COMPASS – Monitoring & Evaluation System of BIH QUEST Center

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BIH QUEST
Center for Responsible Research

BIH Berlin Institute of Health @Charité

SUMMARY | The Berlin Institute of Health at Charité aims to strengthen the translation of biomedical research into societal value and benefit through engaging stakeholders and creating a work environment that facilitates the co-production of knowledge in inter- and transdisciplinary research teams & collaborations. To set impulses for such a transformation at Charité, BIH QUEST Center designs and implements Open Science (OS) & RRI (Responsible Research and Innovation) programmes (see slide 6) focusing on robust and reproducible research practice. QUEST Center also aims to measure its programmes' effects based on the recently developed Monitoring & Evaluation System COMPASS. To ensure high evaluation quality, COMPASS activities are externally advised by CEval, Center for Evaluation.

Monitoring & Evaluation (M&E) System COMPASS

The M&E System COMPASS follows a typical programme's input-output-outcome-impact logic (see slide 6), widely used for policy and program evaluations. In COMPASS, conceptual and empirical evaluation elements are examined in iterative evaluation cycles based on a theory of action (ToA) and theory of change (ToC) programme model [2] (see slide 7). While conceptual elements relate to the programme's working rationale, empirical elements refer to programme achievements and intended (or unintended) outcomes. Such an iterative evaluation approach aims to facilitate the direct utilisation of evaluation results, enabling evidence-based improvement and reconciliation of the programme. Furthermore, working closely together with programme implementers, participants and stakeholders [3] at Charité fosters the optimal alignment of QUEST's OS & RRI programmes, projects and activities with researchers' requirements on the one hand and organisational goals of the Charité2030 strategy on the other. Hence, COMPASS is designed as an impact-oriented monitoring and evaluation system [1] that is based on pre-defined evaluation criteria and indicators (see slides 8 and 9).

While monitoring aims to oversee the stage of the programme as a whole (see slide 11), evaluation refers to the systematic assessment or research, respectively, on individual sub-programmes or projects to uncover influencing factors that contribute to or counteract their success. (see slide 12). One example is QUEST's education & training programme.

Evaluating QUEST's OS & RRI training programme

For several decades professional education has been challenged by a 'transfer problem' such that large expenditures on job-related training do not lead to the intended outcomes. Hence, the QUEST program evaluation team recently started its evaluation of QUEST's education & training activities. The theoretical frame of this (at the current stage) exploratory evaluation research study is based on the training transfer model introduced by Baldwin & Ford in 1988 [4] (see slide 14).

Quantitative methods

According to this model, a quantitative data collection instrument derived from Kauffeld [5] and Sandmeier [6] was adapted to QUEST's education & training activities. It compasses three smaller questionnaires presented to training participants at three different time points after training completion. While the 1st part of the instrument, TT t_1, which is deployed directly after course completion, focuses on the training situation itself, the 2nd part, TT t_2, is deployed three months after course completion, examining participants' short-term transfer effects and work environmental conditions. The 3rd part, TT t3, which is deployed 12 months after course completion, eventually addresses long-term transfer effects, particularly the generalisation and maintenance of course-specific OS & RRI skills and research practices (see slide 14). So far, feedback was collected from 98 (TT t_1, response rate=43%) or 30 (TT t_2, response rate= 14%) course participants, respectively. Interestingly, the majority represent doctoral students (see slide 15). However, team leaders, who are supposed to be multipliers promoting OS & RRI research practices across their research teams at Charité, also participated in QUEST trainings. Preliminary results of this ongoing evaluation (see slide 16) show that transfer climate and support at work are factors to be addressed further using qualitative research approaches.

Qualitative methods

The aim of applying qualitative research is to better understand the findings derived from quantitative evaluation results (see above), carving out details of particular work environmental aspects, for example, the researcher-supervisor relationship, but also grasping the presumably heterogeneous working conditions in the scientific community.

Hence, seven semi-structured interviews with QUEST training participants, conducted between September and November 2021, were transcribed and analysed through systematic qualitative content analysis. Deductive (derived from theory) and inductive (emerging from the material) categories were constructed that represent the central themes discussed in these interviews (see slide 17).

