

A decorative background at the top of the slide featuring a network diagram with red and black nodes connected by lines, set against a light red background.

The Impact of Social Sciences and Humanities on Society

14-16 October 2020, Ottawa

12.30 – 13.45pm

Interdisciplinary approaches

Thomas Alslev Christensen (Chair) – Novo Nordisk

Julia Moore – The Center for Implementation

Nushi Choudhury – National Research Council Canada

Jennifer Crosbie – The Hospital for Sick Children (Sick Kids)

20 September 2018

Interdisciplinary approaches in the Novo Nordisk Foundation's grant-giving

How to increase societal impact through collaborative
programmes of social sciences and humanities with other
scientific disciplines

Thomas Alslev Christensen

Senior Vice President

The Novo Nordisk Foundation

The Novo Nordisk Foundation

A story of how a research discovery at the University of Toronto through a promise to society and a unique interdisciplinary collaboration 100 years later created nearly half a million jobs yearly and one of the world's wealthiest foundation

It began with insulin

THE CLINICIAN
H.C. Hagedorn



THE INVESTOR
August Kongsted



THE SCIENTISTS
Marie Krogh and August Krogh



THE ENTREPRENEUR
Thorvald Pedersen



THE ENTREPRENEUR
Harald Pedersen



The promise of August Krogh

Our vision

The Novo Nordisk Foundation's ***vision*** is to contribute significantly to research and development that improves the lives of people and the sustainability of society.

Our mission

- › To enable Novo Nordisk A/S and Novozymes A/S to create world-class business results and contribute to growth
- › To develop knowledge-based environments in which innovative and talented people can carry out research of the highest quality and translate discoveries into new treatments and solutions
- › To inspire and enable children and young people to learn

An independent Danish foundation with corporate interests

novo nordisk fonden

Dividends

100% SHARES

novo holdings

Investors in life science

Dividends

28.1% SHARES*
76.1% VOTES



25.5% SHARES*
72.0% VOTES



Grants

Grants awarded in 2019:
\$0.8 billion (€0.7 billion)

- Biomedical and health science research and applications
- Patient-centred and research based care
- Life science research and industrial applications promoting sustainability
- Natural and technical science research and interdisciplinarity
- Innovation
- Education & outreach
- Social, Humanitarian and Development aid

Investments in 130 companies

Investment result in 2019:
\$3.9 billion (€3.5 billion)

In 2019, the **foundation** had a net **worth** of \$60 billion (€53 billion), making it the largest financial endowment of any **foundation** in Denmark and one of the largest endowments in the world.

**Our impact framework:
9 principles for how we measure
the contribution to society of RDI
policies**

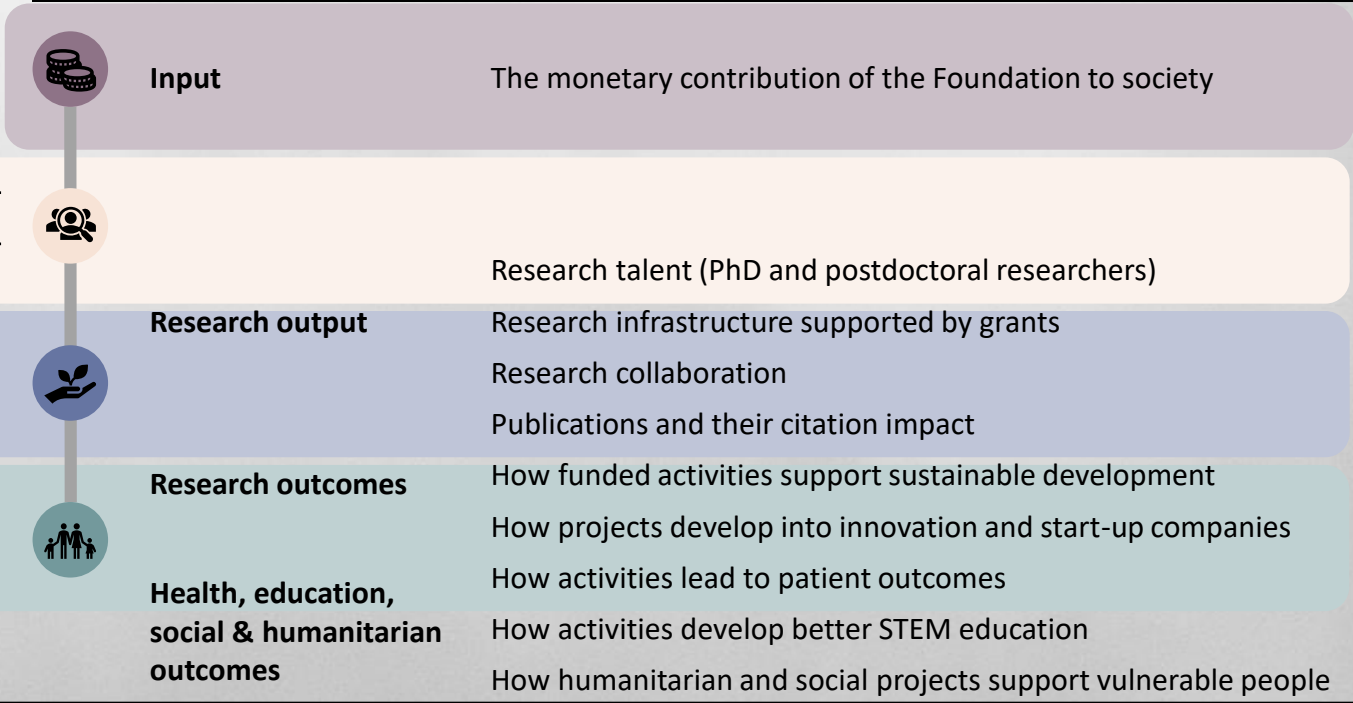
The nine principles

- 1: Fostering the development of research talent
- 2: Creating research infrastructure
- 3: Supporting research collaboration
- 4: Promoting excellent research
- 5: Developing innovative products and solutions
- 6: Creating jobs and growth
- 7: Developing health care and new medicine
- 8: Developing world-class education
- 9: Empowering vulnerable groups in society

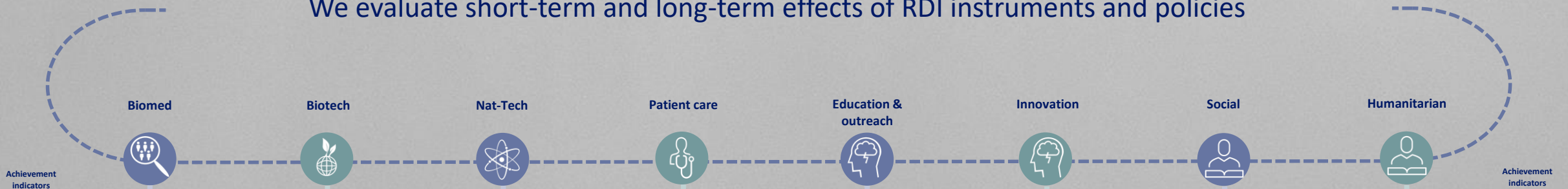
Areas of impact assessment

The logic model

Areas for evaluation of RDI grant instruments



We evaluate short-term and long-term effects of RDI instruments and policies



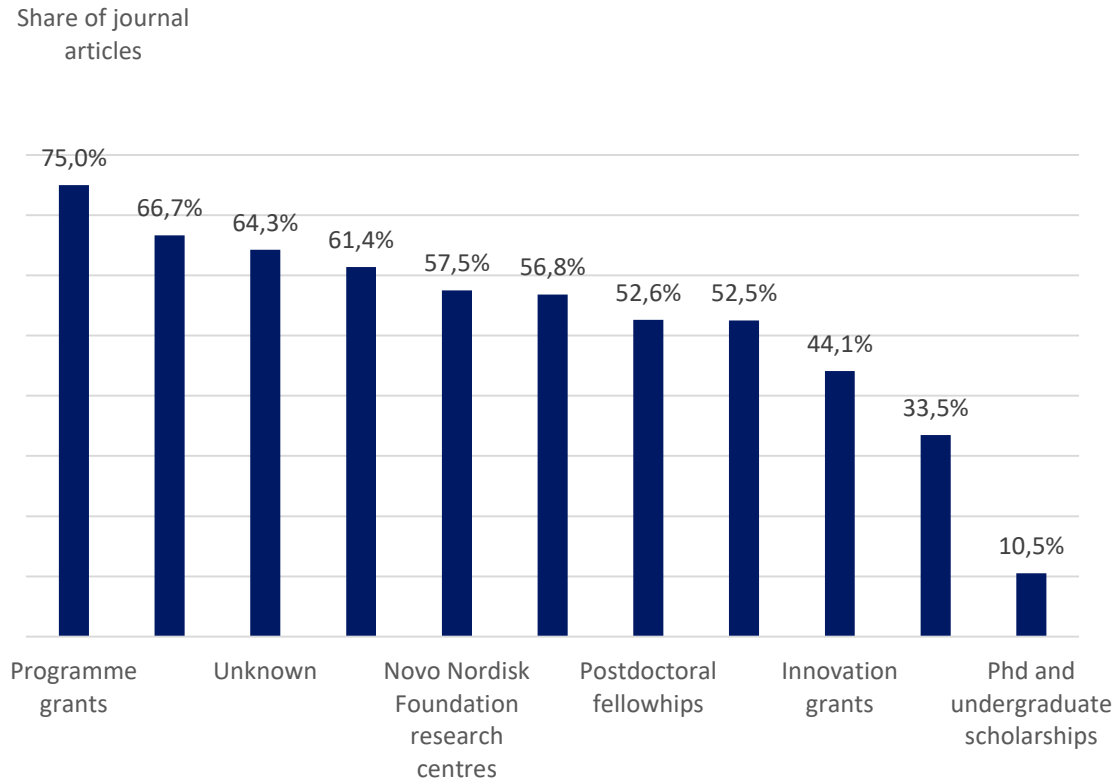
How to increase societal impact through collaborative programmes of SSH with other scientific disciplines

