Knowledge Translation practice to enhance motorcycle research impact

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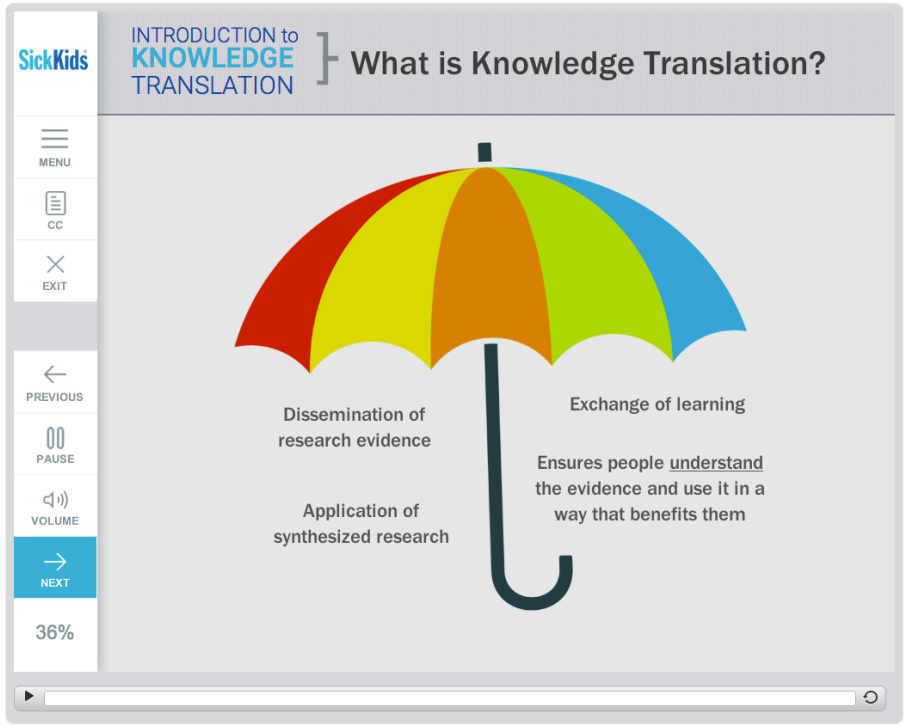
This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement 861570.

What is KT?



The 5 aspects of KT

- Knowledge Translation, exchange, mobilization, brokering
- Knowledge management
- Implementation, Implementation science
- Tech transfer & commercialization
- Translation research, translational science

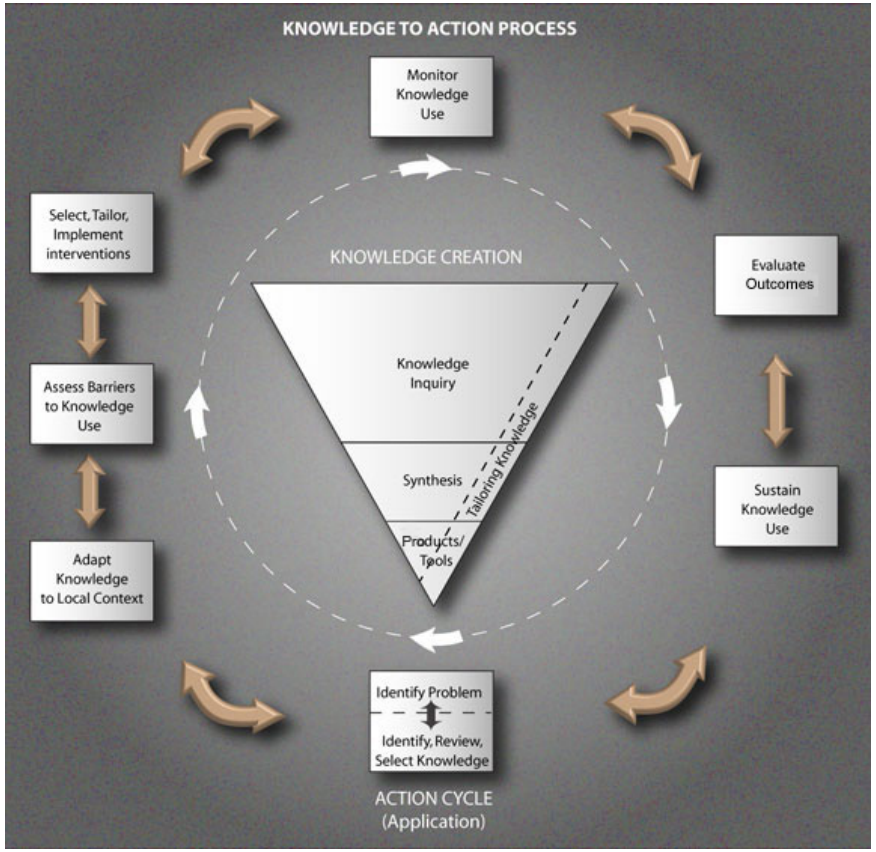
Source: SickKids Learning Institute. (eLearning Module) *Introduction to Knowledge Translation*

What is KT?

- Dynamic
- Iterative
- Synthesis
- Dissemination
- Exchange
- Processes
- Products & tools
- Ethically sound application of knowledge to benefit society

