

# Leverage Intelligence of industrial systems

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# Agenda

- World noospherical shift
- World control shift
- Making Industry smarter, responsible
- Some topics to address

# World noospherical shift

- Our planet is made of (Vernadsky 1926) :
  - A **Geosphere** : inanimate matter - lithosphere, hydrosphere, atmosphere
  - A **Biosphere** : all living organisms, their relationship, and their interactions with geosphere – Humans most impacting
    - Transforms the Geosphere through *Technosphere*,
  - A **Noosphere** : human thoughts
    - Transforms the Biosphere
    - Evolution toward increasing Complexity/Consciousness (Theillard de Chardin)

## Other concepts / ideas / visions

- James Lovelock's Gaia hypothesis :
  - “Organisms interact with their inorganic surroundings on Earth to form a synergistic self-regulating, complex system that helps to maintain and perpetuate the conditions for life on the planet”
- Global brain :
  - communication networks as the “Earth brain”
- Collective intelligence
  - At all scales

# Facebook friendship map



[https://www.facebook.com/note.php?note\\_id=469716398919](https://www.facebook.com/note.php?note_id=469716398919)

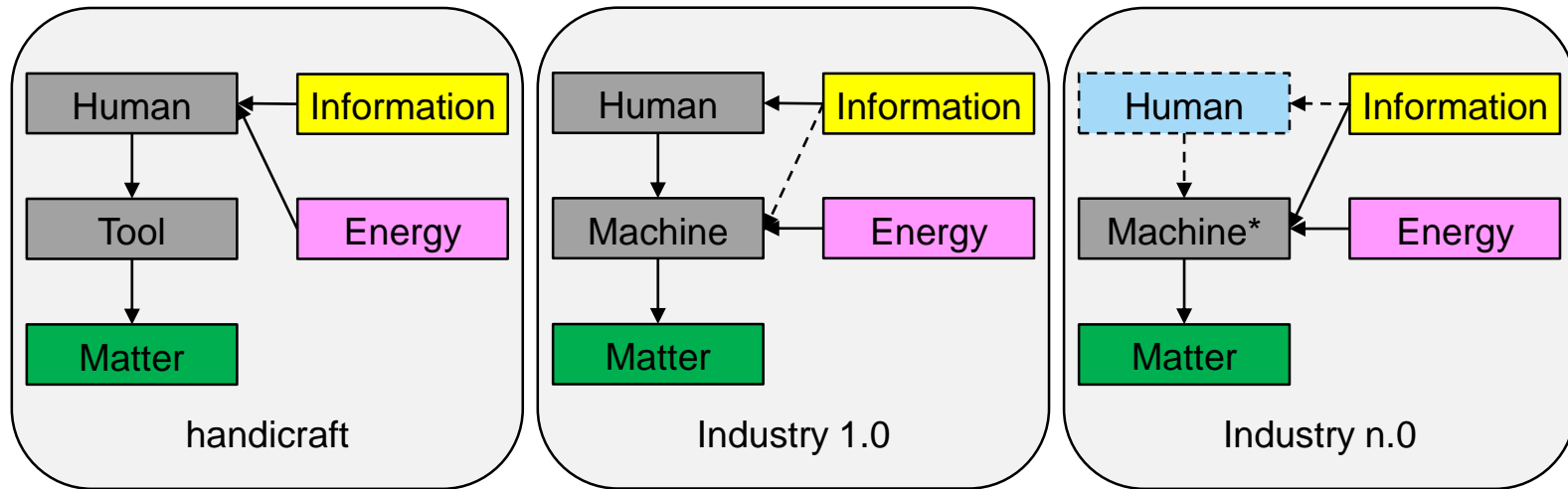
# Map of scientific collaboration



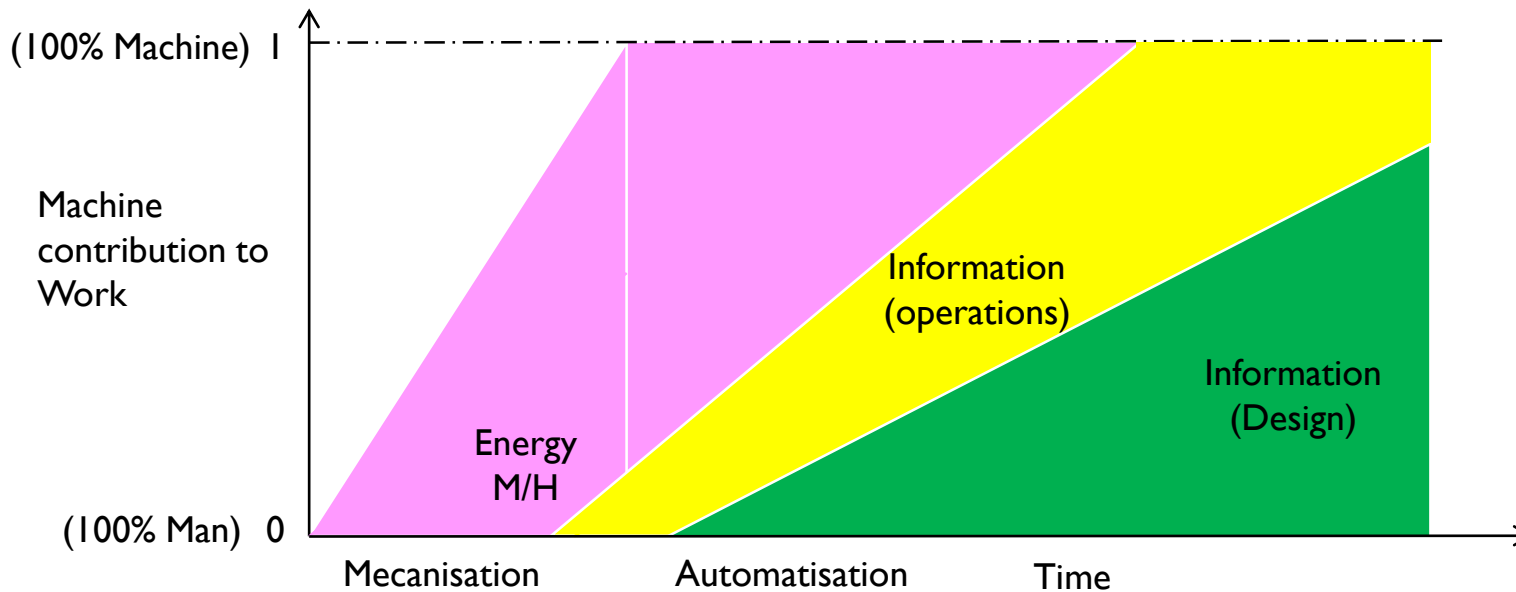
Computed by Olivier H. Beauchesne and SCImago Lab, data by Elsevier Scopus

