

Proposal for a working group on

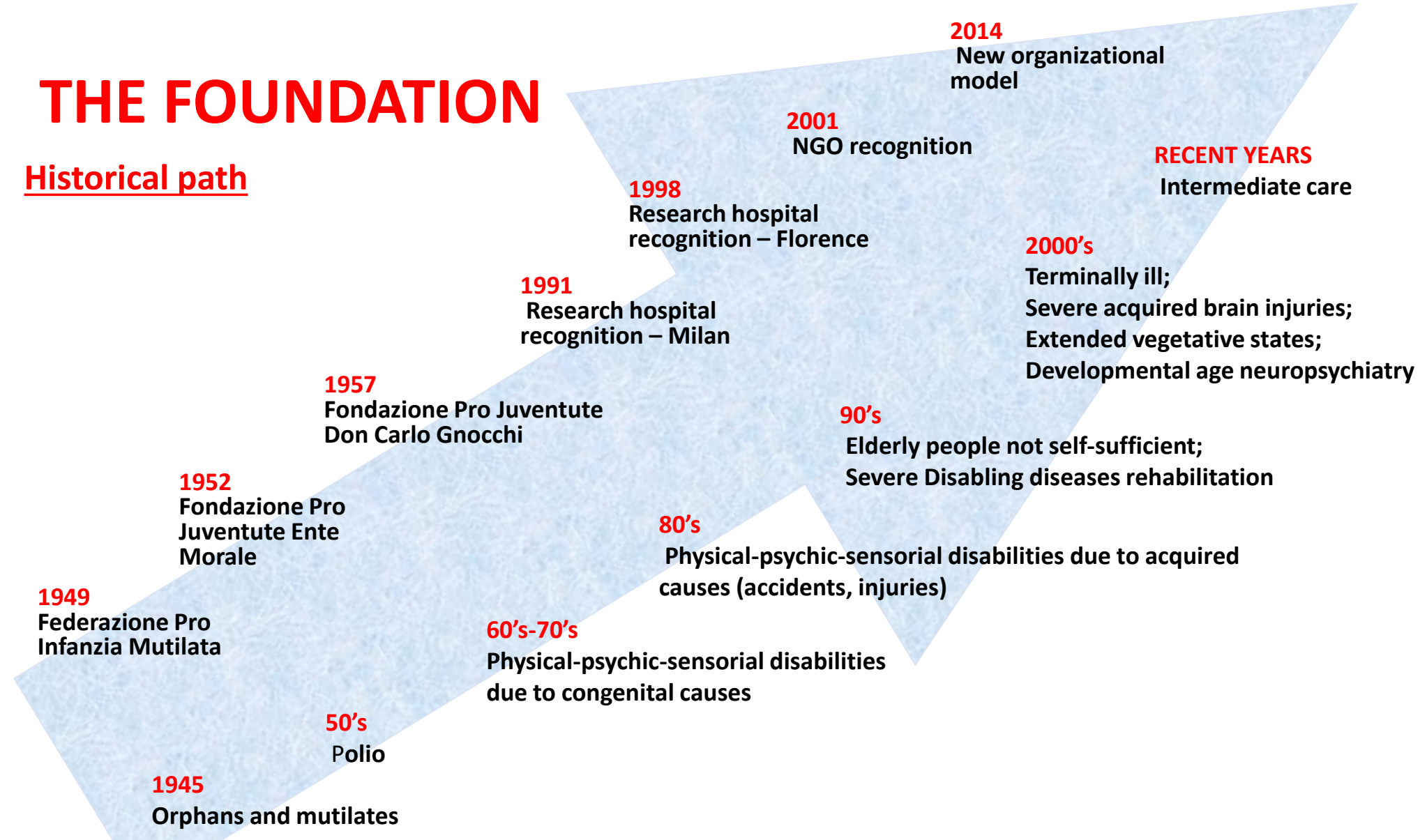
# **Integrated, Technology-based, rehabilitation & care**

(INTERHEA)

