

Evidence Based Policy Cases Track 1: Health & Social wellbeing

The tight connection between people and government in co-creating new and targeted policies

9 December 2021





Agenda

- Introduction. Health and Social Wellbeing— Germana Gianquinto (AI4PublicPolicy)
- Science Technology and Innocation Policy in the domain of Cancer Paresa Markianidou (Technopolis Group, IntelComp)
- Policy Cloud Policies against Radicalisation- Armend Duzha (Maggioli, Policy Cloud)
- Health Policies: co-creation and AI for a targeted policies' implementation Giorgio Da Bormida (AI4PublicPolicy)
- Panel Discussion on the tight connection between people and government in co-creating new and targeted policies.

















Evidence Based Policy Cases Track 1: Health & Social wellbeing

- Better public services can surely make life easier for citizens
- Public Sector Decision Making need to become more agile, faster and adaptive in particular during Covid-19
- Covid 19 has highlighted the importance of people health and social needs and the need to address some longstanding challenges.
- Disruptive technologies running on Cloud can better support data driven policies
- Here's the Data Driven Policy Cluster focussing on Health and Social Wellbeing and on the added value of data-driven policy making.



Evidence Based Policymaking 2021

Join us: 9th December 11:30 am CET Session: Evidence Based Policy Cases from data to decision making

Track 1 - Health & Social



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Lintelcomp

Evidence-based Policy Modeling

Thursday December 9
Evidence Based Policymaking in Europe Summit: 2021

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OUTLINE

- 1. IntelComp platform
- 2. Conceptual framework
- 3. Measurements and data sources process followed
- 4. Domain specific needs Cancer
- Next steps

IntelComp Platform

What it is about



The IntelComp platform

- 1. A cloud platform that will offer artificial intelligence based services for STI policy.
- 2. It is designed to assist the whole spectrum of STI policy: agenda setting, policy formulation, implementation, monitoring & evaluation and tested on specific STI policies: artificial intelligence, climate change and health
- 3. It will be co-created with public administrations and all relevant stakeholders (academia, industry and citizens) to address specific policy questions
- It will be able to process and analyze large volumes of textual data from open data (e.g. OpenAIRE datasets), using artificial intelligence techniques
- 5. Conceptually it relates with two existing platforms for STI policy: Corpus Viewer and Data4Impact

Evidence-based Policy Modelling – WP1 summary

Objectives

- Identify policy needs and barriers including domain specific needs
- Identify relevant
 policy cycle
 indicators and open
 data repositories in
 the pilot domains
- Combine data and indicators to provide solutions for policy makers in the three pilot domains

Tasks

- Identification of domain-specific needs, PA and stakeholder consultation
- Selection of indicators and collection of Input Data (T1.2)
- Model Design Solution and Monitoring

Domains

- Artificial Intelligence
- Climate Change –
 Blue economy
- Health Cancer

WP/Task linkages

- Technical WP2-5
- Conceptual WP6-7

Expert-in-the-loop co-creation methodology



CONCEPTUAL FRAMEWORK

Policy questions

How did we arrive to the long list of policy questions?

1. INNOVATION SYSTEM FUCTIONS

Activities that (may)
contribute to the
diffusion and utilisation
of new science and

technology (both

positive and negative)

are called functions of

innovation systems

2. POLICY CYCLE



Policy stylized in five policy phases:

- 1. Agenda Setting
- 2. Policy Formulation
- 3. Policy Adoption
- Policy
 Implementation (and Monitoring)
- 5. Evaluation

3. STAKEHOLDERS



Stakeholders in focus for Intelcomp

Political leadership, Policy officers, Policy analysts, Evaluation agencies, Monitoring managers, EU policy makers, Academic experts, Research institutes, Industry (associations), National funding agencies . . .

We use all three dimensions ... but not all possible combinations to create a basic set of questions

4. DOMAIN SPECIFIC QUESTIONS



Domain specific

Technology

questions to account

for stakeholders and

interactions



What are innovation system functions accounted for?

