These slides:

https://tinyurl.com/lrjf4nz

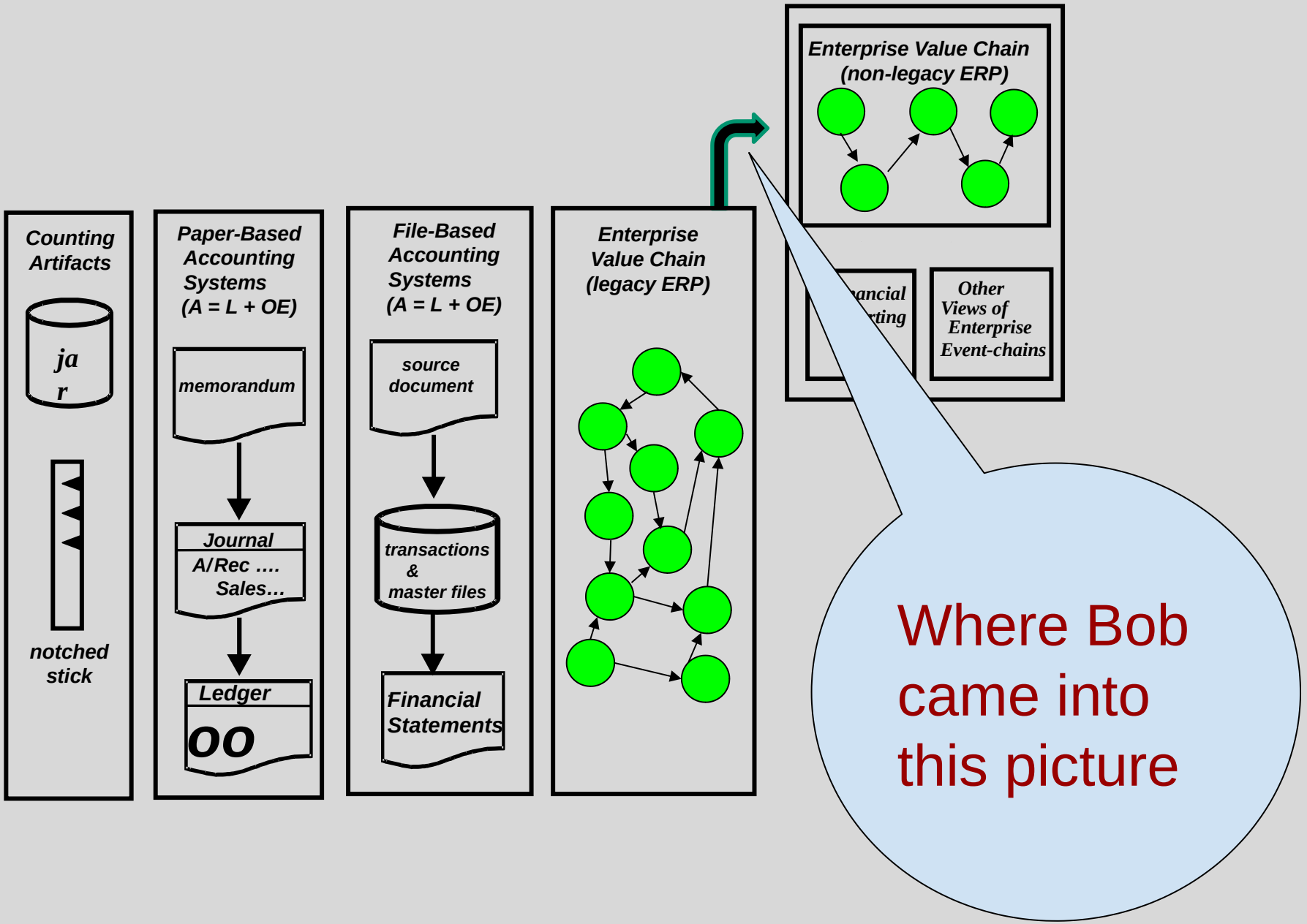
Our evolution with REA

From Elmo and Cookie Monster to new economic ecosystems

FairCoop

Earth's cooperative ecosystem for a fair economy

Bob Haugen and Lynn Foster http://mikorizal.org


Counting Artifacts
ja
r
notched stick
Paper-Based Accounting Systems (A = L + OE)
memorandum
Journal
A/Rec ….
Sales…
Ledger
oo
File-Based Accounting Systems (A = L + OE)
source document
transactions & master files
Financial Statements
Enterprise Value Chain (legacy ERP)
Enterprise Value Chain (non-legacy ERP)
Other Views of Enterprise Event-chains
Where Bob came into this picture

skunkworks

CA plans real-time scheduling engine

QRE gives manufacturers much-needed scheduling power.

By John Cox
New Orleans

Computer Associates International, Inc. (CA) last week disclosed plans to beta-test a scheduling engine that will let manufacturers react quickly to order changes and coordinate those changes across enterprise-wide manufacturing and financial applications.

Quick Response Engine (QRE), under development for two years, will initially be introduced in the CA-PRMS manufacturing application suite, with beta testing due to start in September. Later, QRE will be rolled out in other enterprise applications as appropriate, said David Cahn, vice president of product strategy, business applications at CA.

The announcement was made at the CA-World '95 conference here. Release dates were not disclosed.

gent agents to collect materials, capacity and customer demand information, which is translated into plans or schedules using its own optimization technology. PeopleSoft, Inc. is licensing the Red Pepper engine for a line of manufacturing applications.

Cahn said CA's goal is to let users take existing manufacturing information and move it to the desktop, where it can be used in QRE to build schedules that can be synchronized across the enterprise. Today, manufacturers are hamstrung by batch-oriented applications based on weekly or monthly reporting cycles.

Robert Bosch Corp.'s Automotive Group in Charleston, S.C., will be a beta site for QRE. "Your customer gives you a delivery schedule, and you build based on that," said Krish Kumar, unit manager for information systems at the Charleston


Searching for a good
supply chain model…
1997

University of Toronto, Department of Mechanical and Industrial Engineering

UofT MIE Engineering

Enterprise Integration Laboratory – EIL

EIL Theory Applications Members Publications

One candidate

EIL Theory

Knowledge Management
- Knowledge Management Papers

Enterprise Modelling
- TOVE Ontologies
- Enterprise Modelling Methodology
- Process Interchange Format
- Enterprise Modelling Papers

Agent Architectures and Coordination
- Agent Building Shell
- Coordination Theory
- Agent Coordination Papers

Constraint-Directed Scheduling
- ODO Constraint Directed Scheduling Shell
- Constrained Heuristic Search

TOVE Ontologies

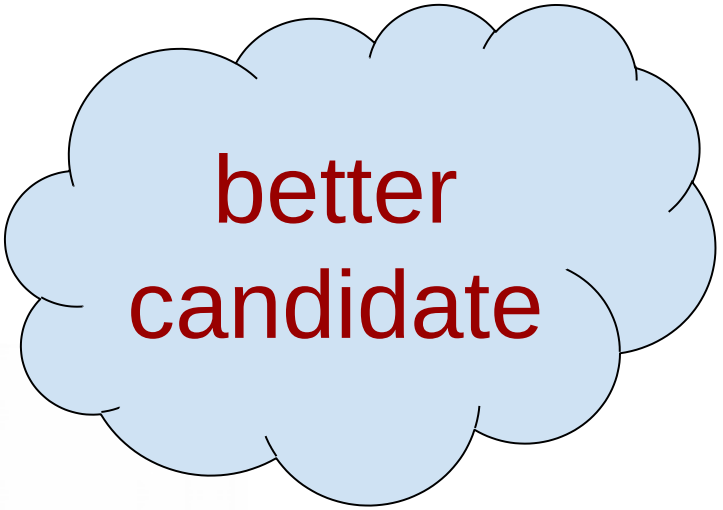
The goal of the TOVE project is to develop a set of integrated ontologies for the modelling of both commercial and public enterprises. An overview of the TOVE project can be found in: Fox, M.S., (1992), "The TOVE Project: A Common-sense Model of the Enterprise", *Industrial and Engineering Applications of Artificial Intelligence and Expert Systems*, Belli, F. and Radermacher, F.J. (Eds.), Lecture Notes in Artificial Intelligence # 604, Berlin: Springer-Verlag, pp. 25-34.

The following ontologies have been developed to model Enterprises. For each ontology we provide a link to a paper that defines the ontology. For additional papers, please click on the research papers link in the side bar.

- **Foundational Ontologies**

Process Interchange Format

Critical in Business Process Reengineering or Enterprise Integration is the ability to share and interlink heterogeneous process models. The goal of the PIF (Process Interchange Format) project is to support the exchange of business process models across different formats and schemas. The project pursues this goal by developing PIF (a common translation language that serves as a bridge among heterogeneous process representations), local translators between PIF and local process representations, and a mechanism for extending PIF to accommodate different expressive needs in a modular way (Partially Shared View).



THE ACCOUNTING REVIEW
Vol. LVII, No. 3
July 1982

The REA Accounting Model: A Generalized Framework for Accounting Systems in a Shared Data Environment

William E. McCarthy

ABSTRACT: This paper proposes a generalized accounting framework designed to be used in a shared data environment where both accountants and non-accountants are interested in maintaining information about the same set of phenomena. This framework, called the REA accounting model, is developed using data modeling techniques, and its underlying structure is found to consist of sets representing economic resources, economic events, and economic agents plus relationships among those sets. Correspondence of REA elements with the accounting theories of Ijiri and Mattessich is discussed. Finally, practical use of the model in the database design phases of view modeling and view integration is presented, and some REA representations of accounting objects are reconciled with those representations found in conventional double-entry systems.

REA was presented as an enterprise accounting model. But it could also connect individual enterprises into larger economic formations.

