



# COST action CA19104 (a-STEP)] D3.1

## Collection of good practices of inclusive design and participatory action: methodology for the development of general framework

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## General notes

Beginning in quarters 5 and 6 (Q5 and Q6) of the project timeline, all necessary activities were established to facilitate the development of a general framework for best practices. During this phase, WG3 participants reached an agreement on the structure of the framework. Following this, a detailed questionnaire was developed as a foundational tool for collecting exemplary practices in inclusive design and participatory action. This questionnaire became instrumental in building a comprehensive framework, guided by active involvement from both the Group Leader and Co-Leader, who led participants through each stage of framework development.

The tool was initially conceptualized and developed by an expert team comprising Dr. Lorenzo Desideri, Dr. Katerina Mavrou (WG3 Co-Leader), and Dr. Silvio Pagliara (WG3 Leader). The completion of the questionnaire was supported by Ms. Maria Mouka, a research associate at the European University of Cyprus, whose contribution through a Virtual Mobility (VM) arrangement was invaluable in finalizing this key component of the project.

A concise literature review on inclusive design and participatory action research informed the development of a questionnaire tailored to align with the project's goals. This questionnaire was designed to capture essential aspects of inclusive design and participatory methodologies, forming a foundational tool for the creation of a general framework of best practices.

Initially created in Excel, the questionnaire was refined and transferred to Google Forms to enhance usability and accessibility. This transition enabled the collection of responses from a broad network, including members of Working Group 3 (WG3), the Association for the Advancement of Assistive Technology in Europe (AAATE), and additional stakeholders involved in inclusive practices. The use of Google Forms facilitated the gathering of a comprehensive dataset suitable for both qualitative and quantitative analysis.

The questionnaire consisted of five main sections, each structured to guide participants in documenting their practices. Designed with accessible language, it included detailed instructions and targeted questions to gather a wide range of information related to inclusive design and participatory action.

Throughout this process, consistent oversight ensured that the questionnaire aligned with project objectives and supported a collaborative approach to developing a practical, adaptable framework. Coordination activities, including review sessions, facilitated the refinement of the tool and the efficient collection of responses. The structured approach to data collection and preliminary analysis maintained a high level of consistency and rigor.

The questionnaire's guidelines and full question set are available in Annex I, titled "[COST Action] T3.1 Collection of Good Practices\_Questions in PDF," which offers insight into the methodology and rationale, enhancing transparency and supporting future replication.



Overall, this systematic effort established a strong foundation for creating a best-practices framework. The resulting data, once mapped, sorted, and analyzed, will inform the recommendations and roadmap presented in the concluding sections of this deliverable.

To develop the collection tool and carry out the mapping, sorting, and analysis of data, the methodology used in the DIG-i-READY Erasmus+ project was adopted. DIG-i-READY emphasized the compilation of advanced tools and methodologies related to Assistive Technology, aimed at enhancing accessibility, digital skills, and social competencies in vocational education. Additionally, to analyze the data and construct a framework for mapping and evaluating the collected practices within the a-STEP project, the 5P framework from the Global Cooperation on Assistive Technology (GATE) community of WHO was selected. This framework provides a comprehensive approach for examining how the collected practices are characterized across five dimensions: People, Products, Provision, Personnel, and Policy.

The first chapter (1) introduces the items of the collection tool, accompanied by explanations of their purpose and insights derived from its application by those contributing to the collection of good practices. This is followed by the mapping and sorting of the collected good practices in the second chapter (2), with the qualitative analysis detailed in the third chapter (3).

## 1. Presentation of the collection tool (questionnaire in Google Forms)

The first section of the questionnaire includes a comprehensive set of instructions designed to guide respondents in documenting their practices effectively. These instructions are structured to ensure clarity and ease of use, allowing respondents to understand the purpose of each section and the type of information required. Specific guidance is provided on completing the questionnaire, including tips for responding to open-ended questions and supplying thorough details about their practices. The instructions emphasize the importance of accuracy and completeness, helping to ensure that the data collected is both reliable and meaningful.

Additionally, the instructions outline the overall objectives of the questionnaire, explaining its role in gathering exemplary practices in inclusive design and participatory action. By highlighting the significance of each response in contributing to the project's broader goals, the instructions encourage thoughtful and well-considered answers. This section also provides contact information for any needed support or clarification, making it easier for respondents to reach out if assistance is required.

Overall, this introductory section creates a clear and supportive framework, enhancing the quality and consistency of the data collected across diverse respondents and contexts.

### Guidelines (first section)

#### General notes and guidelines

A few general guidelines were given in the beginning of the questionnaire, regarding more procedural issues:

- Search of good practices could be made in the national language(s) of the country of the person who conducted the search or/and in English.
- Items with asterisk\* needed to be answered.
- The title of the resource should be given in English.
- The full reference of the resource should be included in both the original language and in English.
- All other information should be provided in English.
- Experiences from interviews were considered valid contributions, and in their presence, it was recommended to keep record of any links or archives that constituted evidence of this practice and report it if possible in the relevant sections of the form.

#### Criteria guidelines

In this brief section, the colour coding of the criteria that would follow in three subsections was explained in a brief table.

## Analytical criteria guidelines

### *Inclusion criteria*

There were 5 inclusion criteria that were coded with green colour and needed to apply. A practice should not be included if not all 5 applied. The 5 inclusion criteria were the following:

1. Year of publication/implementation of the practice should be between 2015 till the day of the search.
2. The subject should be related to all three parameters:
  - i. 1. Inclusive Design which in this context meant a process that is designed in ways that allows participation and is accessible to persons with disabilities.
  - ii. 2. Participatory Action (co-design or/and co-creation) since we also needed to actually have the participation of persons with disabilities.
  - iii. 3. The use of (Assistive) Technology.
3. Implementation should be in Employment and/or Education fields only.
4. Intervention should involve the perspectives and experiences of persons with Autistic Spectrum Disorder or/and Intellectual Disabilities.
5. The design or/and development of an output should be involved. An output could be: a program/service/policy/methodology/tool/ any combination of the former. In the case of an Assistive Technology product, we were interested in the process of development and not the product itself.

### *Hints and ranking criteria*

In the context of the Deliverable, we identify 15 key criteria, highlighted in yellow, which are essential for aligning collected practices with the main objectives of Working Group 3 (WG3). Practices are encouraged to meet as many of these criteria as possible to strengthen their relevance to the WG3 goals. These criteria later serve as a basis for a ranking system (see *Sorting According to Points of Fundamental Items of the Questionnaire*), applied during the analysis phase following practice collection.

The criteria are detailed as follows:

1. **Involvement in Design and/or Development:** Practices should involve stakeholders directly in the design or development stages of the output, enhancing engagement and ownership.
2. **Broad Stakeholder Engagement:** Effective interventions target diverse stakeholders, such as end-users, service recipients, consumers, learners, educators, employees, employers, parents, caregivers, designers, developers, domain experts, and community members. The inclusion of individuals with disabilities, particularly those with intellectual disabilities and/or autism spectrum disorder, is a core requirement, while engagement with additional groups adds value, contributing to the practice's effectiveness.

3. **Self-Advocates' Perspectives:** Practices should incorporate the input of self-advocates to inform idea generation, prioritization, and decision-making processes. Addressing power imbalances within these interactions is equally essential to support authentic representation and inclusion.
4. **Contextual Understanding:** A deep understanding of the context in which the practice is applied is vital, ensuring that specific needs and conditions are considered throughout its implementation.
5. **Integration with Existing Projects:** Connecting resources or practices with existing projects can contribute to a more holistic approach, potentially enhancing the practice's impact and sustainability.
6. **Blending Research and Implementation:** Practices that blur the line between research and practical application are valued, as this fosters a more iterative, real-world approach that integrates theoretical insights with on-the-ground realities.
7. **Communication Accessibility:** It is critical for practices to address the unique communication needs of individuals with ASD and/or intellectual disabilities, ensuring that all participants can engage meaningfully.
8. **Diverse Participatory Research Methods:** Practices should utilize a range of participatory research methods, such as workshops, interviews, brainstorming sessions, focus groups, advisory boards, co-design exercises, and prototypes or storyboards, to capture diverse perspectives and enhance the comprehensiveness of the approach.
9. **Iterative Development and Pragmatism:** An iterative process, including ongoing feedback and refinement cycles, is a valued component, indicating adaptability and responsiveness to evolving needs.
10. **Social Inclusion Impact:** While estimating impact is beyond this project's scope, the inclusion of stakeholder-reported metrics, such as the number of individuals impacted, is valuable. Social inclusion effects are also a key consideration.
11. **Stakeholder-Identified Pros and Cons:** Any advantages or disadvantages cited by stakeholders are recorded to provide a balanced understanding of the practice's strengths and areas for improvement.
12. **Target Audience Feedback:** Feedback from the target audience, if available, is documented, adding depth to the evaluation of the practice's reception and efficacy.
13. **Future Prospects, Sustainability, and Scalability:** Practices that demonstrate potential for sustained activity, scalability, and future development are prioritized as they indicate longer-term viability and impact.
14. **Local/Regional/National Innovation:** Practices should provide clear evidence of innovation within their specific context, whether at the local, regional, or national level, highlighting their unique contributions.
15. **Contribution to UNCRPD Implementation:** The practice should contribute meaningfully to the implementation of United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) provisions in areas such as education and employment.