Definition: Activities that (may) contribute to the diffusion and utilisation of new science and technology (both positive and negative) are called functions of innovation systems

- Function 1. Entrepreneurial activity
- Function 2. Knowledge creation
- Function 3. Knowledge diffusion through networks
- Function 4. Guidance (creating legitimacy for stakeholders, visibility and clarity)
- Function 5. Market formation (create markets through regulation of incentives)
- Function 6. Human and financial Resources mobilisation
- Function 7. Creation of legitimacy for society/counteract resistance to change

(Hekkert, et al., 2006)



Which definition of the policy cycle did we use?

The basic rationale behind the policy cycle is that policies build up on past knowledge and experiences and as long as you exploit past evidence your policy gets better (policy is not formulated in a vacuum)

Agenda setting: Definition of the problem(s) to address

Understand the array of sectoral/technological/institutional potential for a specific future period, determined by internal and external factors

Policy formulation: Explore different courses of action

How can these dimensions be addressed; good practices, positive and negative experiences; rationale

Policy adoption: Make a choice

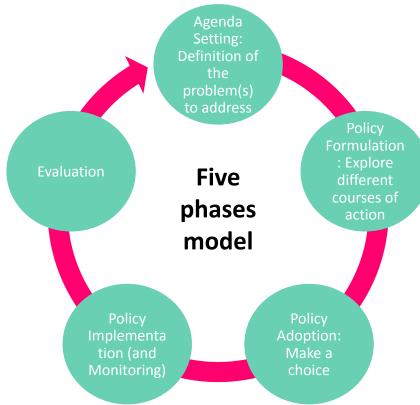
Build an intervention logic to select based on national characteristics and the actions identified in the previous stage

Policy Implementation and Monitoring

Implement efficiently and simultaneously collect all data necessary for corrective action and evaluation

Evaluation

Check coherence, efficiency, effectiveness, value added and impact to help adapt the design of the next cycle



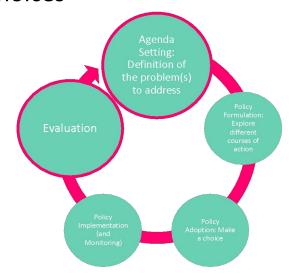


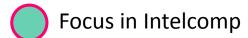
What policy questions can IntelComp provide answers to?

	Phase 1. Agenda setting	Phase 2. Policy formulation	Phase 3. Policy adoption	Phase 4. Policy implementation and monitoring	Phase 5. Evaluation
Function 1. Entrepreneurial activity	7-				
Function 2. Knowledge creation	, 60	90			
Function 3. Knowledge diffusion through networks		Mair)		
Function 4. Guidance (creating legitimacy for stakeholders, visibility and clarity)			30105	×; 9405	
Function 5. Market formation (create markets through regulation of incentives)				9405	
Function 6. Human and financial Resources mobilisation					10/25
Function 7. Creation of legitimacy for society/counteract resistance to change					

There are important questions for all functions of the innovation system and phases of the policy cycle

