Brussels
November 29, 2018

Algorithm-driven systems and 'Smart registrations': Potential Uses, Possible Limits, and Liability Risks

ELRA Workshop

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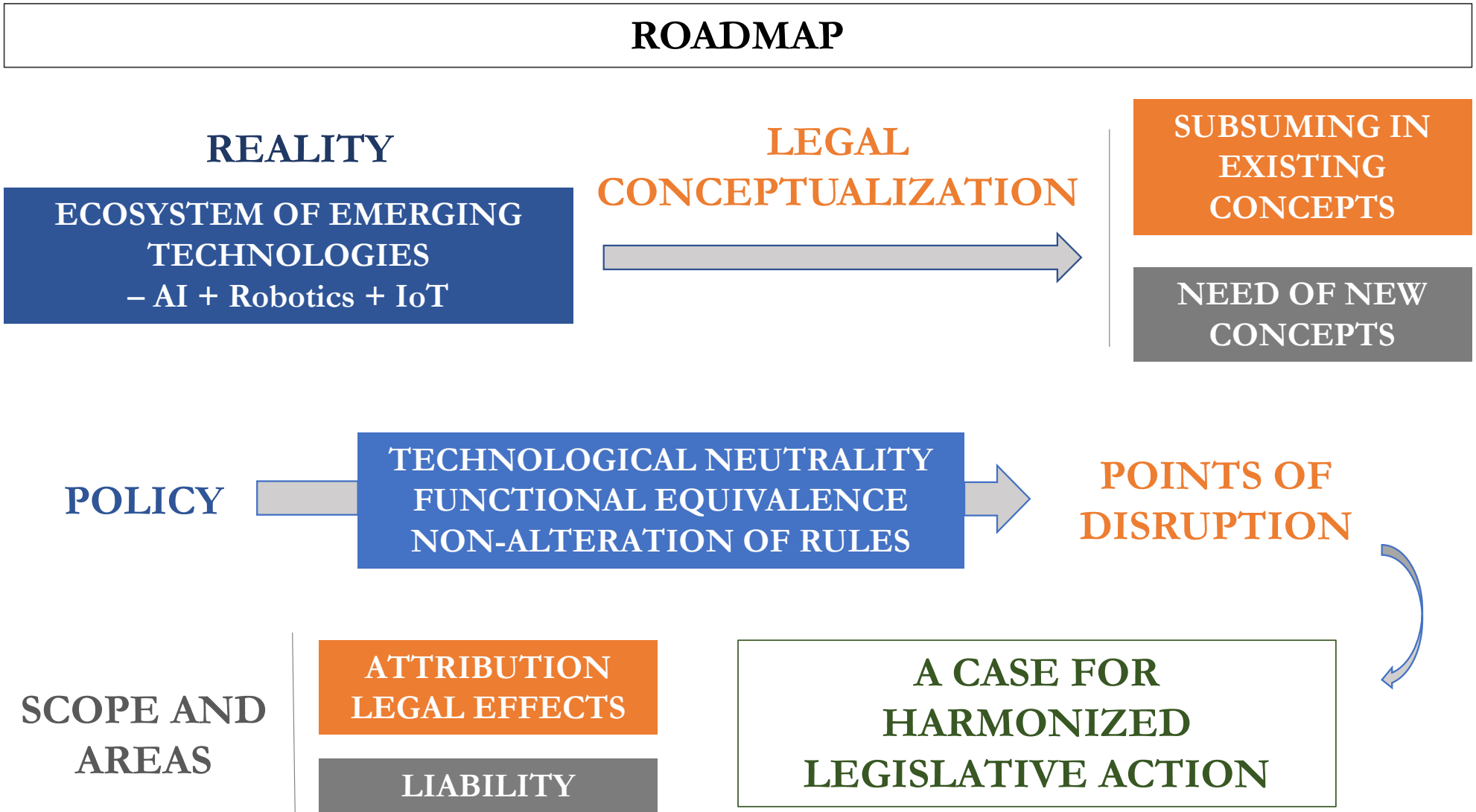
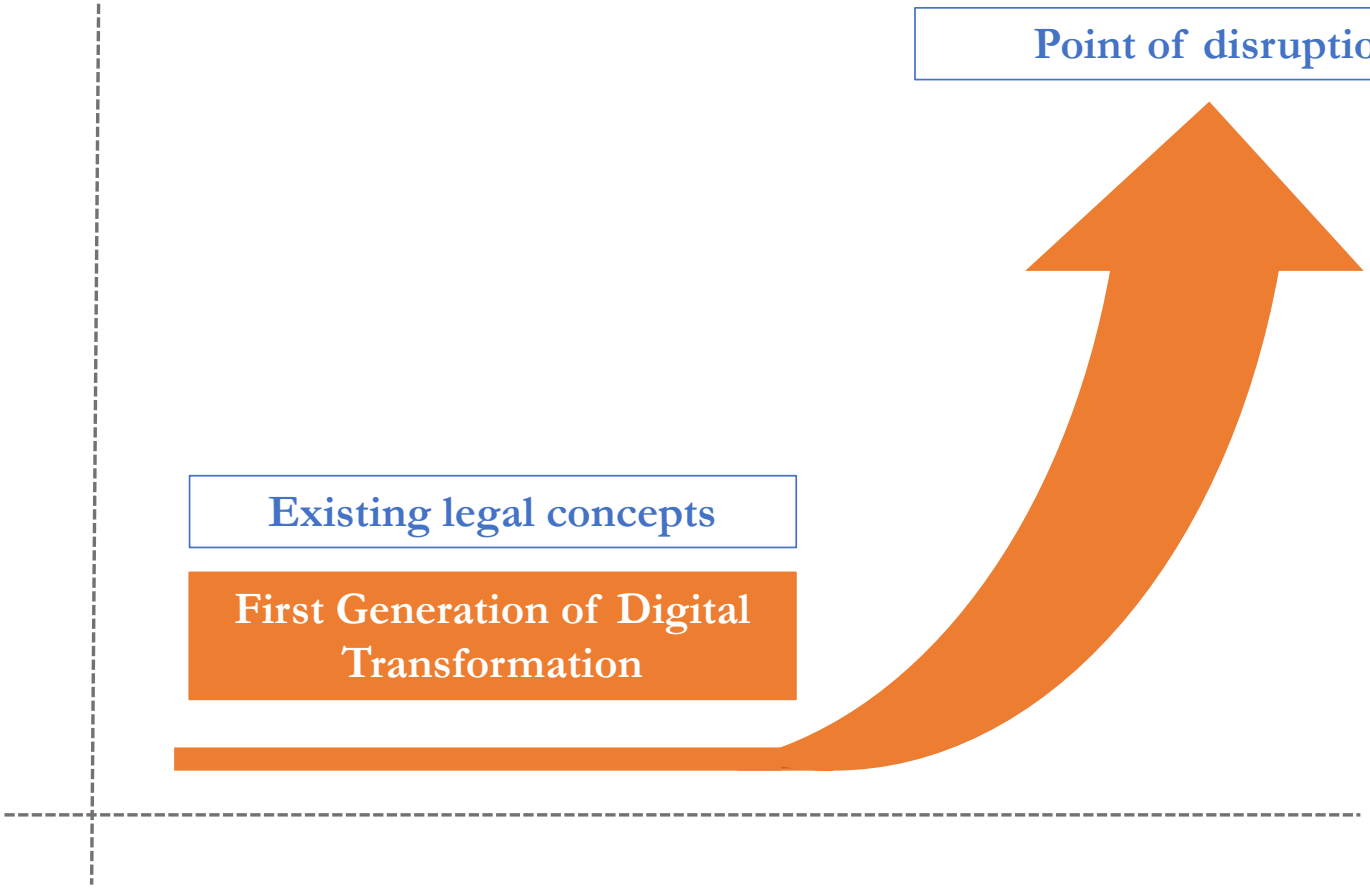

