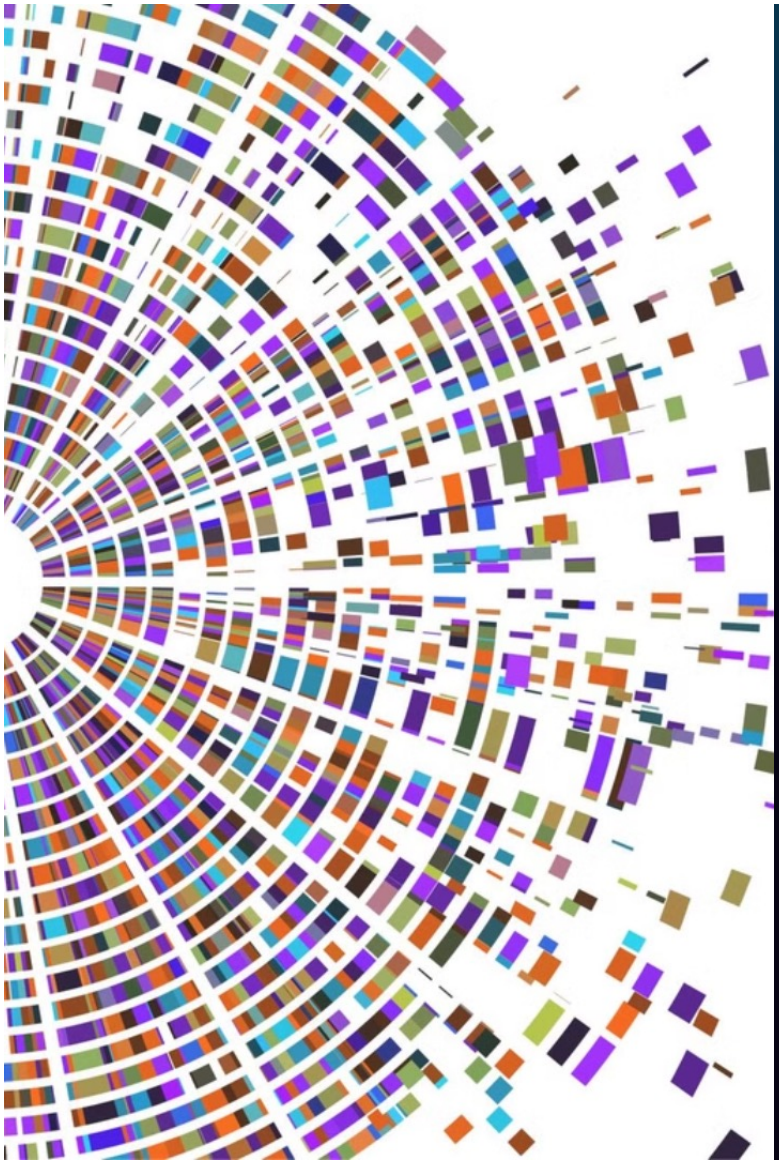
The Qualificative AI - QuAI

A New AI Typology to Revolutionize the Digital Business Model by better integration of the Human Factor along with AI for Better Decision Making

A patented (2019) French- European Innovation based on research having completed the Condorcet Paradox and Arrow's Theorem by using they in developing innovative solutions for AI data qualification.

Dr Florin Paun



Presentation

First part: Issues to be Tackled

- Fake and Biased Data in AI Usage
- Polarization of Opinions
- Impacts on Decision Making

Second part: Scientific Solutions Based on Research

- Solutions drawn from research on the evolution of economic models, innovation models, and evaluation and qualification processes.
- Incorporating human factors into these processes to address challenges in AI data and decision-making.

Third part: Contribution to Cognitive Science

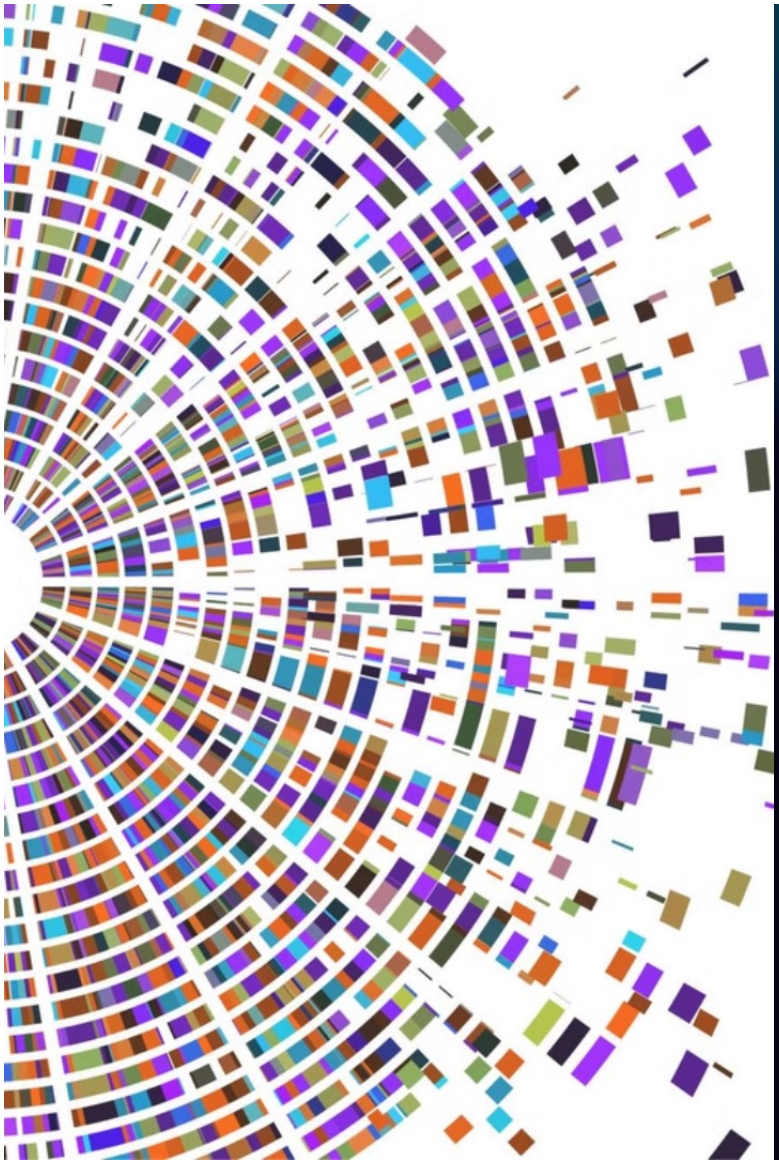
- Completing the **Condorcet Paradox** and **Arrow's Theory** in AI contexts.
- Integrating **Stefan Odobleja's Feedback Loop** and **Lupascu's Tiers-Inclus** into AI.
- Exploring **Asymmetries in Complex Issues** in **Collaborative Decision Making** and **Extended Evaluation Perimeters** (DRL-TRL, Mangrove Forest Supply Evaluations).