But there are too many to deal with and we need to make choices







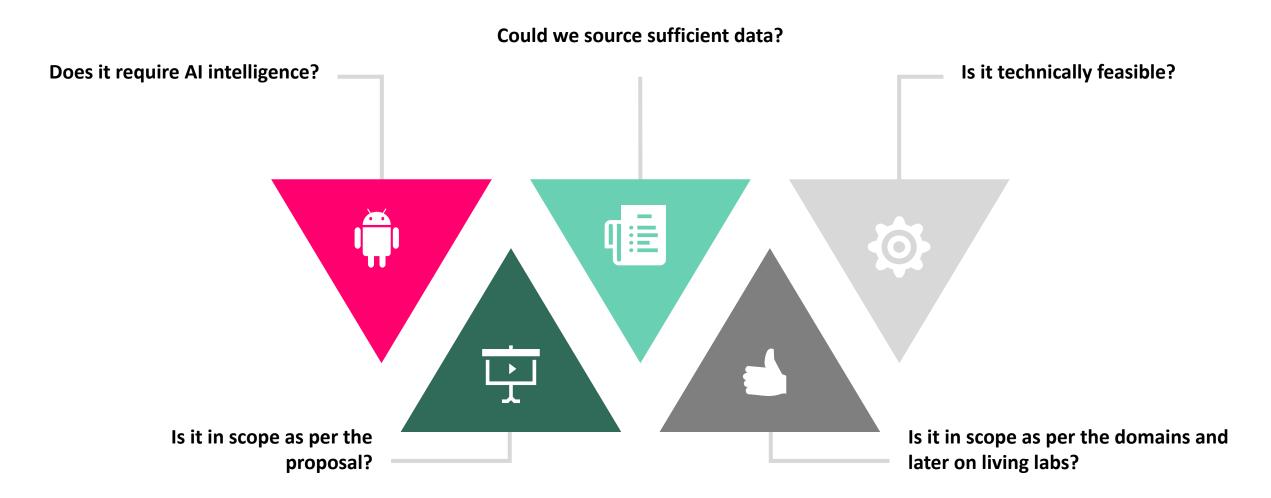
MEASUREMENTS AND DATA SOURCES

Process



From 160 policy questions to quantifiable STI measurements

Policy questions and corresponding quantifications are questioned as follows:



Policy questions in and out of scope for IntelComp

In scope

Out of scope

- Policy questions which require AI intelligence (e.g. Policy questions which require traditional statistical data R&D fields of Top R&D investors)
- Euraxess. Etc.)
- feasible (e.g. What has been the leverage of national sources (e.g. on cost effectiveness or cost benefit) support measures for EU competitive funding?)
- living labs (e.g. In which ways has the diffusion of counterfactual analysis) knowledge taken place?)
- developed by other (EU) initiatives

Policy questions for which we can source sufficient Policy questions for which no sufficient (text) data is available text data (e.g. parliament discussion minutes, TED, or no good proxies can be designed (e.g. € royalties produced by patents)

Policy questions which are complex but technically Policy questions which require a holistic analysis and a mix of

Policy questions in scope in the three domains and Policy questions which require statistical analysis or (e.g.

Policy questions requiring AI intelligence not Policy questions for which while AI tools can be used the intelligence they offer policy is limited (e.g. new markets using public consultation data; scale ups leaving the country via news)

Sources of data identified as relevant for policy questions

Sources of data are assesed in terms of their:

- 1. Text mining potential
- 2. Temporal data availability
- 3. Availability of classifiers
- 4. Open Access vs. paid license
- 5. Resources needed to compile/process
- 6. Representativeness

Turalani	Course John I
Typology	Source_label
Company financials/websites/reports	opencorporates
Company financials/websites/reports	Orbis
Company financials/websites/reports	Country Business Registers
Skills demand	Euraxess
Skills demand	Cedefop
Skills demand	LinkedIn
Innovation	Patstat
Innovation	ETSI - standards
Innovation	ISO micro data - standards
Innovation	Github
Innovation	stack overflow
Innovation	EUIPO trademarks and design
Investments pub	Framework Programmes
Investments pub	National Funders
Investments priv	Crunchbase
Investments priv	National Venture Capital sources
Legislation	EURLEX
Legislatlon	Legislatlon national/international sources
Policy documents	Overton
Policy documents	Parliament discussion minutes
Policy documents	Government sources
Policy documents	Policy research working papers: OECD; World bank; ECB working
	papers; World Economic Forum
Policy documents	EU publications
Policy documents (evaluations and IAs)	SIPER
Policy documents (evaluations and IAs)	Fteval
Foresight studies	EC; Competence centre on foresight; OECD strategic foresight
Procurement	TED
Skills supply	LinkedIn
Skills supply	LFS
Science	OpenAire
Science	Open science observatory
Science	google scolar
Social media/News	European Media Monitoring /Twitter
,]]

APPROACH TO IDENTIFY DOMAIN SPECIFIC NEEDS

Preliminary needs identification in the domain of Cancer

Example: Cancer domain: identification of STI policy needs



Desk research

Health scope in IntelComp: EC plans to tackle cancer

Over €3 billion invested in +/- 2000

The European Beating Cancer Plan

Sets concrete goals to achieve in 4 strategic areas: control and prevention, diagnosis and screening, treatment, quality of life of survivors and caregivers

Cross-cutting themes: research and innovation, digital and personalised medicine, and reducing inequalities R&I flagships:



Knowledge Centre on Cancer (2021)

European Cancer Imaging Initiative (2022)

Examples of actions

- Secure access and sharing of patient data in the European Health Data Space (2021-2025)
- Expanding European Cancer Information System (2021-



Application

- Integrated approach cross policy areas
- Builds on the existing

European Cancer Information System, ERNs on rare cancer, the Innovative Partnership for Action Against Cancer, European Commission Initiative on Breast Cancer...