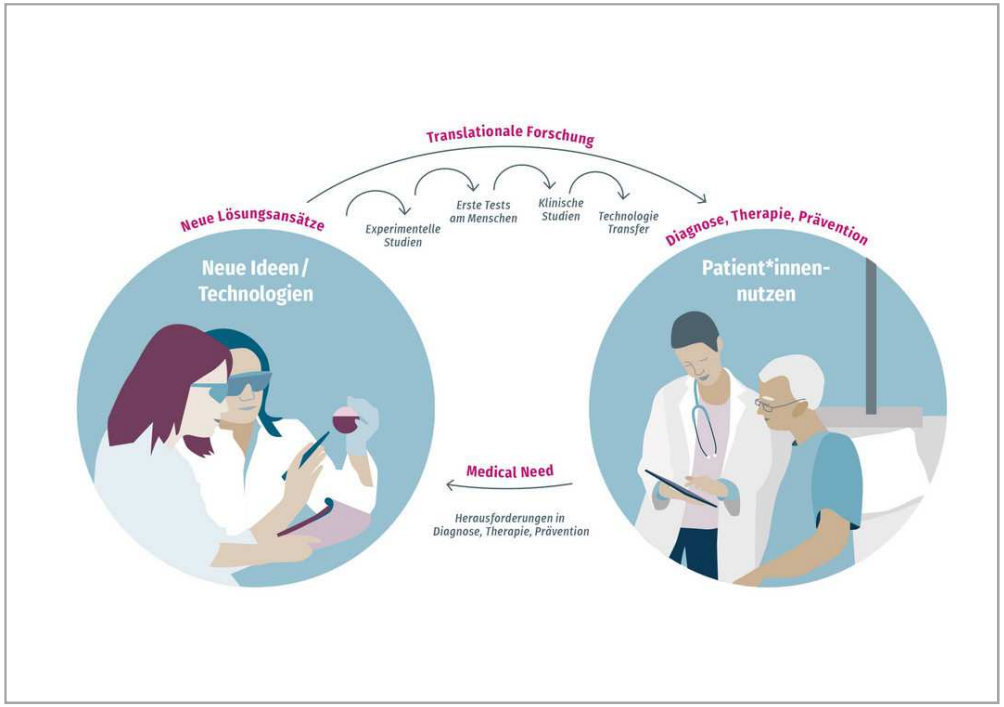
The preliminary results of our analysis so far are in line with the quantitative results, both pointing to the work environment, especially the researcher-supervisor relationship. What is conceived as subcategory leadership in the qualitative analysis refers to training support in the quantitative part of the analysis. Interestingly, supervisors can either actively support training transfer or prevent it partly or completely. Here, three different scenarios can be outlined: Support/high quality leadership (slide 18); No support – no discouragement (slide 19); Discouragement/lack of leadership (slide 20). In each of these scenarios, we see that the work environment influences the training transfer process differently.

However, our results are preliminary. Currently, we are systematising all influencing factors that have emerged from the interview transcript analysis into structural level or social level dimensions, respectively (see slide 21), before further examining how these dimensions interact with and influence each other. Interestingly, the work environment, which – from a programme's logic perspective - is 'located' at the transition from programme output to an outcome, seems to play an important role, both on structural and social levels.

Literature

[1] Gerstler, P.J. et al. (2016) DOI: 10.1596/978-1-4648-0779-4
[2] Weiss, C.H. (1997) doi.org/10.1177/0193841X9702100405
[3] Bryson, J.M. et al. (2010) doi.org/10.1016/j.evalprogplan.2010.07.001
[4] Baldwin, Timothy T.; Ford, J. Kevin (1988) doi.org/10.1111/j.1744-6570.1988.tb00632.x
[5] Grohmann, Anna; Kauffeld, Simone (2013) doi.org/10.1111/ijtd.12005
[6] Sandmeier, Anita; Hanke, Ulrike; Gubler, Martin (2021) doi.org/10.31244/zfe.2021.01.02

translational needs

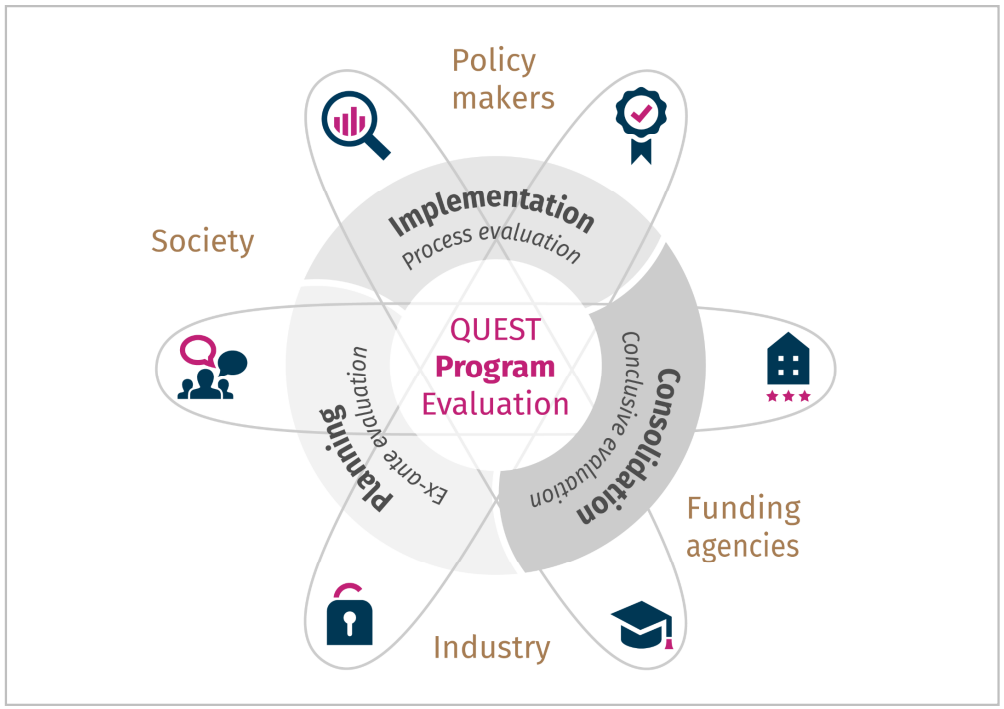


www.bihealth.org/fileadmin/institut/Mission/200813_BIH_Missionspapier_de.pdf

societal value & benefit

- Stakeholder engagement & partnership ⇧
- Knowledge co-production ⇧
- Inter/transdisciplinary collaboration ⇧

