

# Business as Unusual: Designing products with consumers in the loop

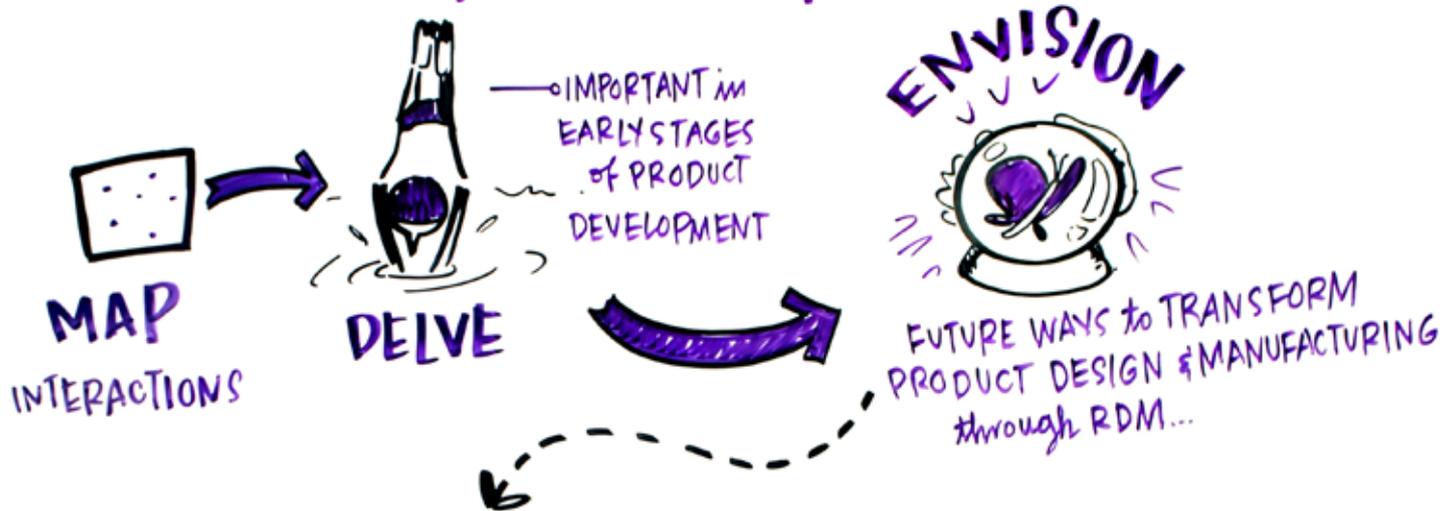
## RECODE Network

Executive Summary

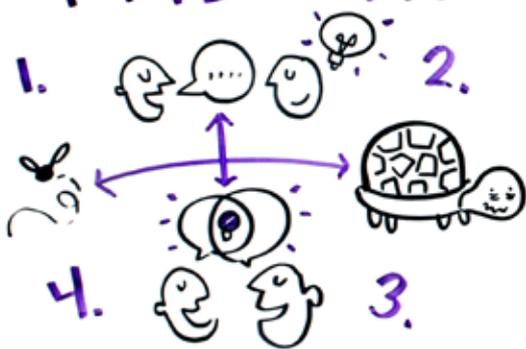


# BUSINESS as UNUSUAL

... CONSUMERS in the LOOP ...



## FUTURE SCENARIOS



WHO'S DESIGNING?  
WHERE is it MADE?  
HOW MUCH DATA is USED?  
WHAT'S the CUSTOMER JOURNEY?  
& the PRODUCT LIFE CYCLE?  
WHO'S in CONTROL?

## 1 CIRCULAR CONSUMABLES



## 2 DEMOCRATIC DESIRABLES



## 4 TAILORED TEMPORARIES



## 3 ENGAGING ENDURABLES



# RECODE Network

## Business as Unusual: Designing products with consumers in the loop

**Professor Harris Makatsoris**  
Cranfield University

**Dr Emma Dewberry**  
Open University

**Dr Leila Sheldrick**  
Imperial College London

**Dr Matt Sinclair**  
Loughborough University

**Dr Mariale Moreno**  
Cranfield University

### Executive Summary

#### Background, aim and objectives

A significant challenge faced by consumer product manufacturers is to be able to rapidly identify new market segments and to respond to those segments with products that consumers will buy. Re-Distributed Manufacturing (RdM) has the potential to disrupt the way we produce and consume products across the lifecycle and to create new models of 'Business as Unusual'. New structures of design and manufacturing can enable large reductions in resource consumption by limiting waste in a supply chain (e.g. reducing transport distances) and through addressing the flows of resources at critical times in the lifecycle of products. It can also enable reduction of R&D waste by enabling a more targeted delivery of custom products to meet specific user needs and demands in different contexts and across extended timespans of the product lifecycle.

The aim of this 6-month feasibility study has been to map and address the options available for integrating users in the New Product Development (NPD) processes of future, sustainable product creation. This implies that in the future the customer/end user/consumer is co-creator of the products they wish to consume. It also implies the need to determine new

and emerging market segments. However, identifying and responding to these market segments will require new forms of organisation, new models for design and manufacture, and product lifecycle models that support different types of consumption. The drivers for the inevitable transformation to re-distributed and resource efficient systems must therefore be determined and mapped. To this end, this study has brought together an interdisciplinary network of academic and industrial partners with the following objectives:

1. To understand where, when, and how, interactions with consumers occur across the various stages of the NPD process and product life cycle
2. To investigate how those interactions can scale via a data-driven approach to front end NPD
3. To investigate the product lifecycle stage of 'ideation' and 'use', to develop an understanding of how a range of consumer interactions in product use or repair can be expanded and built upon to inform more sustainable models of product development in RDM contexts.



