

Economic Resources (Claims) vs Assets (Liabilities)

Discussion Paper

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1 Introduction

In conceptual modeling of economic, accounting and financial reporting (FR), supply-chain and other enterprise architecture (EA) domains, the concepts of economic resources and assets, as well as their counterparts – claims and liabilities, play an important role. Analysis of different ontologies and standards show that their definitions are not consistent, and in addition, resources and assets are regarded as almost synonyms [12, 19]. The need for consistence and distinction increases in the network-based models, such as using DLT. Recent versions of international accounting standards [1] which involve the whole life of a contract can hardly be implemented by accounting departments alone. Accordingly, SAP's developing software on revenue standards implementation [8] delegates a main part of recognition to the Sales (Purchase) department, but only measurement to the Accounting department. Thus, accounting needs to be interpreted in a wider than traditional sense and is an important part of an enterprise conceptual model, and FR concepts must have enterprise and network-wide understandability. Presently, in the Enterprise Architecture (EA) realm, the shared ledger as well as FR perspective is not always recognized, and the concepts of resources and claims, assets and liabilities, are treated differently as in FR.

The Core Ontology for Financial Reporting Information Systems (COFRIS) [4, 9, 10] is grounded on Unified Foundational Ontology (UFO) [5]. In this paper, we build on COFRIS and attempt to align different definitions of economic resources and assets in different standards and propose to distinguish between resources as participants of consensual economic exchanges and assets as enterprise specific economic exchange effects and dispositions.

We start with the analysis and some preliminary conclusions of resource and asset concepts in different standards and COFRIS, continue with a more detailed conceptualization of *Economic relator* in COFRIS and finalize with some suggestions to Conceptual Framework of Financial Reporting [2].

2 Aspects of Economic Resource and Asset Conceptualization

The concepts of resource and asset are key in accounting but turn out also to be hard to define and to distinguish.

First, there is a common practice of calling by the same names both the representations of the objects and the real-world objects themselves. On the contrary, we may design different names for these two cases, and call the elements of enterprise financial statements - assets and liabilities, and the objects of the enterprise they represent – economic resources and claims. Our analysis shows that the accounting frameworks [12] refer to both meanings with the same name, and that different enterprise related standards [11, 17, 20] use terms assets and liabilities also outside the context of representation. The latter approach is taken in COFRIS. The attempts to ascribe *assets* exclusively to the domain of accounting and to the presentation can be explained because “in conventional accounting we do not evaluate activities as such but evaluate them by their effects on assets” [16]. It should be noted also, that new AIS technologies such as blockchain and IoT facilitate convergence of representation and [rights over] objects.

Second, there is a common practice of calling by the same names the dispositions (capabilities, functions) and their manifestations in events.

In UFO a *Resource* is an Object (needed to make progress towards a goal) that participates in an Action. Further in [6], the UFO grounded ontological analysis of resource concept was provided in the enterprise architecture and ArchiMate® framework context, that defined a *resource* as “a type-level entity, capturing the *role* of an (agentive or non-agentive) object in a particular context of usage”. The *underlying object* type is restricted as an “allowed type”, and the context of usage is defined in the scope of a material relation (or in the scope of an event). The *legal* and *holder-specific* aspect of the resource as “an asset owned or controlled” was also considered, but in the given scope, was not elaborated to the level of detail required for FR. For example, the employment contract mentioned in the article, in the contracted (executory) phase usually is not recognized as an asset for FR. The *economic* aspect of a resource, that in an exchange, for a resource transfer, the right to receive another resource of a certain value is obtained, was outside the scope of that article. Our suggestion is that *economic* resource treatment would have been more appropriate for ArchiMate® framework.

In COFRIS we distinguish *assets* as holder specific (exchange) transfer dispositions and effects, and *resources* as (exchange) transfer participants. It may seem that the dispositions themselves can be transferred – the assets can be not only used, but also sold. However, asset’s disposition, enough¹ to play a role in a holder’s enterprise activity, is constrained by the abilities, restrictions and purpose intentions of that enterprise (e.g. as *finished goods*), while more general resource (e.g. *widgets*) is [to be] transferred to some new holder, effecting in the disposition of e.g. *raw material* assets². Thus, the *changes* of assets (liabilities) caused by transfers are specializations of transferred resources (claims). So, resource is a unit of flow, while asset is a unit of stock³. Assets are holder specific and resources are consensual roles of an object. Resources are present [or future] participants of the economic exchanges. At transfer resources to be transferred initially are regarded from the provider’s perspective as from its assets, but

¹ French *assez* - enough.

² Assets may be transferred only within a transfer (combination) of a business as a whole.

