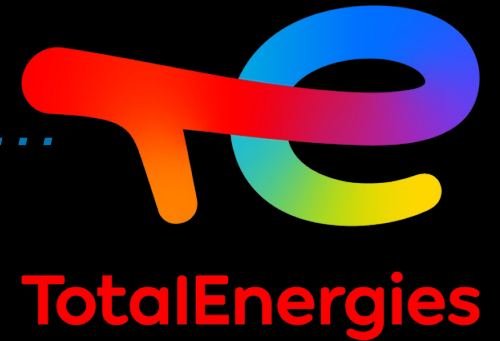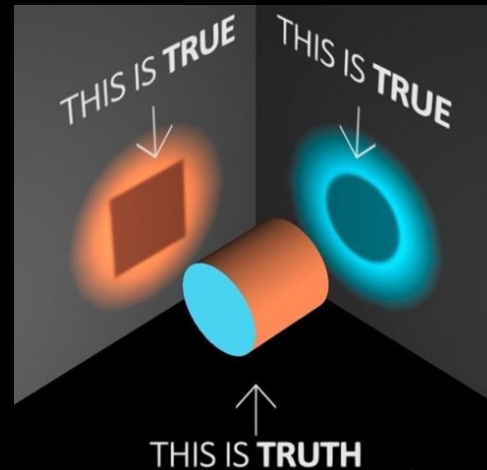*... from TotalEnergies Semantic Framework (TSF) origins ...*
... to SousLeSens genesis ...

"There's no future without memory"
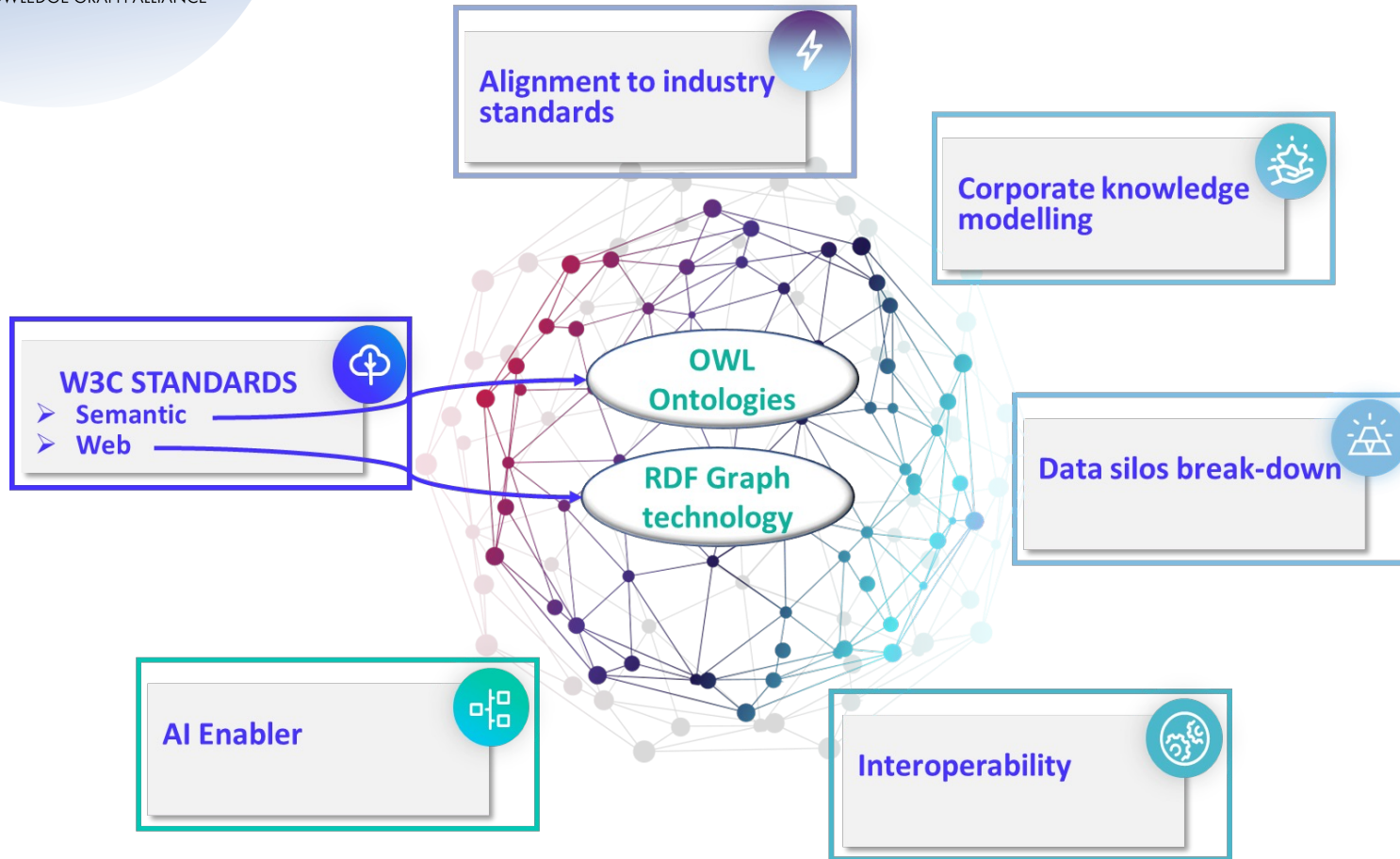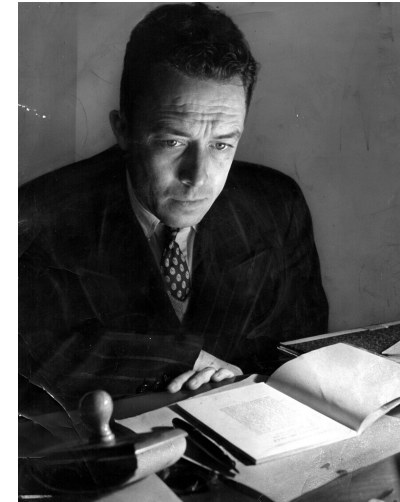
Henri Laborit

