



Spotlight Session: Real-world Transformation – Successes, Pitfalls and Lessons Learned from THCS funded projects

Wednesday, 30 September - 13:00–14:00 CET

#transformation #real-worldexperiece #transferabilty #scalability #THCSLearningWeek

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Emanuela Foglia, PhD, is Researcher of Industrial Engineering and Management at Università Carlo Cattaneo – LIUC and Director of the Healthcare Datascience Lab (HD LAB).



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In the final spotlight session, the contributors will illustrate how co-design and co-creation processes have supported the redesign of cardiac rehabilitation pathways.

Specifically, this webinar will feature the experience of LIUC University, Italy within two THCS-funded projects, COMPASS (2024) and MI-RICORDO (2023), which share a common focus on the transformation of rehabilitation pathways.

The session will position rehabilitation as a strategic lever for advancing integrated, patient-centred and sustainable care systems, with particular attention to policy-relevant insights and scalability across different contexts.

#carepathways #cardiacrehabilitation #co-design #sustainability



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 Save the Date - THCS Learning Week 2026: “Transforming Health and Social Care: Meaning, Models and Measurement”



THCS
TRANSFORMING HEALTH
AND CARE SYSTEMS

THCS Learning Week

 **From 28 September to 2 October**

 **10 sessions** |  **1 hour each** |  **Engaging & collaborative**

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Learning Week 2026

- Thank you for joining this session.
- The session recordings will be hosted on the Knowledge Hub:

<https://knowledgehub.thcspartnership.eu/>



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**Transforming Rehabilitation
Pathways: From co-design to sustainable scaling of
rehabilitation innovations
Lessons from COMPASS and MI-RICORDO**

Emanuela Foglia, LIUC Carlo Cattaneo University, Healthcare Data
Science LAB & LIUC Business School, 21053 Castellanza (VA), Italy

*Spotlight Session: Real-world Transformation – Successes, Pitfalls and Lessons
Learned from THCS funded projects*

Who I am



Emanuela Foglia, PhD, is Researcher of Industrial Engineering and Management at Università Carlo Cattaneo – LIUC and Director of the Healthcare Datascience Lab (HD LAB). Her research focuses on Health Technology Assessment (HTA), healthcare management, digital health, healthcare sustainability, process optimization, and data science applied to healthcare systems. She has extensive experience in coordinating national and international research projects funded by European partnerships, ministries, regional institutions, and healthcare organizations, with expertise in telemedicine, artificial intelligence, rehabilitation pathways, and healthcare innovation. She serves as Director of executive education programs in HTA and healthcare management and collaborates with AGENAS as HTA expert and trainer. Author of more than 80 scientific publications indexed in Scopus, she is Editorial Board Member of BMC Health Services Research and has received several national and international awards for her contributions to healthcare innovation, digital health, and healthcare management research.

My Institution



Founded in 1991 by entrepreneurs from the Varese Province and Alto Milanese, LIUC – Carlo Cattaneo University was established to bridge the gap between education and the evolving needs of the business world. With a strong focus on economics, law, technology, science, and management, LIUC has developed expertise in the healthcare sector, specializing in technology assessment, validation, and the analysis of social and healthcare processes.

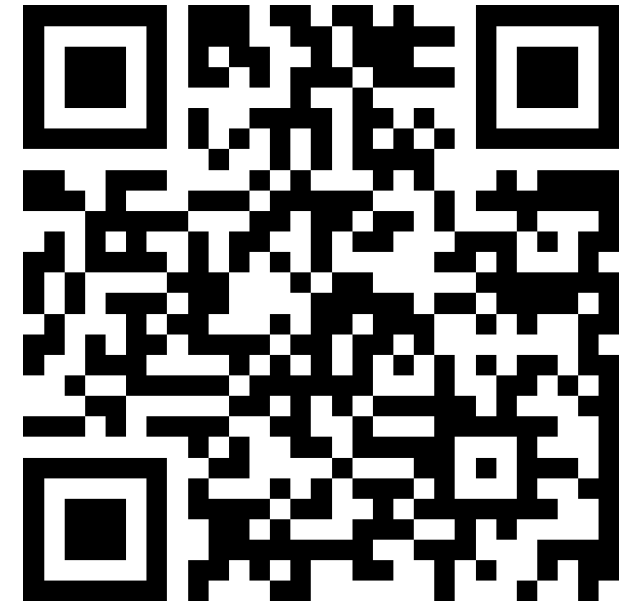


The Healthcare Datascience LAB – HD LAB, Emergencies, Technologies and Beyond, which aims to integrate the fundamental principles of data science and data management with organizational and operations management principles, together with a process-oriented approach to healthcare. The Lab seeks to provide healthcare professionals with knowledge and skills related to the use of big data, offering practical and up-to-date insights to support informed, evidence-based decision-making grounded in real-world data.

We would like to start with your perspective

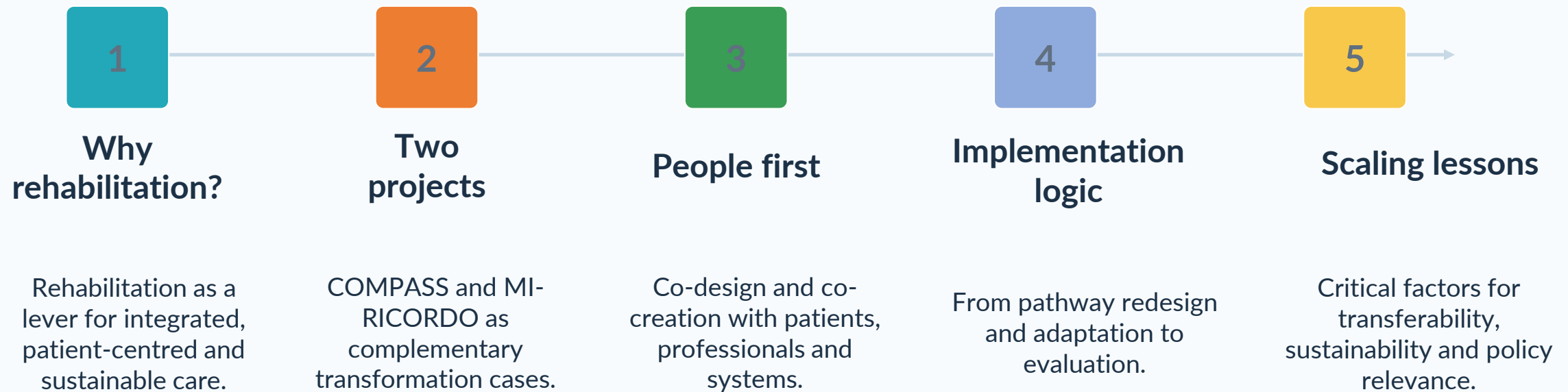
In one or two words, what turns a promising healthcare innovation into sustainable and scalable system transformation, in your opinion?

Scan the QR code and share your answer



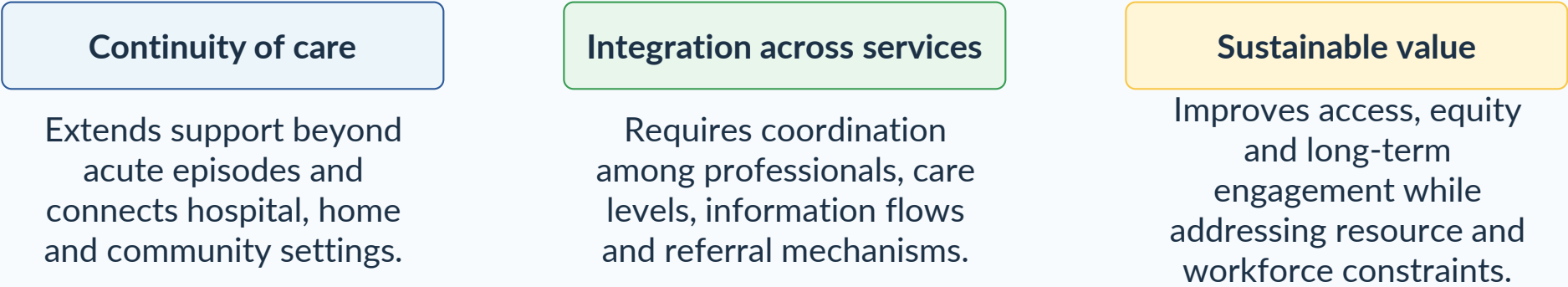
<https://app.sli.do/event/3i3xcWtUcKjBCTTccSqqE5>

Today's journey: from co-design to sustainable scaling

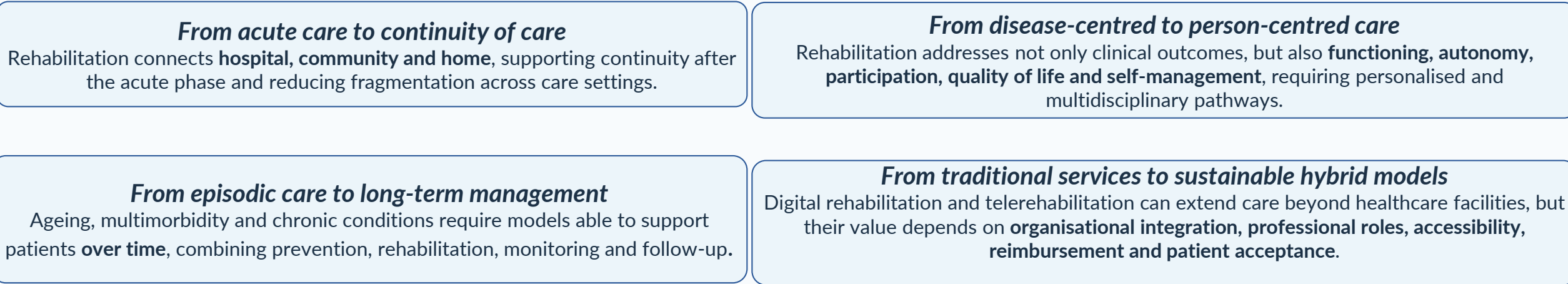


Why rehabilitation matters for health system transformation

Rehabilitation is a strategic lever because it sits at the intersection of clinical, organisational and social transformation.