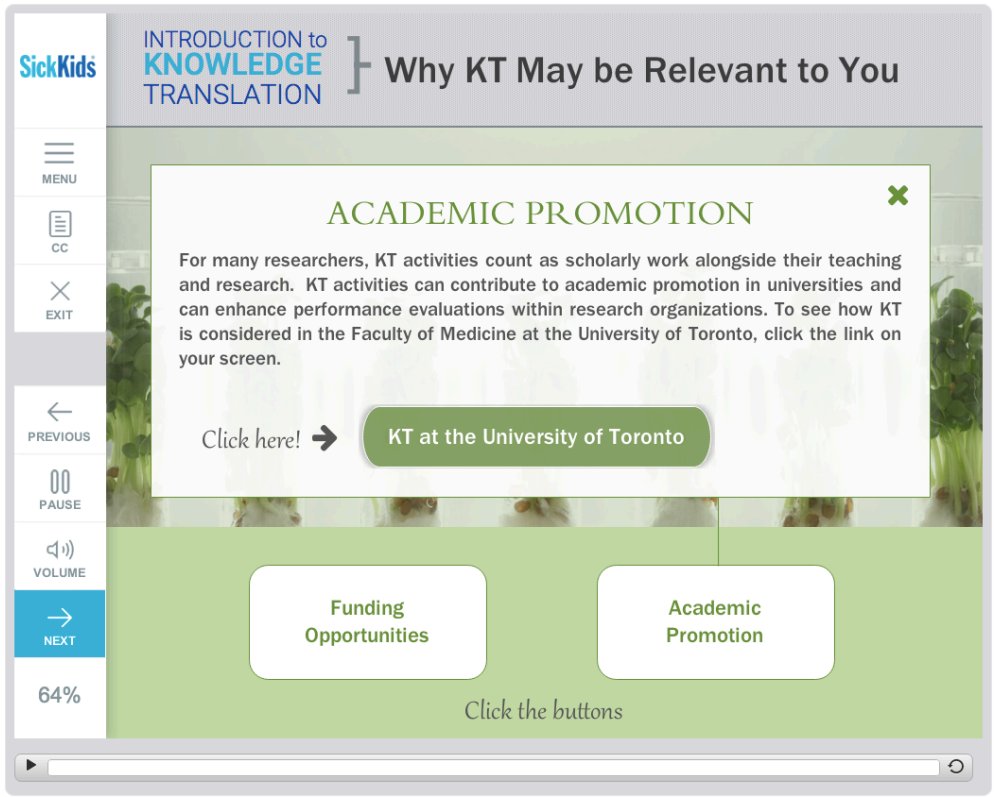
Source: site

Government of Canada / Gouvernement du Canada
Canadian Institutes of Health Research



Knowledge-to-action model for research dissemination (Graham, 2006)

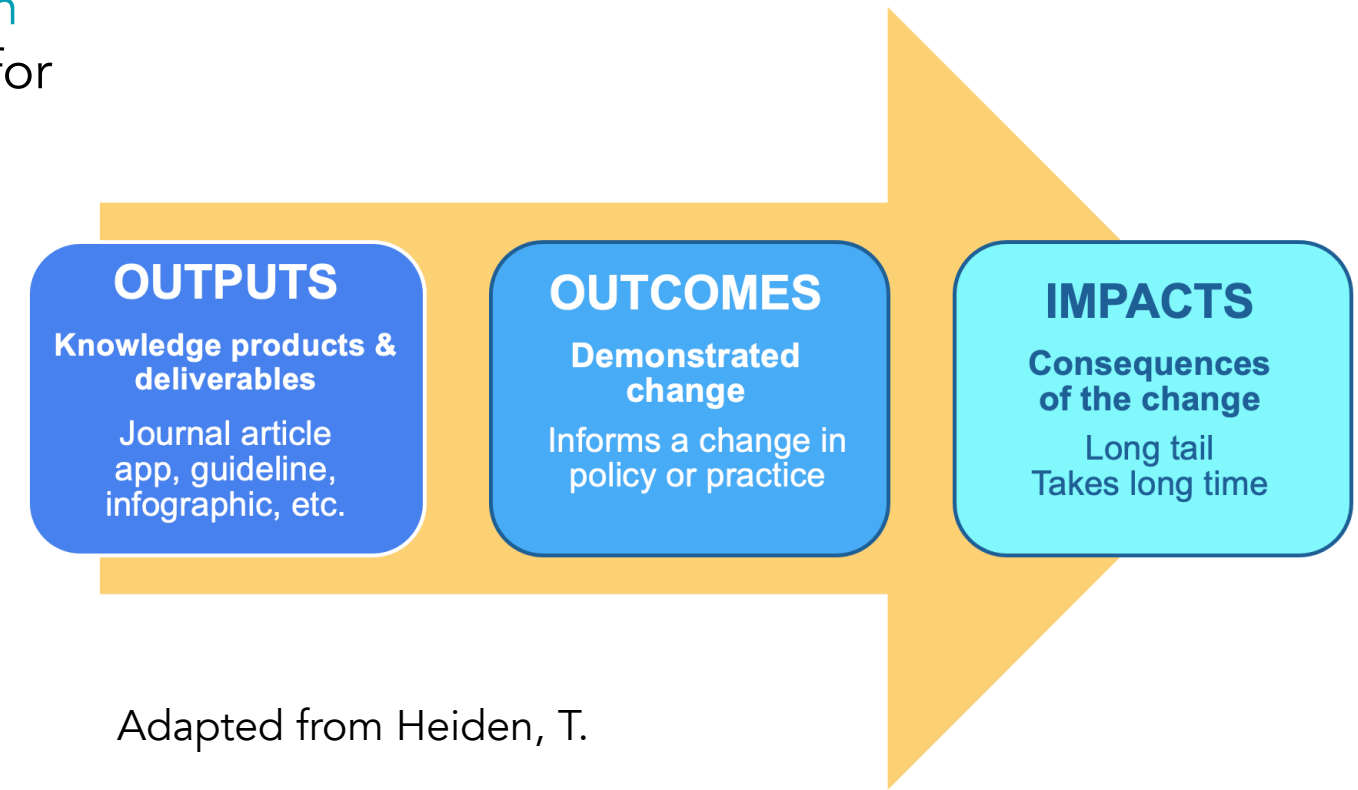
Why do KT?



Source: SickKids Learning Institute. (eLearning Module) *Introduction to Knowledge Translation*

KT is targeted dissemination & implementation

KT & dissemination
are pre-requisites for
research impact



Adapted from Heiden, T.

Motivation for exploring KT of road safety innovation

- Are we taking a big enough view and approach to motorcycle safety?
- Are we reaching the right people with our research?
- Are we delivering the right message(s)?
- Are we using the most up-to-date knowledge & methods?
- Do we understand the barriers and facilitators to the uptake and practical application of motorcycle safety knowledge?
- Are we directing and apportioning our efforts effectively?

INTERSECTIONS OF ROAD SAFETY

A model for inter-sectoral collaboration

RECOMMENDATIONS

- Collaborate and communicate
- Champion equity and accessibility
- Transform data practices
- Change the culture of road use
- Engage communities in co-creation

Source: Parachute, 2022.

https://parachute.ca/en/program/vision-zero/

SAFE-UP

Proactive SAFEty systems and tools for a constantly UPgrading road environment

H2020 MG-2-7-2019 June 2021 – May 2023

Work Package 6

Training activities and awareness creation on future traffic scenarios

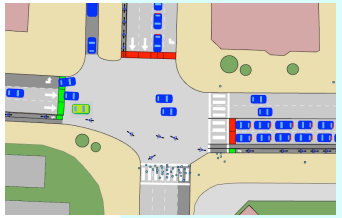
Marilee Nugent, UNIFI
Eleni Chalkia, CERTH/ HIT

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement 861570.