Contributes & informs

The European Cancer Mission

One of five mission areas under the umbrella of Horizon Europe, focused on the future of research and innovation

Objective: achieve a measurable goal that could not be achieved through individual actions

Portfolio of actions: research projects, policy measures or even legislative initiatives







EU Intervention Logic on Cancer (simplistic version)							
Vision	To leave no stone unturned to take action against cancer contributing to a stronger European Health Union						
Operational objectives	"New technologies, research and innovation and the service of patient-centred cancer prevention and care" "Saving lives through sustainable cancer prevention" "Improving early detection of cancer" "Ensuring high standards in cancer care" "Improving the quality of life for cancer patients, survivors and carers" "Reducing cancer inequalities across the EU" "Putting childhood cancer under the spotlight"						
Targets	"By 2030, reduce by one third of premature mortality from cancer through prevention and treatment and promote mental health and well-being" "Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all" Targets from areas representing enabling conditions "A tobacco-free generation: ensuring that less than 5% of the population uses tobacco by 2040" and a 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years "Reduce harmful alcohol consumption in line with the targets of the UN Sustainable Development Goals (relative reduction of at least 10% in the harmful use of alcohol by 2025) and reduce young people's exposure to alcohol marketing" "A 10% relative reduction in prevalence of insufficient physical activity" "A 30% relative reduction in prevalence in mean population intake of salt/sodium" Halt the rise in diabetes and obesity "In Line with EU's Action Plan: Towards Zero Pollution for Air, Water and SoilHalve the aim is to halve premature deaths caused by air pollution by 2030 and align the EU's air quality standards with the World Health Organization's guidelines and reduce exposure to carcinogenic substances and radiation"						
Policies / Programmes	EU4Health programme	Horizon Europe Digital Europe Legislative propo programme Legislative propo		Legislative proposals			
Roadmap/ Actions	EBCP 10 flagship initiatives EBCP 42 actions						
STI actions/ initiatives	EU Knowledge Centre on Cancer EU Network of national comprehensive Cancer Centres Helping Children with Cancer Initiative European Reference Networks Strategic Agenda for Medical Ionising Radiation Applications (SAMIRA) 2 dedicated HE partnerships on healthcare (including cancer) 1. Innovative Health initiative 2. Transforming Health and Care systems Innovative Partnership for Action Against Cancer (IPAAC)		European Cancer Imaging Initiative EIT and MSCA projects (Horizon Europe) Projects EU Cancer Treatment Capacity and Capability Mapping' project European Initiative to Understand Cancer (UNCAN)		European Cancer Information System Cancer Inequalities Registry Genomic for Public Health project (alongside the 1+ Million Genomes Initiative) Repository of digital twins in healthcare European Open Science Cloud		
STI Outcomes	"Reducing cancer inecacross the EU" "Putting childhood under the spotlight"			nd innovation" es through e cancer	r a	New technologies, esearch and innovation and the service of patient-centred cancer prevention and care"	



Example: Cancer domain: identification of STI policy needs



Stakeholder Consultation

Additional Evaluation questions

Unit of analysis: project

- Identification of new collaborations arising (including Public-Private Partnerships)
- Adoption and replicability of innovations to different healthcare systems in the EU. Whether possible/ happening?
- Advancements in Technology Readiness Level (TRL) or Interactive Machine Learning (IML) for the different areas of projects?
- Identification of TRL tranches were projects need more support?
- Project replicability
- Post-marketing data collection (after clinical trials)
- Creation of other ancillary jobs e.g., start-up ecosystem regulators
- Training and skills evolvement/new directions of trained personnel? Adoption of different career profiles?
- Do gender/ age aspects play a role (e.g. research teams' approaches, etc.)?