Interdisciplinarity in grant-giving

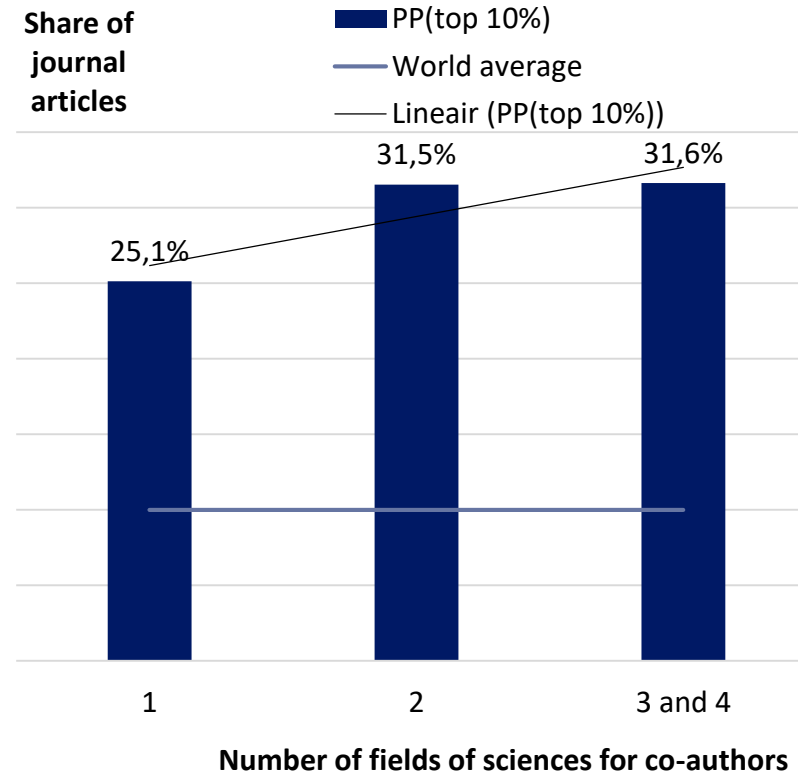
- The challenge research centre programme
- Interdisciplinary Synergy Programme
- The research programme on socioeconomic impact of research
- Copenhagen Bioscience Cluster of research centres
- Research infrastructure programme



Share of articles with interdisciplinary co-authorship across grant types

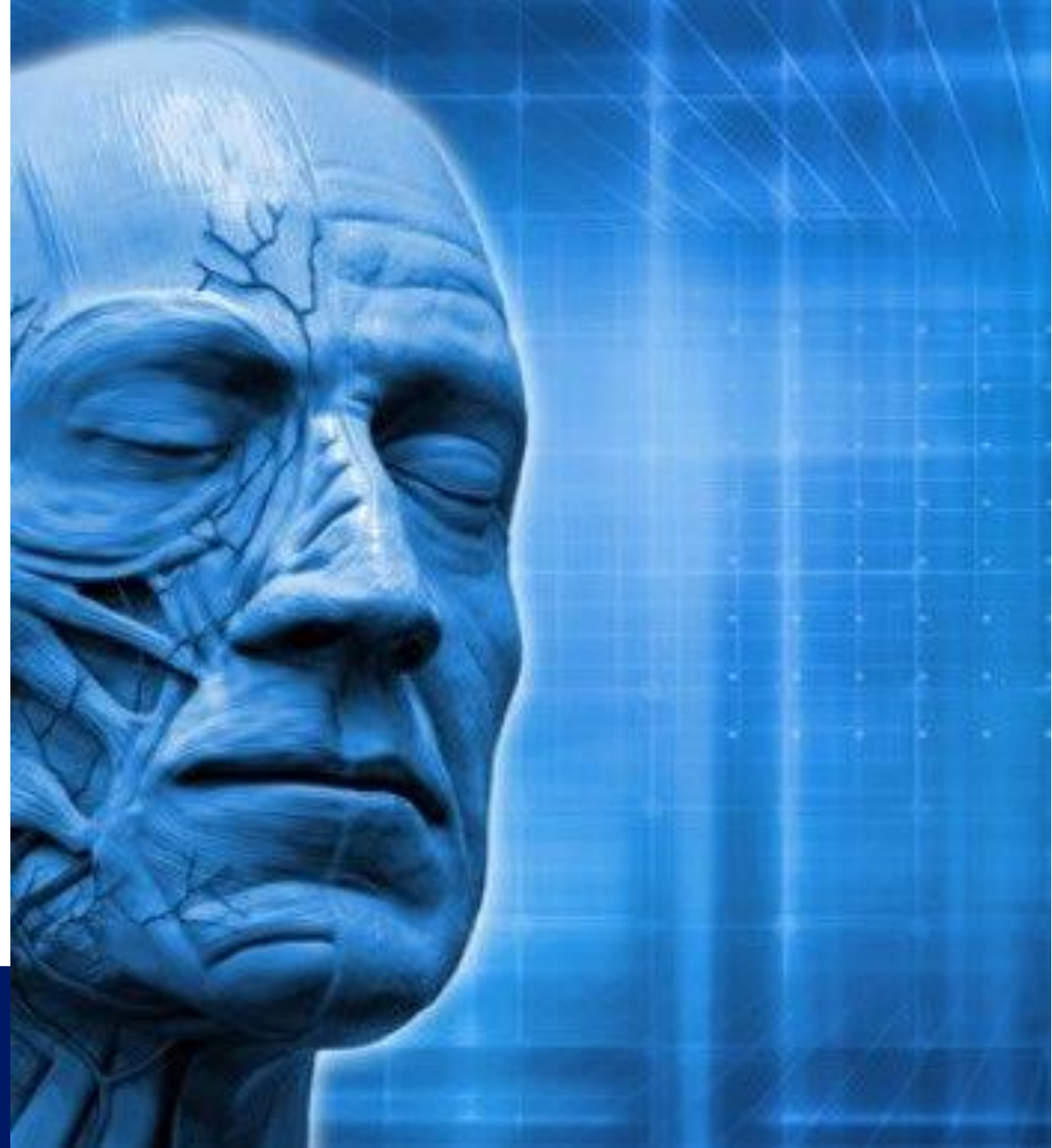
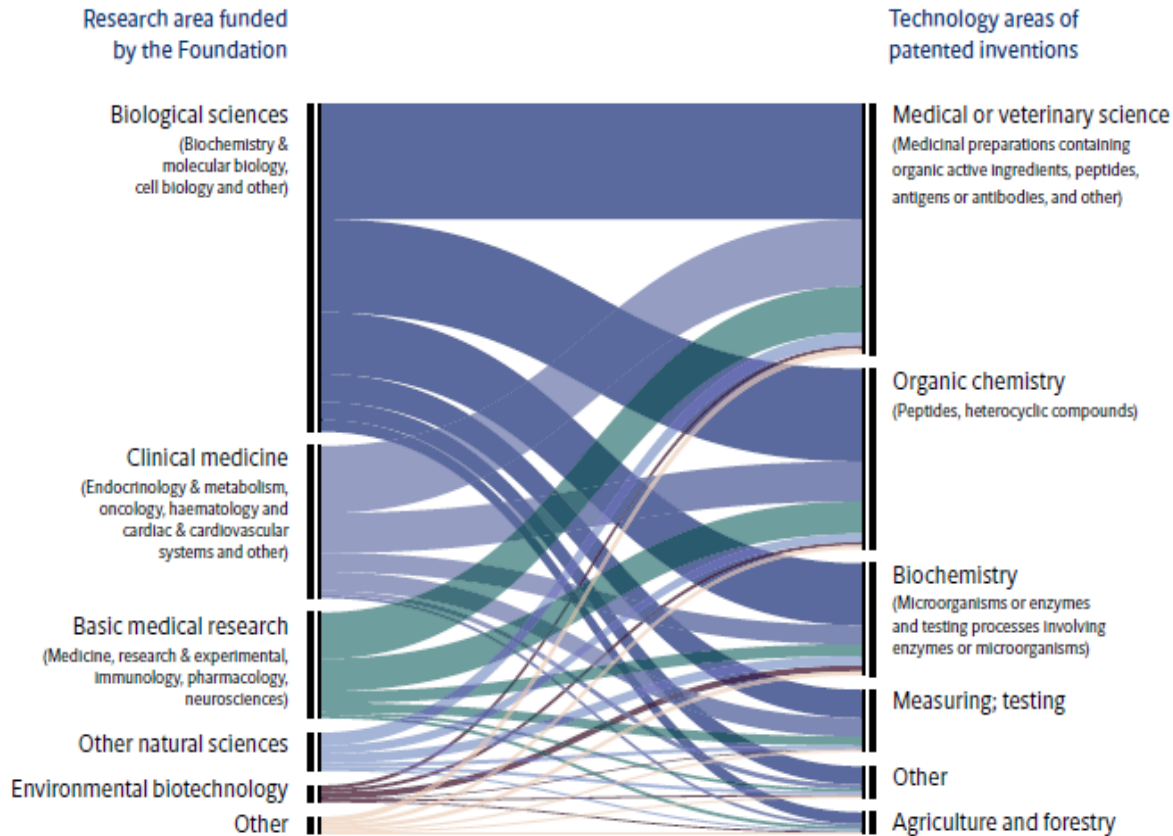