Forth part: The Theorization of a New AI Typology

- **Qualificative AI (QuAI)**: A complementary AI type alongside **Connective** and **Symbolic AI**.
- Exploring its **Definition**, **Comparisons**, and **Applications** in Cognitive Science.

Conclusion

- Addressing the challenges of biased data and decision-making processes with **Qualificative AI (QuAI)** with examples in Defense, Aerospace and New Space Race, crises situations
- Paving the way for more inclusive, relevant, and democratic data processing and decision-making with evolutions of Digital business models and useful AI applications.



The Need for a New Digital Business Model Based on Pertinent Data

The Danger

Over 60% of AI data is fake or biased. Existing digital business models focus on quantity (views, likes, followers), not relevance.

This leads to frustration, aggression, and societal polarization (proven by Condorcet & Arrow).

Impact on security and sovereignty.

Need for a shift towards a model based on Pertinent Data.

The Solution

- **Qualificative AI Xvaluator**: Integrates diverse opinions, critical thinking, and democratic processes to ensure data relevance.
- **Transition to a Functional Economy Based on Access to Collaborative Qualified Data**
- **Scientific Foundations**:
  - Patent obtained in 2019, completing the **Condorcet Paradox** & **Arrow's Theory**.
  - Integrates insights from **Stefan Odobleja** (European father of Cybernetics and Consonantist Psychology, 1939) and **Stefan Lupasco** (Tiers-Inclus theory).

Benefits

A digital space that promotes value creation through open qualification.

Uses "**Weak** Signals" to strengthen **Data Relevance** (make the Date **Strong**)

Supports better decision-making in all circumstances including in crisis situations, cybersecurity and space security.

First part : Issues to be Tackled

- Fake and Biased Data in AI Usage
- Polarization of Opinions
- Impacts on Decision Making

TO TRUST OR NOT TO TRUST

This is the question challenging the impact of AI in the New Space Race

How do Platforms and Social Networks (with over 3 billion users) decide the "truth" of data today?

Introduction to Data Manipulation in Digital Platforms

- **Algorithms & Business Models**:
  - Manipulate "truth of data" through platforms and social networks.
- **Influence Based on**:
  - **Likes**, **Followers**, **Views**
- The **majority opinion** is shaped by **volumetric approaches** rather than content analysis or reflection on sources.

Consequences of the Digital Business Model

- The digital space has become:
  - A **space of manipulation**
  - Polarized opinions
  - **Aggression** & **Confrontation**
- **Theoretical Foundations**:
  - Condorcet's Paradox and Arrow's Theorem highlight contradictions and issues with majority-based decision-making.

This presentation outlines how data and truth are manipulated in the digital space, leading to polarization and aggressive environments on platforms and social networks.

Impacts of Fake Data for Aerospace, Defense and Space sectors

Space and Aerospace Sectors

- **Satellite Disruptions**: Fake data on space debris causes miscalculations, leading to satellite collisions or malfunctions.
  - ESA tracks over **20,000** debris pieces (2020).
- **Launch Failures**: Fake data affects flight simulations and trajectory planning, contributing to **30%** of spacecraft failures (NASA, 2019).
- **Autonomous Systems Failures**: Fake data compromises AI-driven satellite operations.
  - **45%** of satellite systems faced accuracy issues due to data integrity problems (Aerospace Industries Association, 2021).

Global Economic Impact

- **Financial Losses**: The global cost of fake data in defense: **$50 billion** annually (CSIS).
  - Costs include breaches, delays, and trust erosion.
- **Supply Chain Disruptions**: Fake data in the supply chain can cost defense contractors **$1.4 billion** annually (GAO, 2021).
  - Affects manufacturing, equipment, and operations.

Defense Sector Risks

- **Security Breaches & Cyberattacks**: Fake data in defense systems (e.g., spoofing) compromises security.
  - **37%** of cyberattacks involve fake data (DoD).
- **Operational Failures**: Fake intelligence misleads military strategies, causing mishaps and delays.
  - RAND report (2020): Data manipulation led to misdirected airstrikes.
- **Weapon Systems Vulnerabilities**: Fake data manipulates targeting systems, risking mission failure and collateral damage.
  - Pentagon study (2022) on misfired guided missiles.

Geopolitical Tensions

- **International Risks**: Fake data can escalate conflicts between nations.
  - Example: Fake reports of military actions caused a diplomatic crisis between the U.S. and China (2018).
- **Consequences of Fake Data**:
  - Financial losses
  - Mission failures
  - National security risks
  - Diplomatic tensions
- **Solution**: Implementing advanced detection technologies like **Qualificative AI (QuAI)** is essential to mitigate fake data risks and ensure the integrity of space and defense operations.

AI in military operations

To do things that humans are already doing, as well as or better than them.

To do things that are impossible for humans given the urgency and vast amounts of data.

- Multi-Domain Operations (MDO)
- **Definition:** Orchestrating military activities across all operating domains: land, sea, air, space, and cyberspace.
- AI's Role:
    - Synchronizing actions across domains.
    - Real-time data analysis to support faster, informed decisions.
    - Enabling autonomous systems (e.g., drones, robots) to operate across multiple domains.

Challenges for AI in Military Operations

1. Speed of Change:
    1. Rapid adaptation needed in fast-paced military environments.
    2. AI systems must evolve quickly to handle dynamic threats.
2. How to Make it Work as an Ecosystem:
    1. Integrating various AI systems across domains for interoperability.
    2. Creating a seamless flow of data and insights across platforms.
3. Social Science Problem - Behavioral Change:
    1. Overcoming resistance to AI adoption within military culture.
    2. Building trust in AI systems and changing operator behavior.
4. Not Just About AI, But Structural Change:
    1. AI demands shifts in organizational structure, command processes, and policies.

Cognitive Science Approach

- Human-AI Interaction:
    - AI systems designed to **complement** human decision-making.
    - Enabling **faster decision-making** through data insights without overwhelming the operator.
- Key Focus:
    - Training operators to understand and trust AI-driven insights.
    - Balancing autonomy and human oversight.

Conclusion

- AI's Dual Role in Military Operations:
    - Enhancing human decision-making with AI capabilities.
    - Performing tasks impossible for humans under time constraints and data overload.
- Key Challenges:
    - Speed of technological adaptation, ecosystem integration, behavioral change, and structural evolution.
- Success:
    - Requires a combination of **advanced technology**, **human adaptability**, and **organizational transformation**.

