

# RFID-enabled End User Development Toolkit for Designing Fashionable Wearables

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**Fashionable Wearable** is gaining great momentum from the convergence of fashion design, ubiquitous computing, novel fabric and materials. However, the design and development of its hardware, software and user interaction atop remains rather an open research space to be explored.

**Passive Radio Frequency Identification (RFID)** technology, due to some of its features like being battery free, low cost, (some of them) washable and stretchable, is specifically appealing to fashionable wearables.

In this study, a passive RFID-enabled, end-user-oriented toolkit is proposed to support fast prototyping of fashionable wearables with easy and quick implementation of different types of RFID elements. Our target users include fashion designers, wearable designers and developers either with or without specialized knowledge of RFID and related technologies.



Fig.1 Concept Design of RFID-embedded Accessory: The proposed toolkit is also supposed to support the design of fashionable peripherals.

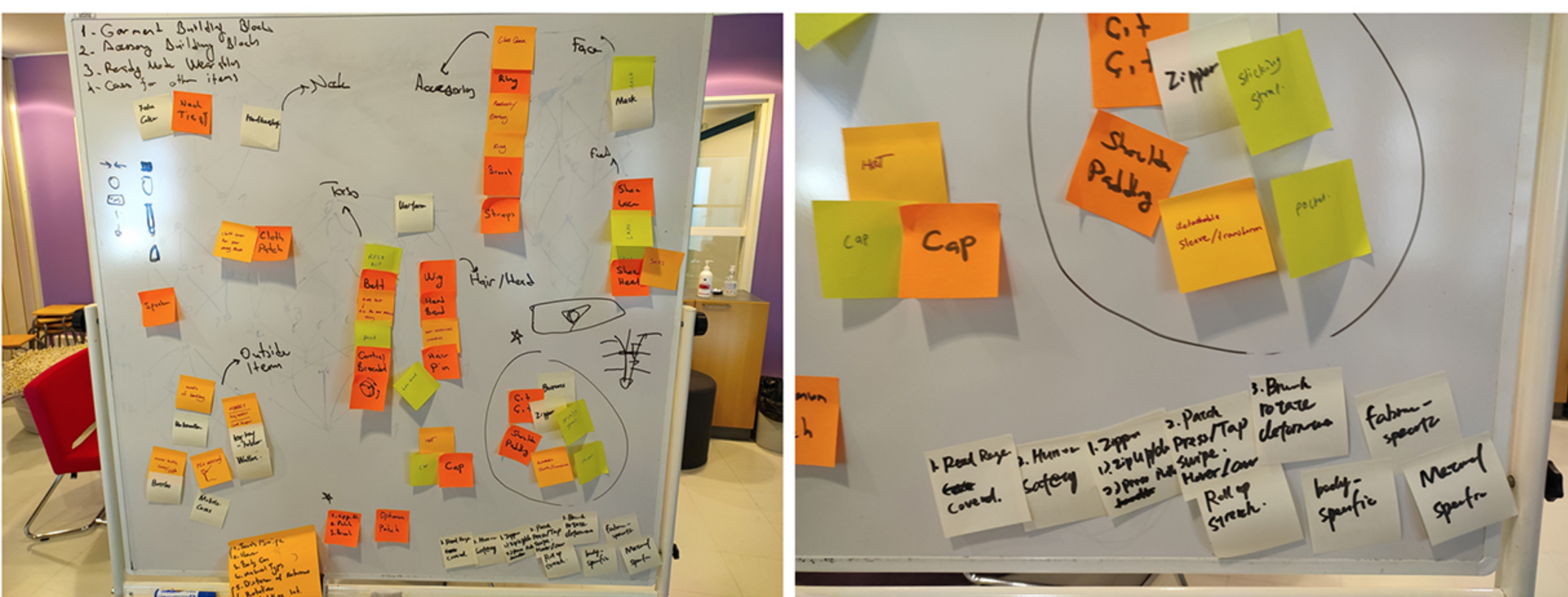


Fig. 2 Key Design Ontology emerged from the ideation session.

## Research through Design

Several hands-on co-design workshops and an ideation session were carried out among an interdisciplinary design team, with its members' expertise covering fashion design, engineering and human computer interaction.

As an intermediate result, we developed accessory prototypes with built-in RFID tags (see fig.1). Moreover, key design ontology was emerged from intensive co-ideations and group brainstorming, from which we have identified several possible design directions for building the toolkit (see Fig.2).