The transformation



Two projects, one transformation challenge

COMPASS CrOss-cultural Model for Postdischarge Assistance and Sustainable digital Solutions in cardiac rehabilitation



Cardiac rehabilitation pathways

Redesign of post-discharge cardiac rehabilitation pathways

Co-design across healthcare professionals and stakeholders

Attention to hybrid/telerehabilitation models and reimbursement

MI-RICORDO Transcultural and Multidimensional validation of digital Rehabilitation Intervention of COgnitive Resources Domain-Oriented



Digital cognitive rehabilitation DTx

Transcultural adaptation of a digital therapeutic solution

Design–Evaluation–Redesign cycles in Italy, France and Portugal

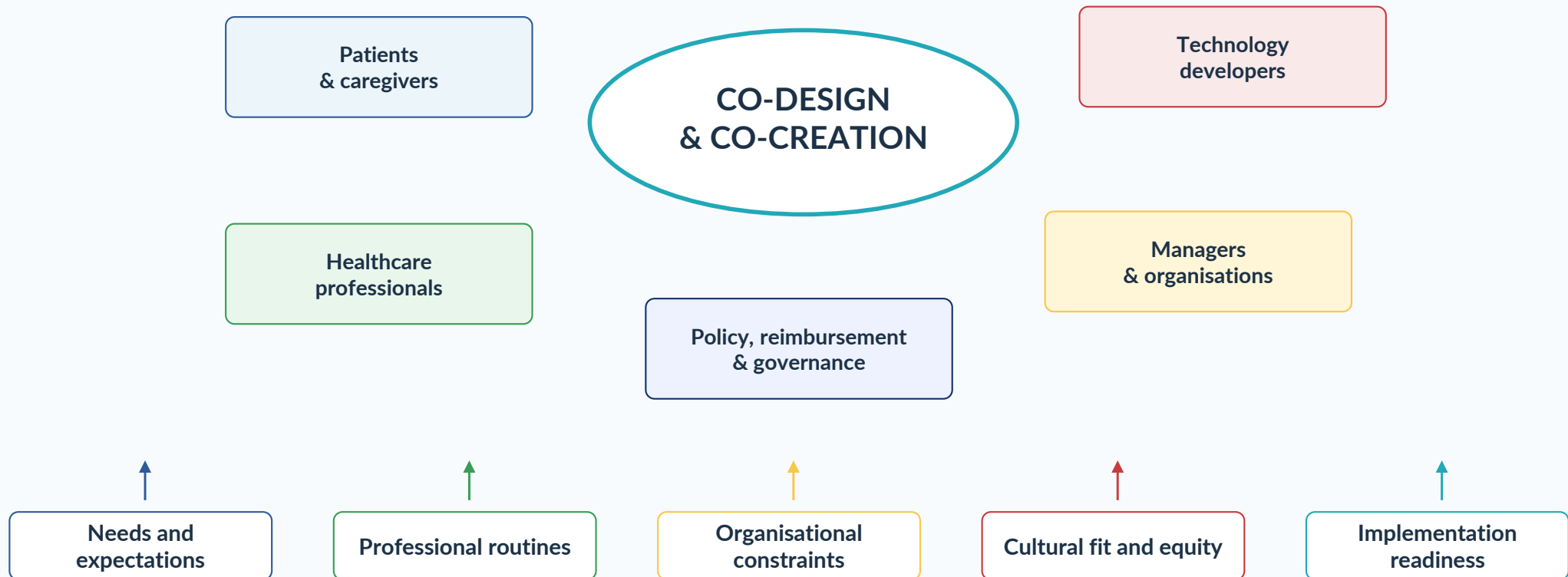
Multidimensional assessment based on the MAST domains

Shared challenge:
How can rehabilitation innovations become context-sensitive, implementable and scalable across health systems?

Transformation starts with people

People are not only users of innovation: they are carriers of clinical, organisational and contextual knowledge.

In health and social care, transformation becomes implementable when the people affected by change help define the problem, test the solution and shape the conditions for adoption.

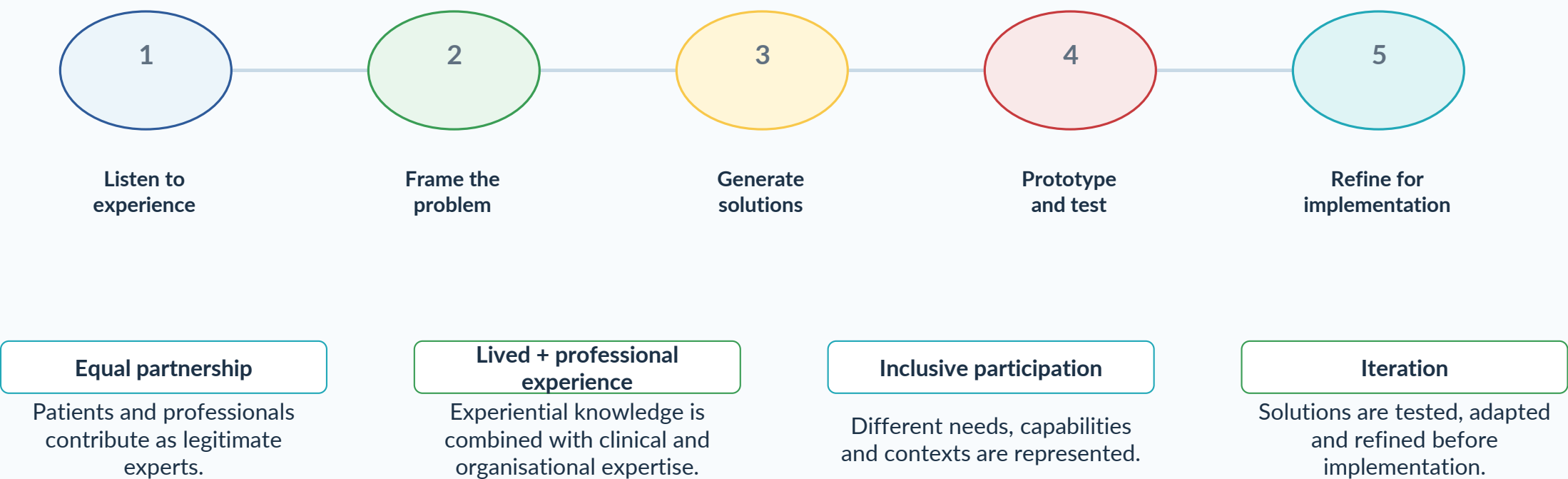


People-centred transformation means designing not only the intervention, but also the pathway, workflow and adoption conditions around it.

Co-design in healthcare: definition and practical meaning

Designing with people who experience, deliver and manage care.

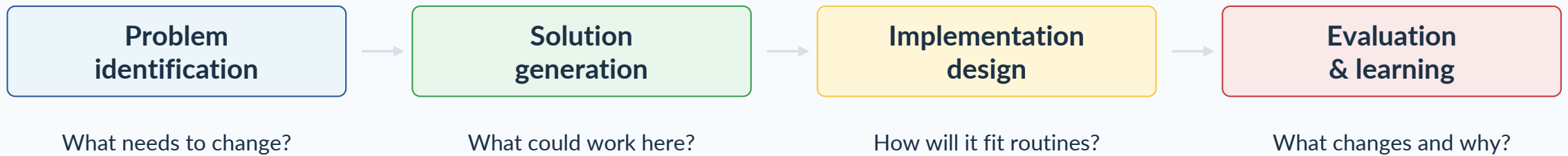
Co-design is the active collaboration of patients, caregivers, professionals and other stakeholders to build a shared understanding of a defined problem and design solutions together.



Co-creation in healthcare: from solution design to system change

A broader collaborative approach that continues across the transformation cycle.

Co-creation is a collaborative approach to problem-solving in which diverse stakeholders contribute across the full journey: from identifying needs and generating solutions to implementation, evaluation and learning.



Value for rehabilitation: solutions are shaped around patients, professionals, workflows, contexts and long-term sustainability.

COMPASS Project CrOss-cultural Model for Postdischarge Assistance and Sustainable digital Solutions in cardiac rehabilitation

Objectives

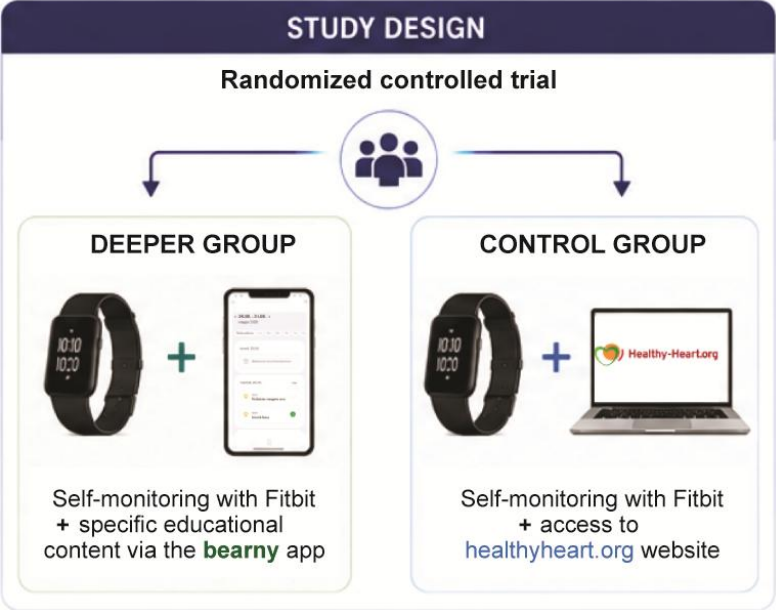
- Design and implement tailored, patient-centred cardiac rehabilitation pathways adapted to healthcare systems in Italy, Switzerland and Portugal
- Integrate digital and remote solutions to support personalised interventions and improve continuity of care
- Apply co-design and co-creation approaches to identify patients' and stakeholders' needs, preferences and expectations
- Improve acceptability, awareness and adherence to cardiac rehabilitation among patients and healthcare professionals
- Identify enablers, barriers and contextual factors influencing implementation and large-scale adoption
- Develop tele-educational models supported by health literacy assessment
- Conduct feasibility and multidimensional evaluations of clinical, organisational and economic impacts
- Support the definition of sustainable CR models and appropriate reimbursement strategies



Partners



COMPASS Study Design





EDUCATIONAL CONTENT LIBRARY
A dedicated library of educational materials available in the **bearny** app.

Content is evidence-based and sourced from official websites (e.g., Ministry of Health).