16. **Recognition and Awards:** If the practice has received any awards or formal recognition, this is recorded as an indicator of its excellence and impact within the field.

These criteria provide a structured approach to assess and rank collected practices, guiding the identification of exemplary initiatives in inclusive design and participatory action.

### *Exclusion criteria*

Five exclusion criteria, highlighted in red, are established to identify practices that should not be included in the collection. While some of these criteria overlap in meaning with certain inclusion criteria, they clarify key priorities for participants, ensuring a shared understanding of what is essential. For instance, the first criterion in both inclusion and exclusion lists pertains to the publication or implementation date of the practice, reinforcing this requirement's importance.

A practice is excluded from consideration if any of the following five criteria apply:

1. Practices implemented or resources created before 2015 are not included.
2. Practices that do not encompass all three core elements—Inclusive Design, Participatory Action, and the use of (Assistive) Technology—are excluded.
3. Practices focusing solely on fields outside of Employment and/or Education are excluded.
4. Practices discussing only types of disabilities other than those specifically required are not included.
5. Practices that do not involve any output design or development phase are excluded.

Following these exclusion criteria, the questionnaire's remaining four sections present the specific questions to be answered by participants, guiding the documentation of eligible practices.

## General information items (second section)

The second section of the questionnaire gathers general information about each practice. This section includes the following items:

- **2.1(a):** *a-STEP COST Action Member Name* (open question)

- Respondents provide the name of the a-STEP COST Action member submitting the practice.
- **2.2: Languages for Sources Searched** (multiple choice)
  - Respondents select one or more languages in which source materials were reviewed:
    - National
    - English
    - Other
- **2.3(a): Contact Person(s) for the Resources – Name** (open question)
  - Respondents provide the name of the contact person for the resources, in case additional information is needed.
- **2.3(b): Contact Person(s) for the Resources – Email** (open question)
  - Respondents provide the email address of the contact person for follow-up inquiries.

This section ensures that each practice submission is accompanied by basic identifying information, language details, and a contact for further clarification if necessary.

## Initial information items (third section)

The third section of the questionnaire gathers initial information regarding the practices. This section includes the following items:

- **3.1: Title of Resource** (open question)
  - Respondents provide the title of the resource being documented.
- **3.2: Year of Resource (2015–2023)** (single choice)
  - Respondents select the year the resource was published or implemented.
- **3.3: Type of Resource** (multiple choice)
  - Respondents select one or more types of resources from the following options:
    - Application

- Books/Handbooks
  - Content Creation Tool
  - Curricula
  - Gamification
  - Manuals
  - Multimedia
  - Platform
  - Policy Documents
  - Empirical Publications
  - Theoretical Publications
  - Reports
  - Seminars
  - Other
- **3.4:** *In Case of a Book, Please Provide More Information on the Type of Book* (open question)
    - Respondents provide additional details if the resource is a book, such as its scientific or handbook nature.
  - **3.5:** *In Case of a Report, Please Provide More Information on the Type of Report* (open question)
    - Respondents provide clarification on the type of report, such as project report, practice report, or evaluation report.
  - **3.6:** *In Case of Any Other Resource, Please Provide a Clarification on the Type of Resource* (open question)
    - Respondents provide details if the resource does not fit into the listed categories, such as training materials, research studies, or informal conversations.
  - **3.7:** *Briefly Provide the Main Objective/Scope of the Book/Report* (open question)
    - Respondents provide a brief description of the main objective or scope of the resource, summarizing its purpose or focus.

This section captures key details about the resource itself, including its title, type, and additional clarifications about the nature of the resource, ensuring a comprehensive understanding of the practices being documented.

## Important information items (fourth section)

The fourth section of the questionnaire gathers important information regarding the organizations and contexts involved in implementing the practices. This section includes the following items:

- **4.1: Title of Organisation(s)/Stakeholder(s) Implementing** (open question)
  - Respondents provide the name(s) of the organization(s) or stakeholders responsible for implementing the practice.
- **4.2: Target Audience** (single choice)
  - Respondents select the primary target audience for the practice:
    - Persons with ASD
    - Persons with ID
    - Persons with ASD and Persons with ID
    - One of the above and other
- **4.3: Level of Education (if applicable)** (multiple choice)
  - Respondents select applicable levels of education:
    - Primary
    - Secondary
    - Post-secondary
    - Higher
- **4.4: Education Setting (if applicable)** (multiple choice)
  - Respondents indicate the educational setting:
    - Formal
    - Informal
    - Non-formal

- **4.5: Employment Type (if applicable) (multiple choice)**
  - Respondents specify applicable employment types:
    - Part-time
    - Full-time
    - Casual Employment
    - Remote Employment
    - Contract Employment
    - Apprenticeship
    - Employment on Commission
    - Probation
  
- **4.6: Sector of Employment (if applicable) (multiple choice)**
  - Respondents select relevant employment sectors, based on CEDEFOP categories, though these were not ultimately utilized as no practices were reported in the employment category:
    - Public Sector and Defence
    - Education
    - Health and Social Care
    - Manufacturing
    - Construction
    - ICT Services
    - Professional Services
    - Administrative Services
    - Arts and Recreation
    - Finance and Insurance
    - Wholesale and Retail Trade
    - Accommodation and Food
    - Transport and Storage
    - Agriculture, Forestry, and Fishing

- Energy Supply Services
- Water and Waste Treatment
- Mining and Quarrying
- Other

This section captures comprehensive information about the implementation context, including the organizations involved, target audience, educational and employment settings, and sectors. This enables a clear understanding of the practice's application and reach within various contexts.

## Fundamental information items (fifth section)

The fifth section of the questionnaire gathers fundamental information about each practice, which is critical for sorting and ranking purposes. This section includes the following items:

- **5.1(a): Stakeholders Involved [Inclusive Design Elements]** (multiple choice)
  - Respondents select all relevant stakeholders engaged in the practice:
    - End-users
    - Recipients of services
    - Consumers
    - Students
    - Educators
    - Employees
    - Employers
    - Parents
    - Caregivers
    - Designers
    - Developers
    - Domain experts
    - Community

- Organizations (proposed as an additional stakeholder by one of the practices)
- **5.1(b): Inclusive Design Approaches Applied** (multiple choice)
  - Respondents choose applicable inclusive design approaches:
    - Accessibility for disability
    - Gender
    - Cultural background
    - Language
    - Universal Design (Design for All) principles
    - Universal Design for Learning principles
    - Geographic location
    - Educational background
    - Economic situation
    - Collaborative action research
    - Service Design
    - Design Thinking
    - Ergonomy  
(*Note: The last four options were added by participants and were included in data analysis but did not contribute to quantitative scoring.*)
- **5.1(c): Implementation of Inclusive Design**
  - Respondents provide a description of how inclusive design is applied, considering the involvement of different stakeholders and approaches.
- **5.2(a): Different Modalities of Participation [Participatory Action Elements]** (multiple choice)
  - Respondents indicate all relevant participatory methods used:
    - Workshops
    - Interviews
    - Brainstorming sessions

- Focus groups
  - Advisory board
  - Co-design activities
  - Use of prototypes and storyboards
  - Iteration
  - Blurred limits between research and implementation
  - Games
  - Online Delphi study
  - Surveys
- (Note: The last three options were participant additions. Online Delphi study, while a form of focus group, enables broader geographic participation. These additions were analyzed qualitatively without influencing the quantitative results.)*
- **5.2(b): Explanation of Participation Modalities and Participatory Research**
    - Respondents elaborate on the chosen participatory modalities and relate them to inclusive design elements (open question).
  - **5.3: Digital Tools Involved [Assistive Technology Element]**
    - Respondents list any digital tools or assistive technologies used (open question).
  - **5.4: Reported Impact or Feedback from Implementation**
    - Respondents briefly describe any reported impact or feedback from the practice's implementation (open question).
  - **5.5: Innovation Element (Local/Regional/National Context)**
    - Respondents provide details on the innovative aspects of the practice in its respective context (open question).
  - **5.6: Brief Summary of Content/Abstract in English**
    - Respondents provide a summary or abstract of the practice in English (open question).
  - **5.7: Full Reference in Original Language (and in English, if available)**
    - Respondents provide the full reference for the resource, in both the original language and English, to the extent possible (open question).



