Development of a new extended product-service to overcome size assignment and fitting barriers for children fashion on-line market addressing customer needs

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Rendicontazione

Informazioni relative al progetto

KIDSIZE

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🇪🇸 Spain

Final Report Summary - KIDSIZE (Development of a new extended product-service to overcome size assignment and fitting barriers for children fashion on-line market addressing customer needs.)

Executive Summary:

Kidsize project was industry-led project aimed at providing a protectable competitive advantage to the European Children's Fashion industry by using new ICT technologies.

Kidsize will help the SMEs operating in the childrenswear sector to sell more and to reduce the costs derived from returns due to sizing problems.

Kidsize will clear up sizing concerns of parents and relatives when buying childrenswear by providing a reliable size recommendation and an accurate prediction of how the clothes would fit and look on the children. In order to underpin the size recommendation, Kidsize includes a new mobile app able to measure precisely your children's body shape in 3D with a couple of pictures.

Project results in real use context showed that Kidsize was consistent with parents' opinion in 87% of the try-on tests, outperforming state-of-the-art methods that use the age or the height of the children, which achieved respectively 45 and 55% of right recommendations.

The accuracy in the size recommendation and fitting predictions is achieved thanks to the new algorithms developed and to the body measurement app, which showed to be much more precise (0.5-1.5 cm error) than body measurements taken by parents (1-5 cm error).

Project Context and Objectives:

Competitive threat from overseas

This project addresses the need of the European childrenswear sector to remain competitive against the price-pressure from products produced at low labour countries, which has become fiercer during the last decade.

Opportunity for growth and internationalisation

Despite there has been an important growth in online sales over the last years, online sales of children's fashion are still far behind other sectors. E-commerce should have brought an excellent and affordable opportunity to European SMEs to address international markets (European and overseas), however, the low growing rate of online sales and the costs for managing returns are slowing down growth and hampering the internationalisation of European childrenswear SME brands and producers.

The main barriers to consumers for shopping clothes online are their concerns and doubts about if the size will fit or not before buying. The consumers may become even more reluctant to assume the risk for not picking the right size if return costs are not included in the price or if the return process is labyrinthian, time-consuming or slow.

In the case of childrenswear, picking the right size becomes more difficult because they grow and because the size labelling may lead to confusion, since it is frequently categorised according to the age of the child even though children of the same age have very different body dimensions. Moreover, the burden of returns affects not only to online sales but also to traditional shopping because the parents do not bring

their children to the shops and when they do they do try on the garments on them. The problem is particularly acute for relatives and friends who may wish to buy clothes, which in this sector represent a non-negligible share of the sales.

Kidsize solution for the childrenswear sector

Kidsize project aimed to provide a reliable size recommendation and an accurate prediction of how the clothes would fit and look on the children that clears up sizing concerns of parents and relatives when buying online and in the shop.

The problem for providing a reliable and accurate solution was that it required access to accurate and reliable information about sizing and dimensions of manufactured garments and about the actual measurements of the child.

In this sense, Kidsize project proposed to develop a new mobile app able to measure children's body shape precisely in 3D with a couple of pictures.

Regarding the reliability of garment dimensions and sizing, most of the European manufacturers produce high quality garments and use normalised size mannequins for patternmaking and design, which made them suitable for adopting Kidsize solution and brought them a protectable advantage against their price-based competitors.

In concrete, the Technological Objectives targeted by Kidsize were:
- Gathering children's body shape and dimensions precisely using a mobile app
- Facilitating the manufacturers feed Kidsize with reliable garment data comfortably
- Realistically representing the children wearing the garments in a virtual try-on
- Providing reliable size recommendations and accurate fitting indications
- Integrating these new information into ecommerce solutions seamlessly

Kidsize consortium

Kidsize project was led by by wide-reaching European SME associations, namely Children's Fashion Europe, Nova CHILD and ASPERI, in order to provide an accurate sizing tool that will give a significant competitive advantage to the sector.

The challenging Kidsize developments required to hire the work to three reference RTD performers from Spain and UK: IBV (anthropometry applied to product design), ISRI (information technologies) and Ozongo (online marketing and ecommerce solutions).

