European RenAIssance: A digital reform of EU democracy

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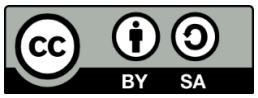

Author's Declaration

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Vienna, 02 June 2025

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Abstract

The European Union is facing its most serious crisis of legitimacy in history. Although European citizens generally trust the Union's institutional frameworks, they do not feel heard, listened to, or addressed by Brussels. Meanwhile, Artificial Intelligence technologies, containing both a disruptive force and a promising potential, have proven valuable tools in opening up democratic processes, contributing to more accessible, inclusive deliberations, and summarizing underlying popular opinion. Unfortunately, the current European legislation, with its rigid risk-categorization framework, threatens with a chilling effect on innovation, a hardship for digital democracy tools, and AI innovations to reach the European markets. Through the recently adopted AI Act's regulatory sandbox system, this Thesis advocates for a responsible, public-sector-led innovation, providing financing opportunities for private providers and regulatory learning potential to member states, in understanding the threats and benefits inherent in this mysterious technology. Through the system of "Da Vinci sandboxes", the Union should create a common platform for sectoral experimentation, establishing a vast, European dataset, to better understand the technology, its risks and benefits, and modify future legislation accordingly. With a combination of online and offline citizen panels, European citizens can be actively involved and cooperated with, in order to debate, discuss issues of a common concern. If the European Union focuses on the "AI race" with China and the US, it will most definitely lose. However, if instead, it identifies desirable technological trajectories, common goals and a unified purpose, it could channel its investment capacity into technology that is actually revolutionary, and which can greatly transform the European Demos.

Table of Contents

List of Figures

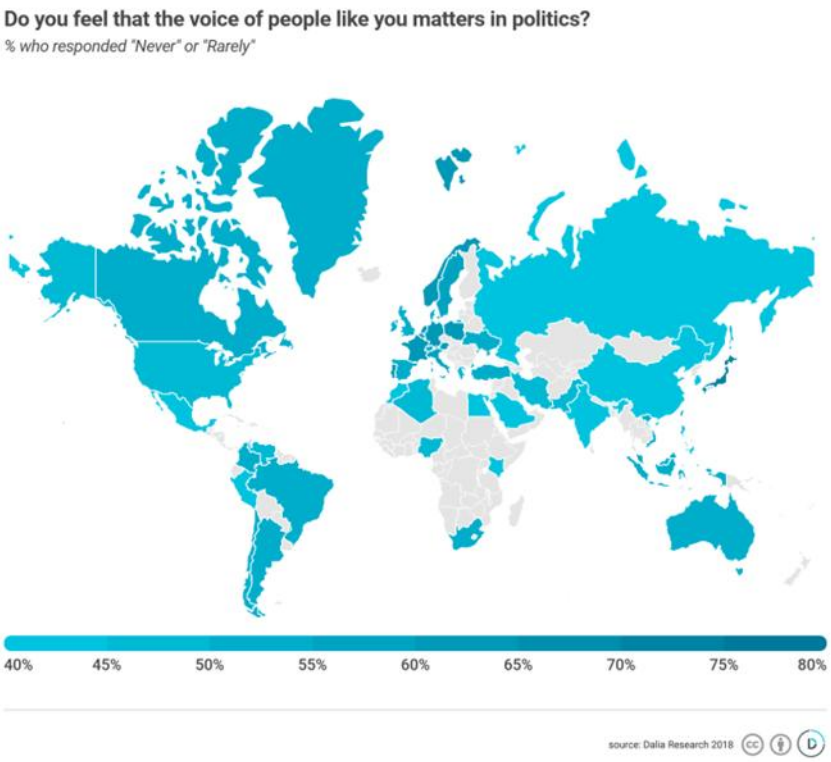
Introduction

"It is for us to put some flesh on the Community's bones and, dare I suggest, give it a little more soul." – (Delors 1989).

Jacques Delors, President of the European Commission from 1985 to 1995 and one of the most influential architects of our Union, rang the alarm bells long ago. His words, nevertheless, remain more relevant than ever. The European Union has long faced allegations of a "legitimacy deficit" (García-Guitián and Bouza Garcia 2024). It seems the "flesh" has been largely absent from the Community's bones, while our European leaders have largely avoided filling the Union's project with the necessary soul. Although many assert this deficit stems from the natural differences among the 27 member states (Fossum 2016), one might wonder: isn't it a logical consequence of the EU's highly bureaucratic framework?

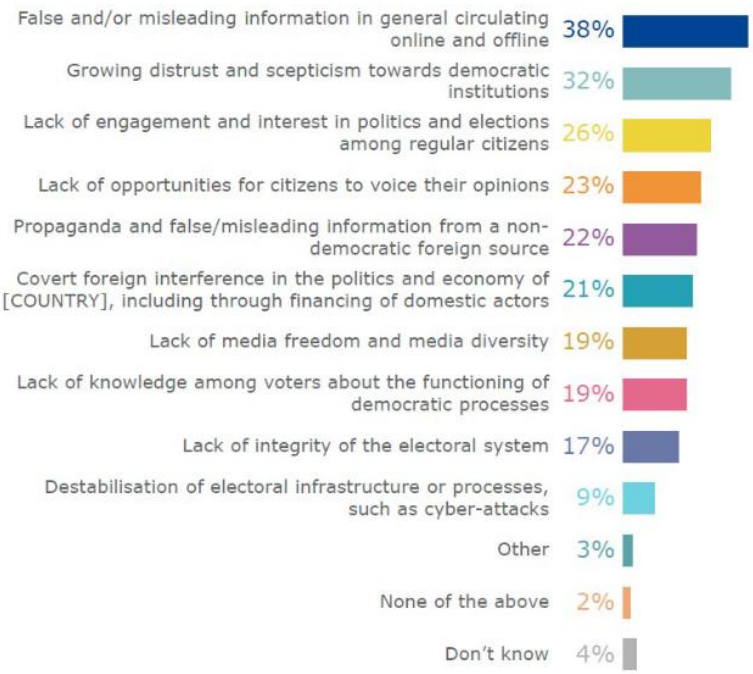
The European Union is a complex multi-level system (García-Guitián and Bouza Garcia 2024), with a division of political authority dispersed among an oversupply of Brussels institutions (Patberg 2024), various governmental layers, and diverse sources of legitimacy (Eriksen and Fossum 2012). The future of European integration depends on the interactions, cooperation, and competition among these formal and informal actors (Lord and Pollak 2013), scattered throughout the 'Euro-Maze'. Complexity appears not as the exception, but rather the rule in the Union's bureaucracy.

The Democracy Perception Index found that the majority of the world's population does not feel they have a voice in politics (Alliance of Democracies, Dalia Research, and Rasmussen Global 2018). This sentiment is especially strong in Europe (*Figure 1).*



1. Figure: Democracy Perception Index 2018 (Alliance of Democracies, Dalia Research, and Rasmussen Global 2018)

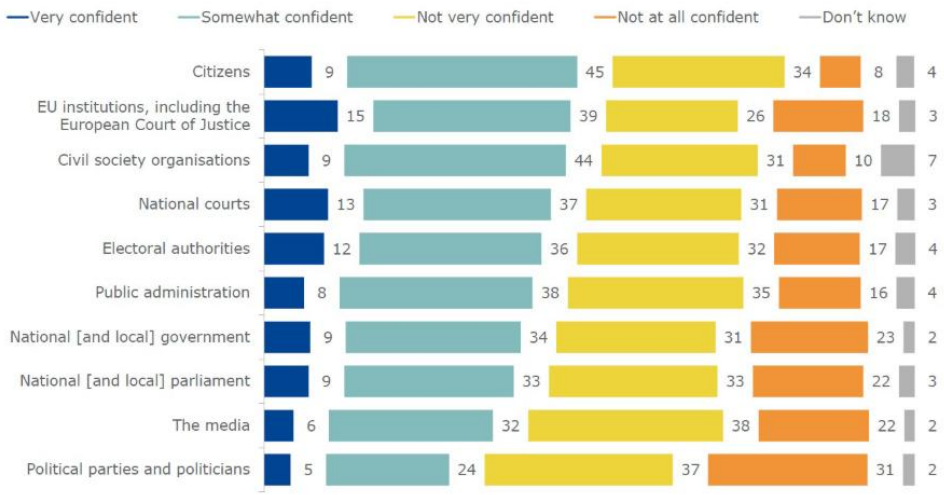
According to a recent Eurobarometer survey, 31% of Europeans are "not very satisfied," while 20% are "not at all satisfied" with how democracy works in their country (European Commission Secretariat General 2023). Meanwhile, 32% of respondents indicated (*Figure 2)* the "*growing distrust and scepticism towards democratic institutions*" (European Commission Secretariat General 2023) as the most serious threat to democracy.



Q3 In your view, which of the following are the most serious threats to democracy in [COUNTRY]

2. Figure: Eurobarometer Survey on Democracy – Threats (European Commission Secretariat General 2023)

After such a grim representation of the state of European democracy, another Eurobarometer survey (*Figure 3)* may place the matter in a more positive light: Next to citizens and civil society organisations, respondents had the most confidence in EU institutions in defending democratic norms in their country (European Commission Secretariat General 2023).



Q10 How confident are you in the following when it comes to defending democracy in your country?

3. Figure: Eurobarometer Survey on Democracy – Actors (European Commission Secretariat General 2023)

While citizens are discontent with the current state of European democracy, they still trust the institutional foundations of the Union. Nevertheless, they feel excluded from the political process and would prefer a radically reformed system in which they are increasingly involved in decision-making. This wish is expressed in the final recommendations of the citizen panels of the Conference on the Future of Europe (CoFoE), advocating for "*holding citizen assemblies periodically on the basis of legally binding EU law*" (Conference on the Future of Europe 2022).

The ideal of the EU project will never be fully democratic until it can design meaningful participatory mechanisms to "*reach a critical mass of ordinary citizens*", giving them real influence over European policy (Alemanno and Organ 2020). To achieve this, however, the EU needs democratic innovations (Smith 2009), reformist solutions that provide accessibility to a diverse pool of citizens, to discuss, debate, and exchange opinions, and where conclusions can easily be drawn from the resulting vast dataset, helping policymakers to understand societal needs, and priorities, enabling them to allocate their available resources accordingly.

This Thesis proposes a solution to the above-explained problem through the AI Act's regulatory sandbox system: digital democracy tools and responsible artificial intelligence technologies.

