



Rehabilitation Research is Multidisciplinary



Increasing the Conformance of Academia towards Rehabilitation Engineering (i-CARE)

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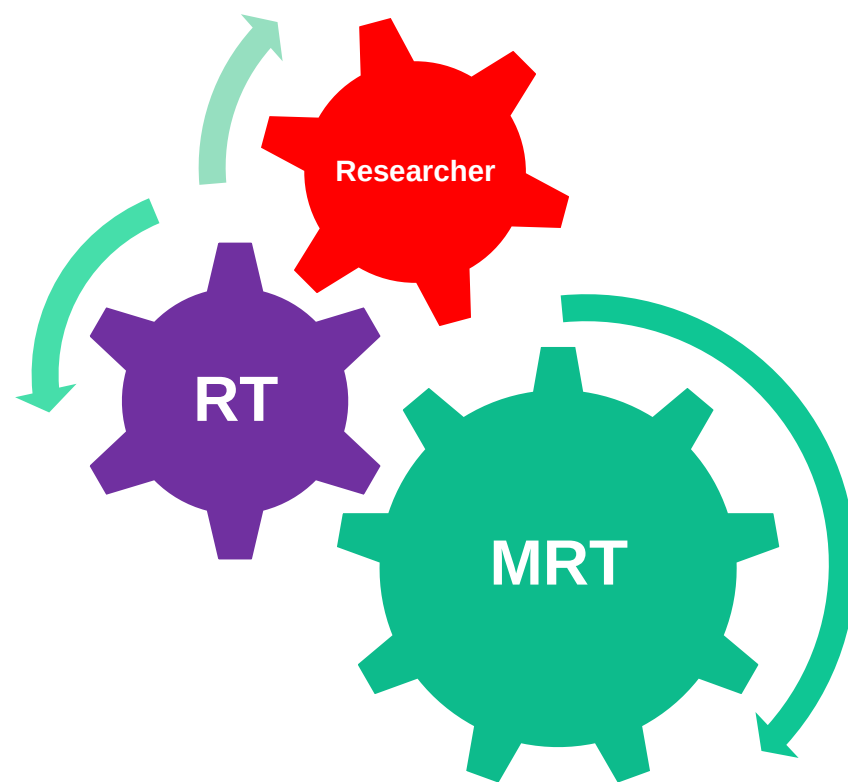
Univerzitetni rehabilitacijski inštitut
Republike Slovenije - Soča



BATTI
Ideas transforming the future

Rehabilitation Engineer or Assistive Technology Specialist

- A professional who is **specifically trained** in **assistive technology** and who is able to **determine appropriate modifications** to make tasks at home, school, and/or work accessible to an individual with a disability.



RT: Research Team

MRT: Multidisciplinary RT

MDR: Multidisciplinary Research

Teams need to have (West, 2005):



- Shared objectives (or purpose)
- Members who work closely together to achieve these team objectives
- Members who have different and defined roles
- Opportunities to review team performance
- A team identity (i.e. 'we-ness' or solidarity)

Work parallel to each other, their primary objective being that of coordination' i.e. **multidisciplinary** team working)

When experts from different fields work together on a common subject within the boundaries of their own discipline, they are said to adopt a multidisciplinary approach.