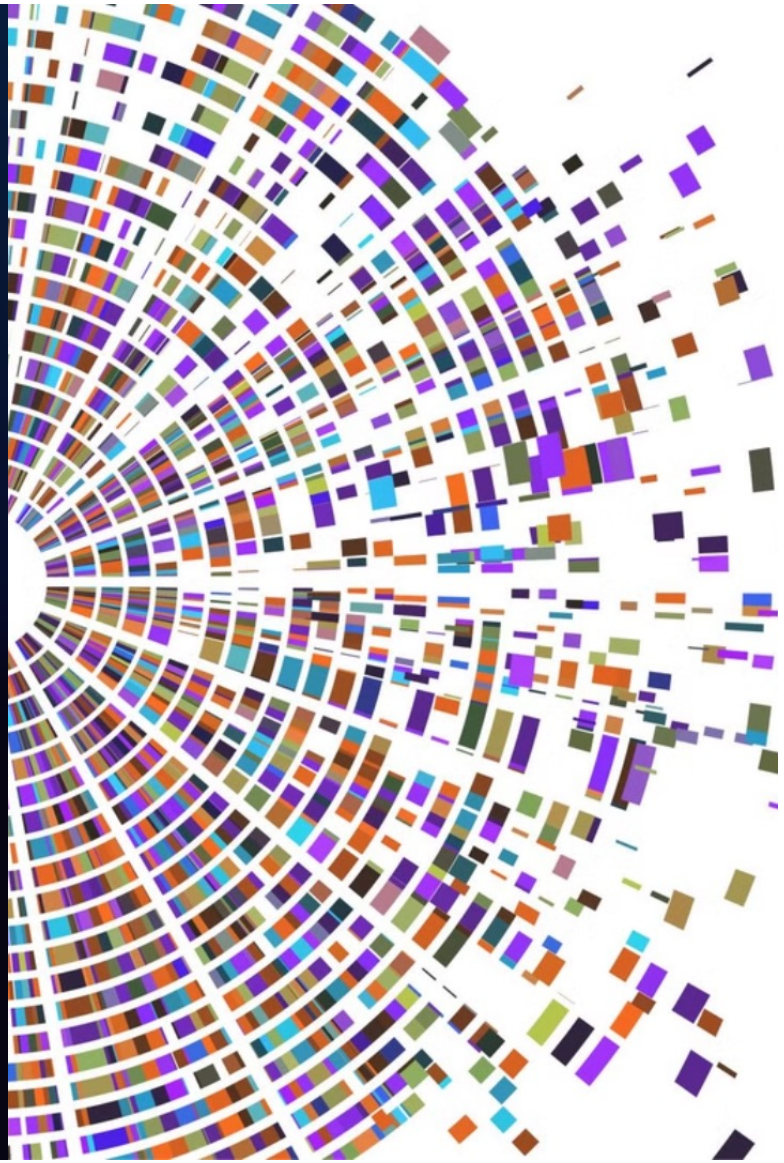
AI is extending into all areas of human activity including the military

> "AI will serve two purposes in the military: to do things that humans are already doing, as well as or better than them. And then, to do things that are impossible for humans given the urgency when there isn't enough time to think due to the multitude of data." AI thus assists the operator in decision-making, helping them save time through data processing."

Admiral Pierre Vandier, Chief of Staff of the Armed Forces

Some areas where AI is having an impact in the military include:

1. **Autonomous Vehicles and Drones**: AI is used in unmanned aerial vehicles (UAVs), drones, and ground vehicles, allowing them to operate with minimal human intervention. These systems can be deployed for surveillance, reconnaissance, and even combat missions.
2. **Cybersecurity**: AI can help detect and respond to cyber threats more effectively, by identifying patterns and anomalies that might signal an attack. Machine learning can be used to predict and prevent cyberattacks before they happen.
3. **Weapons Systems**: AI is being integrated into various weapons systems, improving targeting, accuracy, and efficiency. AI-controlled systems can adapt and learn from their environment, potentially improving the effectiveness of military operations.
4. **Military Strategy and Decision Support**: AI systems can process vast amounts of data and assist military commanders in making more informed decisions. By analyzing real-time data, these systems can help identify strategic opportunities or threats that might not be immediately apparent.
5. **Training and Simulation**: AI is being used to create more realistic and effective training environments, simulating complex battle scenarios for soldiers to practice in, enhancing their readiness.



Second part : Scientific Solutions Based on Research

- Solutions drawn from research on the evolution of economic models, innovation models, and evaluation and qualification processes.
- Incorporating human factors into these processes to address challenges in AI data and decision-making.

Interdependency of evolutions: economic, innovation, evaluation

"Qualificative AI (QuAI) is based on own Scientific Contributions to Interdependence & Consubstantiality of different Evolutions :"

Economic Models:

- **Functional Economy**: Restructures industries (e.g., from "car sector" to "mobility sector").
- **Supply Chain Transformation**: From linear to a **"Mangrove Forest"** structure, integrating digital sectors

Innovation Models:

- **Open Innovation**: Streamlining processes and hybridizing **Tech-Push** and **Market-Pull** strategies, **Agilysing** Innovation processus and organisation as **Shortening the Innovation Cycles**
- Tools like **DRL (Demand Readiness Level)** & **DRL-TRL** supporting the innovation efficiency and reduction of waste and ecological impacts

Evaluation & Qualification Models:

- Overcoming contradictions between **expert-driven** and **crowd-based** approaches.
- Ensuring diversity is integrated within a **democratic process** to maintain relevance.
- Promoting inclusivity in decision-making.

Capabilities and Human Factor Integration in these processus:

- Understanding the **role of human input** and **critical thinking** in evolving economies and societies.
- Identifying **asymmetries**:
- Beyond "**information asymmetry**" (Stiglitz), the theorietisation of new assymetries to manage in the Highly Collaborative processus : **cultural**, **temporal**, **interest-based**, and **contextual** asymmetries.
- **New AI Typology**:**QUALIFICATIVE AI (QuAI)**, developed from these research contributions.
- **New Tool**:**Xvaluator**: A tool designed to apply and support the concepts derived from this research.

Qualificative AI Xvaluator: Bridging Economic Theory, Cognitive Science, and Key Research

Condorcet and Social Choice Theory

- **Nicolas de Condorcet**: A French philosopher and mathematician who contributed to the development of social choice theory.
- **Condorcet's Paradox**: The idea that majority voting can lead to intransitive or inconsistent outcomes. This highlights the complexity of decision-making when multiple agents (or intelligence systems) are involved.
- **AI Xvaluator**: Uses Condorcet's theories to address challenges in collective decision-making by AI, improving voting mechanisms and consensus-building algorithms.

Stefan Odobleja and Cybernetics

- **Stefan Odobleja**: A Romanian psychiatrist and philosopher who is considered a pioneer of **cybernetics** and **artificial intelligence**. His work emphasized the interaction between the human mind and machine-based systems.
- **AI Xvaluator**: Draws from Odobleja's insights to develop models that improve AI's understanding of human cognition and behavior. This includes enhancing the AI's ability to adapt and make decisions in a way that mirrors human thought processes.

Arrow's Impossibility Theorem

- **Kenneth Arrow**: An economist who formulated the **Impossibility Theorem**. His theorem states that no voting system can perfectly reflect individual preferences while also meeting a set of "fair" criteria.
- **AI Xvaluator**: Incorporates Arrow's work to refine algorithms that aggregate preferences and choices across different stakeholders, focusing on fairness and consistency in decision-making.