PP(top 10%) - number of fields of sciences for co-authors

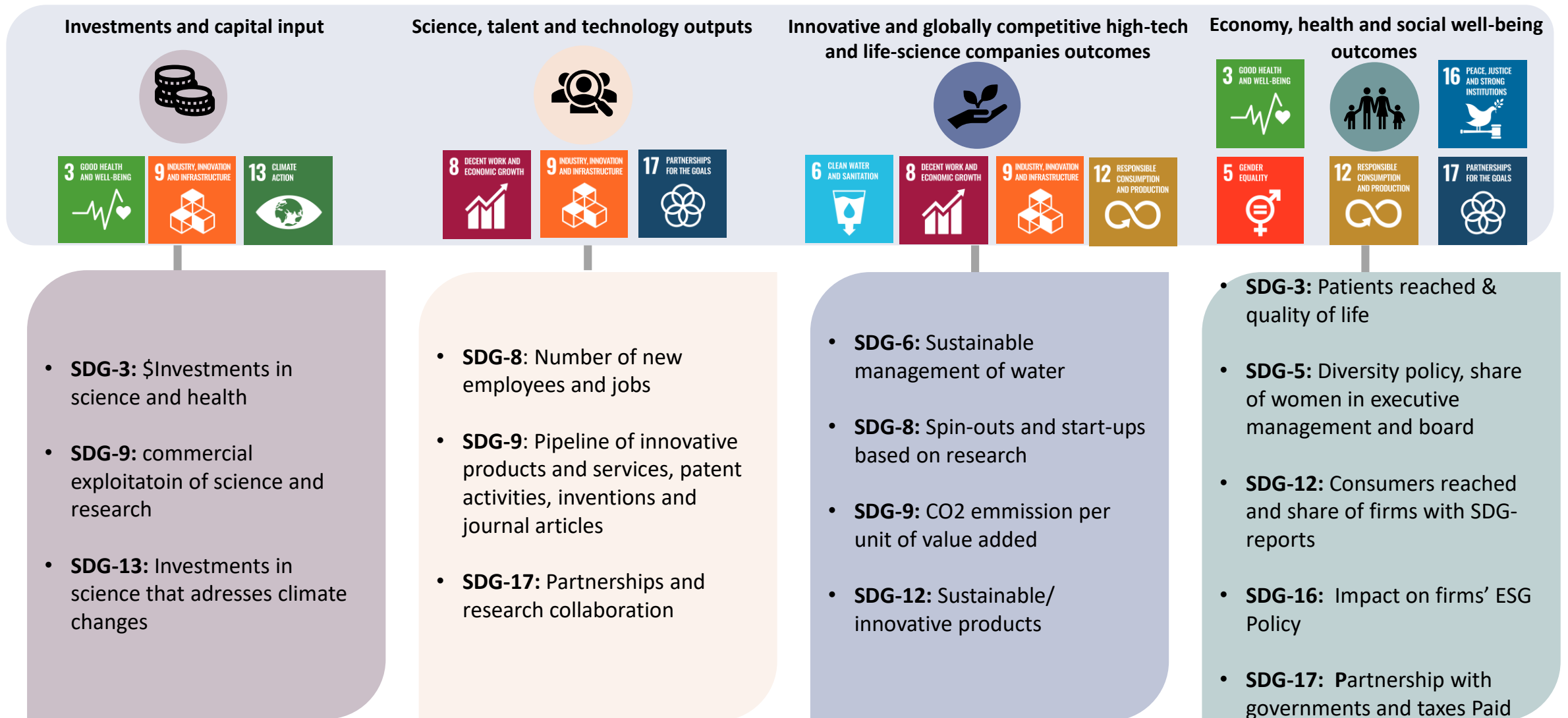


We talked about interdisciplinary co-authorship in journal articles when there are co-authors from two or more fields of sciences

Indication of interdisciplinary research



Interdisciplinary outcomes lead to sustainability and innovative solutions which addresses the SDGs



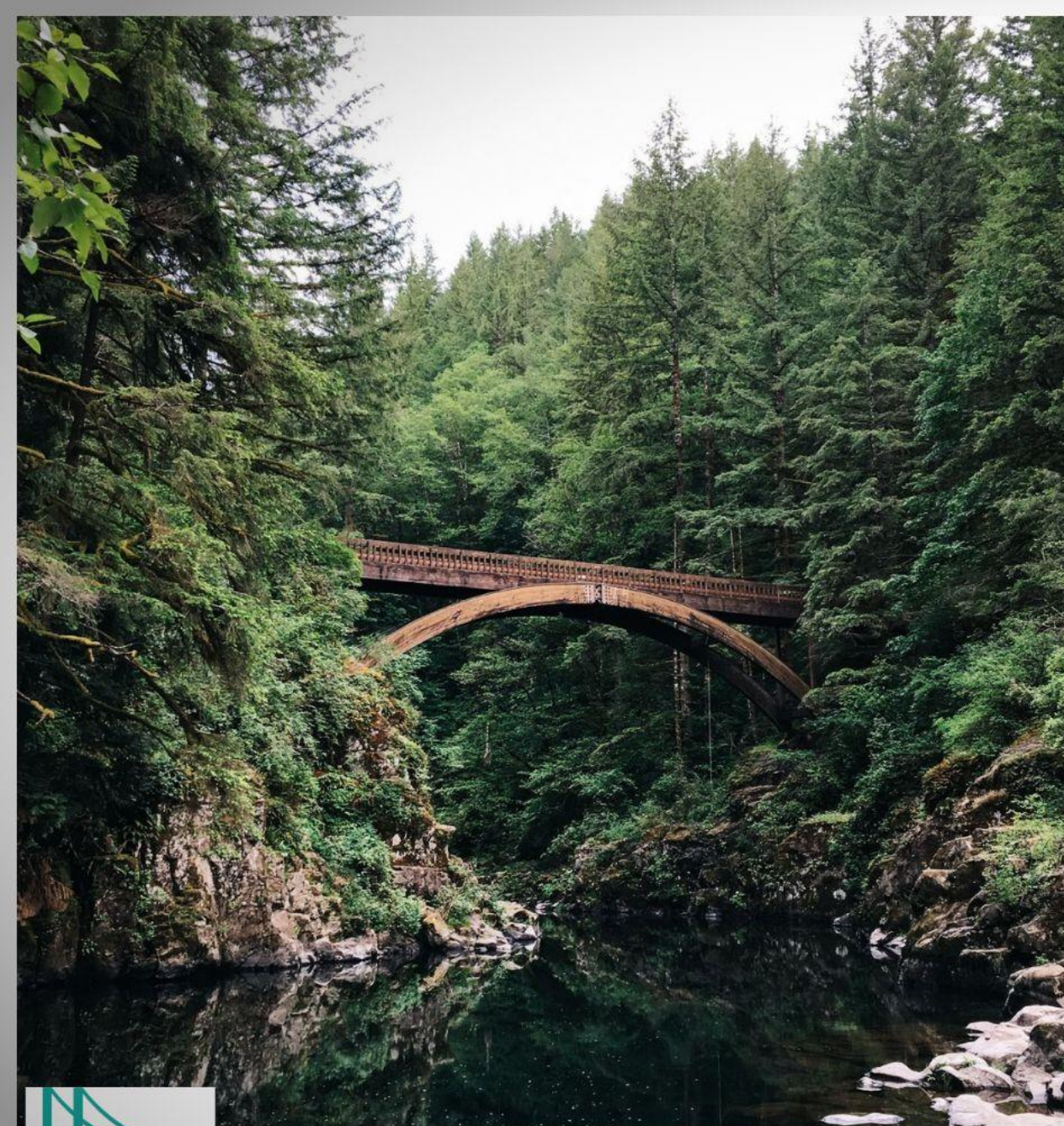
How implementation science can strengthen change initiatives in the social sciences and humanities

Dr. Julia E. Moore, The Center for Implementation

October 15, 2020

17 years for
evidence to be
used in practice

Narrow the gap



Use strategy. Not chance.