Unit of analysis: programme

- Means to track long term employment
- Retaining skilled / trained talent (also non-EU) (is linked to the creation of employment)
- Mapping of complementary/synergetic/substitute sources of funding
- For subsequent programming period the time window to receive results is important (Cancer is a "race against time")
- Definition of whether the programme is realistic (e.g., time, budget, resources)
- Situational analysis for prioritization (e.g., what field of cancer linked to what return on investment? Quality of life of patients?) it may be a secondary need, but it can help leverage funds
- Measuring research outcomes with a focus on different age groups, namely pediatrics and gender distinctions
- The impact on citizens (Do socio-demographic variables play a role (long-term assessment/monitoring/evaluation))?

Evaluation needs

- Quantifying health impact
- Comparing / measuring qualitative impact and patient experience (quality of life, life expectancy gains, etc.)
- Assessment of relevant qualitative data sources, for e.g., during a gap analysis for efficient policy programme planning
- Longer term monitoring of Patient-reported outcome measures and Patient-reported experience measures
- Connecting science practitioners with data analysis to ensure reproducibility of research and technology transfer
- Assessing/ Evaluating medium/long-term indicators to select the right projects to receive funding
- Toolbox for the analysis of various data sources and respective relations
- Exchange platform to discuss results and ask questions
- Improving the evaluation process as a whole (including efficiency)

STI priorities

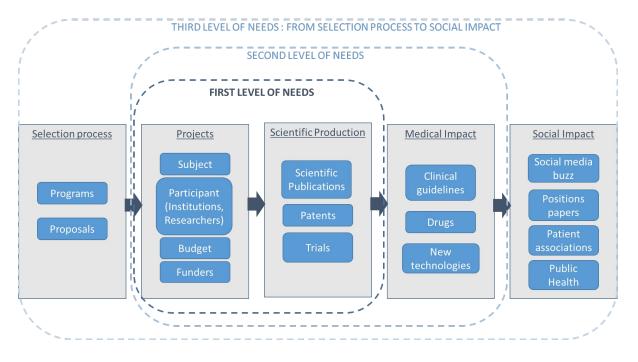
- **Knowledge**: Clinical trials as a driver of research. Importance of monitoring effects, producing statistics, attribution to policy measures
- Knowledge diffusion: Improving (inter-)connectivity between stakeholders and information sharing. Includes considerations on the needs of both public and private entities
- Guidance: The needs of patients at the center. Includes early diagnosis, quality of life, clinical pathways, the patients' journey, measuring/comparing qualitative impacts (such as QoL, life expectancy gains)
- Better data: Includes information sharing, data inter-operability, data protection elements and speeding up data transfer
- Human capital: Upskilling (digital and soft skills)
- Entrepreneurship: The development of health technologies. Includes the role of scale-ups and their sustainability. It is necessary to consider why good hybrid devices/software solutions are not included/considered in the procurement process (they often miss out on these opportunities and then do not survive on the market)
- Other: Understanding the intersection of data between the different policy phases (from foresight, agenda-setting to evaluation)



Example: Cancer domain: identification of STI policy needs

Prioritisation by living lab [provisional]

Analysis of the impact of funded research projects and the characterization of 'impact pathways'



Source: High Council for Evaluation of Research and Higher Education, 2020

Three levels of needs	In terms of:	Domain specific data requirements
To characterize in a broad way the scientific production ("output") of funded projects	Scientific publicationsPatentsClinical trials	Scientific publicationsPatentClinical trials
To identify and characterize the medical impact ("outcomes") of research projects	 Good practices (citations in clinical guidelines) New treatments (pharmaceutical industry) New diagnostic screening techniques (industrialists / start-ups) 	 Drugs New Diagnostic technologies Social media buzz
To identify and characterize the social impact ("outcomes") of funded projects	 Media impact (via the media & social networks) Topics of funded projects most often included in position papers Topics of funded projects corresponding to the expectations of patient organizations. Positioning of projects in relation to public health data (incidence, mortality, quality of life of patients etc.), 	 Health data Position papers Position papers patient associations

