European ALARA network,

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Working group 1 report :

Are there specific challenges in the ALARA process that may be resolved by innovative «ALARA Tools» (developed or under development)?

Working group 1 participants

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Connections with RPOs and ALARA

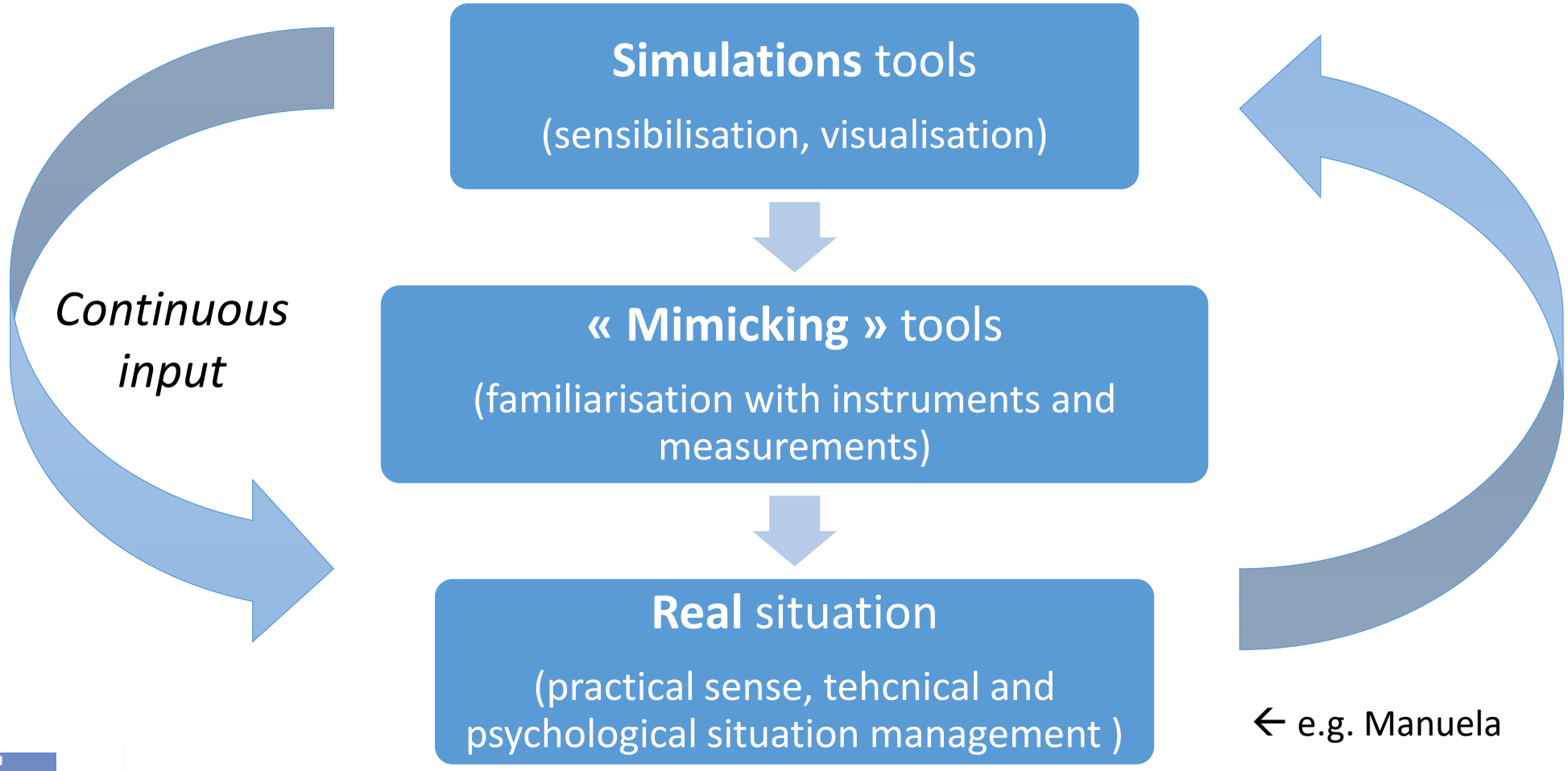
- Different **background** : research, business, dosimetry services, training, …

- **Communication** with the people working «on the field» is **paramount**:
  - Accurate input data for predictive models & interpretation of the exposure (RayXpert, PODIUM,...)
  - Feasibility of the suggested approaches and practical «know-how» (personal external + internal dosimetry).

- What can be defined as an innovative tool ? Are they innovative in their :
  - **Technology** (e.g. drones, augmented reality to monitor +/- conventional scenarios).
  - **Application** (exotic radionuclide intake monitored with conventional tools).

Innovative tools and training

- Presented tools → promising for **training** in ALARA (e.g. PODIUM and others) :



Innovative tools and RP culture

- ***Make the tools interesting for the users !***

Real case scenarios (e.g. RayXpert), user-friendly interfaces, answering the questions :

What, **how** (how much, behaviour, postures), **where ?**

but also

when and **why** (e.g. what is the need for monitoring?)

→Improve RP culture!