³ https://en.wikipedia.org/wiki/System_dynamics : A stock is the term for any entity that accumulates or depletes over time. A flow is the rate of change in a stock.

common understanding for the target customers, and further with the customer should be obtained as a transferable resource, and finally accounted as an asset of the customer.

Another approach in standards is to regard asset as a type, but the resource as an instance. For example, ISO/IEC 23000-18:2018 Information technology — Multimedia application formats, defines resource as “individually identifiable asset such as a video or audio clip, an image or a text”, that corresponds to our view because disposition usually specifies the type while manifestation – an instance.

Third, there can be *intentional* or future transfer participation and disposition, committed in offerings and contracts. If we analyze the whole life of an exchange (contract), we may see that often future resources are promised for which the underlying objects doesn't yet exist, or present liabilities for such future resources. The *valuations* may be not exact but estimated, or timing, uncertainty or market-dependent. It is especially true for objects to be disclosed in FR Notes of Financial statements, where asset (liability) phases provide additional to *recognized* assets (liabilities) concepts.

Such extensions and UFO patterns also provide ground for their relation to analogue Enterprise Architecture concepts. The OMG Business Motivation Model (BMM) [17] specification provides a scheme or structure for developing, communicating, and managing business plans in an organized manner. The standard introduces asset and liability concepts but claims that they are real-world objects without “accounting flavor” (of representation). Of course, these are *future* assets (liabilities) and moreover, in a *planned* phase, long before any contracts. However, we don't find any differences in the meaning, classification and treatment of the assets of BMM, except that *current assets* are called *resources*. As we argued above, the valuation aspect may not be exact at early stages, and the legal aspects are implicit, assuming ownership, while it may be important even for a business plan to decide between lease and acquisition of the fixed assets. The *BMM::Liability* that “reserves resources needed to meet commitments” is an original but from our view too narrow liability concept even for business plans.

In COFRIS different Exchange phases and Fulfillment levels [3] are introduced to model life time of economic exchange and involved resources and assets.

Fourth, the assets (liabilities) and the economic resources (claims) represent social relationships and their change among the participants of the market society, and in COFRIS they are modeled as social relators [13] and more specifically as legal relators [14]. In recent accounting frameworks an *economic* resource is “a right that has the potential to produce economic benefits” [2], while in the REA Ontology presented in ISO/IEC 15944-4:2015 [15], and in other standards, social, legal position and derivative aspects are not emphasized.

Fifth, there is an important difference between property rights and assets, *economic* resources and [proper] resources. The difference lays in *valuation*, i.e., economic resources are scarce and thus valued resources, and assets are valued property rights.

ISO 55000:2014 Asset management [11] defines an asset as “item, thing, or entity that has potential or actual value to an organization . . . Value can be tangible or intangible, financial, or non-financial, and includes consideration of risks and liabilities. It can be positive or negative at different stages of the asset life”. While in this case asset definition comes closer to COFRIS compound economic relator definition, because the liability in [11] is subsumed under the asset, the differentiating of the potential or actual

value and value description is equally important and understood within enterprise asset management activities and COFRIS.

Similarly, in OntoREA [18] where “The Economic Resource is typified into Phase classes according to the economic value specialization condition for distinguishing between Asset, Liability, Equity and Claim whereas this condition is considered as an intrinsic property of the resources” we agree with the value condition but disagree that the assets and liabilities are subsumed under economic resources. Considering that assets are resources controlled by an enterprise, but liabilities and equity are claims against the enterprise, we introduce the concept of an *Economic relator* (compound for the currency swap example in [18]) that has Economic Resource and Economic Claim as exclusive phases.

REA in [15] never defines assets, while the enterprise specific role of assets (italics added in the citation) dominates its economic resource (underlined) examples: “Goods which are tangible resources to include: - Materials including *capital assets* (like trucks), *basic raw materials and natural resources* (like steel or petroleum) plus *sub-components of a larger assembled product* (like seats for an automobile).

REA [15], as an “operational ontology” [21], constantly mentions *valued* resources, but the *recognition, purpose classification, valuation* of the resources and assets, which are the primarily topics for accounting and importance for economy, should be more elaborated.

3 COFRIS. Economic Relator

In COFRIS the valuation for the transfer of a resource is regarded as potential or actual *right to receive* that value. A complex social relator called economic relator is introduced to model relationship between property rights and rights to receive value. Market participants enter into economic relationships that mediate a particular party with the society and other parties (see Fig.1).

An *Economic relator* is a UFO social and legal relator [14], existentially dependent on involved market participants, that consists of:

- Holder’s Rights or Obligations (against Converse holder) to transfer Rights (or their usage) over some Object at some Timing, in exchange for
- Holder’s Right (towards Duty holder) to receive value for the transfer.

