

## Executive Summary

This deliverable, D102.2 contains information about issues that influence the design and sustainability of the ecosystem as well as the demand of the potential services. The DoW documents relevant consumers, developers and stakeholder information that have to be considered at the moment to entry in the ecosystem. The DoW also identifies an initial set of interactions and requirements that the software ecosystem needs to fulfill to solve problems such as the chicken egg, multi-homing, existence of different networks, and with different rules and local legislations. Finally, examples of the requirements that the infrastructure of an inclusive ecosystem has to fulfill are listed after each section in order to give clear picture of P4All needs to achieve sustainability.

The overall contribution to the infrastructure in development is the identification of requirements, models, components and principles that has to be applied in an inclusive ecosystem for people with disabilities. The report focuses on Europe on and on the Member States. However, the results can be generalized in several contexts as the problems and solutions raised are of general interest and common for several contexts and countries outside EU.

Three foundational but related analyses are presented.

- Section 4 (pp. 31 - 51) discusses the potential macroeconomic impact of increased inclusion for people with disabilities for the EU and member states. Specifically, Table 8 - Table 10 (pp. 43-44) summarize the overall potential impact while Table 12 identifies the potential impact from a fully implemented P4All infrastructure. Table 14 (p. 50) and Table 17 (p. 55) consider the potential market impacts of P4All for the general retail and ICT markets respectively.
- Section 5 (pp. 57 - 87) presents information on business models and payment systems. This includes preliminary recommendations on business model and payment system adoption (sections 5.2 and 5.3, and Table 19: Business Model and Payment System Recommendations, pp. 63 - 55). This section also presents information on the challenges (5.4), networks (5.5), and service areas (5.6) that needs to be taken into consideration by the project teams.
- Section 6 (pp. 101 - 132) includes information and numerous examples of the country-specific policy, social benefits, and other factors that must be considered when developing and implementing the various P4All infrastructure components. Variation is significant across the member states in policies, goals, aims, and approaches to providing services to those with disabilities. Design specifications and recommends are included throughout this section. Section 6.5 (p. 132) summarizes several key requirements.

# 1 Overview

## 1.1 The Vision (why Prosperity4All)

“Prosperity4all aims at a paradigm shift in inclusion. It focuses on developing the infrastructure to allow a new ecosystem to grow; one that is based on self-rewarding collaboration, that can reduce redundant development, lower costs, increase market reach and penetration internationally, and create the robust cross-platform spectrum of mainstream and assistive technology based access solutions required.”<sup>1</sup> This effort will require a paradigm shift because the ‘typical’ approaches to solving these complex problems have failed and left many “at risk of exclusion from education, employment, commerce, health information, and almost every other aspect of daily living and civic participation.”<sup>2</sup> The table below shows the typical approaches (in various domains) that have failed contrasted with a new way of thinking and doing that is driving the paradigm shift needed for making possible the vision of P4A.

**Table 1: Misconceptions and Paradigm Shift**

Domain	Old way of thinking/doing	New way of thinking/doing
	<u>Misconceptions &amp; Ruts</u>	<u>Paradigm Shift</u>
Development & Design	<ul style="list-style-type: none"> <li>- Isolated (stand alone functions) work packages that snap together when completed</li> </ul>	<ul style="list-style-type: none"> <li>- Require responsive system in quickly changing context with undefined and expanding scope</li> <li>- Functions are entangled and interdependent</li> <li>- Need built-in ability to incorporate early trial, error and feedback by users and iteratively respond to this</li> <li>- Be flexible and porous</li> <li>- Create conditions for growth, new uses and connections</li> <li>- *see D103.1 section 4.2.1 Global Design Specifications</li> </ul>