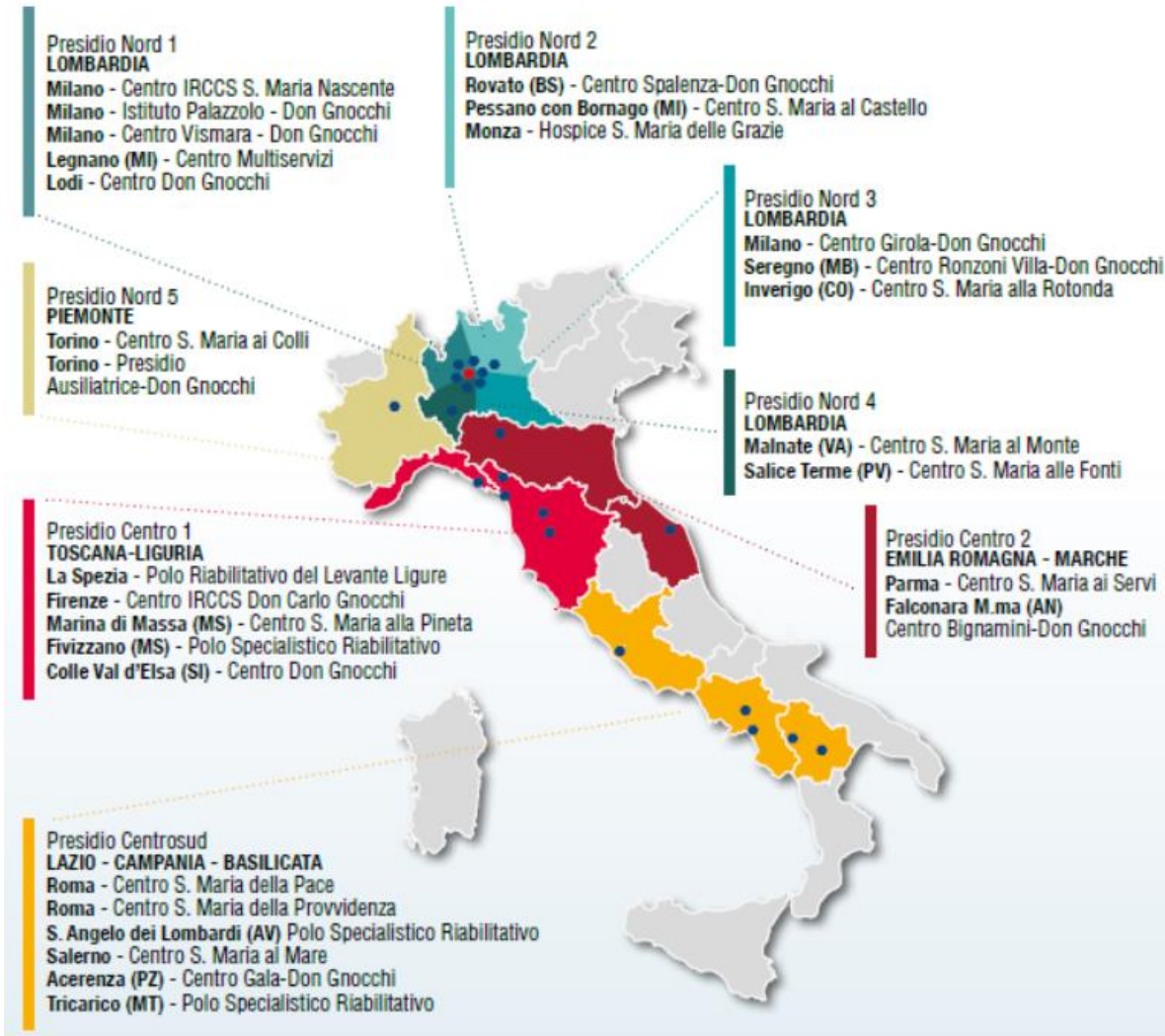
Towards the “Smart Hospital of the Future”

## THE FOUNDATION

### Historical path



Private, not-for-profit, national-healthcare-system reimbursed, group of post-acute centres



## Some figures

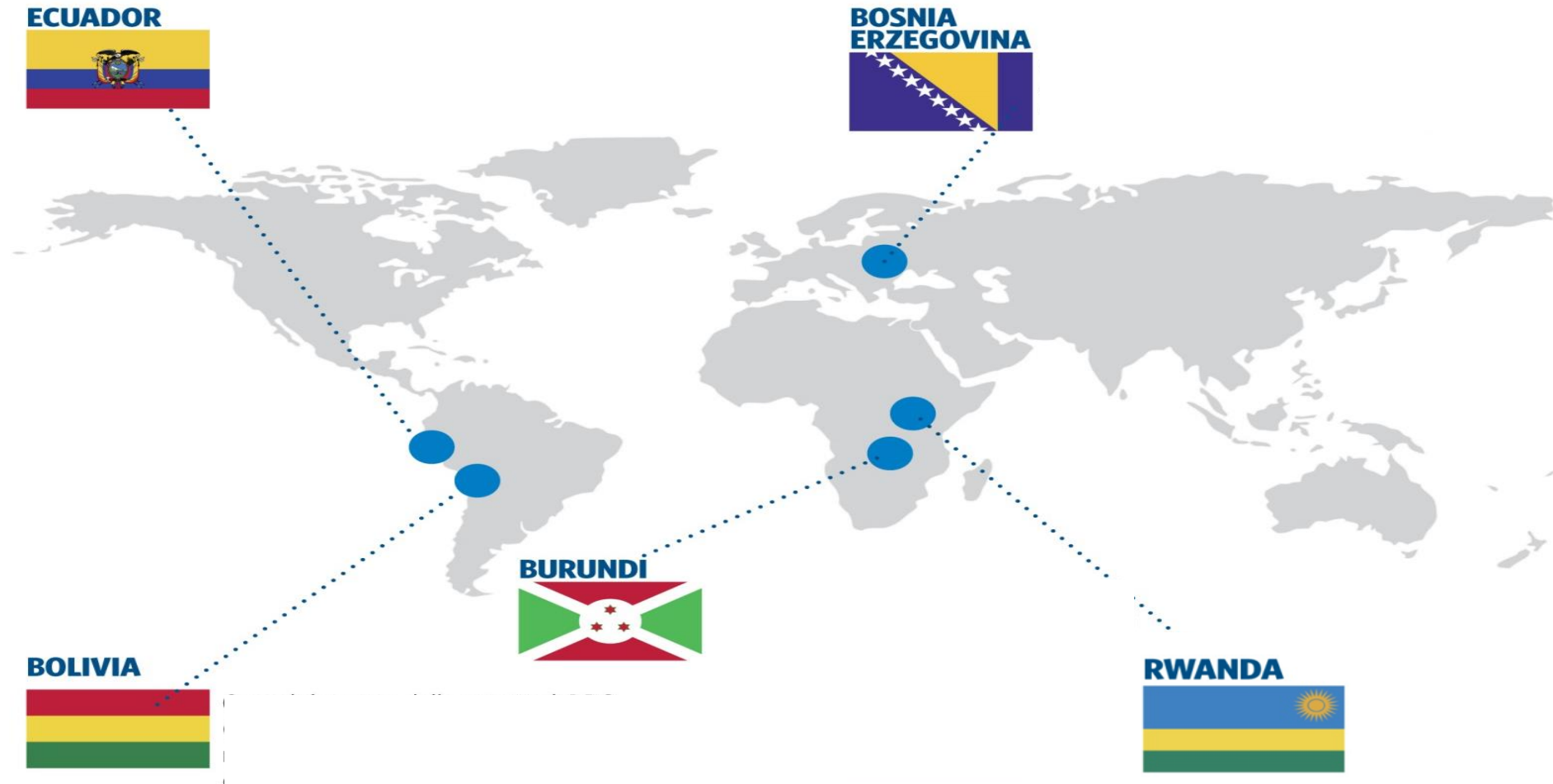
- Founded in 1952
- Over 5500 employees
- 28 Centres in 9 Italian Regions
- 2 Clinical Research Hospitals (IRCCS)
- Over 3600 hospital beds
- Around 3,5 million patients accesses/year