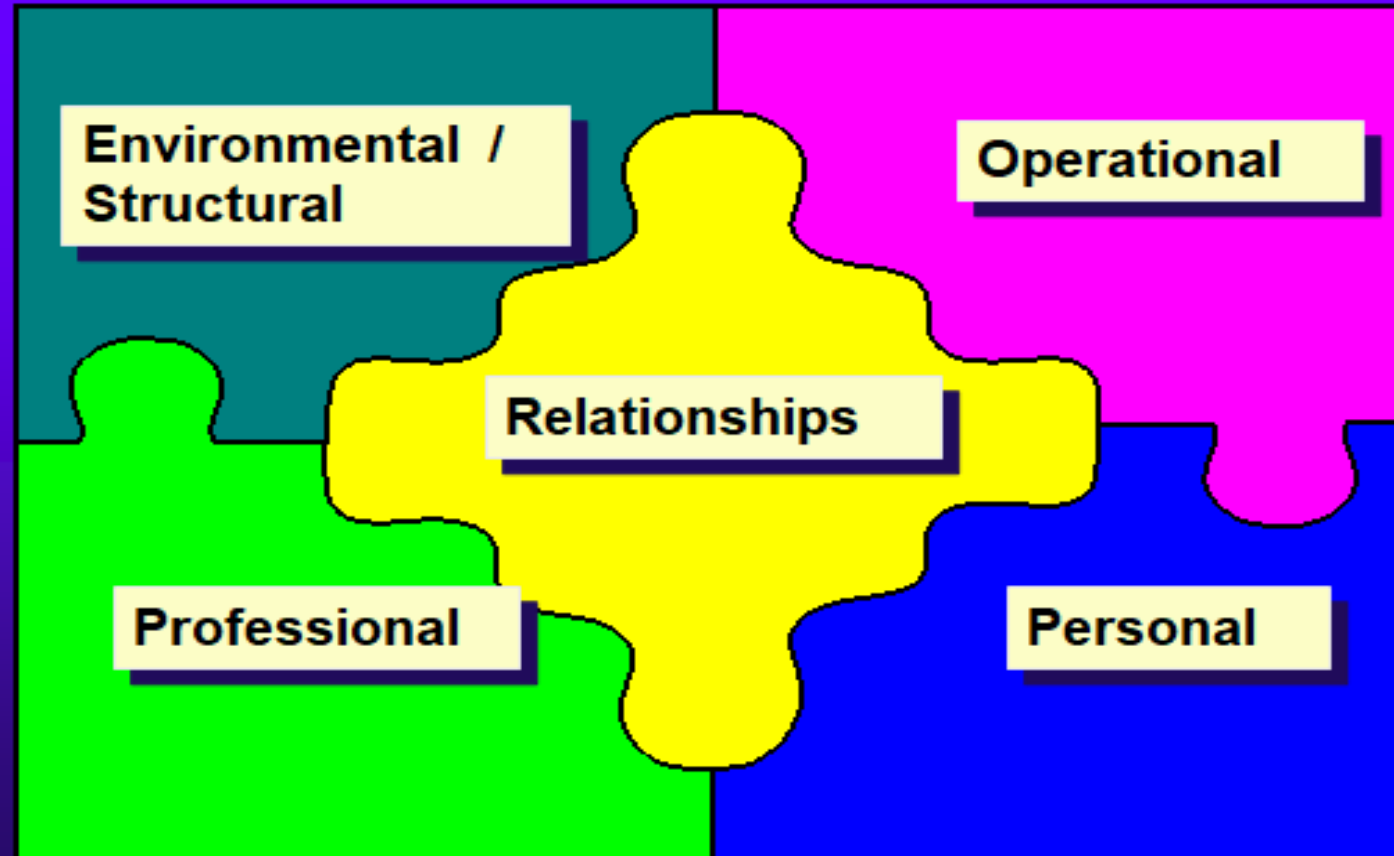


“The interdisciplinary team

- individuals do not only require the skills of their own disciplines, but also have the added responsibility of the group effort on behalf of the activity or client involved. This effort requires the skills necessary for effective group interaction and the knowledge of how to transfer integrated groups activities into a result, which is greater than the simple sum of the activities of each individual discipline. The group activity of an **interdisciplinary** team is synergistic, producing more than each individually and separately could accomplish”

Factors influencing teamworking

(Byrne, 2005a)



- Takes multidisciplinary approach that, for many problems:

- Accelerates research progress.
- Expedites transition of results to application.
- Prepares students to work across disciplines.



The multidisciplinary approach to research is one of the new hot topics in medical research, where the use of multidisciplinary research teams has become ubiquitous, particularly in the USA....