<sup>1</sup> <http://gpil.net/prosperity4all>

<sup>2</sup> *ibid*

Project Management	<ul style="list-style-type: none"> <li>- The roadmap can be predicted and controlled</li> <li>- We can know the problem and create a solution</li> <li>- Can be solved in a standard, linear manner</li> <li>- We can control this and predict requirements</li> <li>- There is an end point when the project is complete and we have succeeded</li> </ul>	<ul style="list-style-type: none"> <li>- This is a complex project and so adopting a 'complex project management' approach is appropriate (inspired by system of systems)</li> <li>- require ongoing transparent communication</li> <li>- Emergent systems cannot be *known* and planned in the same way</li> <li>- "Success" continues to evolve and change</li> <li>- *see D404.1 for more information</li> </ul>
Users	<ul style="list-style-type: none"> <li>- Working from deficit model of disabilities</li> <li>- We can create persona categories that represent most of the possible end users - they have static needs</li> <li>- The only end users are people with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>- The system is built from a perspective of inclusion and one-size-fits-one</li> <li>- This ecosystem is built to empower users and break down barriers to access -- regardless of user ability or disability</li> <li>- Personae are meant to help model the range of behaviours, not represent full demographics of complex and unique people</li> <li>- *see Design Kit D103.1 section 1.4</li> </ul>
Design	<ul style="list-style-type: none"> <li>- Inclusive design isn't necessary or important -- it's the touchy/feely stuff</li> </ul>	<ul style="list-style-type: none"> <li>- Inclusive Design is design that is built upon common design practices with additional principles, practices, and tools used for the benefit of all end-users. It's better design.</li> <li>- We are designing for diversity, inclusive design is needed to design for diversity not the mass</li> <li>- *see Inclusive Design Guide D103.1 section 4.3</li> </ul>

Economic	<ul style="list-style-type: none"> <li>- Accommodating represents all new costs, but not investments</li> <li>- Prosperity is monolithic</li> </ul>	<ul style="list-style-type: none"> <li>- We need “full social costing” showing macro and long-term impact of investment</li> <li>- Prosperity is not just measured as “more money in my pocket”</li> <li>- Prosperity should happen (and be measured) at the “micro” and “macro” levels</li> <li>- Costing models need to incorporate collective costs taking into account sharing and collective production</li> <li>- *see D102.2 and D404.2 deliverables</li> </ul>
Timing	<ul style="list-style-type: none"> <li>- Emergence is a quick process</li> <li>- just a state change not an evolving one</li> </ul>	<ul style="list-style-type: none"> <li>- Emergence will happen through use and feedback and adjustments</li> </ul>
Architectural	<ul style="list-style-type: none"> <li>- We can engineer a fix - technology can solve it all and we are smart people who know what is best</li> </ul>	<ul style="list-style-type: none"> <li>- The engineers are not the only ones building this system -- it is designed to encourage feedback and adapt and grow based on end-user feedback and use</li> <li>- We are dependent on all users/stakeholders from the demand to supply side of the system for the solutions and guidance for iterative refinement</li> <li>- This needs to be self-healing, self-correcting, and self-refining</li> </ul>
Market	<ul style="list-style-type: none"> <li>- The sustainable business model is just “details” that someone else can work out</li> <li>- there can just be one business model that will work</li> </ul>	<ul style="list-style-type: none"> <li>- Business model is more than just payment systems</li> <li>- Solutions need to adapt to users and user context and evolve over time</li> <li>- *see D102.2 deliverable</li> </ul>

## 1.2 How can Prosperity4All achieve this vision?

SP1 has used this new way of thinking and doing to build models and tools that support the infrastructure teams building the vision of Prosperity4All. That vision will result in ***an inclusive ecosystem enabled by the infrastructure to deliver the optimal matching supply or service for a user's functional needs in a specific context for a given goal.***

