



**EBRAINS**

# Brain Capital: competences and mental health in the society of knowledge

ANRT Colloque, Maladie mentales et santé mentale, quelle solutions  
grâce à la recherche et à l'innovation

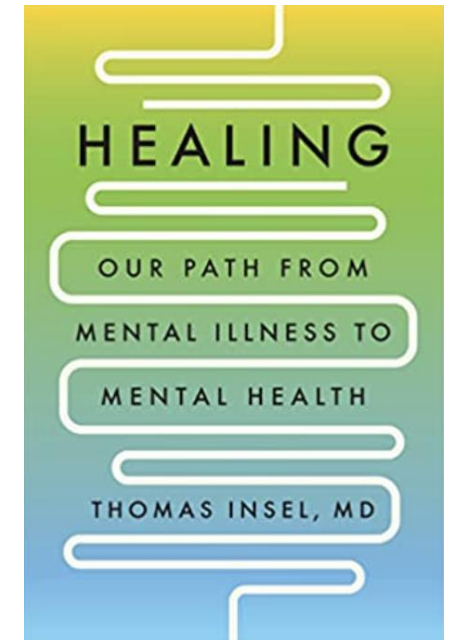
**Paris, 25 November 2022**



Co-funded by  
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# Turning point for mental health

- Mental health problem is medical but the solutions are not just medical. They are social, environmental and political, writes Thomas Insel in “Healing”
- There are two types of families: those dealing with mental illness already and those not dealing with it yet
- Not a crisis of prevalence but a crisis of care



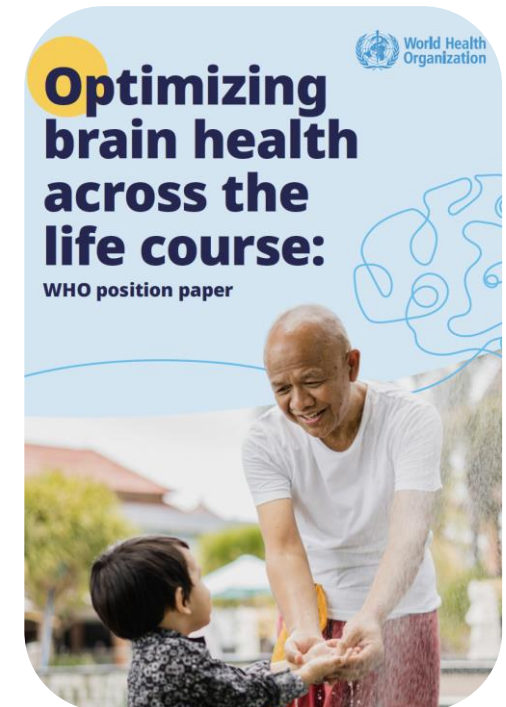
# Mental health: a crucial determinant of brain health

- Mental health and brain health: two separate but closely related concepts (WHO)
- Brain health is a crucial determinant of mental health across the life course
- Mental health and neurological diseases are likely to be the single largest medical and societal cost in Europe in the next 2 decades

## WHO definition of mental health and its relationship with brain health

WHO defines mental health as a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community. Mental health is more than the absence of mental health conditions or disabilities; it is fundamental to our collective and individual ability as humans to think, emote, interact with each other, earn a living and enjoy life (21).

Brain health is an important determinant of mental health across the life course. Many of the risk and protective factors that impact mental health (e.g. social adversities, air pollution, physical activity) are likely mediated through changes in brain structure and/or function (31–34).



# Comprehensive approach to mental health broadly accepted

Healthier Together: New Non-Communicable Diseases Initiative of the European Commission:

- ✓ Mental health resilience by implementing Mental Health in All Policies
- ✓ Promoting mental health and preventing mental disorders
- ✓ Providing equitable and timely access to high-quality mental health services
- ✓ Supporting people with mental health disorders