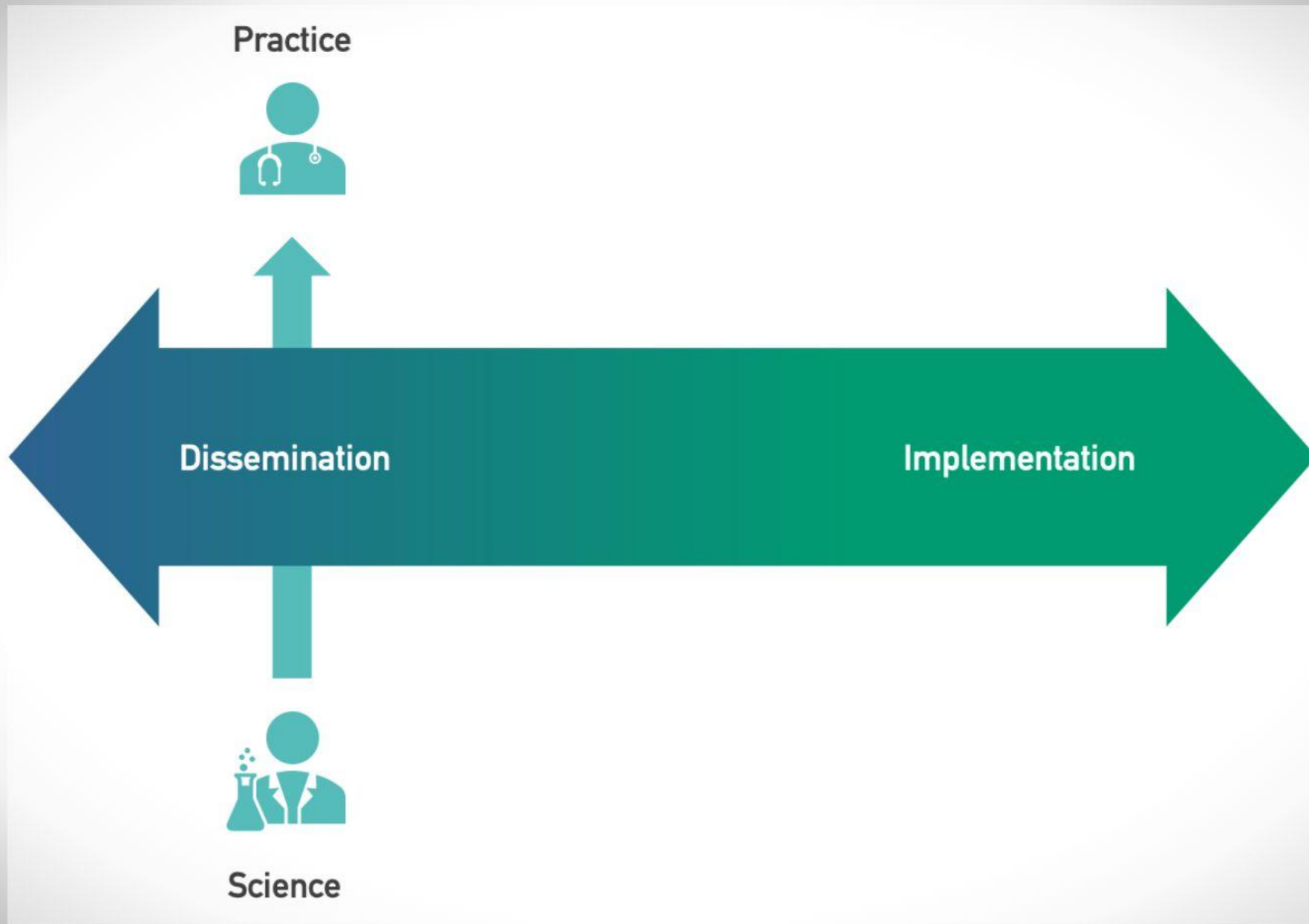


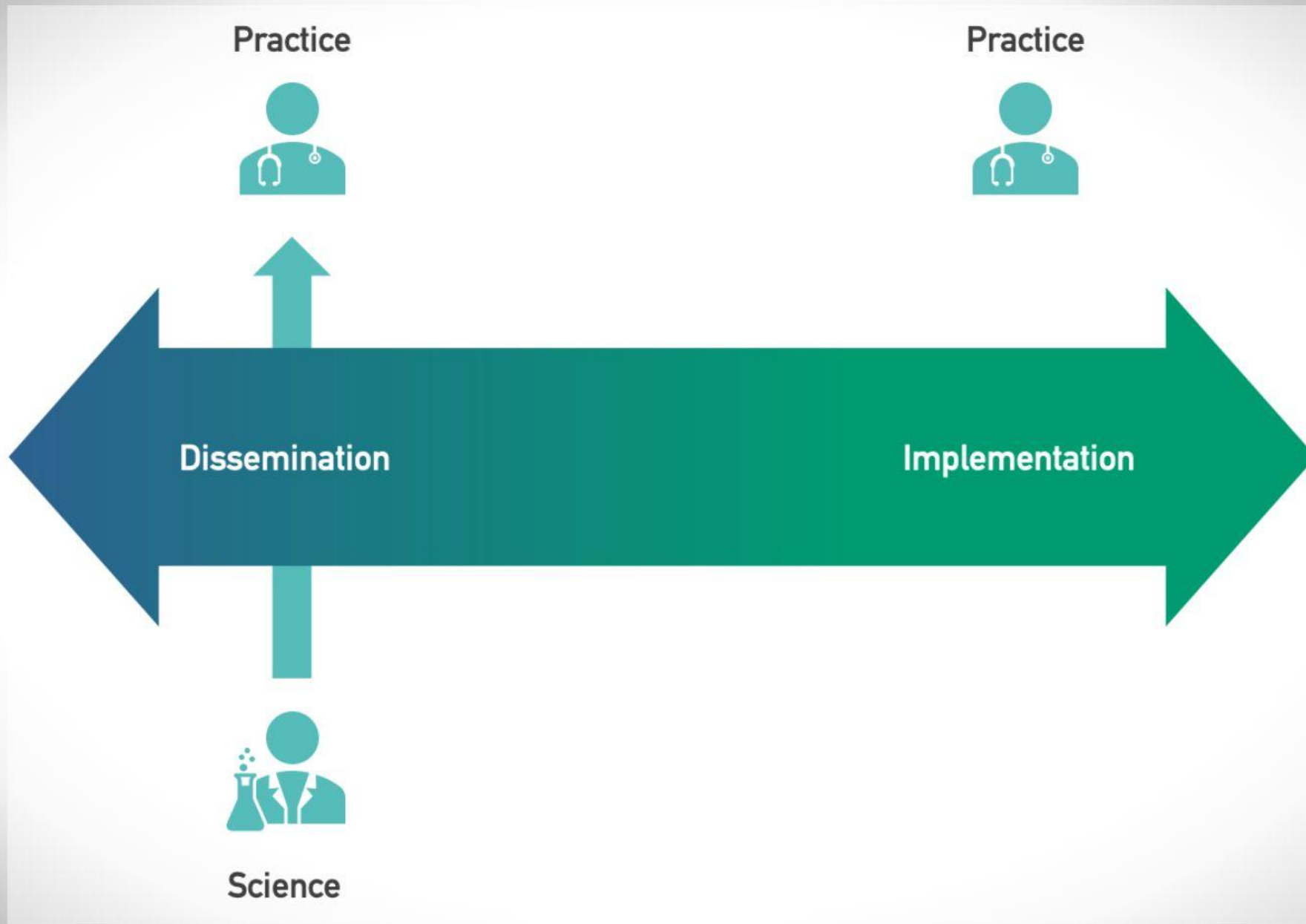
Practice

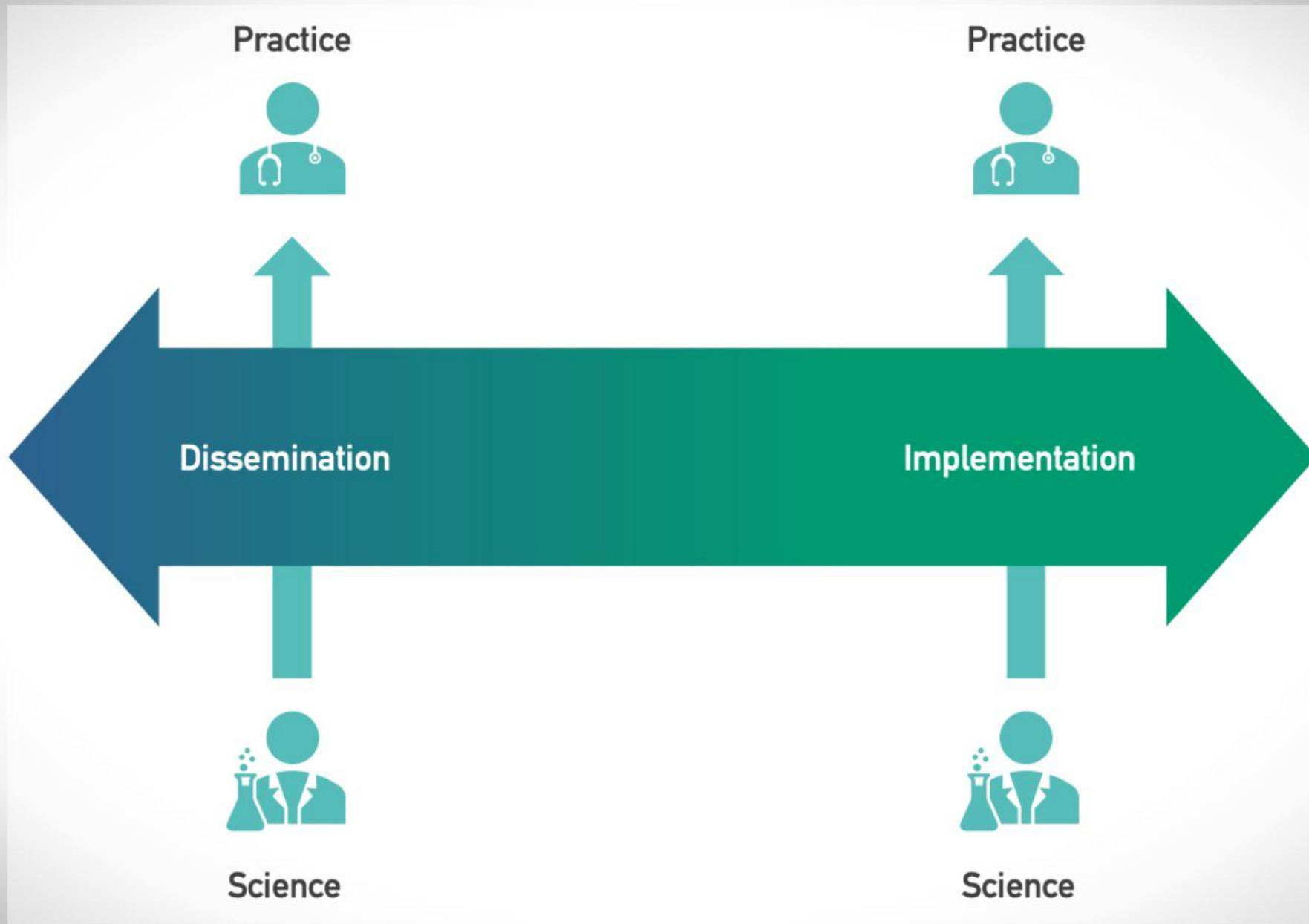


Dissemination

Implementation







This is relevant to your work if...

- You want to create individual, organizational, or systems change
- You design or test any change efforts or interventions
- You fund research to create change
- You support change efforts
- You would like to see sustainable and scalable changes

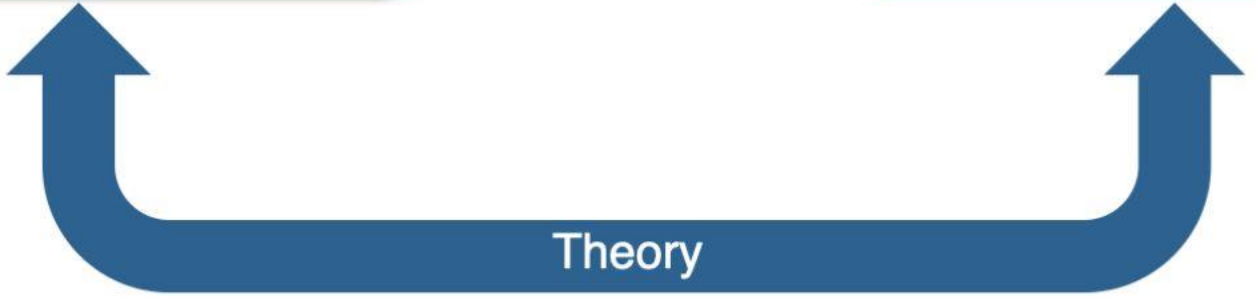
What are you implementing?