- **5.8: Source(s)/Link(s)**
  - Respondents provide any relevant URLs or links, which allow researchers to access additional information and serve as resources for future users of the framework (open question).
- **5.9: Contact Information for Provider**
  - If available, respondents supply contact information for the resource provider (open question).
- **5.10: Other Comments**
  - Respondents can include any additional comments, allowing the capture of valuable insights that may not fit into other sections (open question).

The Google Form was shared with WG3 members on September 20, 2023, and responses were collected from September 20, 2023, to February 2, 2024. Although the form remained open beyond this period, no additional responses were received after February 2, resulting in a total of 13 responses.

## 2. Mapping and sorting of practices collected

This section outlines the approach used to map and sort the collected practices. The term “sorted” is intentionally chosen over “ranked,” as the practices are not evaluated by their “value” but rather organized based on their relevance to the research scope.

The sorting methodology draws primarily from the Erasmus+ project DIG-i-READY, as well as the 5P framework developed by the Global Cooperation on Assistive Technology (GATE) community (see *General Notes*). These frameworks guide the categorization of practices by aligning them with key dimensions of inclusive design, participatory action, and assistive technology.

A total of thirteen practices were collected. Their numbered titles, assigned in order of the submission date, are presented in Table 1.

*Table 1 Listing of practices according to the date they were received*

| No. (date) | Title of the practice  |
|------------|--|
| 01.        | Right to Connect Project   |
| 02.        | Co-designing a Museum Application with People with Intellectual Disabilities: Findings and Accessible Redesign |

|     |   |
|-----|---|
| 03. | Сборник с добри образователни практики ( <i>Collection of good educational practices</i> )  |
| 04. | Immersive Care: VR technology, supermarket app  |
| 05. | m Able to Include   |
| 06. | Viamigo   |
| 07. | Le développement inclusif, défi transdisciplinaire ( <i>Inclusive development, a transdisciplinary challenge</i> )                                      |
| 08. | A framework of evidence-based practice for digital support, co-developed with and for the autism community  |
| 09. | Play2Do - A Simulated Training Framework for Skills Development addressing students with intellectual and developmental disabilities and their trainers |
| 10. | Learners on the autism spectrum in the secondary level II   |
| 11. | Empowerment and Well-Being Through Participatory Action Research and Accessible Gaming: A Case Study With Adults With Intellectual Disability           |
| 12. | Inail   |
| 13. | Using assistive robots to promote inclusive education   |

The sequential numbering of practices, based on their submission dates, serves as a useful coding method for later stages of this report. This approach facilitates comparison of practices across different sorting methodologies applied in various stages of data mapping. This coding enables cross-referencing when observing how each practice aligns within different sorting criteria (see Table 2, Table 3, and Table 5).

The data mapping and analysis process in this report follows four distinct steps:

**1. Mapping and Sorting by Fundamental Information Points:**

- In this initial step, practices are sorted according to key items from the collection tool, as captured in the Google Forms questionnaire. This sorting reflects the foundational attributes and characteristics of each practice, providing an overview of their alignment with project priorities.

**2. Mapping and Sorting According to the GATE 5P Framework:**

- In this stage, the practices are organized based on the 5P framework developed by the Global Cooperation on Assistive Technology (GATE) community. This framework categorizes practices into five key domains: People, Products, Provision, Personnel, and Policy. Sorting practices within these categories offers insight into how each aligns with established elements of inclusive and assistive technology practices.

### 3. Compounding (Summation) of Results from Stages A and B:

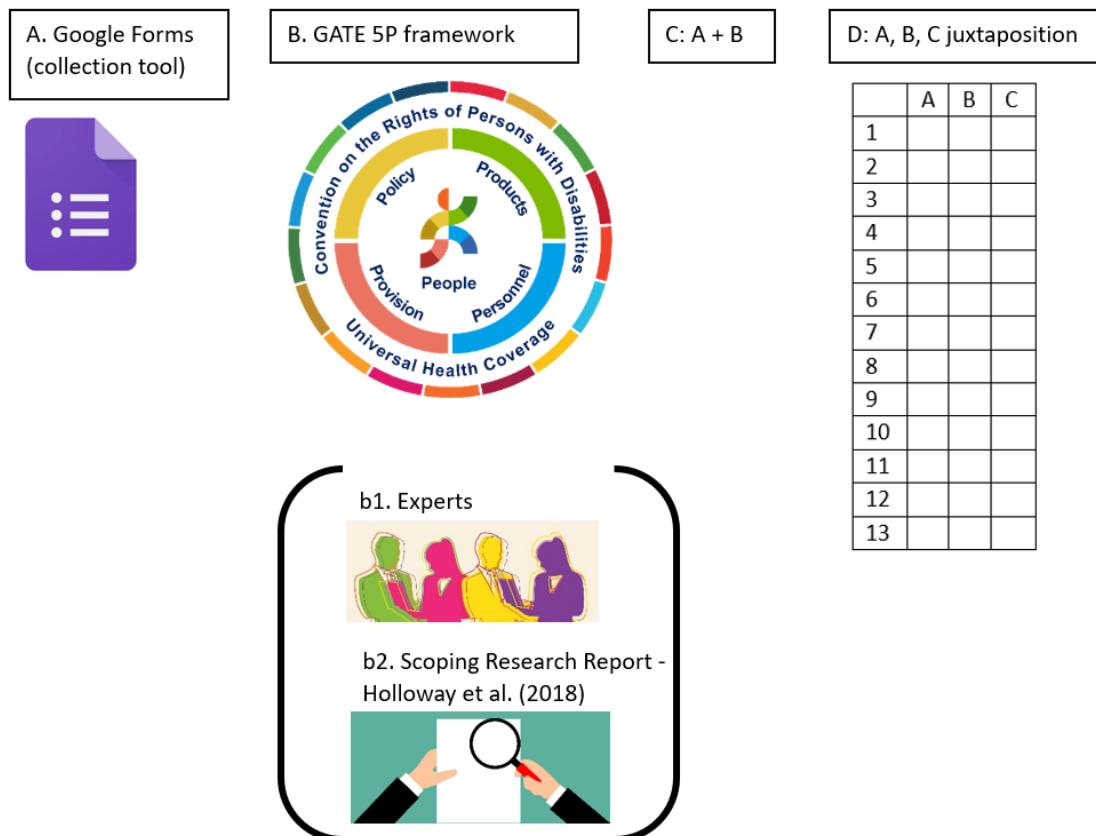
- This step involves combining the findings from the initial sorting by fundamental information and the GATE 5P framework sorting. By summing these results, an aggregated perspective is created, revealing the broader alignment of each practice across both sets of criteria.

### 4. Juxtaposition of Stages A, B, and C to Reach Final Conclusions:

- In the final step, results from each of the previous stages (A, B, and the compounded results of C) are compared. This juxtaposition provides a comprehensive view of each practice's positioning across different sorting methodologies, enabling robust conclusions on their alignment with the project's objectives (see Figure 1).

This systematic approach allows for a nuanced understanding of each practice's relevance to the research objectives, offering a multidimensional assessment that combines foundational data, structured frameworks, and aggregated insights.