Artificial intelligence holds considerable potential for both citizens and governments if used responsibly and effectively. Not only can it contribute to the formation of civic skills and legal awareness, but it could also lead to more effective public services, increased confidence in governance, and less corruption (Stempeck 2022). This, nevertheless, in itself is not sufficient. Given the broad impacts of this technology, its future design shall be powered by a diverse set of inputs (Devine et al. 2023). If policymakers are unable to garner public support and initiate deliberation on the use of this technology, its full potential may never be realized. Researchers from Stanford and MIT estimate the productivity gains resulting from equipping AI to be between 14% and 35%, depending on the nature of the activity (Sciences Po et al. 2024). Nevertheless, European citizens remain divided, with only 55% expecting a positive change in their daily lives thanks to AI over the next 20 years, while 35% anticipate the opposite (Zalc 2025). However, a broader consensus exists (84%) behind the careful management of the technology (Zalc 2025).

Throughout countless international examples, one could see the disturbing effects of AI, if used with dishonest intentions: how malicious actors use it to tamper with information, essentially disrupting the electoral process (e.g. deepfakes, disinformation campaigns), or how, through manipulating the public perception, does it reinforce digital echo chambers, and enhances polarization (Csernatoni 2024). By reducing complex issues to bot-generated, oversimplified statements, the participatory process can be polluted (Stempeck 2022). In the hands of authoritarian leaders, AI is a powerful tool to silence opposition forces and control the population (Csernatoni 2024). The deepfakes surfacing in Slovakia, prior to the Parliamentary

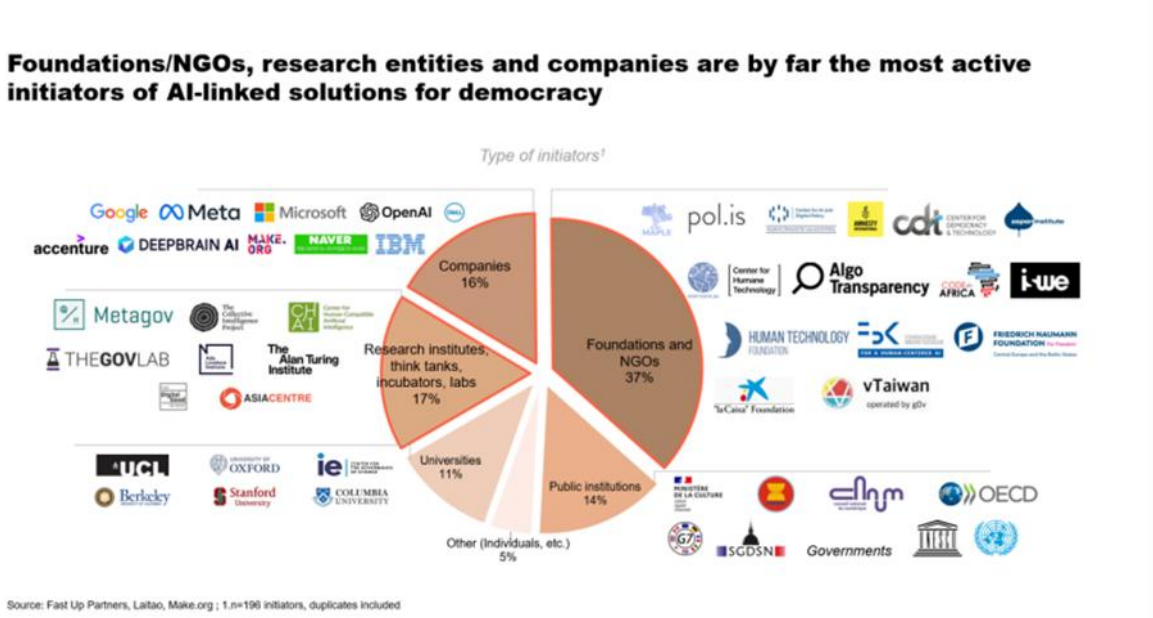
Election or the Calin Georgescu case and the invalidated Romanian presidential election, show the digital revolution taking place in our democracies and the dangers inherent (Babinet and Algan 2025). While artificial intelligence can be a valuable tool in remedying crucial problems faced by our societies, it can just as easily amplify existing biases and discrimination (Sciences Po et al. 2024).

The question arises: How could humans harness AI's effectiveness-enhancing capabilities, holding immeasurable social value, without exacerbating existing structural problems in their societies and further increasing systemic deficiencies? This Thesis advocates for ***responsible, public-sector-led innovation, serving as a "guiding light" to private actors, providing a safe framework for sustainable and innovative private sector inventions.***

Make.org, an independent European civic tech organization that engages citizens through online consultations, digital democracy tools, and other participatory mechanisms, has consulted on artificial intelligence with 11,661 participants and 121,325 votes cast (Sciences Po et al. 2024), whose results seem to support the above. Among the most popular proposals were to leverage AI to safeguard democracies, monitor its expansion, and better define its role in society, strengthening the legal frameworks surrounding it for more effective regulation (Sciences Po et al. 2024). Around 81% of participants agreed with the statement that "*we should fund research that serves public interest, not just private companies and startups*", meanwhile 73% were supportive of the ethical governance of AI, in line with human rights and societal values (Sciences Po et al. 2024).

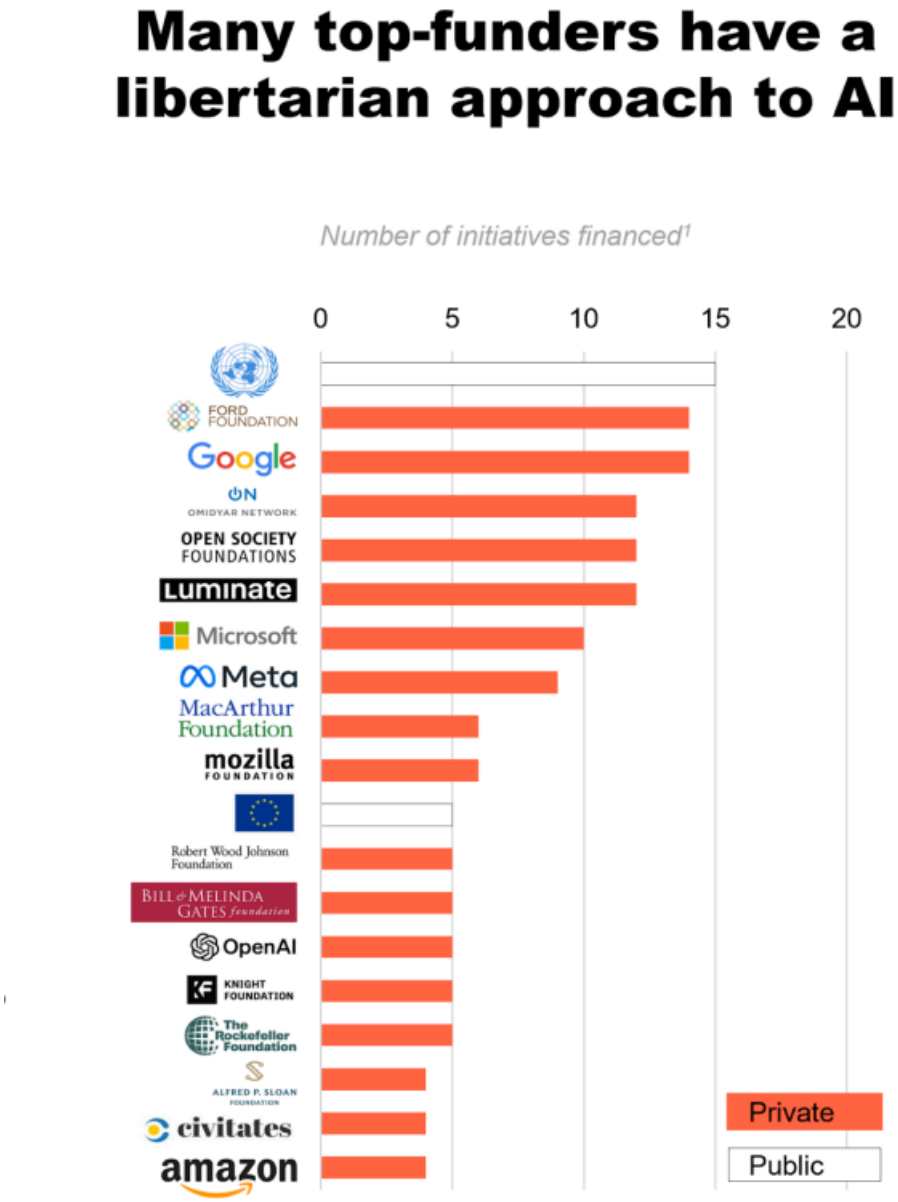
While one can clearly see the increased usage of algorithmic decision-making and data-centric solutions by public sector organizations (Gonzalez Torres and Sawhney 2023), research on the most innovative, AI-driven democratic initiatives (Babinet and Algan 2025) suggests that public bodies still play a disproportionately limited role in leading or shaping these

developments (*Figure 4)*. Compared to foundations or NGOs (responsible for 37% of innovations), research laboratories and universities (28%), or the private sector (16%), public institutions only account for 14% of total innovations initiated (Babinet and Algan 2025).



4. Figure: AI innovations initiated by sector (Babinet and Algan 2025)

A further concerning aspect is that among the top-funders of AI research, actors with a libertarian, open-market approach are disproportionately overrepresented (Babinet and Algan 2025) (*Figure 5)*, indicating an excessive focus on competition and profit instead of public values and responsible AI.



5. Figure: Top-funders of AI research (Babinet and Algan 2025)

While Europeans seemingly understand the distinguished role of AI in addressing public interest issues, they are nevertheless sceptical of its use in democratic processes, especially when it comes to improving their democratically representative institutions with it (Sciences Po et al. 2024). Indeed, with an excessive focus on the efficient management of human relations, and democratic engineering there is a very present danger of socially constructing a *"homo numéricus",* irreversibly damaging our democratic processes (Cohen 2022).

The present Thesis aims to address the following research question: ***How could the European Union equip artificial intelligence to increase citizen involvement in its democratic processes, institutionalizing public-sector-led innovation with regulation?*** Incentivizing the private sector to insert funds into societally beneficial but commercially risky (Mazzucato et al. 2022) or less profitable endeavours is no easy task.