Stephan Lupasco and Dialectics

- **Stephan Lupasco**: A French philosopher known for his **dialectical theory** that explores how contradictions and oppositions in systems lead to change and evolution.
- **AI Xvaluator**: Integrates Lupasco's theory by introducing **dialectical reasoning** into AI systems, allowing them to process and reconcile contradictions, uncertainty, and paradoxes in decision-making.

Third part : Contribution to Cognitive Science

- Completing the Condorcet Paradox and Arrow's Theory in AI contexts
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Condorcet, Arrow, Odobleja, Lupasco

How Qualificative AI Xvaluator Combines and completes These Theories

Condorcet & Arrow's Work:

Qualificative AI Xvaluator addresses collective decision-making challenges through **voting systems**, **preference aggregation**, and **fair decision-making** algorithms.

It ensures that complex, multi-agent decisions remain consistent and rational, avoiding paradoxes and contradictions.

Practical Applications of Qualificative AI Xvaluator

- **Economic Decision-Making**:
- Helps businesses and governments assess policies, investments, or market behavior by integrating economic models and human cognition.
- **Voting and Political Systems**:
- Provides solutions for more efficient, fair, and transparent voting systems based on social choice theory.
- **Human-AI Collaboration**:
- Enhances AI's ability to work with humans, understanding the complexities of human decision-making and adapting its responses accordingly.

Odobleja's Cybernetics & Lupasco's Dialectics:

The system uses **cybernetic principles** to interact with human cognitive patterns, enabling it to model and understand dynamic human-machine interactions.

Dialectical reasoning allows AI Xvaluator to handle contradictions in real-time, improving **adaptive learning** and **problem-solving**.

Impacts of Qualificative AI Xvaluator

Qualificative AI Xvaluator combines **economic theory** and **cognitive science** to improve how AI systems process complex decisions, handle contradictions, and understand human behavior. By drawing on the research of **Condorcet**, **Arrow**, **Odobleja**, and **Lupasco**, AI Xvaluator provides a comprehensive framework for **intelligent decision-making** that benefits both artificial and human intelligence.

Condorcet and **Arrow** inform AI Xvaluator's ability to handle decision-making in groups and ensure fairness in AI-driven outcomes. **Odobleja** and **Lupasco** offer frameworks for improving AI's interaction with human cognition and handling contradictions. Qualificative AI Xvaluator aims to bridge these philosophical, cognitive, and economic frameworks to build more effective, adaptive, and fair decision-making systems.

"THE FOG DATA"

Qualification DATA on AI used in Defense and Space Industries is an imperative

Tiers-Inclus and Interaction!

Getting Out of the Polarization Digital Model: A Dialectical Approach with Lupasco's Theory

Tiers-Inclus can be applied to human-machine interaction, creating a framework for understanding how humans and machines influence each other.

Polarization in digital models refers to a binary, dichotomous approach to information, where everything is categorized into two opposing camps (e.g., 0/1, yes/no, true/false).

Limitations imposed by Polarization :

- Rigid decision-making: Forces systems into fixed, opposing categories.
- Loss of nuance: Complex situations or behaviors are reduced to oversimplified choices.
- Lack of adaptability: Digital systems become more rigid and less capable of responding to complexity or contradiction.

Qualificative AI Xvaluator: Overcoming Polarization: The Role of Dialectics

Dialectical logic moves beyond fixed oppositions, allowing systems to evolve through contradiction and synthesis.

- **Dynamic Synthesis**: Dialectics allows for the integration of **opposing ideas**, generating **synthesis** that transcends simple binary distinctions.
- **Complex Decision-Making**: Instead of binary choices, systems can process contradictions and find **intermediate solutions** or even **create entirely new paths** based on dynamic tension.
- **In Practice: AI Systems**: AI no longer needs to classify inputs into binary categories (e.g., true/false). Instead, the system can consider multiple dimensions of truth, adapting its responses as new information emerges.

Tiers-Inclus and Interaction! Getting Out of the Polarization Digital Model: A Dialectical Approach with Lupasco's Theory

Tiers-Inclus can be understood as a way of organizing and thinking about systems that transcends fixed, polarized categories. It proposes that instead of having rigid, isolated layers (or "tiers"), systems can have multiple, **interconnected levels** that evolve and adapt through contradictions.

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Qualificative AI Xvaluator: **Overcoming Polarization: The Role of Dialectics**

Dialectical logic moves beyond fixed oppositions, allowing systems to evolve through contradiction and synthesis.

Practical Applications

Economic Decision-Making:

- Rather than choosing the "best" option in a binary sense, Lupasco's dialectical model might help resolve conflicts in financial models by **integrating** different economic theories.
- **Example**: A financial algorithm that synthesizes **growth** and **sustainability** models rather than adhering strictly to one.

Healthcare AI:

- A **diagnostic AI** that considers the contradictions in medical research (e.g., differing study results) to offer a more holistic treatment recommendation.
- **Example**: AI suggesting **personalized** treatments based on the synthesis of conflicting patient data and research findings.

Odobleja Feedback Loops in Complex Systems: Examples from Engineering and Social Sciences

Core Idea: Odobleja proposed that human **thinking**, **learning**, and **decision-making** rely on constant feedback between actions and their consequences. This feedback loop is essential for adaptation and improvement over time.

- A **feedback loop** is a process where the output of a system is fed back into the system as input, creating a cycle of continuous improvement, learning, and adaptation.
- In AI, this allows the system to refine its decisions and outputs based on real-time data, optimizing its performance and decision-making ability.

How it Works in Qualificative AI Xvaluator:

- **Qualificative AI Xvaluator** uses **cybernetic feedback loops** to continuously evaluate and adjust its models and decisions.
- The system doesn't just give one-time outputs; it **learns** from previous actions, adjusts according to new data, and refines its predictions and evaluations over time.

Robotics

Robots learn and adapt through feedback, adjusting their movements and actions based on real-time data from sensors.

Social Networks and Platforms

Social media algorithms analyze user behavior and preferences, providing personalized content and influencing online interactions.

Man-Machine Symbiosis: Feedback Loops and Co-creation of TRUSTFUL AI

Humans and AI systems can learn from each other through constant feedback.

This collaboration leads to new discoveries and advancements in both AI and human capabilities.

The Human-Machine Connection:

- Odobleja emphasized that **human intelligence** is deeply rooted in the **feedback loop** between our actions and our environment. He viewed this as essential to cognition and adaptive behavior.
- In **Qualificative AI Xvaluator**, the system mimics this human-like learning by using **cybernetic feedback** to adapt to changes, refine decision-making, and evolve over time.
- In **Qualificative AI Xvaluator**, contradictions between various data points (e.g., conflicting opinions, contradictory market signals) can be **resolved** through feedback loops, where the AI continuously updates its model to **synthesize** opposing views and offer a comprehensive solution.