Evidence

WHAT
E.g., program, practice

Evidence

HOW
Change Strategies



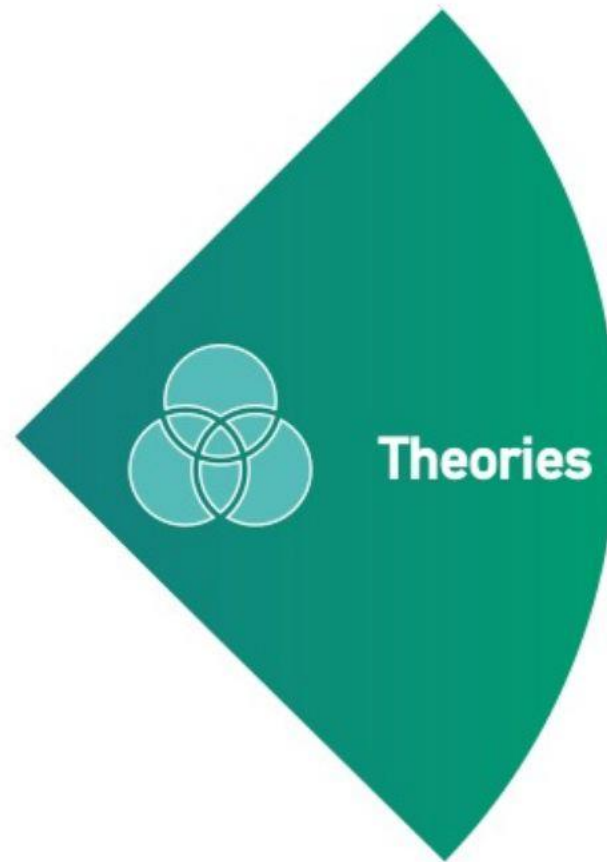


What is the foundation of implementation science?

Process models

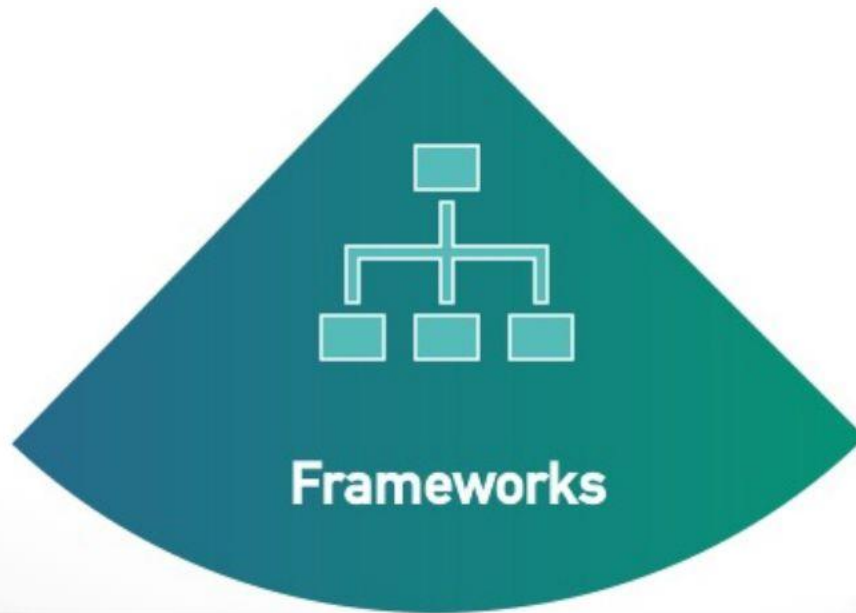


Nilsen P. Making sense of implementation theories, models and frameworks. *Implement Sci*, 2015. 10: p. 53.



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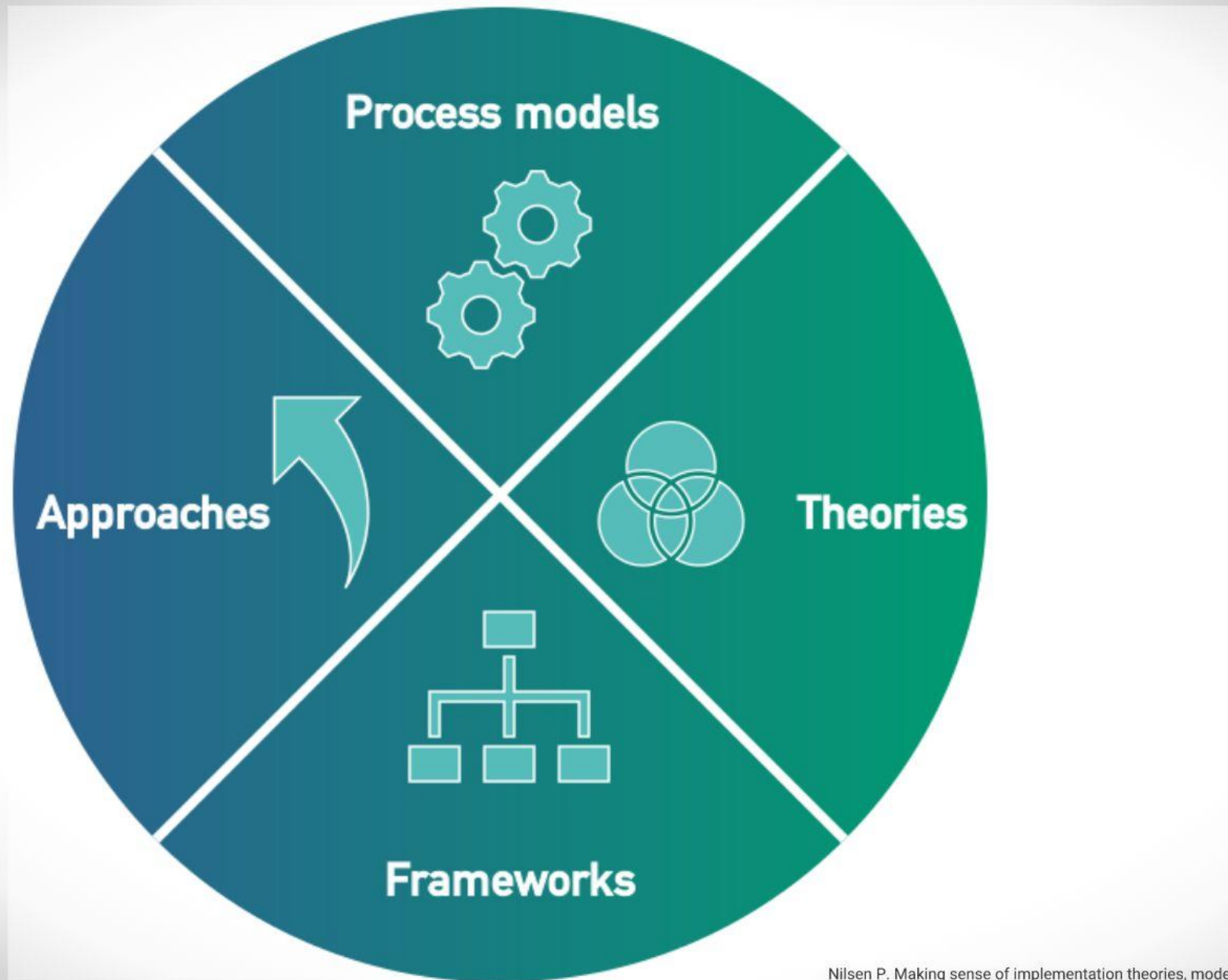
Slides developed by the Center for Implementation; follow us on Twitter at @TCI_ca



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- Subscribe to our monthly *Implementation in Action* Bulletin

<https://thecenterforimplementation.com/bulletin>

- Email us

julia.moore@thecenterforimplementation.com



Twitter
@TCI_ca



LinkedIn

The Center for Implementation
Julia Moore

Want to learn more or share with colleagues?



- Inspiring Change 2.0
Free online mini-course

Open Discussion

- How could implementation science and practice relate to your work?
- Questions, thoughts, reflections?



NATIONAL RESEARCH COUNCIL OF CANADA

Interdisciplinary Research at the NRC

Nushi Choudhury

Medical Devices, Simulation and Digital Health

AESIS October 2020

WHO WE ARE

3,950

**SCIENTISTS, ENGINEERS,
TECHNICIANS, AND
OTHER SPECIALISTS**

including 255 SME industrial technology
advisors

179

BUILDINGS MANAGED

(equivalent to 354 NHL hockey
rinks) **in 22 locations**

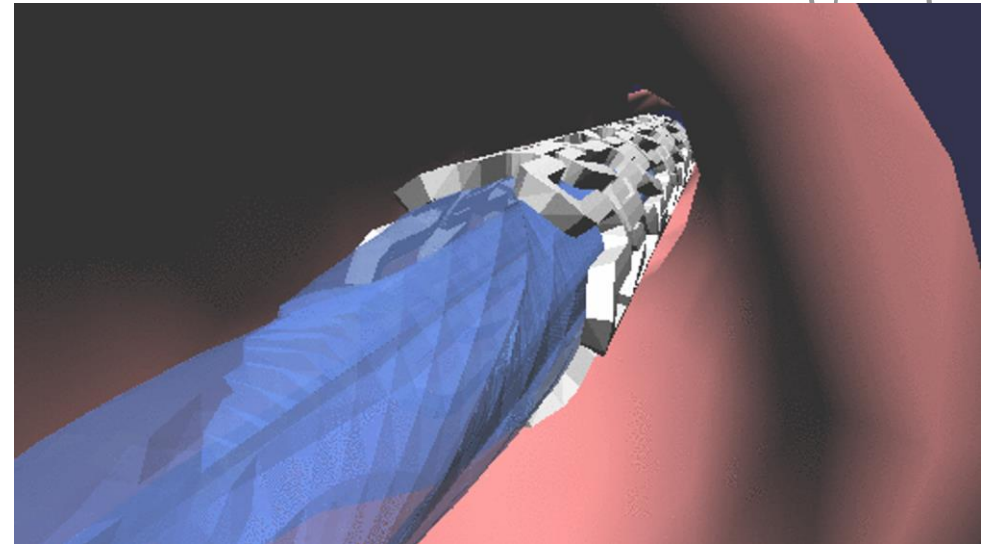
\$1.2B

ANNUAL EXPENDITURE

including an IRAP contribution
budget of \$216M for SMEs

Simulation and Digital Health (S&DH)