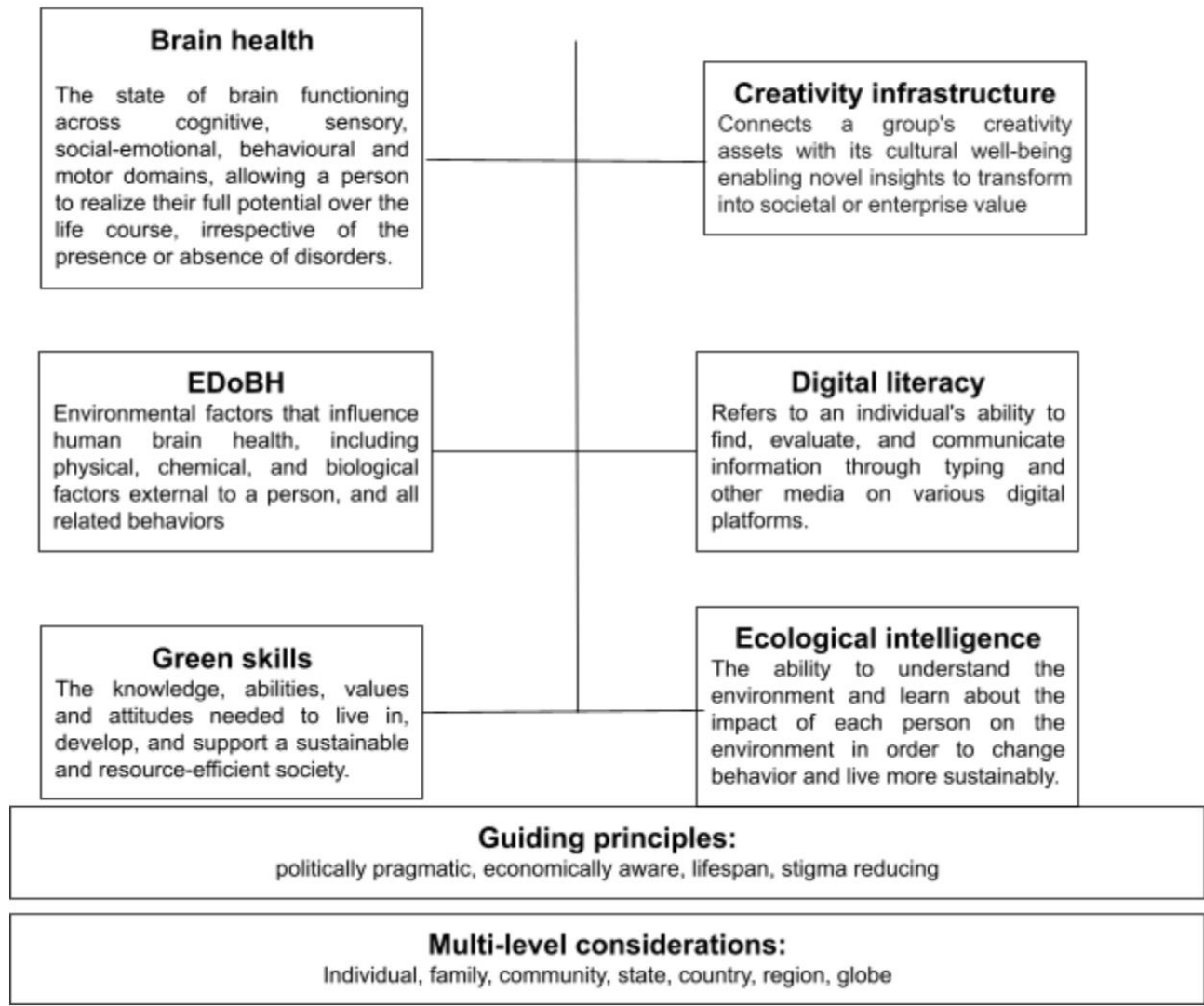
# Concept of brain capital

- ✓ A novel framework that recognises brain skills and brain health as indispensable drivers of the modern knowledge economy.
- ✓ Brain capital is the combination of knowledge and tools to achieve, maximize, and sustain brain health and pertains to both individuals and communities.
- ✓ Today, a premium is put on brain skills and brain health (e.g., an individual's cognitive, emotional, and social brain resources)
- ✓ Investing in ways to build brain capital is thus fundamental to meet modern societal challenges and to drive innovation globally

