



**IM-TWIN: from Intrinsic Motivations  
to Transitional Wearable INTelligent  
companions for autism spectrum disorder**  
*a European funded project*

***Scientific workshop 1***  
**Deliverable 6.6**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 952095.

Project duration 36 months (November 2020, October 2023).  
Consortium: Consiglio Nazionale delle Ricerche (ITA),  
Universiteit Utrecht (NLD), Centre de Recherches  
Interdisciplinaires (FRA), Università degli Studi di Roma  
La Sapienza (ITA), Plux-Wireless Biosignals S.A. (PRT).

## Deliverable data

<b>Work Package:</b>	6 Management and dissemination
<b>Work Package leader:</b>	CNR-ISTC
<b>Deliverable beneficiary:</b>	CNR-ISTC
<b>Dissemination level:</b>	Public
<b>Due date:</b>	31 <sup>st</sup> January 2023 (Month 27)
<b>Type:</b>	Other
<b>Revision:</b>	2 (February 2024)
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## Acronyms of partners

CNR-ISTC	Consiglio Nazionale delle Ricerche, Istituto di Scienze e Tecnologie della Cognizione (Italy)
UU	Universiteit Utrecht (The Netherlands)
CRI	Centre de Recherches Interdisciplinaires (France)
LA SAPIENZA	Università degli Studi di Roma La Sapienza (Italy)
PLUX	Plux - Wireless Biosignals S.A. (Portugal)

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## 1. Overview of the deliverable

This deliverable provides some detail about the next organisation of the workshop “Co-designing play activities and monitoring tools with smart interactive toys to support early intervention in Autism Spectrum Disorder and comparable neurodevelopmental conditions”.

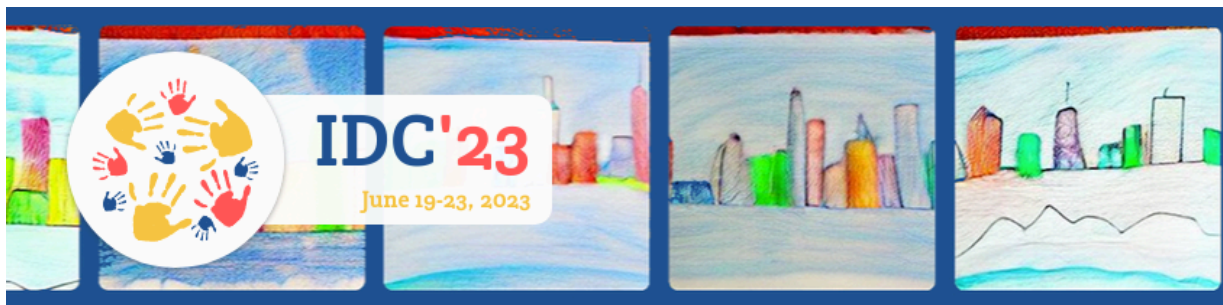
The workshop will take place at the 22<sup>nd</sup> edition of the international conference “ACM Interaction Design and Children, IDC’23”<sup>2</sup> (figure 1), to be held from 19<sup>th</sup>-22<sup>nd</sup> June 2023, at Evanston, Illinois (USA); the conference is hosted by the Center for Computer Science and Learning Sciences at Northwestern University.

The deliverable will be updated after the conference, providing the main outputs of the workshop activities.

## 2. Workshop overview

The workshop will be organised by the ISTC-CNR in collaboration with the Federal University of Santa Catarina, UFSC (Brazil). The goals of the workshop are:

- to provide the interested audience of the conference attendees (researchers, educators, practitioners) with an overview of the technologies developed within the IM-TWIN project and related activities.
- stimulate the inclusion of potential users in the design process of the tools which are currently under development.