Disability

- According to the World Health Organization, a disability is... **“any restriction or lack (resulting from any impairment) of ability to perform an activity in the manner or within the range considered normal for a human being”**

Disease or Disorder

- When most people think of the word “disability” they immediately picture someone in a wheelchair.

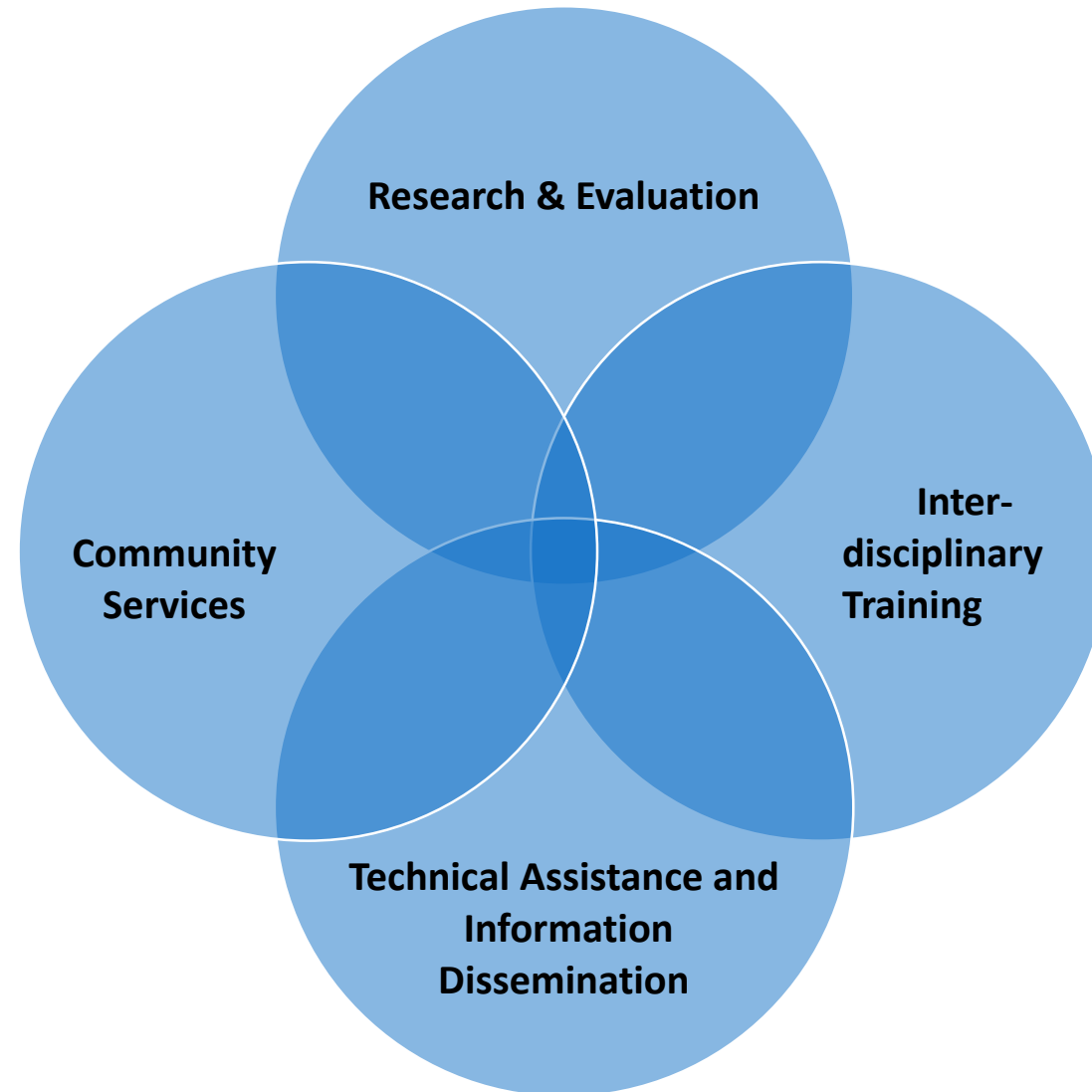
- **Impairment** is any loss or abnormality of psychological, physiological, or anatomical structure or function.
- **Disabilities** is any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being.