How particular technological trajectories come to dominate can be examined if one looks at the direction of human innovation (Mazzucato 2014). Policymakers are in a distinguished position to track these trajectories and organize societal consensus and democratic agency behind desirable directions of innovation, while deterring undesirable ones (Stirling 2008), through strategic investment opportunities and capacity-building (Mazzucato et al. 2022). Although Mr. Zsolt Ződi, Research Professor at the University of Public Service in Budapest, and a highly acclaimed expert in information law and artificial intelligence, warns: so-called "facilitative rules", that the European Union has been experimenting with in the past (e.g. aiming to create a more favourable legal environment, eliminating bureaucratic obstacles, creating institutions, and enhancing cooperation), are unfortunately some of the block's biggest legislative failures.

AI could nevertheless be a learning curve to reposition the relationship between the private and public sectors, shaping the market through their cooperation (Mazzucato et al. 2022) via a symbiotic innovation system (Mazzucato 2014). Instead of focusing on the "AI race" with the

United States and China, European policymakers should concentrate on providing a legislative environment that enables European actors to research and scale up innovative AI tools, addressing essential issues of the public domain.

Methodology

The following Thesis methodology is qualitative, consisting of desktop research and interviews. During the first stage of research, the author gathered information and examined available primary sources (e.g., the EU's AI Act and European founding treaties) and secondary sources, explaining the functioning of regulatory sandboxes, describing previous EU-wide participatory mechanisms (e.g., the CoFoE), and relevant case studies (vTaiwan, Make.org digital tools). Simultaneously, various research datasets were analysed (e.g., Make.org's research on citizen perception of AI) to grasp a better understanding of popular opinion on this technology among European citizens. During the second part of the research, interview subjects were selected based on their expert knowledge or relevant experience in AI and citizen participation.

Lastly, based on the inferences from the desktop research, the interviews conducted, and the outcomes of a previous CIVICA Capstone Project in which the author participated, the final part of the Thesis was compiled, proposing pragmatic solutions and policy proposals to address the research question.

Outline

The Thesis will be structured as follows: first, the concept of participatory democracy will be addressed at the EU level, describing the theoretical foundations of participatory theories and previous attempts by the EU to involve citizens in policy-making (CoFoE). This will be followed by a brief description of the most important features of the European Union's AI Act, while introducing the concept of regulatory sandboxes. Next, through a carefully selected case study (vTaiwan), a positive example will be provided on combining digital solutions with traditional democratic mechanisms to increase the public participation of citizens. Lastly, pragmatic solutions will be offered to aim for a more forward-looking European regulation, where public-interest innovations can be enabled through the AI Act's regulatory sandbox, followed by concluding remarks.

Chapter 1: Participatory Democracy at the EU level

The participation of citizens in democratic processes is one of the most important founding principles of the European project. If 27 countries, diverse in their cultural traditions but united in their goals, can come together and build a shared governance framework, citizens shall not be left behind either. In 2009, participatory democracy became a fundamental principle of the European Union, enshrined in the Treaty of Lisbon (*Consolidated Version of the Treaty on the Functioning of the European Union* 2012). Meanwhile, following Article 10(3) of the Treaty on the European Union: "*every citizen shall have the right to participate in the democratic life of the Union. Decisions shall be taken as openly and as closely as possible to the citizen"* (*Consolidated Version of the Treaty on European Union* 2012). Citizen participation is part and parcel of any constitutional democracy, making governance and public life more accessible and transparent, while improving the efficiency of democratic institutions (Gil De Zúñiga et al. 2010).

In the Eurobarometer survey outlined previously (*Figure 2*), 23% of respondents believed that the "*lack of opportunities for citizens to voice their opinions*" is the most serious threat to European democracy. Meanwhile, 26% indicated a lack of engagement, and 19% a lack of knowledge about democratic processes (European Commission Secretariat General 2023). One could infer that citizens understand the importance of participatory mechanisms in democracies but currently miss their presence.

Although the European Union has realized this problem (see the Commission's communication) (European Commission 2020), its previous attempts to remedy the situation (like the European Citizens' Initiative) have largely remained unsuccessful. In general, it can be said that most of the EU's previous participatory initiatives have remained *"unknown, scattered and underused by the average European citizen*" (Alemanno 2021).

Lately, however, the European Union seemingly started experimenting with radically different tools and platforms: The Conference on the Future of Europe (CoFoE) was its most recent answer to legitimacy allegations, a one-year-long event series for Europeans to share their expectations on the European project (European Commission 2021). Some already treated it as a potential "constitutional moment", a democratic opening for citizens to reclaim their long-awaited constituent power (Patberg 2024). While the term "constituent" refers to the power to make a constitution (usually belonging to member states or citizens), "constituted" signifies the power vested in the institutions created by the constitution (Sieyès and Sonenscher 2003). Perhaps a significant portion of the EU's democratic deficit can be explained by the fact that the two levels are not separated, with constituted powers operating as *de facto* constituent powers, as when member states (participating in EU policy-making with a dual role) transfer competences to the European Union, they essentially transfer them (in part) to themselves (Patberg 2024).

One could argue that the Union functions as an interesting offspring of federalism. As Alexis de Tocqueville, the famous French political thinker and philosopher of the 19th century, warned, when two sovereigns are present simultaneously in a federalist system (in this case, the member states and EU bodies), even if their competences and authority are clearly separated in law, their collision at certain points will be inevitable (Tocqueville 1994).

Ever since the creation of the Maastricht system and the Union's constitutional framework as presently known, no constitutional change has been possible without the consent of the member states (Fasone 2020). The CoFoE provided no exception: although it did introduce new tools and platforms for citizens to voice their opinions, it did not transfer any decision-making power to them, failing to gain necessary momentum (Patberg 2024).

In all fairness to the CoFoE, it is important to emphasize that no single mechanism can claim to represent citizenship in its entirety or aggregate all its interests (García-Guitián and Bouza

Garcia 2024). To have the necessary deliberative capacity and legitimacy as a body to satisfy this is an impossible, unfair expectation (Mansbridge et al. 2012). Instead, a complex system of "multi-level polities" is desired, where citizen involvement varies among the different forms of representation and panels (García-Guitián and Bouza Garcia 2024), aiming towards general deliberation.

The CoFoE was very close to this ideal, generating deliberation on multiple levels (national and corporatized events, transnational citizen panels and a digital forum) and stages (including institutional and non-institutional, structured and unstructured, top-down and bottom-up deliberative forms), with diverse claims to legitimacy (García-Guitián and Bouza Garcia 2024). The various unstructured, voluntary events at the national, regional, and local levels were followed by establishing four statistically selected European citizen panels, electing ambassadors to represent their interests. Lastly, at the final stage, the Conference plenary was assembled, composed of elected ambassadors from citizen panels, to deliberate jointly with representatives of EU institutions and agencies (García-Guitián and Bouza Garcia 2024).

Placing the CoFoE in the long history of European integration, one can see that although the EU's constitutional development has "*largely evaded popular control*" (Patberg 2024), there was a gradually increased willingness to remedy this. The EU's predecessor, Jean Monnet's High Authority, was built upon a consensus between technocrats and corporate partners in a corporatist model, whereby organized labour and interest groups were seen as a strategic form of citizen involvement (Featherstone 1994). From the early 2000s, a neopluralist strategy dominated (García-Guitián and Bouza Garcia 2024), with emphasis placed on the importance of good governance and the "*participation of affected citizens*" (European Commission 2002). This was accompanied with an increased willingness from EU bodies to extend consultation forums as widely as possible (European Commission 2002) and involve various interest groups (sociologically representing citizens) (Bouza Garcia 2015) in the main public policy initiatives.

This reinforced objective to create an inclusive European public sphere (García-Guitián and Bouza Garcia 2024) could be discerned from the Commission's official communication, talking about an "*open, inclusive, transparent (…) debate*", that "*reflects Europe's diversity*" (European Commission 2020). Lately, a third approach emerged in the European storyline: one emphasizing participatory strategies, and ensuring that ordinary citizens are reached and involved in EU policy-making through various innovative methods, such as online petitions, citizen panels, or via the European Citizens' Initiative (García-Guitián and Bouza Garcia 2024). The CoFoE is a representation of the latter.

Sufficiently evaluating the merit and legacy of the CoFoE is no easy task. Particular criticism regarding the event has highlighted its disproportionate emphasis on "*individual self-expression, rather than on normative goals*" (García-Guitián and Bouza Garcia 2024), such as enabling citizens to have a genuine impact on political decisions or acquire the skills necessary in a constitutional democracy. In contrast, other professionals believe that instead of measuring the success of the CoFoE based on whether it resulted in treaty reforms, one should be optimistic that it introduced a previously unused deliberative model into the EU's bloodstream: citizen panels (Patberg 2024). One should treat the CoFoE as a potential perspective-changing moment, offering citizens a *"foretaste of a more intelligible, deliberative, and therefore more citizen-centric transnational Union"* (Alemanno 2021), a previously unprecedented experimentation from the Union's side to involve citizens in its policy-making process. Now is the time to emphasize its norm-creating value and push for it to become a permanent element of its institutional toolbox in the future.

Presently, with the vast availability of personal data, methods influencing public opinion have become more effective and dangerous (Helbing et al. 2023). Edward Bernays's idea of engineering public consent is more relevant than ever (Bernays and Miller 2005). To avoid another Cambridge Analytica scandal (Kaiser 2019), deliberative processes must be

strengthened, aiming to promote consensus (Helbing et al. 2023) contrary to manipulation and polarization. Following Bohman, the desired path towards democratizing European policy-making leads via the "democratic minimum", which allows citizens to deliberate on issues of a common concern (Bohman 2010), like their political institutions and democratic frameworks. This "communicative freedom*"* (Bohman 2010), provided by the democratic minimum, is a self-sustaining process that cannot be stopped once it starts. Members of the "mini-public" created through these deliberative processes, as individual organisms, begin to interact with one another, debate, and deliberate, where the institutions overseeing them have no direct control anymore (Patberg 2024). The question remains: how could European decision-makers create such a self-sustaining deliberative space, enabling broad, diverse, and equitable representation of their citizens to share their opinions, and combat the Union's legitimacy deficit with legislative proposals that truly consider and integrate the needs and priorities of their citizens?

Chapter 2 - Sandboxes and European AI regulation

Artificial intelligence offers boundless opportunities to enhance democratic systems and citizen participation. Digital technology tools can help open previously restricted debates to a broader audience, simplify obscure and complex laws, and analyse a vast and diverse public opinion pool (Sciences Po et al. 2024), producing practical inferences for decision-makers.