<http://olihb.com/2014/08/11/map-of-scientific-collaboration-redux/>

# The Industry shift to information



*\*Machine includes computers*



# Agenda

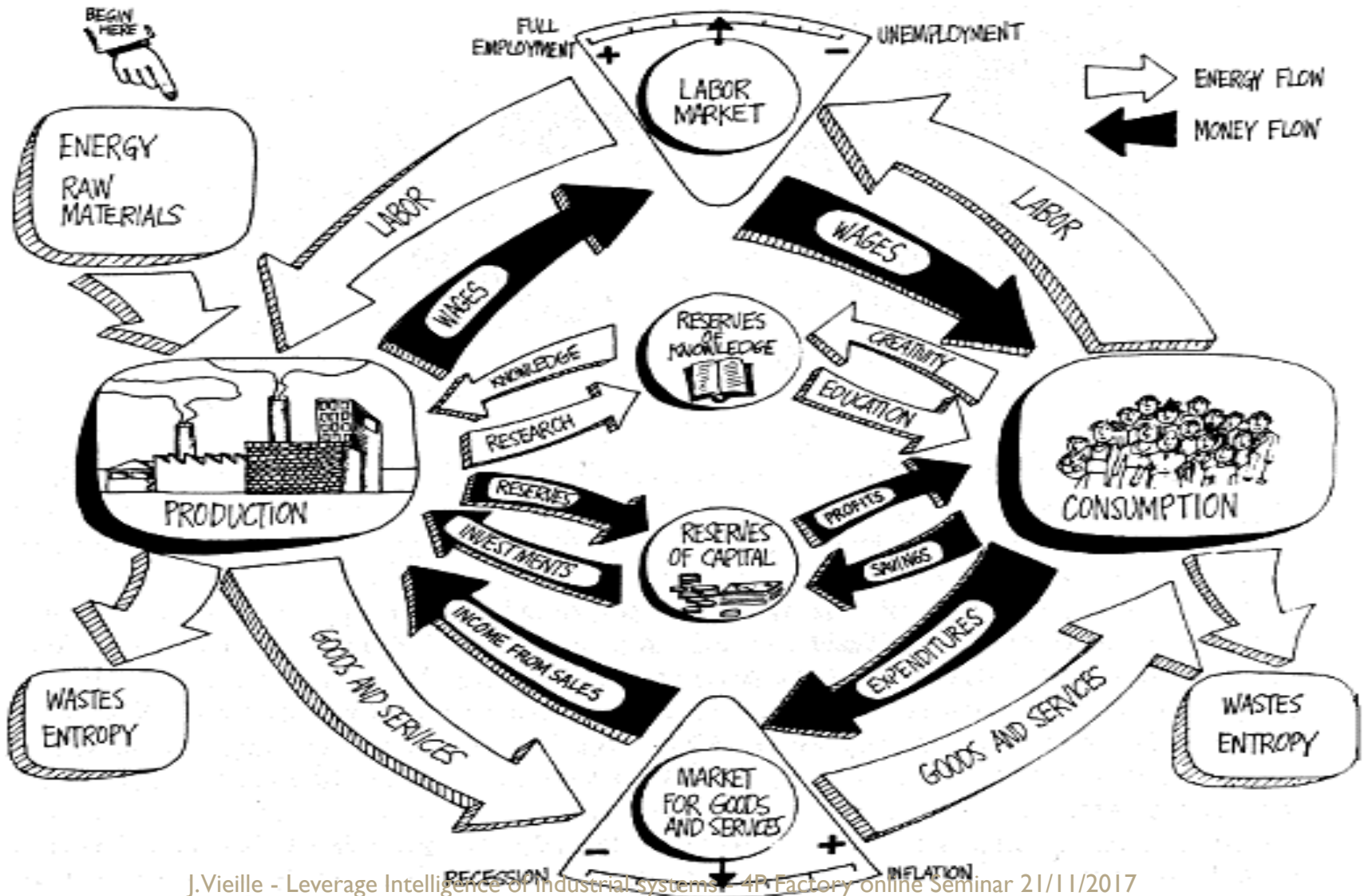
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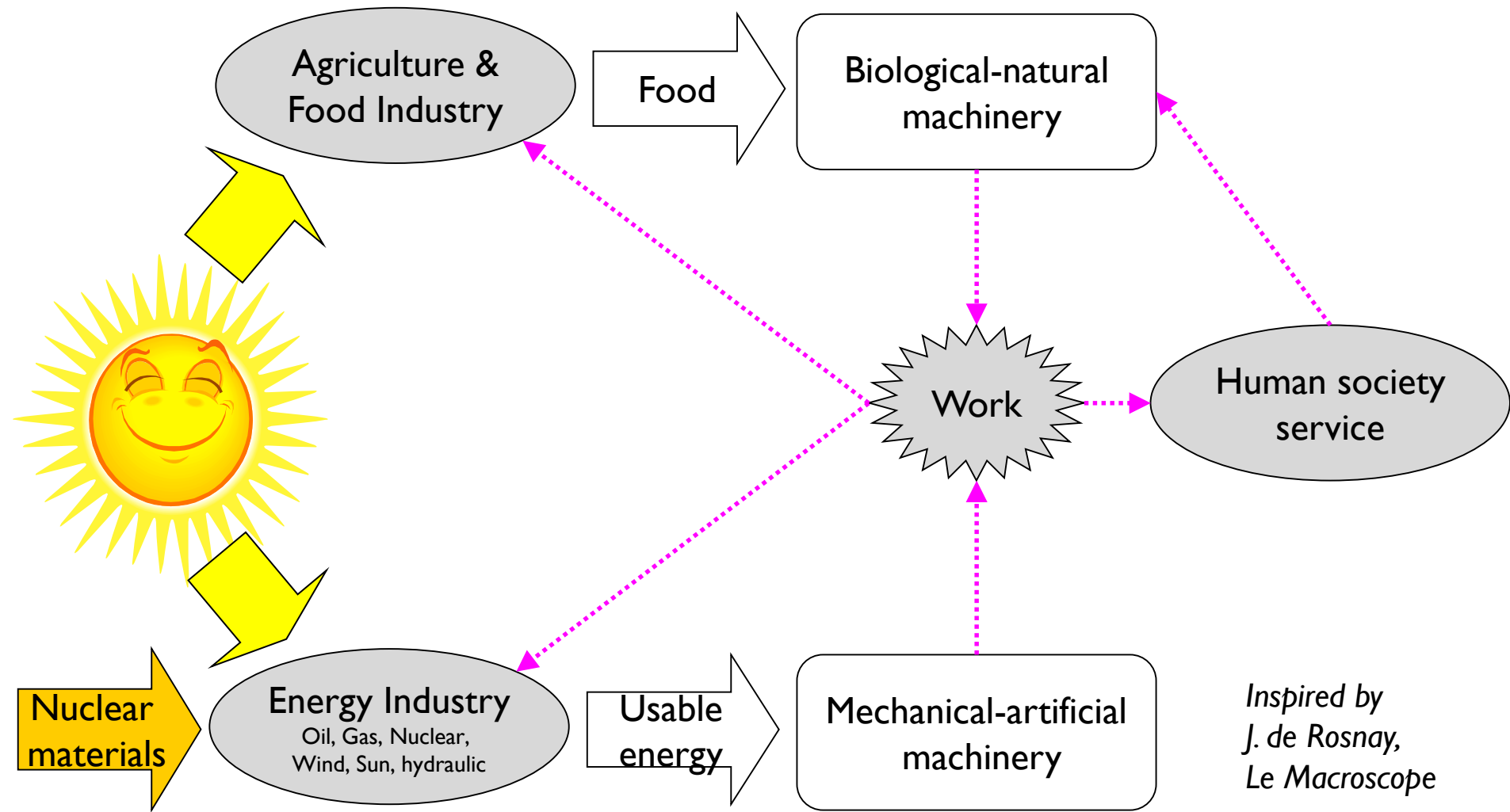
# The Econosphere engine