Feedback and Adaptation:

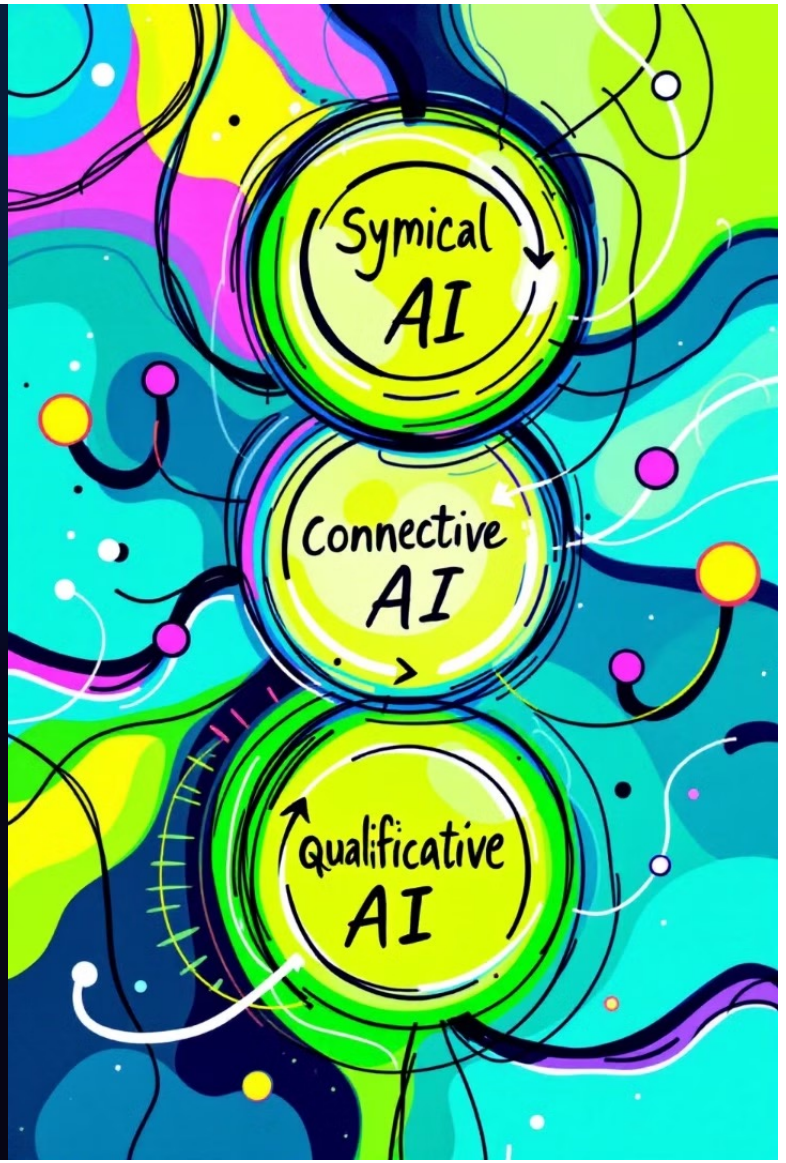
- **Adaptive Decision-Making**: By incorporating **feedback loops**, **Qualificative AI Xvaluator** can **adapt to changing contexts**, improving its decision-making accuracy.
- **Example**: In an economic model, if the AI initially predicts a market trend incorrectly, it will adjust future predictions based on real-time data, refining its strategy through continuous feedback.

Forth part : The Theorization of a New AI Typology

Qualificative AI (QuAI): A complementary AI type alongside Connective and Symbolic AI.

Exploring its Definition, Comparisons, and Applications in Cognitive Science.

Qualificative AI (QuAI)



Conclusion: Synthesizing and Completing Lupasco, Odobleja, Condorcet, Arrow, for the Future of Human-Machine Collaboration

By synthesizing the ideas of Lupasco, Odobleja, and research in cognitive science, we can create a future where humans and machines collaborate effectively, leveraging the strengths of each to achieve unprecedented progress based on **QUALIFIED PERTINENT DATA as the new Value Creation Centers in these evolutions of the Digital Business Model.**

Benefits of Feedback Loops in Qualificative AI Xvaluator

- **Improved Accuracy**: Continuous learning from feedback ensures that **decisions become more accurate** over time.
- **Adaptability**: The system adapts to **changing environments** and conditions, ensuring it remains relevant and effective.
- **Holistic Decision-Making**: By integrating feedback from various sources, **Qualificative AI Xvaluator** provides more **holistic solutions**, especially in complex, multi-dimensional environments.

Definition QUALIFICATIVE AI - QuAI (Paun, 2023)

Qualitative Intelligence (QuAI), as a complementary AI typology alongside Connective and Symbolic AI in cognitive science, is based on **qualified, contextualized, weighted data** that cannot be stored or manipulated because they are part of highly collaborative consultation processes (Open Qualification XV). The consensual and predictive results are therefore not based on data, models, or past experiences (as is the case with connective, symbolic, or generative AI), but are instead shaped in real-time and continuously through open qualification processes that are both conceivable and desirable by all stakeholders involved.

Specificities of the Qualitative AI (QuAI) – a complementary AI typology (completing the Connective AI and Symbolic AI in Cognitive Sciences)

- **QuAI** is based on **Qualified, Contextualized, Weighted Data** that cannot be stored or manipulated.
- Data pertains to highly collaborative processes of consultation (**Open Qualification XV**).
- Unlike traditional AI (connective, symbolic, or generative), QuAI's results are based on real-time, continuous open qualification processes rather than past data or models.
- Predictive and consensual outcomes are generated collaboratively by stakeholders.

The Role of "Trajection" Tools in QuAI

- **Trajection tools** for **Subjects - Data as Perceptions** help create a collective representation of the world.
- These tools act as true existential operators – the **"as-ifs"** – aiding in collaborative qualification processes.
- **Ontological vocabularies** help facilitate optimal choices within well-defined, contextualized conditions, ensuring relevance and trust.

Creating a "Data Passport" with QuAI

- **QuAI** integrates opinions on **OPINION DATA** by considering the context, weak signals, and various criteria (source, weights, etc.).
- This process creates a **"Data Passport"**, revealing the uniqueness of each piece of **Qualified Data**.
- Trust is fostered as a new center of value creation, shifting from **Quantity Data** to **Qualified Data** in the new digital business model.
- QuAI introduces the "epigenese of Data" as scientific ne approach in Cognitive Science

The Value of Contextualization and Opinion Diversity

- The **Qualified AI Ontological Vocabulary** helps distinguish between **"LIKE" data** from different platforms, such as Facebook vs. a reliable, local platform.
- Weighting based on a diversity of observations helps determine the **PERTINENCE** of data.
- By integrating diverse opinions and context, **QuAI** maximizes the objectification process, ensuring results are perceived as **Pertinent** by all stakeholders.