implementing OS & RRI



QUEST programmes

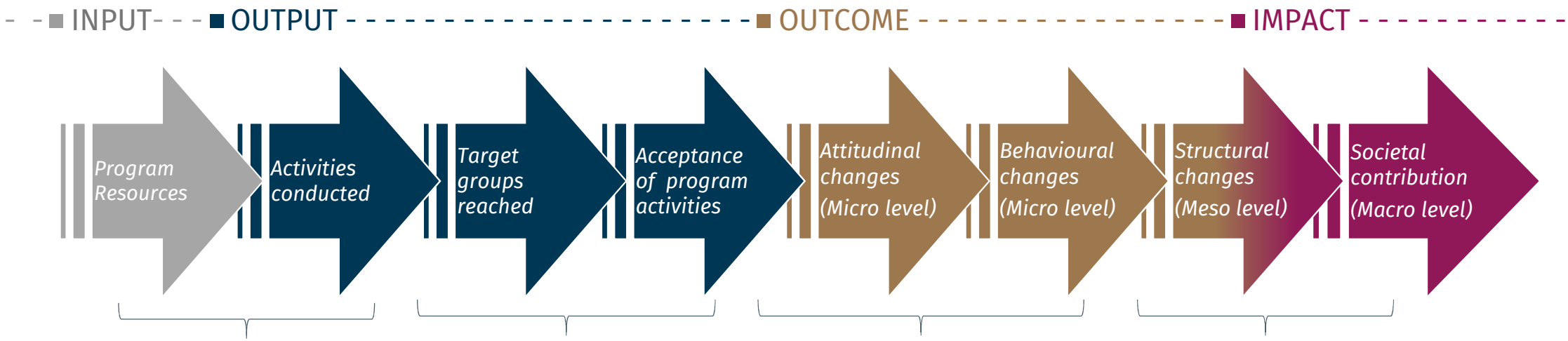
- Open Data & Research Data Management
- Incentives & Indicators
- Education & Training
- Value & Open Science*)
- Patient & Stakeholder Engagement
- Electronic Labbook

**) in close collaboration with NeuroCure, the cluster of excellence in the neurosciences*

HOW TO make OS & RRI progress at Charité observable and measurable?

COMPASS
QUEST Program Evaluation

intervention programme



How well designed and implemented is the programme?

How valuable are programme goals for the intended target groups?

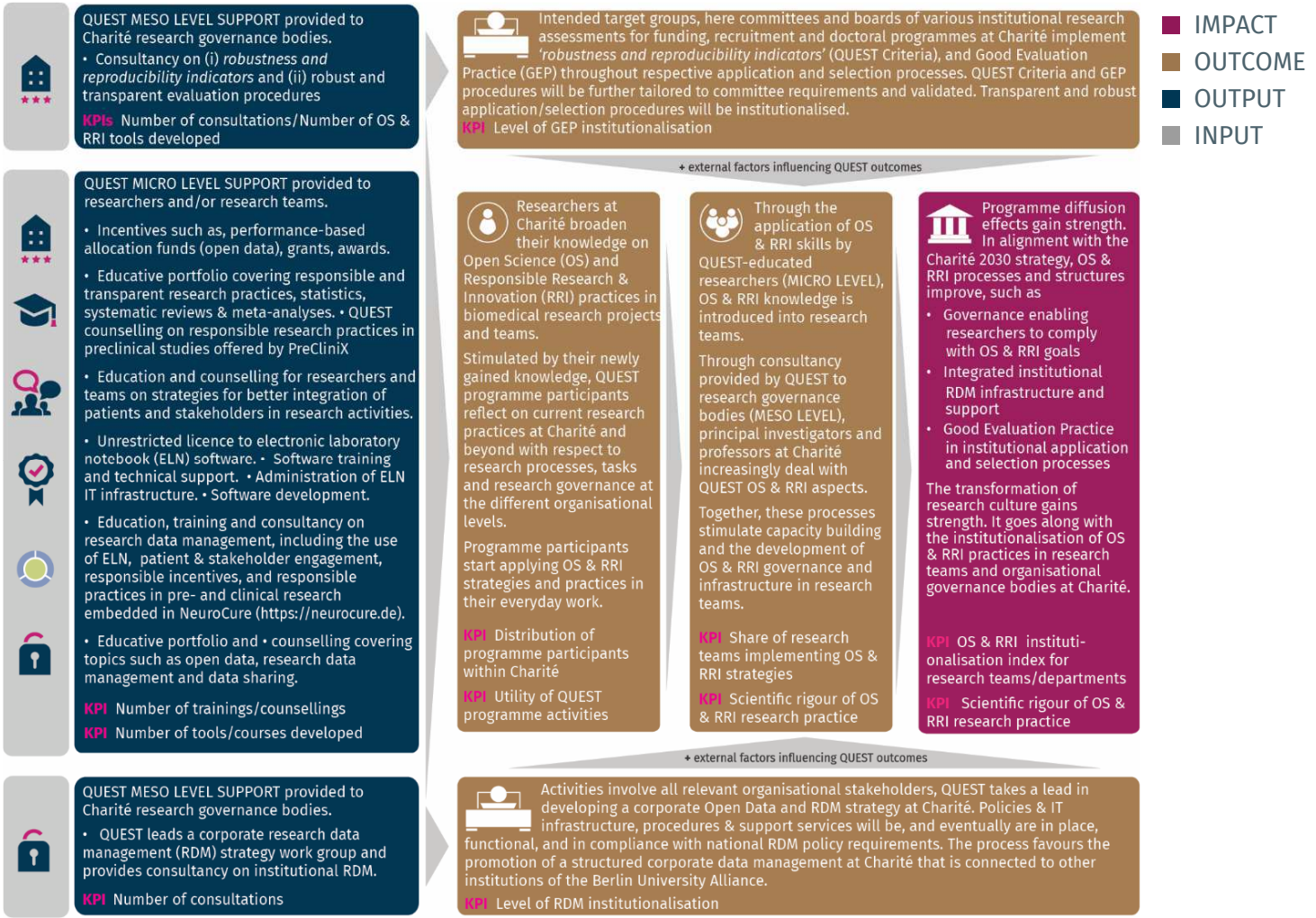
What works best for whom, under what conditions, and why/how?