ROADMAP
REALITY
ECOSYSTEM OF EMERGING TECHNOLOGIES – AI + Robotics + IoT
LEGAL CONCEPTUALIZATION
SUBSUMING IN EXISTING CONCEPTS
NEED OF NEW CONCEPTS
POLICY
TECHNOLOGICAL NEUTRALITY
FUNCTIONAL EQUIVALENCE
NON-ALTERATION OF RULES
POINTS OF DISRUPTION
SCOPE AND AREAS
ATTRIBUTION
LEGAL EFFECTS
LIABILITY
A CASE FOR HARMONIZED LEGISLATIVE ACTION

I.- CONTEXT: The Second Generation of Digital Transformation

Disruptive

Dynamic

Multidimensional



Second Generation of Digital Transformation

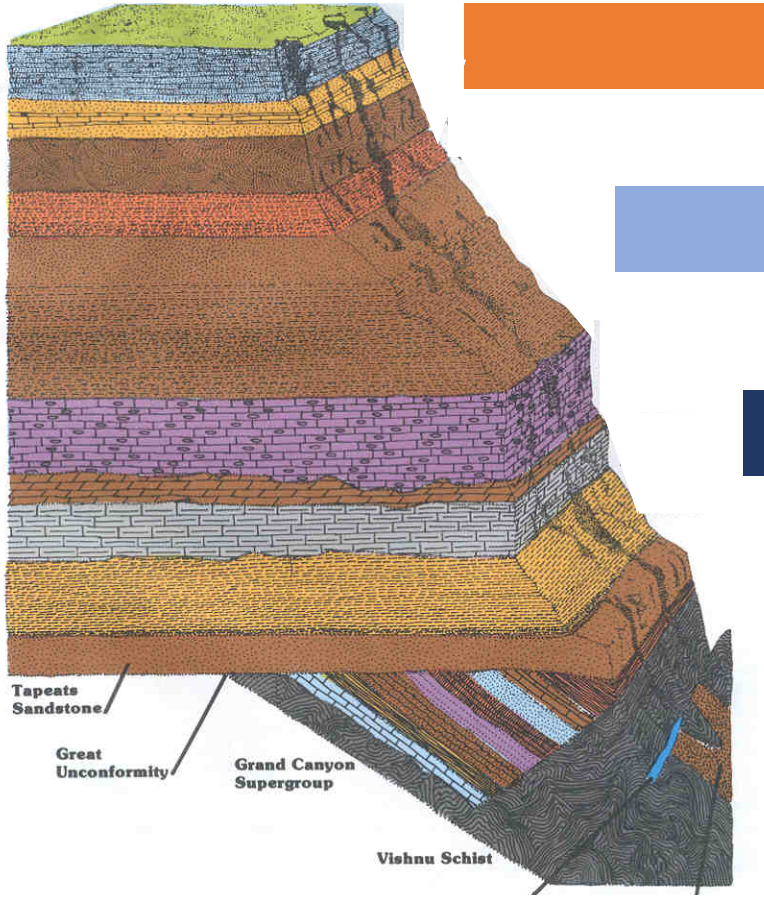
TECHNOLOGICAL NEUTRALITY

