

# DELIVERABLE REPORT

Project acronym: INPUT

Project number: 687795



<b>Deliverable</b>	<b>D3.4, Terminal prototyping test device</b>
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**WP3, Task 3.5, Clinical test coordination**

**Lead: OBHP**

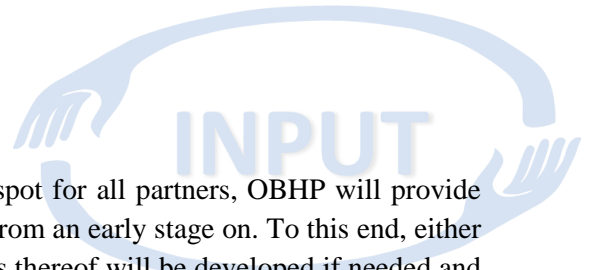
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## 1 DESCRIPTION OF THE TASK

In order to enable rapid interface conformity testing on the spot for all partners, OBHP will provide each partner, as far as needed, with a device to allow testing from an early stage on. To this end, either full arm prostheses, hardware emulators or software emulators thereof will be developed if needed and distributed to the partners requiring such a device for testing prototype systems of signal acquisition and processing. The goal of this task is to facilitate easy transition from local developing to controlling a physical arm for clinical testing for each partner. OBHP will:

- Assess the feasibility and practicability of providing each partner with a physical Otto Bock arm prosthesis or a physical emulator
- **In case of decision for full arm prostheses, OBHP will distribute these among the partners as loan devices.**
- In case of decision for a physical emulator, the device will be designed, manufactured and distributed to the partners by OBHP
- In case of decision against a physical test device, a virtual arm software that emulates a physical arm prosthesis will be developed and provided
- Provide each partner with an abstraction layer software that receives abstract prosthetic movement commands and translates them into direct control commands for the prosthesis or emulator

## 2 DESCRIPTION OF DELIVERABLE

The development demonstrator (as evaluated in D3.2) will be available.

## 3 IMPLEMENTATION

As discussed in Deliverable D3.2, it was decided that fully functional prostheses were indeed feasible and financeable to be supplied within the project for the partners. For this reason, 5 Otto Bock Michelangelo hands and 5 Axon Wrist Rotation units were checked out from the Otto Bock storage depot and the manufacturing costs billed to the INPUT project. Commercially not available prototypes of active wrist flexion/extension units were mounted onto the Michelangelo hand prostheses. Subsequently, loaner contracts were formulated and signed between OBHP and the clinical partners, OSS and UMCG. The prosthetic hardware components were shipped to UMCG on January 16<sup>th</sup> 2017 and handed in person to OSS on January 18<sup>th</sup>, 2017.

In addition to the parts manufactured by Ottobock, three 3D-printed able-bodied adapters are supplied to the testing partners for able-bodied tests. These adapters allow able-bodied users to wear and use prosthesis as bypass of their healthy arm. This is useful for assessing function with a greater number of subjects, for collecting baseline results and also during the development process of clinical tests or software for the experimenters themselves to try the function first hand.

With this prosthetic hardware made available to the project partners, an important cornerstone in the project for significant user testing in real life conditions has been set.

**Table 1: Hand prosthesis material available in INPUT for applied tests with physical prostheses**

Quantity	Name	Serial number
2	Michelangelo Hand right w/ active flexion unit	201640008 201640009
3	Michelangelo Hand left w/ active flexion unit	201634003 201634004 201634005
5	APS Wrist Rotatation units	201330027 201633001 201633003 201633004 201633005
3	3D-printed able-bodied adapters for able-bodied subject tests	-



**Figure 1: The 5 Michelangelo prostheses available for INPUT, including active wrist flexion prototypes and wrist rotations.**



**Figure 2: 3D printed able-bodied adapter**



**Figure 3: 3D printed able-bodied adapter wearing example with prosthesis**