Figure 1 The four stages of mapping and sorting of practices



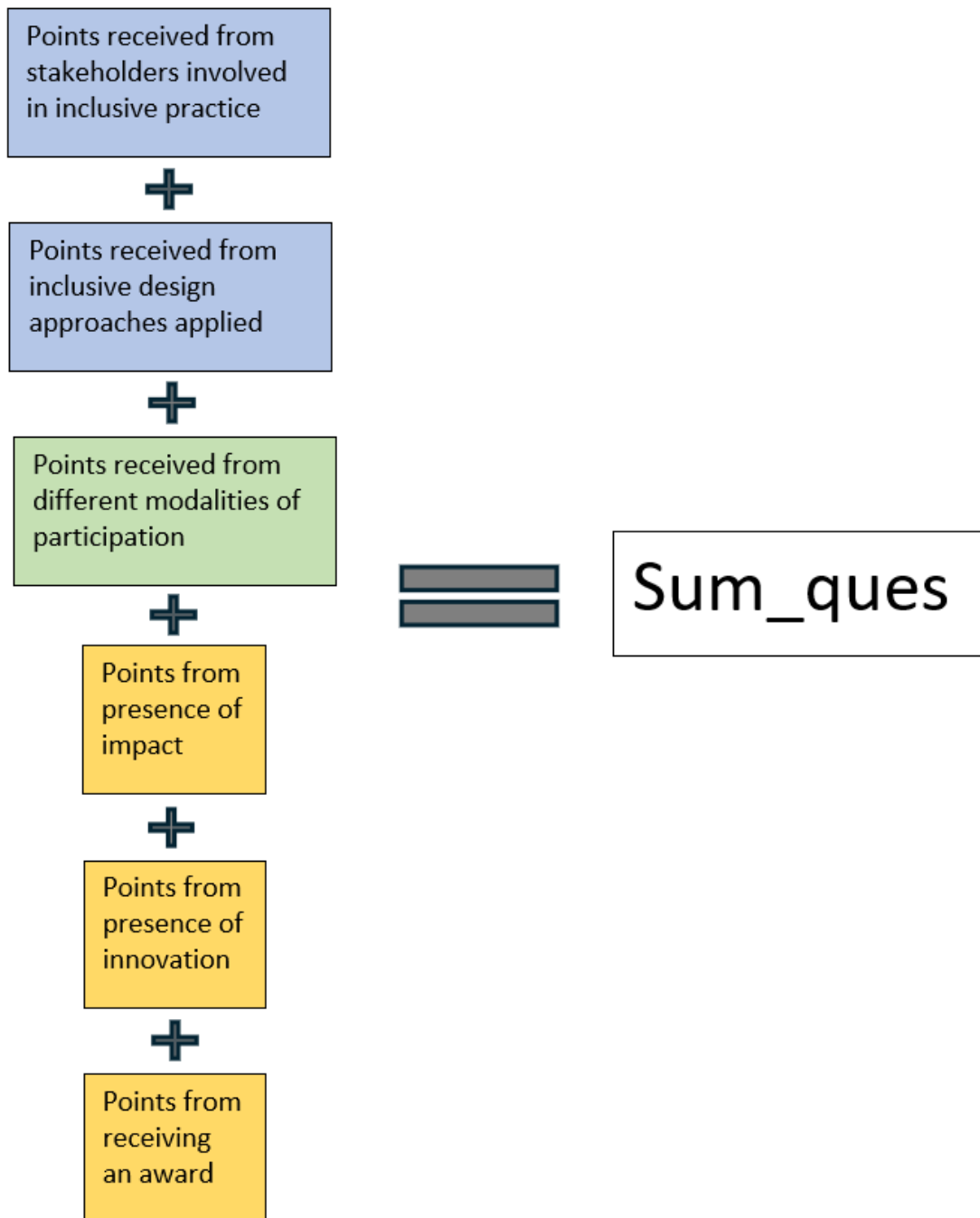
A. Stage A: Mapping and sorting of practices according to points of fundamental information items from the collection tool (questionnaire in Google Forms)

The reasoning behind the initial stage of processing of data (method A) involved the attribution of points to fundamental elements of the findings of the questionnaire, as they were identified in the thirteen practices collected. Thus, a total initial sum of points<sup>1</sup> received from the collection tool form was named *Sum\_ques* and is depicted in [Figure 2](#).

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<sup>1</sup> We are using the term “points” so that we can approach the practices also in a qualitative method

Figure 2 Origination of sum of points from the collection tool (questionnaire in Google Forms) - Stage A



Items in questions from the fifth section of the questionnaire that included fundamental information regarding the practices and provided the opportunity to choose more than one choice, are “spread” in a sheet in different columns.

- These questions included different stakeholders involved in inclusion practices, different approaches of inclusion (regarding the inclusive characteristics of the practices) and characteristics regarding participatory action.
- For each of the practices, a “yes” or “no” would indicate if the characteristic was considered present. In a few cases, when the contributors who submitted the information considered the characteristic non-existent or were not sure regarding its presence, the researchers followed-up with additional search to trace any other information given regarding the practice, so status was changed to “yes”.
- “yes” would receive different number of points, according to the perceived importance of the characteristic in the context of the inclusive design and the participatory action nature of the research. E.g. *Universal Design (Design for All) principles* would receive 5 points, whereas the cultural background would receive 1 point. Thus, the characteristics most important for our research would make the practices more prominent in relation to others.
- On the other hand, the presence of each of the less important (for our research) characteristics would receive at least 1 point and (to some extent) affect the result, enhancing the holistic perspective of our analysis, and at the same time sustaining its validity.
- The reporting of impact and innovation in the practice, as well as the granting of an award, were also given some points (5 for innovation, 5 for impact, 10 for an award). In the frame of this research, we were not able to judge the extension of impact or the type of innovation, thus, we accepted their presence as declared by the person who filled in the questionnaire and then equally attributed the corresponding “value”.
- Of course, the attribution of value in each of the characteristics has been subjective and different attributions would have led to different sorting of the practices.
- After that procedure, each practice received an initial sum of points.
- Thus, each of the practices received an initial total score<sup>2</sup> (Sum\_ques points), which originates from the summation of scores from stakeholders involved, inclusive design approaches applying, different modalities of participation applying, presence of impact, presence of innovation element, and receiving an award. This aggregated to a score that led to an initial sorting of practices as follows in [Table 2](#):

Table 2 Sorting of practices according to the sum of points from the collection tool (questionnaire) (Stage A)

| Title of the practice  | Sum_ques points |
|--|-----------------|
| (01). Right to Connect Project   | 61              |
| (07). Le développement inclusif, défi transdisciplinaire ( <i>Inclusive development, a transdisciplinary challenge</i> ) | 61              |

<sup>2</sup> We use the term “score” with the intention to map relevant practices to our scope and not to judge the intrinsic “value” of these practices

| Title of the practice   | Sum_ques points |
|---|-----------------|
| (08). A framework of evidence-based practice for digital support, co-developed with and for the autism community  | 51              |
| (09). Play2Do - A Simulated Training Framework for Skills Development addressing students with intellectual and developmental disabilities and their trainers | 42              |
| (05). m Able to Include   | 41              |
| (13). Using assistive robots to promote inclusive education   | 41              |
| (12). Inail   | 39              |
| (10). Learners on the autism spectrum in the secondary level II   | 36              |
| (04). Immersive Care: VR technology, supermarket app  | 34              |
| (03). Сборник с добри образователни практики ( <i>Collection of good educational practices</i> )  | 33              |
| (06.) Viamigo   | 29              |
| (11). Empowerment and Well-Being Through Participatory Action Research and Accessible Gaming: A Case Study With Adults With Intellectual Disability           | 25              |
| (02). Co-designing a Museum Application with People with Intellectual Disabilities: Findings and Accessible Redesign  | 17              |

In addition, we wanted to compare these (ultimately quantitative) results derived from questions closely related to our interests with another system, that would be more established, and see if their sorting according to this would be similar, and if an integration would be possible.

### B. Stage B: Mapping and sorting of practices according to GATE 5P framework

In order to formulate the framework for mapping and analysis of the collected practices in our work, the 5P framework developed within the Global Cooperation on Assistive Technology (GATE) community (Figure 3) of WHO was chosen. This framework provides a comprehensive approach in investigating the way collected practices manifest their characteristics within the 5P framework: People, Products, Provision, Personnel, and Policy.

Figure 3 5P framework (People, Products, Provision, Personnel, and Policy) developed within the GATE community - Stage B (from [https://www.who.int/initiatives/global-cooperation-on-assistive-technology-\(gate\)](https://www.who.int/initiatives/global-cooperation-on-assistive-technology-(gate)))



The decision to use the 5P framework instead of other models (either assistive technology [AT], or education-specific) was taken based on the unanimous agreement among the assistive technology community on the interlinking nature of ATs and services, the personnel required for AT-related services, the importance of provision systems, the critical impact of policy, as well as the central role that users should play at all levels. In this view, the 5Ps framework has been considered a comprehensive and universally valid model to align the identification of best practices in assistive technology for education and employment with the more recent global trends in design, development, policy and provision of ATs for people with intellectual or neurodevelopmental disorders.

In order to use this framework for our purposes, we conjoined two differentiated approaches regarding its potential application.

1. The first was the approach of experts within the consortium, who had suggested some essential components regarding each of the five elements (5P) that were important according to their expertise and were considered very relevant to our research. Thus, in the spreadsheet, the 5P of GATE were allocated in different cells in the same row. Under each of the 5P (elements), we placed the components suggested by the experts. These were coded in alphanumeric way (e.g. C2.1, C2.2, C2.3, etc).
2. Under the components of the elements, we placed the units of each element, as scrutinized under each P in the *Scoping Research Report on Assistive Technology* by Holloway et al. (2018). This elaboration of “units”, that had already been published, was considered the organising scheme under which the components of the consortium’s experts should be placed. Consequently, we placed each of the experts’ elements in the cell of one of the units (as elaborated by Holloway et al., 2018) and created potential future items for our framework. These units were stated in a positive way, meaning describing which parameters endorse inclusive and participatory design and not the barriers.



This decision (conjoining two differentiated approaches regarding 5P) gave us the opportunity to take into consideration the expertise of the consortium, and then organise this knowledge under a well-established schema (Holloway et al., 2018). Components as posed by the experts and units as posed by Holloway et al. (2018) were both considered when studying information from the responses. Therefore, the framework created combines characteristics of relateness to the project's needs and also validity referring to an external system.