SAFE-UP

Predict New interactions New risks

WP2 Future safety critical scenarios



Proactively address Future safety needs

- WP6 KT, TRAINING, AWARENESS
- WP3 ACTIVE SAFETY
- WP 3 CONNECTIVITY
- WP4 PASSIVE SAFETY

Create Innovative solutions

- Strategies, Networks, Training
- T3.2 VRU detection in bad weather
- T3.4 Collision avoidance systems
- T3.5 Alert VRUs through smart devices
- Smart restraints for car occupants

WP6 New Safety Needs Knowledge & Messages

- AVs bring new safety but the technology is not mature and has limitations.
- Some scenarios will be riskier than others. VRUs need to know where and when to pay attention and what cues to look for.
- How will VRUs and AVs communicate? New behaviors, new connected technologies.
- Drivers need to understand how to use new safety systems, what they can & can't do.

Overview of WP6

Training activities and awareness creation on future traffic scenarios

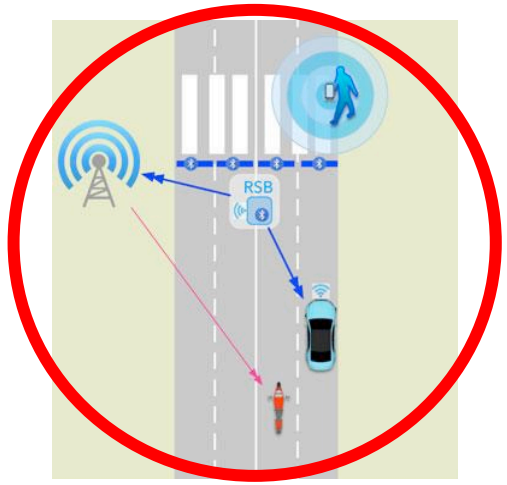
Mission

In WP6 it is our mission to increase the potential safety benefit of project research results and innovative safety technology.

Vision:

We do this by engaging with potential Knowledge Users and stakeholders to help us link outcomes to user needs, translate results into key safety messages that are accessible, relevant and actionable and develop training and awareness strategies including innovative educational programs and a multimedia library of KTproducts.

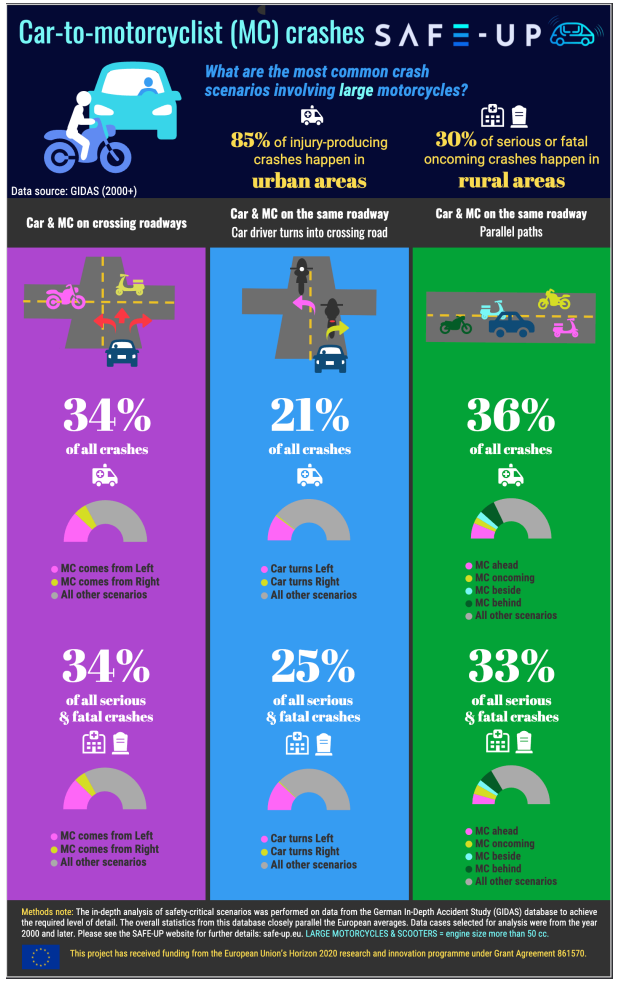
Current

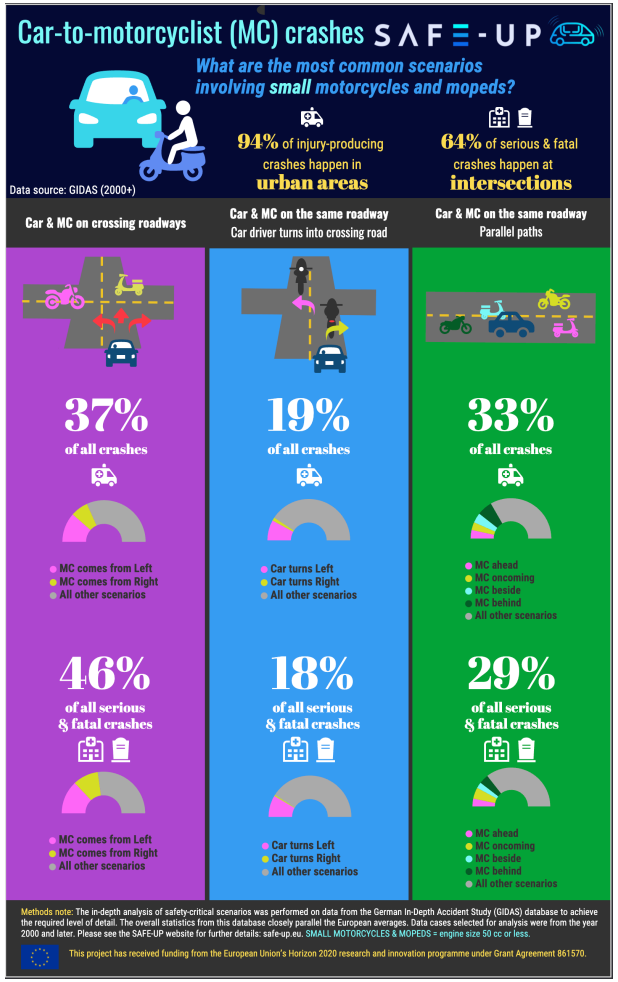


Future

Current Safety-Critical Scenarios in the EU

- Safety-critical scenarios for small and large PTWs in car-to-PTW crashes
- German In-Depth Accident study (GIDAS) – database analysis (2000-2022)
- Bálint, et al., 2021. SAFE-UP report D2.6