FUNCTIONAL EQUIVALENCE

NON-ALTERATION OF EXISTING RULES

…under consideration

II.-APPROACH: The Layers of Digital Financial Innovation Theory



Structural Layer

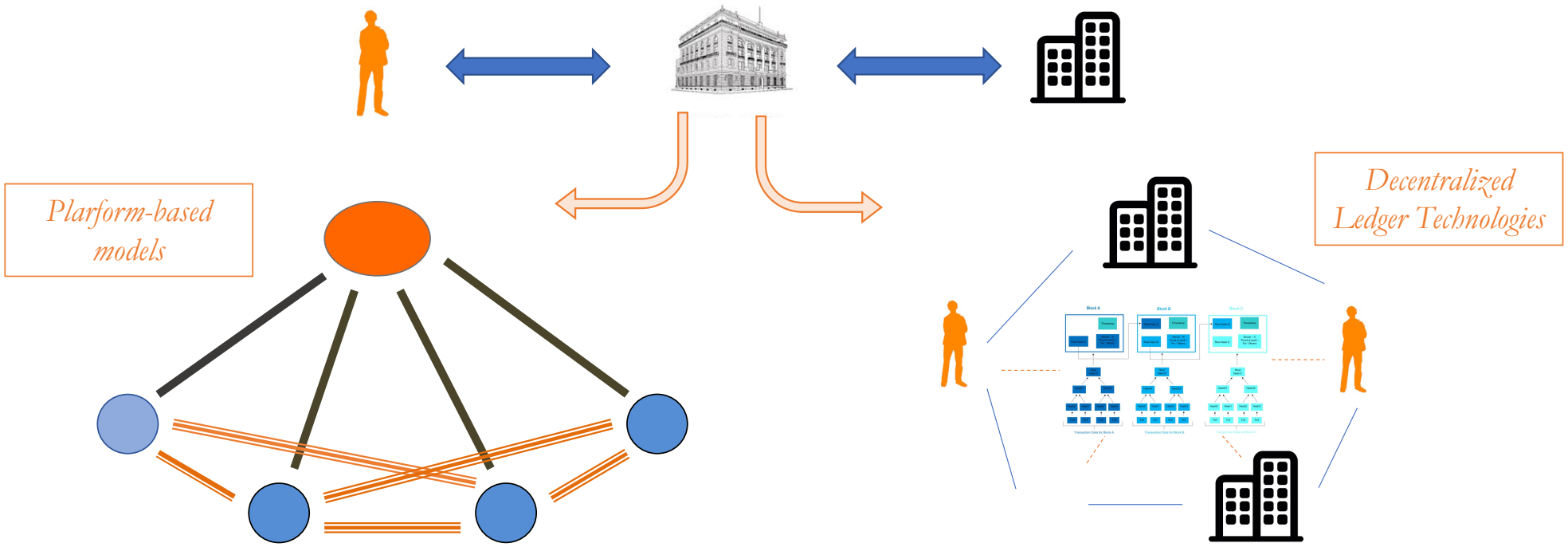
Players Layer

Service Layer

II.-APPROACH: The Layers of Digital Financial Innovation Theory

1. Structural Layer

Technology as Architecture



II.-APPROACH: The Layers of Digital Financial Innovation Theory

2. Players Layer

A highly-automatic registry model in a ECOSYSTEM OF SMART CONTRACTS, SMART PROPERTY, AND TRUSTED THIRD PARTIES