## Areas of activities

- Health Care (diagnostics, rehabilitation, assistance)
- Research & Innovation (pre-clinical, clinical, technological, organizational)
- Social and Training activities for disabled; education; International cooperation (NGO)

# FONDAZIONE DON GNOCCHI ABROAD (DEVELOPING COUNTRIES)



Within the **REHABILITATION MEDICINE** discipline, in which FDG is recognized as an excellence center by **MINISTRY OF HEALTH**, our research focuses on:

1. Advanced technology for health
2. Molecular medicine and imaging in rehabilitation
3. Neurological rehabilitation
4. Musco-skeletal rehabilitation
5. Cardio-Pulmonary rehabilitation

# GAPS: WHAT IS MISSING TODAY

1. Long-term-care (post-acute and chronic) is already a (will be THE) major demand in healthcare.
  - LONG-TERM CARE BUSINESS MODELS ARE NOT READY YET.
2. Tomorrow patients (now 30-40 y.o.) are digital-native and have a participative, outcome-oriented, attitude.
  - TODAY'S MEDICINE DOESN'T FIT THIS TREND.
3. Industry has well-established solutions for the acute market but not for most of chronic / assistance healthcare market. However, they often have the needed components to be integrated.
  - INDUSTRY CANNOT MAKE IT ALONE IN A SUSTAINABLE WAY.