The Human biosphere organization

J. de Rosnay, *Le Macroscopie* (1975)



# Industry eco-system (anthropo-centric!)



# Industry at the heart, service of the human society

- It should not be the other way around
- Industry is chaotic, unstable and self-organizing global system in which
  - Economic attractors oppose to ethical, environmental, and social considerations,
- Because of its capitalistic drive that prioritizes economic factors,
  - favouring (positively) technological and (negatively) social well being evolution

# Society/State to Industry power shift

- Industry and finance lobbies and power
  - Eisenhower farewell address (1961) about the military–industrial complex
  - Glass-Steagall Act repeal (1999) by Bill Clinton
- States mostly controlled by Industry and privatized finance
  - Unemployment, social security decay, inequality increase
  - Inability to address global resources and environment challenges
  - Business driven wars
  - Media control on democratic illusion
  - ...

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# Hypothesis

- The current biosphere systemic imbalance will resolve itself in more or less violent reaction
  - but probably too late
- Industry power cannot be challenged
- Industry is an integrated part of the biosphere,
  - It shall not behave as a competing system against it
  - But as an intelligent subsystem acting for the good of its supersystem
  - to stay alive and well now and in the future

# Objective

- **Make Enterprises smarter, « intelligent »**
  - For orienting the unchallenged power of Industry on the biosphere toward a better World.
  - Benefiting a positive feedback for its
  - Contributing in the extension of the Noosphere,
- **Encourage research and practical approaches for industrial enterprises truly intelligent operations and development**

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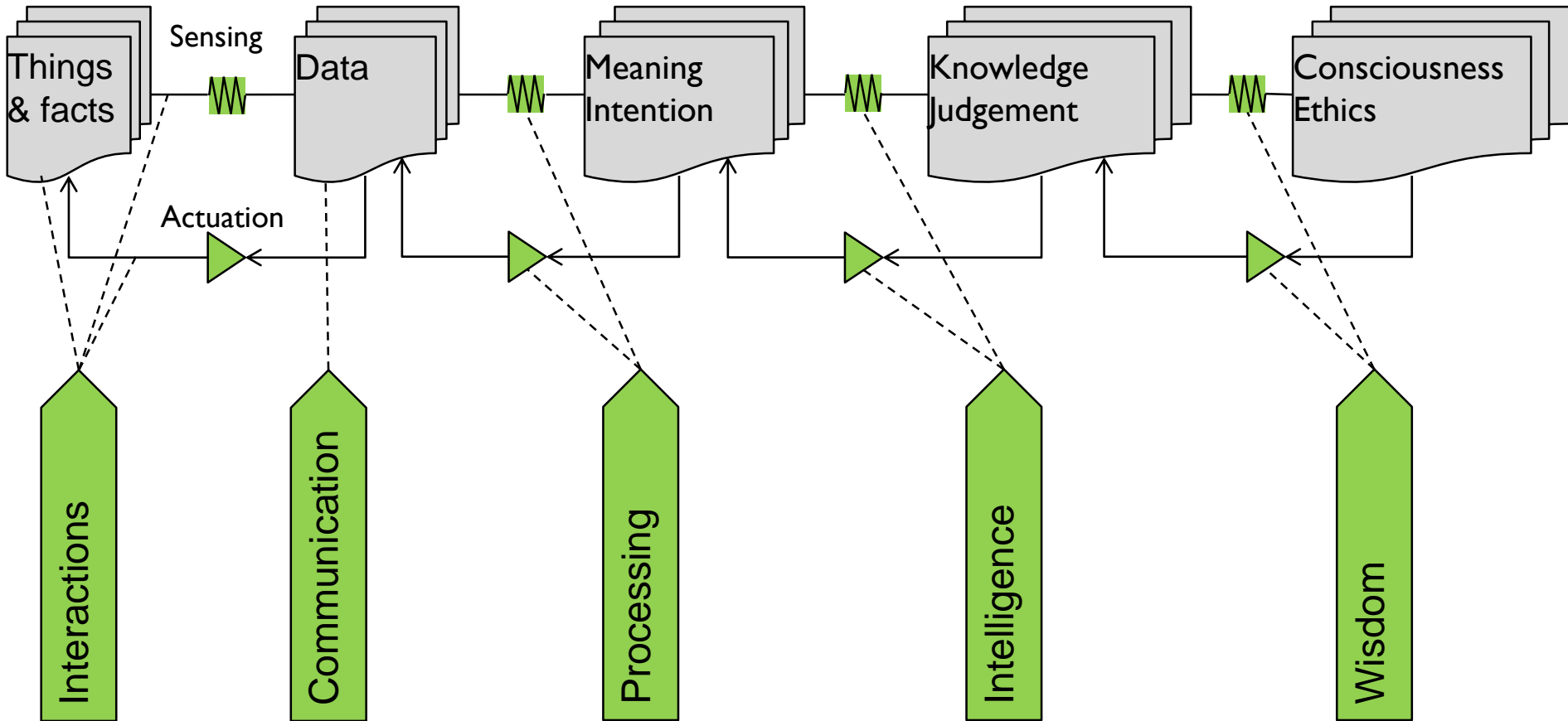
# What is intelligence?