The following outlines the components of the various approaches used in mapping practices:

### **GATE 5P Framework Elements**

1. **People**
2. **Products**
3. **Provision**
4. **Personnel**
5. **Policy**

### **Experts' 5P Components (Detailed Elaboration of GATE 5P Elements)**

#### **People**

- **Universal Design Considerations**
  - C1.a.1 Equitable use
  - C1.a.2 Flexibility in use
  - C1.a.3 Simple and intuitive use
  - C1.a.4 Perceptible information
  - C1.a.5 Tolerance for error
  - C1.a.6 Low physical effort
  - C1.a.7 Size and space for approach and use
- **Human-Centred Design Considerations**
  - C1.b.1 Focus on solving core issues, not just symptoms
  - C1.b.2 Prioritize needs and abilities of people over technology capabilities
  - C1.b.3 Emphasize the entire activity
  - C1.b.4 Continuous testing and refinement

## Products

- C2.1 Systematic review conducted
- C2.2 Collaboration with academic institutions
- C2.3 Research to identify effective technologies for specific areas
- C2.4 User consultations to identify actual needs

## Provision

- C3.1 Regular feedback from real users regarding daily activities
- C3.2 Collaboration with developers
- C3.3 Trial versions available before purchase
- C3.4 Product visibility among professionals and communities
- C3.5 Online review platform established
- C3.6 Training for application designers
- C3.7 Long-term collaborations between research institutions and businesses
- C3.8 Privacy considerations from the beginning

## Personnel

- C4.1 Adequate training for all actors, not limited to teachers
- C4.2 Collaboration with university units for accessibility training
- C4.3 Acknowledgment of existing services and professionals
- C4.4 Consideration of available resources
- C4.5 Cultural considerations
- C4.6 Identification of key trends for personnel capacity building
- C4.7 Free access to MOOCs or shorter alternatives for practitioners
- C4.8 Courses vetted by relevant researchers and practitioners
- C4.9 Online access to courses to cover geographic regions

## Policy

- C5.1 Engagement with local government
- C5.2 Development of public awareness of daily life barriers

- C5.3 Emphasis on moving from integration to inclusion
- C5.4 Risk identification
- C5.5 Distribution of short surveys among stakeholders

These criteria provide a structured, comprehensive framework for assessing and categorizing practices, allowing for a nuanced analysis aligned with both inclusive design and participatory action principles.

**Holloway et al. (2018) units (elaboration of GATE 5P elements) for validation, with embedded components for relevance (the later underlined)**

- People
  - *U.1.1* Awareness – awareness of user needs, the benefits to individuals and society of meeting them, and state obligations to address people’s rights through UNCRPD, the WHO resolution and the SDGs. *C5.2 (public awareness)*
  - *U.1.2* Research/impact measurement – robust research and evidence base, for the ability to scale pilot projects. Evidence is a key tool to promote investment, as well as to prioritise interventions. *C3.1 (periodical feedback)*
  - *U.1.3* Place – the potential "6th P" sits under People and directly relates to the physical environment and conditions in which people live. The concept of Place also extends to the digital space in which people increasingly operate.
  - *U.1.4* Stigma – Disabled people are continually discriminated against, and this is a barrier which prevents disabled people from engaging in society, as well as preventing people from being visible to society. Although discrimination and stigma are worse for some types of disabilities, they pervade all sectors of the disability community.
  - *U.1.5* User-centred design - Products designed with the participation of users are ultimately much better in meeting users’ needs; they are used more and abandoned less. *C1.a, C1.b*
- Products
  - *U.2.1* Standards – Globally accepted product specifications and standards for all products on the APL should exist, so purchasers don’t have to assess products of varying quality as well as cost when deciding what to procure. Opting for the cheaper product not understanding the potential harm delivery of a sub-standard product can do is eliminated. Additional cost to the users and the providers of healthcare is eliminated, as secondary complications from the use of a product which has been poorly designed will not arise.
  - *U.2.2* R&D – product R&D characterised by investment, innovation and R&D in supply, despite of limited buying demand, and making use of any publicly funded research investment, preventing high abandonment rates of AT. User

involvement in the design process is important. C2.1 (systematic review), C2.2 (academics), C2.3 (which for what), C2.4 (actual needs), C3.6 (training of application designers), C3.7 (long-term collab. between res. institutes and bus.), C3.8 (privacy)

- U.2.3 Design – inappropriate design relates to both design process and outcome. Inclusive design places the end user at the heart of the process, creating more appropriate outcomes. AT should be designed to be affordable and suited also to the environments found in LMICs. Furthermore, repairability within the local context should be considered.
- U.2.4 Demand – volume of demand is too low to encourage the development of supply, relating to tariffs and bulk buying potential. Demand is depressed by high prices. Demand is fragmented across multiple small buyers. Manufacturers don't have visibility of demand. The buyer is often not the user. There is often little demand for AT both by the user (due to a lack of information and understanding of the benefits of AT) and by the purchasers at national levels, as AT competes for healthcare budgets which are often thinly stretched.
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- U.2.5 Affordability, availability, and quality - Affordability, both in terms of the full cost of the product as well as service delivery is critical to success.
- U.2.6 Need for a critical mass of innovation - Opening channels for collaborative innovation, as most AT is designed, developed, and sold by large, private companies. C3.2 (developers)
- Provision
  - U.3.1 Investment – compensating for low levels of finance and investment in supply, distribution and delivery systems, that usually mean overall infrastructure is not present to accommodate scale up of AT provision. C3.4 (products made known)
  - U.3.2 Distribution systems – compensating for distribution systems (moving products from point of manufacture to point of delivery) that are inconsistent in terms of shipping, stock, lead times, packaging and logistics. Often services are left without products.
  - U.3.3 Service network (urban and rural) – to scale up the provision of AT nationally, a network of AT services needs to be set up. Services include screening, diagnosis, fitting, and ongoing service/replacement. Establishment

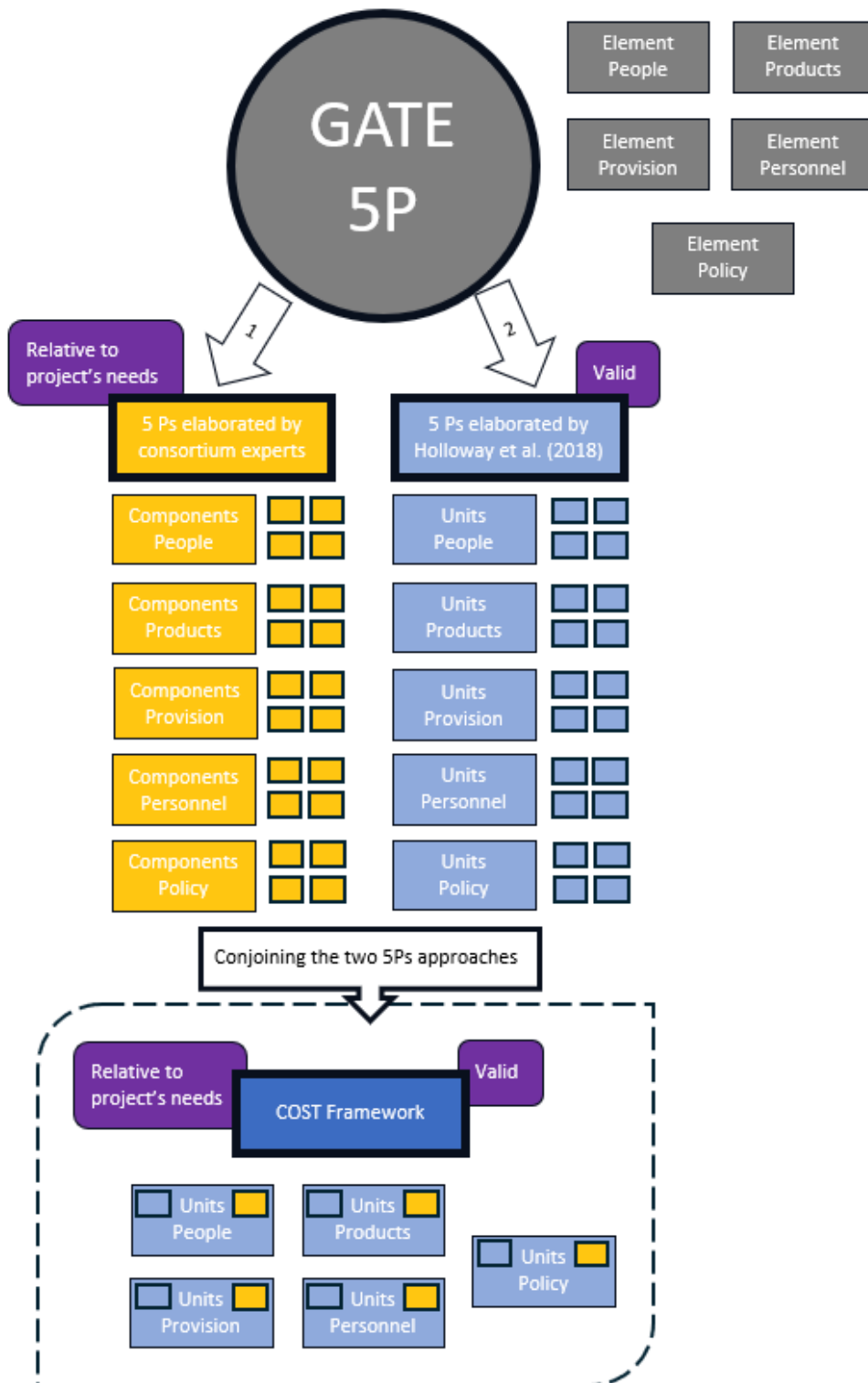
of grassroots service structures to reach those most in need. Giving opportunity to integrate with existing services (e.g. health or education). Non-fragmented, geographically distant service delivery. *C3.3 (trial version)*, *C3.5 (online reviews)*