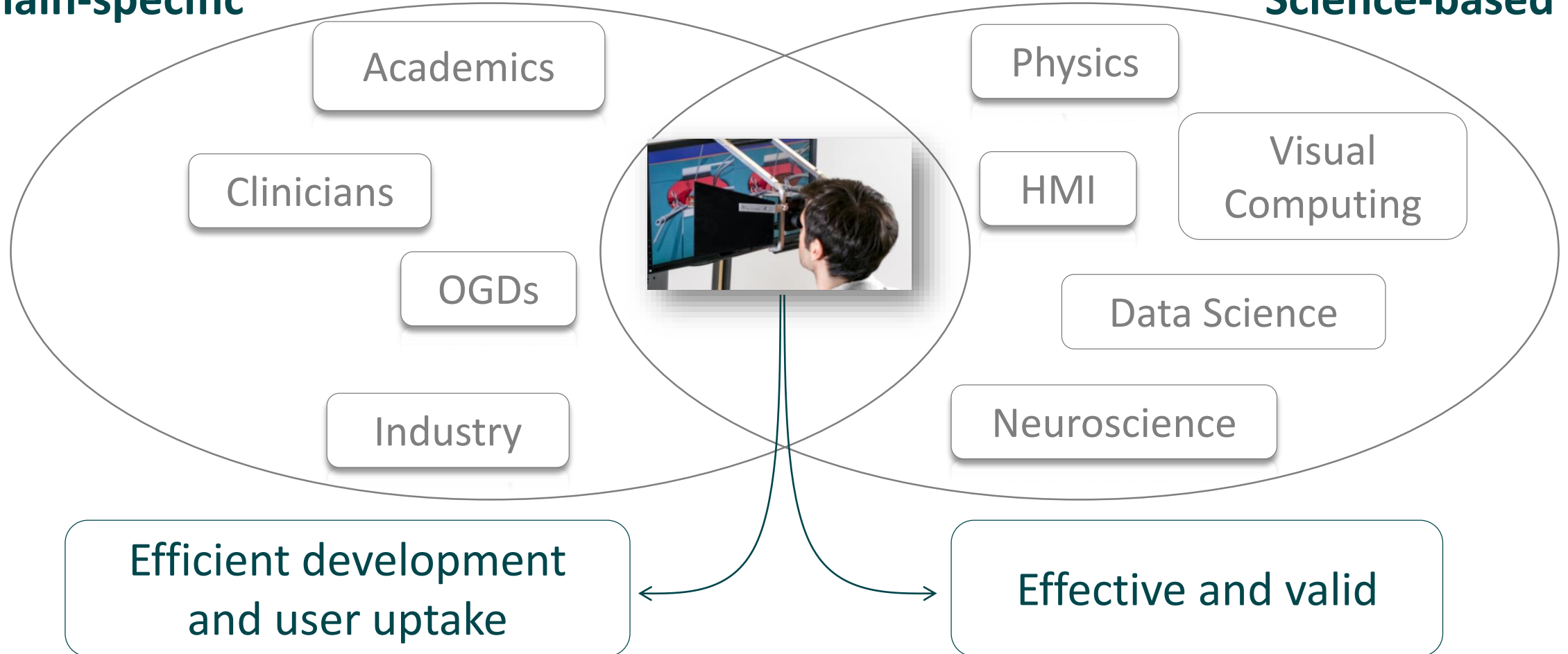
- *Mission*
- Relying on biomedical engineering expertise, core software platforms and front line interactions with clients/clinicians, we deliver science-based research results and innovations for societal and economic benefits of Canada



Our Research & Application Scope

Domain-specific

Science-based



A surgeon in light blue scrubs is using a microscope. The microscope's eyepieces are on the surgeon's face, and the objective lenses are positioned over a surgical field. A monitor to the right displays a 3D simulation of the surgical field, showing a brain with various structures and surgical instruments. The surgeon is holding a surgical instrument with both hands, which is connected to a haptic feedback system. The background is a blue-tinted surgical room.

NeuroTouch
Surgical Simulation
2008-2016

CLINICIAN
DRIVEN
RESEARCH

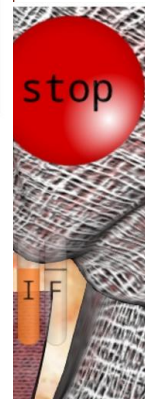
IDEA

TO MARKET

NEUROVR



World Neurosurgery
Volume 80, Issue 5, November 2013, Pages e9-e19



Education & Training

Fundamentals of Neurosurgery: Virtual Reality Tasks for Training and Evaluation of Technical Skills

Nusr: Int J CARS (2014) 9:1-9
Maes: DOI 10.1007/s11548-013-0905-8

ORIGINAL ARTICLE

Assessing performance in brain tumor resection using a novel virtual reality simulator

Nicholas Gélinas-Phaneuf · Nusrat Choudhury · Ahmed R. Al-Habib · Anne Cabral · Etienne Nadeau · Vincent Mora · Valerie Pazos · Patricia Debergue · Robert DiRaddo · Rolando F. Del Maestro



novo nordisk for n



CAE
Healthcare

User-Centric R&D Model

Early-Adopter Group: 30+ clinicians

- Model that mitigates risk by assuring relevance, increases accountability and structures collaboration
- Early TRL: Develop foundational technology internally (2-4 years).
- Intermediate TRL: Early-adopter group of thought leaders to support R&D, with regular delivery of technology iterations (5-10 years).
- Later TRL: Engage a commercial entity for transfer to market (2-3 years).



novo nordisk fonden

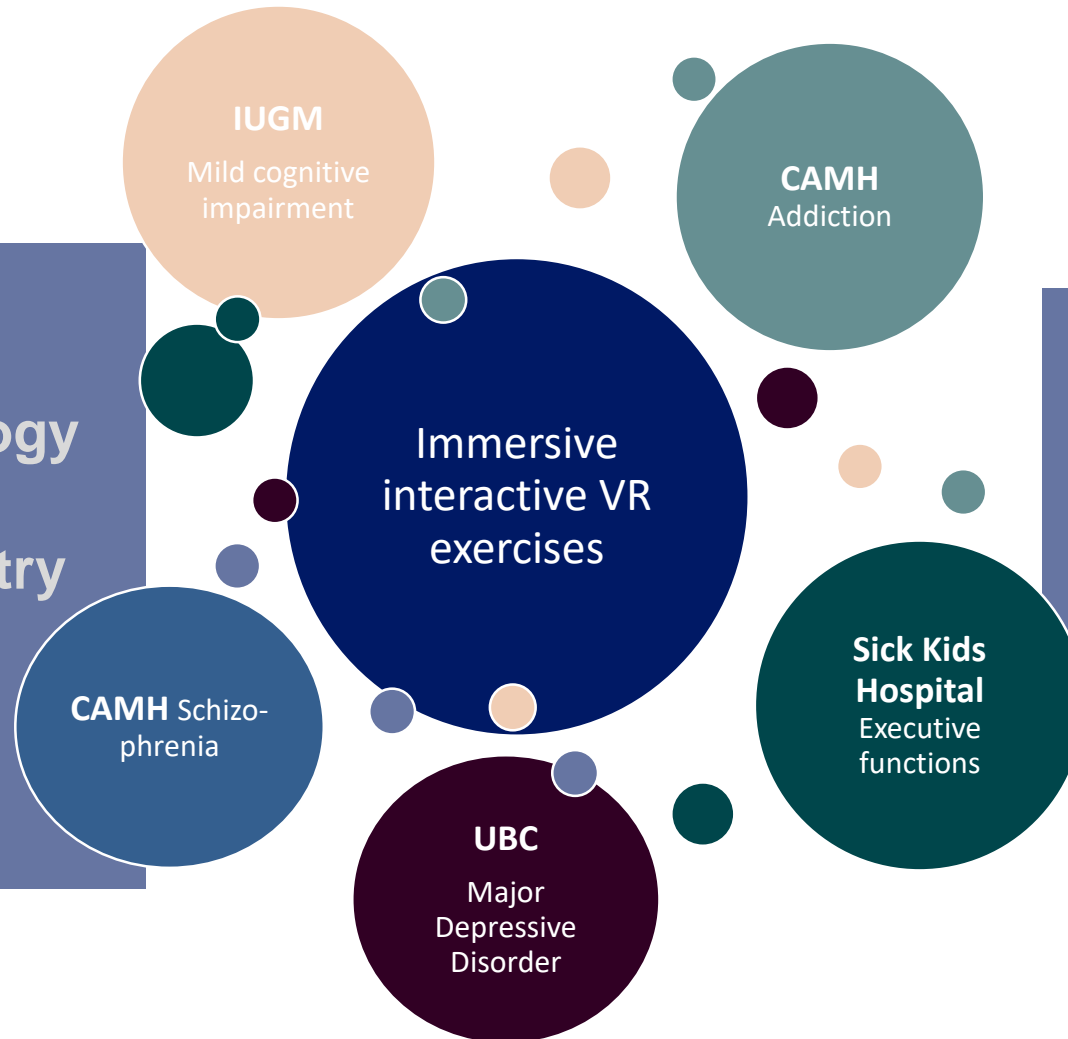


**bWell
Cognitive Care
2017-present**



Cognitive Care Network

- In-house expertise in biomedical software development, technology and HMI
- Experience with industry
- R&D Capabilities
- Large ecosystem
- Federal Programs