- A feature of living organisms
  - Ability to stay alive through its behaviour, ontogenesis (développement), phylogenesis (évolution)
- Results of whole organism,
  - Not exclusively located in a brain or computer
- Sophisticated algorithms
  - Are kind of local computing prowess indirectly related to the ability of the organism to fulfill its vision/mission, to satisfy its needs, objectives, to address its constraints

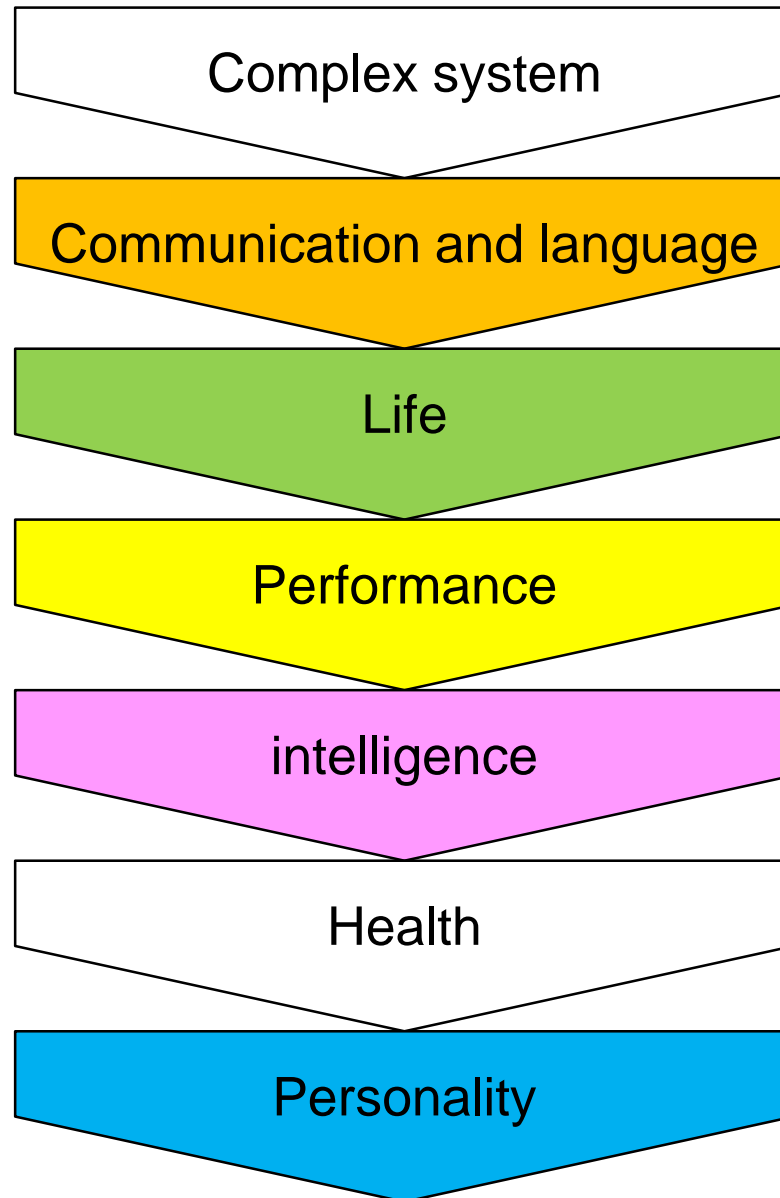
# The Fractal brain theory (Wai H. Tsang 2016)