The left side of the Fig.1 depicts the *consensual* perspective of an Economic Relator in an exchange activity context. Thus, it shows the concepts agreed (or to be agreed) among the contract parties, or within groups, or in the market or in the society. The *Valuation* of an economic relator can be based on the *Transaction price* that is the contracted value to be received for the transfer, or the *Market price* that is the value that could be received in the marketplace for similar transfer. The phases of economic relator are determined by the economic exchange life phases such as *offered, contracted, fulfilled, settled*; fulfillment level such as *contract, performance and transfer*; and fulfillment phases determined by the fulfilment of economic resource (claim) transfer and corresponding value receipt, as depicted in the Table of Fig.1.

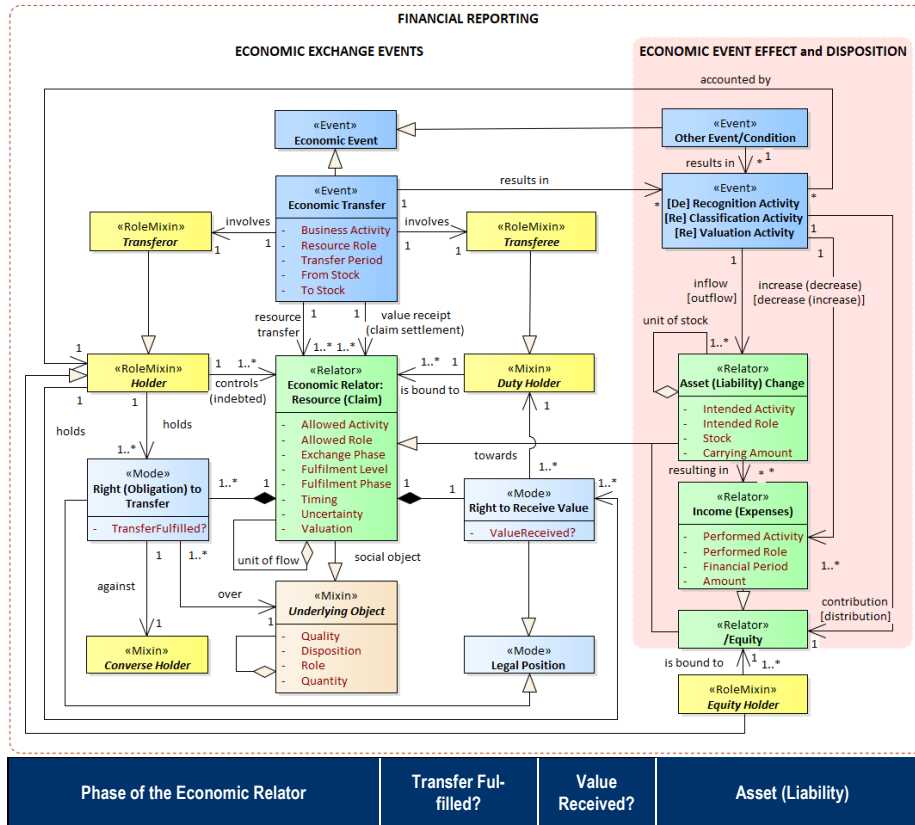


Fig. 1. COFRIS. OntoUML diagram of Economic relator and a Table of its Fulfillment phases. (Legend: Market participants – Economic agents in yellow, Economic events in blue, Economic relators, their roles and phases in green).

An *Economic resource* is a Right (a claim-right to exchange/receive, permission to use/consume, power and immunity [14]) to transfer in exchange for economic benefits – right to receive value (or right to receive other economic resources, or other economic resources themselves), or to fulfil (settle) economic claims.

An *Economic claim* against market participant is an obligation of the resource (claim) exchange/transfer to which the market participant is legally or constructively bound. *Unit of Flow* is a (compound) group of resources and/or claims which are transferred or fulfilled together.

An *Economic transfer* event attributed by the *Business activity* type is performed by a *transferor* who fulfils a conditional obligation (or settles an economic claim) by:

- transfer of holder's rights or their usage from a stock controlled by transferor to the stock controlled by transferee. Transfer may occur instantly or over period of time. *Stock* in this case is any collection of involved party's economic relators.
- receipt of transferor's value receipt rights for the transfer towards the transferee, (or settlement of economic claim against the transferor).

An *Underlying object*, an UFO mixin, denotes the physical or social object, or their type characterized in particular by: *Quality, Disposition, Role and Quantity* (of collective objects or *Amount* of matter) of underlying objects or object function.