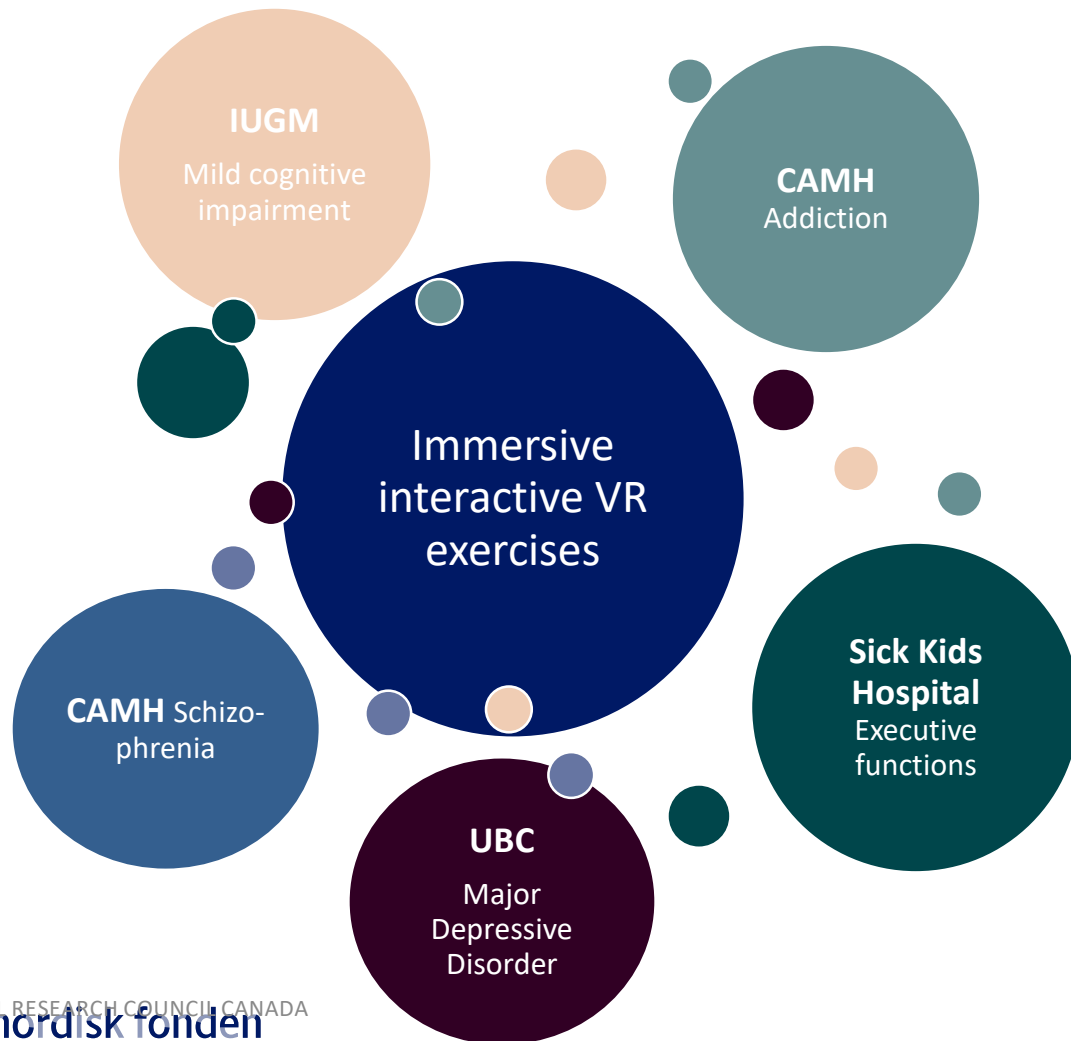
- Domain-specific expertise
- Innovative research
- Onsite trials
- Unique cohorts
- Centralized data

Interdisciplinary research and collaboration

Lessons learned along the way

1. Human-centered design approach can structure interdisciplinary collaboration
2. Finding collaborators is not always easy
3. Physical co-location can build bonds, promote speaking the same language
4. Engage stakeholders: implement feedback, demonstrations, conferences, workshops
5. Train outside of comfort zone
6. Flexible research method is a must
7. Find the right grants, common goals, co-author publications

Cognitive Care Network



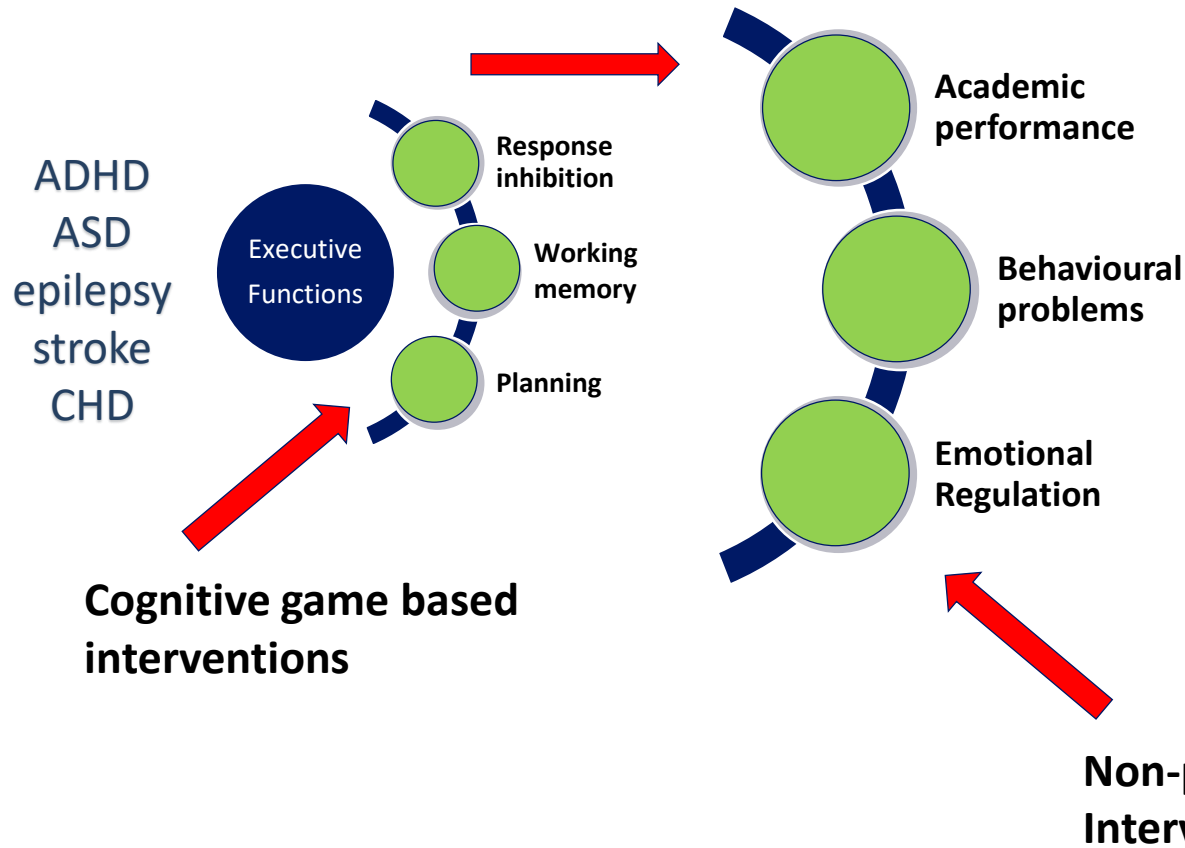
Sick Kids Hospital
Executive functions
Jennifer Crosbie
(started 06/2019)



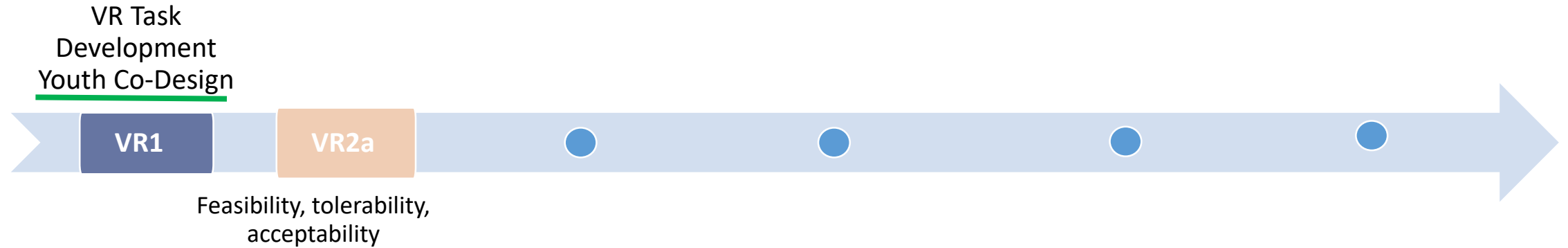
Developing Novel Virtual Reality Assessment and Intervention Tools to Improve Mental Health Outcomes in Youth

Jennifer Crosbie, Psychologist, Clinician Scientist, Neurosciences and Mental Health

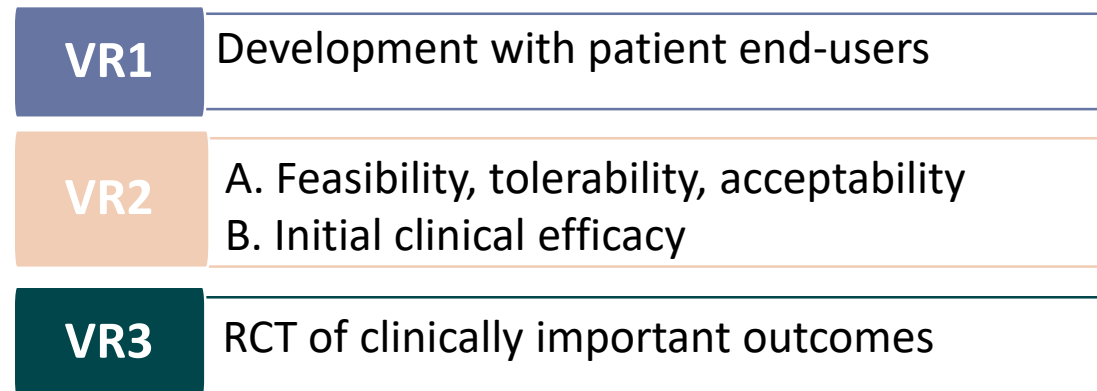
The Story



- Immersive
 - Multi-sensory
 - Engaging/ demanding
 - Include multiple/relevant EFs
-
- An illustration of a person sitting at a desk, looking thoughtful, with several thought bubbles around their head containing the words: "What if...", "Can't", "How?", "No", "Bad...", and "Don't".



Three Phases for VR Therapy Development and Validation



The Measure

VR Task
Development
Youth Co-Design

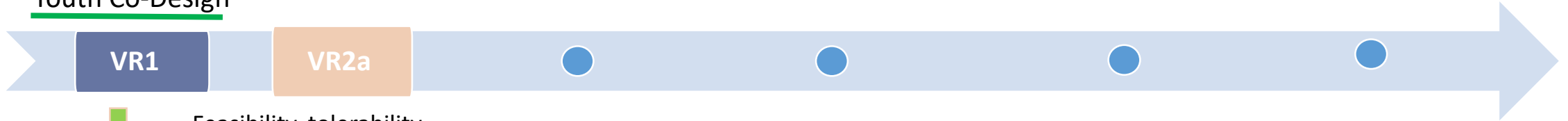


Feasibility, tolerability,
acceptability



The Measure

VR Task
Development
Youth Co-Design



Feasibility, tolerability,
acceptability

National Research Council (NRC)



Response Inhibition



Spatial Working Memory



Delay Aversion

Why is Youth Engagement so Important for Digital Interventions?

