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# Open inclusive fashion: New insights for a co-design platform

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**Abstract.** This paper intends to propose a platform dedicated to a community for inclusive fashion. This platform can innovate in the awareness creation process by involving a wide range of stakeholders through a novel combination of visually-centered networking/collaboration together with a powerful recommendation system based on data analytics. This solution can potentially impact positively the well-being of more than 50 million of motor/physical disabled citizens as consumers of fashion products. This can be achieved by bringing together three different networks: (i) fashion consumers, emphasizing consumers with disabilities; (ii) companies from fashion/garment/footwear industry; (iii) social and research organizations supporting disabled people. This will allow to create individual and collective awareness about sustainability at the social level demanding the engagement of groups of citizens and industries in sharing information and knowledge and developing ideas and solutions for people with disabilities facing problems related to fashion, garment and footwear products and services.

**Keywords:** Design for Inclusion · Open Inclusive Fashion · Collaborative awareness · Co-design Platform

## 1 Introduction

According to the European Union Agency for Fundamental Rights [1], some 80 million European Union citizens have a disability, with 70% of them (almost 60 million) with a motor/physical one. In a social approach, disability is understood as the result of the interaction between the individual's impairment and the barriers created by

society (be social, environmental and attitudinal) [2]. In 2010, the European Commission adopted a strategy to break down barriers that prevent disabled people from participating in society [3]. The values of dignity, autonomy, equality and inclusion were defined as key EU principles. With the UN's most recent human rights treaty, the Convention on the Rights of Persons with Disabilities (CRPD), the core concepts of self-determination, participation and inclusion have been expressly linked to people with disabilities [1].

Fashion is part of human life, transversal to all genres, geographies, religions, economies, and ways of life. It induces happiness most of the time, but it can also contribute to forms of delusion and social exclusion. Particularly when considering people with disabilities, fashion cannot be considered a vehicle for inclusion, rather it is the contrary most of the times. Fashion is an industry pushing lifestyles to the consumer, and being pulled by basic to sophisticated consumer needs. Pushing is the prevalence, so the disabled and other minorities seldom have a voice in what concerns to fashion. This creates a kind of "lifestyle exclusion" of a big minority of people. The lack of empathy of society towards disabled's lifestyle represents another barrier for the inclusion of people with disabilities from participating in society. In Europe, millions of people with disabilities experience difficulties with garments and footwear every day, i.e. clothes and shoes do not fit properly or are difficult to wear. Moreover, these consumers seem to be excluded from the fashion industry target markets. This prevents these people from enjoying the well-being that follows from being able to create or choose their own image from a fair amount of choices adapted to their disabilities. In fact, the meagre offer of fashion products and services, the poor knowledge and engagement of the fashion/garment/footwear industries in what concerns to people with disabilities, and the unawareness for the citizens is likely to make this societal problem ongoing.

This paper intends to address this as a sustainability problem at the social level, proposing a platform to empower disabled citizens through participation and interaction. The platform will be dedicated to a community for inclusive fashion aiming to create individual and collective awareness by using state-of-the-art social media technologies together with modern data and information management techniques. This paper is the first formal presentation of the platform, providing its rationale, a brief description of the concept and approach, as well as some of the expected impacts.

## **2 Rationale for the Collaborative Awareness Platform**

The above described social sustainability challenge is addressed by proposing a collaborative awareness platform that will empower disabled citizens, as fashion consumers, through distributed networking and online collaboration. This can represent the first platform and community dedicated to inclusive fashion, and will innovate in the awareness creation process by involving a wide range of stakeholders - disabled consumers, socially responsible companies and disability experts - through a novel combination of visually-centered networking and collaboration together with a powerful recommendation system based on data analytics. Such collaborative platform will create awareness in three complementary ways:

(i) by involving fashion consumers, emphasizing consumers with disabilities, in sharing expectations, ideas and experiences aiming to stimulate the industry offer; using the services of the platform, disabled fashion consumers will be able to communicate visually and interactively fashion concepts, ideas, concerns and collaboratively co-design solution concepts that, eventually, can be developed by interested companies;

(ii) by involving companies from fashion/garment/footwear industry: from one side in learning from a community of consumers with disabilities and, from the other side, in contributing with knowledge about fashion design and production; engaging companies and consumers in a networked dialog for knowledge co-creation will hopefully result in ideas and concepts for the design of adapted fashion products and services;

(iii) by involving social and research organizations supporting disabled people, bringing specialized knowledge on how to engage and empower the disabled citizens as fashion consumers.

The platform's ambitions are to foster the co-design of fashion products and services by a collaborative network of consumers with special needs, companies belonging to the fashion industry, and multi-disciplinary specialists contributing to an all-inclusive well-being society. Figure 1 presents the platform's rationale: why, what for, how, what outcomes.

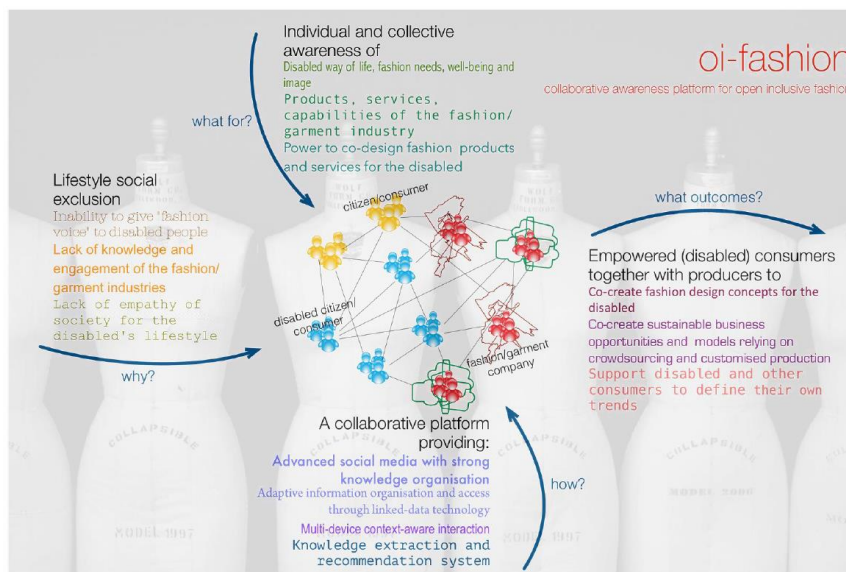


Fig. 1. Rationale for the collaborative awareness platform

### 3 Concept and Approach for the Collaborative Awareness Platform

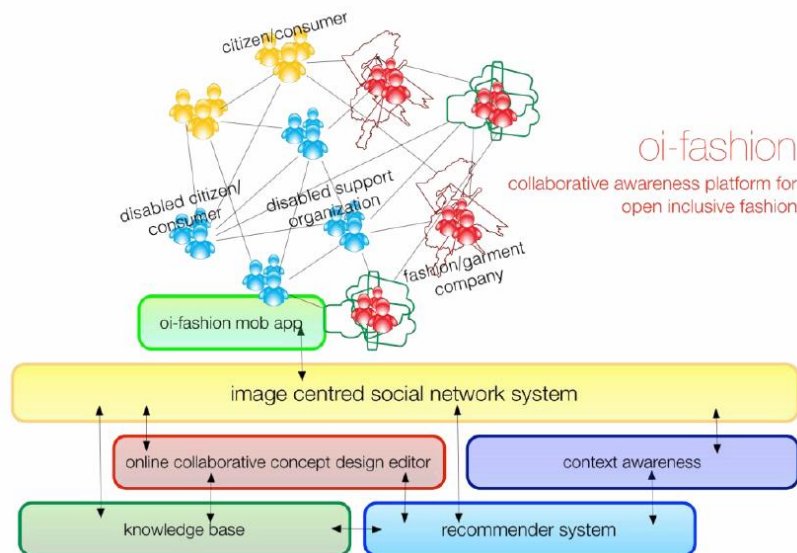
This user-driven collaborative platform will empower and foster awareness in the existing community of disabled citizens. This platform is aimed at different types of