**A NEW ROLE FOR HEALTHCARE PROVIDER IS NEEDED: BECOMING «SMART»**

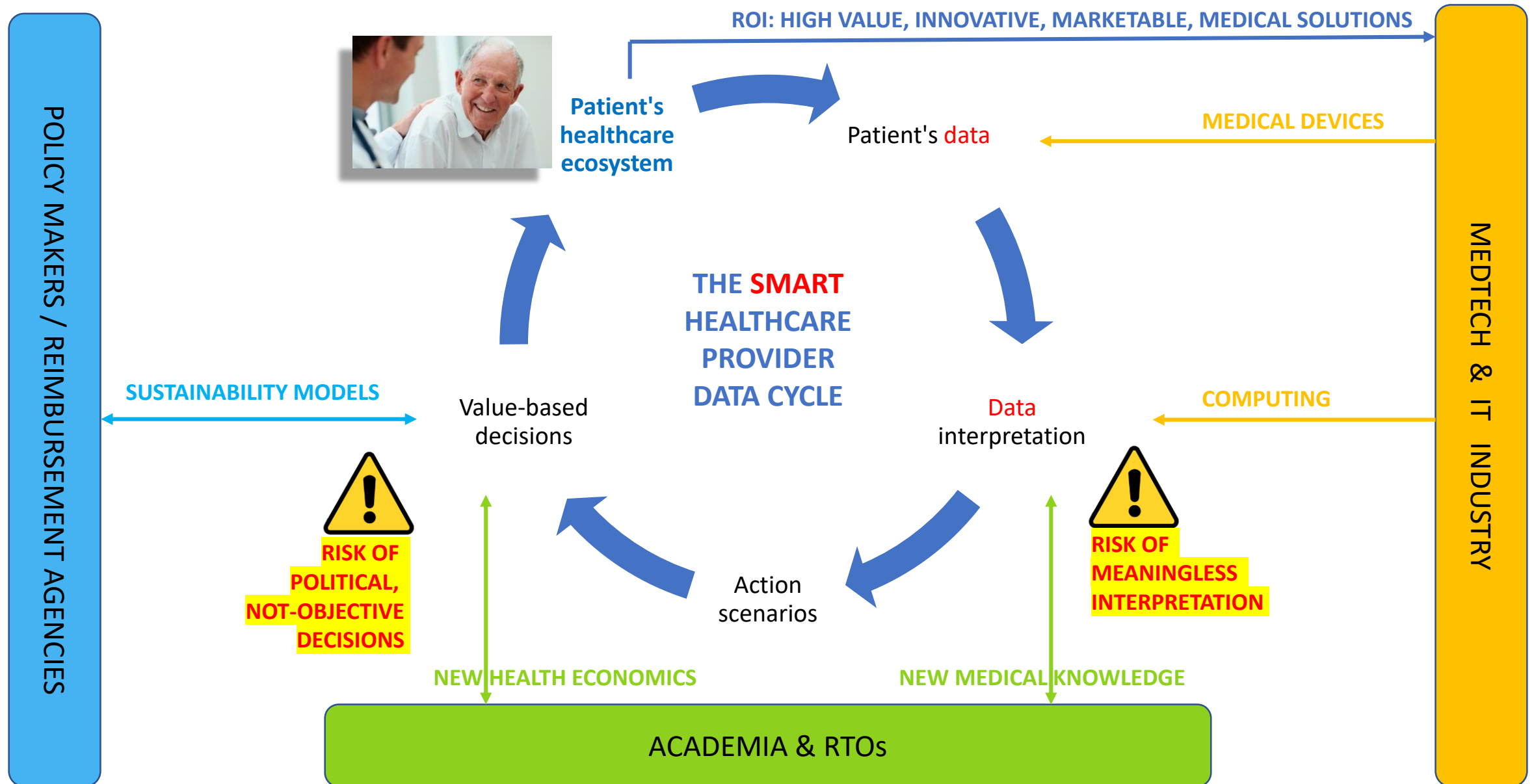


# WHAT SMART MEANS FOR FUTURE HEALTHCARE PROVIDERS?

1. **EMBRACING THE ENTIRE HEALTHCARE CYCLE**, thus addressing continuum of care, ageing and acute-to-long-term care trend
2. **BEING DATA-DRIVEN**, thus its usefulness is assessed based on **objective data**, both clinical and management ones, relative to processes to be innovated
3. **BEING AN ACTIVE PART OF THE ECOSYSTEM**, including other healthcare providers , scientific community, industry and policy makers → NEXT SLIDE.