Human causal factors in car-to-PTW crashes (MAIDS)

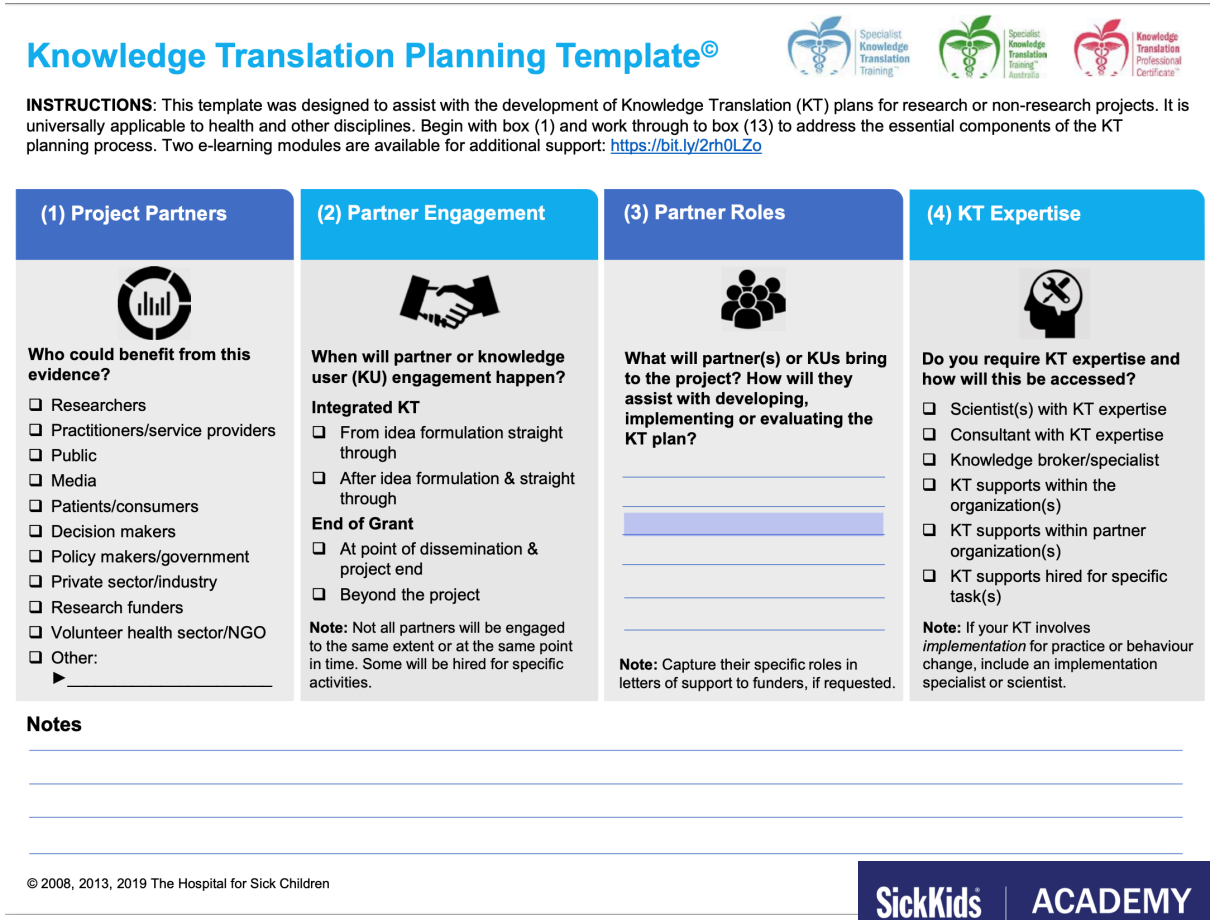
- Huertas-Leyva, et al., 2021 *Human error in motorcycle crashes*
- Motorcycle Accident In-Depth Study (1999-2001)
- A methodology based on in-depth data to identify the skills needed and support training interventions for safe riding.
  - Identified scenario types (frequency x injury severity).
  - Identified human errors as causal factors.

		Total	SCP/LD	TIP/LD	TAP/OD	TAP/SD	RE/SD	HS/OD
OV	detection	40.8%	**47.8%**	**56.0%**	**67.4%**	**50.0%**	**21.2%**	**13.6%**
	decision	12.2%	12.5%	16.0%	15.8%	15.7%	9.6%	11.9%
	exec./compreh.	1.7%	1.5%	0.0%	2.1%	3.0%	1.9%	3.4%
MC	detection	9.3%	**9.6%**	2.0%	3.2%	**11.9%**	**28.8%**	8.5%
	comprehension	2.4%	3.7%	3.0%	2.1%	3.0%	3.8%	0.0%
	decision	13.1%	**11.8%**	9.0%	3.2%	**14.2%**	**11.5%**	**25.4%**
	execution	4.8%	1.5%	0.0%	1.1%	0.0%	5.8%	**13.6%**
	unknown type	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%
	view obstruction	4.4%	4.4%	**12.0%**	4.2%	0.7%	1.9%	6.8%
	other	9.0%	7.4%	2.0%	1.1%	1.5%	15.4%	15.3%

Key components in KT planning

Tool used to guide WP6 activities.