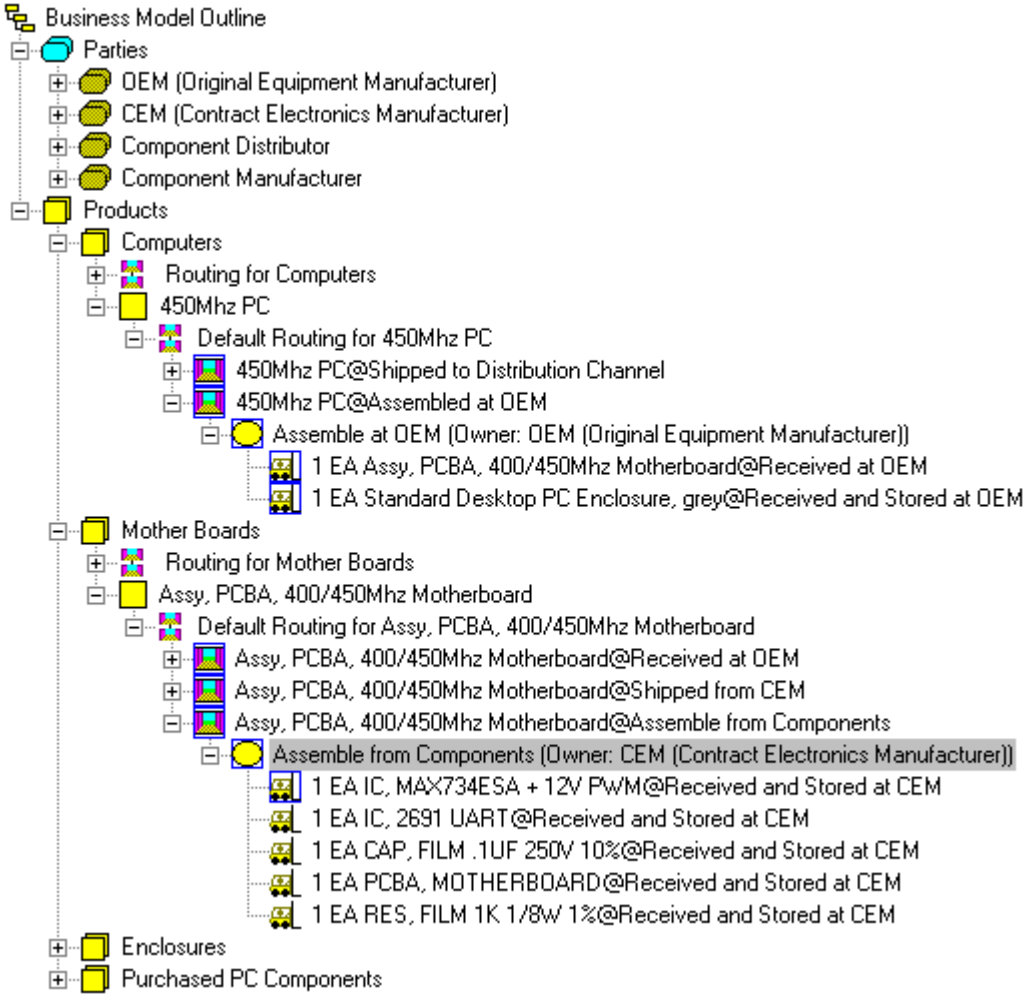
The REA Ontology quotes Ijiri: "...the economic activities of an entity are a sequence of exchanges of resources - the process of giving up some resources to obtain others." Those exchanges of resources do not stop at the boundaries of a single company.

Business Object Component Workshop VI: Enterprise Application Integration

REA, a semantic model for Internet supply chain collaboration

by Robert Haugen, CTO, Logistical Software LLC
and William E. McCarthy, Arthur Andersen Alumni Professor, Michigan State University

Failed supplychain startup



ISO Standard

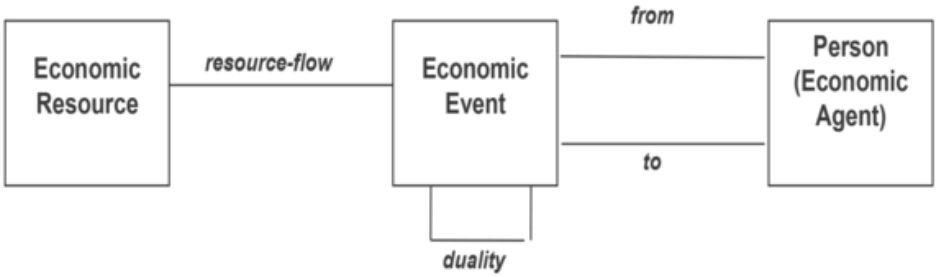
Online Browsing Platform (OBP)

Search | ISO/IEC 15944-4:2015(en) ×

ISO/IEC 15944-4:2015(en) Information technology — Business Operational View — Part 4: Business transaction scenarios — Accounting and economic ontology

Table of contents

Figure 1 — Basic economic primitives of the Open-edi ontology



There are some specific points of synergy between the REA ontology and the ISO Open-edi specifications as represented in ISO/IEC 15944-1.

ISO/IEC 15944-1, 3.9 defines commitment as *"the making or accepting of a right, obligation, liability, or responsibility by a Person..."*. Commitment is a central concept in REA. Commitments are promises to execute future economic events, for example, to fulfill an order by executing a delivery event.

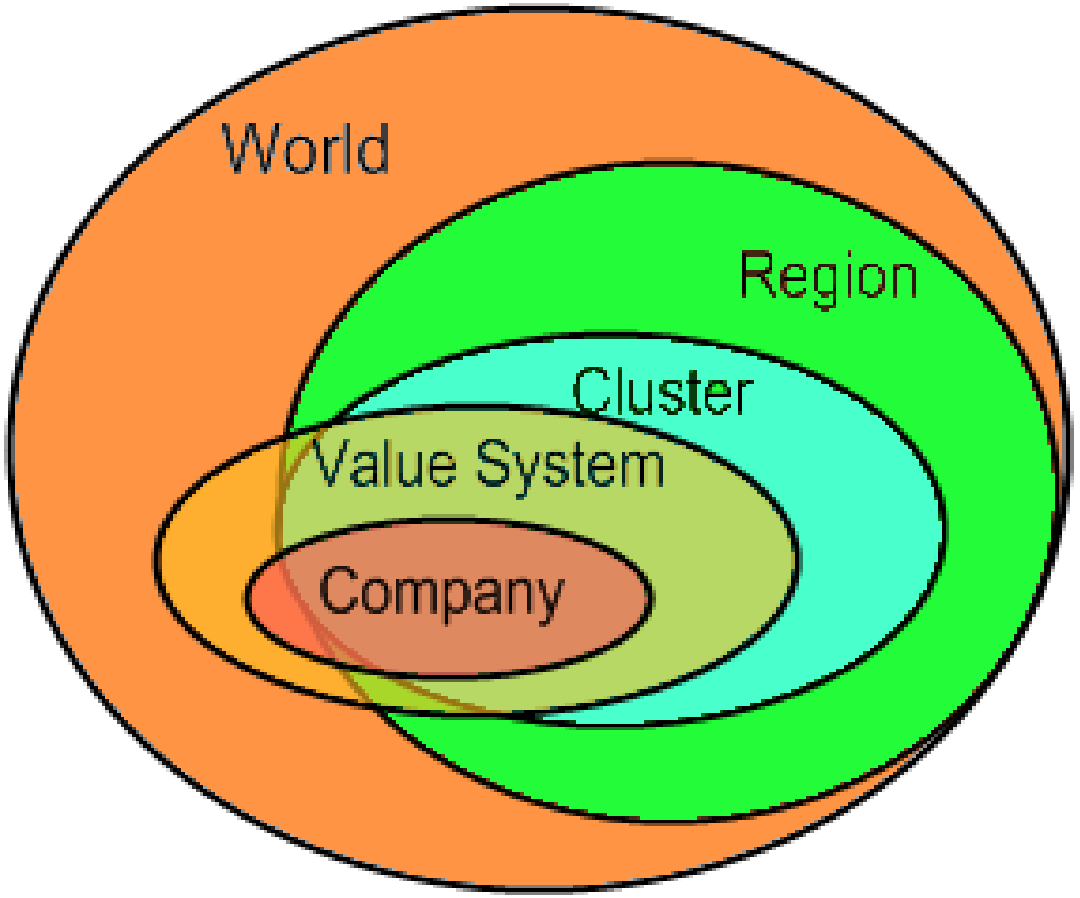
ISO/IEC 15944-1, 6.1.3, Rule 1 states: *"Business transactions require both information exchange and commitment exchange."* REA firmly agrees with and helps give definition to this assertion. Reciprocal commitments are exchanged in REA via economic contracts that govern exchanges, while information exchange is tracked via business events that govern the state transitions of business transaction entities that represent various economic phenomena.

ISO/IEC 15944-1, 6.3.1, Rule 39 states: *"Conceptually a business transaction can be considered to be constructed from a set of fundamental activities. They are planning, identification, negotiation, actualization, and post-actualization."* For REA, actualization is the execution of economic events that fulfill commitments. Planning and identification involve business partners with types of economic resources, events, and persons, while negotiation is finalized by an economic contract which is a bundle of commitments. The UN/CEFACT Business Process Group has also defined negotiation protocols that assist in forming commitments. The Open-edi set of activities and the REA economic concepts will help each other tie together all the activities into a cohesive business transaction, and then unite that transaction definition with its related information models.