- **Handicaps** is a disadvantage for a given individual, resulting from an impairment or a disability, that limits or prevents the fulfillment of a "survival" role that is normal (depending on age, sex, and social and cultural factors) for that individual.

REHABILITATION TEAM

“COMING TOGETHER IS THE BEGINNING, STAYING TOGETHER IS PROGRESS, WORK TOGETHER IS SUCESS,.” – HENRY FORD

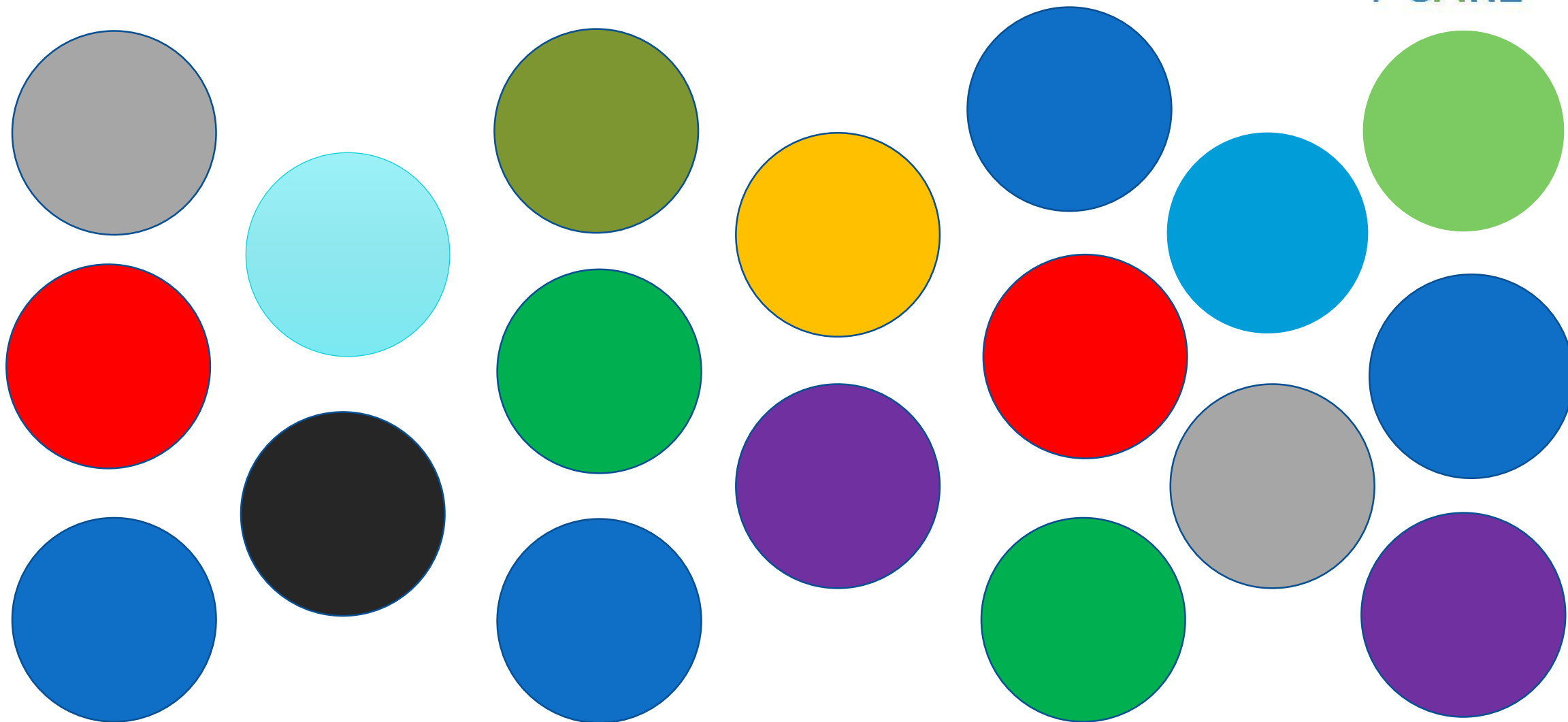
EFFORTS FOR PERSONS WITH DISABILITIES

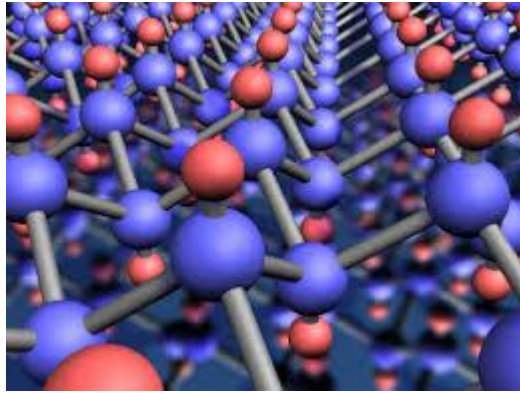
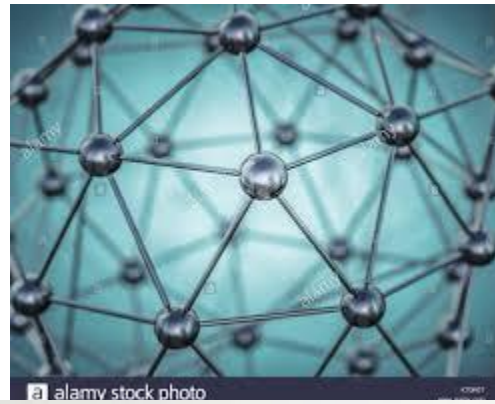


MEDICAL EFFORTS FOR PERSONS WITH DISABILITIES



DISCIPLINES ???