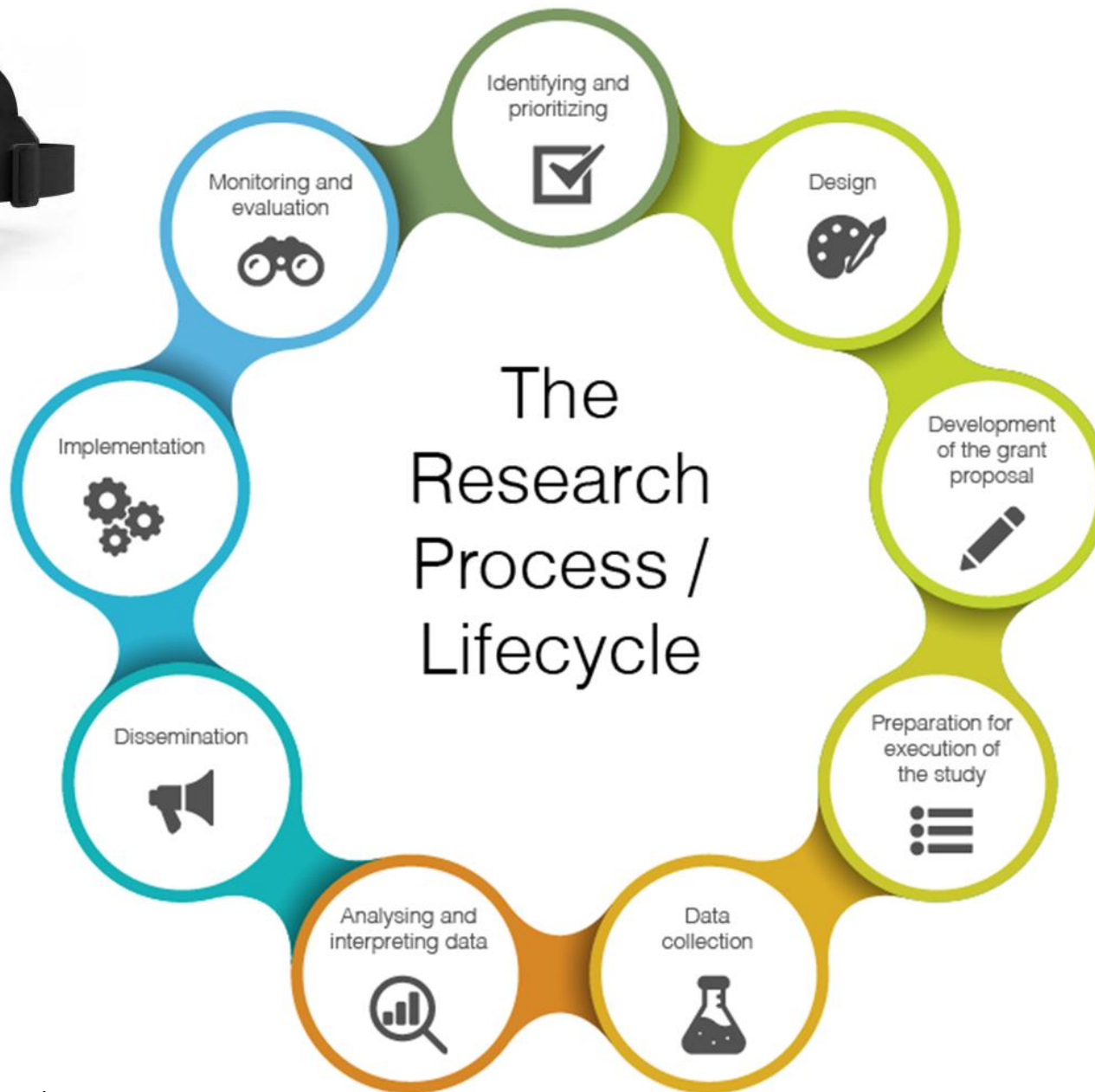
- Generational divide in tech-savviness
- Current interventions are less attractive and interactive than commercial entertainment products
- Mental health digital interventions vs. traditional pharmacotherapy model
- Engagement is a key indicator of outcome

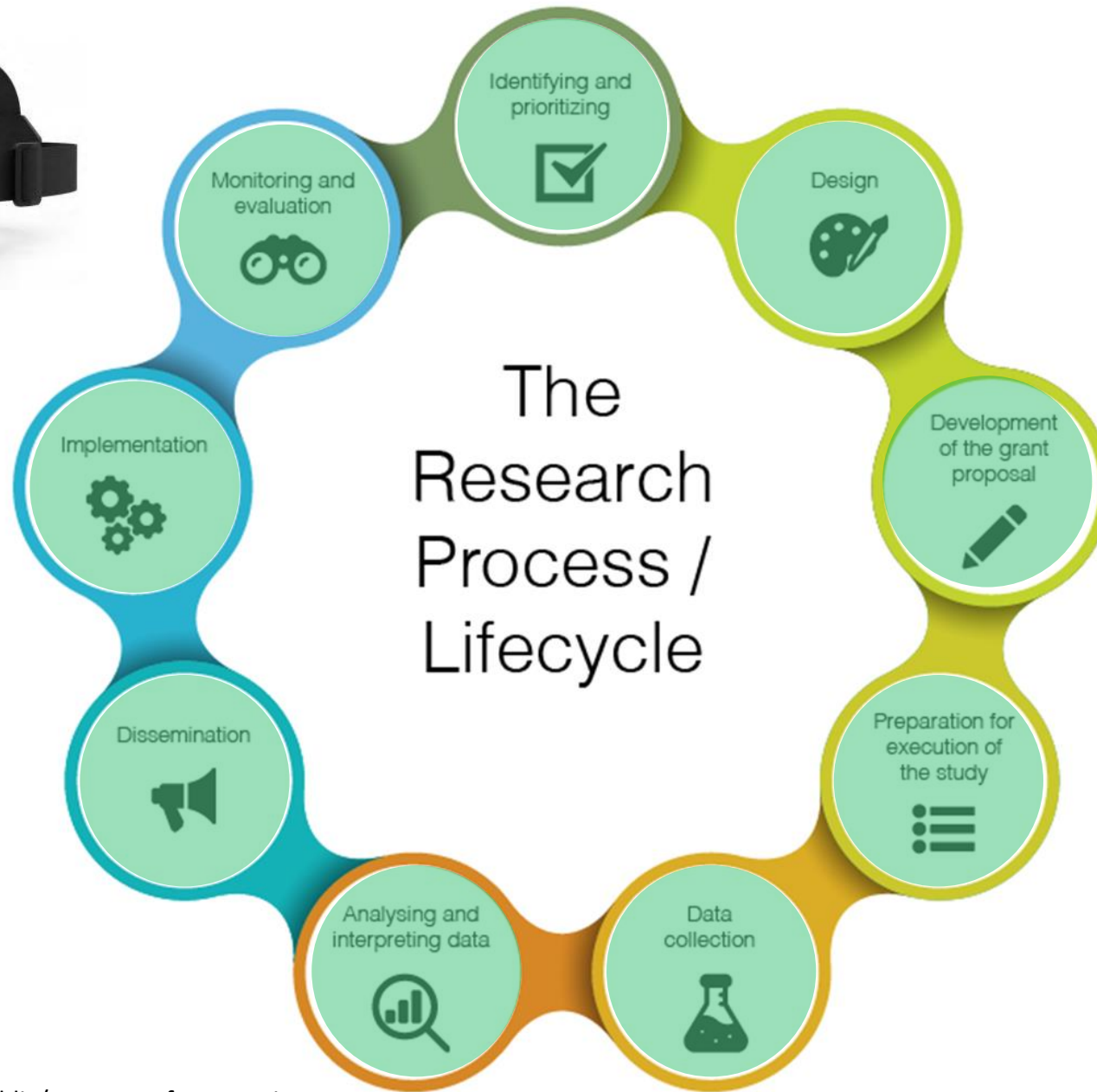


Best Practices for Participatory Research

- Recruit youth early in the design process
- Increase relevance and effectiveness of interventions
- Promote ideation through team collaboration
- Prototyping phase: Obtaining feedback for prototypes
- Continuous feedback and further development

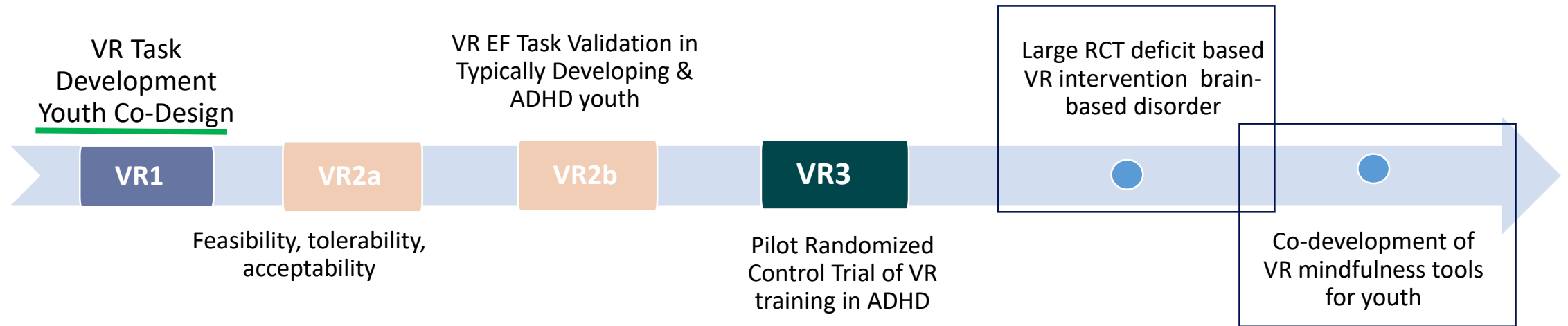






Co-designing interventions with youth not for youth

The Outcome



- ✓ INNOVATION — Development of novel technology based intervention for MH in youth
- ✓ COLLABORATION – NRC technology partnership
- ✓ PATIENT ORIENTED – Youth Co-designed interventions