It is still all about speaking the same language …
… structured in a common way

Addressing the challenge of better data exchanges internally & with our partners

KGA — INTERNATIONAL SEMANTIC AND FAIR KNOWLEDGE GRAPH ALLIANCE

TotalEnergies

Alignment to industry standards

Corporate knowledge modelling

W3C STANDARDS
➢ Semantic
➢ Web

OWL Ontologies

RDF Graph technology

Data silos break-down

AI Enabler

Interoperability

Misnaming things adds to the world's unhappiness

Albert Camus

The value of adopting common semantic modeling practices is huge…

From *puzzled* information to shared "*commons*" knowledges

All our knowledge begins with the senses, proceeds then to the understanding, and ends with reason. There is nothing higher than reason.
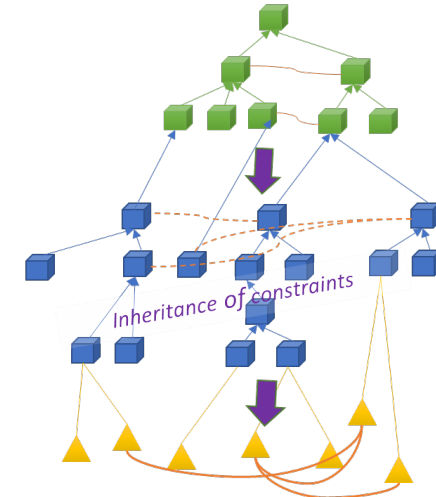
Immanuel Kant

Common Sense / Shared

Knowledge & Wisdom representation

Systematic /Universal/Semantic consistency

Ontology based on Dichotomic classification system

formal ontology
- abstract classes taxonomy
- semantic predicates
- **axioms / constraints**

Opportunist / local
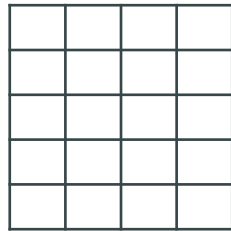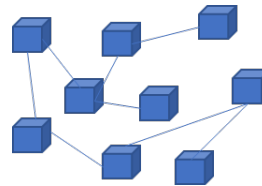
Thesaurus Grouping of concepts