Finally, with regard to the preliminary agreement between Open-edi and REA, the two major sets of ideas that characterize the Open-

Beyond the Enterprise: Taking REA to Higher Levels

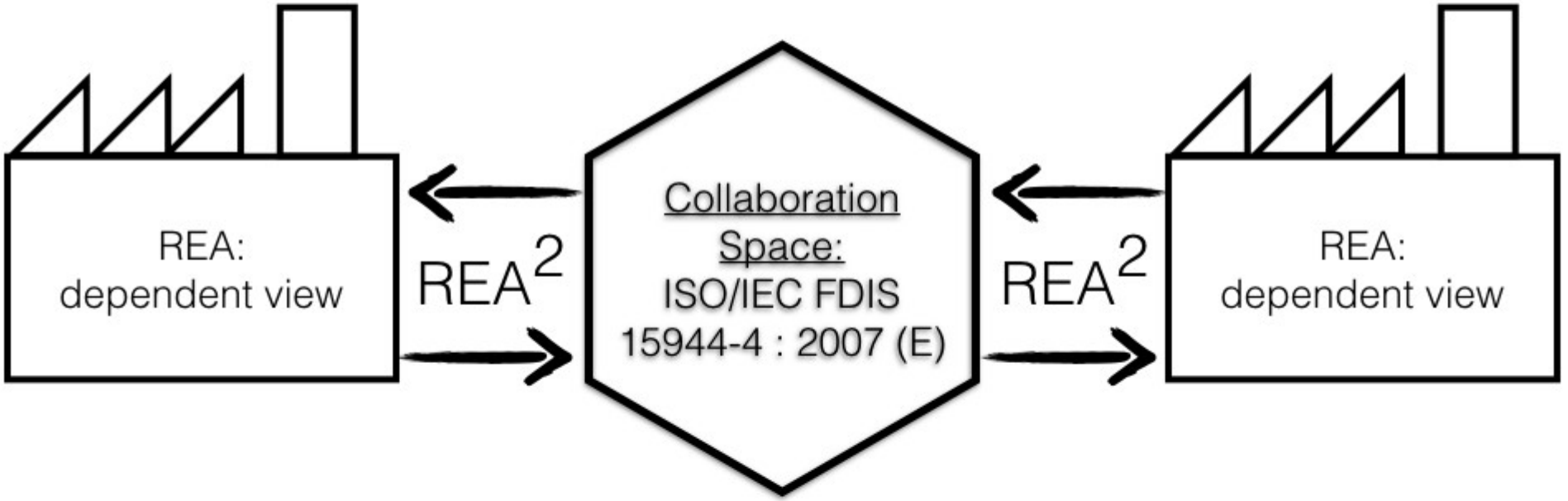
Robert Haugen, Mikorizal Software



REA-25 2005

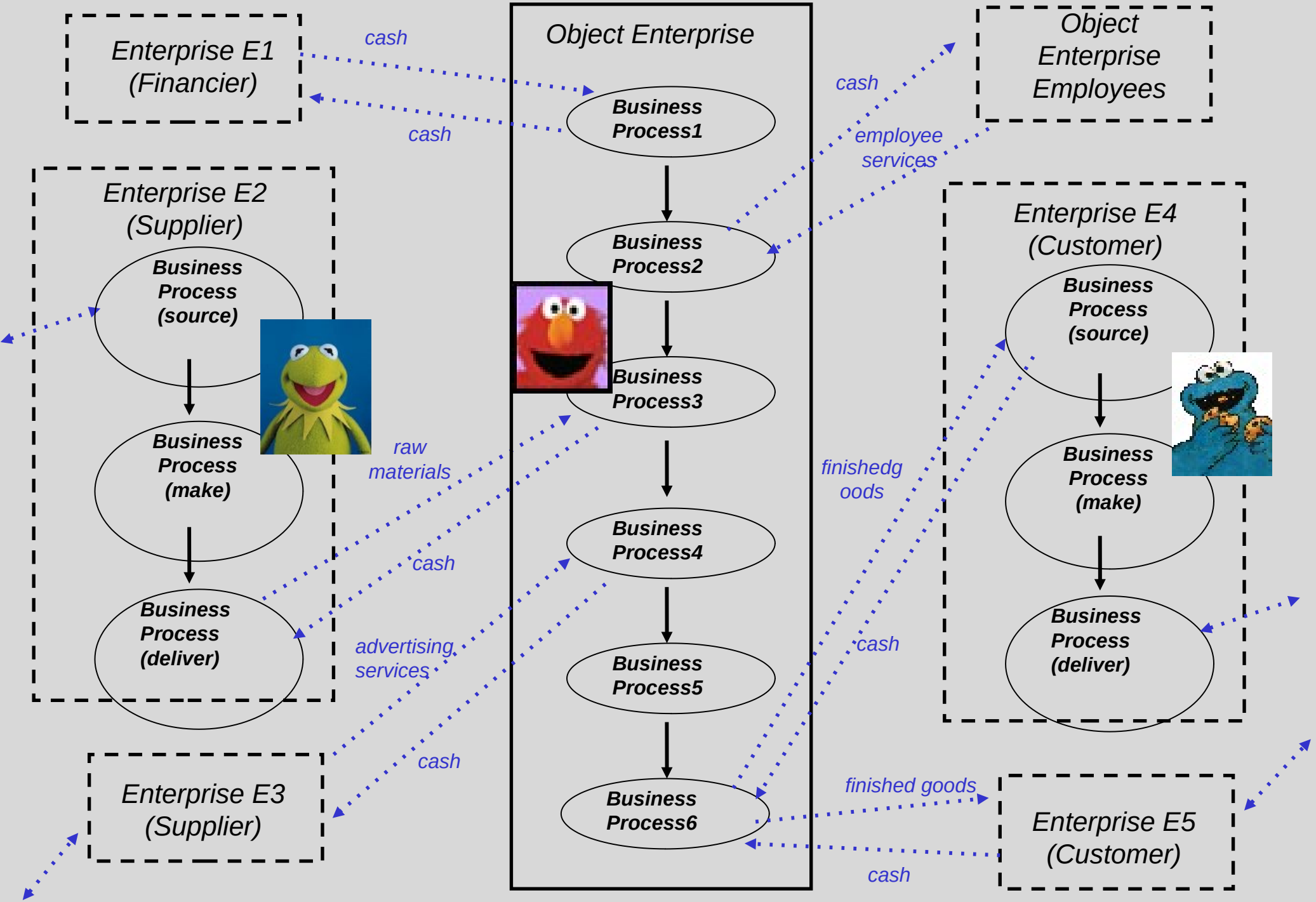
The Sensorica Open Value Network

Where Lynn came into the picture...



Collaboration Space:

Wim Laurier , Jesper Kiehn, and Simon Polovina



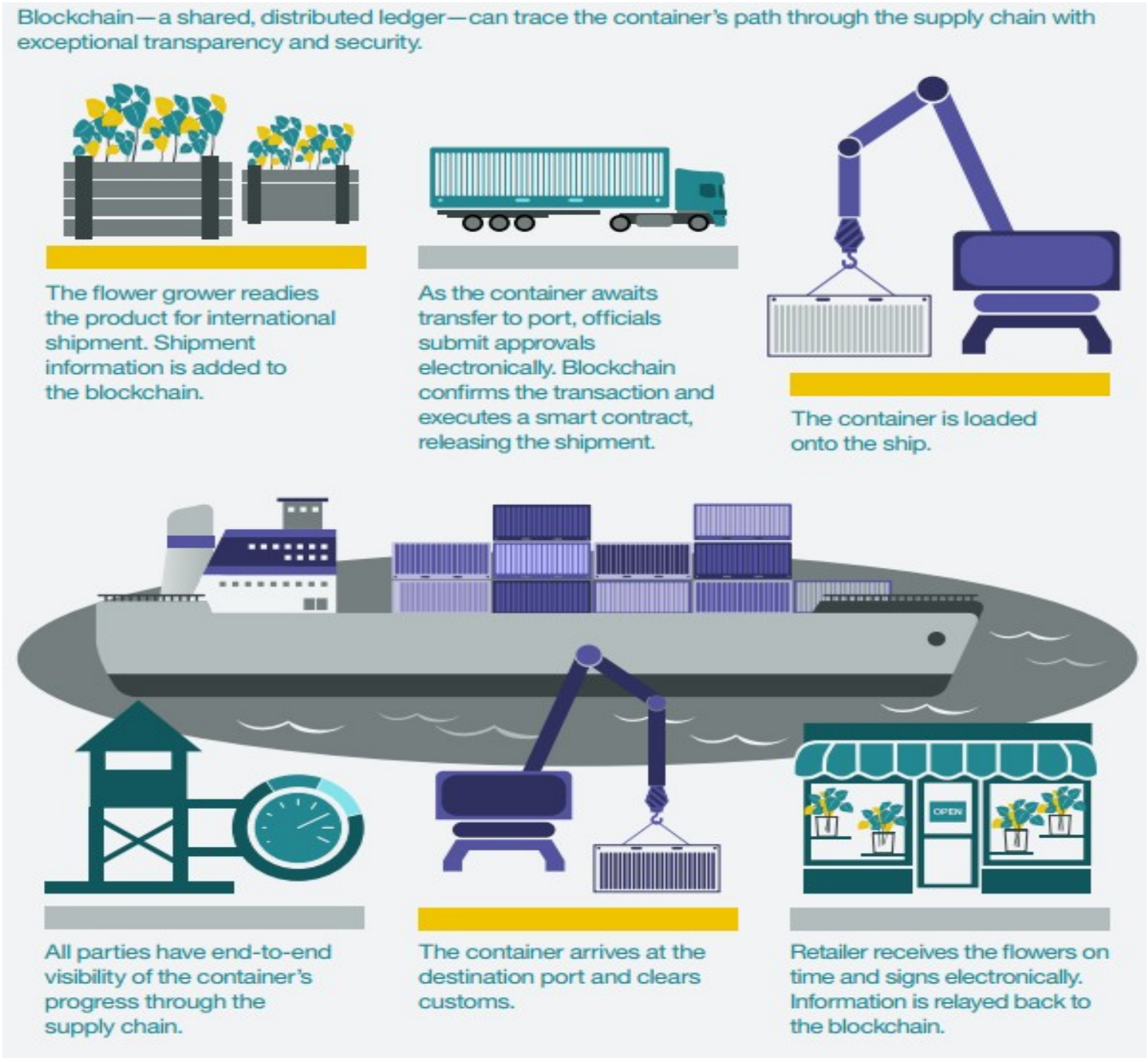
REA Modeling at the Value Network level

Shanzai

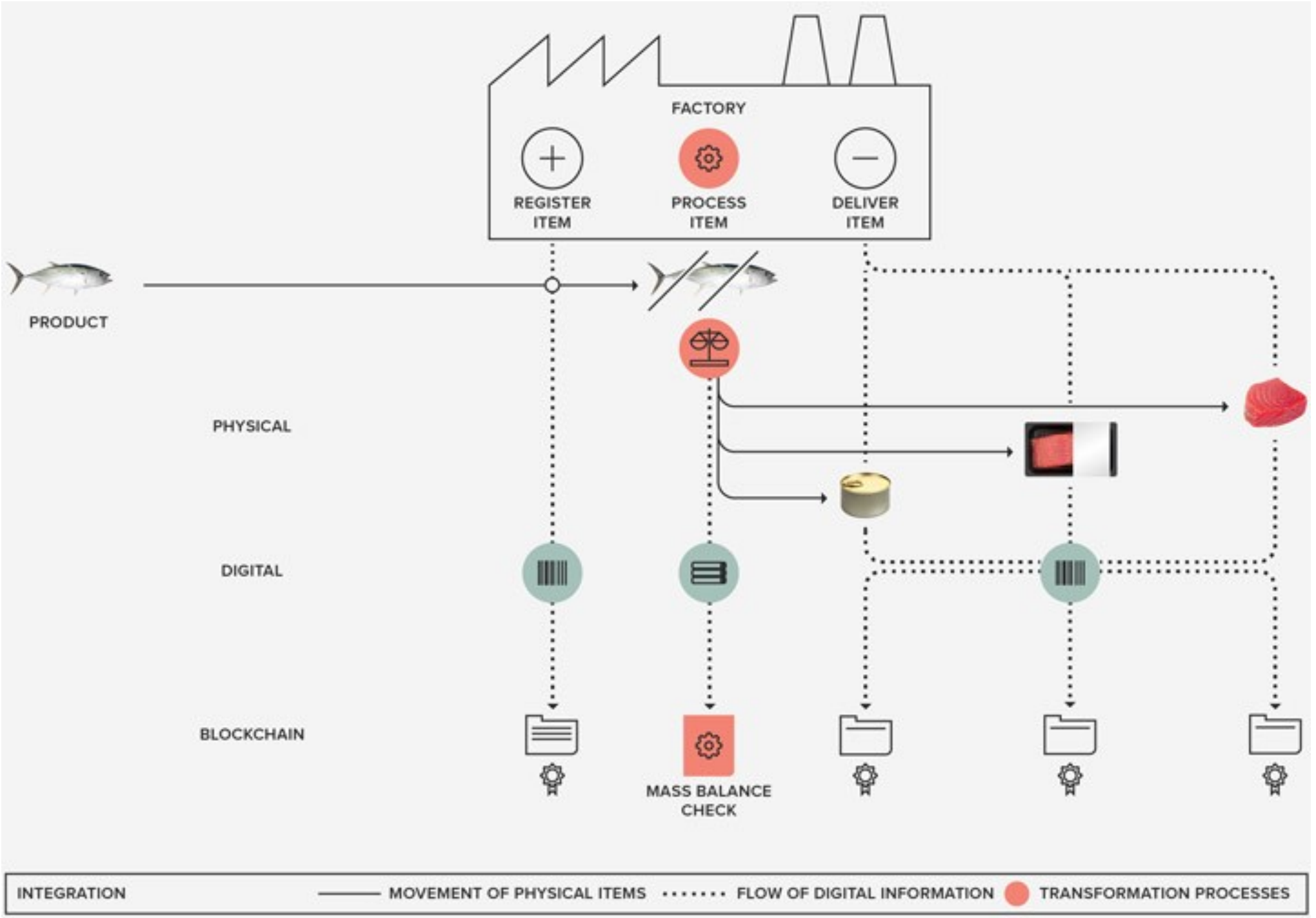
Chinese open manufacturing networks

“a culture of sharing information“

blockchains

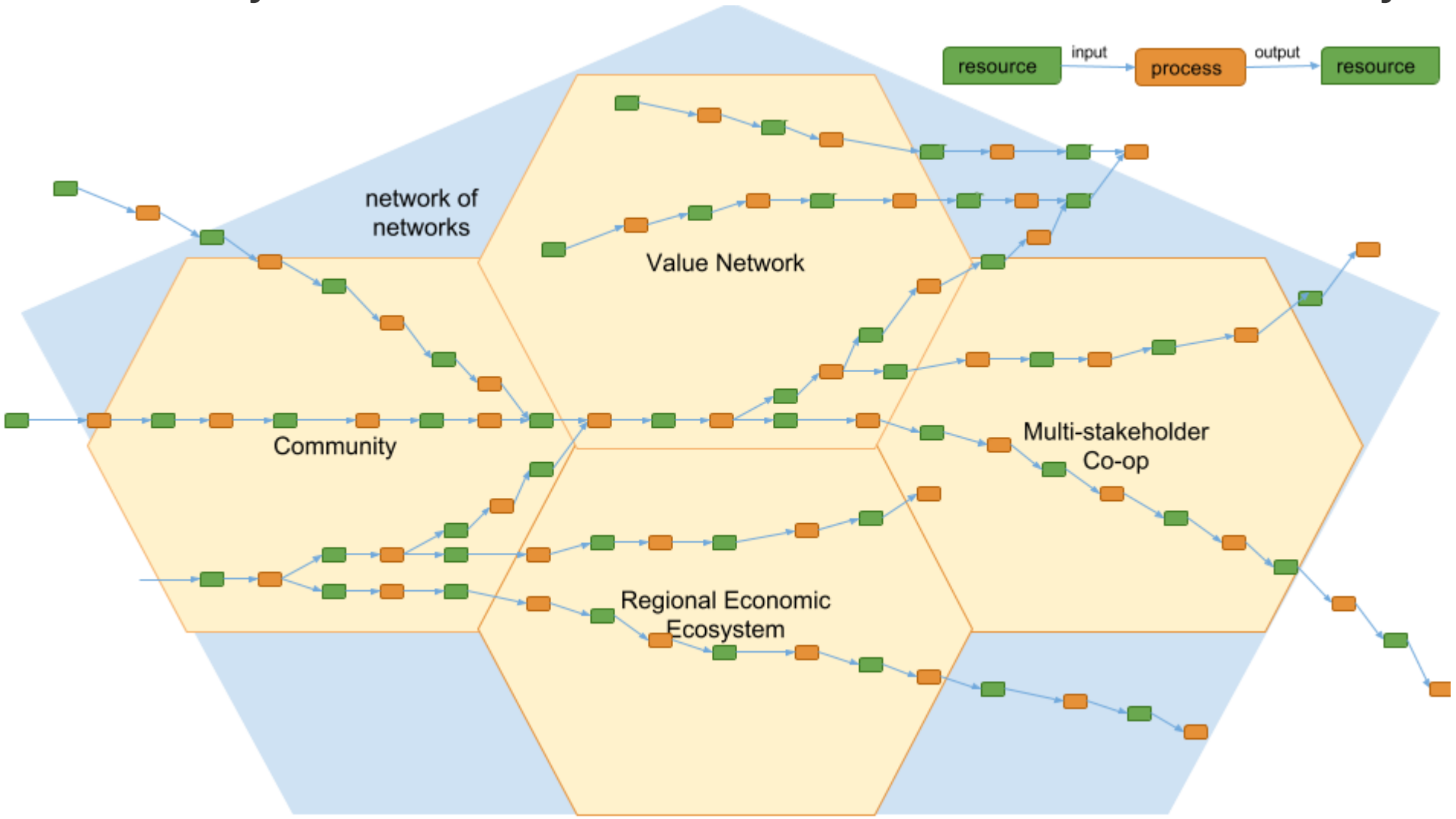


blockchains



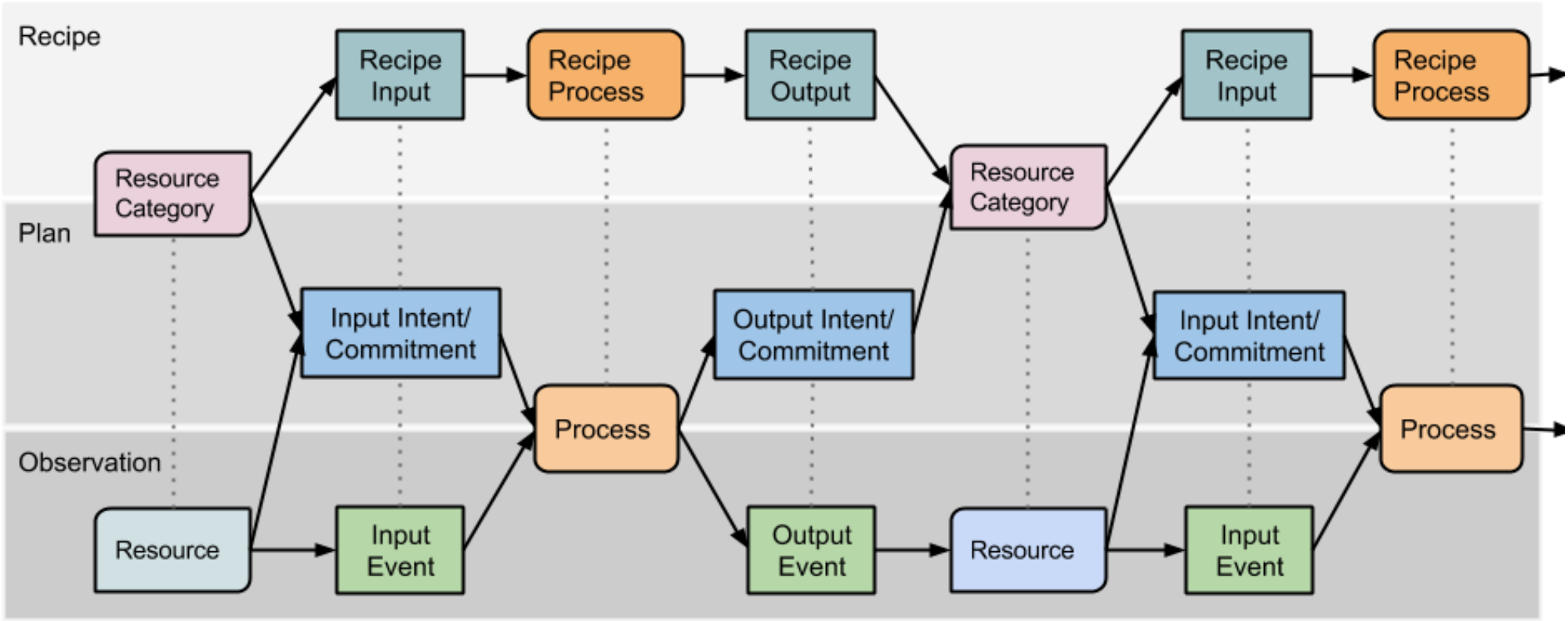
Valueflows

A vocabulary for the distributed economic networks of the next economy



3 levels of Value Flows

Almost but not exactly the same as 3 levels of REA