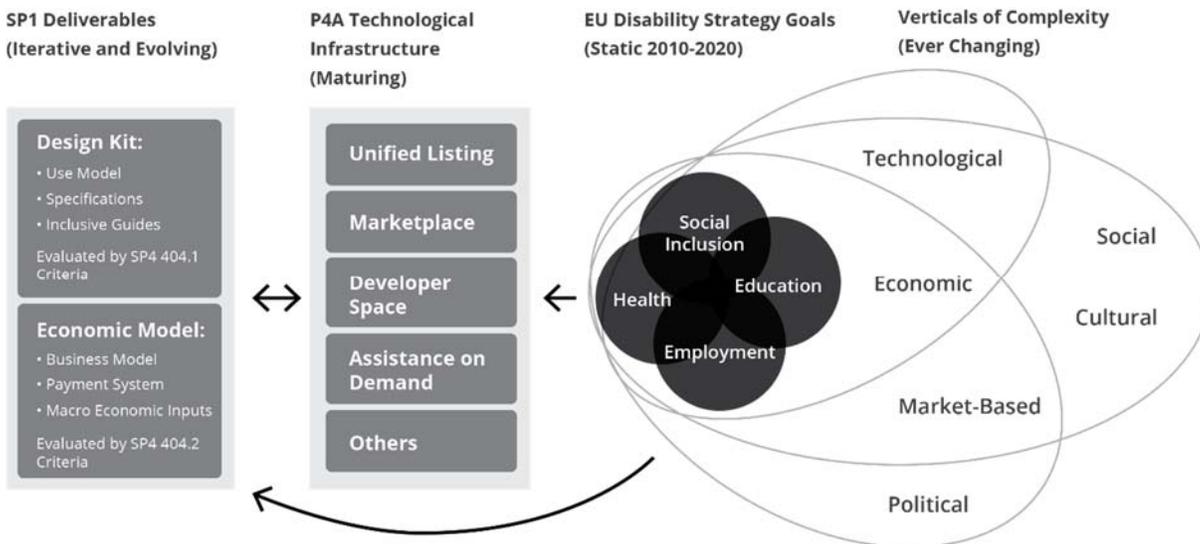
Understanding the need for this paradigm shift is necessary to understanding the methods the infrastructure teams must use to achieve the vision of an inclusive ecosystem. The infrastructure teams are asked to explore their practices and assumptions, note where they are falling into the ruts or misconceptions outlined above, and explore the models from SP1 to adapt their processes to achieve greater inclusion. A key part of the SP1 models is a loop of continuous feedback that leads to refinement of the models to ensure they better address the needs of the infrastructure teams while solving complex problems for unique users.

Below are explanations to help the project teams and the larger P4A community understand how the various pieces of Prosperity4All come together to achieve the vision of an infrastructure enabling an ecosystem.

***Understanding the paradigm shift, applying the various models from SP1, and maintaining an understanding of the ever-changing context P4A exists within will help the infrastructure teams practically move forward with processes that are informed by and reflect the changing nature of the context.*** Figure 1 shows just this -- how the work of SP1 and the infrastructure team is situated in a large dynamic context. The UML diagrams that follow (Figures 2-6) walk through the various functions to get an end user from need to match within an inclusive ecosystem. This is the context within which SP1 has created models and tools for the broader P4A team.

## 1.2.1 The Infrastructure and The Context

Figure 1: Infrastructure enabling an ecosystem (and its context)



The diagram above shows the tools that SP1 is delivering for the various infrastructure teams to use as they build the component parts of the P4A. These tools help ensure the project achieves its overall vision as stated above. The Design Kit and Economic Model contain the initial information the infrastructure teams will need to create an inclusive infrastructure that can serve as the backbone to an inclusive ecosystem. The Design Kit includes a Use Model, global and component specifications, and an inclusive design guide. The Economic Model contains a business model and payment system analysis. The infrastructure teams are asked to both use and help refine these models as they gain experience and provide feedback on their efficacy and use.

The models have been created from within the current context in Europe: namely the combination of the 4 areas earmarked in the EU's *Disability Strategy Goals*<sup>3</sup> and the every-changing 'verticals of complexity' that make up Europe, markets, and technology. The SP1 team's hope is that the various infrastructure teams will keep this larger context in mind while they use the models, design and develop technologies, and provide feedback. With this feedback loop, SP1 can effectively refine the models to best reflect the needs and contexts of users of P4A while helping the infrastructure teams fulfill those needs with ever-changing complexity.

## 1.2.2 The specification: From 'making a request to 'delivering a match'

Below is a UML document that shows with increasing detail the path within an inclusive ecosystem of a user who has made a request, interacts with the P4A infrastructure, and ultimately is delivered a matching good or service.