**Figure 1:** logo of the Interaction Design and Children, IDC’23 conference.

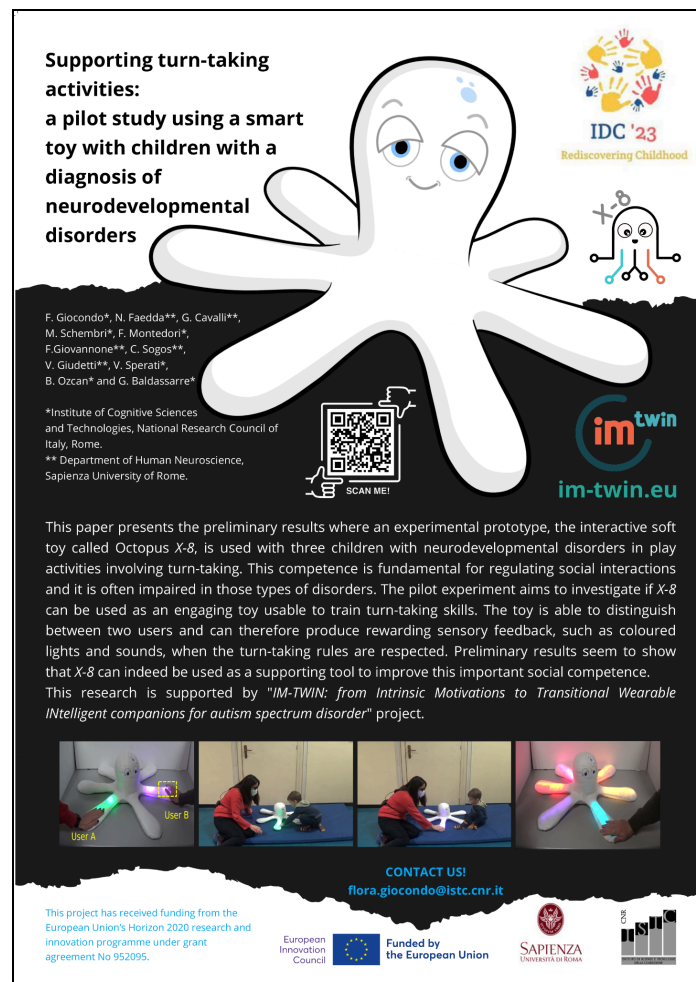
The workshop is listed at the official IDC page <https://idc.acm.org/2023/workshops/> , and the “call for participation” is available at the link [https://im-twin.eu/idc\\_2023\\_workshop/](https://im-twin.eu/idc_2023_workshop/).

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<sup>2</sup> <https://idc.acm.org/2023/>

### 3. Redrafting of workshop activities

The present paragraph was added and updated after the IDC conference. Since the workshop didn't reach the minimum number<sup>3</sup> of required attendees, the event was cancelled by the conference organisers. For this reason, the planned activity was redrafted and merged with the live demo prepared to support the paper "[Supporting turn-taking activities: a pilot study using a smart toy with children with a diagnosis of neurodevelopmental disorders](#)"<sup>4</sup>, presented at IDC and published in the conference proceedings (see fig. 1).



**Figure 1:** the poster presented at IDC 2023, and supporting the paper "Supporting turn-taking activities: a pilot study using a smart toy with children with a diagnosis of neurodevelopmental disorders".

<sup>3</sup> At least 8 participants were necessary to confirm the workshop.

<sup>4</sup> <https://dl.acm.org/doi/10.1145/3585088.3593863>



**Figure 2:** the attendees could interact with the TWC Octopus X-8 and test its features.

During the live demo, lasting around 1 hour, the researchers showed to the attendees interested in the topic, the functional features of the TWC Octopus-X8. As shown in Fig. 2, the audience could interact with the toy and test the various available social “games”. In order to provide the

public with the additional content planned for the workshop (namely, the other components *TWC Panda PlusMe*, the *Eye Contact Detector Tool* and the *Therapy Aid Tool*, all described in the “call for participation” available at the link [https://im-twin.eu/idc\\_2023\\_workshop/](https://im-twin.eu/idc_2023_workshop/)), the researchers set up a tablet showing the videos of the other tools, in detail:

- Panda PlusMe: <https://im-twin.eu/video/#Plusme>
- Octopus X-8 (additional features): [https://im-twin.eu/video/#data\\_collection\\_capabilities](https://im-twin.eu/video/#data_collection_capabilities)
- Eye Contact Detector Tool: [https://im-twin.eu/video/#eye\\_contact\\_detector](https://im-twin.eu/video/#eye_contact_detector)
- Therapy Aid Tool (developed by UFSC researchers):  
<https://www.youtube.com/watch?v=S3w9jncUsQc>

Thanks to this supporting material, the researchers could provide the attendees with a complete overview of the system – which includes the *Octopus X-8* smart toy – and its purpose. This stimulated an interesting discussion with the people visiting the stand<sup>5</sup>, who wanted to deepen the argument of assistive technologies for Neurodevelopmental Disorders, NDD. Feedback was very positive: almost all of the attendees found the proposed technology innovative and potentially useful to support and monitor the therapy of children with NDD. Interestingly, some attendees – mainly pedagogists and kindergarten teachers, that is the main audience of the conference – also suggested a further, potential use of this technology with typically developing children, to set up social play activities for teaching, through sensory-motor feedback, and concepts related to emotions or communication.

## 4. Conclusions

This deliverable has been updated after the conference, with the additional [section 3 “Redrafting of Workshop activities”](#).

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<sup>5</sup> About 30 people visited the stand and asked for further information.

## History of changes

No.	Description
1	Version updated from 1 to 2 (February 2024)
2	Added the <a href="#">section 3 “Redrafting of workshop activities”</a> , which provides the feedback from attendees obtained during the conference activities.