Main differences between Value Flows REA and “classical” REA

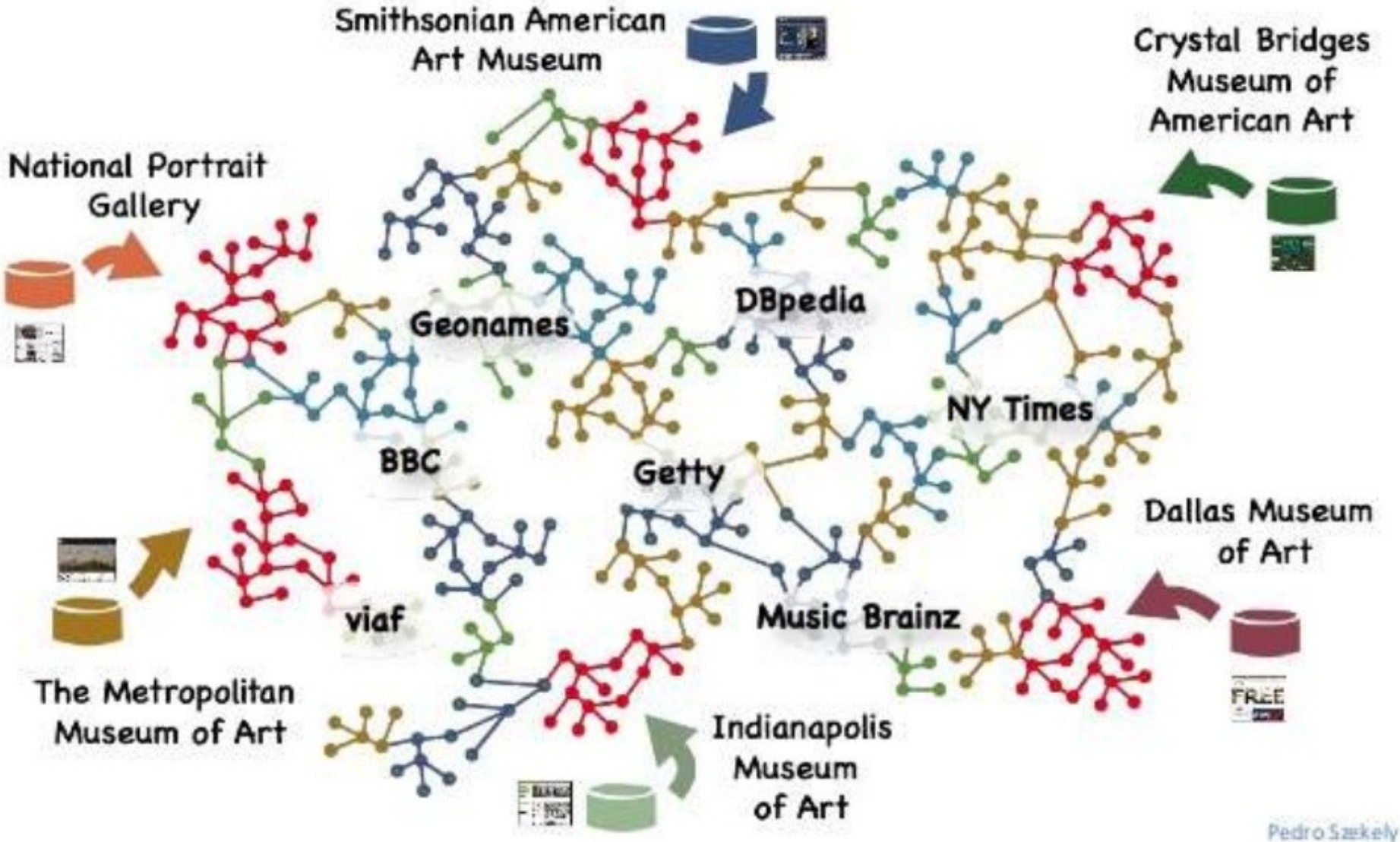
“Classical” REA:

Economic Resources are (1) scarce and (2) under the control of an enterprise.

Value Flows REA:

1. Intellectual creations like designs are not scarce, yet they are economic resources. They only become scarce when legally restricted.
2. Air and water are economic resources, but they are not under the control of an enterprise unless they are legally restricted.