Domain Ontology

Inheritance of constraints

Data representation

Individuals

terms

Local / personnal

Scope & diversity
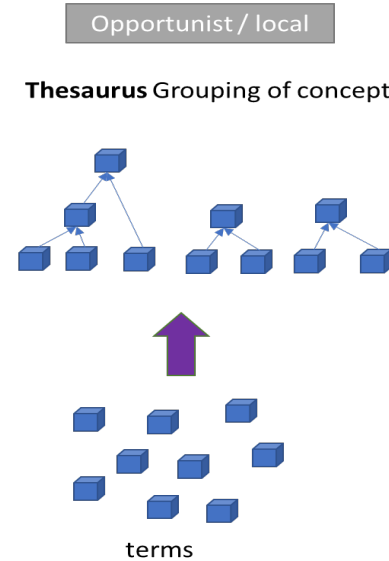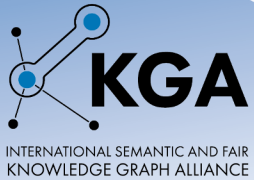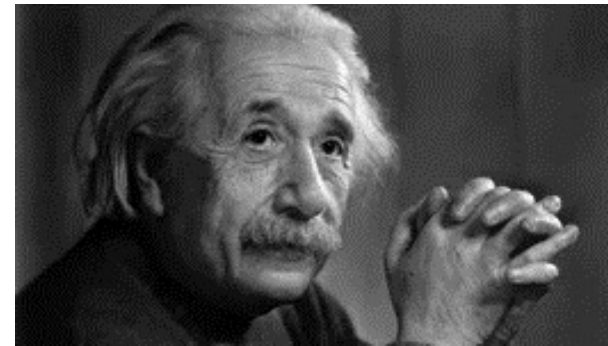
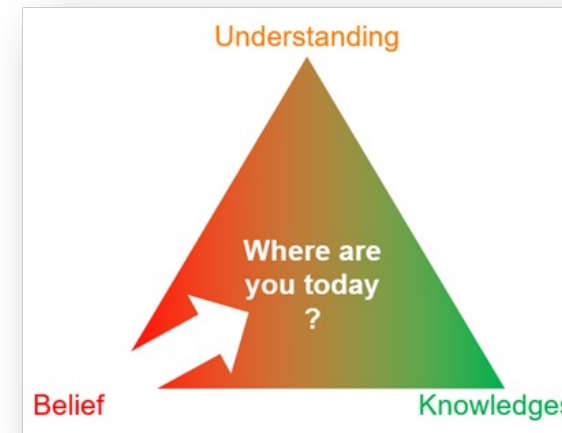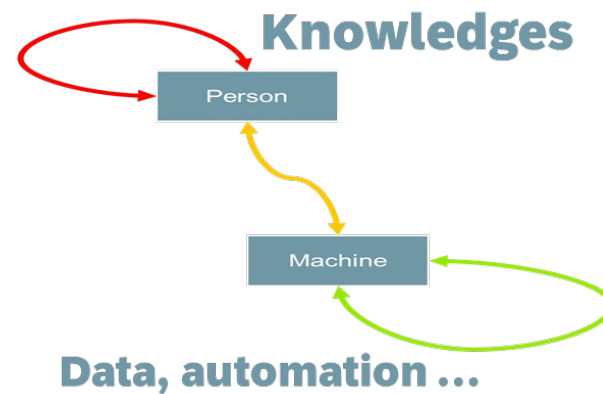Tables   Graphs   Taxonomies   Semantic Knowledge Graphs

Complexity

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We all need sustainable structuring principles to capitalize our knowledges

Disciplines
Activities
Qualities

Physical Asset Lifecycle

Specification
Design
Manufacture
Installation
Commissioning and Training
Operations
Maintenance
Decommission Disposal

We cannot solve our problems with the same thinking we used when we created them.

Albert Einstein

Interoperability challenge

Communicate Knowledge/informations

Exchange Data

Through Time (Life cycle)

To the right recipient

Ontology +SKG

Necessary and sufficient Content

Non ambiguous content

Extensively Controlled vocabulary

Defined Concepts

Defined Relations between Concepts

Knowledges

Person

Machine

Data, automation …

Understanding

Where are you today ?