ALARA tools: **communication & sharing challenge**

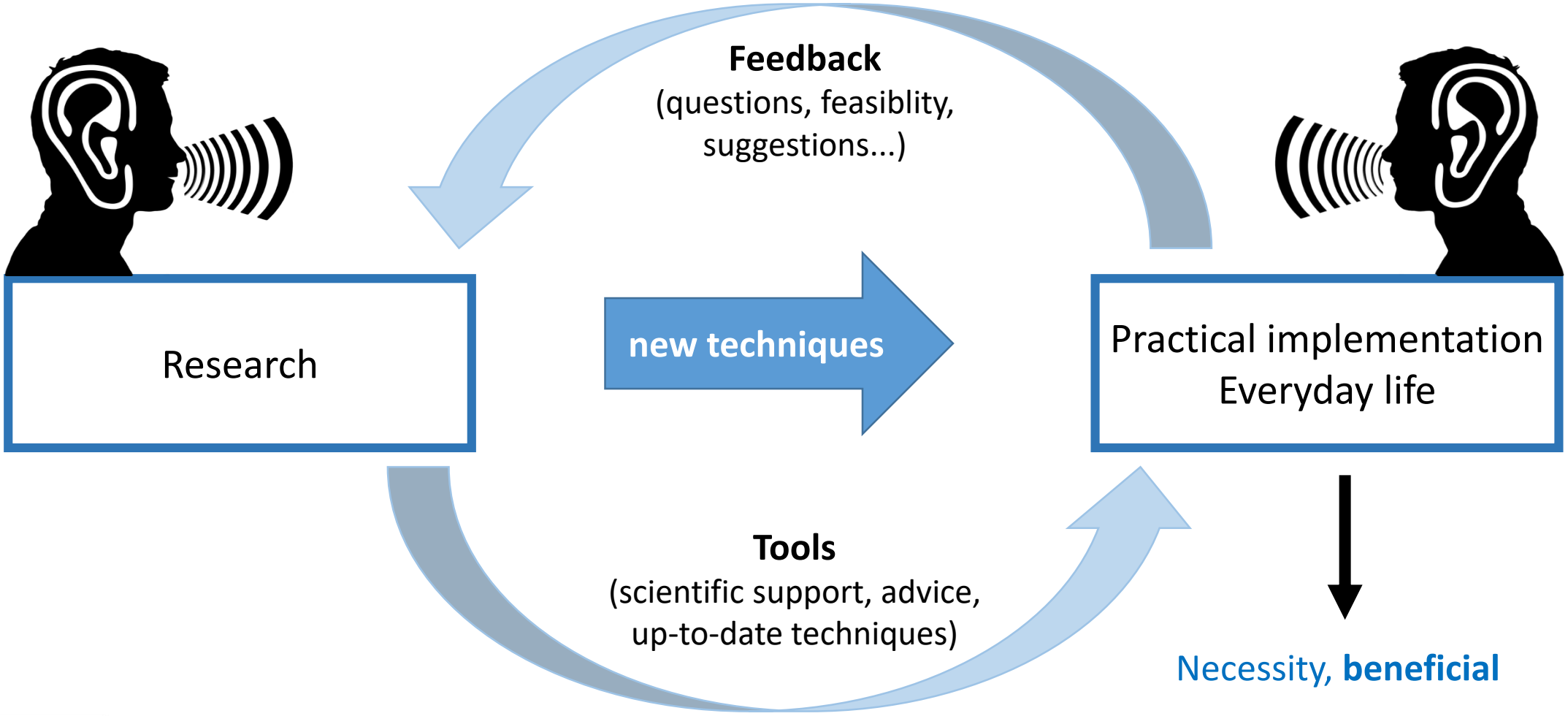
Research

new techniques

Practical implementation
Everyday life

Obligation, **constraint**

ALARA tools: **communication & sharing challenge**



Picture: https://cdn-images-1.medium.com/max/960/0*AqYF0242D_qKd-L2.png

New tools, new approaches

Make the tools (and the dosimetry) more **inclusive:**

- Target «different» audience (e.g. D-shuttle : build RP culture involving «dynamic» actors) :
  - Young people that can transfer the information to the older generations.
  - Medical field : we shall not forget the other members of the medical staff.

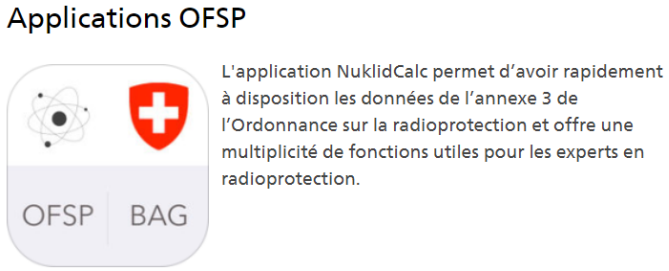
- New tools may appear more **trustable** (new technologies, more participative) and help people understand the risks.
- Tools may give «*evidence to support regulatory decisions*».
- ⚠ DIY dosimeter ≠ DIY dosimetr**y**
- (need to redefine the role of the RPOs → WG 3)

Innovative ALARA tools and possible applications

- Predictive studies using MC simulations have been presented.

- Extend the approach to machine learning (ML) ? (Reduce computation times?)
  - Create set of training data :
    - e.g. medical staff position wrt the machine, doses from physical dosimeters or MC simulations in known positions.
  - Compute dose estimates at different positions / at different times by ML ?

- Explore the use of smartphones as support for RP (RPOs, regulatory bodies, …) (e.g. app : NuklidCalc):
  - Guided procedure in case of emergency → workflow?
  - Radionuclide data and basic calculations.
  - Field of interest of the users and will to share data ?
  - Reference publications for given topic.



→ **to edit ! Make a <u>collection</u> of the available tools and publication for a given topic ? Easier to find information and give "common ground" to the people in the field (newcomers, …).**

- Explore the use of smartphones as support for the population :
  - Be careful with "fake" app → we should be prepared and know how to react / <u>issue of communication and social media</u> !

Innovative tools exist ... And are widely available...

- But how to bring the message to the public?
- How to make sure that this information is well understood?
- Will RPOs and local authorities be more active in replying to the public questions and concerns?