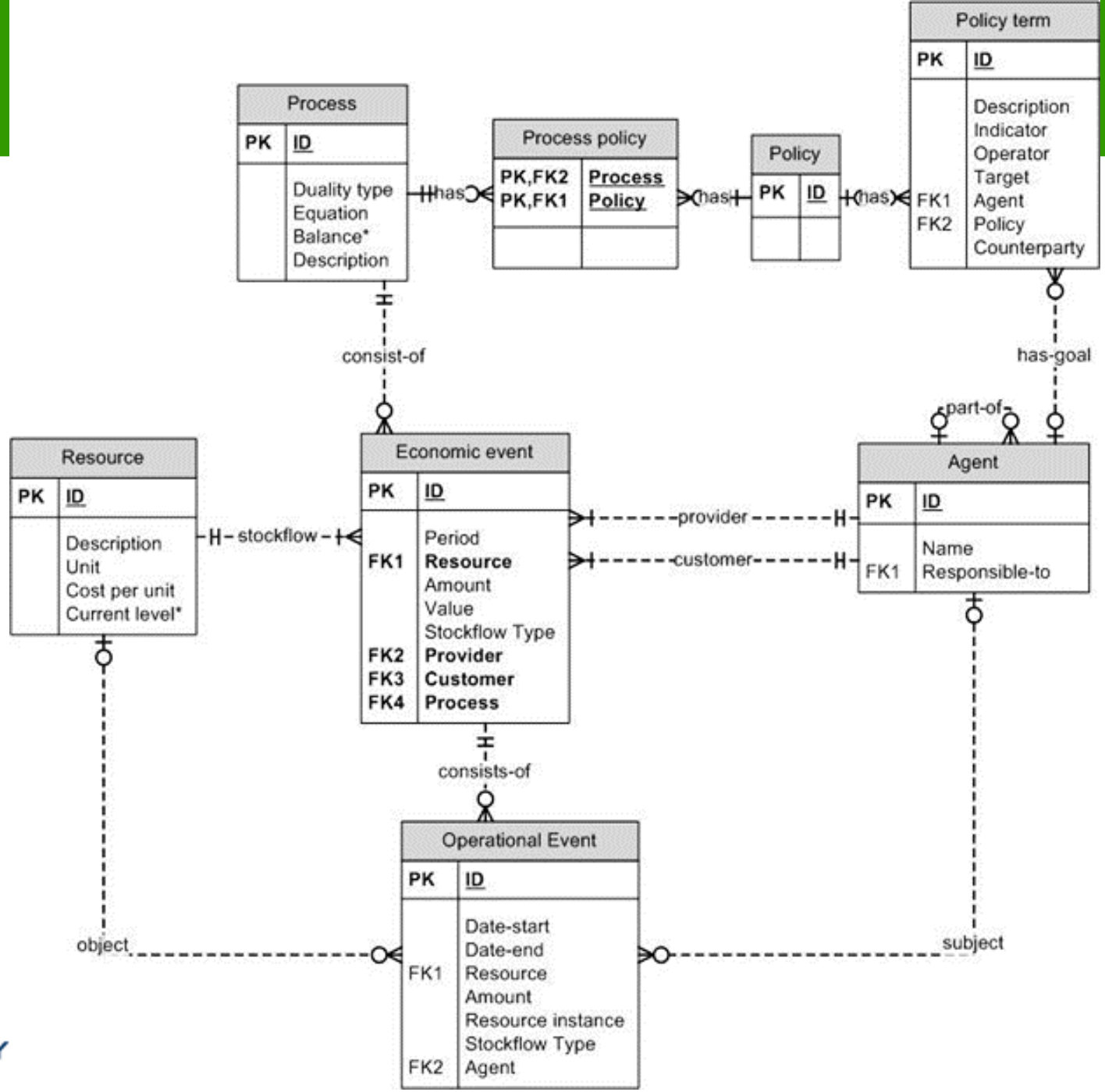
Data model



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Service accounting meters

METER	DESCRIPTION
$U_{r,x} = \Sigma_{e \in x}$ amount(e) * #period(e) * CP_r	**Resource use costs**, summarizing over all stock flow events e in the process x where e uses resource R
$DC_{s,x} = \Sigma_{e:support \in x}$ value(e) = (duality) $\Sigma_r(U_{r,x}) + R_x - P_x$ where $R_x = \Sigma_{e:consume \in x}$ amount(e) * $CP_{resource(e)}$ $P_x = \Sigma_{e:produce \in x}$ amount(e) * $CP_{resource(e)}$	Total **service delivery cost** of a service instance S supported by process x, including consumed resources and costs of waste disposal.
$DC_x = \Sigma_{x:\ support(s) \in x} DC_{s,x}$	Total service delivery cost of a service instance S
$DC_{s',p} = \Sigma_{s:s'}\ (DC_s) + D_{s',P}$	Total service delivery cost for all service instances S of S' in period P, including depreciation of initial investment
$AC_{s,p} = DC_{s',p}/N$	Average service support cost in period P, where N is number of service instances (contracts) in P
$VU_{s,CU} = SR_s - \Sigma_r(U_{r,y}) + R_y - P_y$	**Value-in-use** of S for customer CU defined as service revenue minus all costs, where y is the customer process. U,R,P - analogous to above