A New AI Typology is needed : the Qualificative AI

The Qualificative AI : "Qualitative AI: How to Revolutionize Digital and Ecological Trust" (https://pouparsodigital.fr/xvaluator/)

L'IA Qualificative Xvaluator : révolutionner la confiance numérique et écologique

Née à Issy-les-Moulineaux, Xvaluator a l'ambition d'être un acteur déterminant de la transition numérique et écologique. En combinant intelligence artificielle et intervention humaine, cette deeptech française brevetée en 2019 se distingue par une approche unique pour qualifier et valoriser les données tout en réduisant leur empreinte écologique.

Solution alternative et collaborative face aux GAFAM, sa technologie innovante, centrée sur la réduction des données fausses et biaisées, répond à des enjeux critiques : rétablir la confiance dans le numérique et protéger nos démocraties.

La solution phare d'Xvaluator repose sur l'IA qualificative (QuAI, une nouvelle typologie IA découverte et théorisée par le Dr. Florin Paun en 2023), capable d'analyser les données en temps réel et de réduire les biais grâce à une collaboration participative.

Son écosystème inclut :

- **Un Digital Wallet** : outil de consultation pour des décisions optimales.
- **Une technologie brevetée « Like Fingerprint® »** : qui structure et protège les données en respectant les normes RGPD.
- **Un Data Lake** : centralisation et qualification des avis pour une prise de décision éclairée.


Dr Florin Paun

Cette approche permet la qualification des données et l'identification des données pertinentes ce qui a comme conséquence la réduction les flux de données inutiles tout en renforçant la confiance numérique, un point essentiel dans un monde saturé d'informations biaisées ou fausses.

Xvaluator veut ainsi contribuer à la réduction de l'empreinte écologique du numérique, notamment dans le cadre de l'IA générative. Sa solution, adaptée aux entreprises d'Île-de-France, est offerte gratuitement dans des projets pilotes visant à accélérer la transition numérique et écologique. Ses ambitions ne s'arrêtent pas là : avec une levée de fonds de 15 millions d'euros envisagée pour soutenir son développement, l'entreprise mise sur l'embauche de talents et le renforcement de sa recherche et développement. Depuis Issy-les-Moulineaux, cette deeptech montre qu'innovation technologique et impact sociétal peuvent aller de pair, tout en dessinant les contours d'un avenir numérique plus éthique et durable. ■

Table comparing Connective AI, Symbolic AI, Hybrid Connective-Symbolic AI, and Qualificative AI (QuAI), based on the different criteria

Criteria	Connective AI	Symbolic AI	Hybrid Connective-Symbolic AI	Qualificative AI (QuAI)
Basis of Learning	Data-driven, patterns learned from data.	Rule-based, relies on predefined knowledge.	Combines data-driven learning with symbolic reasoning.	Integrates both qualitative and quantitative data for decision-making.
Data Dependency	Highly dependent on large datasets for training.	Minimal, relies on predefined rules and logic.	Moderate, depends on both data and symbolic rules.	Moderate to high, based on both structured and unstructured data.
Interpretability	Low, as models (e.g., neural networks) are black-box.	High, due to explicit rules and logic.	Medium, combining interpretability of symbolic AI with complexity of connective AI.	High, emphasizes understanding decision-making rationale.
Adaptability	Highly adaptable, learns from data and changes over time.	Low, limited to the rules set during creation.	Medium, adapts through data while maintaining symbolic structure.	Very high, adapts based on evolving qualitative insights and data.
Examples	Deep learning, neural networks, reinforcement learning.	Expert systems, logic-based AI.	Neuro-symbolic systems, cognitive architectures.	Systems in qualitative decision-making, ethical AI, social AI.
Limitations	Requires massive data, computationally intensive.	Can't handle complex or uncertain problems.	Balancing both data and rules can be challenging.	Struggles with fully automated decision-making in dynamic environments.
Data Valorisation Based On	Statistical patterns, correlations, and trends.	Logical coherence and predefined structures.	Combines data patterns and logical rules.	Contextual relevance, subjective insights, and qualitative judgments.
The Role of Human Factor	Limited; models often function without human intervention once trained.	High, humans define rules and input knowledge.	Moderate, humans create and refine symbolic structures.	Very high, humans contribute qualitative insights and interpretations.
Capabilities to Integrate Multi Sources	High, integrates diverse data sources (e.g., images, text, etc.).	Low, struggles to integrate varied data sources.	High, integrates both structured data and symbolic knowledge.	Very high, integrates diverse qualitative and quantitative sources.
Capabilities to Take Pertinent Decisions	High in well-defined environments (e.g., gaming, autonomous vehicles).	Limited to predefined decision rules.	High, leverages both learned patterns and predefined rules for decision-making.	High, uses qualitative context to guide decision-making.
Capability to Integrate Diversity of Opinions and Alterity	Low, typically lacks consideration for diverse perspectives.	Very low, hardcoded rules can be narrow.	Medium, allows some diversity through symbolic flexibility.	Very high, prioritizes inclusivity and diverse viewpoints.
The Valorisation of Weak Signals	Low, tends to miss subtle patterns in noisy data.	Low, symbolic AI may overlook minor details.	Medium, can leverage weak signals through symbolic adjustments.	High, specifically designed to interpret weak signals in context.
Digital Business Model: On Which Basis Value Is Created	Data monetization, AI-driven services.	Rule-based systems with pre-programmed value creation.	Value is created by combining data insights with symbolic reasoning.	Value is created based on contextual qualitative decisions and analysis.
Ecological Footprint	High, requires significant computational power and data centers.	Low, more efficient in computation but limited in scope.	Medium, can balance efficiency and complexity.	High, complex data processing and qualitative evaluations may increase footprint.
Ethical Footprint	Can be biased, lacks transparency in decision-making.	Ethical concerns arise from rigid, non-evolving rules.	Balanced, combining symbolic ethics with learning systems.	High focus on ethical principles, transparency, and fairness.
Qualification of Sources	Relies on the quality of data, can be biased if data is biased.	Sources are manually curated and pre-defined.	Sources are considered within both symbolic and data contexts.	Sources are evaluated based on relevance, context, and qualitative importance.
Qualification of Criteria	Based on data-driven performance metrics.	Based on logical and pre-defined criteria.	Based on both data-driven and rule-based performance.	Focuses on both quantitative and qualitative criteria, prioritizing context.
Qualification of Temporality	Temporal, models evolve with new data over time.	Static, rules are fixed over time.	Can adapt temporally, evolving based on both data and rules.	Highly dynamic, adjusts based on real-time, situational contexts.
Temporality	Real-time, continuous learning over time.	Static, operates within a set timeframe.	Temporal, adapts as both data and rules evolve.	Real-time and dynamic, adjusts based on context and situation.
Pertinence of Results	High in contexts where data patterns are clear.	High in well-defined, structured problems.	High, balancing both learned insights and logical reasoning.	Very high, emphasizes relevance based on evolving qualitative contexts.