<sup>3</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0636:FIN:en:PDF>  
 Ecosystem infrastructure for smart and personalised inclusion and PROSPERITY for ALL stakeholders  
[www.prosperity4all.eu](http://www.prosperity4all.eu)

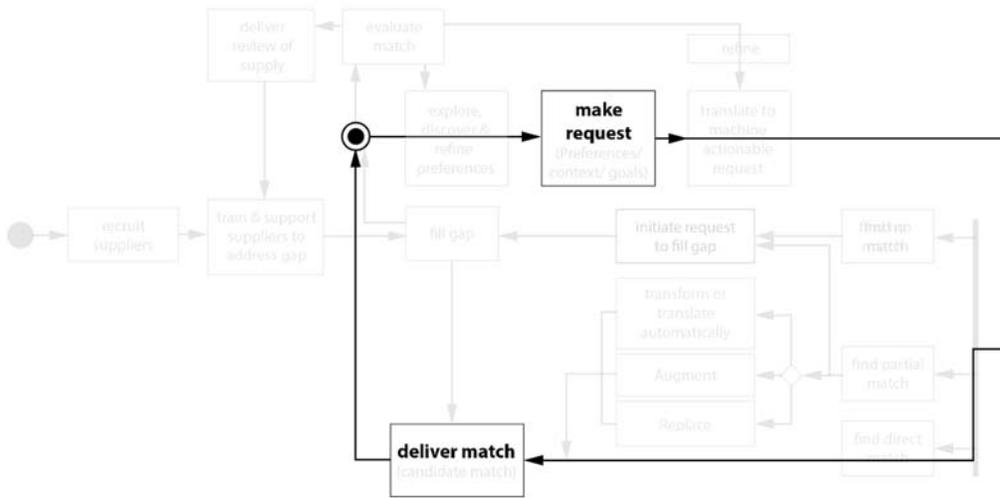
The figures are shown stepwise from the most fundamental function in Figure 2 (making an initial request) to Figure 7 (Activity Diagram for Handling a Request and Delivering a Match), which shows all of the various functions at work within the ecosystem.

The point of this diagram is to show function, not to determine who a ‘user’ is or what a ‘match’ looks like. Those topics are explored in various deliverables from SP1 (namely: D101.2, D102.1, D102.2, D103.1). Those deliverables outline what we know now: actors in the ecosystem, clear business models and payment systems, realistic use cases, specifications, and more (with specific tools for the infrastructure teams presented in the SP1 [Design Kit](#) D103.1 and [Economic Models](#) D102.2).

We do not know all of the eventual end-users or eventual matches that the Prosperity4All ecosystem will support. We are building an infrastructure to support an inclusive ecosystem that will adapt, grow, emerge, flex, and accommodate diverse and unpredictable use cases and yet unknown users. The UML diagram shows a porous yet complete pipeline of functions that will support this emergence, growth, and change – porous because it is flexible enough to accommodate the unknown and complete because of the fundamental function of providing a match to a request.

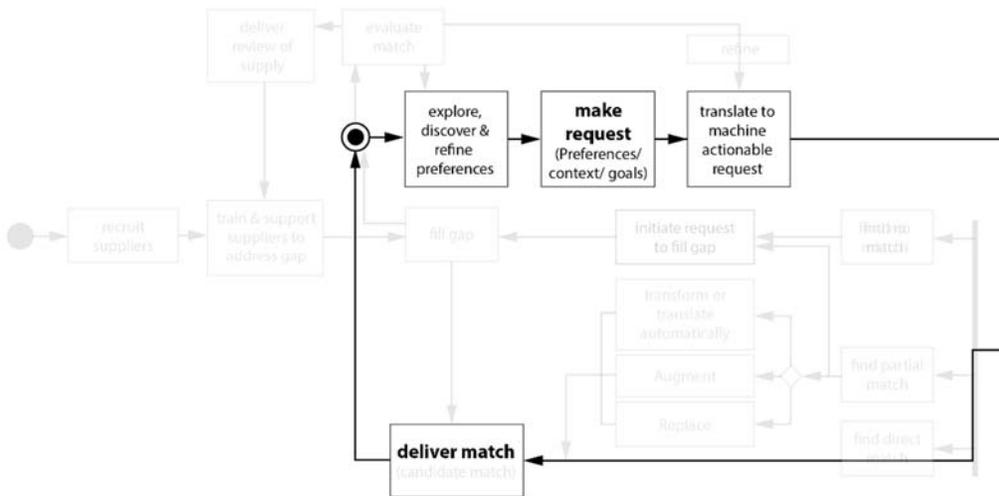
#### **Figure 2: Making the initial request**