## Expected Results

The expected toolkit will provide: 1) a set of mashup-able RFID-embedded physical gadgets, including but not limited to buttons, zippers, patches etc., which are ready to be adapted to different sizes, shapes, forms and integrated with various fabrics and materials; 2) compatible software tool that allows end users to swiftly configure and customize their own control logic among different components via simple unified interface; 3) support for the recognition and realization of multiple user interactions associated with the gadgets, e.g. press, hover, swipe, interactions with clothing (folding, zipping) etc..

With the toolkit, end users will be able to quickly establish and experiment on a rich repertoire of experience prototypes, without much distraction by the underlying technologies and off-bottom details. Thus, it will facilitate designers and developers to identify design requirements and restrictions, communicate and share design ideas, envision different application scenarios, as well as test and evaluate diverse design possibilities.

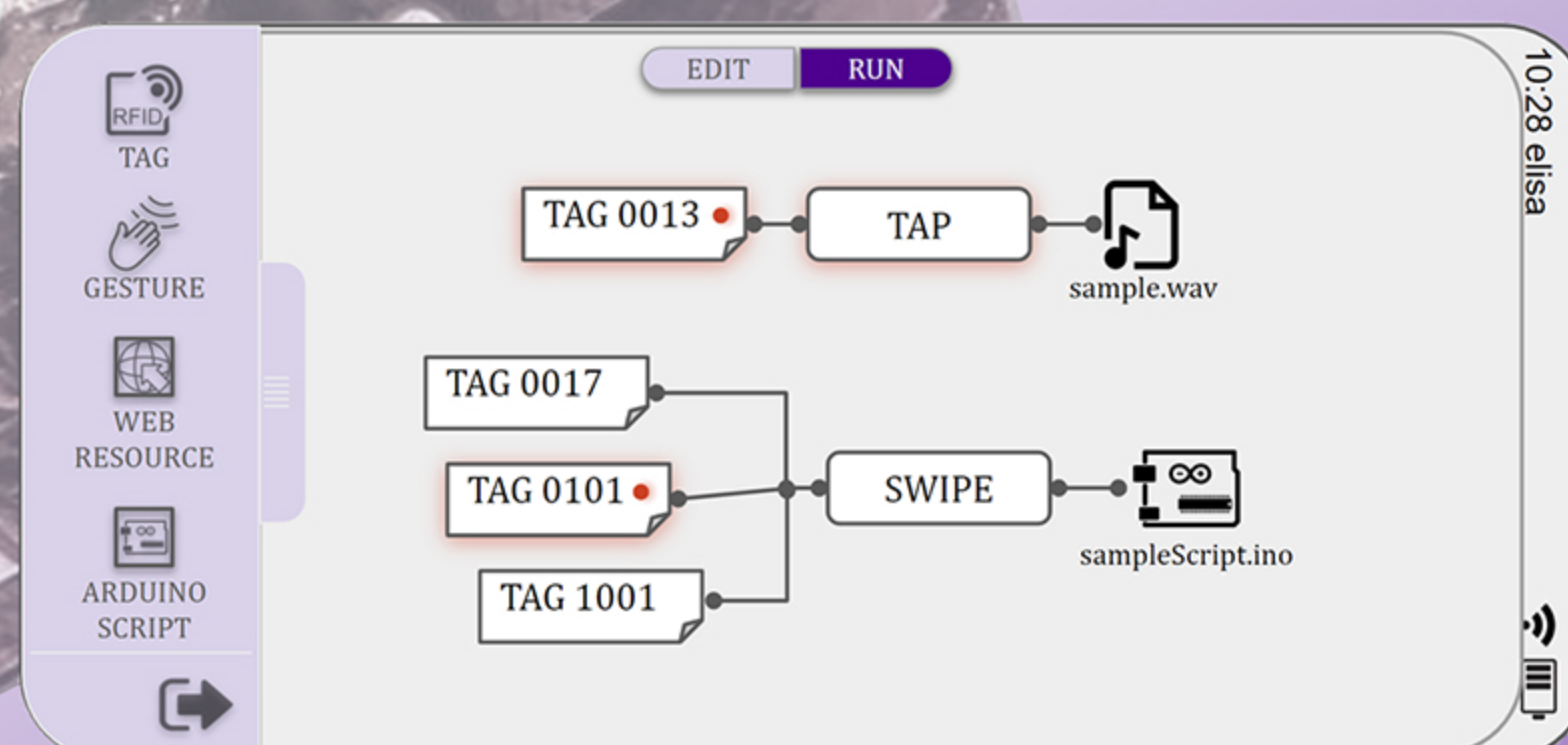
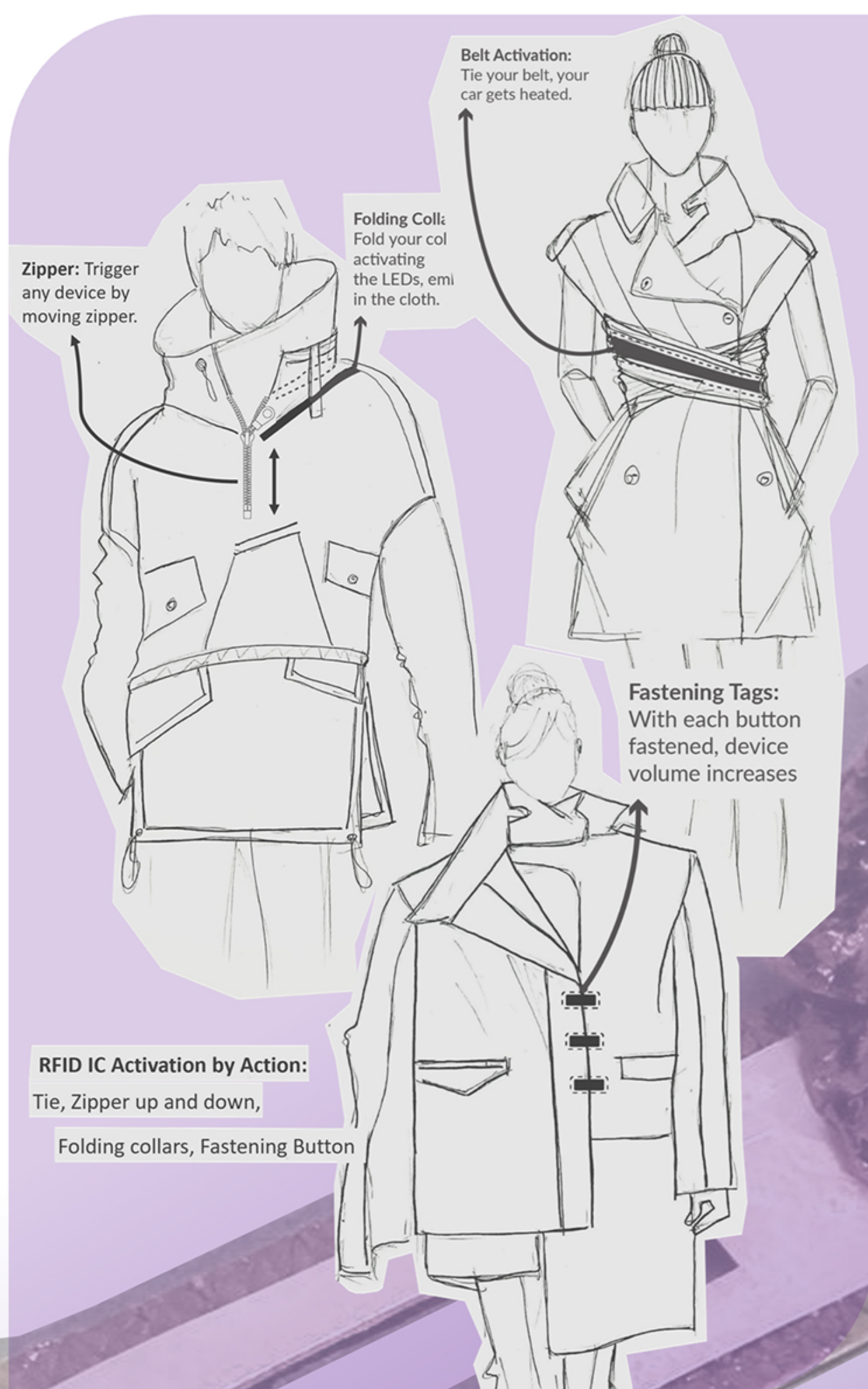


Fig. 3 Preliminary design sketches (left) and psudo-user-interface of prototyping software in mobile end (middle and right).