Belief

Knowledges

Semantic Knowledge Graphs and linked-data value creation

"The future is already here, it's just not evenly distributed"

William Gibson

Not Everybody's developing *Knowledges* the Same Way

It is not the strongest of the species that survives, not the most intelligent that survives. It is the one that is the most adaptable to change…
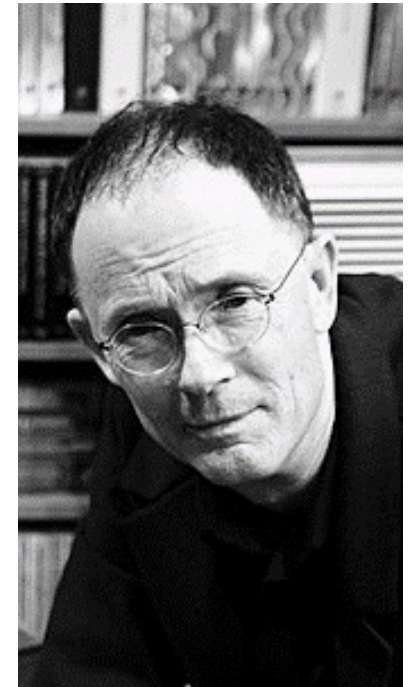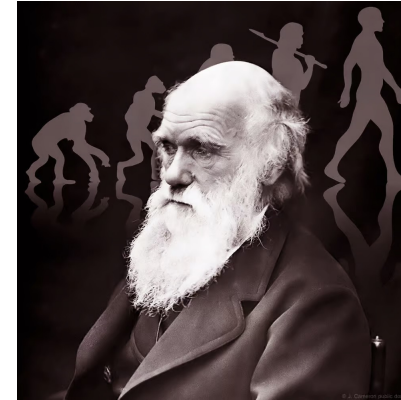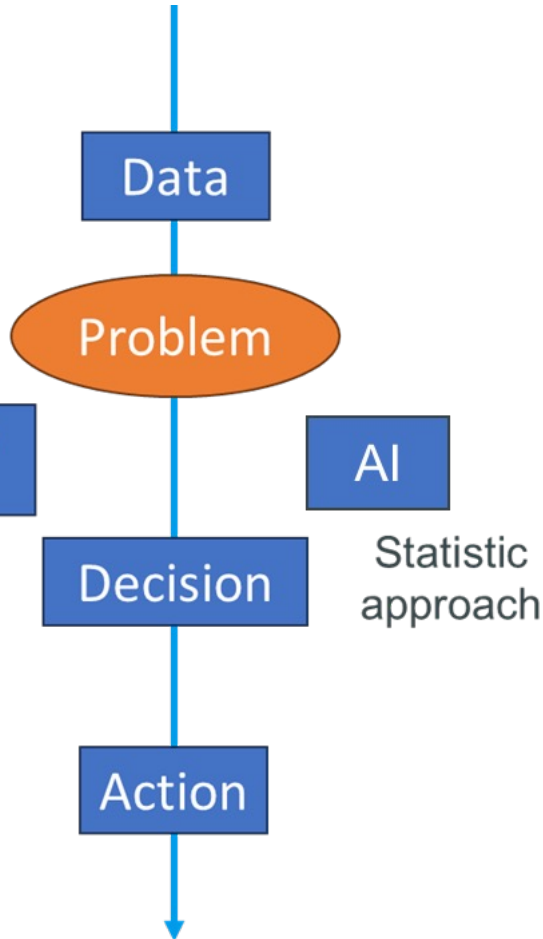
Charles Darwin

Data

Problem

Human data exploration « *Synthesis* »

Semantic, logic, determinist approach

AI

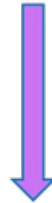Statistic approach

Decision

SKG = Semantic Knowledge Graph

SKG

Action

-

polysemy

- Talk : *original ways for people communicate*
- Write : *Information retention & elaborated reasoning*
- Web : *a documents network*
- Spreadsheet/RDBS: *management of objects defined according to an attribute logic*

NLP AI : *aggregation of the most likely statistically relevant pieces of text in relation to a given theme*
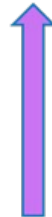
- Knowldege Graph : *objects' graphs*
- Domain Ontology : *objects desciptions aligned to an upper ontology*
- Upper Ontology : *formal description of the relationships inherent in human language*
- Formal Ontology : *definition of concepts and their relationships in terms of Boolean logic*

(FOL = First Order Logic)