Exercise videos



Life's Crucial 9

BASELINE ASSESSMENTS (All participants)



Anthropometric measurements



Cardiovascular parameters



Blood analysis



Physical functional tests



Psychometric questionnaires

Includes anthropometric measurements, cardiovascular parameters, blood analysis, physical functional tests and a series of psychometric questionnaires



COMPASS: Materials and methods

Study design

- Focus on the Discover and Define phases of the Double Diamond to explore the problem space of tertiary cardiac rehabilitation (i.e. long-term maintenance)

Research process

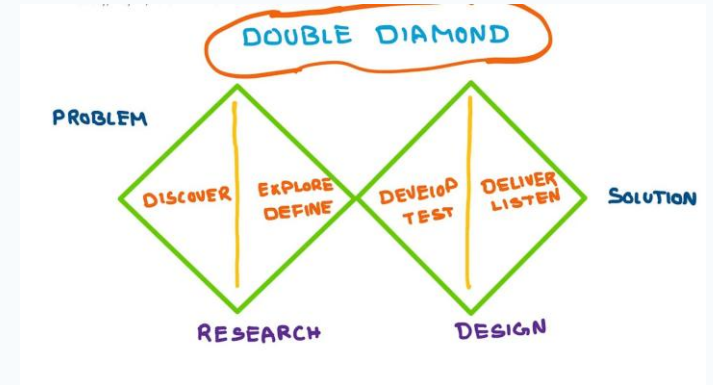
- i. Structured exploration of the current configuration of CR pathways through questionnaires and semi-structured interviews
- ii. Collective validation and refinement of emerging findings through focus groups
- iii. Structured prioritisation of consolidated problem areas through a ranking-based questionnaire (e.g., from 1 = most relevant to n = least relevant)

Healthcare professionals

- 15 professionals (physiotherapists/exercise specialists, cardiologists, nurses, psychologists, researchers) from participating centres of COMPASS project across four European countries (Italy, Switzerland, Portugal, and Belgium)

Data analysis

- Thematic analysis, involving iterative coding and categorisation of qualitative data, and comparative examination of structured responses across settings
- Descriptive statistics (mean values, standard deviations, and interquartile ranges) and inferential analyses (Kendall's coefficient of concordance and p-values)



Barriers, criticalities, and areas for improvement: healthcare professional/ organizational perspective

Dimension	Telerehabilitation	Outpatients	Inpatients
Clinical & Pathway-related	Limited incorporation into established care pathways; unclear patient referral mechanisms; scarce involvement of general practitioners; challenges in remotely managing frail or clinically complex patients	Underuse and inappropriate referrals (particularly for frail/high-risk patients); insufficient coordination between levels of care; heterogeneous implementation of rehabilitation pathways	Poor continuity of care between settings; ineffective discharge planning and referral management; exclusion of complex patients because of restrictive eligibility criteria
Organisational	Inadequate reimbursement schemes; absence of well-defined regulatory guidance; elevated implementation costs; workforce shortages and insufficient staff training; need for integration of hybrid care models	Restricted service capacity and limited resources; shortages of healthcare professionals; insufficient infrastructure; reimbursement models not reflecting patient complexity; need to reinforce referral procedures and broaden accessibility	Complex reimbursement and administrative procedures; fragmented organisational structures; limited adaptability regarding length of stay; need to improve access and simplify operational workflows
Technological	Poor interoperability between systems; need for dedicated digital platforms, devices, and integrated data management; usability challenges among older and frail users; low levels of digital preparedness	Limited availability of digital tools; need for clinical decision-support systems and tailored rehabilitation programs; uneven technological uptake across centres	Shortages in specialised technologies and equipment; underutilisation of decision-support tools; need for better knowledge exchange and technology-enabled personalisation
Social	Digital exclusion; limited health literacy; socioeconomic and cultural obstacles; reduced patient awareness and participation	Logistical barriers related to transport and time; burden on caregivers; socioeconomic and gender-related inequalities; insufficient patient awareness	Significant caregiver burden; social disparities, especially among vulnerable patients; cultural challenges; weak engagement after discharge
Behavioural & Relational	Limited patient participation and digital competencies; reluctance towards telemedicine solutions; unclear professional responsibilities and insufficient interdisciplinary collaboration	Divergence between acute care and rehabilitation objectives; reduced patient motivation; scepticism among healthcare staff; inappropriate referral practices	Inadequate transition from acute care to rehabilitation; insufficient patient readiness; communication shortcomings; limited multidisciplinary coordination
Resistance to Change	Resistance embedded in organisational culture; regulatory obstacles; scarcity of resources; concerns regarding telehealth-related risks	Resistance among healthcare personnel; administrative rigidity; limited resources; low confidence with innovative approaches	Resistance from staff, particularly senior professionals; administrative overload; poor motivation and ineffective communication
Key Areas for Improvement	Revise reimbursement mechanisms; establish clearer regulatory policies; strengthen digital infrastructure; improve digital competencies and patient participation; embed telerehabilitation into routine care pathways	Enhance referral pathways; strengthen coordination among services; expand resources and service capacity; improve patient education and psychosocial assistance	Optimise referral and discharge management; promote greater flexibility and individualisation of care; reinforce long-term adherence strategies; expand infrastructure and available resources

Barriers, criticalities, and areas for improvement: referral perspective

Dimension	Telerehabilitation	Outpatients	Inpatients
Referral Processes & Actors	Combination of digital tools and informal communication channels (e.g., email, telephone, fax); referrals originating from hospitals, specialists, and general practitioners; patient prioritisation managed by CR physicians and bed coordinators	Comparable hybrid referral approach with substantial dependence on informal and relationship-driven exchanges; multiple referral sources including specialists and GPs	Similar referral organisation; hospital-originated referrals prevailing, frequently shaped by internal organisational dynamics and bed allocation priorities
Coordination Mechanisms	Limited formalised coordination processes; extensive dependence on personal networks and informal communication; insufficient structured integration between different care levels	Weak collaboration among providers; referrals often guided by individual initiative rather than established pathways	Fragmented coordination across hospital departments; inadequate inter-unit communication; prioritisation criteria not consistently based on clinical appropriateness
External Barriers	Informal referral pathways circumventing official procedures; low awareness and misconceptions regarding CR; limitations in service capacity	Limited awareness among healthcare professionals; referral practices influenced by personal preferences or routine habits	Referrals frequently motivated by organisational pressures (e.g., bed turnover); insufficient recognition of the value of CR; structural barriers within hospitals
Internal Criticalities	Long waiting times, restricted resources, and referral inaccuracies; insufficient capacity to manage frail or clinically complex patients	Waiting lists delaying treatment initiation; referral mistakes; inadequate internal communication; lack of specialised resources	Similar limitations in capacity; prioritisation of surgical patients compared with non-surgical cases; communication failures and referral inconsistencies
Technological & System Issues	Absence of interoperable and standardised digital infrastructures; reliance on email communication increasing risk of data dispersion; lack of integrated referral platforms	Limited adoption of structured digital solutions; absence of systems for risk stratification and pathway standardisation	Minimal evidence of formal digital support systems; processes mainly embedded within internal hospital infrastructures
Key Challenges & Improvement Needs	Need for integrated digital referral platforms; stronger coordination among GPs, specialists, and CR services; improved patient awareness and involvement	Need to standardise referral pathways; enhance awareness of CR benefits; reinforce coordination and communication mechanisms	Need to better align referral criteria with clinical appropriateness; strengthen communication and formalisation of internal processes; broaden awareness of CR beyond surgical populations

Barriers, criticalities, and areas for improvement: patients' perspective

Dimension	Telerehabilitation	Outpatients	Inpatients
Main Barriers	Digital inequalities related to devices, internet access, and limited digital competencies; reluctance towards technology use; high dependence on caregiver assistance	Practical and logistical obstacles (travel distance, time constraints, work and family obligations); limited understanding of the importance of CR	Transportation difficulties and caregiver burden; limited awareness and low prioritisation of CR pathways
Key Needs (Organisational & Technical)	Intuitive and accessible technologies; training initiatives to improve digital competencies; ongoing technical assistance; clearer guidance regarding CR pathways	Improved accessibility through geographically closer services; enhanced patient education and involvement; clearer and more effective communication	Increased accessibility to services; stronger communication strategies and greater patient involvement
Technological Needs	Easy-to-use and cost-effective devices; training activities and continuous support for digital technology adoption	Moderate but increasing demand for digital solutions, with particular attention to usability and patient awareness	Technologies aimed at supporting patient participation and adapted to individuals with limited digital skills
Social & Behavioural Challenges	Reduced motivation; resistance towards digital solutions; cognitive and literacy-related barriers; strong reliance on caregivers	Limited health literacy; motivational difficulties; competing personal and occupational responsibilities	Low levels of health literacy; communication shortcomings; weak patient involvement, particularly after discharge
Health Literacy & Education	Introductory educational support during initial phases, mainly focused on adherence and core information	More comprehensive educational programmes centred on lifestyle changes, cardiovascular risk factors, and self-management	Ongoing educational support with emphasis on long-term adherence and self-care practices

Prioritisation phase

A lack of consensus among respondents was observed (Kendall’s W: 0.02)

N	Phase 2 Outpatient and tele-rehabilitation	Mean*weight	IQR	p-value	Phase 3 long-term maintenance	Mean*weight	IQR	p-value
1	Inadequate reimbursement schemes for CR, including tele-rehabilitation models	0,16	2	n.s.	Inadequate reimbursement schemes for CR, including tele-rehabilitation models	0,13	-	n.s.
2	Fragmented referral pathways across care settings	0,19	2	<0.05	Reimbursement limits affecting pathway sustainability	0,21	-	<0.05
3	Distance, transportation needs, and time constraints	0,23	2	<0.05	Organisational pressures related to reimbursement constraints	0,29	2,00	<0.05
4	Territorial and regional disparities in CR service availability	0,24	4	<0.05	Territorial and regional disparities in CR service availability	0,30	2,00	<0.05
5	Insufficient referral, explanation, and patient education during the acute phase	0,25	-	<0.05	User-friendly and intuitive digital technologies	0,31	-	<0.05
6	Low perceived need or perceived value of cardiac rehabilitation	0,26	3	<0.05	Limited financial or professional incentives to support change	0,31	2,00	<0.05
7	Limited availability of resources to implement new CR models	0,27	1	<0.05	Limited availability of resources to implement new CR models	0,31	2,00	<0.05
8	High demand and organisational constraints limiting timely access to CR	0,27	4	<0.05	Limited integration of tele-rehabilitation into existing workflows	0,33	2,00	<0.05
9	Inconsistent or limited referral to CR from acute care professionals	0,28	1	<0.05	Digital divide limiting participation in tele-rehabilitation (digital literacy, access to devices)	0,33	3,00	<0.05
10	Limited interoperability and information sharing between services	0,31	3	<0.05	Fragmented referral pathways across care settings	0,34	3,00	<0.05
11	Access barriers for older, frail, and complex patients	0,31	1	<0.05	Access barriers for older, frail, and complex patients	0,35	2,00	<0.05
12	Reimbursement limits affecting pathway sustainability	0,33	2	<0.05	Lack of structured follow-up and automatic referral after discharge	0,37	2,00	<0.05
13	Limited financial or professional incentives to support change	0,33	2	<0.05	Simple and user-friendly tools supporting patient engagement	0,38	2,00	<0.05
14	Personalised exercise programmes adapted to risk and functional status	0,37	2	n.s.	Misalignment between acute care priorities and rehabilitation goals	0,38	2,00	<0.05
15	Low perceived need for CR due to insufficient patient education	0,37	2	<0.05	Digital divide and low digital literacy limiting tele-rehabilitation access	0,40	3,00	n.s.