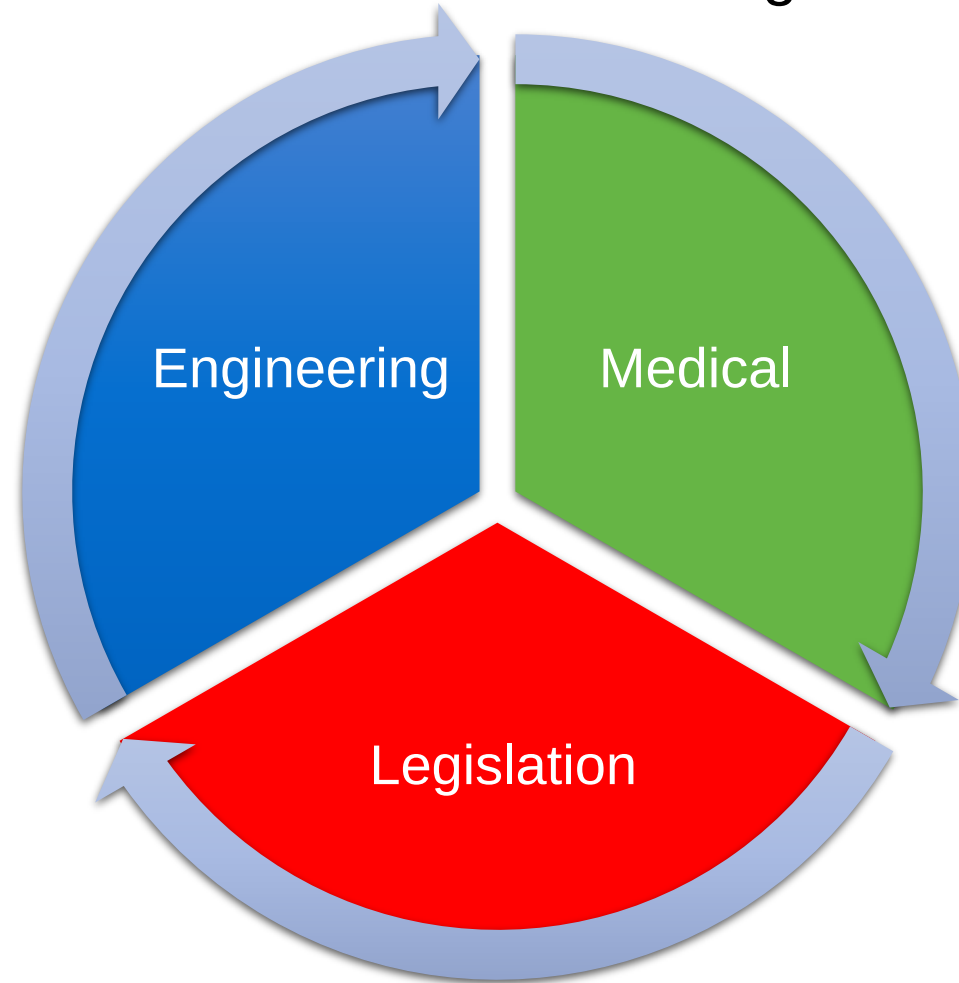


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