1. Project Partners
2. Degree of Partner Engagement
3. Partner(s) Roles
4. KT Expertise on Team
5. Knowledge Users
6. Main Messages
7. KT Goals
8. KT Strategy(s)
9. KT Process
10. KT Evaluation
11. Resources
12. Budget Items
13. Plan implementation



Knowledge Translation Planning Template©

INSTRUCTIONS: This template was designed to assist with the development of Knowledge Translation (KT) plans for research or non-research projects. It is universally applicable to health and other disciplines. Begin with box (1) and work through to box (13) to address the essential components of the KT planning process. Two e-learning modules are available for additional support: https://bit.ly/2rh0LZo

(1) Project Partners	(2) Partner Engagement	(3) Partner Roles	(4) KT Expertise
Who could benefit from this evidence? ❑ Researchers ❑ Practitioners/service providers ❑ Public ❑ Media ❑ Patients/consumers ❑ Decision makers ❑ Policy makers/government ❑ Private sector/industry ❑ Research funders ❑ Volunteer health sector/NGO ❑ Other: ► _____	**When will partner or knowledge user (KU) engagement happen?** **Integrated KT** ❑ From idea formulation straight through ❑ After idea formulation & straight through **End of Grant** ❑ At point of dissemination & project end ❑ Beyond the project **Note:** Not all partners will be engaged to the same extent or at the same point in time. Some will be hired for specific activities.	**What will partner(s) or KUs bring to the project? How will they assist with developing, implementing or evaluating the KT plan?** **Note:** Capture their specific roles in letters of support to funders, if requested.	**Do you require KT expertise and how will this be accessed?** ❑ Scientist(s) with KT expertise ❑ Consultant with KT expertise ❑ Knowledge broker/specialist ❑ KT supports within the organization(s) ❑ KT supports within partner organization(s) ❑ KT supports hired for specific task(s) **Note:** If your KT involves *implementation* for practice or behaviour change, include an implementation specialist or scientist.

Notes

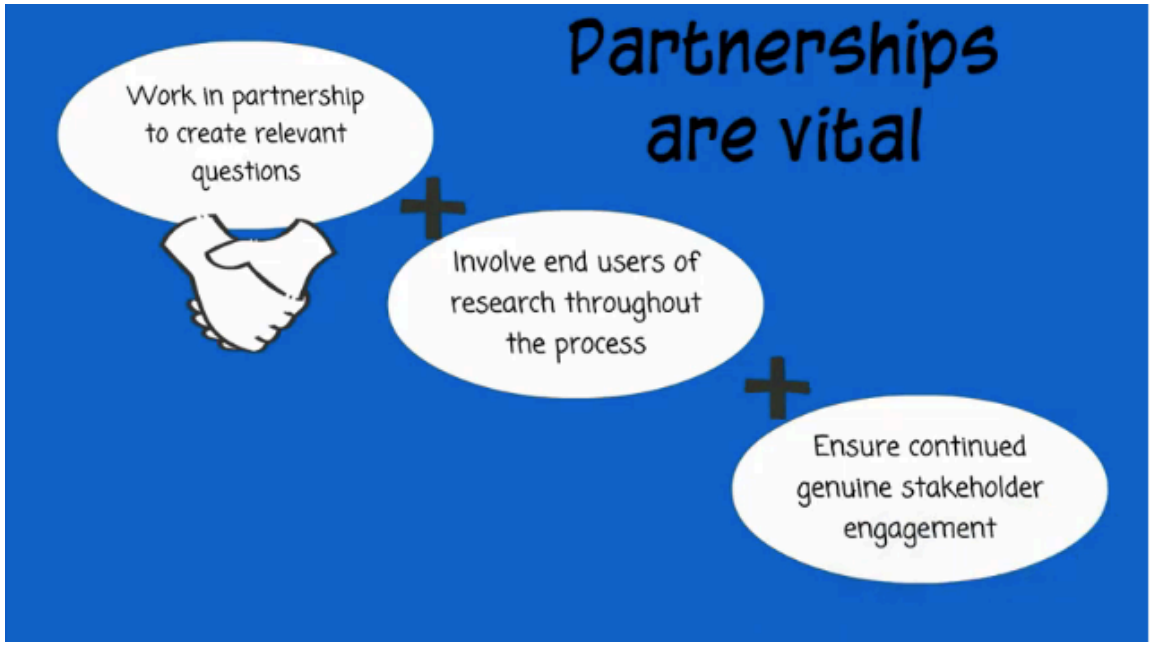
SickKids LEARNING INSTITUTE | ACADEMY ONLINE

Source: Barwick, M. (2008, 2013, 2019). KTPT©

Engaging Project Partners

- Who can use the knowledge?
- Who can ensure the project's success?
- Best practice – integrated KT
  - Partners engaged throughout the research project
- You're are invited to be involved!

[SAFE-UP Questionnaire to identify potential Safety Network Partners]



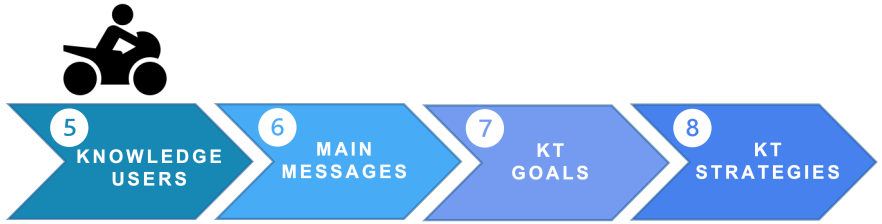
Source: Video *What is Knowledge Translation?* researchimpactacademy.com

Ad Hoc Safety Partner Network

Currently engaged
IFP - International Federation of Pedestrians
ECF - European Cyclists Federation
FEMA - Federation of European Motorcyclists' Assns
IFZ - Institute for two-wheeled safety
EFA - European Driving Schools Association
POLIS - Cities network on transport innovation
ERTICO - ITS Europe
ETSC – LEARN! Project
ACEM – European Association of Motorcycle Manufacturers

Next phase….

Using the KTPT – (5) Knowledge Users (KUs)



- Target audience(s)
- Not just end users….
- Think of *Next* knowledge users
- Who needs to know about what you have learned?
- Who is going to be interested in your research findings?

Potential KUs
Adapted from: KTPT©

- ❑ Researchers
- ❑ Road transport & safety Practitioners
- ❑ School boards, Educators
- ❑ Driving schools, instructors
- ❑ Public, Consumers
- ❑ Media
- ❑ Decision makers
- ❑ Policy makers, government
- ❑ Private sector, industry
- ❑ Research funders
- ❑ Charities, NGOs
- ❑ Other

Using the KTPT – (6) Main Message (MM) from results

"A well-written main message is a clear, concise and audience-focused statement."