What COMPASS is teaching us about system transformation?

Transformation starts from understanding existing pathways

Mapping current models reveals fragmentation, unmet needs and differences across settings and countries

Innovation must address the whole pathway, not only the technology

Digital solutions are effective only when embedded into referral processes, professional workflows and continuity-of-care models

Co-design helps align multiple perspectives early

Patients, professionals and organisations bring different priorities that need to be reconciled before implementation.

Organisational and system barriers are as important as clinical ones

Reimbursement, workforce capacity, interoperability and coordination strongly influence implementation

Equity must be designed into new models of care

Digital literacy, access to technology, frailty, socioeconomic conditions and health literacy can determine who actually benefits

Scalable solutions require adaptation, not standardisation alone

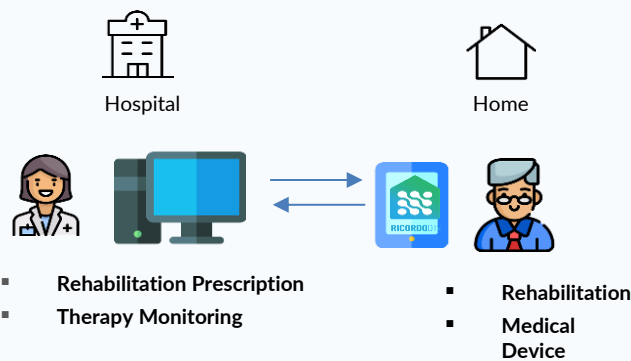
Common principles can be shared across countries, but implementation models must reflect local healthcare systems and contexts

MI-RICORDO project (Transcultural and Multidimensional validation of digital Rehabilitation Intervention of COgnitive Resources Domain-Oriented)



Objectives

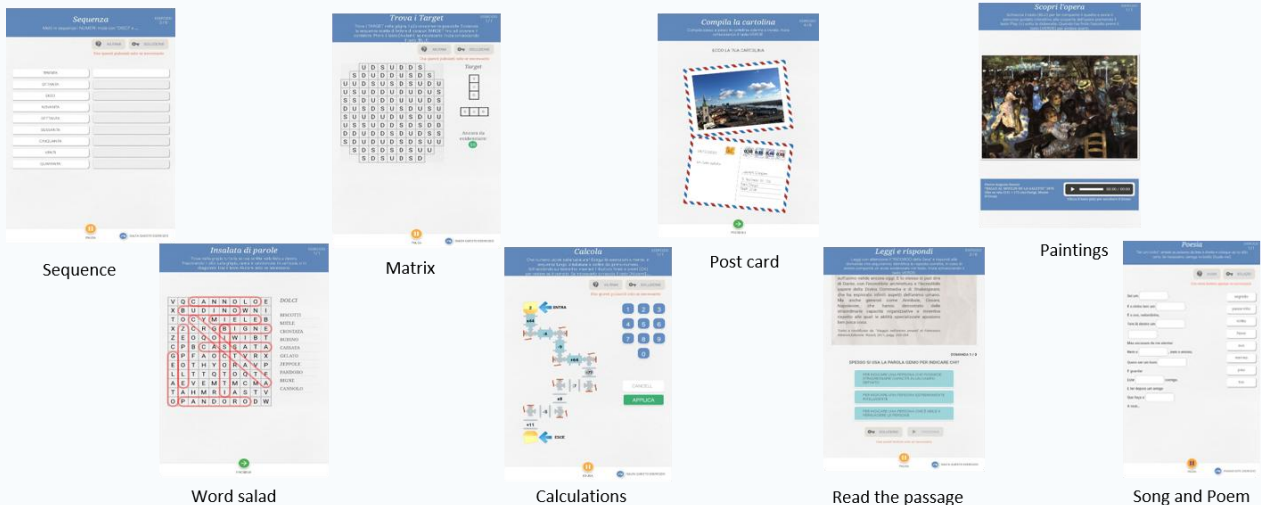
- To study and reconfigure an innovative digital healthcare solution, able to offer continuity of care for people with cognitive impairment, already developed and tested in the Italian context, for its transferability, transcultural adaptation and acceptance in different contexts (Italy, Portugal and France) and in different settings of reference: hospital, home, nursing home and day center
- To propose a multidimensional model that, starting from the MAST (Model for Assessment of Telemedicine) approach, could support the effective validation and adaptation of telemedicine digital solutions, considering also safety, clinical effectiveness, patient perspectives, economic aspects, organizational domains, socio-cultural, legal, ethical aspects, finally acceptability, and reimbursement concerns



Partners

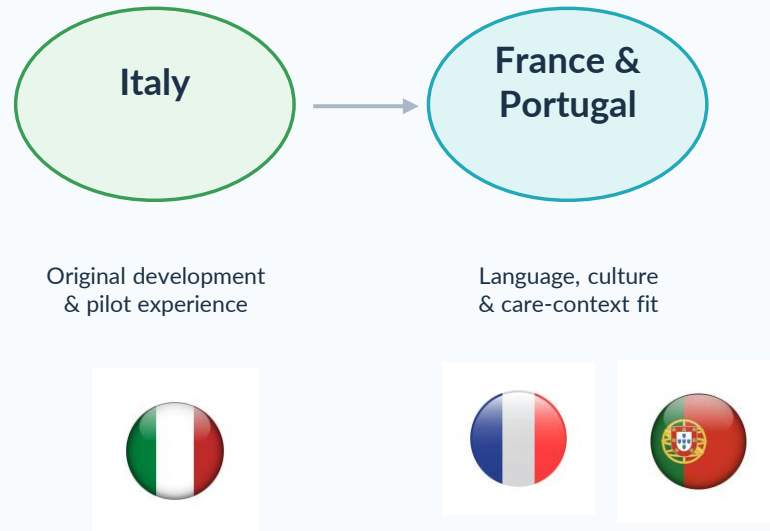


Cognitive Activities



MI-RICORDO: Adapting digital rehabilitation across countries

Adaptation pathway



Adaptation layers

Language and localisation	Interface labels, instructions and clinical communication.
Cultural references	Regions, public figures, artworks and everyday examples.
Clinical practice fit	Rehabilitation routines, patient profiles and care settings.
Organisation and governance	Workflows, roles, reimbursement and regulatory context.
Equity and access	Digital literacy, caregiver support and usability for frail users.

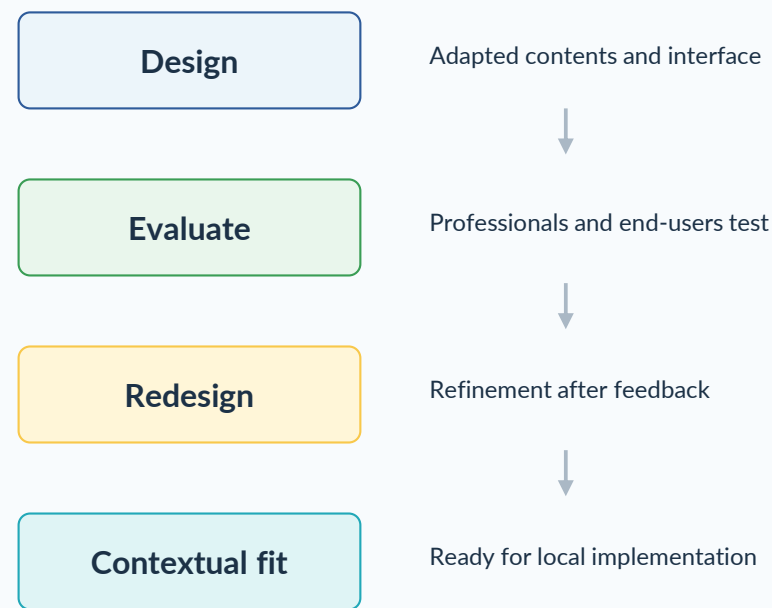
Transferability is not replication: Not a copy-paste logic

- A digital intervention cannot simply be moved from one country or setting to another. Its value depends on how it fits local care pathways, professional routines, patient expectations and system constraints.
- Transferability means maintaining the intervention's purpose while redesigning the conditions that make it usable, acceptable and sustainable in each context.

Co-creation as a driver of transcultural adaptation

Design–Evaluation–Redesign cycles

In MI-RICORDO, healthcare professionals and end-users help test whether the adapted solution is understandable, usable and meaningful in each country and care setting.



What co-creation surfaces

Content adaptation	Regions and artworks may need replacement to preserve comparable cognitive demand.
Task adaptation	When a linguistic sequence is not equivalent, the task logic can be redesigned while preserving the cognitive function.
Platform localisation	UI labels and instructions require expert review beyond automatic translation.
Implementation insight	Feedback reveals usability, workflow and acceptability issues before broader deployment.

Co-creation helps move from a translated product to a transferable rehabilitation model.

Transcultural adaptation of the neuro-rehabilitation contents

Example 1: Activity A01 Word Salad

Insalata di parole ESERCIZIO 1/1

Trova ed evidenzia le parole nella griglia. Cerca in orizzontale o in verticale. Usa il tasto [Aiutami] se necessario.