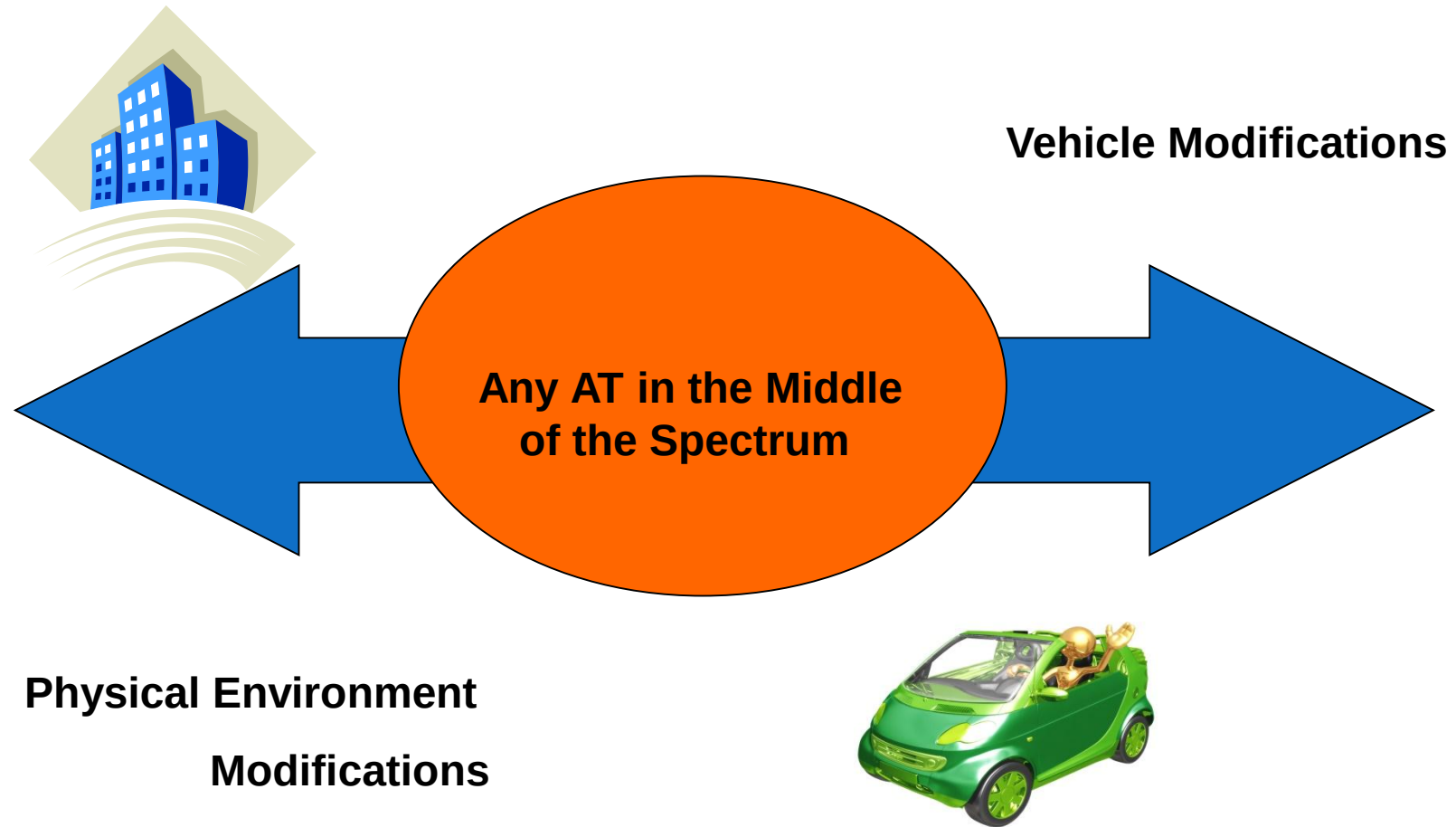