Which aspects of the programme generate the most valuable OUTCOMES?

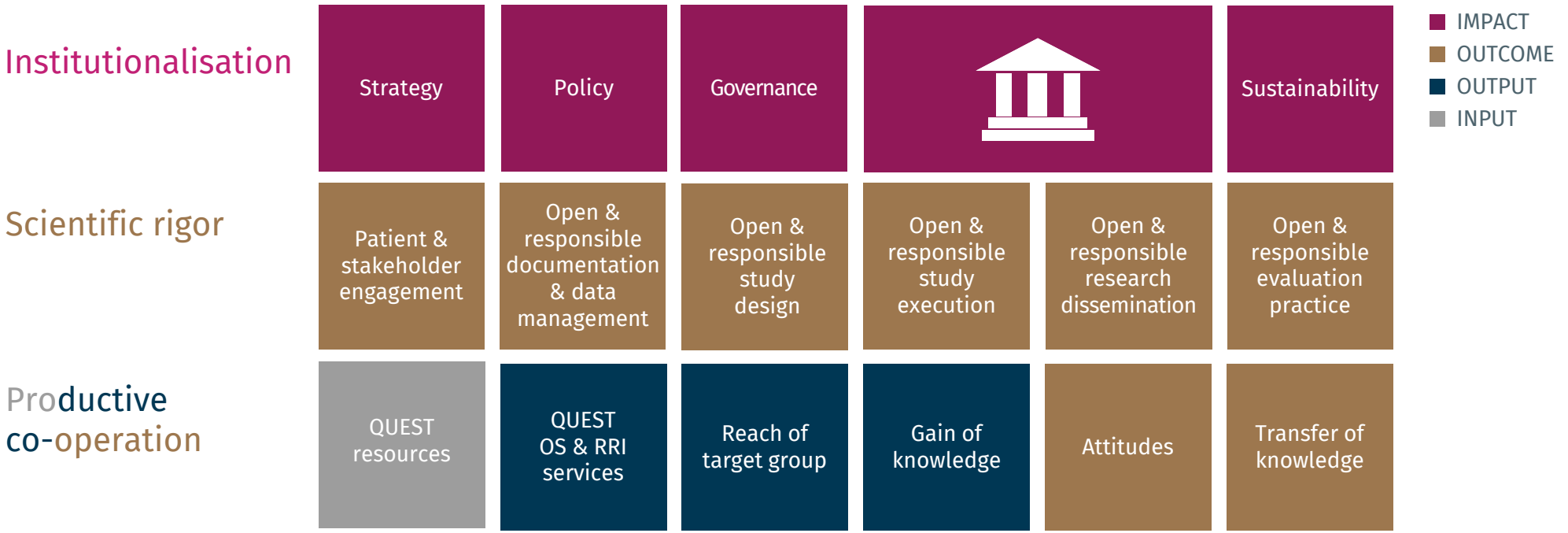
How sustainable are OS & RRI outcomes?

QUEST programme model

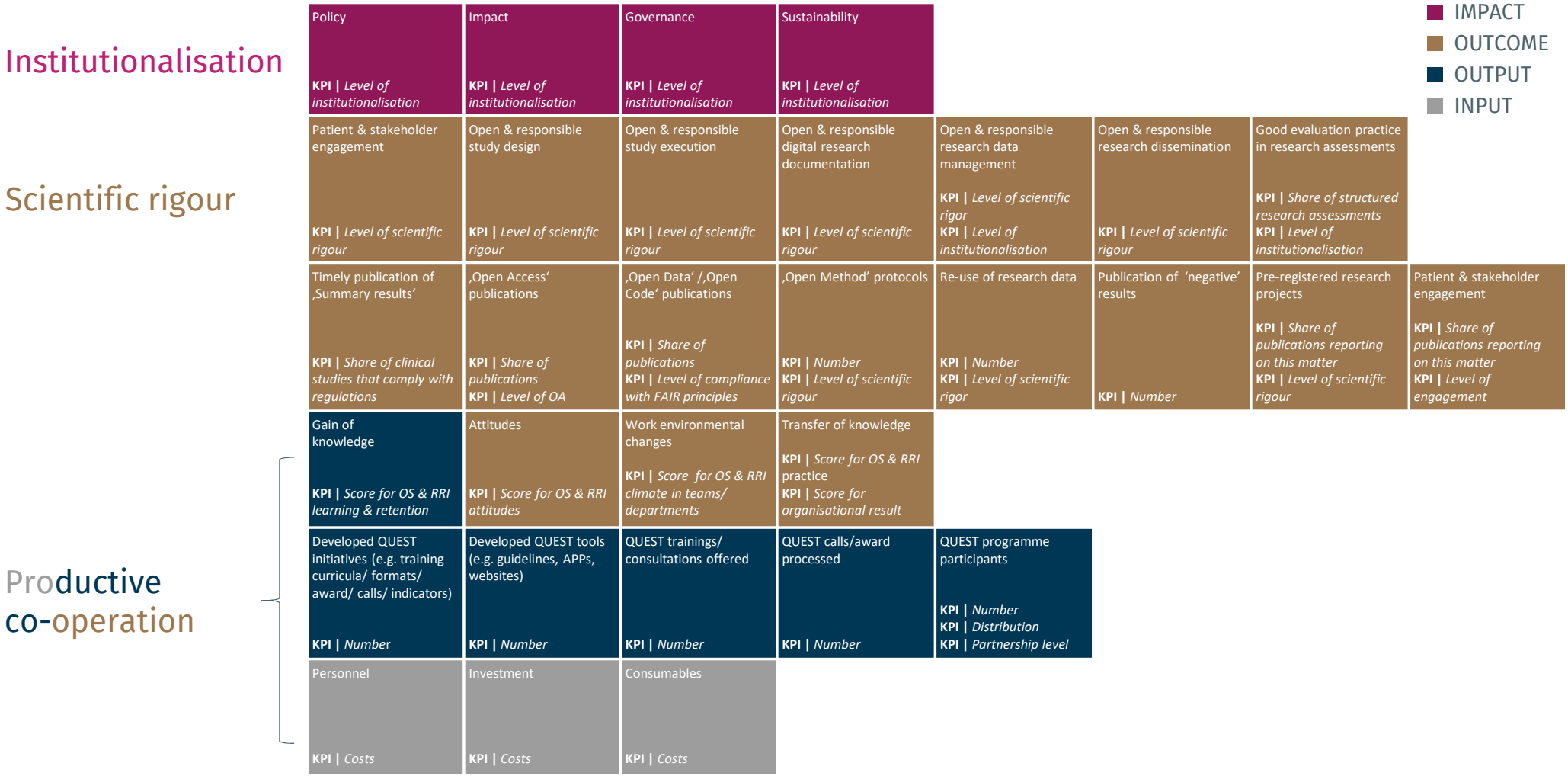
- Incentives & Indicators
- Education & Training
- Patient & Stakeholder Engagement
- Electronic Labbook
- Value & Open Science
  NeuroCure (Cluster of Excellence in the neuro-sciences) research teams affiliated at Charité
- Open Data & Research Data Management