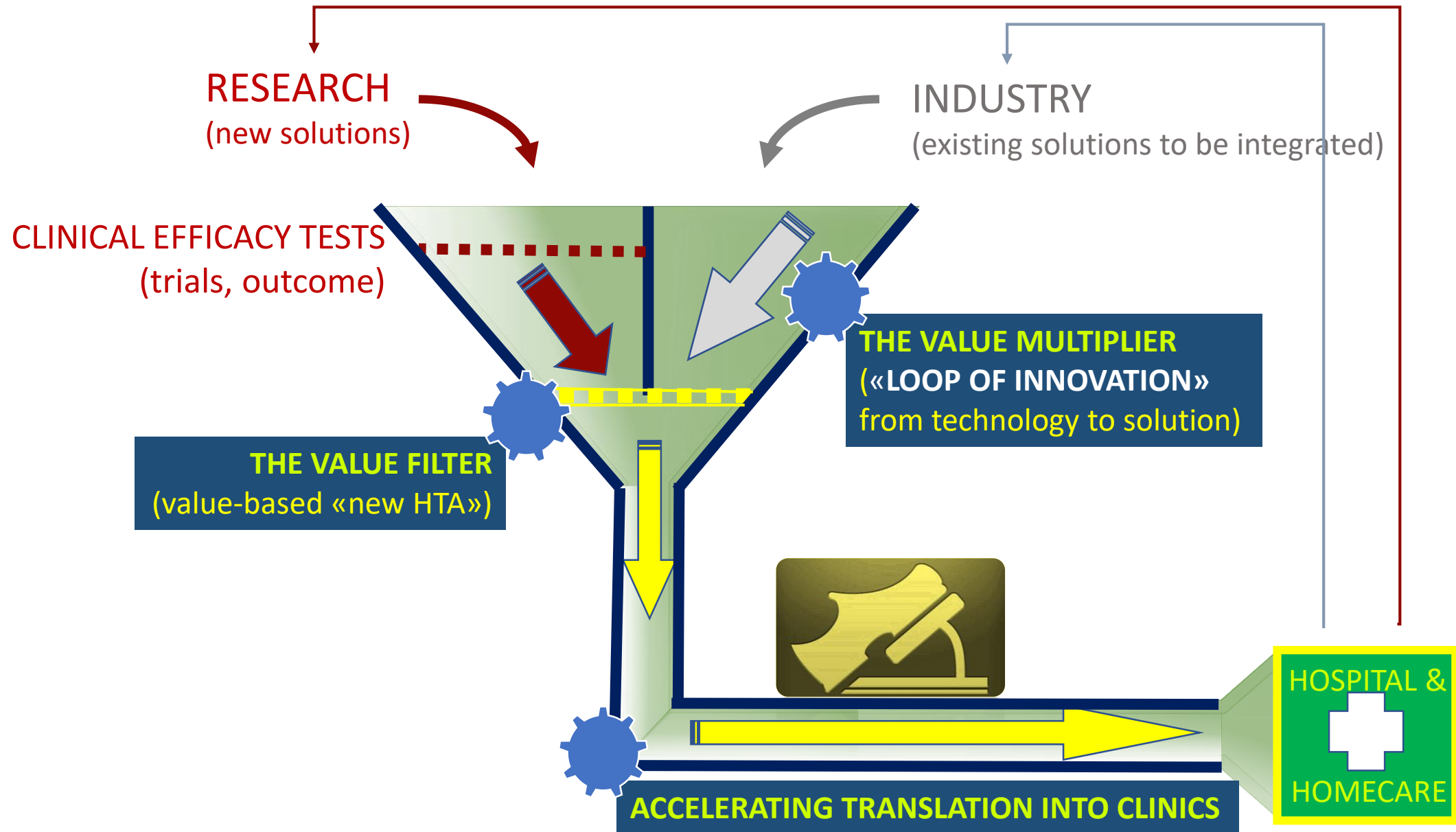


# THE ECOSYSTEM OF A SMART HEALTHCARE PROVIDER

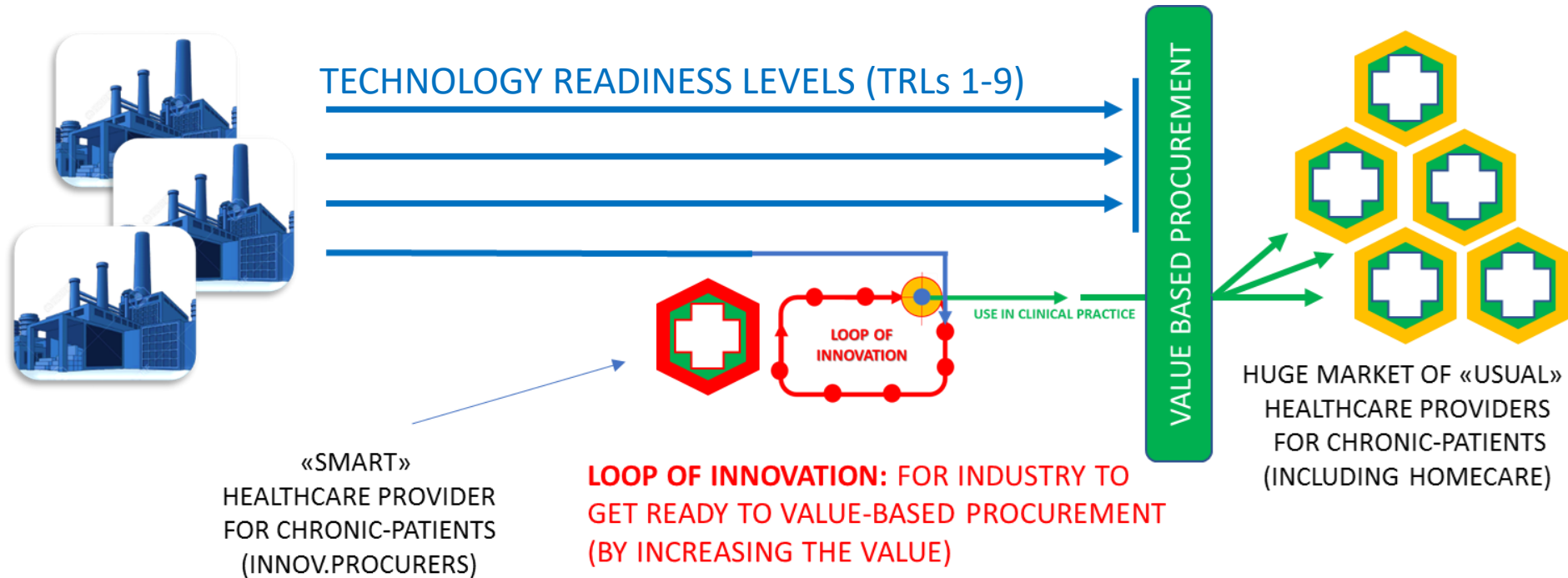




# SMART HEALTHCARE PROVIDER: THE INNOVATION FUNNEL



# «LOOP OF INNOVATION» IS A VALUE MULTIPLIER



## THE VALUE MULTIPLIER

**An industrial technology going through the FDG «innovation loop» raises the value of its offer, by transforming a technology into a viable solution for the long-term care world, and makes its market access easier**

# «LOOP OF INNOVATION» APPLIED TO ROBOTIC REHAB



## LOOP OF INNOVATION

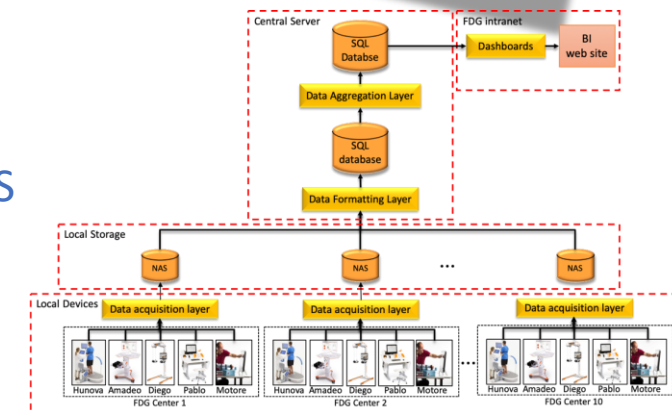
- ✓ SCOUTING OF MED-DEV ALREADY CE MARKED
- ✓ COLLABORATIVE PROCUREMENT AGREEMENT WITH VENDORS
- ✓ INTEGRATION OF DIFFERENT SYSTEMS TO COLLECT DATA
- ✓ DEVELOPMENT OF DATA ANALYSIS TOOLS
- ✓ OUTCOME- AND COSTS- FOCUSED CONTROLLED TRIAL («**INNOVATION TRIAL**»)
- ✓ WORKFLOW OPTIMISATION
- ✓ SUSTAINABILITY AND REIMBURSEMENT MODELS.