Dr. Melanie Barwick (2017c), implementation scientist

Determining your SMITT & BLAM *Source: KTPT©*

SMIT

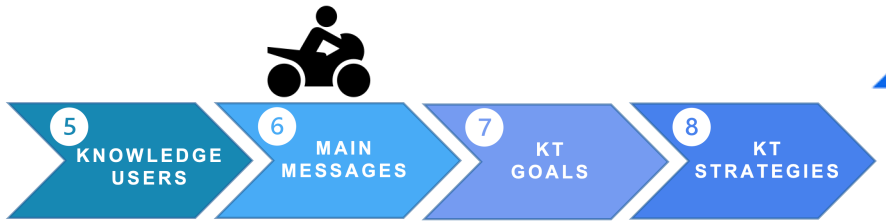
What is the **S**ingle **M**ost **I**mportant **T**hing?

- *Information level*

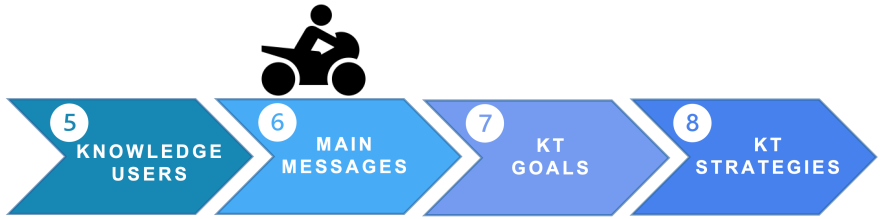
BLAM

What is the **B**ottom-**L**ine **A**ctionable **M**essage?

- *Implementation level*



Using the KTPT – (6) Main Message (MM) from results

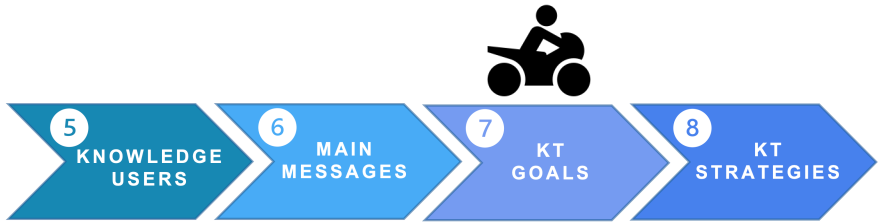


Source: Barwick, M. et al. (2021). Knowledge Translation Professional Certificate – course Manual.

Using the KTPT – (7) KT Goals

"Being clear about why you are communicating your research findings is central to effective KT."

*Dr. Melanie Barwick (*2017c), implementation scientist



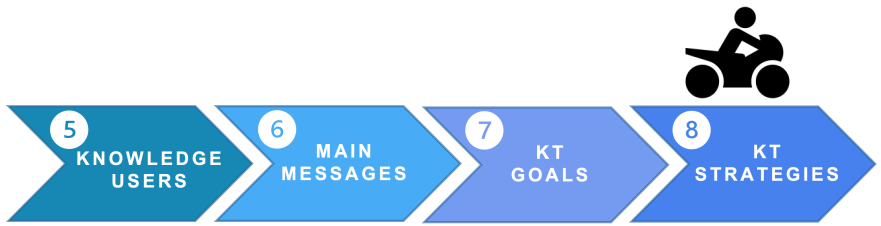
KT goals
Adapted from: KTPT©

- ❑ Generate awareness, interest, buy-in
- ❑ Impart knowledge, tools, skills
- ❑ Generate public action or behaviour change*
- ❑ Generate practice change*
- ❑ Inform/improve decision-making
- ❑ Inform research & researchers
- ❑ Facilitate policy change
- ❑ Facilitate commercialization/technology transfer*
- ❑ Other

**These KT goals will require separate implementation plans.*

Using the KTPT – (8) KT Strategies

Selected strategies should be user-centred, aligned with goals and evidence-informed as to potential effectiveness



KT Goal →

(8) KT Strategies

Which KT strategies will you use? Consider your KT Goal(s) and select accordingly. KUs, MMs, KT Goals and KT strategies should align with each other.

Generate Awareness, Interest, Buy-In Share Knowledge, Inform Decision-Making

Audiences 1 2 3

Role-Based
- Knowledge Broker
- Champion/opinions leader
- Consultant
- Leadership
- Collaboration/partnership

Educational
- Materials (guide, toolkit, pamphlet)
- Plain language summary
- Policy brief
- Grey literature
- Publication
- Workshop, webinar
- Conference
- Professional development
- In-service training
- Network
- Media
- Social media

Arts Based KT

Inform Research

Audiences 1 2 3

Role Based
- Science collaboration
- Network

Educational
- Peer reviewed publication
- Conference
- Workshop
- Synthesis document
- Other document

Technological
- Social media

Facilitate Policy Change

Audiences 1 2 3

Role Based
- Collaboration/partnership
- Science policy fellowship, placement
- Knowledge broker

Educational (*also see far left column*)
- Peer reviewed publications
- Grey literature
- Meeting dialogue
- Policy brief
- Evidence brief/synthesis
- Stakeholder position paper
- Rapid response synthesis

Facilitate Practice or Behaviour Change

Note: If your KT goal includes practice or behaviour change you should begin with dissemination goals (share, inform) to set the stage and create buy in.

Follow with an **implementation plan** – see **The Implementation Game**[1] and worksheet here: https://bit.ly/333VkyB

Commercialization / Technology Transfer

- Patent
- Technology transfer/commercialization

Note: See the **Technology Transfer Planning Template**[2] here: https://bit.ly/2Gvp3ru

Source: Knowledge Translation Planning Template

Example: Translating results on current safety-critical scenarios*

5. Knowledge Users	6. Main message	7. KT Goals	8. KT Strategies
Partners Educators, Driving instructors Road users • URUs • Drivers	New findings explain the most frequent and serious crashes between PTW riders and passenger car drivers and the mistakes drivers and riders make. Use this knowledge to anticipate hazardous situations for motorcyclists and to make better choices to reduce risk.	• Generate awareness • Inform • Educate • Impart skills, tools • Promote behaviour change*	• Tailored materials according to KU preferences, needs. • Infographics. • Videos based on crash reconstructions showing multiple user POV. • Interactive learning modules integrating the above materials.

*** Refer to slides 11-12 – *What would be your KU, MM, KT Goal?***

Context: What is the current road safety paradigm?

vox.com

WHAT IS 8 80 CITIES?