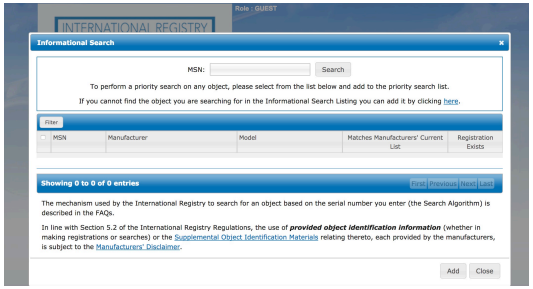
Smart Property

REGISTER AS A PLATFORM

Oracles

Feeding and verifying data

Other Registers



Flow of data

II.-APPROACH: The Layers of Digital Financial Innovation Theory

2. Players Layer

A PLURALITY OF ACTORS, PROVIDERS AND TRUSTED THIRD PARTIES

Image recognition

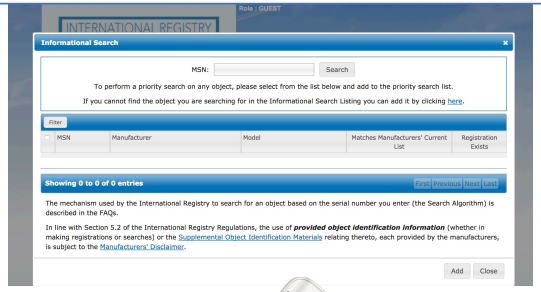
Aggregators

REGISTER AS A PLATFORM

Oracles

Feeding and verifying data

Other Registers

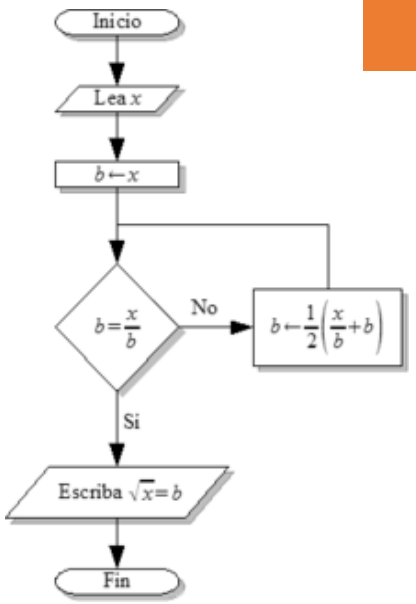


Comparators

Maps / Location

Search engines

3. Service Layer



Automation
Tasks, processes and decision making

A.- Prioritise

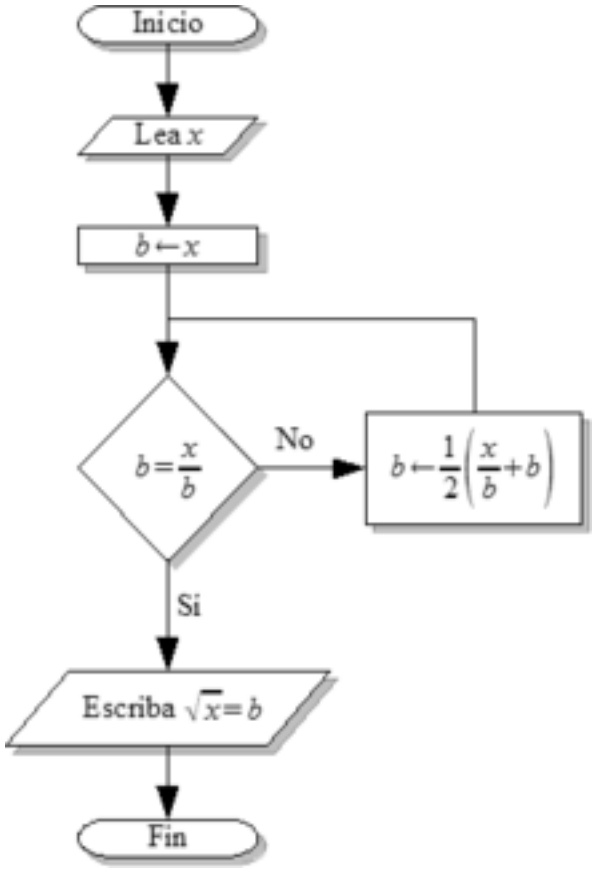
B.- Classify *(Content ID)*

C.- Associate to – similarity

D.- Filter *(Weibo)*

E.- Search

Anatomy of an Algorithm



PRE-CONDITIONS

DESIGN

DATA

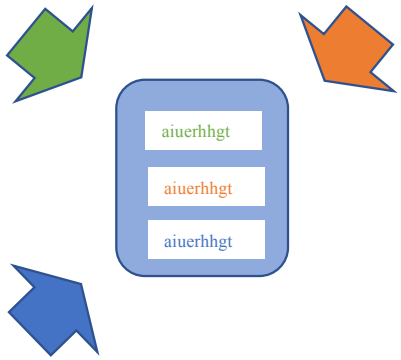
LEARNING

OUTCOMES

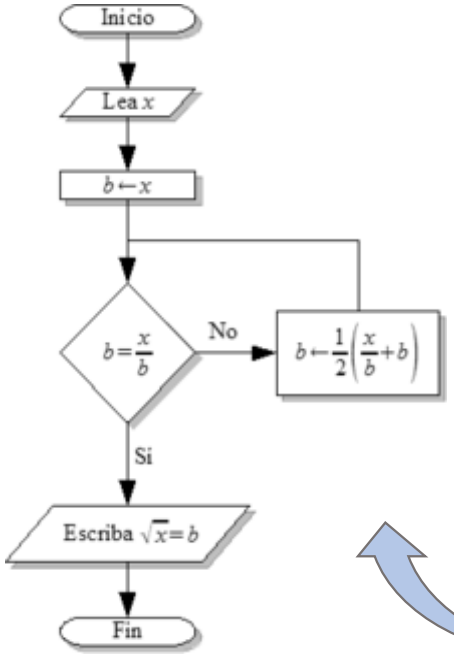
III.-POTENTIAL USES AND APPLICATIONS: “Smart Registrations”

MANAGEMENT OF DYNAMIC / OPENED REGISTRATION

Smart Registrations



AUTOMATION OF TASKS AND PROCESSES



COLLECTION OF DATA – IoT AND BIG DATA

IV-POSSIBLE LIMITS for SMART REGISTRATIONS - The need of a function-based approach