This step shows the most fundamental function of the ecosystem: for a user to make a request and for a match to be delivered. Here ‘user’ should be understood broadly (refer to D103.1 section 4.1 for the Use Model including personae and use cases) and the “match” should also be understood broadly to represent a need, service, or solution. A match can be fully automated, delivered by a person or any combination along that continuum. For the purpose of a simple example: A policymaker (user) could enter the system looking (makes a request) for some indication of patterns of unmet needs in the marketplace. The delivery of those metrics would constitute a (match). A developer (user) could enter the system looking for resources (makes a request) to help her put a project team together. The matching of that developer with others who are interested in participating in her project constitutes a (match).



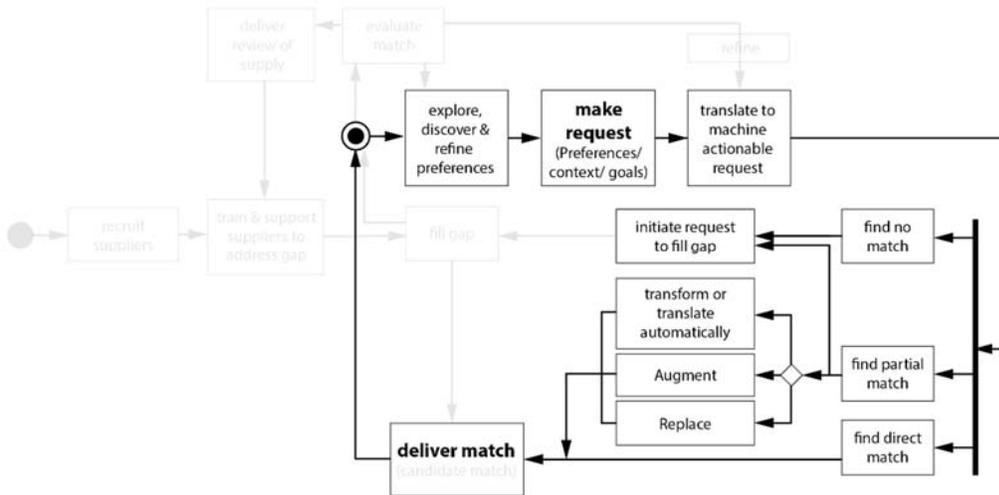
**Figure 3: Making a well-formed request**

A user will make a request and then interact with interfaces and tools that will help her refine that request further. This refinement might happen intentionally (how can I express what I really want?) or might happen as a result of interacting with various tools' interfaces (fill in the fields to submit your request or enter your project). A request is "well-formed" when it contains complete and accurate information about the user's goal (what needs to be done?), preferences (what is the best way for me to do it?) and context (what factors influence this?)