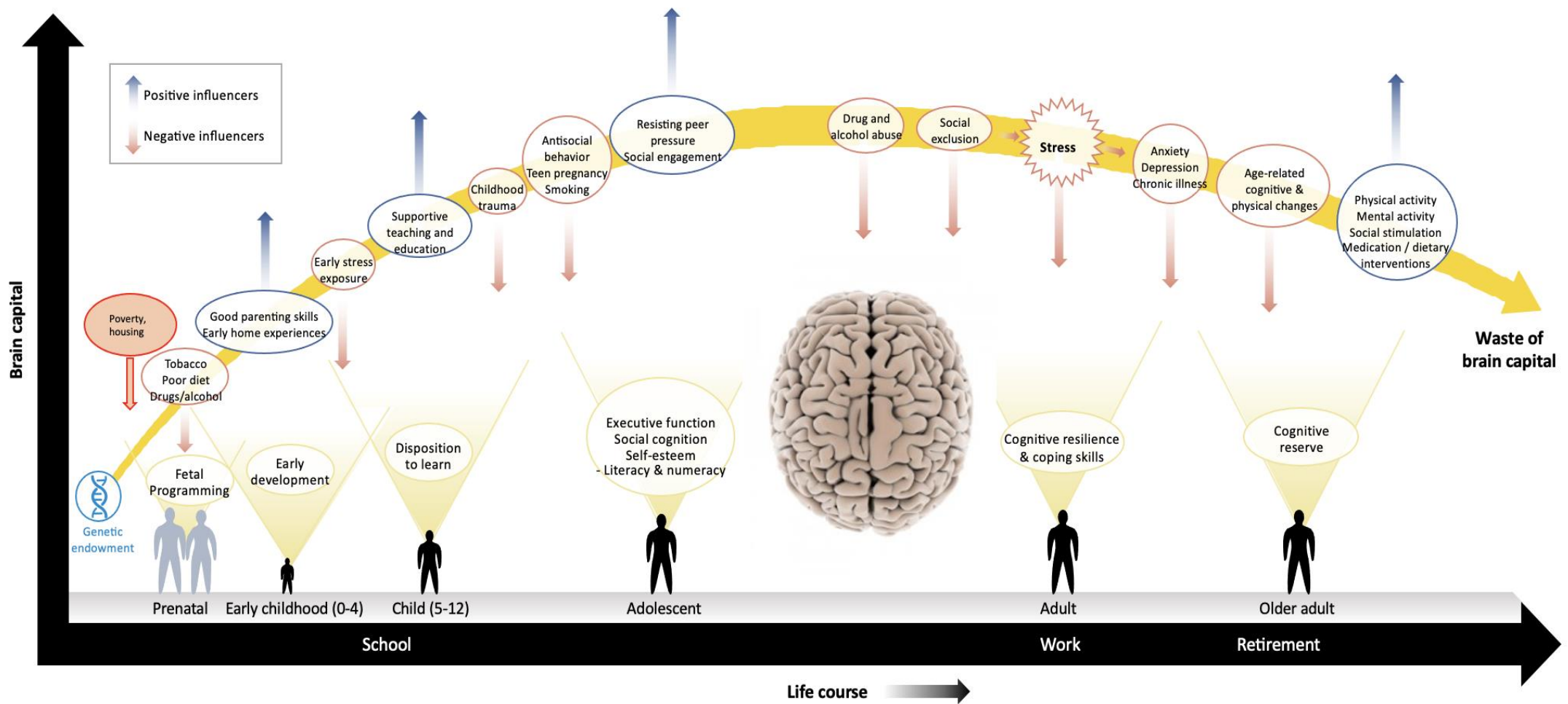


Brain  
Capital  
Alliance

# Green brain capital model as an example of the comprehensive & lifespan approach



# Brain Capital Across the Life Span

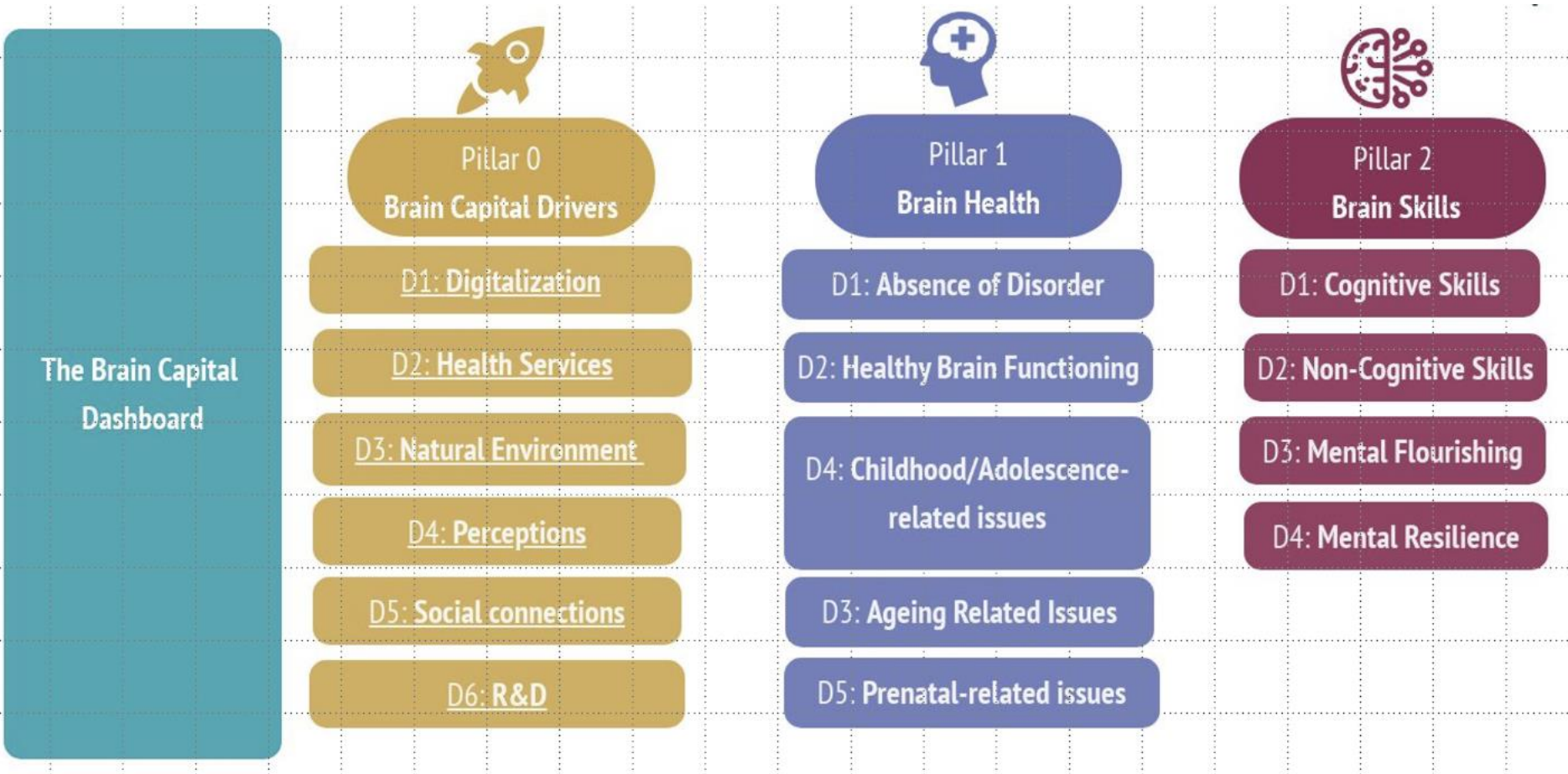


# More holistic than ever

- Towards structural evolution: changing the social and economic structures that given rise to the conditions that negative impact brain capital and the collective wellbeing of societies
- An early warning system for mental health: developing new tools to measure, monitor and forecast dynamics of mental wealth → Mental Wealth Initiative
- Aiming to understand which policy-mediated changes in economic, social, environmental, and health sectors could enhance brain capital
- Other examples include COP2 (Care of People and Planet) group of climate and mental health organisations collaborating to recommend mental health action for nations as part of their climate response