users: citizens/consumers with disabilities, caring people of disabled people, general citizens/consumers willing to contribute to the well-being of people with disabilities, organizations supporting the disabled and fashion/garment/footwear companies willing to be aware of expectations and needs of consumers with disabilities.

This can integrate several online communities of disabled citizens together with fashion industry companies and disability experts through an innovative combination of a distributed, image-based, social network, an interactive co-design tool of fashion concepts and a recommendation system based on the social-network generated data. The resulting community will raise awareness on the inclusive fashion social sustainability problem through the improved communication and visual oriented collaboration services provided by the platform. This will have a significant impact on the self-esteem and well-being of the disabled citizens and will pave the way for a visible and positive economic impact in a market normally seen as unprofitable.

The platform can take the needs of lifestyle inclusion and self-esteem of people with disability as a starting point and engage them, the general public, socially responsible fashion industry companies and disability experts in a process of developing collaborative fashion concept designs as a lever for awareness creation. Another lever that will contribute to start this initiative is the actual participation of already-existing networks of interest and communities of disabled persons.

Collective awareness (Figure 2) will be achieved through the dynamics of an online community supported by a social network centered on visual information and by synchronous and asynchronous collaboration with the purpose of co-designing fashion concept designs.



**Fig. 2.** Overall concept for a collaborative awareness platform

Photographs, sketches, videos and other visual content will be uploaded or created online by the users and can be collaboratively annotated with metadata and superim-

posed drawings or sketches. Comprehensive individual and group social-network profiles will support the automatic and manual establishment of ties between the users, linking them to the generated visual information. Self-presentation and self-representation are of utmost importance in this type of community. Knowing the history, experiences and expectations of each member increases their credibility and the perceived-value to the community of their contributions.

An application will enable the collaborative creation, edition and discussion of fashion/functional design concepts through both creating stencil based sketches from scratch on a canvas, and superimposing sketches and adding comments, suggestions and other annotations to uploaded visual media content. Examples of specific collaborative content are fashion designs - fashionable garment and footwear (stylish appearance); functional finishing - garment and footwear that fits the body properly and enhances the wearer's abilities and personal image; sustainable products - garment and footwear made in sustainable ways and with sustainable resources.

The social-network and the collaborative co-design application will be powered by two features: (i) a knowledge base with knowledge extracted from the social network data together with data provided by the fashion/garment/footwear companies and the disabled support organizations; (ii) a recommendation system giving suggestions on fashion and functional design. The recommendation system will rely on analytics techniques applied to the social-network generated data.

The platform will be accessed through a mobile or desktop application where, besides co-designing fashion/functional concepts, the user will do the usual social networking activities such as browsing the images, commenting, interacting with others, creating interests. Mobile application access will be used to create contextual links that can be used for immediate awareness. By using the mobile application, contextual data such as location or proximity to stores and other points of interest will be recorded to be used by the recommendation system.

The stakeholders will be not only industry and academia but also local communities, family members of disabled persons, activists for an all-inclusive society, social entrepreneurs, students, citizens, and civil society organizations. The platform will be unique as it can bring together disabled person with traditional manufacturers in one space, transforming extant business models and creating new models of corporate social responsibility (CSR).