QUEST indicator system



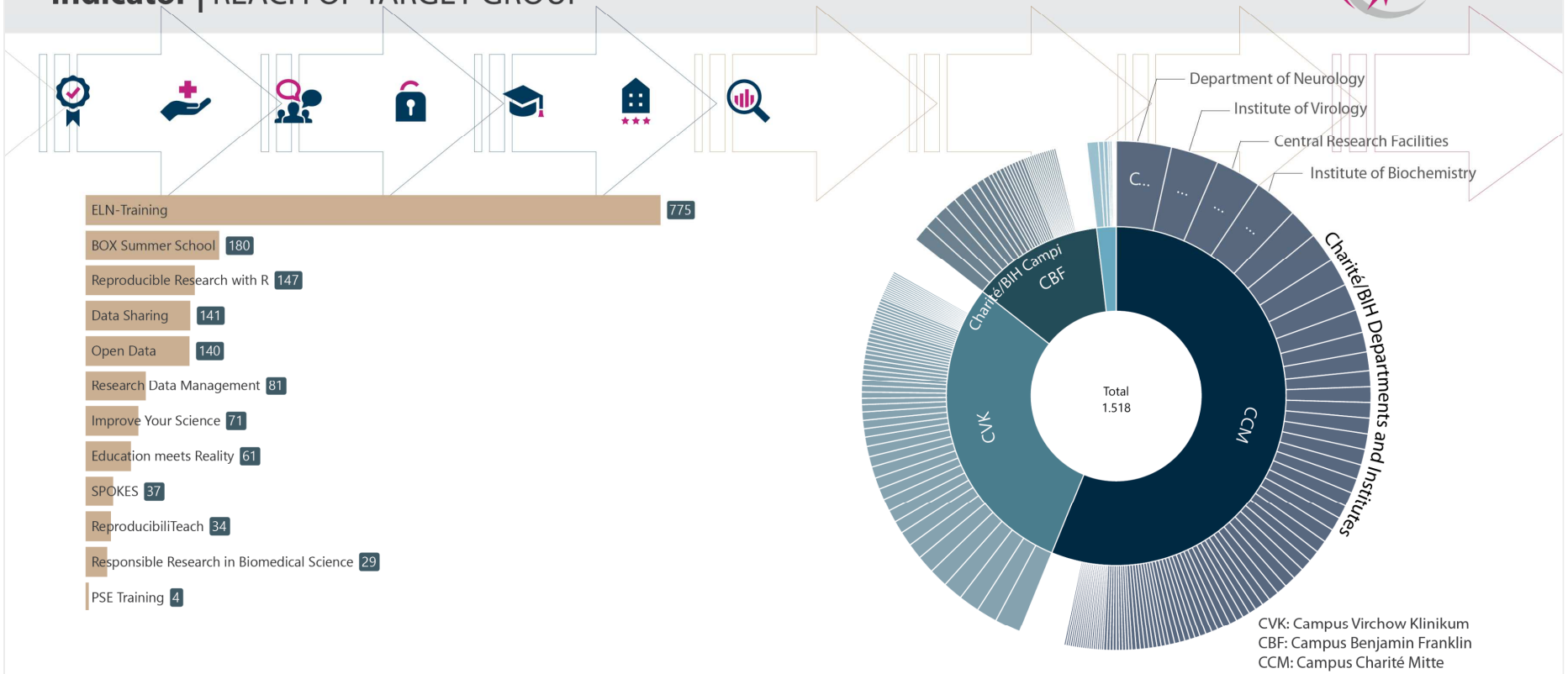
QUEST indicator system



M&E System

COMPASS monitoring dashboard

Programme level | OUTPUT
Indicator | REACH OF TARGET GROUP

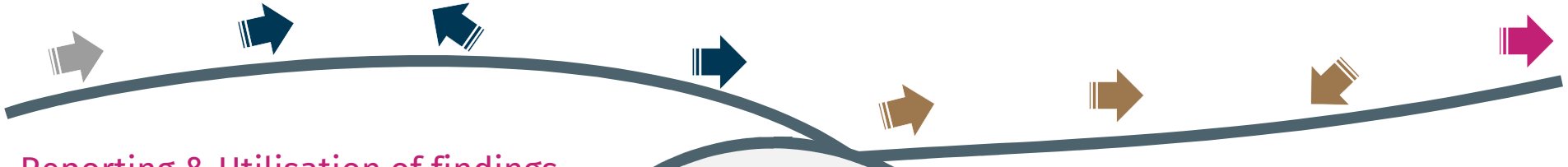


NUMBER OF QUEST PROGRAMME PARTICIPANTS

DISTRIBUTION OF PROGRAMME PARTICIPANTS WITHIN CHARITÉ/BIH

Please note that the figures shown derived from preliminary monitoring data, as the COMPASS dashboard is still in the development phase.

COMPASS evaluation



Evaluation
cycle / project

Reporting & Utilisation of findings
- Monitoring dashboards
- Reports & recommendations
- Scholarly publications

Theory construction
- Data interpretation &
- Integration of findings into the knowledge base/theory