AUTAMI **SOLUZIONE**

Usa questi pulsanti solo se necessario

A	B	B	Y	A	P	H	O
M	O	L	I	S	E	O	L
O	S	V	E	N	E	T	O
L	I	P	J	W	E	L	M
I	C	U	D	Y	H	L	B
G	I	G	L	W	O	P	A
U	L	L	A	Z	I	O	R
R	I	I	T	Y	C	P	D
I	A	A	P	J	F	M	I
A	M	A	R	C	H	E	A

Le regioni italiane

- LAZIO
- LIGURIA
- LOMBARDIA
- MARCHE
- MOLISE
- PUGLIA
- SICILIA
- VENETO

TRANSLATION						
LEVEL ITEM	ITALIAN	TRANSLATION/ADAPTATION	FRENCH	REVISION_CA	PORTUGUESE	REVISION_MUNDIS
sport		TRANSLATION	FOOTBALL	PARTNER REVISION	FUTEBOL	PARTNER REVISION
		TRANSLATION	COURSE		CORRIDA	
		TRANSLATION	GOLF		GOLFE	
		TRANSLATION	JUDO		JUDÔ	
		TRANSLATION	NATATION		NATAÇÃO	
Regions of Italy		TRANSLATION	TENNIS		TÊNIS	
		ADAPTATION (region of French)	LAZIO		LÁCIO	
		ADAPTATION (region of French)	LIGURIE		LIGÚRIA	
		ADAPTATION (region of French)	LOMBARDIE		LOMBARDIA	
		ADAPTATION (region of French)	MARCHES		MARCAS	
		ADAPTATION (region of French)	MOLISE		MOLISE	
		ADAPTATION (region of French)	POUILLES		PÚGLIA	
		ADAPTATION (region of French)	SICILE		SICÍLIA	
		ADAPTATION (region of French)	VÉNÉTIE		VÊNETO	

- Some items only required direct translation (e.g., list of sports)
- Other items required specific cultural adaptations Italian regions were replaced with French and Portuguese regions
- A consistent geographical progression (south to north) was maintained
- References to famous sports figures were also adapted
- Well-known athletes were selected for the French and Portuguese versions respectively

Transcultural adaptation of the neuro-rehabilitation contents

Example 2: Activity A04 – Sequence

A.

Sequenza

ESERCIZIO 1/1

Metti in sequenza I MESI DELL'ANNO. Inizia con "AGOSTO" e ...

 AIUTAMI
  SOLUZIONE

Usa questi pulsanti solo se necessario

OTTOBRE	
MAGGIO	
APRILE	
GENNAIO	
LUGLIO	
AGOSTO	
NOVEMBRE	
FEBBRAIO	
DICEMBRE	

B.

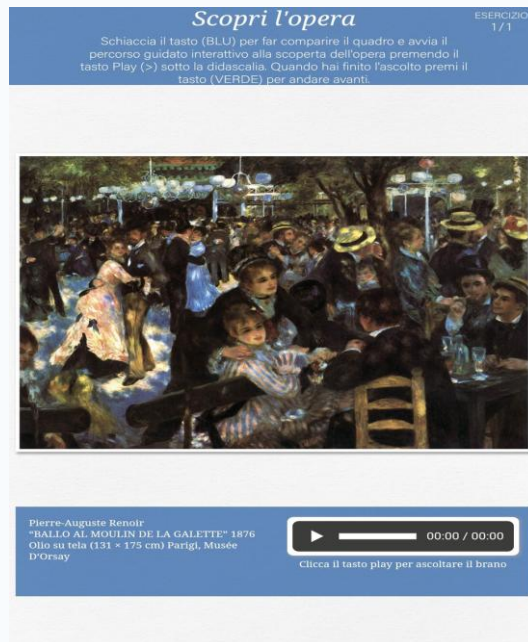
TRANSLATION

LEVEL	INSTRUCTION 1	ITALIAN	TRANSLATION/ADAPTATION	REVISION_CA	REVISION_MUNDIS
1 N 1		Metti in sequenza le FESTIVITA' ITALIANE	TRANSLATION	FRANÇAISES. Commencer par	PORTUGUESE
1 N 1			ADAPTATION		Coloque em sequência os FESTIVIDADES PORTUGUESES
1 N 1			ADAPTATION		Ano Novo
1 N 1			ADAPTATION		Páscoa
1 N 1			ADAPTATION		Dia da Liberdade
1 N 1			ADAPTATION		Dia do Trabalhador
1 N 1			ADAPTATION		Dia de Portugal
1 N 1			ADAPTATION		Implantação da República
1 N 1			ADAPTATION		Todos os Santos
1 N 1			ADAPTATION		Imaculada Conceição
1 N 1			ADAPTATION		Natal
1 INSTRUCTION 2		Metti in sequenza i MESE DELL'ANNO	TRANSLATION	DE L'ANNÉE. Commence par	AGOST Coloque em sequência os MESES DO ANO. Comece co
1 N 2			TRANSLATION		Agosto
1 N 2			TRANSLATION		Outubro
1 N 2			TRANSLATION		Novembro
1 N 2			TRANSLATION		Dezembro
1 N 2			TRANSLATION		Janeiro
1 N 2			TRANSLATION		Fevereiro
1 N 2			TRANSLATION		Abril
1 N 2			TRANSLATION		Mai
1 N 2			TRANSLATION		Julho

- This task required substantial cultural adaptation
- In the Italian version, the sequence was based on prepositions learned in a fixed order French prepositions do not follow a standardized learning sequence
- To preserve the same cognitive demand, prepositions were replaced with personal pronouns French pronouns (Je, Tu, Il, Elle...) are typically learned in a structured and fixed order

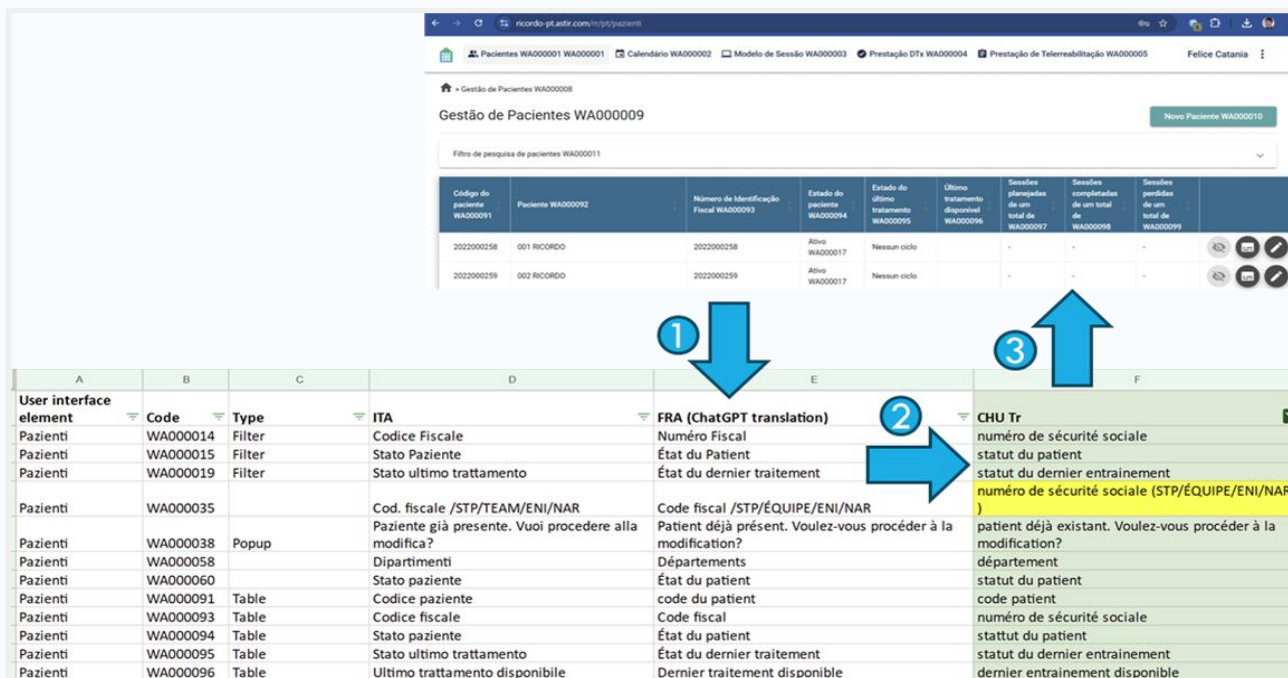
Transcultural adaptation of the neuro-rehabilitation contents

Example 3: Activity A16 Paintings



- In most cases, adaptation only required translation of the audio guide
- Some cultural adaptations were nevertheless necessary
- Certain paintings included well-known Italian historical figures (e.g., Alessandro Manzoni) → The expert panel evaluated the need to replace culturally specific artworks
- Alternative paintings were considered to ensure comparable cognitive demands across countries

Transcultural adaptation of the platform



A	B	C	D	E	F
User interface element	Code	Type	ITA	FRA (ChatGPT translation)	CHU Tr
Pazienti	WA000014	Filter	Codice Fiscale	Numéro Fiscal	numéro de sécurité sociale
Pazienti	WA000015	Filter	Stato Paziente	État du Patient	statut du patient
Pazienti	WA000019	Filter	Stato ultimo trattamento	État du dernier traitement	statut du dernier entrainement
Pazienti	WA000035		Cod. fiscale /STP/TEAM/ENI/NAR	Code fiscal /STP/ÉQUIPE/ENI/NAR	numéro de sécurité sociale (STP/ÉQUIPE/ENI/NAR)
Pazienti	WA000038	Popup	Paziente già presente. Vuoi procedere alla modifica?	Patient déjà présent. Voulez-vous procéder à la modification?	patient déjà existant. Voulez-vous procéder à la modification?
Pazienti	WA000058		Dipartimenti	Départements	département
Pazienti	WA000060		Stato paziente	État du patient	statut du patient
Pazienti	WA000091	Table	Codice paziente	code du patient	code patient
Pazienti	WA000093	Table	Codice fiscale	Code fiscal	numéro de sécurité sociale
Pazienti	WA000094	Table	Stato paziente	État du patient	statut du patient
Pazienti	WA000095	Table	Stato ultimo trattamento	État du dernier traitement	statut du dernier entrainement
Pazienti	WA000096	Table	Ultimo trattamento disponibile	Dernier traitement disponible	dernier entrainement disponible

To perform the translation, the process was executed in the following steps:

- the bundle containing the labels used in the UI was exported and the labels were translated with translation tools available in the market,
- the translations were modified by the project coordinators/panel of experts in France and Portugal
- the localized bundle were uploaded in the UI

Codice prestazione	Rev.	Stato	Disponibile	Descrizione prestazione
 FRANCESE	0	Attiva	No	Francese
 FRANCESEDTX	1	Attiva	Si	Francese DTX
 PORTOGHESE	0	In bozza	No	Portoghese
 RIC-584 TEST	0	Attiva	Si	RIC-584 test
 TESTAPDXTX001	0	Attiva	No	Test App DTX 001

Examples of UI of the web application

Transcultural adaptation of the App



Examples of UI of the application - Welcome screen

Transcultural adaptation of the App

ITALY

Leggi e rispondi

ESERCIZIO
1/1

Leggi con attenzione il "RICORDO della Sera" e rispondi alle domande che seguiranno. Identifica la risposta corretta; in caso di errore comparirà un aiuto evidenziato nel testo.

IL RICORDO DELLA SERA

ANNO 19 - € 110

IL TIRAMISU': IL DESSERT ITALIANO PIÙ AMATO AL MONDO!