We believe that if everything we do in our cities is great for an 8 year old and an 80 year old, then it will be great for all people.

880 cities
Creating cities for all

880cities.org

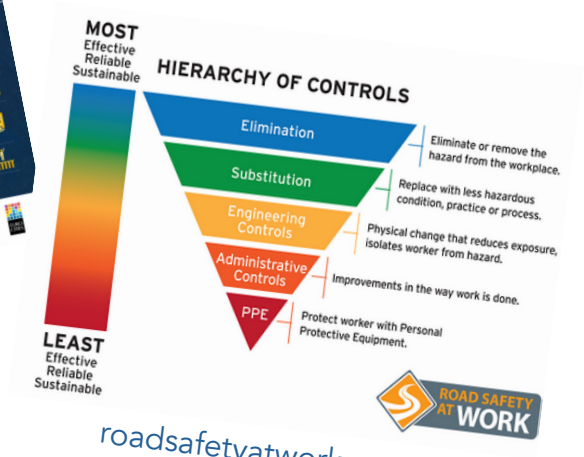
SUSTAINABLE DEVELOPMENT GOALS

sdgs.un.org

visionzeronetwork.org

preventable.ca

polisnetwork.eu



roadsafetyatwork.ca

visionzerochallenge.org

parachute.ca

who.int

International Transport Forum

The Safe System Approach in Action

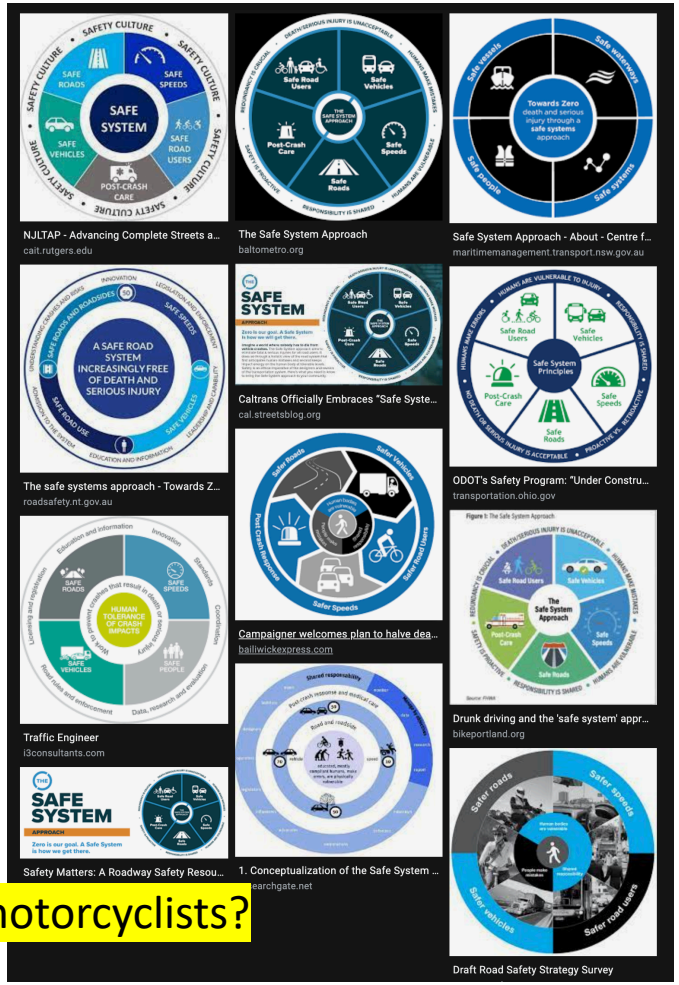
Research Report

"Today, the Safe System approach is at the centre stage of road-safety policy making at the global, regional and national levels."
ITF (2022)

The Six pillars of the safe systems approach

1. Road-safety management
2. Safe roads
3. Safe vehicles
4. Safe speeds
5. Safe road-user behaviour
6. Post-crash care

Google images search for the safe system's six pillars:



Where are the motorcyclists?

Language of road crashes

- Making the message palatable, e.g. to vulnerable mode advocacy groups.
- Word choices shape perception and conceptualization of road crashes.
- Understanding guides our problem statements.
- Alignment with current paradigms.

- Where are the motorcyclists?

Language Matters

STOP		GO
Accidents	→	Collisions or crashes
"A car hit a pedestrian."	→	"A person driving hit someone walking."
Bikers, Cyclist	→	People biking
Pedestrians	→	People walking
Drivers	→	People driving
Disabled person	→	A person with a disability
Transit riders	→	People using transit
Transportation Alternatives	→	Transportation Choices
"As a cyclist, I..."	→	"As a [mom, neighbor, teacher, resident] who often bikes, I..."
"I bike 8th Street and it stresses me out."	→	"When I drive, bike, or walk 8th Street, I get stressed out."
Cycle track	→	Protected bike lane
Biking advocates, walking advocates	→	Citizen Advocates or Neighborhood advocates
R.R.F.B, Pedestrian Hybrid Beacons	→	Safer ways to cross these stroads!
Active transportation	→	Healthy Transportation

Source: Norte elgruponorte.org

Six language choices that affect how people perceive road collisions

Language style	Status quo reporting style	Negative implications	Better practice
Word choice	ACCIDENT: *Motorcyclist killed in accident on Main Street.*	Obscures preventable nature of crashes.	CRASH COLLISION: *Motorcyclist killed in crash on Main Street.*
Expression of agency	NO AGENT GIVEN: A scooter rider was hit and killed.	Obscures role of a human actor.	AGENT GIVEN: A scooter rider was hit and killed by a car.
Subject and verb tense.	FOCUS ON RIDER: *A motorcyclist was hit and killed by a car.*	Increases blame for focus of sentence.	FOCUS ON DRIVER: *A car hit and killed a motorcyclist.*
Focus on machines vs. humans	OBJECT-BASED: *A car went through a stop sign.*	Obscures role of a human actor.	PERSON-BASED: *A car driver went through a stop sign.*
Information, data on pre-crash phase	COUNTERFACTUAL STATEMENTS: *The moped wasn't there when I looked.*	Increases perceived blame for the victim.	(not included)
Framing of the problem – micro vs. macro POV	EPISODIC FRAMING: Treats the crash as an isolated incident.	Points to individual faults rather than systemic dangers and solutions.	THEMATIC FRAMING: *This is the tenth fatal collision this year.*

Adapted from: Parachute, 2021. *Change the language change perceptions: how we talk about road collisions.*

Can our (unconscious) paradigm choice enhance or constrain our approaches to safety solutions?