Theory development/ testing
- TPB-Model *(Ajkzen)*
- TA-Model *(Venkatesh)*
- TT-Model *(Blume, Ford)*
- …

Evaluation design
- Case study
- Panel (pre-post) study
- (Semi)Experimental setting

Methodology
- Mixed & multi methods

Data analysis
- Causal analyses
- Multi-level analyses
- Network analyses
- …

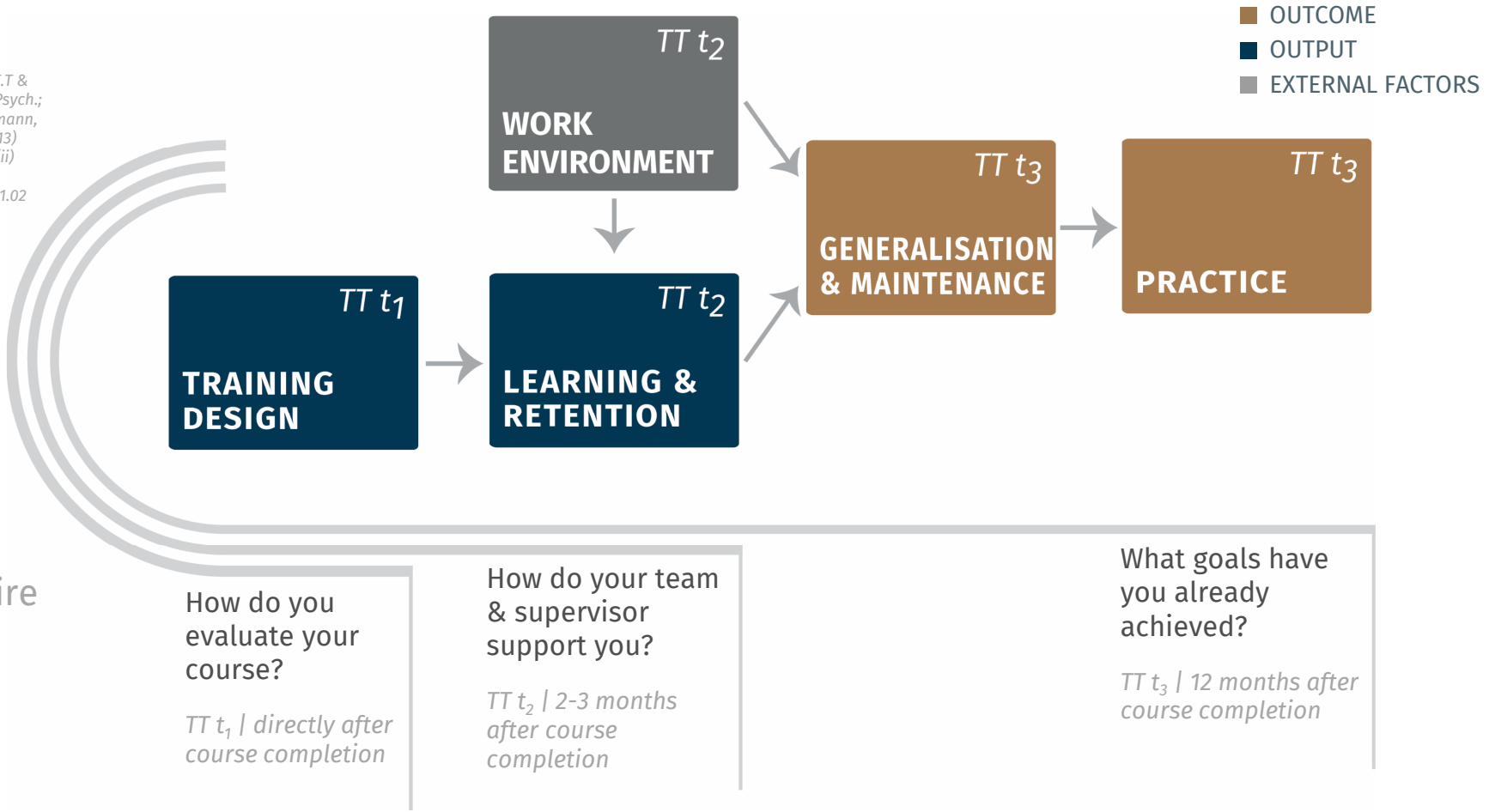
Data collection
- Interviews, Surveys, Observations
- Documents

Evaluating the transfer of training

training transfer

➢ model

Adapted from (i) Baldwin, T.T & Ford, J.K. (1988) Personnel Psych.; Spring 1988; 41, 1; (ii) Grohmann, Anna; Kauffeld, Simone (2013) doi.org/10.1111/ijtd.12005; (ii) Sandmeier, A. et al. (2021) doi.org/10.31244/zfe.2021.01.02



➢ questionnaire

How do you evaluate your course?