3500+ PATIENTS  
55.000 TREATMENTS



AI FOR DATA ANALYSIS  
AND  
PREDICTIVE VALUE



# THE VALUE FILTER

- HEALTH-TECH MUST COLLECT HEALTH DATA TO ENABLE OUTCOME VARIATION MEASUREMENT

$$\text{VALUE} = \frac{\text{OUTCOME}}{\text{COSTS}}$$

- HEALTH-TECH MUST COLLECT PRODUCTION DATA TO ENABLE TRACKING OF THE PROCESSES AND THEIR COSTS

BASIC REQUIREMENT (BETTER OR EQUAL CLINICAL EFFICACY):

$$\Delta\Omega \geq 0$$

## THE VALUE TEST

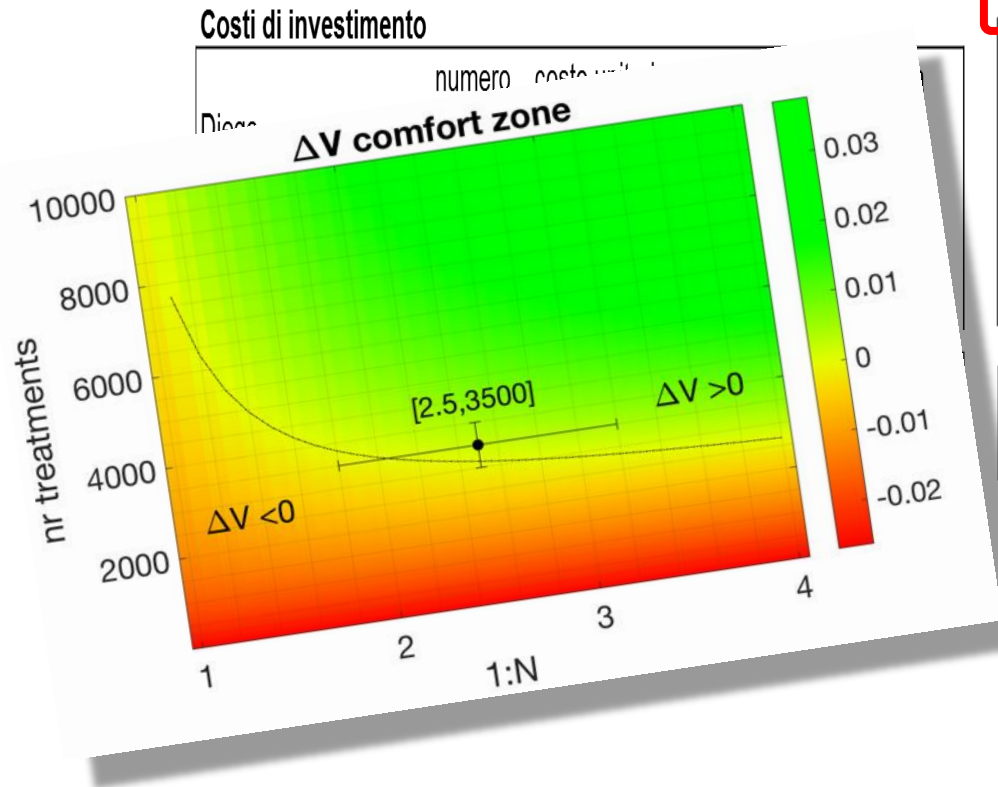
An innovative service has a **real added value** respect an existing one having the same purpose if:

$$\left\{ \begin{array}{l} DV > 0 \text{ (higher outcome per cost)} \\ V_H \geq 1 \text{ (economic sustainability)} \end{array} \right.$$





# FROM INNOVATION TRIAL TO VALUE-BASED DECISION



## Volumi di utilizzo dei robot

numero tratt. robotici annui	2016	2017	media
Diego	5890	6189	6040
Pablo			
Amadeo			
Motore			
% uso macchine		num tratt annui	
Diego	13%	812	
Pablo	21%	1272	
Amadeo	50%	3032	
Motore	15%	923	

## Sostenibilità

Vh robotica	2,55
Vh tradizionale	2,68

Prezzo ticket paziente	€
Rimborso SSN trattamento	€
costo trattamento robotico	€
costo tot percorso robotico	€
costo trattamento standard	€
costo tot percorso standard	€

## Outcome

peso motricity index	33,0%
peso ARAT	33,0%
peso Fugl Mayer	33,0%

## Media Outcome pazienti (variazione score)

Robotici	Tradizionali
13,02	9,32

Under proper conditions  
robotic rehabilitation is a positive added value  
service (+0,007 score points/€ respect to usual care).  
Reciprocal of value gives the cost saving of 11,90€  
per outcome score point

Valore (p.ti score/€)	€/p.to score
V robotica (variazione score per euro speso)	0,027
V convenzionale (variazione score per euro speso)	0,021

Delta	+0,007	-11,90
-------	--------	--------



# EU EFFORT: BUILDING THE HEALTHTECH ECOSYSTEM



[www.nobel-project.eu](http://www.nobel-project.eu)



NOBEL, a unique ecosystem to make  
healthcare revolution happen in Europe!