MANAGEMENT OF DYNAMIC / OPENED REGISTRATION
Smart Registrations

I.- The need to store the chain of registrations
II.- If automatic: the need to guarantee the consent, where needed, or the verification of the Registrar, where required.
III.- The need to previously identify the authorized oracles and IoT sources

AUTOMATION OF TASKS AND PROCESSES

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AUTOMATION OF TASKS AND PROCESSES

I.- The impossibility of codifying general principles, indeterminate concepts, standards.
II.- The limitations of algorithmic scope and language
III.- The inherent limits of algorithm-driven system to interpret the causa of transactions.
IV.- The dependence of standard terminology – restrictions on private autonomy

COLLECTION OF DATA – IoT AND BIG DATA

IV-POSSIBLE LIMITS for SMART REGISTRATIONS - The need of a function-based approach

MANAGEMENT OF DYNAMIC / OPENED REGISTRATION *Smart Registrations*	*I.- The need to store the chain of registrations* *II.- If automatic: the need to guarantee the consent, where needed, or the verification of the Registrar, where required.* *III.- The need to previously identify the authorized oracles and IoT sources*
AUTOMATION OF TASKS AND PROCESSES	*I.- The impossibility of codifying general principles, indeterminate concepts, standards.* *II.- The limitations of algorithmic scope and language* *III.- The inherent limits of algorithm-driven system to interpret the causa of transactions.* *IV.- The dependence of standard terminology – restrictions on private autonomy*
COLLECTION OF DATA – IoT AND BIG DATA	*I.- Perfect compatibility* *II.- Permanent interconnectivity* *III.- Dependence upon IoT perfect functioning.* *IV.- Control and accuracy of collected data*

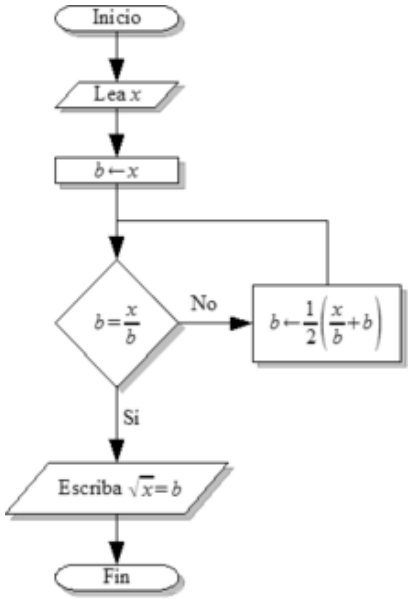
V.-LIABILITY RISKS: Understanding DISRUPTIVE FEATURES

LEVEL OF AUTONOMY

Unpredictability

COMPLEXITY LEVEL

Plurality of components and actors



DEGREE OF VULNERABILITY

Data dependency

Cyber-security

V.-LIABILITY RISKS: Understanding DISRUPTIVE FEATURES

RISKS SCENARIOS

- Problem of design
- Inability to understand data
- Removal of registration
- Misunderstanding of the transaction
-
- Mistaken data
- No search results
- Misleading registration
- Expiration

V.-LIABILITY RISKS: Understanding DISRUPTIVE FEATURES

RISKS SCENARIOS

- Biased / discriminatory results
- Inability to understand data
- Removal of registration
- Misunderstanding of the transaction
-
- Mistaken data
- No search results
- Misleading registration
- Expiration