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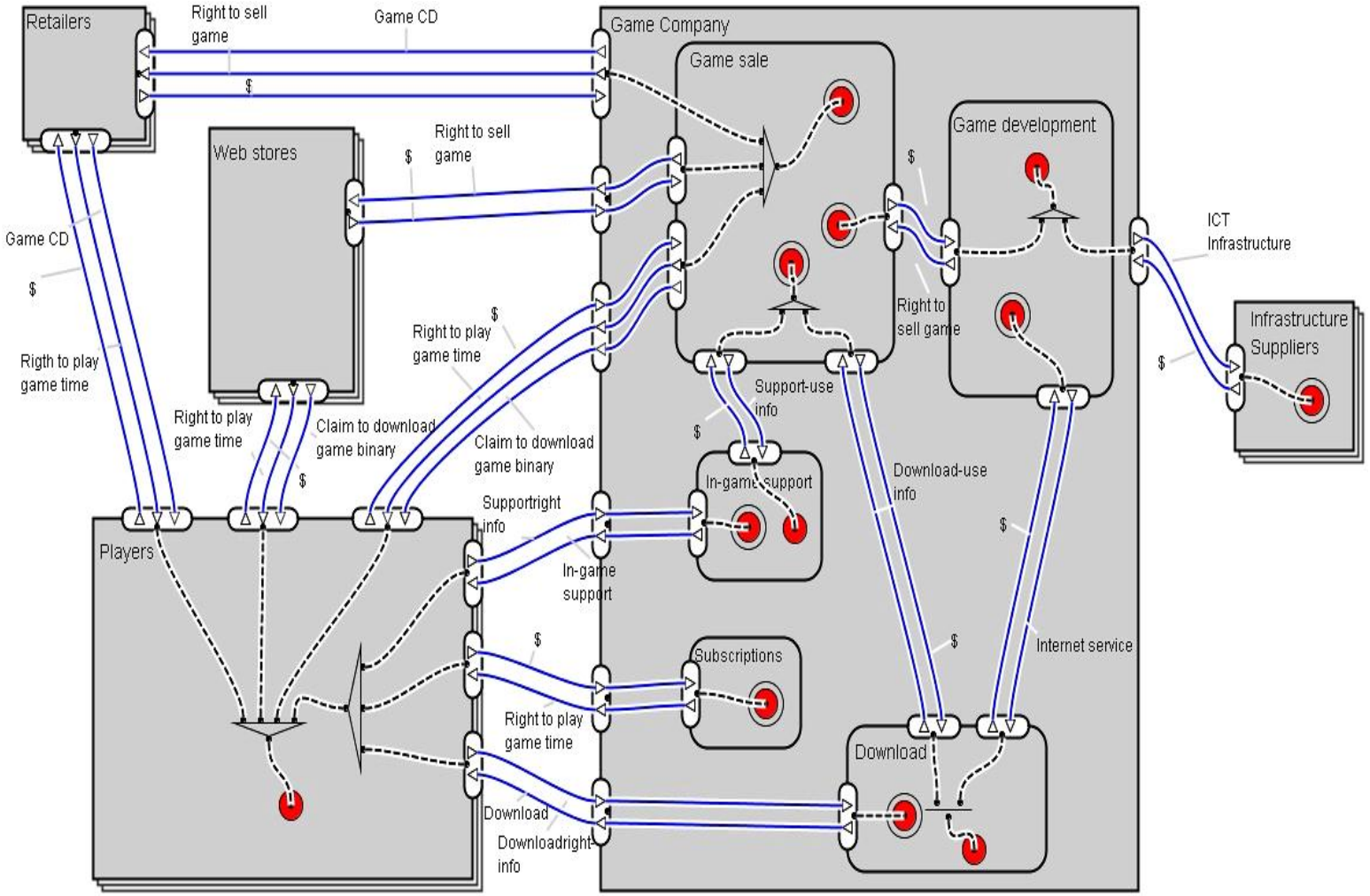
Online game case –e3value model