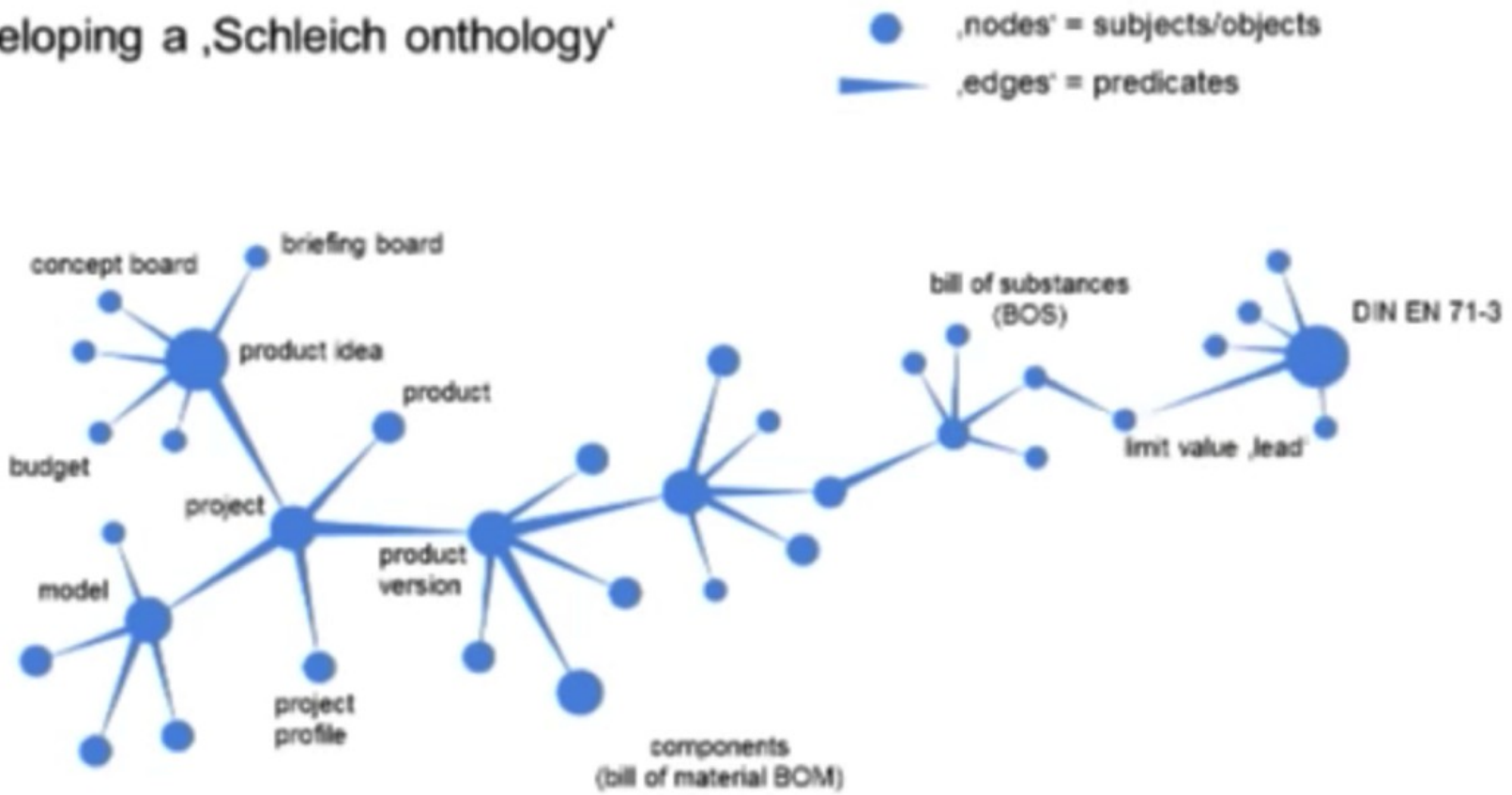
Linked Open Data



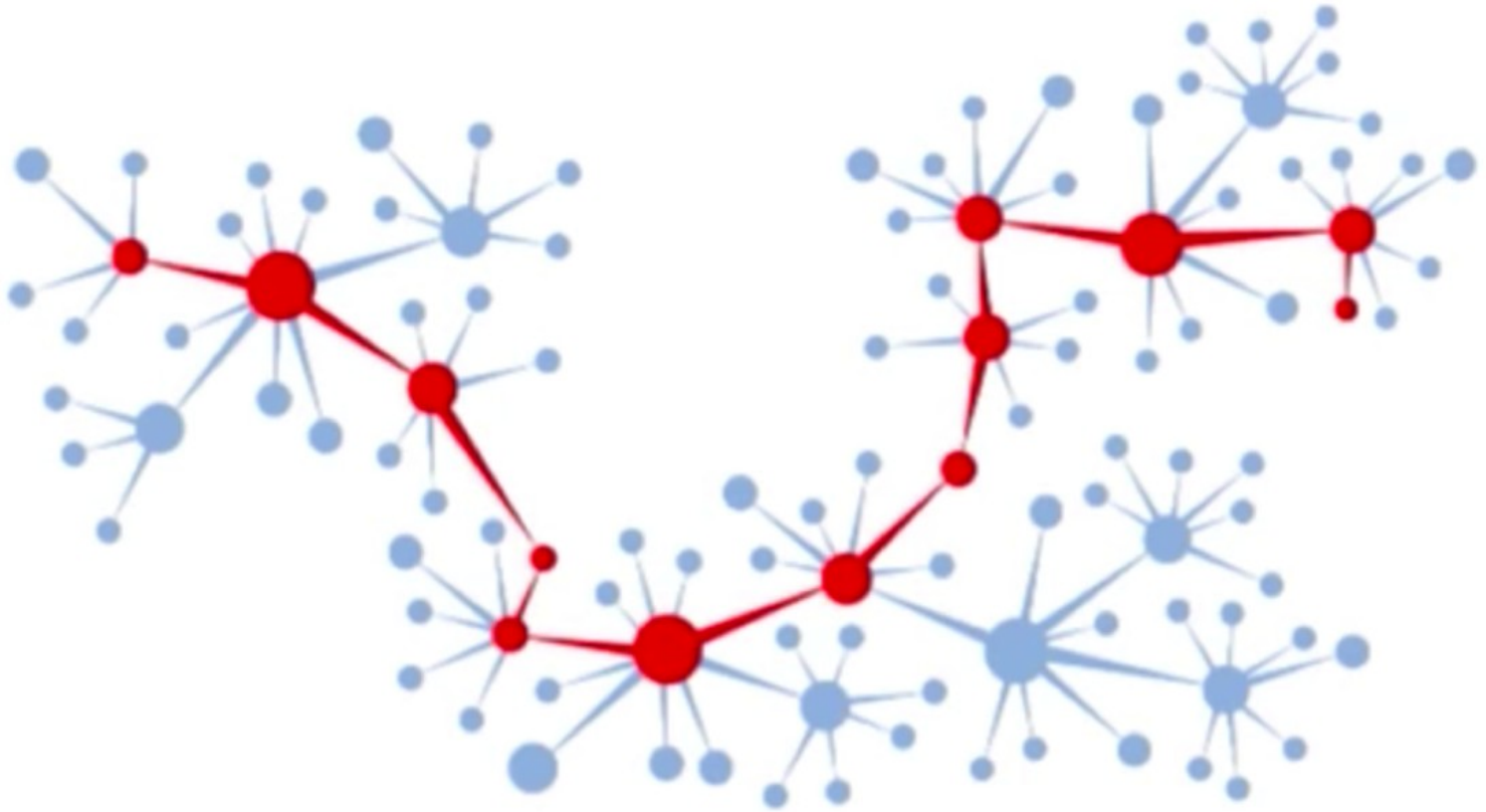
Pedro Szekely

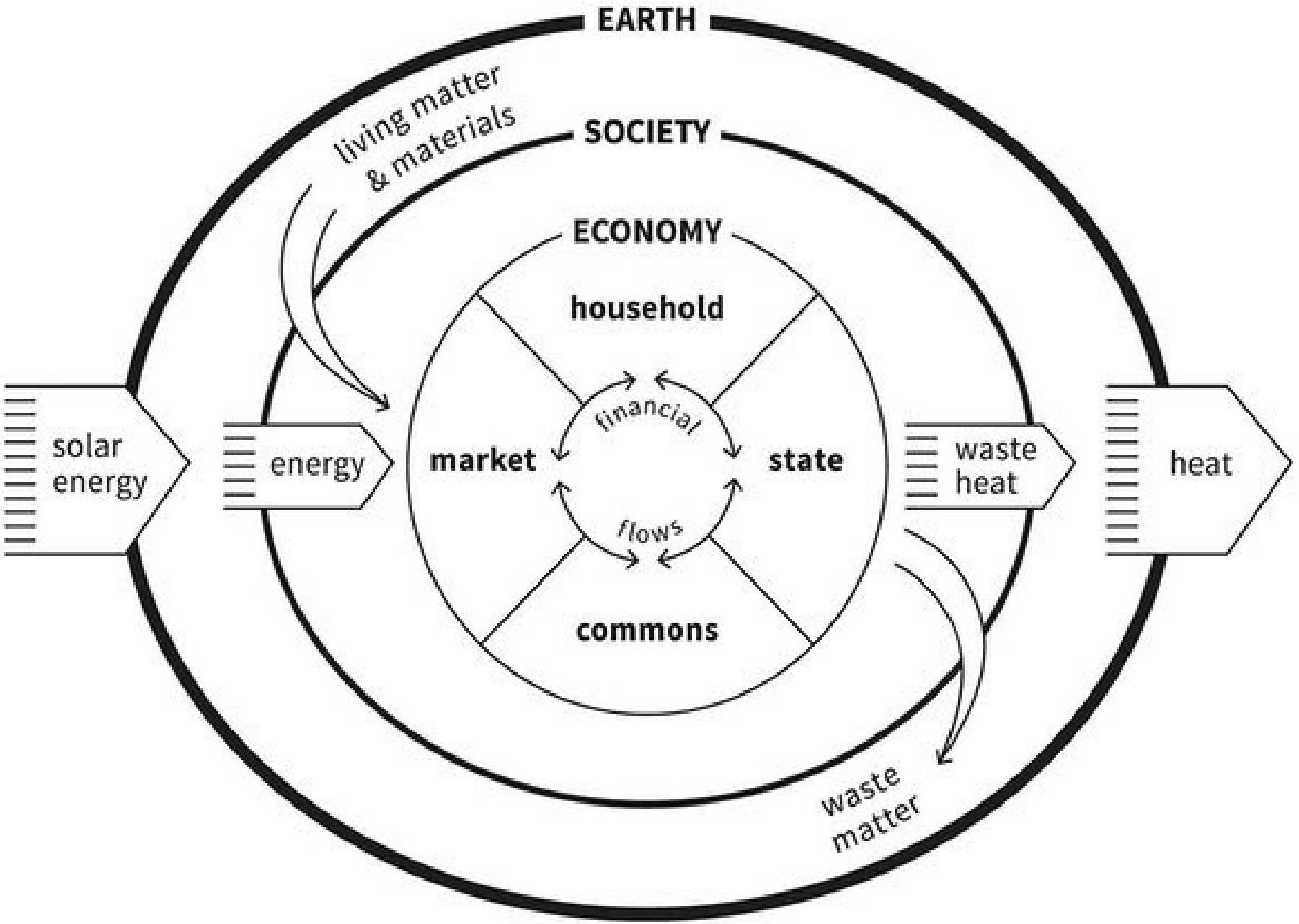
It‘s all about nodes and edges

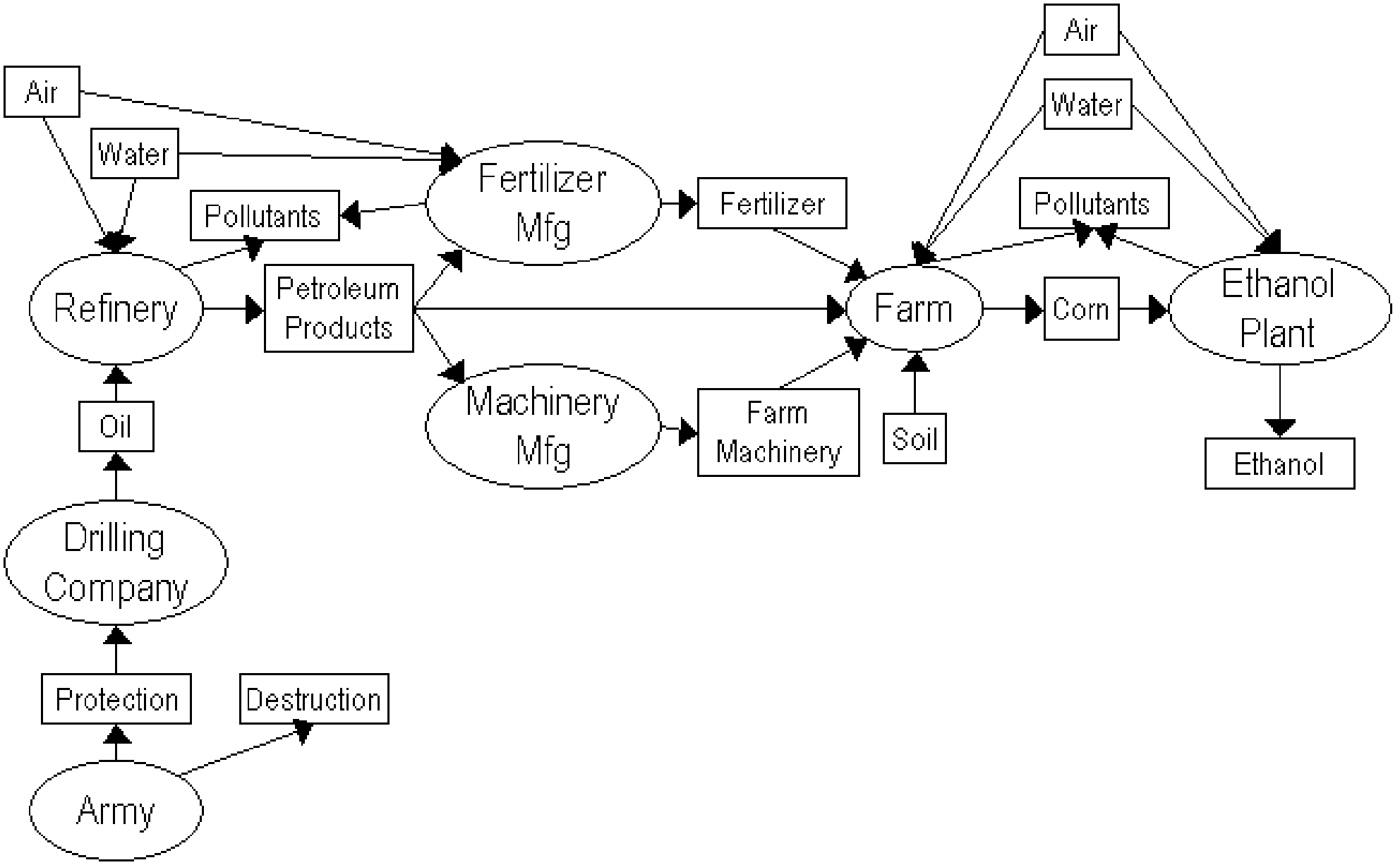
developing a ‚Schleich onthology‘



getting an answer means .. finding the right path




EARTH
living matter
& materials
SOCIETY