- *U.3.4* Technology – emerging and evolving technologies are changing the way AT products are delivered i.e. self-manufacture, bespoke services, remote access. New technology and advances not overly focusing on high-resource settings.
- *U.3.5* Cost - compensating for cost seen as a critical problem for provision and an ultimate barrier.
- *U.3.6* Donor-dependent supply chains - compensating for them having a detrimental effect on the continuity and effectiveness of AT provision.
- Personnel
  - *U.4.1* Service models – compensating for AT service models dependent on the availability of highly qualified professional staff that can be very labour (and therefore time) intensive. Development and trial of alternative models that help scale up AT provision, including use of technology. Creation of globally accepted standards for service models. *C4.5 (culture)*
  - *U.4.2* Trained staff – compensation for the need to have personnel involved in AT assessment and prescription that are highly qualified. Staff at grass roots level that can show competence to deliver AT effectively. No resistance to new systems of training, including approaches to task-shifting. *C4.1 (train all actors)*, *C4.2 (collab. with univ. unit for access. training)*, *C4.3 (already serv. & prof.)*, *C4.4 (already resources)*
  - *U.4.3* Cost – reduction of the cost of service-element of AT that usually costs far more than the unit cost of products. Overall cost addressed whilst ensuring quality of product and service.
  - *U.4.4* Harnessing the power of technology - mobile technology as a powerful tool in improving the capacity of personnel involved in AT development and provision, as well as being a mode of new AT delivery.
  - *U.4.5* Continued development of workforce - continued training. Compensation for one-off training that provides little opportunity for follow-up or to further expand knowledge. *C4.6 (key trends)*, *C4.7 (MOOC)*, *C4.8 (courses by)*, *C4.9 (online courses)*
- Policy
  - *U.5.1* Legislation – governments that ratified the UNCRPD meet their obligations by embedding these obligations in day-to-day operations and budgets. *C5.3 (from integration to inclusion)*, *C5.4 (identification of risks)*, *C5.5 (distribution of short survey within stakeholders)*
  - *U.5.2* Governance – effective management of government funding that is available for the provision of AT, systems being clear and transparent for all

- involved. Regulations apply to procurements (to ensure quality). Regulations not serving as bottleneck to expanding services.
- *U.5.3 Procurement* – planning driven by user needs rather than budgetary requirements. Budgeting available for procurement in advance. Compensation for lack of consolidated distributors that can help rationalise procurements and ensure quality. User needs being established in both quantity and quality based on WHO specifications, overall budgetary requirements are established. Governments allocate resources for procurement. Alternative and transitional financing systems are explored to supplement for non-sufficient government funding nationally available.
  - *U.5.4 Supply* – governments' policy encouraging the supply of AT products, eliminating, e.g., restrictive import and export policies, customs and duties, sales taxes, transportation limitations and cross border trade routes. Compensation for emphasis on national/local production intended to help develop the economy (to the detriment of quality products that meet user needs). Alternative supply and distribution systems explored. Impact measurement showing the societal impact of appropriate AT provision and its long-term economic benefits. *C5.1 (local government)*

The reasoning that led to the blending of the two approaches regarding the use of 5P framework is depicted in Figure 4:

Figure 4 GATE 5P framework and their conceptualisation through the mapping of practices - Stage B



It needs to be noted that the components of 5P framework suggested from the experts proved to be sometimes too specific to be identified in the material of the practices. Nevertheless, they also led the search for relevant information.

The sorting of the practices using the 5P framework (blending of approaches for relevance and validity) led to differentiated results depicted in [Table 3](#):

*Table 3 Sorting of practices according to 5P framework (joining of approaches for relevance and validity) (Stage B)*

| Title of the practice   | 5P sum |
|---|--------|
| (01). Right to Connect Project  | 20     |
| (02). Co-designing a Museum Application with People with Intellectual Disabilities: Findings and Accessible Redesign  | 11     |
| (12). Inail   | 9      |
| (03). Сборник с добри образователни практики ( <i>Collection of good educational practices</i> )  | 8      |
| (05). m Able to Include   | 8      |
| (06). Viamigo   | 8      |
| (13). Using assistive robots to promote inclusive education   | 8      |
| (08). A framework of evidence-based practice for digital support, co-developed with and for the autism community  | 7      |
| (04). Immersive Care: VR technology, supermarket app  | 5      |
| (09). Play2Do - A Simulated Training Framework for Skills Development addressing students with intellectual and developmental disabilities and their trainers | 5      |
| (10). Learners on the autism spectrum in the secondary level II   | 5      |
| (11). Empowerment and Well-Being Through Participatory Action Research and Accessible Gaming: A Case Study With Adults With Intellectual Disability           | 5      |
| (07). Le développement inclusif, défi transdisciplinaire ( <i>Inclusive development, a transdisciplinary challenge</i> )                                      | 4      |

These emerged by examining each practice according to the alphanumeric units (26 in total, e.g. U1.1, U1.2, etc.) of the Holloway et al. (2018) approach, enriched by the insights of the experts (components). If one of these units was identified in a practice, the practice would receive one point. The more parameters were identified, the more points the practice would receive in this second sorting approach. Nevertheless, if more than one pieces of information led to including a unit, the practice still received one relevant point. [Table 4](#) presents the number of units (Holloway et al., 2018, enriched by the insights of the experts) that were identified in each of the categories of the 5P. Thereof, it is concluded that the *People* element of 5P is the one most represented in the practices:



Table 4 Number of occurrences of items of 5P elements identified in practices

| Element of 5P | Occurrences of items identified (103 in total) |
|---------------|--|
| People        | 44 (in 5 groups)                               |
| Products      | 28 (in 6 groups)                               |
| Provision     | 13 (in 6 groups)                               |
| Personnel     | 14 (in 5 groups)                               |
| Policy        | 4 (in 4 groups)                                |

### C. Stage C: Compounding of stages A and B for mapping and sorting of practices (collection tool and GATE 5P framework)

As a third method (after sorting according to points of fundamental items of the questionnaire and sorting according to GATE 5P framework) that seeks to combine the first two, after the summation of the points received from the first two methods, different results emerge, as shown in Table 5:

Table 5 Compounding of stages A and B for mapping and sorting of practices (collection tool and GATE 5P framework) - Stage C

| Title of the practice   | Total sum |
|---|-----------|
| (01). Right to Connect Project  | 81        |
| (07). Le développement inclusif, défi transdisciplinaire ( <i>Inclusive development, a transdisciplinary challenge</i> )                                      | 65        |
| (08). A framework of evidence-based practice for digital support, co-developed with and for the autism community  | 58        |
| (05). m Able to Include   | 49        |
| (13). Using assistive robots to promote inclusive education   | 49        |
| (12). Inail   | 48        |
| (09). Play2Do - A Simulated Training Framework for Skills Development addressing students with intellectual and developmental disabilities and their trainers | 47        |
| (03). Сборник с добри образователни практики ( <i>Collection of good educational practices</i> )  | 41        |
| (10). Learners on the autism spectrum in the secondary level II   | 41        |
| (04). Immersive Care: VR technology, supermarket app  | 39        |
| (06). Viamigo   | 37        |

| Title of the practice   | Total sum |
|---|-----------|
| (11). Empowerment and Well-Being Through Participatory Action Research and Accessible Gaming: A Case Study With Adults With Intellectual Disability | 30        |
| (02). Co-designing a Museum Application with People with Intellectual Disabilities: Findings and Accessible Redesign                                | 28        |

After this final (third) sorting, we can compare the three sortings after juxtaposing the results of the three different stages of the methodology. This is presented in the section that follows.