- To be more precise

According to success stories in European and American Rehabilitation research team, we need to consider three targets

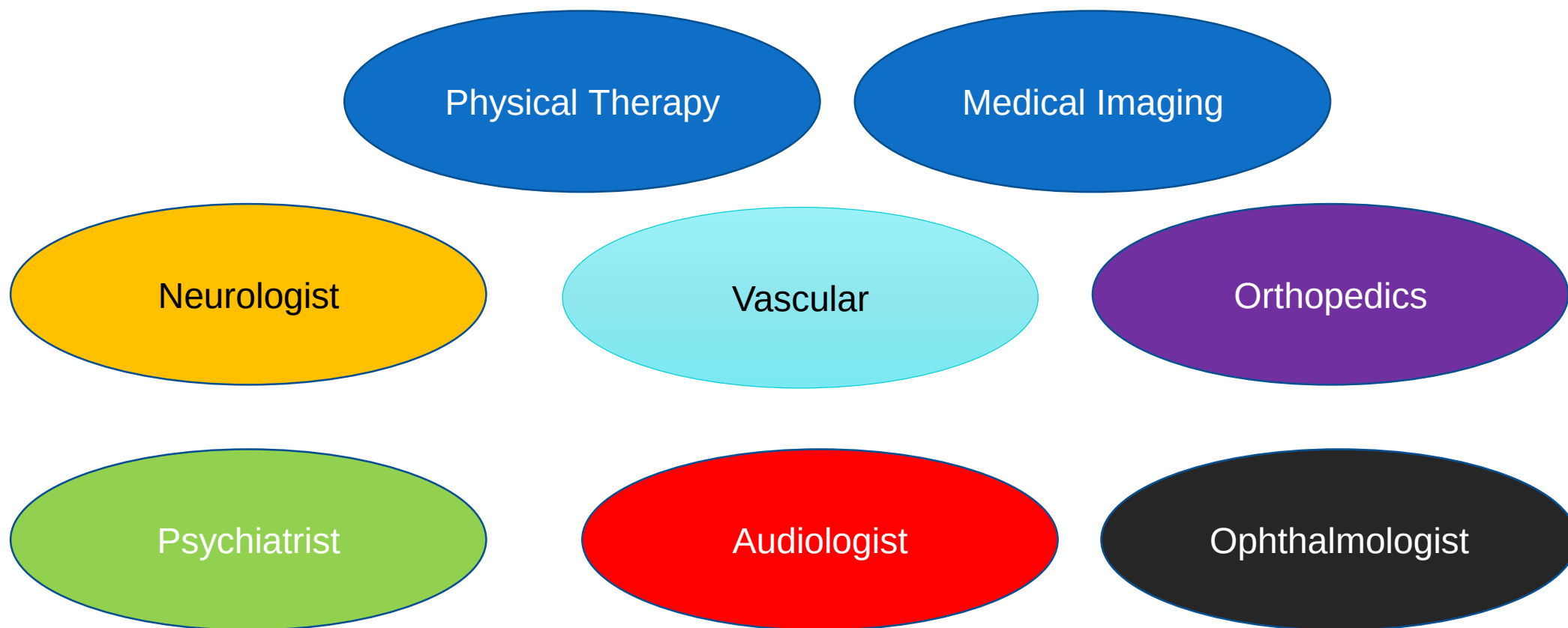


Spectrum of Assistive Technology



Starting point:

- Accurate Diagnosis of case with disability
- Evaluation of cases and degree of disability





Categorization for cases
-strengthen points
-weakness points
(Patient ability and disability)



National Index or
archiving

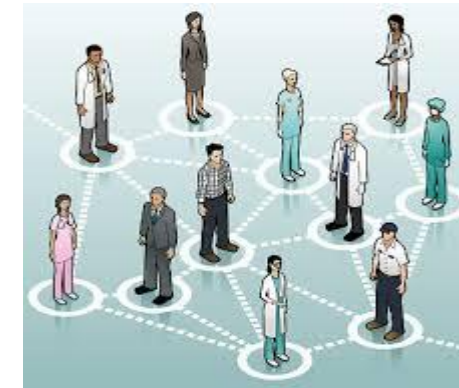


Case Study in MDR

- So in approximately six years a **Vascular Science** / **Engineering activity** has evolved from no activity to an active group of postgraduate researchers with close to **9 papers** either published or being close to published in international peer-reviewed journals.
- A key reason for the success of this collaboration is that the research programme is multidisciplinary where the team **are carrying out work at the boundaries** of our respective disciplines.
- This experience indicates that there are **huge opportunities** to make significant contribution to the science and engineering by operating at the boundaries as we bring a unique skill set to the problems of vascular disease.
- Another advantage of this research is that **it is translational in other words knowledge** obtained from basic research is expected to be translated into **diagnostic or therapeutic interventions** as the research involves both clinicians and medical device specialists.



- A multidisciplinary team is an evolving entity:
- One of the features of the multidisciplinary approach is that the multidisciplinary team meet on a **regular basis** to discuss problems associated with the research programme and to monitor progress.