LIABILITY VARIABLES

1). Algorithm design

2). Data

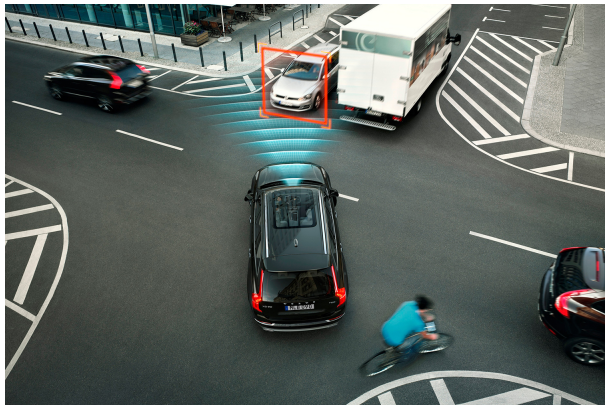
3). Machine learning

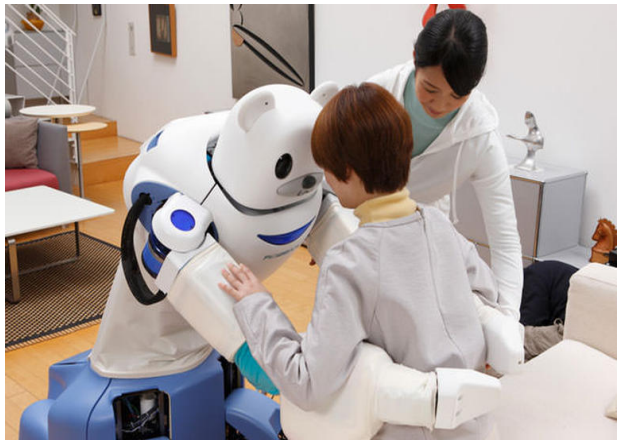
4). Autonomous decision making

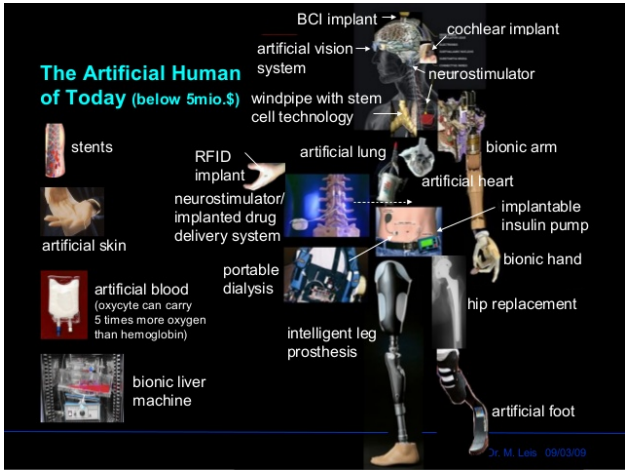
5). Hacking / Non-authorized access

6). Random or accidental operation

UNDERSTANDING REALITY: THE ECOSYSTEM OF EMERGING TECHNOLOGIES







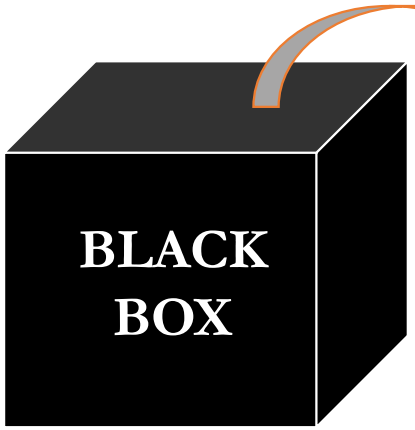
VI.-POLICY DECISIONS ON LIABILITY REGIME OPTIONS

GENERAL RULES ON LIABILITY	DEFECTIVE PRODUCT (service? software?)	PERSONALITY-BASED SOLUTIONS
Causation	*Concept of product*	*Compulsory insurance*
Force majeure	*Concept of defect*	*Compensation schemes*
Mere tool in the performance of functions	*Control over functioning*	*Separated patrimony*
	Unpredictability	

TRANSPARENCY AND EXPLAINABILITY

Functionalities of the process	Specific decision
Ex ante	Ex post

PRIVATE AUTONOMY AND AUTONOMOUS DECISION-MAKING



Article 22 GRDP EU

1). Right not be subject to a decision based *solely* on automated processing (profiling)

2). Right to explanation

3). Right to obtain human intervention

CONCLUSIONS

I).- A variety of possible uses and applications of algorithms: from partial to total automation of tasks, processes, and decision making

…BUT

II).- The inherent limitations of algorithmic systems to produce and manage "smart registrations" from the perspective of expected and due functions

…AND

III).- The liability risks arising from automation in the context of liability regime for emerging technologies

…the need for LIABILITY RULES AND SPECIFIC RIGHTS

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