#### D. Stage D: Juxtaposition of stages A, B, and C for mapping and sorting of practices

In Table 6, the position of every practice in the different sorting approaches is depicted, along with the sector in which they belong (Ed = Formal or Informal Education, Em = Employment, CH = Care/Health):

*Table 6 Juxtaposition of the three stages - Stage D - the (listing) numbers of the practices that retain their high location are highlighted in green*

| No. (date received)  | Sector     | Sum_ques points | 5P sum | Total sum |
|--|------------|-----------------|--------|-----------|
| 01. Right to Connect Project   | Ed         | 1st             | 1st    | 1st       |
| 02. Co-designing a Museum Application with People with Intellectual Disabilities: Findings and Accessible Redesign     | Ed         | 13th            | 2nd    | 13th      |
| 03. Сборник с добри образователни практики ( <i>Collection of good educational practices</i> )                         | Ed         | 10th            | 4th    | 8th       |
| 04. Immersive Care: VR technology, supermarket app   | Ed         | 9th             | 9th    | 10th      |
| 05. m Able to Include  | Ed         | 5th             | 5th    | 4th       |
| 06. Viamigo  | Ed         | 11th            | 6th    | 11th      |
| 07. Le développement inclusif, défi transdisciplinaire ( <i>Inclusive development, a transdisciplinary challenge</i> ) | Ed, Em, CH | 2nd             | 13th   | 2nd       |
| 08. A framework of evidence-based practice for digital support, co-developed with and for the autism community         | CH         | 3rd             | 8th    | 3rd       |

| No. (date received)   | Sector | Sum_ques points | 5P sum | Total sum |
|---|--------|-----------------|--------|-----------|
| 09. Play2Do - A Simulated Training Framework for Skills Development addressing students with intellectual and developmental disabilities and their trainers | Ed     | 4th             | 10th   | 7th       |
| 10. Learners on the autism spectrum in the secondary level II   | Ed     | 8th             | 11th   | 9th       |
| 11. Empowerment and Well-Being Through Participatory Action Research and Accessible Gaming: A Case Study With Adults With Intellectual Disability           | Ed     | 12th            | 12th   | 12th      |
| 12. Inail   | CH, Em | 7th             | 3rd    | 6th       |
| 13. Using assistive robots to promote inclusive education   | Ed     | 6th             | 7th    | 5th       |

As previously stated, in the first column, the number assigned to each practice is conventional (see Table 1) and has emerged from the date that the practice was sent through the Google Form, serving as a code name for each practice. The second column depicts the sector in which the practice belongs to (Education, Employment, Care/Health). The next three columns record the location of each practice in the three different sorting approaches (according to the sum of scores from fundamental items in the questionnaire, the 5P approach, and the sum of both scores). As it can be seen, most of the practices do not-retain an equally “high” or “low” position in all three sorting approaches. E.g. the practice “Right to Connect” [01] happened to have been the first that was sent through the Google Form, and it preserves a very high position in the other three sorting approaches. More specifically, it was first in the first, first in the second, and first in the third approach. On the other hand, the second practice that was received through the Google Form questionnaire “Co-designing a Museum Application with People with Intellectual Disabilities: Findings and Accessible Redesign” [02] was in the highest positions (2<sup>nd</sup>) in the second approach (GATE 5Ps) but rather low in the first and the third approaches (13<sup>th</sup> in both).

In this work, we are not interested in judging the practices. Thus, for the scope of our research, we will consider that the characteristics of the practices that retain a high position especially in the first two approaches are the characteristics of those practices that can be considered more relevant to our scope and the characteristics of which are of paramount importance according to criteria that are external to our research and thus have higher validity according to an external system. The third sorting (sum of two sorting approaches) is interesting, but might give less important nuance to our discussion, since results in the second table are much

smaller than those in the first table, thus, summation of the two latter will not lead to a sorting approach much different than that in the first table.

“*Right to Connect Project*” [01] and “*m Able to Include*” [05] are the practices with rather high and stable position in all three sorting approaches, therefore it is their characteristics that we can consider exemplary, without neglecting characteristics that might be absent in these two practices.

It needs to be noted, though, that researchers who studied the data had participated in some practices, so they may have been biased when suggesting the score of present characteristics, etc.

### 3. Qualitative analysis of practices collected

After the sorting of practices according to three different approaches (Stage A, Stage B, and Stage C) and their juxtaposition (Stage D), which was a rather quantitative process, it is important to examine qualitatively the items of 5P framework that mostly appear in these practices. This is the aim of the next sections of the report. Elements are mapped according to 5P framework, and units embedded in them originate from Holloway et al. (2018) (see [B. Mapping and sorting of practices using the WHO 5Ps framework \(People, Products, Provision, Personnel, and Policy\)](#)). For ease of reading, the titles of the practices are represented as established in [Table 1](#) through their codes in brackets [ ].

#### 1. *People* items

*Awareness* in Holloway et al. (2018) is placed under *People* element. In [07] the aim is to “enable Switzerland to be more inclusive and participate in the implementation of the Convention on the Rights of Persons with Disabilities”. Thus, the importance of the Convention is explicitly introduced. Moreover, one of the main scopes of [12] is the dissemination of information regarding the redefinition and redesign of services of the national labour insurance institute (the only practice included - also - in the sector of Employment). In addition, in [01] the leading partner has organised the thorough dissemination strategy for the project, as the continuation of a previous campaign of this organisation which was titled “Right to Connect Now”. Furthermore, this practice, as well others, use a website to make their work known, or publish articles. Also, real life stories are used in the collection of educational practices in [03], whereas [05] has received an award which can be expected to help in the dissemination of the scope and results of the practice. Furthermore, workshops are used in the dissemination of [13]. In this practice, it is emphasized that the use of co-designed activities with robots in classrooms leads to all students understanding the difficulties that children with disabilities face.

With respect to the *Research/impact measurement* (under *People* in Holloway et al. (2018)) in [01] data have been collected referring to feedback, including the impact of the process on co-designers' and facilitators' experiences regarding the creation of an accessible digital platform.

Also, 500 users in total will have the opportunity to use the e-learning platform created within the frame of the project, with 500 accounts already created and being at their disposal (50 accounts for each of the 10 countries). Furthermore, with the mobile application created in [06], persons with intellectual disabilities were reported to be happy to travel more independently (walking, biking, taking the bus or train) with less need for immediate support by a care giver. Moreover, in [08] an online tool based on a framework of evidence-based support that was co-developed with and for the autism community, is reported to “enable researchers, developers and the autism community to evaluate the evidence base for any digital supports they are interested and is freely available”. In [03] educational practices, it is mentioned that with the use of mobile phones and projectors, students become more active and more attentive in class and participate more, with more passive students having the opportunity to express themselves. In [12] a new service model is reported to have been delivered, totally tailored on user needs (persons with disabilities). In [09] it is mentioned that the material and equipment (Play2Do 3D game) used is useful for the training of newly recruited teachers. Lastly, regarding obstacles in the effort to record the feedback of a practice, [04] reports that due to COVID-19 pandemic circumstances it was not feasible to measure the impact in users’ life.

Relating to *Place* (the potential “6th P” according to Holloway et al. 2018, which also includes digital spaces) people with intellectual disabilities co-create and use an accessible platform. In [01] persons with intellectual disabilities create and test an accessible platform, whereas in [02] they test an application for navigating museum material [02]. Furthermore in [04] persons with autism spectrum disorder use a Virtual Reality application and learn how to do their shopping in the grocery store.

Regarding *Stigma*, in [01] a peer-to-peer education model is used, that enables persons with intellectual disabilities to become educators themselves (a role that is not usually expected to be assumed by them), whereas in [06] application, users with intellectual disabilities are able to commute more independently. Furthermore, [10] suggests the conscious inclusion of the learners with autism spectrum disorder in decision-making processes in upper secondary education. Lastly, [11] endorses “a discussion about a potential paradigm shift toward a social model of accessibility aligned with the current views on the field of disability studies”.

The content of the practices collected includes references regarding the item titled *User-centred design.*, e.g. the co-design of an accessible digital platform in [01]. It is nevertheless noted that in [04] the persons with intellectual disabilities start participating in stages of the designing only after the first stage of the research, meaning that they participate in piloting and evaluation procedures, whereas care givers and teachers are involved in the initial stage and the development of the Virtual Reality application for training in grocery shopping. Nevertheless, it is not clear whether the feedback by the persons with disabilities is taken into consideration into probable further stages of development and iteration, which is a basic characteristic of participatory research involving technology.

## 2. *Products* items

With reference to *Standards*, in [01] a universally valid framework for competence development of those supporting learners with intellectual disabilities in developing their digital skills was developed. Also, in [08] a consensus from an international group was made up from the autistic and broader autism communities as well as researchers as to what constitutes good evidence for digital supports for autistic users. Also, in [09] the importance of “practices that are considered suitable either as established standards or proposed models for widespread adoption” is recognized.