<b>Biosphere</b>		<b>Econosphere</b>	
Structure	Intelligence	Structure	Intelligence
Evolution (phylogenesis)	Learning & creativity	Political and social organization	Culture, social, technology dev.
Development (Ontogenesis)	Thought & behaviour	Enterprise emergence	Enterprise Development
Genome	Brain	Information media	Enterprise organization and processes
Genome regulatory network	Neural network	Organization, information technology	
Gene	Neuron	Machines & people	Automation & skills

# Potential/Kinetic Information relationship



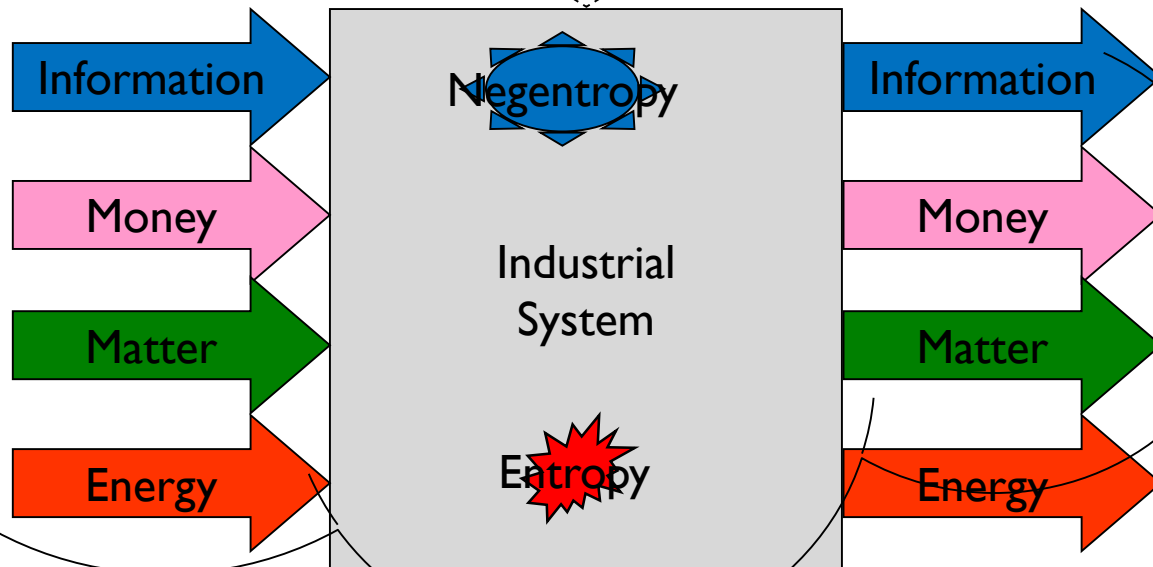
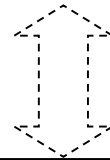
# What needs to be addressed?