## **4 Advances Beyond the State-of-the-art**

### **4.1 Collaborative Awareness**

One of the goals of the European Commission is to raise awareness of different societal, economic and sustainability problems among citizens and mobilize different categories for trying to solve these problems. Among all the categories, this platform will be focused on: (i) people with disabilities and mobility impairments, elderly and their caregivers, and parents using strollers for their children; (ii) users of online communities interested in knowing more about their data and in defending their online rights [5]. Virtual communities are considered a source of information as well as a means of

social interaction [4]. Schau and Muniz [6] found that participating in a community helps members to gain confidence and validation of self-identity.

Therefore, this collaborative platform intends to create links with the broader consumer community and foster the social and business interest of the fashion industry. To create awareness it will involve a wide range of stakeholders - disabled consumers, socially responsible companies and disability experts - through a novel combination of visually-centered networking and collaboration together with a powerful recommendation system based on data analytics.

## **4.2 Communication Channels**

Annett-Hitchcock and Xu [4] developed a study entitled “Shopping and virtual communities for consumers with physical disabilities” which was conducted in order to provide some insight into how the Internet can facilitate the sharing of information about fashion products for consumers with disabilities and fill a gap on the development of studies in this area. From the websites found (Apparelyzed; Disabilities-R-U; Ablebody; Disaboom; New Horizons and Luvwhatyouwear) the Apparelyzed was selected as the biggest one. Researchers selected all posts directly related to clothing, fashion, accessories and shopping. From the data obtained, areas, categories and words that appeared more frequently were analyzed. In general, this study found that there is a gap between retailers and consumers with disabilities. There are limited opportunities for people with disabilities to interact with retailers other than those offering ‘specialized’ products. A number of small, independent companies serve the needs of this population, with different degrees of emphasis on fashion and function, and mostly online. These authors also concluded that future studies might look at the possibility of online communication channels, exploring marketing, product development and brand recognition on a global level, addressing a variety of disabilities types.

The collaborative awareness platform proposed in the present paper will serve as a communication channel between the disabled and fashion industry. From this integration they will be able to create products about fashion clothing and solutions that meet the specific needs of this population, addressing the suggestions of Annett-Hitchcock and Xu [4].

## **4.3 Collaborative Design**

Understanding the voice of the consumer and how consumers with different needs interact will ultimately enhance product design. People with disabilities traditionally view clothing and fashion as an adaptive art, where it is up to the consumer to find a way to adapt something to suit their needs. Their desire for style and image can even be perceived as stronger than able-bodied consumers, as apparel products are appearance management tools, which could be utilized to downplay visual impact of the disabilities that they may have. A few examples of studies with a specific focus include donning and doffing, fabrication, construction quality, thermal comfort, seamless knitting technology. Unfortunately, this wealth of research has not translated into much improvement in the general availability of clothing and accessories in mainstream retail stores [4].

Therefore, the objective of the platform is to foster the co-design of fashion products and services by a collaborative network of consumers with special needs, companies belonging to the fashion industry, and multi-disciplinary specialists contributing to an all-inclusive well-being society.

#### **4.4 Clothing Acquisition**

The acquisition of clothing for people with disabilities and mobility impairments is a process that needs better understanding. Crosier and Handford [7] found that shops are not prepared for accommodate disabled people, turning shopping into a humiliating and negative experience for these consumers. Limited sources are available for these consumers to seek information or advice regarding apparel acquisition. In addition, it is hard to find research that looks at acquisition from the consumer perspective. So, information through word of mouth from peers who have similar backgrounds becomes more important for these consumers. There is a strong potential for virtual communities for consumers with physical disabilities not only to share information, but also to assist in the decision-making process of product purchasing.

This collaborative platform will help the fashion industry to develop clothing for people with disabilities and mobility impairments, while taking into account shared information regarding their specific needs. The people interested in acquiring these clothing will have access to information that would help them during their decision-making process of product purchasing.