Nevertheless, European citizens predominantly still treat AI as a helpful assistant, insisting on human intervention and prominence on essential decisions (e.g., 67% believing that overestimating AI's promises to solve complex societal problems is an inherently incorrect approach (Sciences Po et al. 2024)*).* When asked about "*using AI to stimulate participatory democracy",* division among respondents remained (Sciences Po et al. 2024).

"*Legislation and technology move at different paces*" (Ruschemeier 2025); thus, responsible policymakers shall aim to create robust, precise, but also flexible legal requirements (Ruschemeier 2025) that can easily accommodate future technological changes. As AI evolves and develops, new technological opportunities but also accompanied social dilemmas will emerge (Devine et al. 2023). Conflicting interests exist between providing legal certainty for citizens while ensuring that an overly rigid legal system does not stifle innovation. The difficulty in AI legislation is that, while typically, regulation aims to balance restrictions with real or potential damage, and the interests to be protected, regarding AI, we cannot always be sure about what those risks or damages are (Ruschemeier 2025).

The AI Act aims to address such uncertainty with a risk-based approach, placing different AI applications into four risk categories, based on severity: minimal, limited, high, and unacceptable, risk being defined as a combination of the likelihood and severity of the harm. (*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024*

Laying down Harmonised Rules on Artificial Intelligence 2024). Among the areas where AI operations are considered high-risk, multiple include public services, like "*administration of justice and democratic processes*" (*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence* 2024). European lawmakers decided to insert such a list as an Annex into the final document to facilitate future modifications, allowing the Commission to easily insert or remove elements outside the ordinary legislative process.

According to Professor Ződi, one of the genesis of the Regulation's problems is that it aims to assimilate into a long tradition of product conformity rules that the EU propagates since its New Legislative Framework, meanwhile ignoring the fact that AI may not necessarily be a "product", in the traditional sense of the word. Artificial intelligence can have both physical (e.g., a medical device) and non-physical materializations (e.g., software), which complicates the question of "what, the product is"? While traditional products can predominantly cause physical harm, AI's peculiarity is that it can also harm fundamental rights. This product conformity logic, which the AI Act also attempts to follow, works with many quantifiable parameters to measure potential harms. However, following Professor Ződi, "*human rights are impossible to quantify*." Determining ex-ante whether, for example, an AI software will discriminate against minorities during a credit assessment procedure is almost impossible to predict. He instead believes in the traditional role of courts and legal proceedings to assess whether an AI application poses a serious threat to fundamental rights.

One further criticism regarding the AI Act is that the European regulators religious focus on risks, failed to consider the accompanying benefits of such systems. In general, a risk-benefit analysis is missing from the document, while the sector of application of a specific AI system, predominantly determines its subsequent risk categorization (Ebers 2024). This means that AI systems operating in so-called strategic, or vulnerable sectors (e.g., education, healthcare,

justice, etc.) may already be classified as high risk (Novelli et al. 2024), where the unnecessary regulatory burden and compliance costs placed on them (e.g., data quality standards, transparency requirements, etc.) are justified simply by the sector they operate in (Balan et al. 2024). This could prove especially burdensome for digital democracy tools, already predetermining the verdict of the balancing test, without considering additional circumstances (Novelli et al. 2024), like their benefits to democratic processes.

Regarding innovation and technological development, one can observe a disproportionate tendency to focus excessively on improving the rate of this development, rather than its direction (Mazzucato et al. 2022). While we have recently witnessed certain AI-enabled public services supporting specific, predefined public values or objectives (Gonzalez Torres and Sawhney 2023), many are concerned that the European Union's AI Act will stifle innovation with unnecessary red tape and regulatory hurdles (Kshetri 2024). Based on the above-outlined, in many cases, rigid framework, it is a justified concern that the EU's AI Regulation will disproportionately disadvantage smaller enterprises, hinder innovation, and raise the entry barrier for innovative actors, potentially preventing the most beneficial and efficient solutions from reaching the market (Balan et al. 2024).

However, it is important to underline that during our discussion, Professor Ződi firmly argued that despite the widely held theory, Europe's problems regarding AI are not regulatory in nature. One tends to overlook economic aspects, as well as the lack of European digital platforms (e.g., Google, Facebook, or X), a necessary precondition for data aggregation. As the Draghi Report underlined, the main reason behind the productivity gap between the EU and the US is the former' weakness in emerging (digital) technologies, where only four of the 50 biggest tech companies are European (Draghi 2024). Aside from a few initially promising cases (e.g., Mistral), there are no strong and competitive European AI models. The problem is not that Europe would lack innovative ideas, or talented researchers, but that it cannot successfully

commercialize these or scale them up due to restrictive and inconsistent regulation (Draghi 2024). Professor Ződi underlined that, as the EU in many cases still does not behave as a block and a truly single market, allocating its expenditure in 27 different countries, each with its own economic rules. The European common market remains fragmented in many cases, while desperately needed venture capital, available immensely in the United States, is mainly non-existent on the Old Continent.

This Thesis advocates for an innovative and well-thought-out European regulatory framework that supports innovation while guaranteeing essential public interests. Regulators are not in an easy situation: while the growing rate of AI development necessitated some regulatory intervention, these laws can quickly become obsolete. Outdated laws that do not consider societal changes violate the principle of legal certainty, necessitating flexible yet clear and effective rules, which regulatory sandboxes can help achieve (Ranchordas 2021).

While such regulatory tools are predominantly unknown in Europe, the AI Act, as the first overarching horizontal regime for artificial intelligence (Ruschemeier 2025), has introduced the sandbox concept. Currently, AI research is a financially burdensome endeavour, significantly restricting access to the technology. This predetermines the market actors who can conduct research, and whose portfolio will finally determine investment or research focus (Mazzucato et al. 2022). To counter this, authorities (or in this case, European institutions) can create real-world laboratories as testing grounds for this breakthrough technology, within a relaxed legal framework, although under continuous scrutiny, thereby gaining valuable insights into the object of regulation (Krönke 2021).

According to the AI Act, a sandbox is a "*controlled framework set up by a competent authority which offers providers or prospective providers of AI systems the possibility to develop, train, validate and test, where appropriate in real-world conditions, an innovative AI system, under a sandbox plan for a limited time under regulatory supervision"* (*Regulation (EU) 2024/1689*

of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence 2024). Some of the benefits of such regulatory instrument is that it increases legal certainty, provides a clearer picture on opportunities and risks of AI usage, eventually contributing to regulatory learning, to understand the operation of these systems and to accordingly adapt the legal framework in the future (*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence* 2024).

In order to understand the real value behind regulatory sandboxes, one has to compare bureaucracy with adhocracy. While in the former, the default solution when facing a difficult decision is to defer to a supervisor (Hsiao et al. 2018), in the latter, emphasis is on experimentation, trying different courses of action, receiving feedback, making the necessary changes, and reviewing progress (Birkinshaw, and Ridderstrale 2010). That is why participation in regulatory sandboxes should primarily concern those issues that raise legal uncertainty for providers and policymakers alike (*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence* 2024).

Currently, the market around artificial intelligence and digital technologies follows perverse, capitalist tendencies. Big, western tech companies not only dominate the market, but their outsize, disproportionate influence in accessing vast amounts of citizens' data provides them tremendous leverage, for example, regarding electoral processes and political choices (Csernatoni 2024). While it seems natural that investment in any sector will predominantly tend towards "*capital-rich environments*" (Mazzucato et al. 2022), the disproportionately low focus on addressing social needs with AI is concerning. Asymmetric access to datasets (or the use of low-quality, deeply biased ones) and the concentration of market power all lead to value-extractive economics, without addressing any social value created by technology (Mazzucato et al. 2022). If used in an "*accessible, equitable, and fair manner*", digital technologies can

remedy previously unaddressed social needs and ensure better data for decision-makers (Helbing et al. 2023). In contrast, if we fail to use them responsibly, they may reinforce existing power imbalances (Helbing et al. 2023). In order to support the optimistic scenario, the AI Act should promote and strengthen the public sector's participation in sandboxes, providing them with valuable experimentation opportunities (Gonzalez Torres and Sawhney 2023) and data.

While regulatory sandboxes are a promising regulatory tool to upscale innovation and available public data, it is important to underline that they should not be treated as "*a carte blanche for risky products of dubious liability"*(Ruschemeier 2025). They are there to help participants gather knowledge on whether their AI services comply with the legal requirements ('Regulatory Sandboxes in the AI Act Between Innovation and Safety', n.d.) and garner useful regulatory input on their products' design, ensuring that safer products reach the market (Council of the European Union 2020). To achieve this, innovators are sometimes exempted from specific legal requirements during the experimentation phase ('Regulatory Sandboxes in the AI Act Between Innovation and Safety', n.d.). This, however, does not mean and shall never mean that participation in the regulatory sandbox replaces regulation, or provides for large-scale exemptions from it (Ruschemeier 2025). Underlying ethical and professional standards, in conjunction with Union law must always be respected (*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence* 2024). As the AI Act also underlines, in case significant risks to health and safety and fundamental rights arise during the testing stage of the AI product, adequate mitigation is in order, or if this is not possible, competent authorities could temporarily or permanently suspend the testing process or the involved actor's participation (*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence* 2024). All in all, protecting the public good and

fundamental rights shall be pursued when designing regulatory requirements (Ruschemeier 2025).

In general, one can conclude that there must be a paradigm shift taking place, moving away from the idea of a surveillance-based, data-driven "AI-utopia", trying to optimize and control society (Helbing et al. 2023) and prevalent public opinion. Instead, AI shall be used responsibly, enabling "*a data-oriented AI-supported co-evolving society that empowers people to innovate, coordinate, cooperate, and better contribute to the society of the future*" (Helbing et al. 2023). Alternatively, as Audrey Tang, the first digital minister of Taiwan, has outlined: "*making the State transparent to the people, not making the people transparent to the State*" (Chang 2021).

According to Professor Ződi, the apparent objective of the decision-makers to create a horizontal regulation (attempting to apply in all areas, except for a few) resulted in quite general wording, with details and further specifics to be worked out later on. In the future, it will be the Commission implementing acts, the guidelines of the AI Office, ethical codes, and various sectoral standards, to determine the course of AI and sandbox regulation. While there is uncertainty on which direction the Commission will attempt to push such a regulatory device, after examining the positive case study of Taiwan, using digital democracy tools as an integral part of its democratic process, this Thesis will propose solutions for equipping regulatory sandboxes in the future.