## Building an ecosystem

NOBEL organizes multiple events to create a unique meeting place for all the stakeholders from emerging medical technologies in Europe.



## Shaping a strategy

NOBEL builds a commune vision for the future of HealthTech in Europe, integrating the separate roadmaps of emerging medical technologies: the Continuum of Care.



## Accelerating innovation

NOBEL manages the HealthTech TAB (Translation Advisory Board), tailored support to the selected HealthTech innovations, free-of-charge for beneficiaries.

**DRIVING INPUT PROVIDED TO EU COMMISSION TO BUILD HORIZON EUROPE NEW PPP HEALTH,  
WHICH WILL FUND R&I PROJECTS SHARED BY PHARMA, MEDTECH, BIOTECH, IT ACTORS**



# EU EFFORT: VALUE-BASED PROCUREMENT



European wide Innovation  
Procurement in Health and Care

[www.euriphi.eu](http://www.euriphi.eu)



## GOALS

- **GET PREPARED** TO EU DIRECTIVE 2014/24/EU
- **FEDERATE** WHOLE HEALTH-TECH ECOSYSTEM INVOLVED IN PROCUREMENT
- **BUILD** A COMMUNITY OF PRACTICE ON VALUE-BASED PROCUREMENT
- **VALIDATE** M.E.A.T. ALGORITHM (BCG AND MEDTECH-EUROPE)
- **APPLY** VALUE-BASED PROCUREMENT TO INTEGRATED CARE AND INFECTIOUS DISEASE DIAGNOSTICS
- **PREPARE** NEW EU PCP AND PPI CALLS

## CONSORTIUM

- 11 leading Public Procurement Organizations from 10 EU countries, covering more than 500 service providers throughout Europe

Official Journal of the European Union

28.3.2014

EN

L 94/65

### DIRECTIVE 2014/24/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on public procurement and repealing Directive 2004/18/EC (Text with EEA relevance)

[...]

Those sector-specific measures should be complemented by an adaptation of Directives 2004/17/EC and 2004/18/EC empowering contracting authorities to pursue the objectives of the Europe 2020 strategy for smart, sustainable and inclusive growth in their purchasing strategies. It should hence be made clear that, except where it is assessed on the basis of price only, contracting authorities can determine the most economically advantageous tender and the lowest cost using a life-cycle costing approach. The notion of life-cycle costing includes all costs over the life cycle of works, supplies or services.

This means internal costs, such as research to be carried out, development, production, transport, use, maintenance and end-of-life disposal costs but can also include costs imputed to environmental externalities, such as pollution caused by extraction of the raw materials used in the product or caused by the product itself or its manufacturing, provided they can be monetised and monitored. The methods which contracting authorities use for assessing costs imputed to environmental externalities should be established in advance in an objective and non-discriminatory manner and be accessible to all interested parties. Such methods

# TELEREHABILITATION (THERAPIST'S TELEPRESENCE)



## HOME TELEREHABILITATION MINI-KIT:

- mini PC
- webcam
- kinect Sensor
- vital parameter sensors
- modem LTE
- Ticuro Reply TM Platform (Medical CE)
- VirtualrehabTM Platform (Medical CE)

## The Setup



## The therapist...

- video calls the patient;
- checks and corrects patient movements using an audio-video connection;
- views vital parameters;
- closes the session and remotely turns off the patient's pc.

## The patient...

- turns on TV and PC at the scheduled time;
- performs the rehabilitation programme following the tele-connected therapist's instructions;
- communicates with the therapist through the audio-video connection.