## **5 Expected Impacts**

### **5.1 Primary Impact**

This platform will be the first collaborative platform dedicated to disabled fashion and potentially impact positively the well-being of more than 50 million of motor/physical disabled citizens as consumers of fashion products. There is not a real community about fashion and disability EU-wide. People are still surprised that the 2 words 'aesthetics' and 'disability' could be mixed, even disabled people themselves. According to the European Union Agency for Fundamental Rights [1], some 80 million European Union citizens have a disability, 70% of them with a motor/physical one. Thus, millions of people with disabilities experience difficulties with garments and footwear every day, i.e. clothes and shoes do not fit properly or are difficult to wear. Moreover, these consumers seem to be excluded from the fashion industry target markets. This prevents these people from enjoying the well-being that follows from being able to choose their own image from a large amount of choices adapted to their disabilities. People, having short-term injuries due to accidents as well as elder people having mobility problems due to their age are in a similar situation (in Europe, people aged over 65 represent 17% of the total population (89 million in 2008) and are expected to reach 29% by 2050). The platform can significantly contribute to overcome this situation by involving the community in an active and creative way.



## 5.2 Secondary Impact

The active participation of numerous branches of the social life in the European society in a common platform will create awareness of the industry towards the disabled community, which will positively influence decision making regarding this market segment. The increasing individualization demands more and more personalized approaches in any kind of services, and especially in the services for disabled people. That is why ideas, experiences and concepts developed together by consumers, enterprises, research centers and specialists stored in the knowledge base of the platform, can create business opportunities that fulfill the disabled consumer needs of a high personalization, what can be applied also for people without disabilities. As the platform will be crowdsourcing ready, there is an enormous potential for the identification of business opportunities and the creation of new business models addressing the new markets fostered by the platform.

The customization need for disabled people is immense and is today covered mainly by very small producers offering marginally very functional and less fashionable products. Retailers as well as brand owners are mainly interested in distributing mass market-oriented products manufactured in low-cost countries, while online shopping cannot currently satisfy this category of consumers since most of the time, online garment, shoes purchases need to be adapted. This results in the production of small quantities and high production costs, making them accessible only to a small portion of this population and not providing enough income to the companies involved in this niche business. The development of an international niche market of adapted, personalized fashion for disabled people is a chance for the European textile, clothing and footwear industry, representing around 1.2 million employees (0.9 Textiles and clothing, 0.3 Footwear and 1.2 Furniture), a chance to minimize the delocalization in cheaper labor countries outside the EU.

By this way, the platform may contribute to empower not only people with mobility impairments to express their wishes and needs but also textile, garment and footwear companies in EU with economical obstacles to develop personalized products for all. In this manner, the big difference between people with and without disabilities will disappear with the time.

## 6 Conclusion

Although people are becoming more aware of this situation, disabled citizens still experience difficulties with garments and footwear products and services. Their desire for style and image can even be perceived as stronger than able-bodied consumers, as apparel products are appearance management tools, which could be utilized to downplay visual impact of the disabilities that they may have. It is important for the industry to recognize the needs of this market segment, both the special function-related utilitarian need and the image/style related to hedonic need. Disabled people represent a large and untapped market that is far from being fully addressed. Nevertheless, there are now some designers involved in the creation of fashion for people with special needs. However, they are still insufficient to meet the demands of current needs.

Millions of disabled citizens participate today, as fashion consumers, in small/local, more or less dedicated, online communities. They try hard to overcome the lack of awareness and empathy from the fashion industry and other citizens but the outcomes are very limited as their voice is not loud enough due to the low density of their networks. This is a clear, long-lasting social sustainability problem. It is thus a challenge and an opportunity to use the collaborative power of ICT networks to integrate, amplify and metamorphose these small/local communities into a global distributed social-network, beyond the limited Facebook stereotype, fostering not only knowledge networking but, above all, active ways for the involvement and the creation of awareness and empathy. State-of-the-art social media technologies together with modern data and information management techniques can thus be used to develop a collaborative awareness platform that joins the vast but dispersed community of disabled fashion consumers, create links with the broader consumer community and foster the social and business interest of the fashion industry.

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