ECONOMY
household
financial
market
state
flows
commons
solar
energy
energy
waste
heat
heat
waste
matter

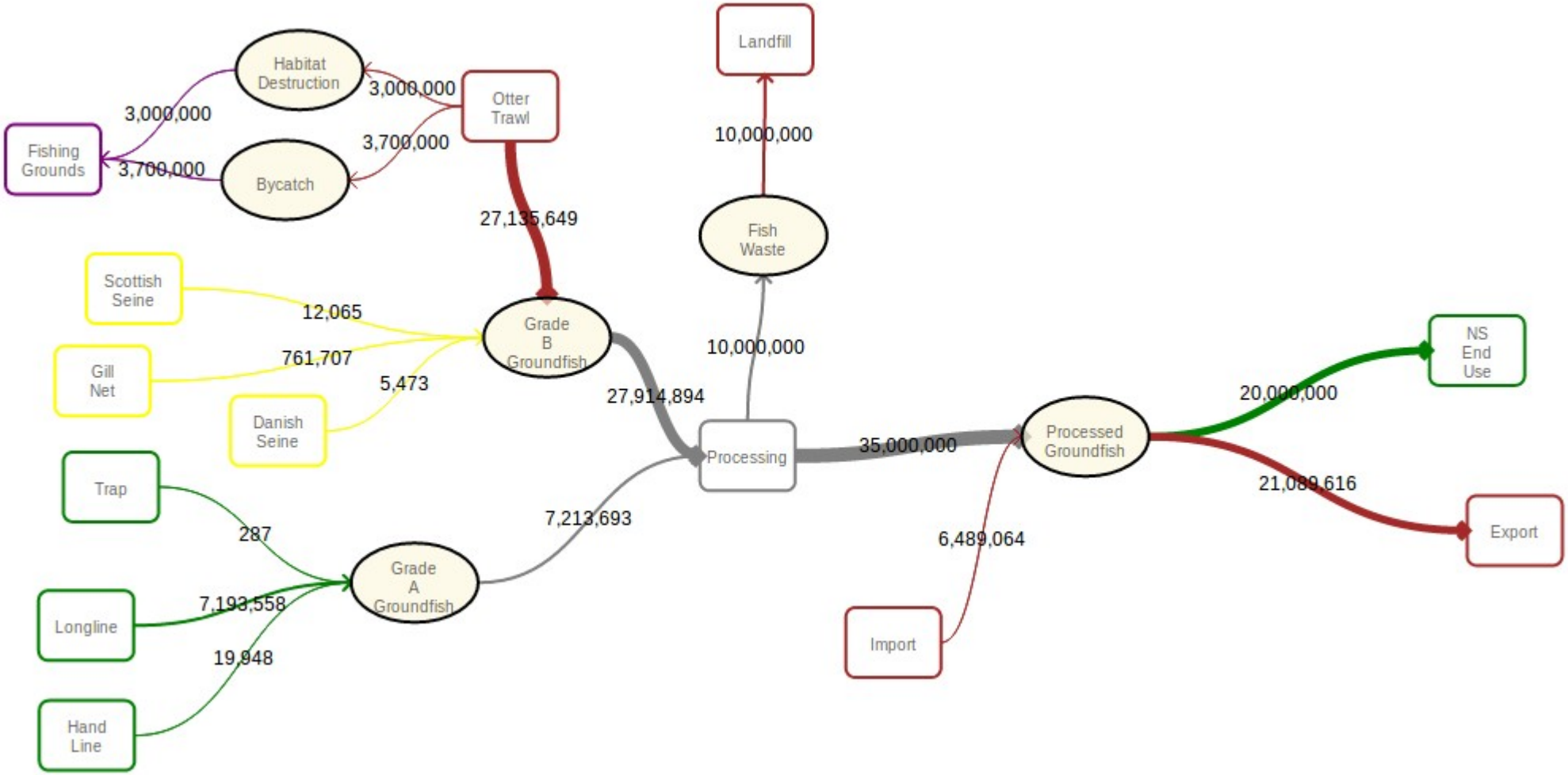

Air
Water
Fertilizer Mfg
Pollutants
Fertilizer
Refinery
Petroleum Products
Machinery Mfg
Farm Machinery
Oil
Drilling Company
Protection
Destruction
Army
Air
Water
Pollutants
Farm
Soil
Corn
Ethanol Plant
Ethanol