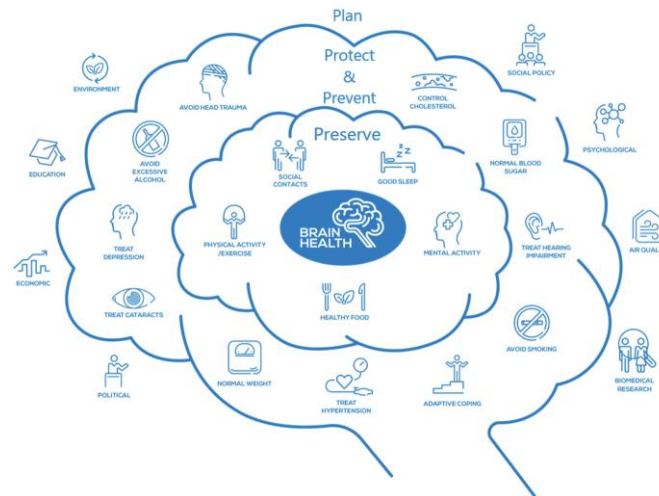


# Brain Capital Dashboard



# Innovation trajectories (1): pivot towards prevention

- ✓ EAN's Brain Health Strategy: call for a "person-centred" approach focused on promotion, prevention, treatment, care and rehabilitation
- ✓ Prevention:
  - Earlier and more precise diagnosis
  - More clinically effective interventions and monitoring
  - Better patient adherence, and reduced hospitalisation



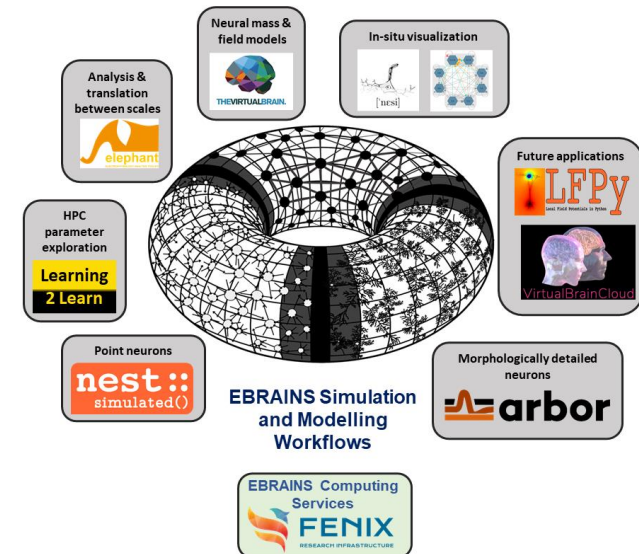
# Innovation trajectories (2): personalised management of mental disorders

- Focus on digital health technologies (DHTs) with a demonstrated added value for better management and care and improved experience of patients with mental disorders
- Outcomes to include a reusable digital platform to be used across numerous conditions and scenarios to collect, analyse and integrate diverse multimodal clinical and patient data
- Digital engagement tools for patients, caregivers and other relevant actors such as healthcare professionals, or social workers
- Analytical tools and methods to provide (near) real time feedback on the DHTs



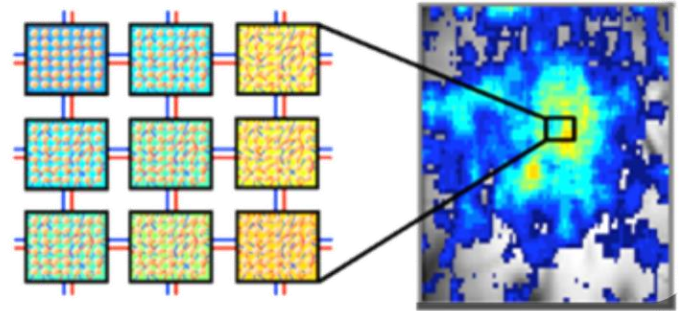
# Innovation trajectories (3): precision psychiatry

- Diagnostic systems based on deeper understanding of the biological and psychosocial basis of disorders
- Scientific work from molecular factors to social determinants to understand behaviour, based on understanding of mechanisms
- RDoC matrix: domains reflecting brain systems in which functioning is impaired and units of analysis



# Innovation trajectories (4): neuroelectronic medicine

- Significant advances in the management of certain psychiatric diseases have come from neuro-engineering approaches, including through refinement of deep brain stimulation
- Full potential of optogenetics for applications in neuropsychiatry also remains to be unlocked