TT t_1 | directly after course completion

How do your team & supervisor support you?

TT t_2 | 2-3 months after course completion

What goals have you already achieved?

TT t_3 | 12 months after course completion

training & participants (included in the exploratory study as of October 2022)

Oxford | Berlin Summer School

Themes: Open, transparent, and reproducible research workflows, research ethics, meta-research

Data Sharing

Themes: Possibilities of processing and sharing (personal) data in a way which allows their reuse while securing privacy

Research Data Management for (Bio-) medical

Themes: Sciences generic and subject-specific requirements, standards and recommendations, relevant site-specific RDM services/infrastructures

ReproducibiliTeach

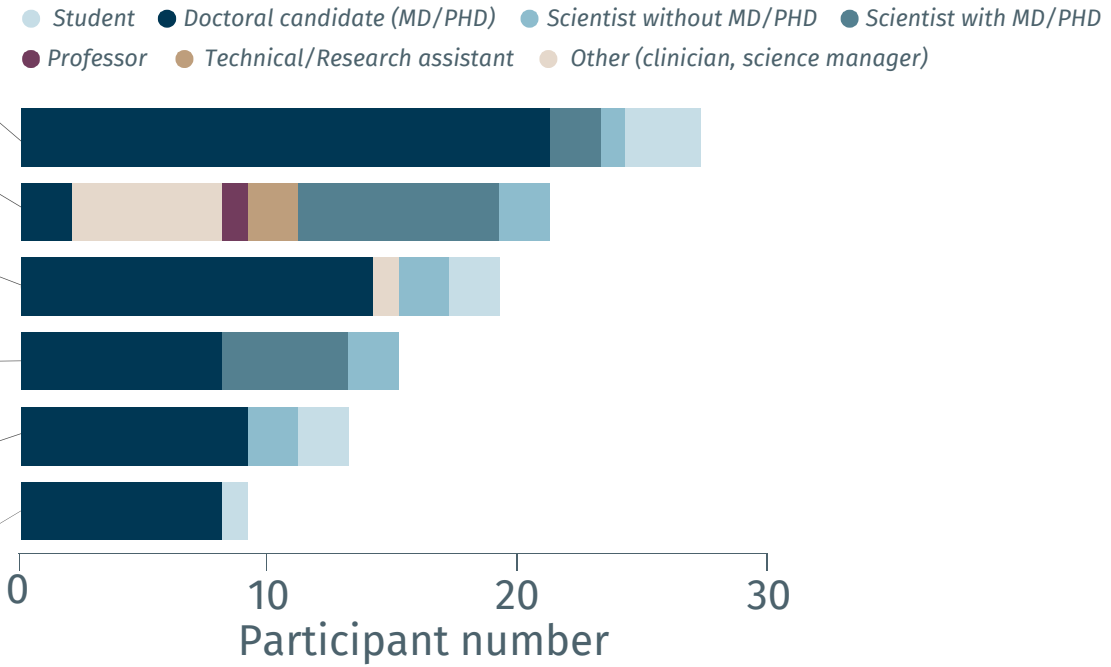
Themes: Identify common problems that affect transparency and reproducibility; implementing better practices in their own research

Responsible Research in Biomedical Science

Themes: Understanding the basic concept and principles on how to conduct a well-founded good scientific preclinical thesis

Reproducible Research with R

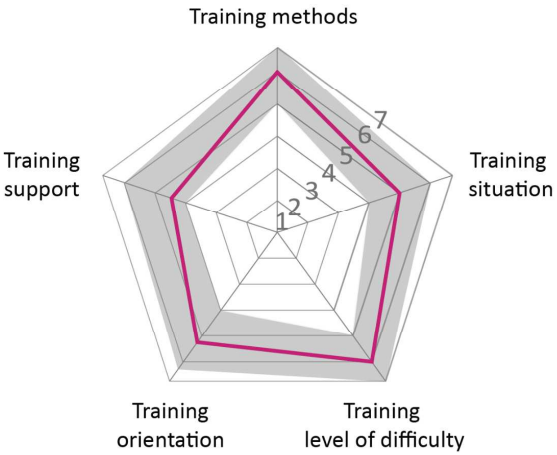
Themes: How to prepare data and analyses in a way others can understand how figures and statistical tests were created