Chapter 3 - Making democracy digital: the vTaiwan case

Taiwan is a relatively young democracy (Chang 2021), with a population of less than 25 million. Regardless of its relatively modest size in global comparison and even shorter history, this small island, characterized by constant geopolitical tension with China, has become a hub for digital innovation and participatory democracy. Despite its lack of long-lasting democratic traditions, it scored 93 for Global Freedom in the Freedom House's 2019 annual *Freedom in the World Report,* compared to the US's 86, or China's 10 points (Freedom House 2019). According to Audrey Tang, Taiwan's first digital minister, Taiwan is a special case due to the island's peculiar history: democracy and the internet emerged simultaneously here, resulting in many seeing democracy as a social technology (Chang 2021).

Tang's leading role in improving democratic processes through digital democracy tools (Chang 2021) has resulted in countless social innovations, such as vTaiwan, a consensus-building platform (Helbing et al. 2023), where citizens can set the direction of important societal conversations. Standing for "*vision, voice, vote, and virtual*" (Hsiao et al. 2018), vTaiwan offers a digital democracy experiment, an open consultation process through bringing citizens together with government officials, relevant experts, and other stakeholders, to *"deliberate, reach consensus and craft legislation"*(GovLab 2020).

Through a careful combination of online and offline consultation processes, this platform facilitates discussions on controversial, large-scale societal issues, enabling lawmakers to understand public opinion, to identify consensus points and draft national legislation accordingly, providing an unprecedented legitimacy to their political agenda (GovLab 2020).

Audrey Tang's entry into politics and Taiwan's shift towards digital democracy cannot be described as orthodox. In 2014, as a sign of protest against the island's unconditionally passed

Cross-Strait Services Trade Agreement with China, a civil disobedience movement formed, with students and activists occupying Taiwan's Legislative Yuan (Rowen 2015). While such a rupture between society and its government could easily lead to a frozen, long-lasting conflict, in Taiwan, these events nurtured a symbiotic relationship and cooperation between the "*old political guard"* and the newcomer tech community (Roch, Freihse, and Kaufmann 2022). Tang was responsible for internet support within the occupied Yuan, ensuring constant communication channels were enabled between involved activists and citizens on the outside (Chang 2021). What started as civil disobedience quickly became a collective democratic exercise, with the occupied Yuan livestreamed and facilitating deliberations among citizens on the controversial Trade Agreement. A list of consensus items was drafted, which the head of Parliament eventually accepted (Chang 2021), while the ruling Kuomintang party lost its authority and legitimacy to act (Hsiao et al. 2018).

What followed was a vibrant democratic system based on citizen participation and digital democracy tools. Fortunately, vTaiwan remained a platform independent from the government (a conscious decision), which now runs more as a collaboration between the public sector and civilians. Although the government does provide funding for the process, it is run by non-government affiliated volunteers, maintaining the legitimacy and independence of the platform (GovLab 2020).

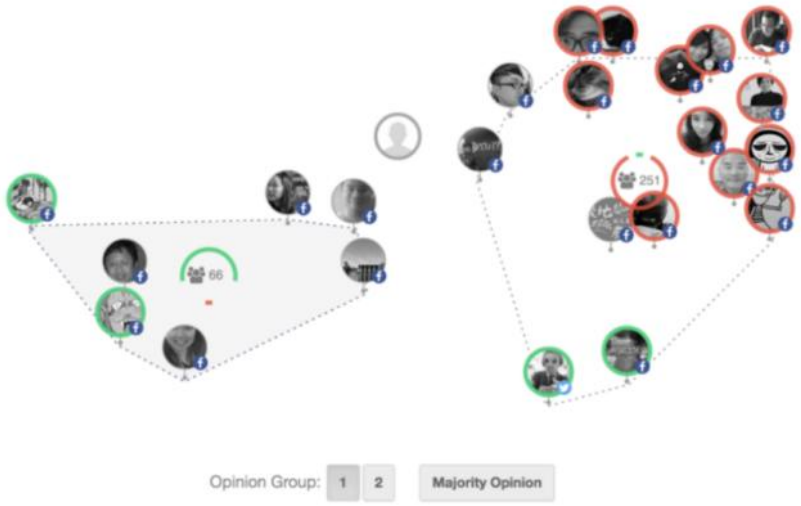
Democracy cannot be rushed, and thus an admirable aspect of the vTaiwan process is that while it consists of four distinct stages, there is no pre-defined timeframe on when to move from one to the next, making sure that a substantive deliberation is achieved, only moving to the next stage when all stakeholders are ready to reach an agreement and propose common solutions (Hsiao et al. 2018).

The whole process starts with a proposal stage. Creating a deliberative tradition, vTaiwan hosts weekly "mini hackathons" (both online and offline versions), where citizens (Hsiao et al. 2018)

or relevant stakeholders (affected groups or experts whom the organizers have previously contacted) (GovLab 2020) debate and propose issues to the competent authority to solve. One of the disadvantages of such a procedure is that a government authority must accept, or be accountable for a given issue (Hsiao et al. 2018); otherwise, it cannot progress further.

One of the apparent democratic deficits in our current constitutional systems is the exceptionally complex language of legal texts and official documents, creating harmful entry barriers to meaningful and representative discussion. Solving this, during the second opinion stage, vTaiwan volunteers simplify the case into a more digestible format, attaching relevant documents, together with an open dictionary for terminological uncertainties, making sure that unbiased information is available (GovLab 2020). Providing information materials and learning resources to participating stakeholders could enable informed and meaningful participation (Devine et al. 2023). During this stage, an online opinion survey is launched, where the community's already established network (and through them, new members) are asked about the issue (Hsiao et al. 2018).

Pol.is is another digital democracy innovation (Hsiao et al. 2018), essentially gathering and analysing stakeholders' various opinions (Ho 2022), positioning them on a matrix. Firstly, organizers contribute with sample problem statements or prompts for discussion (GovLab 2020), aiming to represent a range of diverse viewpoints, to stimulate deliberation. Citizens can then add their own statements and opinions regarding the issue, to which other participants can react using "upvotes" and "downvotes", based on whether they agree with a given opinion, while Pol.is clusters people into groups according to voting similarity (Helbing et al. 2023). Using unsupervised machine learning, the flow and structure of the conversation are discerned, resulting in an "opinion landscape" (GovLab 2020).



6. Figure: Example of a Pol.is 'opinion landscape' (GovLab 2020)

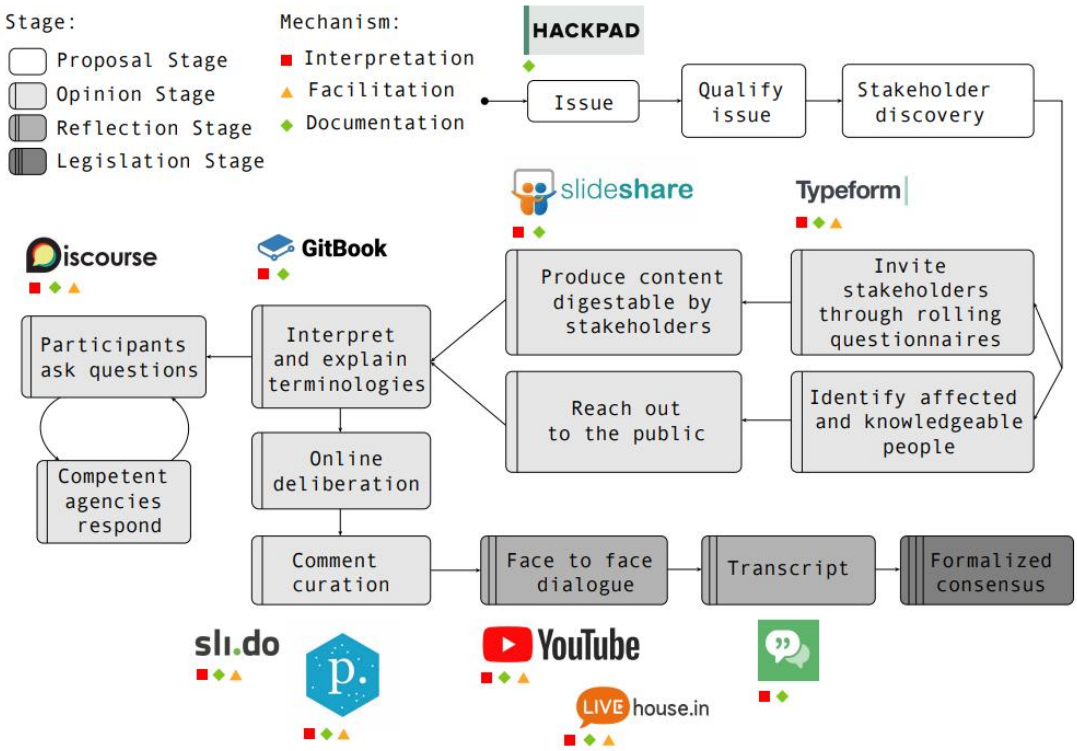
A similar, but slightly different technology, the AI Objective Institute's "*Talk to the City" (TttC)* tool, instead of looking at the correlation between voting patterns (so clustering people based on their similar combinations of votes to specific statements), extracts the key arguments from statements, and groups participants based on them (Devine et al. 2023). In this sense, TttC is a more exciting gadget, as it can technically create an infinite number of different groups and clusters, representing widely different opinions on a spectrum. TttC clusters arguments under umbrella terms and categories, indicating those ideas or statements that were widely supported by other groups as well, thus forming the basis for future consensus or agreement (*Figure 8*). The idea is not to simply highlight overall popular statements, but to focus on those that are widely supported across various groups (Devine et al. 2023).

7. Figure: Clusters made by TttC and potential consensus points (Devine et al. 2023)

While like-minded groups swiftly emerge, the Taiwanese experience does not show a further polarizing effect, with people naturally attempting to come up with statements that win most votes from other groups and clusters (Helbing et al. 2023). Such an opinion round can last for multiple stages, whereby at the end of each stage, vTaiwan volunteers review and analyse the collected opinion, producing reports on the results (GovLab 2020). This way, they can see an issue's opinion landscape, controversial aspects, and potential consensus points, all handy information for the upcoming consultation meetings. For producing reports, LLM summary applications, subsequently reviewed by human facilitators, can also be used, which professionals believe are at least as accurate as humans (Devine et al. 2023).