	1900-1920	1920-1950	1950-1970	1960-1985	1985/1990-Now
Paradigm	Chance, bad luck	Road devils, accident prone drivers	Road user, vehicle, road	Multi-causal approach	*Results of integral road system*
Approach	What	Who	How: the cause	How: which causes, technical improvements	Multi-dimensional, economic analysis
Interventions	Ad hoc	Educate, punish	Engineering, education, enforcement.	Technical solutions for vehicle and road.	Adapt road system to road user.
Possible Message Main	If you ride a motorcycle, sooner or later you will go down. Ride at your own peril.	Reckless riders bring misfortune onto themselves! Follow the rules, pay attention, don't speed … *or else!*	Understand the common hazards to motorcycling to reduce your risk (e.g. vehicle maintenance, road surface hazards, common mistakes made by riders and drivers).	Results on the most common crashes should inform design of safety systems to compensate for rider and driver failings (e.g. ABS, CITS). Riders should purchase bikes with current safety technology and practice using it.	Results on common crash scenarios and human causal factors should inform further systems analysis to identify interacting danger conditions and to guide multi-faceted interventions that address the six pillars of safe systems.

Adapted from: Hagenzieker, et al., 2014. *The history of road safety research: A quantitative approach.*

Contextualizing MC research results within current paradigms, best practices, global and local agendas . . .

- What happens to our
  - Choice of target audience?
  - Main Message?
  - Goals for sharing knowledge?
  - Strategies for for realizing our goals?
  - Methods for measuring success?
    KTPT (10)

Learning 1

Our choice of road safety paradigm can have serious safety and ethical implications for the outcomes of intervention development:

> *"Overstating the role of road-user error may result in a reduced focus on effective countermeasures that address systemic failures in this causal chain."*
> *- ITF, 2022 pp. 12-13*

Hoboken prioritizes intersection visibility over car parking (Youtube)

Learning 2

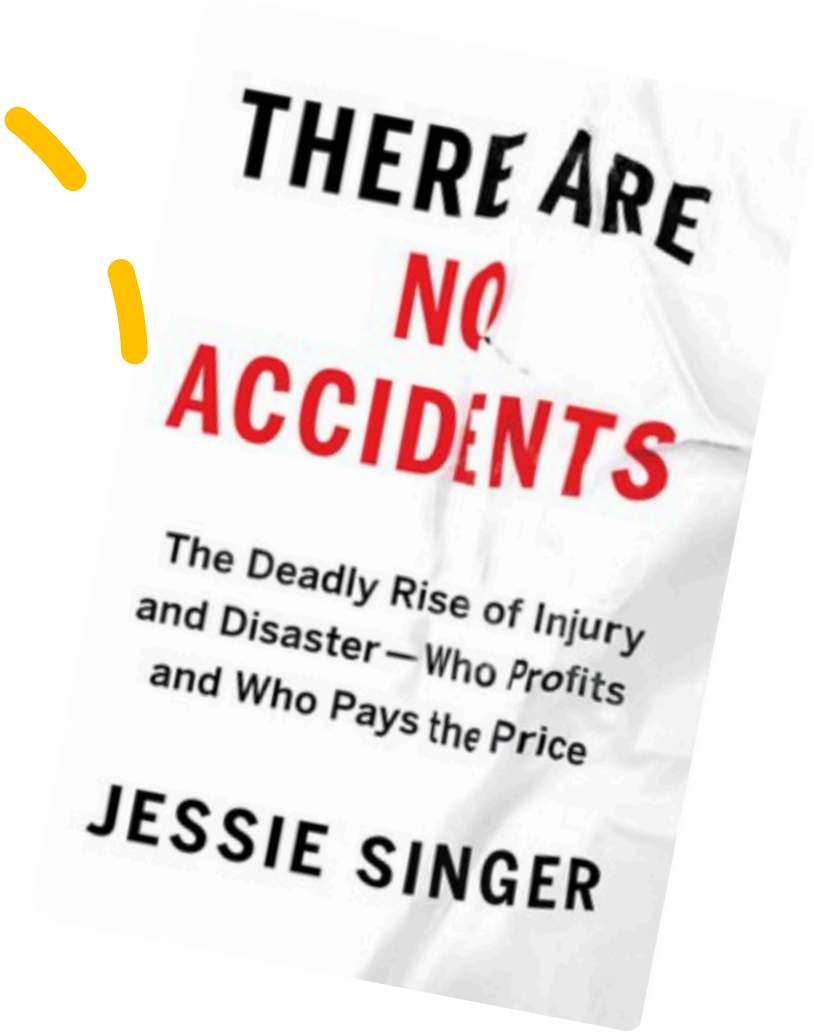
Our conceptualization of road danger/safety is influenced by historical bias, which can perpetuated by the language used to communicate about road crashes.

Learning 3

As researchers we have ethical and scientific responsibilities to beware of historical social biases being unconsciously inserted into the research process.

> *"Safer use of vehicles, effective education and training schemes and increased awareness of all road users."*
>
> - Call: H2020-MG-2018-2019-2020 (Mobility for Growth)

Is this the most effective KT goal?



Learning 4

Deconstruction of victim-blaming discourse changes the narrative on human error in crash causation and redistributes the shares of responsibility according to who has the real power to remove and mitigate road danger.

"Thus, the design and operation of the road transport system should guide the road user to safe behaviour and mitigate the consequences of common human errors." (ITF, 2016 p. 26)

Some recommendations & paths to explore

- Partner with other unprotected (URU) groups and learn from them, find common goals and objectives for mutual support.
- Build capacity for engagement & leverage community and organizational shared interests.
- Forge stronger links to current paradigms and agendas.
- Utilize research, methods and critical thinking practices from disciplines outside STEM subjects.
- More, better cross-disciplinary research collaboration for knowledge co-creation
- Lean on implementation science.

References

- Bálint, A., et al. (2021). D2.6 Use Case Definitions and Initial Safety-Critical Scenarios. Project: SAFE-UP, Horizon 2020 GA 861570. http://safe-up.eu
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The SAFE-UP partners

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement 861570.

THANK YOU!

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