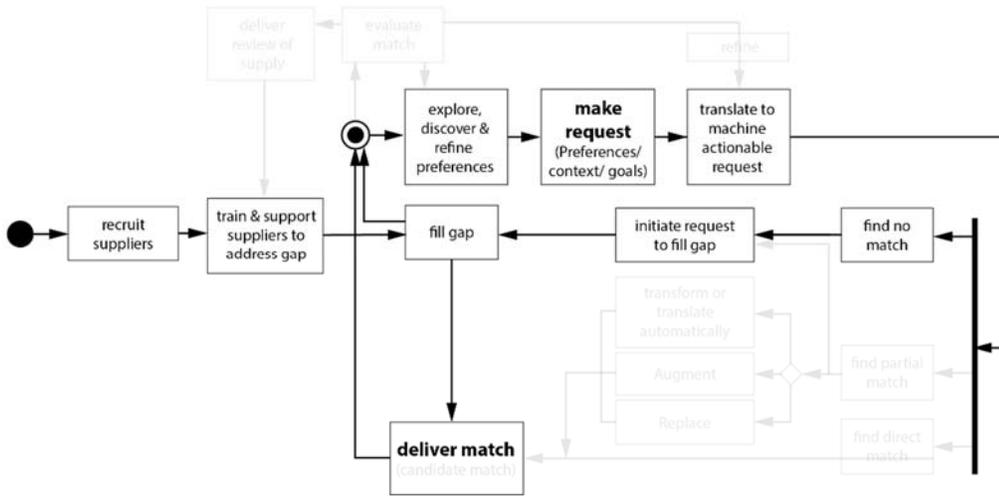
**Figure 4: Addressing the request**

The infrastructure handles the request by delivering a match. In some cases a match is not found (which then triggers a request to fill a gap). In other cases either a partial match is found (which provides an opportunity for the match to be adapted), or a direct match is found and delivered.



**Figure 5: Addressing the gap**

If a match is not found, a process is triggered to fill that gap. Filling a gap requires recruiting, training and supporting suppliers who could fill that gap and help delivering the required match. The ecosystem will grow and adapt to evolving uses and requests as gaps are filled and the network of suppliers expands.



**Figure 6: Evaluating the match**

Once a candidate match (either partial or direct) is delivered, a mechanism that is built into this ecosystem will allow users to evaluate the delivered match. This evaluation will be delivered to the suppliers who contributed to the match. It will also be delivered to the P4A infrastructure to help refine the services and tools that enable users make well-formed requests – to further grow, refine, and adapt the system and the matches to meet the needs of diverse users and use cases – to diversify.

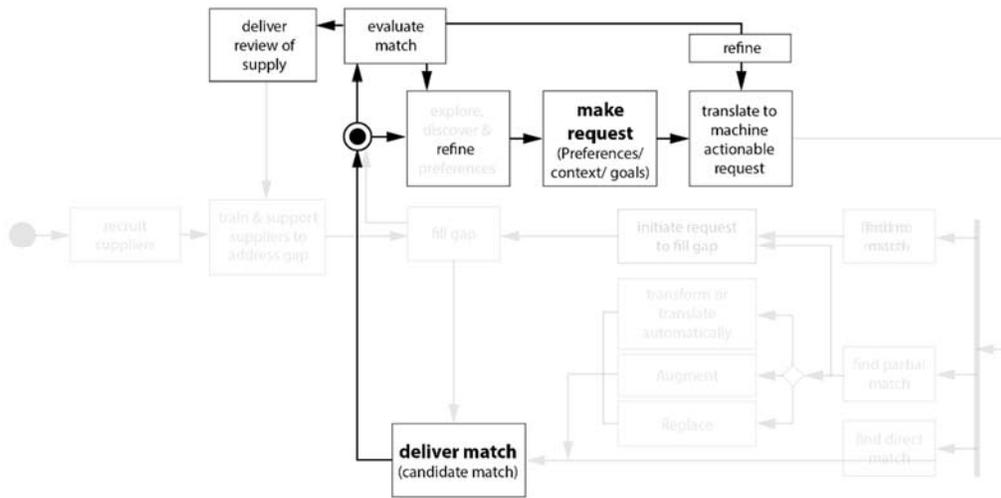
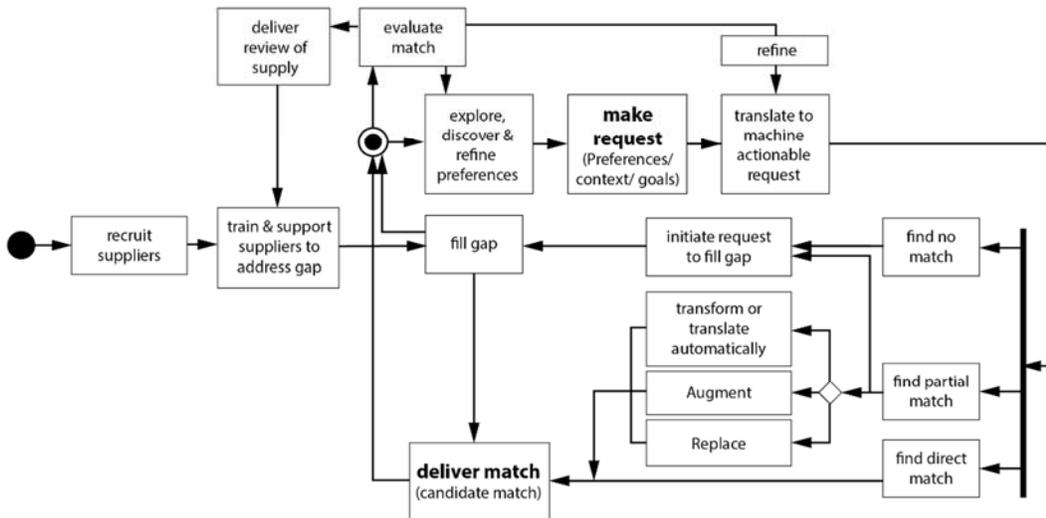