In respect of *Research and Innovation*, a comprehensive literature review was conducted in [01], as well as needs analysis of the target population, with a university being leader in the task. Also, universities participate in the activities of a great number of other practices (e.g. [13]). But even if a university is not involved, thorough research activities including online Delphi study or the conduct of case studies is reported.

Regarding the *Design* appropriateness, low-income countries such as Greece [01] and Bulgaria [03] get to be benefitted from these practices.

*Demand* quotes were not detected in any of the practices collected.

Relating to the *Affordability, availability, and quality* of the product, the opportunity to use created applications or handbooks for free is the case in many practices (e.g., [03]).

Ultimately, regarding the “Need for a critical mass of innovation”, no such practices were detected. Nevertheless, collaboration with developers is emphasized in [01] and [02].

## 3. *Provision* items

*Investment* is another item and the availability of information about products in websites is important in [5]. Also, in [12] services of national labour insurance institute INAIL were redefined and redesigned in a radical way.

Regarding *Service network (urban and rural)* in [01] digital accessible platform there is the opportunity to use it without increased need of support, also from remote areas.

With respect to *Technology* that emerges and changes the way that products and services are delivered, [01] e-learning platform constitutes an example, with mobile devices giving the opportunity to use it and receive online directions.

In respect of *Cost*, platforms, applications and handbook described are free for use by the end-users but there are no references in the cost of services, which is often a factor that determines total cost.

Finally, regarding *Donor-dependent supply chains* there are no relevant quotes that depict less need to rely on donors.

#### 4. *Personnel items*

With respect to *Service models*, in [01] the digital platform is easy-to-read regarding its interface and content and does not require extended guidance from highly qualified professionals. In [12] user involvement is considered crucial to reshaping, redesign and implementation of the services provided.

About *Trained staff*, [05] integrates a set of already-developed technologies to create a context-aware accessibility layer that, by being integrated with existing and future ICT tools, can improve the day-to-day life of people with IDD by understanding their surroundings and helping them to interact with the information society. In [09], even though most of the educational material is in English, education of teachers is enhanced in the practice.

With reference to *Cost*, in [08] the opportunity to use the framework for free regarding what constitutes good evidence for digital supports among the broader autism community, including autistic people and their families, as well as autism-related professionals and researchers.

Regarding *Harnessing the power of technology*, a number of applications can be used in mobile devices, but most importantly regarding this parameter, AT delivery (online support for its use) is provided through a digital platform in [01].

Ultimately, in connection with *Continued development of workforce* [01] gives the opportunity of training of professionals to new methods, whereas [03] handbook gives teachers the opportunity to share and draw inspiration from the stories included in the educational practices, as well as foster confidence and unity in supporting children and enhance professional growth.

#### 5. *Policy items*

This is the less elaborated section of the framework (*Legislation, Governance, Procurement and Supply*). Generally, all outputs in practices created with inclusive design and participatory action are used for free, so the need to tackle this kind of issues is not brought up regarding e.g. the use of hardware.

## 4. Recommendations and Roadmap

According to Holloway et al. (2018) “multi-layered and multifaceted ways in which economic, social, and political factors interplay and interact to create barriers to AT for those who need it the most”. On the other hands, educational systems tend to be complex and structured. Therefore, adopting innovations or bringing about change requires investments in time, creativity, management skills and resources.

The stakeholders involved are many, among which ministries, regional or local educational authorities, school directors and management, educators, students, families. Each of them has a role with responsibilities, resources and expectations. The well-functioning of the educational ecosystem depends on the participation and collaboration of all stakeholders.



Thus, policy makers at European level and national, regional and local educational and vocational authorities, each within their respective roles and functions, have a specific responsibility in guiding and facilitating the transition towards more resilient and inclusive educational and vocational systems. Less practices were identified in the field of employment.

Recommendations are presented in Table 7.





*Table 7 Recommendations (the ones identified in practices [01] and [05] in blue colour)*

| Level to be addressed   | People   | Products | Provision  | Personnel  | Policy   |
|---|--|----------|--|--|--|
| a. For educational and vocational authorities at European level | n/a  | n/a      | <p>Availability of information about products in websites is important and should be endorsed</p> <p>Standardised certification schemes and tools should be developed and implemented</p> <p>Use of different systems to provide with AT (health, education, etc.)</p> | n/a  | <p>Monitoring of UNCRPD implementation in the member states</p> <p>Countries should follow regarding the availability of guidelines for web accessibility and monitoring tools</p> <p>European funded projects should prioritise services and resources in transition from one institution to another or from education to employment and value the support of inclusive and participatory design in proposals and evaluations</p> |
| b. For educational and vocational                               | <p>Explicit endorsement of UNCRPD</p> <p>Redefinition and redesign of services</p> |          | Resources should be made available for investments in technology in  | Easy-to-use online services that do not require the use of highly trained staff (also in c.) | Further gaps in EU policies regarding UNCRPD implementation need to  |

| Level to be addressed  | People  | Products  | Provision  | Personnel   | Policy  |
|--|---|---|--|---|---|
| authorities at national level  | <p>Dissemination on the importance and effect of positive changes already implemented</p> <p>Low-income countries should have the chance to benefit</p>   |   | <p>education and for schools that experiment new forms of teaching and learning</p> <p>Services need new partnerships and management structure when mainstreaming</p>  | <p>National programmes for the training of educators and other staff using digital technologies for the participation of persons, with the use of existing competency frameworks are warranted</p> <p>Integration of more comprehensive AT training in new and currently existing curricula</p>                 | <p>be identified and addressed, with expression of political willingness and integration in the agenda</p> <p>A comprehensive strategy to bridge the digital divide</p>   |
| c. For educational and employment authorities at regional or local level | <p>Discussion about a potential paradigm shift towards a social model of accessibility aligned with the current views on the field of disability studies</p> <p>Establishment of an ongoing dialogue between schools, educational authorities and organisations of parents and persons with disabilities</p> <p>Creation and support of innovation driven communities of users and developers</p> | <p>Use of universally valid frameworks for competence development and effective digital support</p> | <p>Platforms and services that are user-centred and do not demand extended support for use should be preferred also from distant geographical areas in mobile devices</p> <p>Where schools do not have the</p> | <p>Free educators training programmes in the use of digital tools (ICT - AT) in education should be included in obligatory in-service training, and the outcomes and impact of those programmes should be monitored</p> <p>Easy-to-use platforms do not require the use of highly-trained staff for further</p> | <p>The policies of schools and enterprises should reflect inclusion in their mission statements</p> <p>Leaders should coordinate appropriate action plans, allowing different actors to integrate their contributions to the strategies</p> |

| Level to be addressed | People  | Products  | Provision   | Personnel   | Policy |
|-----------------------|---|---|---|---|--------|
|                       | <p>Connection of new activities with previous ones</p> <p>Transdisciplinary approach for co-innovation</p> <p>Literature review conducted</p> <p>Available evidence-based frameworks should be used</p> <p>New service models should be tailored on user needs</p> <p>Formulation of the environment taking into consideration the mission statement, the culture, parents, etc.</p> <p>Use of real-life stories as examples</p> <p>Co-design activities in the classroom so that children understand the difficulties of their classmates</p> <p>Enhancement of attentiveness of students with the use of technology</p> <p>Development and assessment of independent commuting applications</p> | <p>Research for products backed-up by universities</p> <p>Low-income countries should have the chance to benefit</p> <p>Products available for free or at a low price</p> <p>Open-source repositories and libraries</p> <p>Compatibility with AT</p> <p>Repairing in local level should be possible</p> | <p>resources internally, external support should be sought in the form of specialised professionals in AT and multidisciplinary teams for the selection and implementation of AT as well as for educating and training staff.</p> | <p>training of students and persons (also in b.)</p> <p>Integration of already-developed technologies is time and resources saving</p> <p>Online support should be available</p> <p>Educational material should also be available in national language</p> <p>Project implementation gives the opportunity for training of trainers in new methods</p> <p>Professional growth is enhanced with the use of real life stories</p> <p>Carers considered also as additional personnel</p> |        |

| Level to be addressed | People  | Products | Provision | Personnel | Policy |
|-----------------------|---|----------|-----------|-----------|--------|
|                       | <p>Opportunity to use the outcomes of projects for the greatest possible number of persons</p> <p>Research for the training of newly recruited teachers</p> <p>Collection of feedback</p> <p>Use of opportunities to evaluate the outcomes in real life situations</p> <p>Digital space is an option for sectors of the life of persons with disabilities</p> <p>Peer-to-peer education models are valuable</p> <p>Participation of persons with disabilities also in the initial stages of development of a product</p> <p>Documentation of outcomes regarding quality of life with privacy issues considered</p> <p>Dissemination in websites and media</p> <p>Publication of scientific articles</p> <p>Receiving an award</p> |          |           |           |        |





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**DIG-i-READY:** <https://digi-ready.eu/results> (see chapter 5)