



**PlusMe: Transitional Wearable Companions
for the therapy with children with
Autism Spectrum Disorders**
a European funded project

Deliverable 1.1
***Identification of a research partner for
engineering PlusMe***

Work Package 1 *Engineering*
due at month 2 (1th November 2020).

Lead beneficiary: CNR
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Project coordinator National Research Council of Italy,
Institute of Cognitive Sciences and Technologies, ISTC-CNR.

1. Overview of the deliverable

This deliverable provides an overview of the Institute for Microelectronics and Microsystems (IMM), which is part of the National Research Council of Italy (CNR), the same legal entity of the project coordinator ISTC-CNR (see fig. 1). IMM-CNR is in charge of the engineering process of *PlusMe* device, and was selected for its expertise in the field of advanced electronics.



Figure 1. ISTC and IMM are part of the CNR.

2. The Institute for Microelectronics and Microsystems, IMM-CNR, Rome Unit

The IMM-CNR¹ is a research institute – with five branches in Italy – of the CNR Department of Physical sciences and technologies of matter, whose research activity is focussed on innovative solutions for microelectronics, flexible electronics, sensors, process for smart components and micro fabrication².

The Rome Unit³ (from now on IMM) has been formally involved in the project, and will collaborate with ISTC to fulfill the engineering tasks described in the proposal (work package WP1, *Engineering*). In more detail, the IMM will carry on part of the engineering process of PlusMe prototype, with the aim to technically improve the current device and make it closer to a potential market exploitation. Such a process will be accomplished mainly through 2 tasks: the

¹ www.imm.cnr.it/

² <https://www.cnr.it/en/institute/057/brochure>

³ <https://www.imm.cnr.it/source-sites/rome-unit>

first one consisting in the development of a new working prototype, characterised by innovative materials and solutions; the second one oriented to the feasibility study for a potential, small scale, production of the new device. Several deliverables⁴ will be produced to monitor the progress of the WP1.

IMM was selected for its expertise in the development of technologies and devices in the area of flexible microelectronics (e.g. sensors networks, actuators), through an industrial-oriented approach (see Fig. 2 and 3).

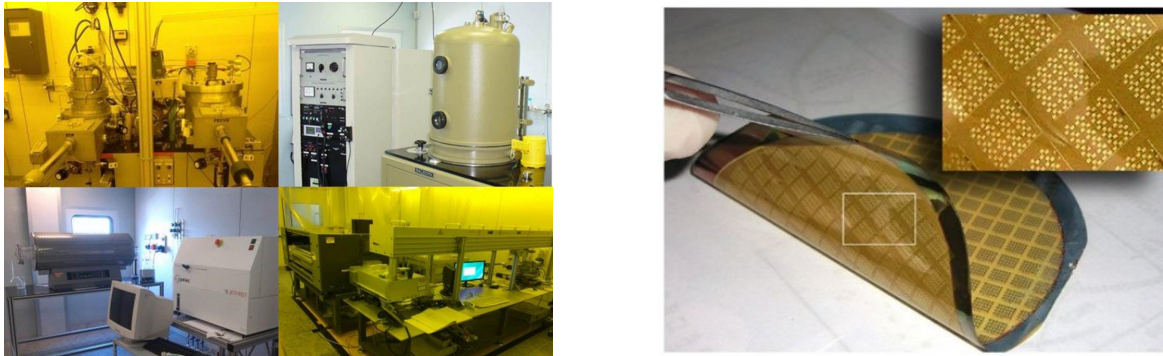


Figure 2. The IMM laboratories (on left); an example of a flexible sensing film produced by IMM, used for wearable electronics (on right).

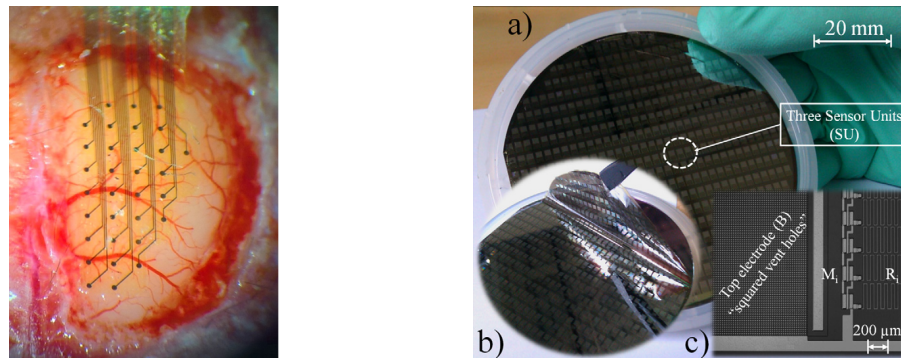


Figure 3. Ultra-thin microelectrode array for neural signal recording (on left); flexible capacitive sensor with integrated readout electronics for gas sensing (on right).

IMM, as a research institute, took part to several activities and projects⁵, among which:

- *Before Hand*⁶, topic: automotive (programme H2020-EU.2.1.1 *Industrial Leadership*);
- *Challenge*⁷, topic: power electronics (programme H2020-EU.2.1.3 *Industrial Leadership*);

⁴ <https://www.plusme-h2020.eu/deliverables/>

⁵ <https://www.imm.cnr.it/projects>

⁶ <http://www.beforehand.eu/>

⁷ <http://www.h2020challenge.eu>

- *Corticonic*⁸, topic: brain-computer interface (EU FP7-ICT-2011-9 *FET Proactive: Neuro-Bio-Inspired Systems*);
- *BISEM*, topic: biodegradable Sensors (Diatomic - EU H2020 funded project of Digital Innovation Hub)

3. Future development

The progress of the *PlusMe* engineering process, will be monitored by IMM and CNR through the following, next deliverables:

- D1.2 *Engineering process of PlusMe*: confidential report due at month 9 (31 May 2021);
- D1.3 *Plusme product demonstrator*: public demo due at month 12 (31 August 2021);
- D1.4 *Final report on PlusMe device*: public report due at month 18 (28 February 2022);

⁸ <https://cordis.europa.eu/project/id/600806>