During reflection, the facilitator in charge hosts an online-offline consultation with stakeholders (Hsiao et al. 2018). Usually, key stakeholders are invited to present in person (private sector representatives, scholars, public officials, etc.), combined with active private individuals from the previous rounds (GovLab 2020). With a constant livestream and online facilitation, releasing videos on the vTaiwan social media pages (Hsiao et al. 2018), the organizers aim to transport the digital debate into the physical space, incorporating relevant online opinions (GovLab 2020) to achieve adequate representativeness and participation. During this in-person discussion, the facilitators summarize the process so far, meanwhile key stakeholder groups present their positions on the issue (Hsiao et al. 2018). Nevertheless, the facilitator does have discretion in terms of choosing "*insightful and valuable opinions*" (GovLab 2020) from the online sphere to incorporate into the meeting.

Lastly, once a consensus is reached on the prepared legislative proposals and solutions, they are submitted to the government. While in some cases, issues can be resolved by a statement, guideline, or specific policy, quite often the consultation process is followed by a draft bill, sent directly to Taiwan's legislature (Hsiao et al. 2018).

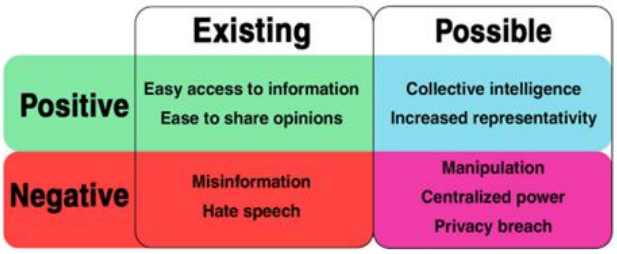


8. Figure: The vTaiwan procedure and related digital tools (Hsiao et al. 2018)

As demonstrated above, some of the most significant advantages of vTaiwan are its engaging, open, and innovative process, flexible stages (Roch, Freihse, and Kaufmann 2022), and adaptive structure, understanding that no two issues are the same, and that democracy cannot be made uniform (GovLab 2020). Involving various stakeholders and dealing with different matters, vTaiwan respects such diversity, offering different pathways to arrive at an optimal solution. When one thinks of social media and digital tools, polarization comes to mind. The internet is shaped by "*negative coalitions*", contributing to a "*democracy of rejection*" (Rosanvallon 2008). This process instead, emphasizes "*constructive co-creation among diverse groups*", a "*democracy of proposition*" (Rosanvallon 2008). According to Tang, vTaiwan's strength lies in the fact that instead of reinforcing things that divide us, it invites participants to think and reflect on their own thoughts and feelings regarding an issue (Hierlemann and Roch

2020), building community. According to data, the method seems to work, with around 80% of the topics discussed leading to successful and decisive government action in some form, the most famous being the UberX consultation (Helbing et al. 2023).

vTaiwan is, nevertheless, not without its deficiencies and setbacks. Given the complex and tech-intensive structure of the process and the multiple stages involved, this could dishearten participation and challenge continuous engagement from the broader population, empowering those who already hold a disproportionate power and status in society (tech-comfortable, young, educated participants) (Ho 2022). Also, while so many actors and stages could be a clear advantage, it contributes to vTaiwan's problem of a lack of institutionalization, whereby for issues to be taken up, governmental support is still necessary (Roch, Freihse, and Kaufmann 2022). Some further positive and negative effects of digital democracy tools can be observed in *Figure 10.*



9. Figure: Some positive and negative aspects of digital democracy tools (Helbing et.al 2023)

As Professor Ződi warns: one must not forget in the cloud of "techno-optimism" that sometimes we are dealing with extremely complex, structural problems where software simply cannot be used as a remedy. For example, he reminds that using AI is not going to solve discrimination against minority groups in the US, a continuous and deeply complex problem, embedded in American history. Especially, as long as we continue to insert historical data into learning algorithms based on human behaviour, those will only reinforce historical discriminatory patterns. While one agrees that a "programmers' perspective," holding that social problems can

be translated into technical tasks (Ho 2022), oversimplifies the issue, creating a technical framework where these problems can be discussed and debated, shall nevertheless be pursued.

Taiwan, as a cradle of digital democracy, has recognized that no single individual or stakeholder possesses the perfect solution to complex societal problems (Hierlemann and Roch 2020). What interests Audrey Tang, nevertheless, is whether some common values exist in the maze of polarized opinions, and whether these could fuel valuable societal innovations without anyone feeling worse off (Chang 2021)? Taiwanese officials consistently contest the notion that their country would be a "*perfect offering*" or that it would serve as a "*model to be copied*" (Hierlemann and Roch 2020). Although one agrees that no one size fits all, it would be interesting to experiment with equipping these digital democracy tools as elements of a comprehensive, orchestrated European strategy, instead of their ad-hoc usage, predominantly occurring until now (Devine et al. 2023). Democracy is a habit, and long-term results can only be achieved if it is consistently practiced, empowering participants to connect with each other.

Perhaps the reason Taiwan has been so successful in its digital democracy processes is its constant scrutiny and ability to adapt, with a community designing something new and revolutionary, in case something does not work (Hierlemann and Roch 2020). However, experts working in this field agree that for long-term benefits, "*time is better spent cultivating communities than developing software*" (Stempeck 2022). Taiwan does not aim to become the best practice in digital technologies or citizen participation, but instead to gather knowledge and experience in this field, and constantly learn from their research (GovLab 2020). European citizens seem to agree, with 65% of them supporting a gradual learning approach to improve AI services, instead of envisioning an overly ambitious "*grand AI breakthrough*" (Sciences Po et al. 2024). In the following, let's analyse how could digital democracy tools be implemented gradually, and responsibly, while maintaining the democratic agency of the European Demos.

Chapter 4 - European RenAIssance: a proposal for reformed digital governance

Along the pages of the previous chapters, citizen participation and the current European AI regulatory framework were analysed, reinforced by positive case studies, and crucial aspects to consider for future reform. Based on the above discussion and the conclusions of a CIVICA Capstone Project (Balan et al. 2024) in which the author has participated, the foundations of a future European governance system will be established, successfully combining safety and innovation with citizen engagement and online tools.

According to Jean Bodin, "*there can only be one sovereign in the commonwealth*" (Bodin 1992), sovereignty being indivisible (Elton 1976). In contrast to this, the European regulatory framework is more complicated. To effectively tackle the origin of the EU's democratic deficit, constituent and constituted powers must be strictly separated, where selected citizens could have a meaningful and substantive influence on European integration, even if conflicting with the will of constituted power (Patberg 2024).

For this, an institutionalized process and newly established bodies are necessary. Instead of adding another layer of bureaucracy to the EU's already complicated regulatory structure, one proposes the setting up of a permanent constitutional assembly (with in-person participation of selected citizens), coupled with ad-hoc (online) assemblies where those citizens who do not sit in this permanent body, can access and participate in the debate, putting elements on its agenda (Patberg 2024). A study commissioned by the European Parliament's Committee on Constitutional Affairs (AFCO) similarly included a two-level model for increased citizen participation, with a permanent Citizens' Chamber and various temporary Citizens' Panels (Alemanno 2022). The ratio of different member states' populations must be considered in the

composition of these citizens' assemblies, similar to the mathematical formula used in the European Parliament.

Digital tools and online platforms (as used during the CoFoE, and vTaiwan) can give citizens much broader access to participate in deliberations (Conference on the Future of Europe, n.d.; GovLab 2020). However, in order to avoid the exclusion of citizens without the necessary technical infrastructure, one must follow the practice of Taiwanese President Tsai, who made broadband a human right, and guaranteed widespread accessibility to tablets in the country, as *"digital democracy only works, if access is not an issue"*(Chang 2021).

Naturally, before implementing such a reform, various legitimate questions arise: Will European institutions (or member states) be willing to delegate their constitutional powers to citizens? Is there enough flexibility within the EU's bureaucracy for this? Will this subvert traditional decision-making or only complement it (Stempeck 2022)? A gradual transition towards more deliberative, online tools is necessary to guarantee that most of these questions are answered in the affirmative.

There seems to be an agreement that hybrid models (combining digital tools with traditional human interactions), extracting the advantages of both online and offline experience (Stempeck 2022) can be a great political compromise towards future reform. For example, having an in-person citizen panel at the core of the process, meanwhile allowing for wide accessibility in the digital sphere for others citizens as well. Giving the permanent Citizens' Chamber a coordinating role, deciding for which areas the smaller, ad hoc Citizens' Panels shall be set up for (Patberg 2024), or through a bottom-up approach, allowing citizens who successfully collect a pre-defined number of signatures (making use of the currently forgotten European Citizens' Initiative model) to set up their own ad hoc assemblies, must be considered. Such a system would not only provide relevant outputs that could not be legitimately ignored anymore by

European decision-makers, but could initiate crucial deliberations of a common concern (Patberg 2024).

Clarie Alspektor, Head of Research Programmes and Coordinator of the Democratic Commons Project at Make.org, outlined a case where such an online-offline participatory experience was already implemented. This was the "*Forum Gegen Fakes*" (or "Forum Against Fakes") in Germany, a project fighting disinformation (Renkamp, Jain, and Hierlemann 2024). Within the boundaries of this project, so-called "mini-publics" (on-site citizen assemblies) co-operated with "maxi-publics", hundreds of thousands of citizens online, actively contributing to what was discussed in the citizens' assembly. Following such an online-offline participatory experience, the final recommendations were submitted to the German Ministry of Interior.

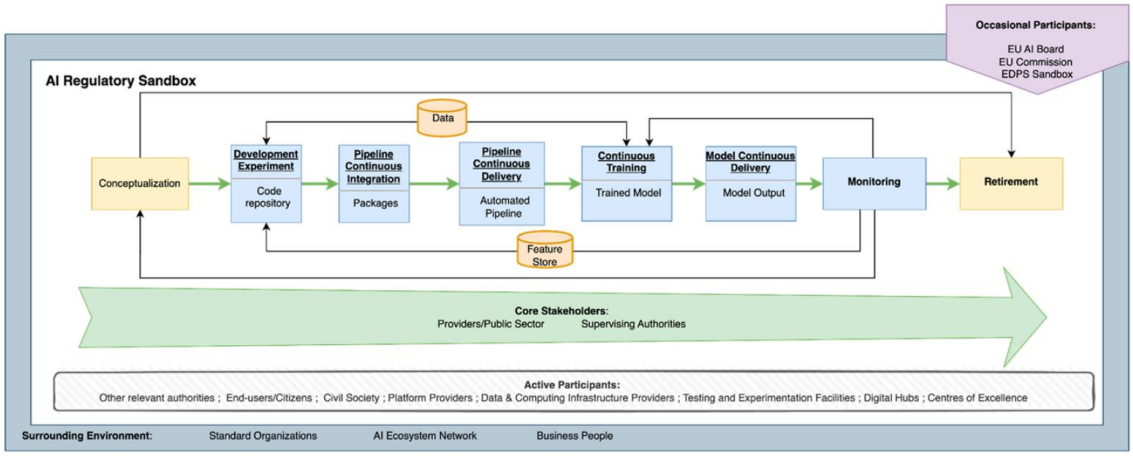
As a second step, next to a reformed constitutional outlook for Europe, which enables the involvement of citizens in decision-making, a supportive legislative framework is also needed, guaranteeing innovation, scale-up, and regulatory learning. Such a stimulating environment can, in return, ensure the necessary support for innovative European projects furthering public objectives. This Thesis, following the research results of a CIVICA Capstone Project that the author participated in, proposes the establishment of a system of "Da Vinci Regulatory sandboxes", combining safety, innovation, and the public interest.