local economic development

Communities, Clusters, Networks and Resources

Resource Maps, Network Flows

As-is vs To-be, Gaps, Opportunities

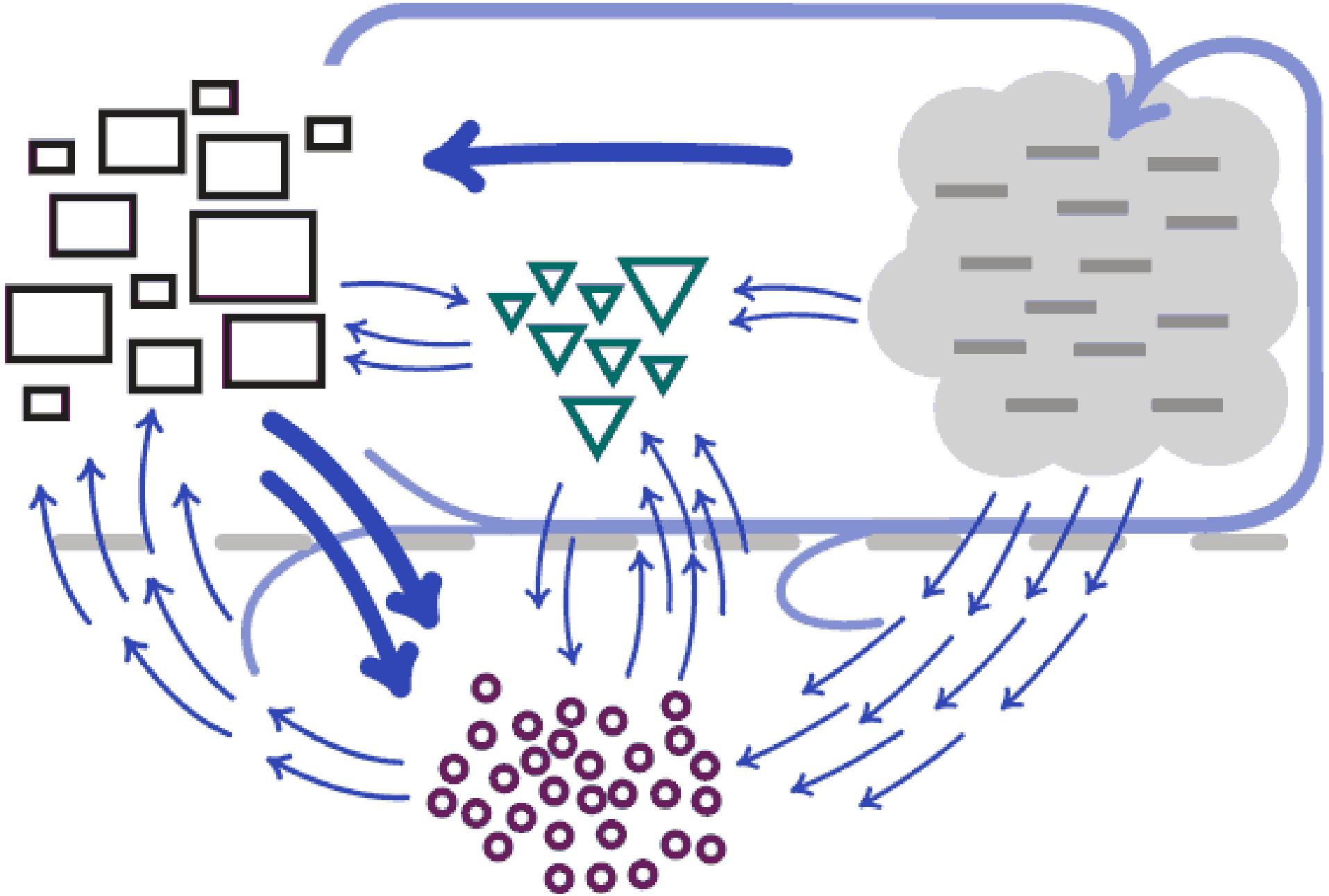


Mutual Credit

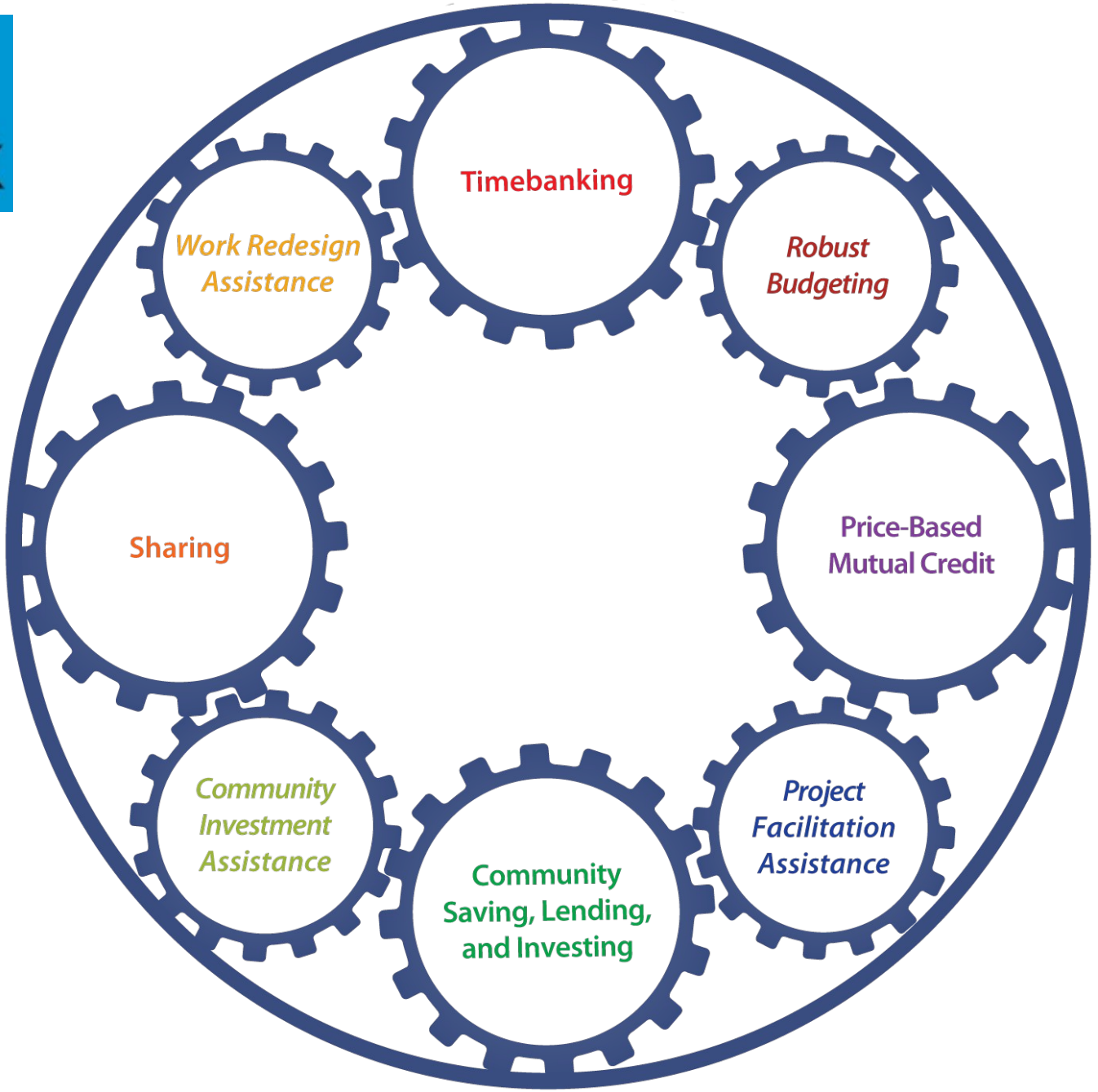
Creating our own money

Mutual Credit

Creating our own money



MUTUAL AID NETWORK



draft01. march 2017

FairCoop

The earth cooperative ecosystem
for a fair economy

FairCredit

FairCoin

FairFunds

LocalNodes
get help from them ;)

donate

be selfemployed with

FreedomCoop
Where every human being can become a member

OCP
https://ocp.freedomcoop.eu

CoopShares
FairCoop startup
to develop everything

FairStarts
Network of incubators
for a collaborative economy
and P2P production

FairCoin

donate

FairSaving
secure saving service

FairCoin wallet

FairCoin
who accepts FairCoin?

FairMarket
sell your products *online* for FairCoins
spend FairCoins *online*

FairPay
spend FairCoin *in local shops* with NFC card

FairToEarth
https://fairtoearth.com
monetary toolkit

New REA software project

a set of building blocks for apps

django-rea

Repositories | **People 9** | Teams 1 | Projects 0 | Settings

Find a member…

Members | **Outside collaborators**

Invite member

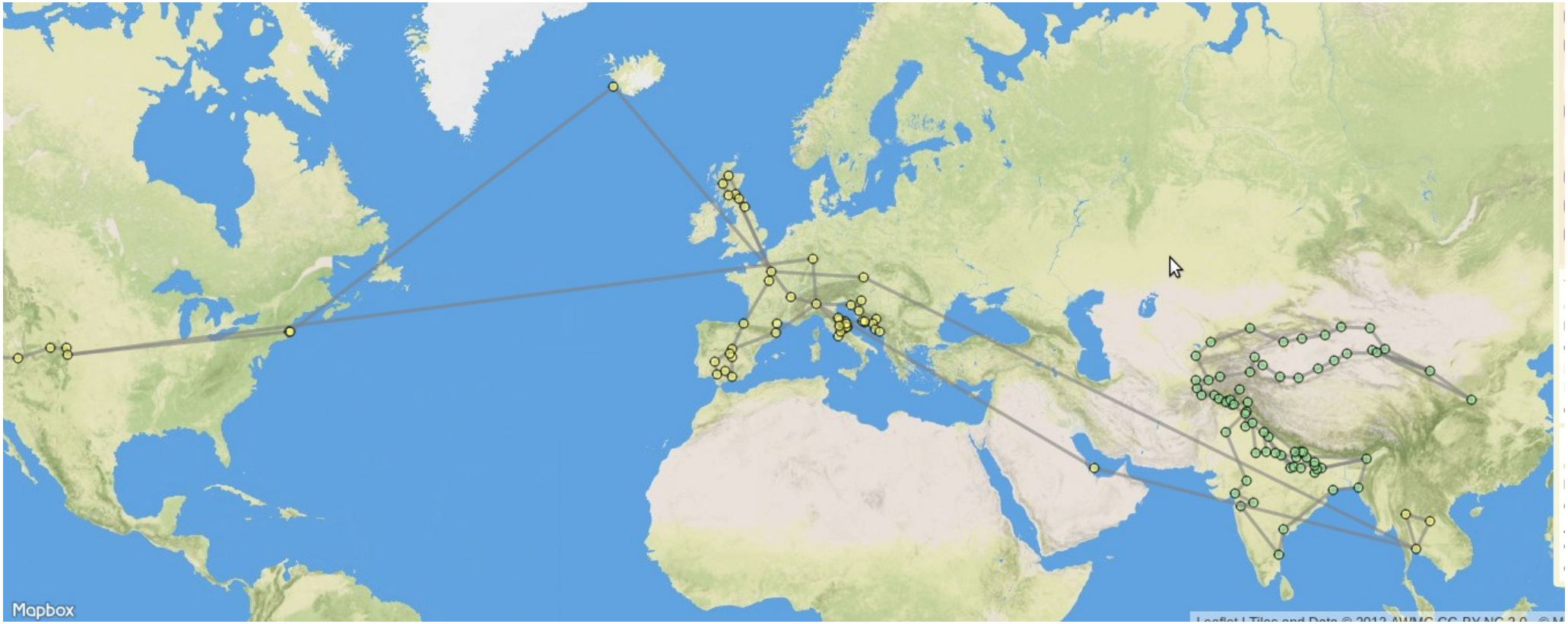
☐	**Select all**				5 pending invitations	2FA ▾	Role ▾
☐		Bob Haugen bhaugen	US	2FA ✕	Private ▾	Owner	1 team ⚙ ▾
☐		bum2	Spain	2FA ✕	Private	Owner	1 team ⚙ ▾
☐		escanda	Spain	2FA ✕	Public ▾	Owner	1 team ⚙ ▾
☐		Lynn Foster fosterlynn	US	2FA ✕	Private	Owner	1 team ⚙ ▾
☐		ivan ivanminutillo	Italy	2FA ✕	Private	Owner	1 team ⚙ ▾
☐		numa numapanuma	Argentina	2FA ✕	Private	Owner	1 team ⚙ ▾
☐		pospi pospi	Australia	2FA ✕	Private	Owner	1 team ⚙ ▾

WWHEE

World Wide Holonic Economic Ecosystem.

Like the World Wide Web, for economic interactions.

Same as Bill's World Wide Semantic Accounting System.



Links

- http://mikorizal.org/BeyondTheEnterprise.html
- http://www.zdnet.com/article/ibm-maersk-aim-to-speed-up-shipping-with-blockchain-technology/
- https://www.provenance.org/
- https://neo4j.com/blog/semantic-pdm-graph-data-model-schleich/
- https://www.theguardian.com/commentisfree/2017/apr/12/doughnut-growth-economics-book-economic-model
- https://www.valueflo.ws/
- https://locecon.org/
- http://linkeddata.org/
- https://fair.coop/
- https://youtu.be/YvegNqKcQ-g (mutual credit video)
- http://www.mutualaidnetwork.org/
- http://rea-project.readthedocs.io/en/latest/intro.html