Next steps – short term

By December 2021

- 1. Propose the list of policy questions under 'evaluation' and 'agenda setting'
- 2. Propose measurements and indicators that could be calculated
- 3. Propose **suitable data sources** for the calculation of indicators
- 4. Provide a preliminary Identification of sources for ontologies of relevance to the domains (where relevant)
- 5. Select the **domain specific policy questions and corresponding measurements** which will serve as the basis for discussion within the living labs



https://intelcomp.eu/

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Participatory policies to counter and prevent radicalization

Armend Duzha, Maggioli S.p.A. PolicyCloud project



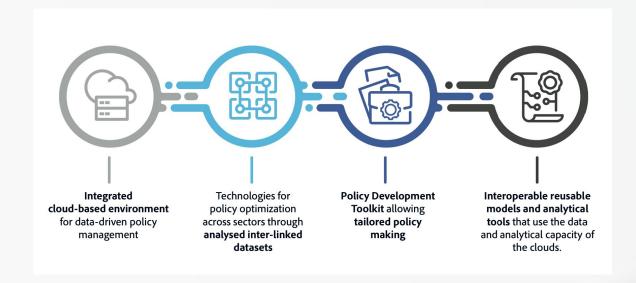






PolicyCloud project: At a glance

An integrated cloud-based environment for data-driven policy management that will provide interoperable and reusable models and analytical tools towards efficient policy making.











PolicyCloud project: Expected impacts



Facilitating interoperability, reusability, and scalability

Realizing a social-centric approach considering legal and security aspects

Promoting data-driven innovation, public administration and public sector innovation

Boosting the data-driven economy





PolicyCloud project: Pilot cases



POLICIES AGAINST RADICALISATION

Collecting and analysing social media data to enable policy makers to address radicalisation effectively.

ITALY



INTELLIGENT POLICIES FOR THE FOOD VALUE CHAIN

Implementing
environmental policies
to boost the growth and
development of the
agri-food industry.

SPAIN



URBAN POLICY MAKING

Facilitating urban policy making and monitoring through ther analysis of crowdsourced data.

BULGARIA



OPEN DATA POLICIES FOR CITIZENS

Predicting
unemployment and
associated risks to guide
social services policy
planning.

UK





Use case 1: Participatory policies to counter radicalization

The purpose





- Reduce the occurrence of radicalisation by early identifying warning signals and potential risks from social media and other data sources
- Promote secure access to public spaces for more people by timely adopting cost-effective counter-measures
- Encourage citizen engagement and trust in the perceived legitimacy of public authorities (municipalities, regions, LEAs)





Use case 1: Participatory policies to counter radicalization

Main challanges

- Retrieve and assess information from different data sources
- Present the outcomes of the analysis using advanced visualizations
- Identify current/future trends and potential risks/threats
- Keep track of people moving from mainstream
- Coded / hidden language used





Use case 1: Participatory policies to counter radicalization

Data sources

- Privately-owned datasets
- Open datasets: GTD and RDWTI
- Social media: Twitter, Reddit
- Blogs and websites: RSS Feeds















Scenario A: radicalization incidents

- Monitor the occurrence of radicalization incidents in a given area
 - Data











Scenario B: radicalized groups and individuals

- Identify the main actors (individuals or groups) involved in violent activities or propaganda spreading through online and offline activities
 - Data















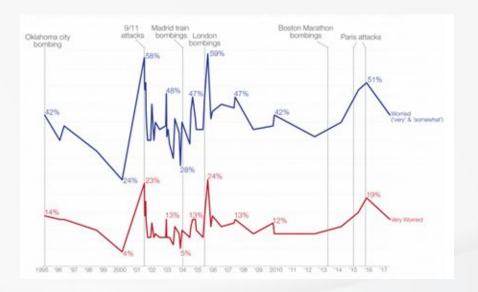
Scenario C: Trend analysis

- Understand the current and future trends of radicalization efforts (keywords detection, new entity recognition, new terms identification)
 - Data













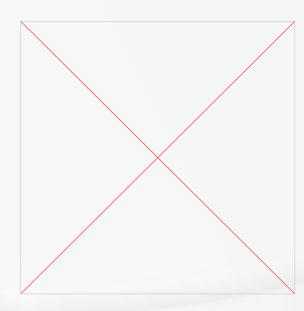
Scenario D: Assessment of Online Propaganda