The AI Act mandates member states to set up at least one regulatory sandbox, meanwhile it provides this as a voluntary option for the European Data Protection Supervisor (EDPS) to do the same for Union institutions, bodies and agencies (*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence* 2024). This lays the groundwork for future EU cooperation and a uniform European sandbox system.

Following Professor Ződi, the AI Act's horizontal nature, trying to catch and regulate "all issues", neglects crucial sectoral differences in different AI applications. To address this, a common regulatory platform, but with specific, sectoral sandboxes, is proposed. To kick-start, national supervisory authorities, in conjunction with Union institutions (e.g., the AI Office, or the EDPS), shall identify specific objectives they would like to use AI applications for, and submit these lists (similar to member states' Recovery and Resilience Plans) to the Commission's AI Office (Balan et al. 2024). Understanding the needs of member states is a crucial step in regulatory learning; meanwhile, involving them from the beginning could ease opposition towards proposed reforms. The AI Office shall then, in consultation with the member states, identify common themes and objectives, organizing them into different sectoral sandboxes (e.g., healthcare, education, etc.), where member states can contribute and delegate their researchers and universities to participate. Currently, "*Europe is lacking focus*", meaning that common objectives are not articulated enough by setting clear priorities, and following up with coordination and joint action (Draghi 2024).

National AI providers of various sizes can then apply to these sandboxes with their AI products through a uniform portal, providing them with a chance for safe experimentation, while also guaranteeing regulatory learning for European institutions and national authorities with the data produced (Balan et al. 2024). An example from Norway could stand as a useful benchmark in evaluating the merit of applicants. A committee, filled with lawyers and other experts examine applications based on the following criteria: whether the project uses AI; whether it provides benefit to individuals or society; whether it could significantly benefit from sandbox participation; and whether it consents to be subject to the relevant authority ('Framework for the Regulatory Sandbox - General Participation Criteria' 2021) (in this case, the European Data Protection Supervisor).

Through the previously outlined citizen chambers, citizens could be involved in the first phase of designing the sandboxes, while those consenting could participate as "end-users" during experimentation, with authorities safely monitoring their interactions (Gonzalez Torres and Sawhney 2023).

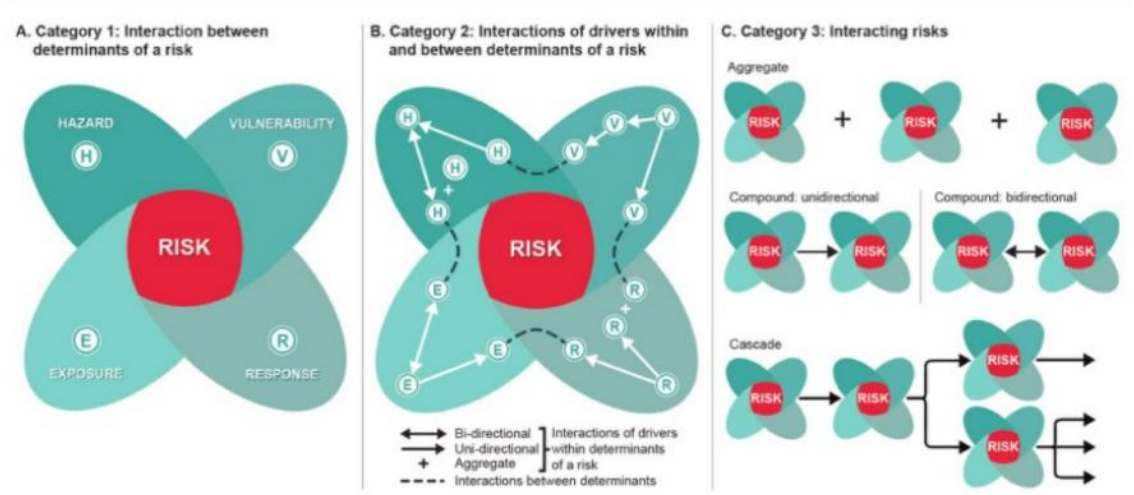


10. Figure: Example of a multi-stakeholder sandbox (Gonzalez Torres and Sawhney 2023)

As a next step, an AI Board shall be established to examine and analyse the behaviour of AI models, identifying risks and benefits, consisting of professionals from various disciplines, including national experts, researchers, constitutional lawyers, civil society, and industry leaders (Balan et al. 2024). The AI Act itself underlines that future implementing acts shall guarantee the involvement of a diverse pool of actors from the AI ecosystem in regulatory sandboxes (*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence* 2024).

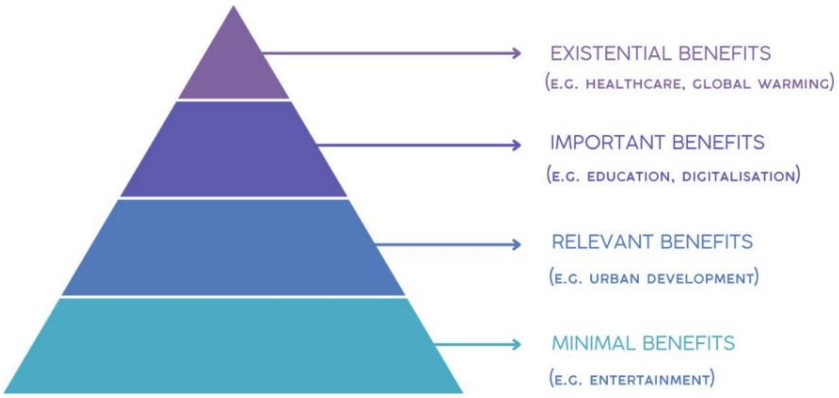
During risk analysis, the AI Board shall equip the framework used already in the field of climate change, by the Intergovernmental Panel on Climate Change (IPCC) (Novelli et al. 2024). This approach, instead of looking at risks as separate, closed-off entities, focuses on the combination of multiple factors, as it is usually the interaction of these moving particles (similar to a

chemical reaction) that results in the emergence of specific risks (Novelli et al. 2024). This approach conceptualizes risks as a combination of potential sources of harm, values and interests that could be harmed (Novelli et al. 2024), contexts or attributes that could make these interests susceptible to the harm (Cardona et al. 2012), and mitigating measures available (Simpson et al. 2021). Based on their interaction, it categorizes risks as those with an aggregate (multiple risks accumulating), compounding (one risk influencing another), or cascading (risk "waters down" to other sectors, creating additional risks) relationships (Novelli et al. 2024) (*Figure 12*). Understanding how AI applications work in different sectors through the sandboxes (e.g., one attribute may be harmless in the field of law enforcement, but could prove to be very damaging in healthcare), could help the European regulators to arrive to not only to a more nuanced understanding of AI, but a fairer regulatory system in general.



11. Figure: The determinants of a risk and their interactions (Novelli et al. 2024)

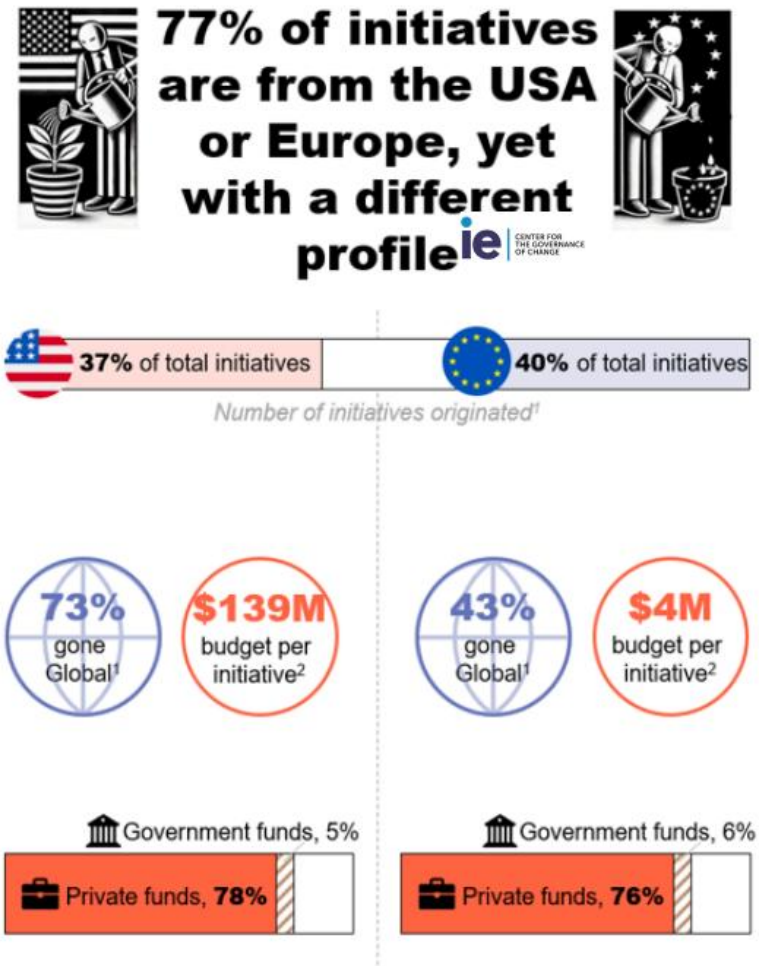
In order to properly understand the risks emerging from different AI applications and the trade-offs involved, one must consider the accompanying benefits as well. Within this CIVICA Capstone Project, we have proposed setting up a "benefit-pyramid" (*Figure 13)*, which would categorize different AI applications "*based on their contribution to human existence"* (Balan et al. 2024). According to this, benefits would be categorized as existential (those contributing to goals fostering basic human existence), important (not connected to absolute human necessities, but providing considerable benefits in important sectors such as education, leading to more democratic and equitable societies), relevant (those benefits that have a comforting value, making everyday lives easier, widely accessible to the public, leading to increased efficiency and wellbeing), or minimal (having only an entertainment, or minimal, "luxury value", to an exclusive group of citizens) (Balan et al. 2024). Based on such a system, the risks and benefits of different AI applications could be weighed against each other, while keeping in mind sectoral differences, leading to more forward-looking and fairer regulation. Such a risk-benefit analysis could also ensure that digital democracy tools, powered by AI, would not necessarily be that strictly scrutinized, given the immense societal benefits they provide.