Il tiramisù è uno dei dolci italiani più famosi e apprezzati al mondo. E' anche un piatto geniale nella sua semplicità. Ma quali sono le sue origini? E qual è la ricetta originale?

Il tiramisù è un dolce tipico della cucina italiana. Nasce a Treviso alla fine degli anni Sessanta da una rivisitazione dello "sbatudin", un dolce energetico a base di tuorlo d'uovo montato con lo zucchero.

La ricetta originale prevede l'utilizzo di mascarpone, uova, zucchero, savoiardi, caffè e cacao in polvere. Per prima cosa si prepara la crema, che è l'ingrediente fondamentale. Per ottenere una crema morbida e compatta occorre anzi tutto montare i tuorli d'uovo con lo zucchero, aggiungendo poi al composto il mascarpone e gli albumi montati a neve. A parte si preparano i savoiardi, inzuppandoli nel caffè, per poi ricoprirli via via con la crema. Si procede alternando savoiardi inzuppati e strati di crema fino allo strato finale, sul quale si sparge un velo di cacao in polvere.

La ricetta classica non prevede l'utilizzo di altri ingredienti. Tuttavia, esistono numerose varianti del tiramisù: la più recente prevede

PAUSA

SALTA QUESTO ESERCIZIO

FRANCE

Lisez et répondez

EXERCICE
1/1

Lisez attentivement le "Le Monde du Souvenir" et répondez aux questions suivantes. Trouvez la bonne réponse

LE MONDE DU SOUVENIR

ANNO 19 - € 110

LA TARTE TATIN : UN DESSERT CLASSIQUE DE LA CUISINE FRANÇAISE!

La tarte Tatin est l'un des desserts français les plus célèbres et appréciés. C'est aussi une recette originale, née d'une erreur ! Mais quelle est son histoire ? Et comment la préparer selon la tradition ?

La tarte Tatin est une spécialité de la région Centre-Val de Loire. Elle aurait été inventée à la fin du XIXe siècle par les sœurs Tatin, qui tenaient un hôtel à Lamotte-Beuvron. Un jour, l'une d'elles aurait oublié de mettre la pâte dans un moule à tarte, et aurait décidé de la poser sur les pommes caramélisées en cours de cuisson. Le résultat a eu un tel succès que la recette est devenue célèbre.

La recette traditionnelle utilise peu d'ingrédients : des pommes, du sucre, du beurre et de la pâte brisée ou feuilletée. On commence par éplucher et couper les pommes, que l'on fait revenir dans le beurre et le sucre jusqu'à ce qu'elles soient bien caramélisées. Ensuite, on les dispose dans un moule, puis on recouvre le tout avec la pâte. La tarte est ensuite cuite au four, puis retournée encore chaude avant d'être servie.

PAUSE

PASSER CET EXERCICE

PORTUGAL

Leia e responde

EXERCÍCIO
1/1

Leia com atenção o "Diário da Tarde" e responda às perguntas que se seguem. Identifique a resposta correta; em caso de erro, uma dica será destacada no texto. Comece pressionando o botão VERDE.

DIÁRIO DA TARDE

ANO 19 - € 110

PASTEL DE BELÉM: O DOCE MAIS GUARDADO DE PORTUGAL!

O pastel de nata é um dos doces mais famosos e apreciados em Portugal e no mundo.

A sua origem remonta ao século XIX, no bairro de Belém, Lisboa, quando os monges do Mosteiro dos Jerónimos começaram a vender os pastéis para sobreviver após o encerramento dos conventos. Assim nasceram os Pastéis de Belém, feitos segundo uma receita secreta, ainda hoje guardada na Antiga Confeitaria de Belém.

O pastel de nata tradicional é feito com massa folhada crocante e um recheio cremoso de natas, gemas de ovos e açúcar. O creme é cozido em banho-maria, colocado na massa e levado ao forno até ficar dourado. Algumas pessoas gostam de polvilhá-lo com canela ou açúcar em pó. Os verdadeiros Pastéis de Belém só se encontram na Antiga Confeitaria de Belém, que também é conhecida como Confeitaria "Pastéis de Belém".

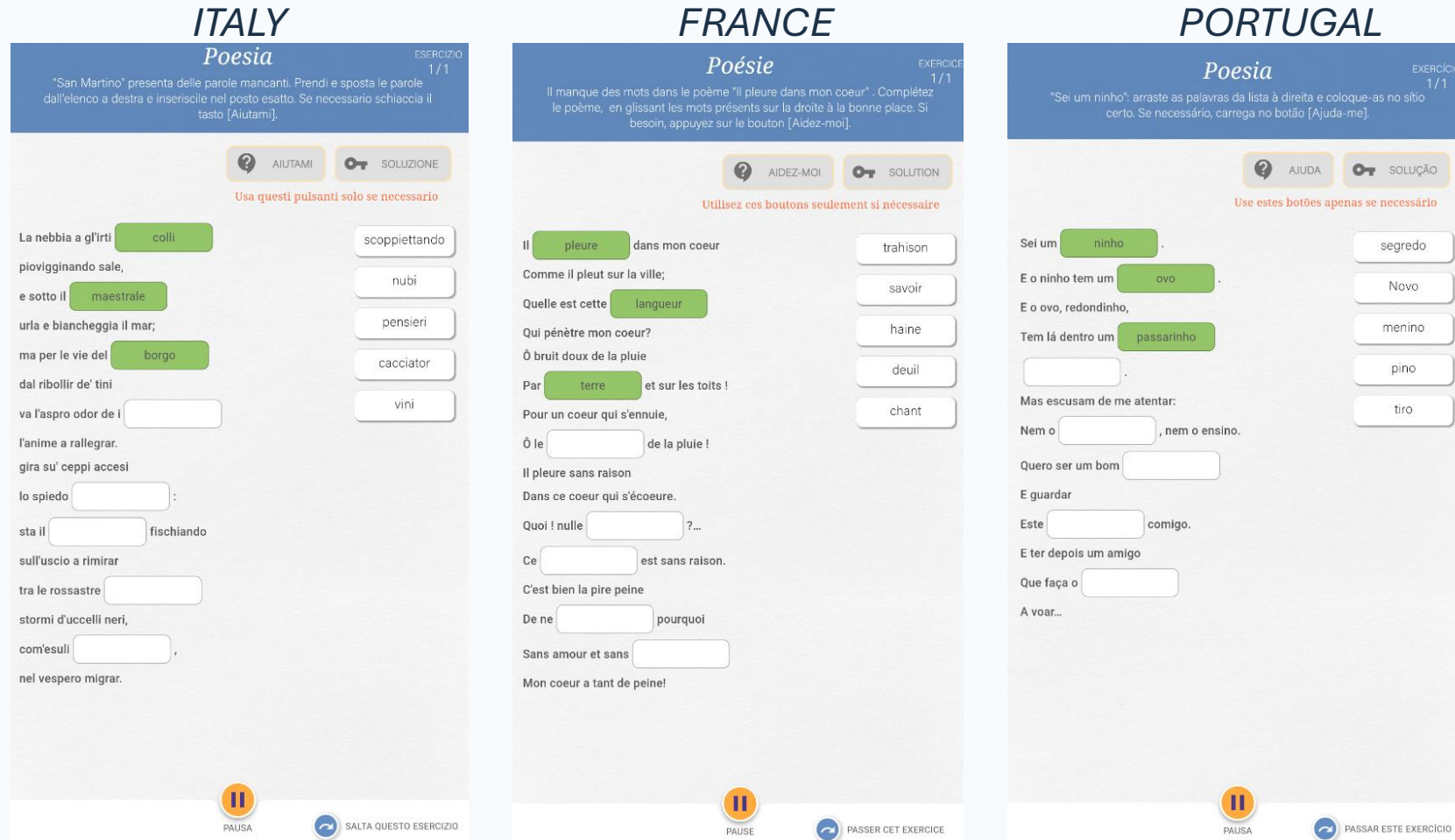
Com o tempo, esta receita evoluiu, incorporando a massa folhada de influência francesa. Hoje, os pastéis de nata são uma imagem de marca da doçaria portuguesa e um símbolo da tradição. Assim, a Antiga Confeitaria de Belém mantém a receita original.

PAUSA

PASSAR ESTE EXERCÍCIO

Examples of UI of the application - task A12 "Read the passage"

Transcultural adaptation of the App



Examples of UI of the application - task A12 "Song and Poem"

Transcultural adaptation of the platform

The screenshot shows the 'Modifica Paziente' (Modify Patient) form for patient 2026002036. The interface is in Italian. At the top, there's a navigation bar with icons for 'Pazienti', 'Calendario', 'Template Sessione', 'Prestazioni DTx', and 'Prestazioni telereabilitazione'. Below the navigation bar, the title 'Modifica Paziente 2026002036' is displayed, followed by 'Modifica' and 'Indietro' buttons. The form is divided into two columns. The left column contains fields for 'Codice paziente' (2026002036), 'Cod. paziente trial clinico*' (Test), 'Nome', 'Sesso' (dropdown), 'Telefono', 'Comune di residenza', and 'Password'. The right column contains fields for 'Descrizione trial clinico*' (Test), 'Cognome', 'Data di nascita' (calendar icon), 'E-mail', 'Indirizzo di residenza', 'CAP', and 'Lingua*' (Italiano dropdown). At the bottom, there's a 'Dipartimenti *' label.

Examples of UI of the platform - ITALY

The screenshot shows the 'Modifier le patient' (Modify Patient) form for patient 2026002133. The interface is in French. At the top, there's a navigation bar with icons for 'Patients', 'Calendrier', 'Modèle de Session', 'Prestations DTx', and 'Prestations de Téléréhabilitation'. Below the navigation bar, the title 'Modifier le patient 2026002133' is displayed, followed by 'Modifier' and 'Retour' buttons. The form is divided into two columns. The left column contains fields for 'Code patient' (2026002133), 'Code patient essai clinique *' (FRA), 'Nom', 'Sexe' (dropdown), 'Téléphone', 'Commune de résidence', and 'Mot de passe'. The right column contains fields for 'Description de l'essai clinique *' (SÉANCE DE TEST), 'Prénom', 'Date de Naissance' (calendar icon), 'E-mail', 'Adresse de résidence', 'Code Postal', and 'Langue*' (Français dropdown). At the bottom, there's a 'Département' label.