An enterprise party specific exchange effects situation is depicted on the right side of the Fig.1. An *Economic event* affects the value or structure of an economic relator. The exchange events together with enterprise specific *Other events* or *conditions*, such as regulation, market participant, market price and underlying object changes, affect enterprise specific economic relators – assets (liabilities) – whose changes are specializations of transfers of resources (claims), extended by *intended activities*, such as administration, sales of goods and rendering services and [outsourced] production.

Assets (Liabilities) are present rights (obligations) for resources controlled (claims indebted and unavoidable) by a party, as a result of past activities which form their *Historical cost* [2]. *Carrying amount* represents the present valuation and can be measured as historical or present (market) value. The role of an asset (liability) is the one it will play in an *intended* activity, such as raw material, labor, equipment and finished good. The role of income (expenses) is the role performed in a *performed* activity. Regarding presentation, the Balance Sheet is the aggregation of Asset (Liability) Changes, while the Income Statement is the aggregation of Income (Expenses) per period.

Unit of Stock or Account is a (compound) group of rights and/or obligations which are usually or mandatory transferred (fulfilled, consumed/used, produced, classified, valued) together, such as a business, cash generating unit, and economic contract.

While all exchanged resources (claims) are enterprise asset (liability) changes in FR, some are [regarded as] *momentarily*, i.e., are transferred (consumed) as received. Momentarily assets (liabilities), such as services, increase (decrease) carrying amount of affected *stock* assets (liabilities or equity). Other asset (liability) changes are *recognized* for future recovery (transfer) or *derecognized*. *Classification, Valuation and Uncertainty* of assets (liabilities) depend from the intended activities and roles and can change as a result of their enhancement/impairment and market and own prices and risks.

Equity is the value residual of assets (liabilities) and represents the equity claim of a group of enterprise owners – *Equity holder*. Changes in equity caused by inflow [outflow] in (valuation of) assets (liabilities) are classified as: exchange *income* [*expenses*], enterprise specific *gain* [*loss*], equity holder *contribution* [*distribution*]. These elements are attributed to *Financial periods, Performed activities* (business and accounting), and *Performed role* of corresponding asset (liability).

4 Preliminary Suggestions to IASB Conceptual Framework for Financial Reporting

In March 2018 IASB finally released the revised version of the Conceptual Framework (CF) for Financial Reporting [2]. The revised framework contains several conceptual improvements, including new resource (as rights that have the potential to produce economic benefits), asset and liability definitions. Our goal is to be reasonably compliant with the framework in engineering COFRIS. Another goal is to see where the CF could benefit from our ontological analysis. We list the following suggestions:

Firstly, Financial reporting should aggregate *transaction-centric* plus enterprise-specific, but not exclusively *enterprise effect-centric* information. Thus, economic exchange should be introduced as a unifying concept. Aggregating consensual transactions for FR, instead of accounts, would provide additional opportunities for comparability with other enterprise processes, possibilities of application of process mining methods, and insights into the value co-creation processes. Conceptually it may also eliminate need for some artificial non-stock accounts, such as *momentarily*, *WIP Labor* and even *nominal*.

Secondly, competitive *consensuality* (meaning that among parties there is an agreed shared ledger of contracts and their fulfillment, including provider and customer resources (claims) and required asset (liability) information) should be a quality aspect, even within the old context of audit reconciliations. Consensuality should be added to comparability, verifiability, timeliness, and understandability as qualitative characteristic that enhances the usefulness of information that both is relevant and provides a faithful representation of what it purports to represent and reduces *reporting uncertainty*.

Thirdly, *correlativity* in economic relationships, should be a standard-setting principle. The important intermediate resources (claims) of contract realization, performance and transfer should be defined. When correlativeness and consensus are not regarded as a principle, deficiencies emerge in standards already discussed by us elsewhere, such as concerning leases [10], contract assets and revenue [3].

Fourthly, Assets (Liabilities) are conceptualized only as *recognized*, while they and other economic relators are also *planned*, *offered*, *contracted*, *suspended*, *fulfilled*, and *settled* within the phases of exchange (contract) and often have to be disclosed in the FR Notes of financial statements. Hence the *Economic exchange phases* should be included in the framework.

And fifthly, a unifying concept of an *Economic relator* should be introduced. A partial effort in the framework has been made by defining the concept of a Unit of Account as a group of related rights and/or obligations. The difference is that the economic relator is a more atomic building block that shows the value relationship, from which more complex (compound) units of account such as the contract (of three levels and phases of fulfillment, as shown in [3]), investment portfolio, cash-generating unit, and business as complex economic relators can be built.

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