Figure 7: Activity Diagram for Handling a Request and Delivering a Match



### 1.3 Business Model misconceptions

Business models are usually defined for both theory and practice as an “abstract representation of an organization”<sup>4</sup> and include the core aspects of a business including purpose, business process, target customers, offerings, strategies, infrastructure, organizational structure, sourcing, trading practices, operational processes, policies, and culture. This concept of business model is frequently used within the accounting context for purposes of public reporting.

In the P4A project the discussion about business models has been mostly limited to the identification of alternative organizational structures, payment models and reimbursement models, normally applied to specific services, products, goods etc. The SP1 deliverables cannot identify which specific payment or reimbursement models should be used because they are specifically related to the services, goods, etc. that will be developed and offered. SP1 cannot be prescriptive about business models but must instead be informative about the options and the benefits and trade-offs associated with the various business model

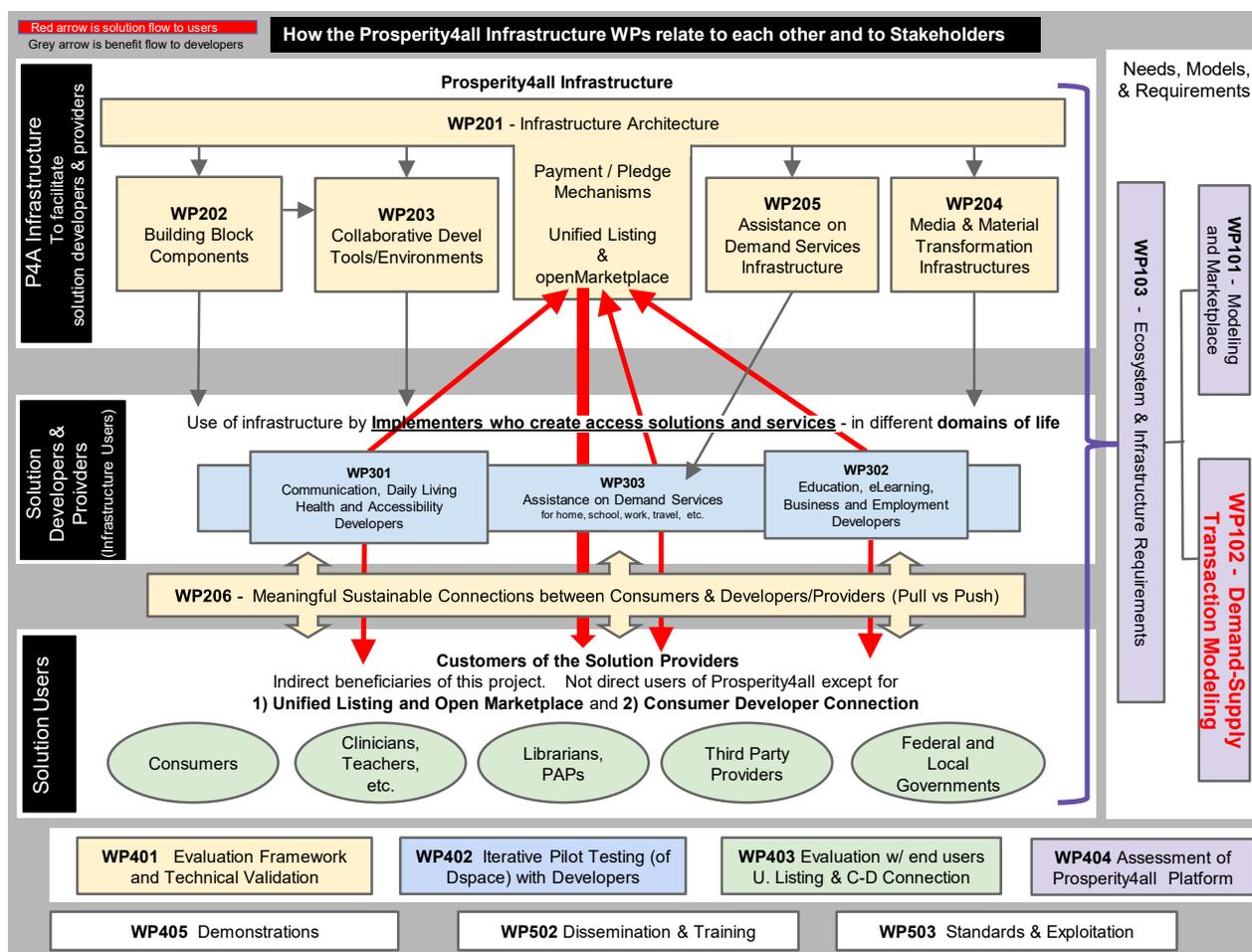
<sup>4</sup> Al-Debei, M. M., El-Haddadeh, R., & Avison, D. (2008). "Defining the business model in the new world of digital business." In Proceedings of the Americas Conference on Information Systems (AMCIS) (Vol. 2008, pp. 1-11).