# The enterprise black box

Government  
Employees  
Shareholders  
Environment

Suppliers, Customers  
Partners  
Subcontractors  
Bankers, Insurers

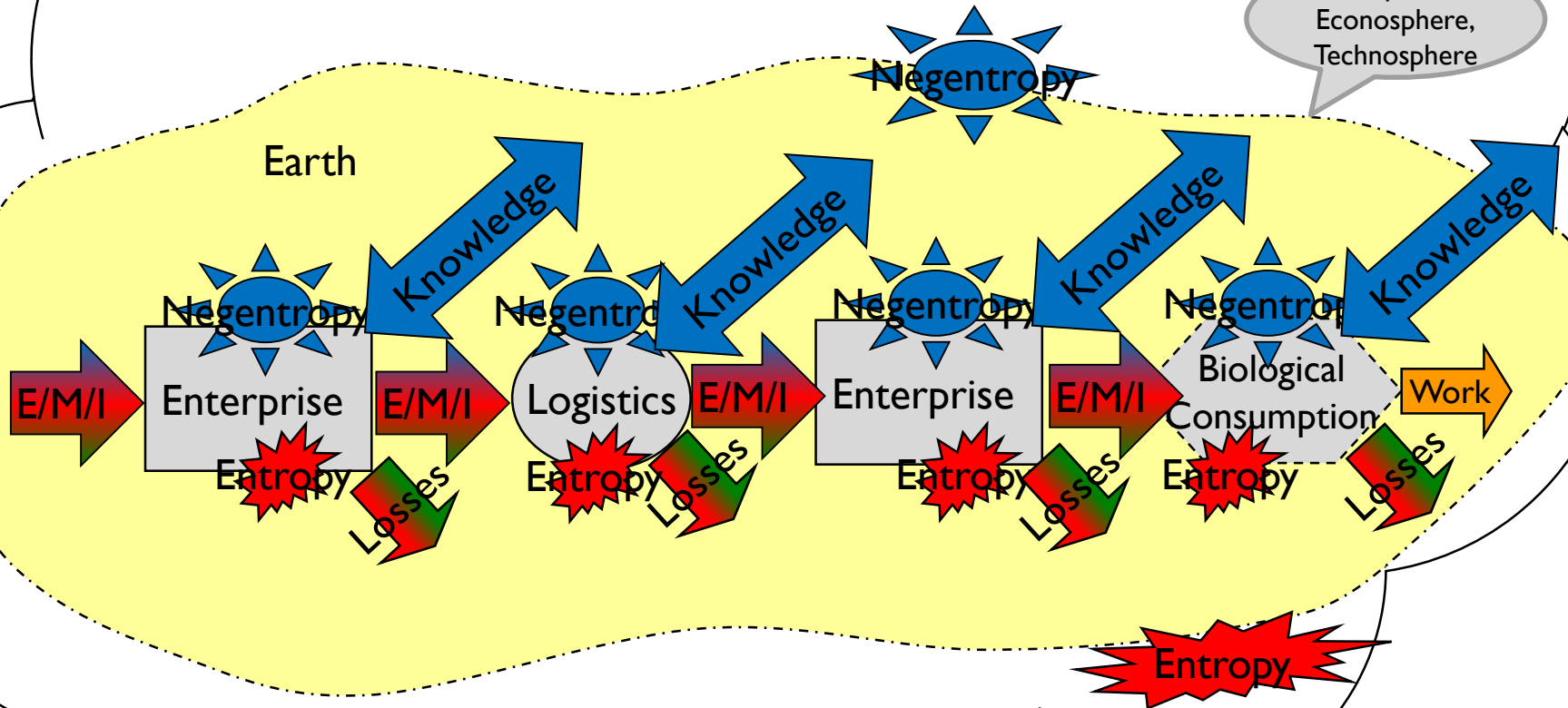


# The Industry system

Solar system / Milky Way / ... / Universe

Noosphere?

Biosphere,  
Econosphere,  
Technosphere



# Intelligence assessment

- Shall not address « computation » feat
- Rather a black box I/Os from concerned observers / parties viewpoints

Relationships	Information	Money	Energy	Matter
Shareholder	?	?	?	?
Employees	?	?	?	?
Government	?	?	?	?
Nature	?	?	?	?
Partners	?	?	?	?
Competitors	?	?	?	?
...	?	?	?	?

# Performance management for short to long term survival

$$\text{OIE} = R \times Q \times S \times \text{OVA} / \text{OOE}$$





**Thanks!**

**Questions?**