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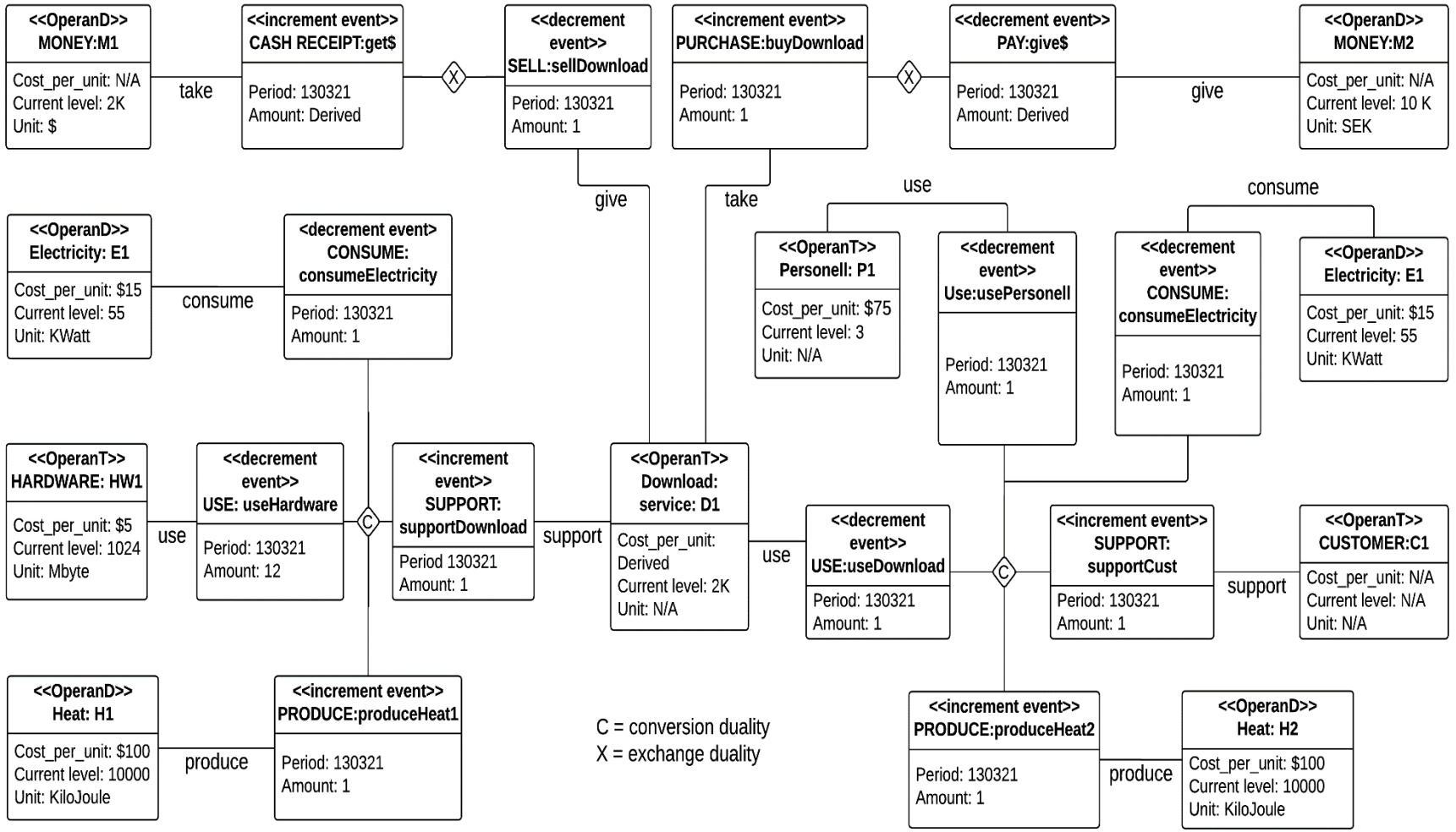
Application of pattern to online game case



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Computing value in use

$$VU_{D1,C1} = SR_{D1} - (\Sigma_r(U_{r,y}) + R_p - P_p)$$

SR_{D1} is assumed to be 200.

Based on $Sup_{CU,p}$, the support to the customer

$\Sigma_r(U_{r,y}) = 1*75 * 1 = 75$ (based on personnel cost per unit, in class Personnel, and amount, in class UsePersonnel and the length of the time period (#period, in this case assumed to be 1) in class UsePersonell)

Cost side

$R_p = 1*15 = 55$ (based on electricity amount and electricity cost per unit)

Cost side

$P_p = 1*100 = 100$ (based on heat amount and heat cost per unit)

Revenue side

Thus, $VU_{D1,C1} = 200 - (75 + 55 - 100) = 170$

Conclusions

- We have presented a Service Accounting framework based on the REA business ontology.
- Services are represented as REA resources.
- There is not one “service process”. Services are realized by 3 processes: the service delivery process, the service exchange process, and the service usage process.
- Based on the service ontology, it is possible to define essential indicators – in particular, meters such as value-in-use and total-cost-of-delivery.

- Future work:
  - Working out a full set of balances and performance indicators, as well as policies
  - Design of an ESP (Enterprise Service Planning) system

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