preliminary results

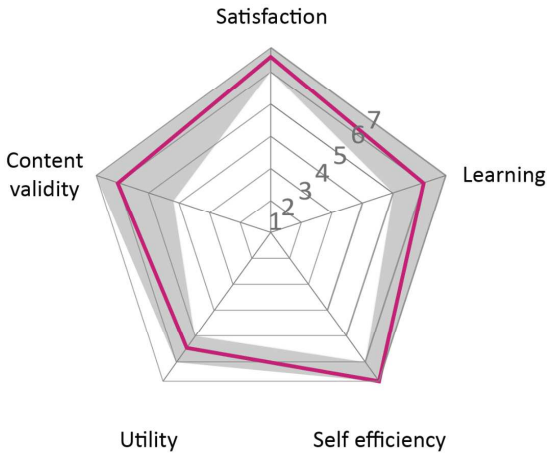
Training design

t_1 = directly after course completion
n = 78*/98



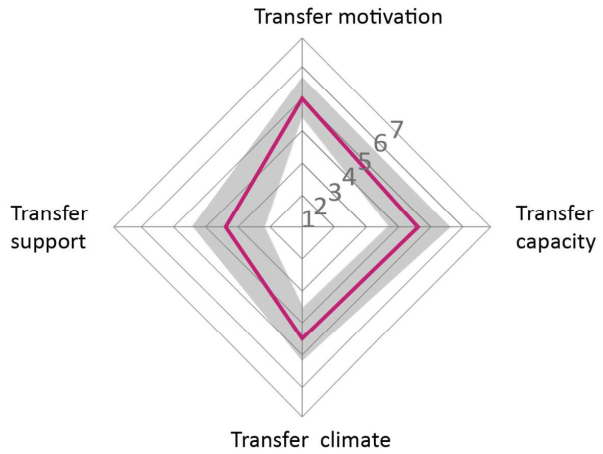
Learning & retention

t_2 = 3 months after course completion
n = 30 **



Work environment

t_2 = 3 months after course completion
n = 30 **



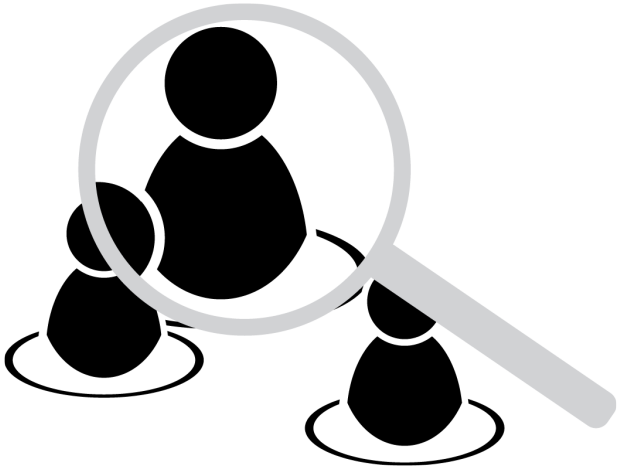
OUTPUT
EXTERNAL FACTORS

Likert scale, 1=strongly disagree, 2, 3, 4, 5, 6, 7=strongly agree

**) Note: Training support was not yet included in the evaluation survey of one of the courses evaluated here*
***) Note: As of October 2022, only part of the courses have been subjected to the training transfer t_2 questionnaire*

qualitative approaches

… for further studying work environmental factors



- Qualitative content analysis
  Kuckartz & Rädiker (2022)
- 7 semi-structured interviews with QUEST training participants in Sept – Nov 2021
- Inductive-deductive construction of categories

Support

"when I came back, [...] my professor was really happy I joined the [QUEST training]. And I asked for funding from the hospital, and everyone was quite happy. My professor said, 'Okay. So when you come back, you have to teach us all these things.'"

(T-Transfer_INT-TK_02)

No support – no discouragement

"[...] I have to also say, that he/she [supervisor] is not discouraging me from doing it. He/she is also not really supportive, it is like: Yes, do whatever you want. I can tell you an anecdote: When I started my PhD, I told him/her I'll do my experiments in a blinded fashion, it is important. And he/she was half-jokingly answering: ‚Yeah, okay, sure, do it. If you don't want to get publishable results, it is your way'. And I think, I mean, he/she is not 100 percent serious with that, but I think it is still showing, how he/she thinks about it."

(T-Transfer_INT-TK_04)

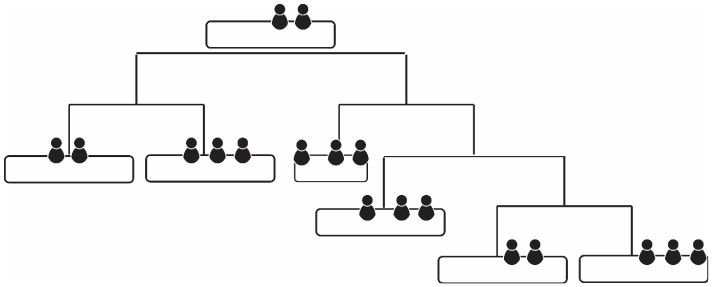
Discouragement

"Often it goes like this that a call appears, there is time pressure, a large team of different partners comes together. Some of them have never heard of this [OS and RRI]. There are hierarchies. Especially not being a professor I have to speak against everyone and there are people who turn their eyes because they may be more advanced in their career and don't want to be told that things could be done differently. And somehow it gets lost in the sense of 'choose your battles' because at some point I think: 'Well, oh my God okay, then we do it the way you want, the proposal is not going to get approved anyways.' And suddenly the proposal does get approved and I'm in the project."

(T-Transfer_INT-TK_06, free translation)

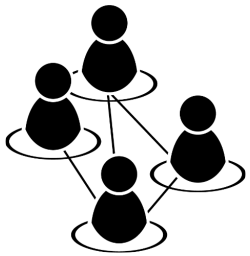
preliminary results

... work environment can represent supporting factors or obstacles



structural level

- work environment
- resources
- **time and productivity pressure**



social level

- work environment
- **leadership**
- community
- motivation

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