Examples of UI of the platform - FRANCE

The screenshot shows the 'Alterar paciente' (Modify Patient) form for patient 2026002121. The interface is in Portuguese. At the top, there's a navigation bar with icons for 'Pacientes', 'Calendário', 'Modelo de sessão', 'Serviços de DTx', and 'Serviços de Telereabilitação'. Below the navigation bar, the title 'Alterar paciente 2026002121' is displayed, followed by 'Alterar' and 'Voltar' buttons. The form is divided into two columns. The left column contains fields for 'Ensaio clínico com pacientes' (Sim), 'Código do paciente' (2026002121), 'Código do paciente do ensaio clínico*' (teste), 'Nome', 'Sexo' (dropdown), 'Telefone', 'Concelho de residência', and 'Palavra-passe'. The right column contains fields for 'Descrição do ensaio clínico*' (teste), 'Apelido', 'Data de nascimento' (calendar icon), 'E-mail', 'Endereço de residência', 'CÓDIGO POSTAL', and 'Língua*' (Português dropdown). At the bottom, there's a 'Departamentos' label.

Examples of UI of the platform - PORTUGAL

Transcultural adaptation of the platform

The screenshot shows the Italian version of the platform. The top navigation bar includes 'Pazienti', 'Calendario', 'Template Sessione', 'Prestazioni DTx', and 'Prestazioni telerabilitazione'. The main header is 'Trattamento terapeutico - Fondazione Don Carlo Gnocchi ONLUS'. The 'Paziente' section displays clinical and fiscal codes. The 'Trattamento terapeutico Telerabilitazione' section shows session details and a progress bar. The 'Sessioni di terapia' table has columns for N°, Data, Ora inizio, Durata, Stato sessione, Completamento sessione (%), and Attività.

N°	Data	Ora inizio	Durata	Stato sessione	Completamento sessione (%)	Attività
1	15/05/2026	16:57:46		In corso	10%	A08 - Compila Cartolina Liv2 A00 - Inserisci di parole senza recall Liv2 A05 - Trova elementi nella matrice Liv2 A01 - Inserisci di parole Liv2 A06 - Calcoli matematici Liv2 A01R - Inserisci di parole (R) Liv2 A04 - Sequenze Liv2

Examples of UI of the platform - ITALY

The screenshot shows the French version of the platform. The top navigation bar includes 'Patients', 'Calendrier', 'Modèle de Session', 'Prestations DTx', and 'Prestations de Téléréhabilitation'. The main header is 'Entrainement - Université Côte d'Azur'. The 'Patient' section displays clinical and security codes. The 'Entrainement Téléréhabilitation' section shows session details and a progress bar. The 'Session d'entraînement' table has columns for N°, Date, Heure de début, Durée, État de la Session, Achèvement de la session (%), and Activités.

N°	Date	Heure de début	Durée	État de la Session	Achèvement de la session (%)	Activités
1	15/05/2026	11:02:05		En cours	20%	A08 - Carte postale à remplir Liv2 A00 - Salades de mots sans rappel Liv2 A05 - Trouver des éléments dans la matrice Liv2 A01 - Salades de mots Liv2 A06 - Calculs mathématiques Liv2 A01R - Salade de mots (R) Liv2 A04 - Séquences Liv2 A20 - Poèmes Liv2

Examples of UI of the platform - FRANCE

The screenshot shows the Portuguese version of the platform. The top navigation bar includes 'Pacientes', 'Calendário', 'Modelo de sessão', 'Serviços de DTx', and 'Serviços de Telereabilitação'. The main header is 'Tratamento terapêutico - MUNDIS - Associação Cívica de Formação e Cultura'. The 'Paciente' section displays clinical and fiscal codes. The 'Tratamento terapêutico Telereabilitação' section shows session details and a progress bar. The 'Sessão de terapia' table has columns for N°, Data, A começar agora, Duração, Estado da sessão, Conclusão da sessão (%), and Atividade.

N°	Data	A começar agora	Duração	Estado da sessão	Conclusão da sessão (%)	Atividade
1	15/05/2026	11:11:10		Iniciando	10%	A08 - Preencha o Postal Liv2 A00 - Saladas de palavras sem memória Liv2 A05 - Encontre elementos na matriz Liv2 A01 - Salada de palavras Liv2 A06 - Cálculos matemáticos Liv2 A01R - Salada de palavras (R) Liv2 A04 - Sequências Liv2 A20 - Poemas Liv2

Examples of UI of the platform - PORTUGAL

But is an innovation ready for implementation and scale?

Does it work?

Evidence of clinical effectiveness, safety and added value for patients.

Do people accept and use it?

Experiential knowledge is combined with clinical and organisational expertise.

Does it fit existing care pathways?

Alignment with workflows, roles, referral mechanisms and organisational routines.

Can the system sustain it?

Workforce capacity, infrastructure, costs, reimbursement and governance

Can it be transferred across contexts?

Cultural, organisational, regulatory and health-system adaptation

Can access remain equitable when scaling?

Digital literacy, frailty, socioeconomic barriers and accessibility must be considered

Multidimensional evaluation of digital rehabilitation



WHAT IS THE MAST MODEL?

The **MAST (Multidimensional Assessment of Software Technology)** model is a comprehensive framework to evaluate digital health interventions across multiple domains, ensuring a balanced assessment of their value, beyond clinical effectiveness alone. It supports decision-making for adoption, implementation and scaling in real-world healthcare settings.

HOW DOES IT WORK?



Define evaluation objectives and stakeholders



Assess the intervention across the 6 MAST dimensions



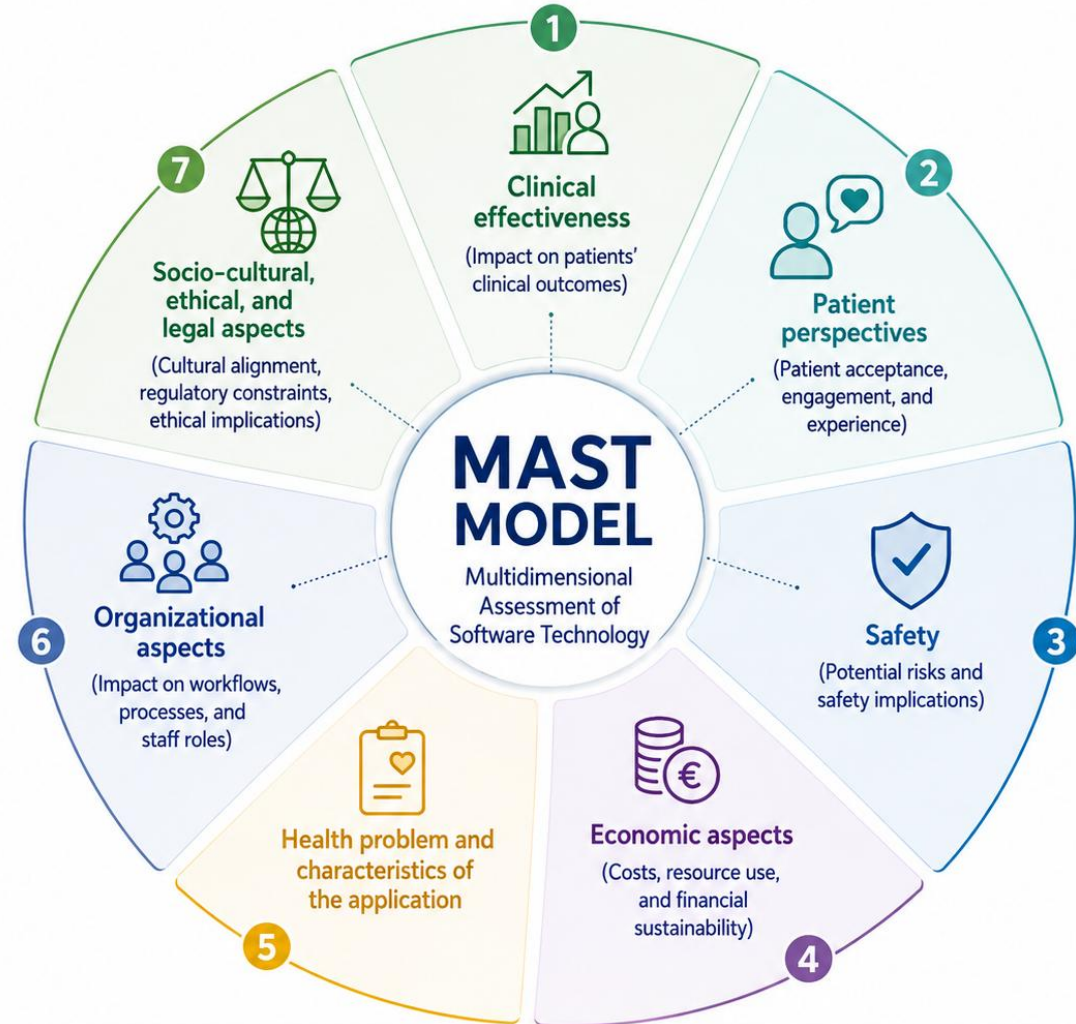
Generate a multidimensional profile



Inform decisions for adoption, adaptation and scaling



MAST ensures that digital rehabilitation solutions are effective, acceptable, feasible, sustainable and aligned with the values of patients, professionals and health systems.



MI-RICORDO: Materials and methods

Research design: Mixed-methods study grounded in **Implementation Science** (Nilsen, 2015) and structured through the **MAST framework** (Kidholm et al., 2012), adopting a **multi-stakeholder co-creation approach**

Phase 1 – Stakeholder Assessment: online survey administered to healthcare professionals and project stakeholders involved in the **MI-RICORDO project** across **Italy, Portugal, and France**

Assessment of:

- *MAST dimensions*
- *Technology acceptability*
- *Implementation barriers*

Methods:

- *Ranking tasks*
- *Likert scale items*

Phase 2 – User Experience Assessment: survey administered during cross-country dissemination and demonstration events of the transculturally adapted RICORDO DTx platform to patients/caregivers and healthcare professionals

Assessment of:

- *User experience*

Methods:

- *Likert scale items*
- *Open-ended question*

Data analysis: data were analysed using **descriptive statistical techniques** to examine the perceived relevance of MAST dimensions, implementation barriers, technology acceptability, usability, and user experience

Comparative analyses were conducted across stakeholder groups and participating countries to identify differences in perceptions, priorities, and implementation challenges