# Data to be part of the European Health Data Space

- ✓ Projects need to promote better exchange of and access to different types of health data and data generated by DHT and other medical health technologies
- ✓ EHDS will build a common European approach for the use and re-use of health data that complements and builds on the GDPR
- ✓ 15 mandatory categories of data to be defined
- ✓ Data access bodies to be set up to provide access in a secure environment
- ✓ One request to be sufficient for all required data sets in the different countries
- ✓ **Pilot project launched** to prepare and test infrastructural support



# Supporting infrastructure

- ✓ Launch of the European Alliance of Medical Research Infrastructures to offer a one-stop-shop for industry and academia that supports their needs
- ✓ Filling important gaps, including by launching clinical trial networks



# EBRAINS as a dedicated Research Infrastructure for brain science

EBRAINS aims at **accelerating collaborative brain research** with a comprehensive package of data, tools and facilities



## Data and Knowledge

Online solutions to facilitate sharing of and access to research data, computational models and software



## Atlases

Navigate, characterise and analyse information on the basis of anatomical location



## Simulation

Solutions for brain researchers to conduct sustainable simulation studies and share their results



## Brain-Inspired Technologies

Understand and leverage the computational capabilities of spiking neural networks

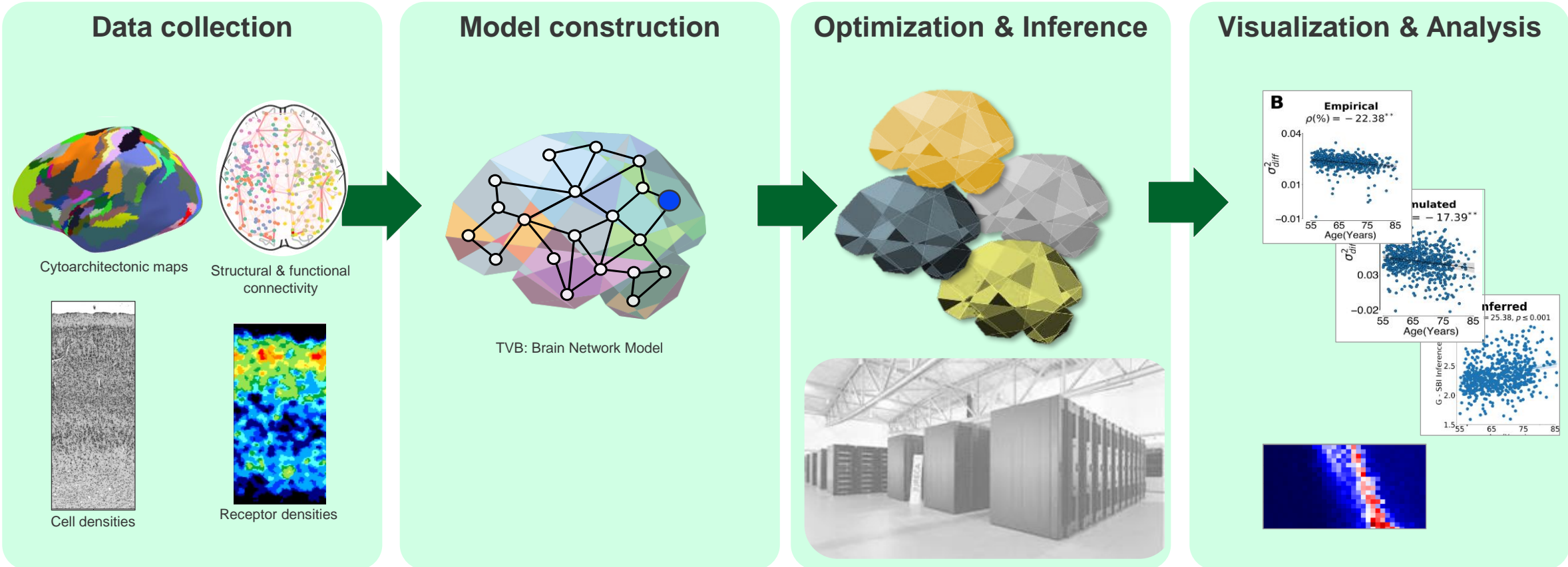


## Medical Data Analytics

The Medical Data Analytics service provides two unique EBRAINS platforms, covering key areas in clinical neuroscience research



# EBRAINS Knowledge Loop



*HBP/EBRAINS scientists aim to demonstrate that cutting edge datasets on structural variability can be used to explain functional variability of age effects with whole brain models.*