Conclusion

Addressing the challenges of biased data and decision-making processes with Qualificative AI (QuAI) with examples in Defense, Aerospace and New Space Race, crises situations

Paving the way for more inclusive, relevant, and democratic data processing and decision-making with evolutions of Digital business models and useful AI applications.

Better Decision Making based on QuAI

Evolution of the Digital Business model and AI impacts

Data in the Current Digital Business Model

The current digital business model, driven by platforms and social networks, treats data primarily as a commodity.

Quantity is prioritized over quality in this model, focusing on collecting vast amounts of data without context.

Key issues with this model:

Opaque, inert data – Data lacks relevance and often misleads.

Mixed true and false data – Accurate and misleading data are often blended together.

Polarization and manipulation – Algorithms push content that generates engagement, regardless of its accuracy.

Data Lake Approach in Current Model

Data lakes: Data is stored in large volumes but lacks context and categorization.

The focus is on volume rather than quality, with no clear distinction between valuable or misleading data.

This model leads to inefficient use of data, with incomplete or incorrect interpretations influencing decision-making.

New Economic Model of Data Functionality (Xvaluator)

The new model, proposed by Xvaluator's Qualitative AI, emphasizes quality over quantity.

Key features of the new model:

Contextualized and qualified data – Data is enhanced with relevant context to ensure its meaning and importance.

Democratically updated in real-time – Continuous input from diverse, critical human perspectives refines the data.

Inclusive and relevant – Ensures the data is useful for decision-making and reflects a wide range of perspectives.

Business Model Based on the VOLUME (quantity) of Data:

- **Inert and Opaque Data** that is incomprehensible.
- **PASSED Data** (retroactive expertise, dependent on past patterns).
- **Mixed Data**—true and false data combined together.
- **Controversial Data** that transforms the digital space into an environment of opinion polarization and societal conflict, aggressive and manipulative.
- **Aggressive, Biased Data**.
- **Data Collected in "Data Lakes"**, where relevance lies in the VOLUME rather than in understandable, qualified content.
- **Data Scientists** decide (often controversially and questionably) how to classify and qualify these mixed data sets.
- **Polarisation** of opinions and Society

Business Model Based on the RELEVANCE (perceived quality in a collaborative and democratic manner) of Data:

- **Augmented Data** through Contextualization and Open Democratic Qualification Processes (enabled by the universal AI tool Xvaluator), which are understandable by the determinants of the Qualitative AI process (source, criteria, stances, temporality, evolving and democratic weightings).
- **REAL-TIME UPDATED Data** (democratically) continuously updated by the diversity and critical thinking of the Human Factor (open qualifications and contextualizations).
- **Qualified Data** and reduction of false and biased data flows (through a highly inclusive process of diverse opinions).
- **Qualified and Qualifiable Data** in real time, creating highly inclusive content that transforms the digital space into a collective wisdom environment, inclusive and third-party driven.
- **Inclusive and Evolving Data** to integrate the full diversity of opinions in a highly democratic manner (at all levels of fact-checking processes).
- **Qualified and Updatable Data** classified into "Data Rivers" (Paun, 2023) (whose relevance lies in the context and quality of content by visibly integrating "weak signals" that make "strong data" more relevant, efficient, and useful for decision-making through consultations).
- **Collective Wisdom** of digital users – the XVALUATORS – (experts and non-experts together through democratic weighting options provided by the French innovation (patented in 2019) of the Qualitative AI tool Xvaluator) determines the qualification and classification of useful data for society, leading to perceived positive impacts without aggression or manipulation.

How Qualitative AI Xvaluator Can Evolve the Digital Business Model and Propose a New Social Contract in the Age of AI for Democratic and Ethical Data Qualification

The Qualitative AI Xvaluator offers a groundbreaking approach to the way data is collected, qualified, and used in the digital business model, focusing on inclusion, democratic collaboration, and ethics. Here's how this technology can transform the digital landscape and introduce a new Social Contract.

The shifting from a **volume-based approach** to one focused on **relevance** and **collaborative open qualification**

1 Shifting from a Volume-Centered Model to a Relevance-Centered Model

Currently, digital businesses often focus on accumulating vast amounts of data (volume), such as likes, views, and followers, without necessarily qualifying their relevance or truthfulness. **Qualitative AI Xvaluator** changes this model by prioritizing the **quality** of data over its quantity. By integrating a **democratic and ethical qualification process**, Xvaluator ensures that data is continuously and in real-time **qualified** and **relevant**.

2 The Importance of Collaborative and Democratic Data Aggregation

Xvaluator allows every digital user to retrieve and control their own data, opinions, and impact from platforms and social networks while benefiting from an **open, democratic participation** process for qualifying this data. This approach encourages **co-creation** of information value, where **users, experts, and digital communities** can collectively contribute to the qualification and contextualization of data. This creates a more **equitable and transparent** way to manage information and ensures that it remains high-quality and not manipulated by private interests.

3 Creating a "Third-Inclusive Space" (Digital Sector as Tiers-inclus Space)

The proposed **Social Contract** of Xvaluator is based on **inclusivity** and the **diversity of opinions**, including opposing viewpoints. The integration of these contrary opinions is essential for building a model where **trust in data** is strengthened. This helps to move beyond the polarized and conflicting digital spaces currently found on social platforms, towards creating a **Third-Inclusive Space**, where all opinions are valued and integrated in a balanced way. This process aligns with an **ethical vision** where the diversity of opinions and perspectives becomes a condition for the truthfulness of information.

4 Democratic and Ethical Qualification of Data

Qualitative AI Xvaluator introduces mechanisms to **democratically weigh** the opinions of users, communities, and experts. This process is guided by **determinants of value** (such as sources, context, temporalities, and weightings) to ensure that data is **qualified based on its relevance**, not just its popularity. This reduces the impact of **biased or false data** and shifts the digital model towards a system where **information integrity** is paramount.

5 Integrating "Weak Signals" to Strengthen Data

Xvaluator also facilitates the identification and integration of **"weak signals"** in data, which makes **strong data** (relevant data) more meaningful. These weak signals may include less visible trends or minority opinions that, when integrated in a balanced way, enhance the overall understanding and reliability of data. This provides a method for countering the effects of **filter bubbles** and **biased algorithms**, which tend to favor certain information while excluding others.

6 Towards a Digital Economy Based on Data Functionality

Qualitative AI Xvaluator proposes an **economy of data functionality**, where the value of data is not based on its **volume**, but on its **contextual relevance**. The goal is to move away from the logic of **Data Lakes** (large and opaque data pools) towards a more fluid and **qualitative system**, where data is continuously **updated, contextualized, and qualified** through tools like Xvaluator. This will make the digital economy more **responsible and socially respectful**, while ensuring that data is used in an ethical way.

7 An Ethical and Ecological AI Model

Finally, Xvaluator represents an **ethical and ecological** model of AI. By actively involving users in the qualification and validation of data, this model provides a more **sustainable** approach to data management, focusing on transparency, collective responsibility, and reducing the negative impact of biases. Furthermore, it enables the **counteracting of excessive data centralization** by large tech companies.