Stakeholder assessment: MAST Dimensions

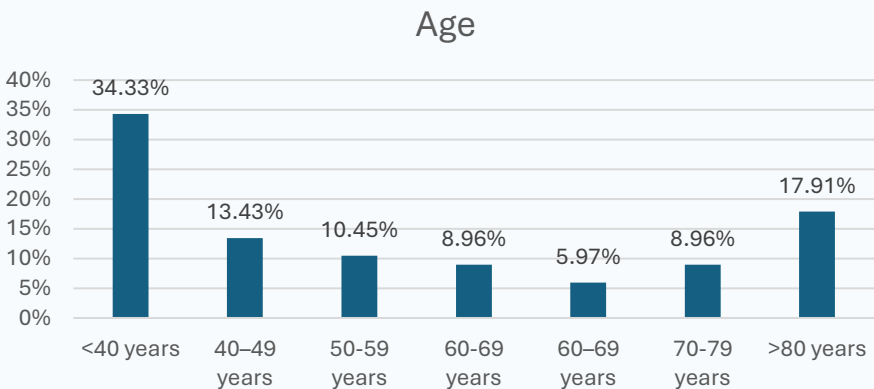
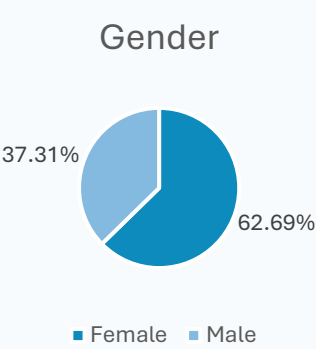
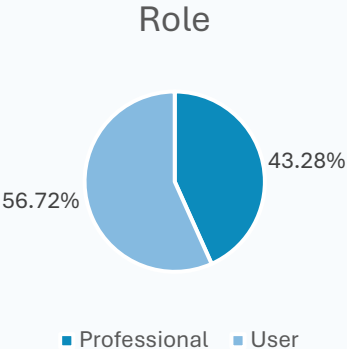
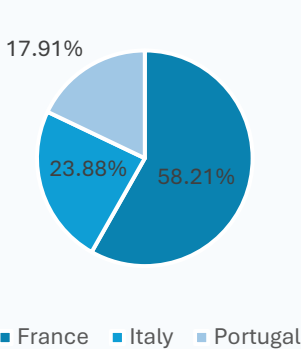
Respondents (n = 13) were mainly psychologists (76.9%), with 5–20 years of professional experience in neurorehabilitation (46.2%) and more than 3 months of experience with RICORDO (69.2%), from Italy (53.8%), France (23.1%), and Portugal (23.1%)

MAST Dimensions*	Italy	Portugal	France	Entire Sample
Clinical effectiveness (Impact on patients' clinical outcomes)	1.86	2.00	2.33	2.00
Patient perspectives (Patient acceptance, engagement, and experience)	2.71	2.33	2.00	2.46
Safety (Potential risks and safety implications)	3.71	5.00	3.67	4.00
Economic aspects (Costs, resource use, and financial sustainability)	3.86	5.67	4.33	4.38
Health problem and characteristics of the application	4.86	3.67	5.67	4.77
Organizational aspects (Impact on workflows, processes, and staff roles)	5.29	5.67	5.33	5.38
Socio-cultural, ethical, and legal aspects (Cultural alignment, regulatory constraints, ethical implications)	5.57	3.67	4.67	4.92

**Mean values from 1 to 7, where 1 = most relevant and 7 = least relevant*

User Experience Assessment

Total respondents: 67



	Italy			Portugal			France		
	Entire Sample	Healthcare professionals	Users	Entire Sample	Healthcare professionals	Users	Entire Sample	Healthcare professionals	Users
How easy was it to use the device?*	3.94	4.00	3.92	4.08	3.83	4.33	3.54	3.75	3.32
Do you think this system could be useful to improve cognitive abilities?*	3.88	4.00	3.85	4.33	4.17	4.50	3.62	3.65	3.58
How would you rate your overall experience with the device?*	4.25	4.33	4.23	4.33	4.17	4.50	4.00	4.05	3.95

p-value<0.05
between
countries

*Mean values from 1 to 5, where 1 = extremely likely and 5 = extremely unlikely

Stakeholder assessment: Technology Acceptability

Technology Acceptability from Healthcare Professionals' perspective*	Italy	Portugal	France	Entire Sample
Using RICORDO in my clinical practice would improve my job performance	3.71	1.67	3.67	3.23
Using RICORDO is useful in my daily work	3.71	1.67	4.00	3.31
Learning to use RICORDO is easy	3.86	1.67	3.33	3.23
Interaction with RICORDO is clear and understandable	4.14	2.00	3.33	3.46
RICORDO is easy to use in practice	3.57	1.67	3.67	3.15
RICORDO fits well within my organization's workflow	3.71	2.33	3.33	3.31
RICORDO is compatible with existing clinical practices in my country	3.43	2.33	3.67	3.23
Colleagues have a positive attitude toward RICORDO	3.86	2.33	3.67	3.46
I support wider adoption of RICORDO	3.57	1.33	4.00	3.15

Technology Acceptability from Patients' perspective*	Italy	Portugal	France	Entire Sample
Learning to use RICORDO is easy from patients' perspective	3.43	2.67	3.67	3.31
RICORDO is perceived easy to use from patients	3.43	2.67	4.00	3.38
RICORDO is perceived useful to improve cognitive abilities from patients	3.43	2.00	3.67	3.15
Interaction with RICORDO is clear and understandable	3.43	2.67	4.33	3.46
Patients are willing to use RICORDO	3.57	2.00	3.67	3.23
Digital rehabilitation is culturally acceptable in my country by patients	3.57	2.33	3.67	3.31
Cultural differences influence the usability of RICORDO from patients	4.43	2.33	5.00	4.08
Language and localization are critical for RICORDO wider adoption from patients	3.43	2.00	5.67	3.62 <i>p-value<0.05</i>
Learning to use RICORDO is easy from patients' perspective	3.43	2.67	3.67	3.31

*Mean values from 1 to 5, where 1 = extremely likely and 7 = extremely unlikely

Stakeholder assessment: barriers

Main barriers to the structured implementation of RICORDO DTx**	Italy	Portugal	France	Entire Sample
Reimbursement tariffs affecting pathway sustainability	1.86	2.67	2.67	2.23
Low awareness of tele-rehabilitation models among professionals	2.57	3.67	1.67	2.62
Fragmented internal workflows and poor coordination across teams	3.43	4.00	3.00	3.46
Capacity constraints internal to healthcare authorities limiting the number of patients treated in tele-rehabilitation	3.57	2.00	4.00	3.31
Limited availability of trained staff and specialised competencies	3.57	2.67	3.67	3.38

******Mean values from 1 to 5, where 1 = most relevant and 5 = least relevant

Implementation, Sustainability & Future Scalability



Making RICORDO-DTx sustainable beyond the project

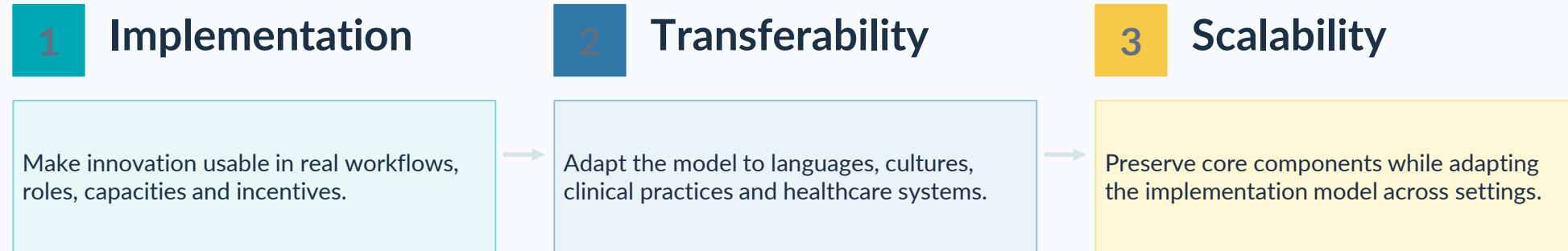
Successful implementation will depend on the capacity to address:

- **Reimbursement and economic sustainability** of the telerehabilitation pathway
- **Workflow integration** within routine clinical practice
- **Training and engagement** of healthcare professionals
- **Patient and caregiver acceptance** in different care settings
- **Regulatory readiness** and long-term governance

Future directions:

- Testing RICORDO-DTx in larger multicentre real-world settings
- Defining country-specific implementation models
- Supporting scalability across healthcare systems

Implementation, transferability and scalability: what have we learned from MI-RICORDO and COMPASS?



Cross-cutting success factors

Stakeholder engagement

Design with patients, professionals and organisations from the beginning

Context-sensitive adaptation

Adapt and redesign according to local constraints

Multidimensional evidence

Look beyond clinical effectiveness to organisational, economic and social impact

Governance & incentives

Align reimbursement, roles, responsibilities and data infrastructures

From successful projects to sustainable system transformation

Project success

Prototypes, pilots, co-designed pathways and preliminary evidence

Bridge conditions



Sustainable system transformation

Routine practice, funded pathways, clear governance and continuous improvement

Implementation roadmap

Who does what, when and with which resources

Workflow integration

Embed innovation into referral, delivery and follow-up processes

Economic sustainability

Reimbursement, incentives and value demonstration

Workforce readiness

Training, professional roles and change management

Data & interoperability

Information sharing, monitoring and feedback loops

Equity safeguards

Accessibility, digital literacy and inclusion of frail users

Transformation is achieved when innovations become integrated into the operating model of the system

Implications for policy and future scaling

Policy levers

Make rehabilitation visible in integrated care strategies

Position rehabilitation as a lever for continuity, participation and long-term management.

Standardise core principles, adapt implementation locally

Keep shared objectives while allowing country- and setting-specific pathways.

Use multidimensional evaluation for decisions

Include clinical, patient, organisational, economic, ethical and socio-cultural evidence.

1

2

3

4

5

6

Support hybrid and digital rehabilitation models

Define reimbursement mechanisms and rules for remote, blended and home-based care.

Invest in workforce and digital readiness

Build skills, professional engagement and organisational capacity for change.

Plan multicentre real-world validation

Generate comparable evidence across health systems and implementation contexts.

Take-home messages

Rehabilitation can be a strategic lever for system transformation.

1	Rehabilitation is not only a downstream service	It connects acute care, community, home and long-term management.
2	Co-design makes transformation implementable	Stakeholders help identify real needs, barriers and feasible solutions.
3	Transferability requires adaptation, not replication	Language, culture, workflows, regulation and reimbursement shape adoption.
4	Sustainable scaling requires multidimensional evidence	Clinical outcomes must be integrated with patient, organisational, economic and social dimensions.
5	Future rehabilitation models must be integrated, equitable and sustainable	Innovation becomes transformation only when embedded in care systems and everyday practice.

COMPASS and MI-RICORDO show that pathway redesign, digital rehabilitation and multidimensional evaluation can jointly support more resilient care systems.

THANK YOU FOR YOUR ATTENTION

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