- Understand specific events and online activities (sentiment analysis, opinion mining, location surveillance, user monitoring)
 - Data















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- intelcomp.eu





Al 4 Health Policies

Co-creation and AI for a targeted policies' implementation Giorgio Da Bormida





Data-drive society

- Policy development represents one of the most prominent applications of cloud computing and HPC for public administration
- Public authorities can now develop evidence-based, data-driven policies
- The ultimate vision of data-driven policy making entails the use of Artificial Intelligence (AI) as a means of increasing the efficiency of the policy development and management (i.e. going beyond development to adaptation and optimization) process and boosting a more responsive, adaptive, intelligent and citizen centric governance



Enabling co-creation and Al

- Cloud computing infrastructures enable public authorities to harvest the vast amounts of data
- High Performance Computing (HPC) capabilities
- Cost reductions and improved economies of scale
- Reducing the time needed to develop and roll out new services

- execution of advanced data analytics capabilities over such datasets
- to leverage the outcomes of Machine Learning (ML) and Deep Learning (DL) techniques towards holistic and actionable insights





EHDS and Health policies

- Data Innovations towards establishing a European Healthcare Data Space (EHDS), which will comprise integrated, federated, well-structured, FAIR data (e.g., medical records, laboratory data, real-world data about patients, PROMs/PREMs, alternative data sources, scientific findings)
- EHDS will integrate the findings/outcomes of any project's tools, as means of implementing a continuous improvement cycle where past findings are considered in the operation of the tools.
- Based on EHDS, AI will enable healthcare professionals and policymakers' to collaborate effectively towards educated, data-driven, evidence-based, and patient-centric decisions for health prediction and care



The way foward....

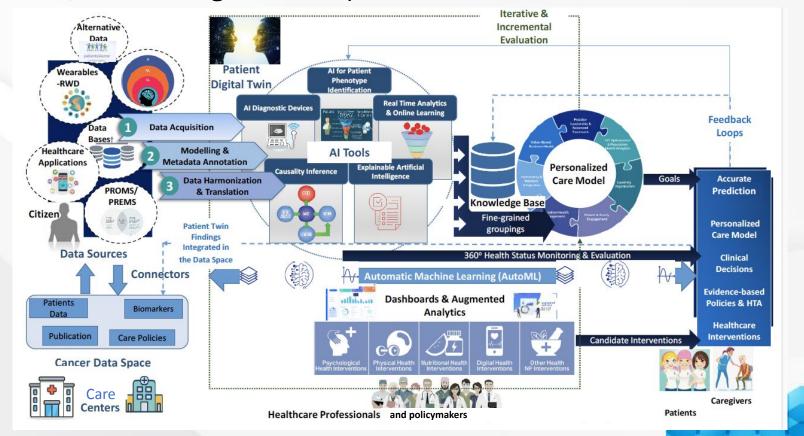
- AI Technology innovations, including:
 - development of explainable AI (XAI) and causality inference techniques
 - Federated Machine Learning (FML) solutions
 - Al-based Healthcare Technology Assessment (HTA) assessments; and
 - powerful Patient Digital Twins
- for trusted, accurate, and highly personalized clinical decision making and policy making





Al4Health: Virtualized cloud-based Platform

• Virtualized cloud-based Platform to centralize access to AI resources and to enable the integration, consolidation and sharing of assets, including datasets (via EHDS), analytical models for clinical and policymakers' decision making, AI/ML algorithms and advanced AI tools (e.g., XAI, FML, Patient Digital Twins).





Panel Discussion- The connection between people & government in co-creating targeted policies.

- What is the current situation of evidence-based policymaking in your field? And why is it important?
- What are the challenges that you have identified, in your field, when working towards data-driven policymaking?
- Why is the work you are doing/planning in your local pilot important for Europe?
- What is your recommendation to policymakers for evidence-based policymaking? /What are the requirements you have identified for policymakers to be able to support data-driven policymaking?
- What recommendation do you have for the cluster?







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