+

Semantic precision
Logical consistency

Not Everybody's developing *Ontologies* the Same Way

When people work together, mountains turn to gold

Chinese quote
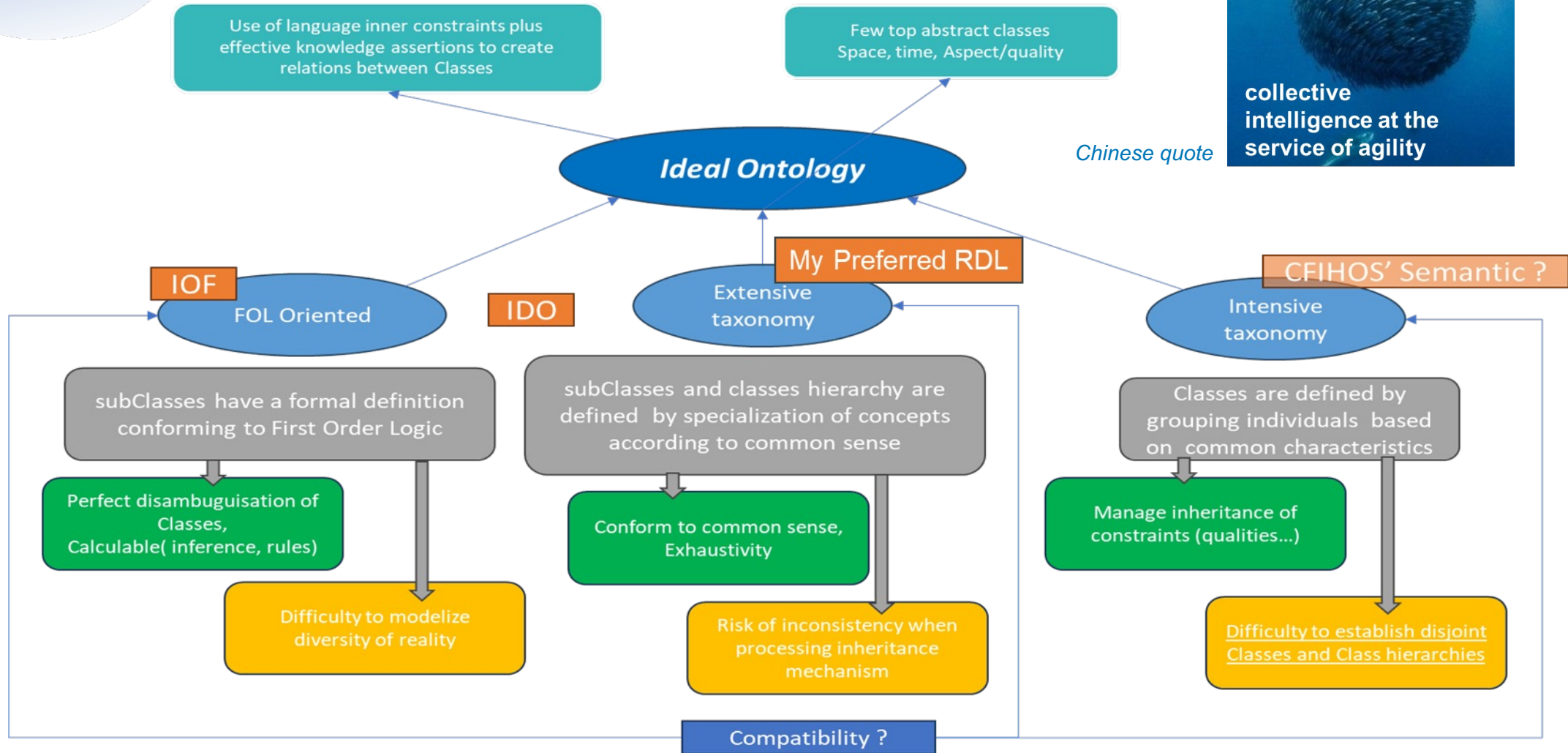
collective intelligence at the service of agility

Use of language inner constraints plus effective knowledge assertions to create relations between Classes

Few top abstract classes Space, time, Aspect/quality

Ideal Ontology

IOF

IDO

My Preferred RDL

CFIHOS' Semantic ?

FOL Oriented

Extensive taxonomy

Intensive taxonomy

subClasses have a formal definition conforming to First Order Logic

subClasses and classes hierarchy are defined by specialization of concepts according to common sense

Classes are defined by grouping individuals based on common characteristics

Perfect disambuguisation of Classes, Calculable(inference, rules)

Conform to common sense, Exhaustivity

Manage inheritance of constraints (qualities...)

Difficulty to modelize diversity of reality

Risk of inconsistency when processing inheritance mechanism

Difficulty to establish disjoint Classes and Class hierarchies

Compatibility ?

Thank you !