# New European initiative on mental health

- Announced in President von der Leyen's State of the Union address on 14 September 2022 and one of the key initiatives in the Commission's Work Programme for 2023

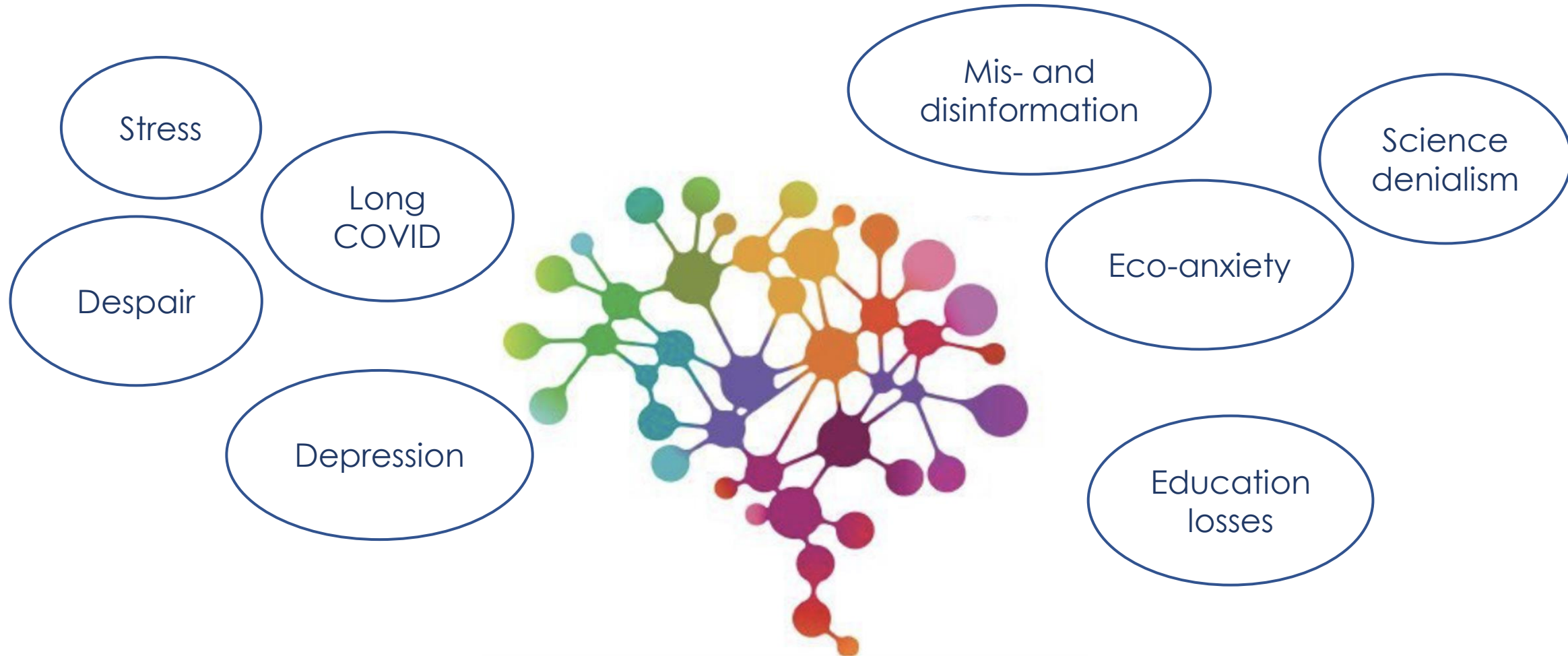


# Inputs to the new Initiative

- MEP Alliance's long-standing advocacy for EU-level action on mental health: emphasis on a comprehensive EU Mental Health Strategy
- Calls for the Strategy to incorporate robust governance, legislative initiatives and appropriate financing
- Meant to be inclusive, cross-sectoral and cross-generational
- European Parliament Report 'Mental Health in the Digital World of Work': scope for the Psychosocial Directive at Work
- Focus on mainstreaming, awareness raising and good practice exchange, putting in place national action plans, funding of actions, including for capacity building



# Back to brain capital: systemic alignment needed to tackle brain challenges







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# Thank you

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