options. Further, specific countries can impose limitations on business model usage and adoption that may create specific restrictions for the project teams based on country and payment needs and the specific goods and services provided.

## 2 Contribution to the global architecture

The contribution of this deliverable is indicated in red on the right of the diagram. This deliverable is providing information on the economic and business models and their context and appropriateness to the remaining project elements.

Figure 8: Overall Picture of Prosperity4all



The overall contribution to the infrastructure in development is the identification of requirements, models, components and principles that has to be applied in an inclusive ecosystem for people with disabilities. The report has focus on Europe on and on the Member States. However, the results can be generalized in several contexts. This due to the fact that the problems and solutions raised are of general interest and common for several contexts and countries outside EU.

The estimates developed here are high-level and are intended to show the potential macroeconomic impact of increased inclusion across the EU and within its member states. These estimates show the potential economic impact created by the development of the inclusive ecosystem that the Prosperity4All infrastructure will enable. This is potential system-wide, top-down impact estimates and not a bottom-up aggregation of individual estimates of specific components. The estimates presented here show the potential of what could happen

## 2.1 Specific DoW and WP objectives

Please write a short text providing answers to the following questions:

- Which task / wp are source for the results presented in this deliverable?
  - WP102 Detailed Demand-Supply Transaction Modeling
- Which other tasks / wps have been contacted, to coordinate the results?
  - WP101 Modeling and Marketplace
  - WP103 Ecosystem and Infrastructure Requirements
- How will results contribute to the overall architecture of the project?
  - Providing recommendations on business models and payment systems for the other projects.
- Which specific task / wp will use the results for their future activities? Which results? How?
  - Issues and gaps that affect the design of the inclusive ecosystem.
  - Market strategies to address including the chicken egg problem, critical mass problem and entry of actors in an inclusive ecosystem
  - Different networks that should be present in an inclusive ecosystem.'
  - Some design decisions from 1 to 3
    - List of requirements and design decisions
  - Ensuring sustainability of the ecosystem
    - Requisites to make the ecosystem sustainable,
    - Areas and design considerations
  - Social security insurances, policies and differences between some member's states
  - Policies, rules and principles that the sustainability of the ecosystem
    - Examples of policies at the country level
    - Other rules and local legislations and its implications
  - Social services, principles, differences and identification of a preliminary portfolio of services
    - Some differences in available solutions
    - Labor market services for disadvantaged persons
    - A preliminary portfolio of basic social services that sustain inclusion in the society
    - A tentative intelligent based service system that capture differences between the member states