12. Figure: Benefits of AI applications and their categorization (Balan et. al. 2024)

During the research phase, the AI Board evaluates identified risks and the accompanying benefits in that sector based on the sectoral sandbox research, meanwhile providing constant feedback and recommendations to providers to improve their products for certification. Based on the data, it is the AI Office's role to issue guidelines and political directions for future providers and participants, including previously identified risk sources and their interactions (Balan et al. 2024). As previously emphasized, one of the problems with the current AI Act is its rigid framework regarding risk categories. However, such a categorization must be made more flexible, if it turns out later on (based on sandbox experiments, for example) that a specific category was not justified (Balan et al. 2024). Thus, similar to the stock exchange, following the AI Boards evaluations, a particular AI application would receive a "risk-score", whereby in the future, applications could "*jump up to higher, or be relegated to lower risk categories*", if further risks or benefits are identified in subsequent sandbox experimentations (Balan et al. 2024). To provide for legal certainty, if an AI application were promoted to a higher risk category, the provider would be given the chance, through participating in future sandboxes, to demonstrate that a change in category was not justified (Balan et al. 2024).

An analysis of the top 100 worldwide AI and Democracy Initiatives (*Figure 14)* signals an almost equal amount of them originating from Europe as the US, although a highly polarized funding system in the former (around 4 million dollar budget per initiative, compared to 139 million dollars in the US) puts the EU's sovereignty and ability to utilize AI for the public good at risk (Babinet and Algan 2025). The excessive dominance of certain US mega players and platforms is a recurring phenomenon (the "GAFAM" coalition of Google, Apple, Facebook, Amazon, and Microsoft), with 65% of such initiatives funded by one of them (Babinet and Algan 2025).



13. Figure: Comparison of US and European AI-initiatives and their financing (Babinet and Algan 2025)

In order to rectify such shortcomings, through the European sandbox platform, private investors can already "scout" startups and projects participating, and financially support them along the way (Balan et al. 2024), enabling a sustainable finance mechanism for these European initiatives, meanwhile providing an EU budget guarantee to investors, similar to InvestEU. As the private sector is rarely incentivised to financially support globally beneficial but commercially risky innovations (Mazzucato et al. 2022), through this platform, they would have a chance to invest early, witness the experiments, gain advertising opportunities for their portfolio and receive crucial (public) data for their future operations, all while supporting

innovative European projects and enhancing the public good. As Professor Ződi mentioned, the problem of Europe is not that it does not spend on innovation, but it spends it in 27 different countries. Currently, the EU budget is dispersed among 50 spending programmes, with complex, and fragmented procedures to receive financing, with "*limited ability to mobilise private investment through risk-sharing instruments"*(Draghi 2024). This prevents bigger, pan-European projects to reach the sufficient scale to compete globally (Draghi 2024). Such a uniform platform could ensure that funds are channelled and directed in a common European direction, supporting European research and sandboxes.

A solution to the investment gap regarding European companies and achievable public goals could be to connect the two. Those AI providers that successfully participate in the sandbox, achieving the objectives underlined in the beginning within the sectoral plans, implementing any remaining recommendations of the AI Board, could receive further European financing to enter the market (Balan et al. 2024). Taiwan's "Pay for Success scheme," for example, outsources public services, preconditioning payment to the successful achievement of a predefined policy outcome (Mazzucato et al. 2022). Assessing whether the stated objectives were achieved, together with some return on investment in a social sense, and making payment preconditioned on this (Wiblin and Harris, n.d.), is similar to Gillian Hadfield and Jack Clark's "regulatory markets" proposal (Clark and Hadfield 2020), where the private sector is incentivized to "*allocate money, talent and computing power towards policy aims*" (Mazzucato et al. 2022).

As a last step, ensuring future research and regulatory learning, an EU-wide database shall be established, guaranteeing the sustainability of the sandbox system (Balan et al. 2024). Similar to the US's National AI Research Resource Task Force (Mazzucato et al. 2022), this cloud shall be made available to European scientists, students, and universities, guaranteeing the future of

European research, democratising access to expensive data. As Ms. Alspektor underlined, Make.org is working on similar open-source AI tools, enhancing citizen participation. Currently, they only have limited data available (exclusively using data generated via their platforms, complementing it with open-source datasets); however, they aim to publish their codes and resources for other actors and researchers to use in the future. Attempting to become a benchmark for democratic AI, they aim to support other researchers to fine-tune their LLMs based on their research or creating their own innovative platforms. This open-data policy, whereby the private sector and universities work together with the government towards mutually desirable policy aims, shall be the founding pillar of a future European Demos.

Conclusion

It seems that Jacques Delors's words have proven true. The European Union is facing a crisis of legitimacy, although its citizens still trust its institutional foundations. To tackle such a crisis, this Thesis has proposed democratic (online) innovations and the creation of meaningful participatory mechanisms through the recently adopted AI Act's regulatory sandbox system.

Artificial intelligence is a threat and an opportunity at once, which is why responsible, public-sector-led innovation is needed, serving as a guiding light for private actors to invest, experiment, and create socially beneficial AI technologies. Currently, the public sector's involvement in AI developments, both in terms of funds allocated and innovations initiated, is extremely low. The question of institutionalizing public-sector-led innovation, involving various private and civil stakeholders, while making it a sustainable, profitable model, was one of the most cardinal dilemmas of this Thesis. One of the crucial social objectives that was analysed was the Union's democratic crisis, which could serve as a precedent-creating issue for testing such a model, combining public-private innovation and enhancing regulatory learning, potentially reproducible in subsequent cases.

While citizen participation has consistently appeared (albeit in different forms) on the pages of European integration, so far it remained an incomplete objective. The Conference on the Future of Europe was one of the most recent attempts of the EU on this field, introducing a new form of deliberative model into its bloodstream: the citizen panel. Allowing citizens to come together, discuss, deliberate and reach consensus, creates a self-sustaining process within human polities, outside the paternal control of political institutions, achieving Bohman's "democratic minimum".

However, the vast number of citizens needed for a truly representative process, while providing for equal access and participation, considering socio-economic differences, is a key consideration. Numerous case studies from vTaiwan to Make.org have proven that combining online and offline solutions, and AI's ability to summarize considerable citizen opinion, enabling smoother and clearer debate, has significantly improved citizen participation, leading to fairer, more open democratic processes.

However, in order to make sure that similar innovations take place on a European level, an innovative and stimulating legal framework must be enabled. It was argued that the rigid risk-based regulation of the AI Act (automatically placing specific AI applications into higher risk category) has the potential of stifling innovation, serving as a "chilling effect" on desirable technological trajectories. Instead of the religious focus on risks, one has proposed a nuanced risk-benefit analysis, where risk is not understood as an individual, closed-off entity, but a context-specific phenomenon, which emerges based on the combination of multiple different particles. These particles behave differently in specific contexts, which calls for a sectoral understanding of AI applications, instead of a horizontal regulation.

While China and the US produce and innovate, the EU regulates. Although there is nothing sinister in regulation, when serving a clearly definable purpose, this objective is somewhat missing from the AI Act. Although the European Union does spend on innovation, these resources are unfortunately not channelled towards a common direction.

As a positive example, the case study of Taiwan and its democratic innovations was introduced. Although Taiwan's regulators insist that they are not a "*model to be copied*," they could nevertheless provide valuable lessons on how to treat democracy as a social technology and use AI's potential to empower people to innovate, coordinate, and cooperate instead of enhancing division and polarization.

If Europe erratically focuses on the "AI race" and the rate of technological development, it will most definitely lose. However, if it decides to concern itself with the direction of such development, understand the technology, and slowly build up a group of competitive European companies powered by European datasets available for researchers, while channelling its potential towards desirable public objectives, it may have a chance.

It seems like Europe faces a multipolar crisis: an institutional, regulatory, and economic one. To solve the first, it was argued that EU constituent and constituted powers must be separated, enabling the meaningful participation of citizens in the legislative process through a two-tiered citizen panel system (permanent "in-person" and ad-hoc, "online" chambers).

Second, to tackle the regulatory and economic problems of the Union, a system of "Da Vinci sandboxes" were proposed, consisting of various sectoral experimentation spaces; a risk-benefit analysis, and a common European platform, whereby startups can apply to participate in different sandboxes, while contributing to regulatory learning and an EU-wide data repository, with the data produced. Through participating and complying with the recommendations, such providers will receive financing opportunities from the EU and private sources, enabling their scale-up and contributing to safer products reaching European markets.

For the drafting of the EU's new long-term budget between 2028-2034, the European Commission has decided to cooperate with Make.org, to establish a European Citizen's Panel, and an accompanying online Citizens' Engagement Platform, extending the discussion into the digital sphere ('Make.Org Builds the Bridge between Online and Offline at the European Citizens' Panel on Budget' 2025). This platform allows citizens to share their views and priorities on the next budget of the European Union, while also commenting on their fellow citizens' contributions ('Make.Org Builds the Bridge between Online and Offline at the European Citizens' Panel on Budget' 2025). The European Commission and its Directorate General for Budget have promised to consider the final recommendations of the panel, left to

be seen in July 2025, when the first draft budget will be published (‘Make.Org Builds the Bridge between Online and Offline at the European Citizens’ Panel on Budget’ 2025). It seems like the European Union is slowly learning its lesson and is gradually integrating citizens (with the help of digital tools) into the decision-making process.

Europe's idea was always based on reform, engagement, and unity. However, as it focused on creating an ever-closer Union, it may have lost track of the first two. But as long as the idea of Europe exists, with the words of Jacques Delors echoing, Europe’s potential is there to be realized.

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