Conclusion: The New Social Contract for AI The model proposed by **Qualitative AI Xvaluator** offers a profound evolution of the current digital business model, shifting from a **volume-based approach** to one focused on **relevance** and **collaborative open qualification**. By promoting a **democratic, collaborative, and ethical process** for managing data, Xvaluator lays the foundation for a **new digital Social Contract**, where trust in data is strengthened through the integration of diverse opinions and perspectives, while maintaining data integrity. This model aims to create a more **just, inclusive, and responsible** digital space ("tiers-inclus"), founded on the **continuous qualification and evolution of data** to meet the needs of society and users in a democratic context.

Xvaluator is a single, universal, and inclusive tool of QuAI

- **QuAI Xvaluator** is designed to support digital transformation, ecological transition, data security, participatory valorization, and decision-making through consultation and consensus in the functional economy.
- **Democratization of Access** to the **CONTRIBUTION** and **BENEFITS** of **Opinion Data** and **Perceived Impact Data** by all stakeholders, at any time, on all topics of interest.
- **Reduce Flows, Fakes, and Flops** to increase the **Efficiency, Ecological performance and Ethics** of processes and outcomes of shared open valorization, qualification of data during AI usages
- **Ex-ante integration** of **Externalities** (material and immaterial) in valorization and decision-making processes = **Compensation for Extra-financial Values** (green, sustainable finance), securing digital identities.
- A new paradigm of **Open and Inclusive Valorization** at all possible levels of expression of **DIFFERENCES**, **Human Critical Thinking**, and continuous **Evolution**.
- (The **CHOICES** and **THINGS** + **Opinions on the Choices and Things** + **Opinions on the Opinions**, thanks to the **Xvaluator Patent** – for contextualization, aggregation of opinions, and perceived impacts)
- **How?**: Participatory aggregation, contextualization, and weighting of data through human critical thinking and **Open Valorization**: **Xvaluator Like Fingerprint**, **Xvaluator Ontological Vocabulary** – QuAI
- **Challenges for the future of the Economy and Humanity**:
- AI processes and results will be **highly participatory** or they will not be at all!
- Data security will be **highly participatory** or it will not be at all!
- Valorization in the 21st century will be **participatory** or it will not be at all!
- Decision-making will be **participatory** or it will not be at all!
- Promotion and advertising will be **participatory** or it will not be at all!

- **QuAI Xvaluator** supports:
  - Digital transformation
  - Ecological transition
  - Data security
  - Participatory valorization
  - Decision-making through consultation and consensus
- Promotes **open and inclusive** approaches in the **functional economy**

Key Benefits of QuAI Xvaluator

- **Democratization of Access**:
  - Contribution and benefits of **Opinion Data** and **Perceived Impact Data** for all stakeholders.
  - Accessible at any time, on any topic of interest.
- **Efficient Decision-Making**:
  - Reduces **flows, fakes, and flops** to enhance **process efficiency** and outcomes.

New Paradigm of Valorization

- **Ex-ante Integration** of externalities (material and immaterial) into decision-making.
- **Compensation for Extra-financial Values**: Green, sustainable finance, and secure digital identities.
- **Inclusive Valorization** at all levels, promoting **critical thinking** and **evolution**.
- Slide 4: Future Challenges and the Need for Participation
- **AI processes, data security, valorization, decision-making, promotion, and advertising** must be **highly participatory** to succeed.
- **Core Principle**: If these processes are not participatory, they will not by adopted. The solution to anticipate IMPLEMENTATION and ADOPTION is to anticipate behaviour evolutions and integrate the stakeholders in the construction (Open innovation) of innovative solutions

Xvaluator is the European Game Changer in creating Pertinent Data and changing the digital business model to reduce Fake and Biased Data !

Xvaluator, the Universal Democratic Converter of Big Data into Pertinent Trustful Valuable Qualified and Aggregated Opinion and Impact Data has no evaluators as employees

Xvaluator (Patent obtained in 2019): The Tool for a New Typology of AI: "Qualitative Intelligence"

Objective: To reduce the flow of false data, decrease the ecological footprint during the use of generative AI, and simultaneously support both the **digital transition** and **ecological transition**.

Xvaluator is the **universal enabler and provider of pertinent and trustworthy opinion and impact data** when using **generative AI**.

Key Contributions:

- Xvaluator is a solution that addresses the problem of **false data flow**, ensuring that only **reliable, pertinent, and relevant information** is used in the decision-making process.
- By focusing on **Qualitative Intelligence (QuAI)**, it creates an environment where data are continually updated, verified, and contextualized, improving both the **quality** and **trustworthiness** of data used across various domains.
- The tool reduces **ecological impacts** by eliminating the need for inefficient data storage, filtering, and manipulation. It enhances the use of generative AI by ensuring data is more relevant, thus reducing waste and environmental strain.

Partnerships and Recognition:

- **Xvaluator** contributed to the **first France-IA Report**.
- It is a member of the **Pole Finance Innovation** and the **Alliance for Trust in Digital**.
- It is also a member of **EDIH Paris Saclay**, playing an important role in the development and promotion of digital innovation and trust in the tech ecosystem.

For further information and updates, visit the **EDIH Paris Saclay Service Catalogue** and explore **Xvaluator's LinkedInActivity**.

REFERENCES

Recent Publications:

2024: "Qualitative Artificial Intelligence (Quai). When Artificial Intelligence Integrates the Full Diversity of Human Critical Thinking" – A reflection on integrating AI with human critical thinking.
Read the article here

"Functional Economy of Qualified Data at the Heart of Virtuous Growth" – A study on the economy of qualified data to promote sustainable growth.

"The Functional Economy of Qualified Data at the Heart of Virtuous Growth" in Marché et Organisations.

2023: "Digital Ecosystems for Agilizing Innovation" – An analysis of digital ecosystems to make innovation more agile.

Presentation at the Qualitative AI Xvaluator conference at the "European Summit in Paris."

2022: "New Paradigm for the Open Evaluation of Blockchain Value Through Agilization Tools" – Exploration of new tools for evaluating blockchain value within the framework of open innovation.

2021: "Hybridization of Tech-Push and Market-Pull Approaches in Innovation Processes" – A study on combining Tech-Push and Market-Pull approaches in innovation processes.

Other Significant Works:

2019: Brevet Xvaluator (FR3054904A3) – A patent for a tool to evaluate technological innovations.

Major contributions to journals and reference books on technological entrepreneurship, innovation asymmetries, and hybrid approaches between technology and the market.

2018: "Shortening Innovation Cycles" – Sharing experiences to accelerate innovation in the aerospace and defense sectors.

Major Contributions:

In-depth analysis on the impact of artificial intelligence, blockchain, and digitalization in innovation.

The proposal of technological entrepreneurship models and new tools to reduce asymmetries in the technology transfer process.

Reflections on the functionality of data and its role in sustainable growth, as well as the valuation of luxury in the AI era.

Thank you for your attention!

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