- The fact that the **team meet and discuss** the work programme together means that the **different disciplines start to understand better the capabilities and limitations** of the other disciplines and all members of the team begin to develop a clearer understanding of the problem being addressed.
- **This increased level of understanding** can trigger a realization of potentially new research opportunities.



Suggestions on the Development of MDR

- One suggestion is that the team start with a medium to small project that has a reasonably good chance of success and perhaps initially use a small team so that the team develops confidence that they can work together on multidisciplinary research and that a successful outcome can be achieved.
- Before starting the work programme, it may not be a bad idea for the team to write up a memorandum of understanding which might contain the following:
 - A rationale for the work programme to be undertaken
 - A summary of the work programme
 - The members of the team and their expected contribution
 - An approximate timescale for the work
 - How the outcome of the work will be disseminated
 - An agreement on the publication of the work
 - An agreement on any possible commercialization of the work

- Success Stories

Physical Disabilities

Exoskeleton:

- Neurologists
- Physiotherapist
- Mechatronics
- Material Sciences



EsoGlove:

- Neurologists
- Physiotherapist
- Mechatronics
- Material Sciences



Physical Disabilities

Smart Glasses:

- Ophthalmologist
- Mechatronics
- Material Sciences
- Software Engineering



Thank You

Keep connected with i-CARE project:

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