<https://www.youtube.com/watch?v=61DBjRTp9dY&feature=youtu.be>

# CARELab: VR-ASSISTED CHILDREN (RE)HABILITATION

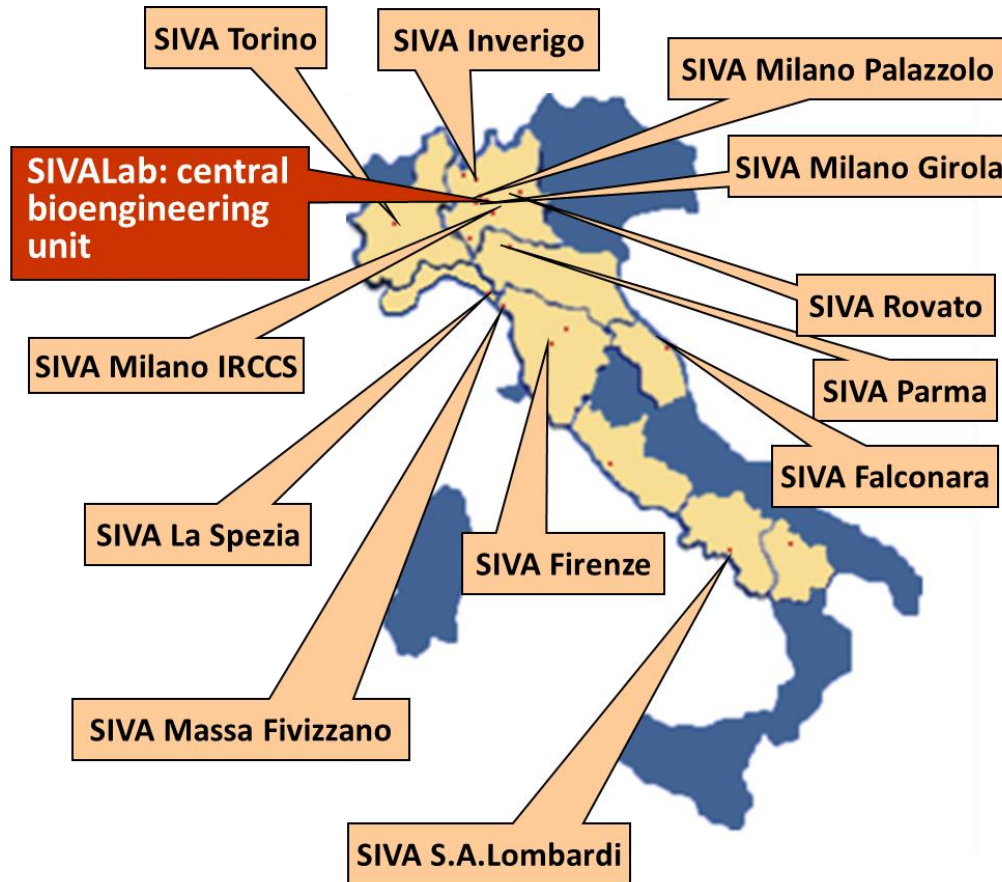


- 80 children treated so far
- 1600 treatment sessions
- 50+ games available
- Medical CE marked





# SIVA: a network for consulting, research and treatment based on assistive technology



- **12 SIVA Units performing 4278 Assistive Technology Assessments in 2018**, offering:
  - assessment
  - guidance
  - adviceto find out the most appropriate, personalised assistive technology solution
- **1 central bioengineering unit, SIVALab:**
  - **scouting** and updating the SIVA AT exhibitions
  - offering technical and methodological **support** to SIVA network
  - spreading **information** on AT (**Portale SIVA**)



## **MISSION STATEMENT OF THE WORKING GROUP**

# **Integrated, Technology-based, rehabilitation & care**

**(INTERHEA)**

In a long-term care era, where chronic and ageing population is growing in an unprecedented way and challenges all actors of welfare ecosystem, technology is a precious companion if an appropriate knowledge layer is created and shared to maximize its positive impact, in an integrated care perspective.

INTERHEA, within EPR, should serve as a hub for tech-based (or willing-to-be) care centres in EU, to share such a culture and to collect, amplify and bring their voices to policy makers level.

EPR OBJECTIVE	INTEREHA WG OBJECTIVES	INTEREHA WG ACTIONS
<p><b>Contribute to policy making</b></p>	<ul style="list-style-type: none"> <li>• <b>Community building</b> of tech-based integrated rehab&amp;care centres in EU</li> <li>• <b>Producing and updating a SRIA</b> (Strategic Research &amp; Innovation Agenda) of WG INTEREHA, to be used for EC programmes lobbying purposes</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Marketing actions</b> on INTEREHA outside EPR</li> <li>• <b>Creating a map of tech-based integrated rehab&amp;care centres in EU</b>, including available technologies and expertise, through a free web-based form, self-filled by centres (even outside EPR) and supervised by INTEREHA</li> <li>• Put in place actions (like surveys, meetings, bilateral contacts with similar initiatives and EC-funded projects, etc.) to <b>collect information and advices to feed the INTEREHA SRIA</b></li> </ul>



EPR OBJECTIVE	INTEREHA WG OBJECTIVES	INTEREHA WG ACTIONS
<p>Exchange of good practices</p>	<ul style="list-style-type: none"> <li>• <b>Knowing who does what:</b> exchanging good practices (methods and technologies supporting them) among centres in WG INTEREHA</li> <li>• <b>establishing a metrics</b> (like value-based healthcare) to evaluate scalability and value of practices and to prioritize them within the SRIA</li> </ul>	<ul style="list-style-type: none"> <li>• <b>mutual visits</b>, surveys on activities and expertise, among EPR members</li> <li>• create and grow an <b>internal know-how on metrics to evaluate technology impact in rehab&amp;care</b> (ex.: seminars, sharing of literature)</li> <li>• <b>create a tool to easily evaluate added value</b> of new technologies and methods in care practice</li> </ul>

EPR OBJECTIVE	INTEREHA WG OBJECTIVES	INTEREHA WG ACTIONS
<b>Obtaining funded projects</b>	<ul style="list-style-type: none"> <li>• profit from critical mass within EPR and lobbying actions to <b>influence EC programs topics</b>, to successfully participate in EC calls</li> </ul>	<ul style="list-style-type: none"> <li>• monitoring and circulating <b>information about last H2020 and first HorizonEurope work programmes</b></li> <li>• <b>think of consortia</b> potentially including both individual members and EPR as an association</li> </ul>

## 6 CONCLUSIONS

1. The hospital of the future relays on an ecosystem approach: EPR can be a «catalogue of pathfinders» in the post-acute and chronic world
2. Knowledge-driven, data-supported medicine. Let's defend this position.
3. Human-needs-driven, data-supported healthcare management. Let's showcase this approach.
4. From clinical to innovation trials: EPR could be an early adopter
5. More organisational culture for the technology innovators: EPR could train them
6. Companies and procurers must get prepared to a value-based approach: let's offer a support in real-world conditions.

# THANK YOU

fgramatica@dongnocchi.it  
www.dongnocchi.it