In order to demonstrate the feasibility and scalability of the proposed solutions, two popular brands from France and Spain were also embarked into the project: Sucre d'Orge and Bóboli.
Project Results:
Knowledge generation and scientific advances:

- The in-depth analysis of the design, manufacturing, retail and purchase of children's fashion.
- The gathering of needs and requirements from childrenswear stakeholders, namely users (children), buyers and decision makers (parents and relatives), retailers (online and brick-and-mortar), producers and designers.
- The translation of the needs and requirements into design specifications for each of the components configuring Kidsize solution.
- The gathering of a comprehensive anthropometric database of children including 3D models and their corresponding body measurement sets.
- The understanding and modelling of the children's body shape space; in 3D for children aged 3-12 and in measurements for those aged less than 3.
- The development of accurate methods and algorithms for the segmentation children's body silhouettes from font and side pictures
- The development of accurate data-driven methods and algorithms for the 3D reconstruction of children's body shape matching front and side silhouettes.
- The gathering of training datasets for the modelling of the children-garment fitting interaction and for its projection due to children's growth for 12 types of garments.
- The development of methods for the modelling of two size recommendations – the right size for wearing the garment straight away, and the best fit to allow room for the child to grow
- The development of methods for the modelling of fitting information at 12 body areas relevant to garment look and fit.
- The modelling of size recommendations and fitting predictions for upper body, lower body and full body garments for the two popular sizing systems: ASEPRI's patternmaking mannequins and Groupe-Enfants-France's anthropometric guide.

Technology developments and prototypes demonstrated in real-use contexts:

- The implementation and set up of webservices to provide the 3D reconstruction and the size recommendations remotely.
- The development of a mobile app for measuring of children in 3D with two pictures.
- The development of software for the enrichment of children's body shapes captured with the app with realistic textures and geometries like hairstyles, skin tones, fingers toes or eyes.
- The development of back-offices for the fast and seamless provision of relevant garment information enabling Kidsize recommendation and virtual fit simulation.
- The development of methods and tools for modelling garments in 3D efficiently
- The development of a web-service for the virtual fit simulation, i.e. dressing realistically virtual children representations.
- The development of an online 3D try-on room compatible with any internet browser.
- The development of back-offices for the seamless integration Kidsize-enabled products into e-commerces.
- The development of user-friendly web interfaces for the integration of size recommendations, fitting predictions and virtual try-on room into e-commerces.
Potential Impact:
The European Children's Fashion Industry is made up of more than 5.200 companies that employ 250.000 people and generate an annual turnover of over 20 million Euros. This sector is characterised by being

dominated by fast moving that create and produce fashionable and high quality clothes.

Kidsize aims at providing these companies with a technology-based protectable advantage to face the competitive threat from overseas low-cost producers and to uptake the opportunity that e-commerce may bring to internationalisation.

Kidsize will help European companies to sell more and to sell better. The increase of sales will be achieved by clearing up the size-related concerns of parents and relatives when buying childrenswear online or when they go shopping without their children. Nowadays, returns account for up to 40% of sales made on the internet or without trying on the garments, and 75% of returns are due to size-related problems. In this sense, Kidsize will also increase the value of each sale but reducing the number of returns and thus cutting down their direct and indirect costs (i.e. transportation and stocks).

In addition to selling more and better prêt-a-porter fashion, Kidsize technology, namely the 3D measuring app and the virtual fit simulation, could enable many European manufacturers to diversify their activity and enter the made-to-measure markets.

The competitive advantage provided by Kidsize to European SMEs will be protected by two factors. First, the distribution of Kidsize will be under the direct control of the three European associations leading the project, namely Children's Fashion Europe, Nova CHILD and ASEPRI. Secondly, the nature of the technology developed makes that only those manufacturers that know 'who are they dressing' and 'what are they manufacturing' would be able to provide a reliable size recommendation, thus making it useless for their price-based competitors even if they achieve to replicate the technology.

List of Websites:

Kidsize Project website: http://www.kidsizesolution.com/ ⎘

YouTube channel (project video in English, French and Spanish):

https://www.youtube.com/channel/UC9Myhl722CSGlSIWKER3H0g ⎘

Kidsize app @ Google Play: https://play.google.com/store/apps/details?id=org.ibv.kidsizeapp ⎘

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