Figure 1 Consumer Intervention map fully populated with intervention touchpoints

## Contribution to Re-distributed Manufacturing

Specifically, this study has explored how to respond to this major challenge:

*How should we engage users in New Product Development in future re-distributed models of sustainable production and consumption?*

This has involved mapping the challenges and opportunities for user engaged design and manufacture, and investigating their application to bridge the gap between users, brands and the products they produce. In addition, it has sought to understand how the promotion of resource efficient product lifecycles can be incorporated within future, more localised and responsive structures of manufacturing and product adaptation. To meet the established objectives the work was divided into four phases:

- **Mapped** the possible consumer interventions across the lifecycle of products, focusing primarily on consumer products. This mapping exercise (Figure 1), helped to identify the challenges and opportunities for user engaged design and manufacture, and investigated their application to bridge the gap between users and manufacturers.

- **Delved** into fast moving consumer goods (FMCG) by exploring crowdsourcing techniques such as the Open Food gaming portal, to enable consumer interactions at large scale with brands (Figure 2).
- Delved into durables to explore people-product relationships occurring in the lifecycle of consumer products, to identify opportunities for re-distributed models of production and consumption. This exploratory research suggested that developing a better understanding of the opportunities and challenges posed by long-life products, alongside the potential of different people-product interactions in product life, will support evolving cultures of sufficiency and the creation of new business (Figure 3a) for sustainable production and consumption. This increased sustainability would not be possible if accessibility to repair/maintenance spaces wasn't available. Hence, opportunities for the re-distribution of these facilities would be key to become mainstream. In addition, for these spaces to thrive, the concept of RdM could help to set up the capacity for new collaborations between original equipment manufacturers and suppliers of parts as well as upskilling programmes.

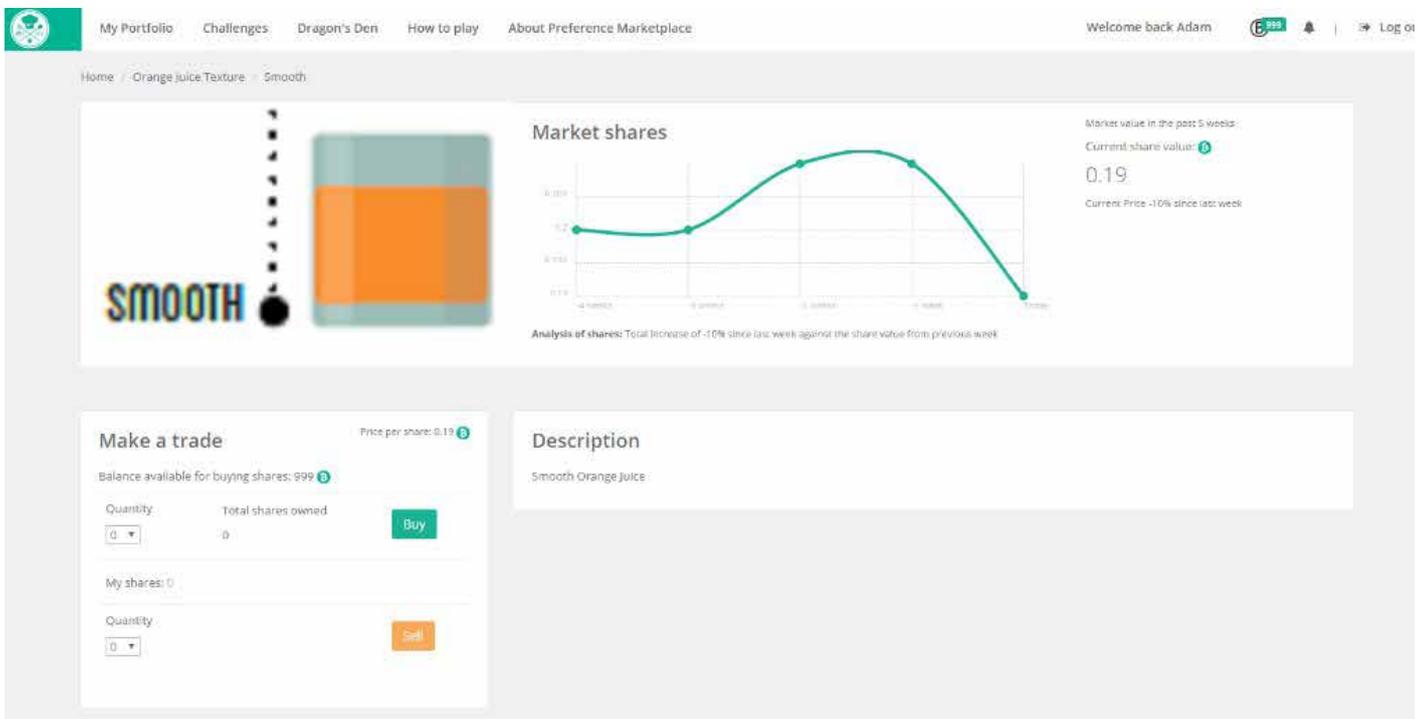


Figure 2 Open Food gaming portal

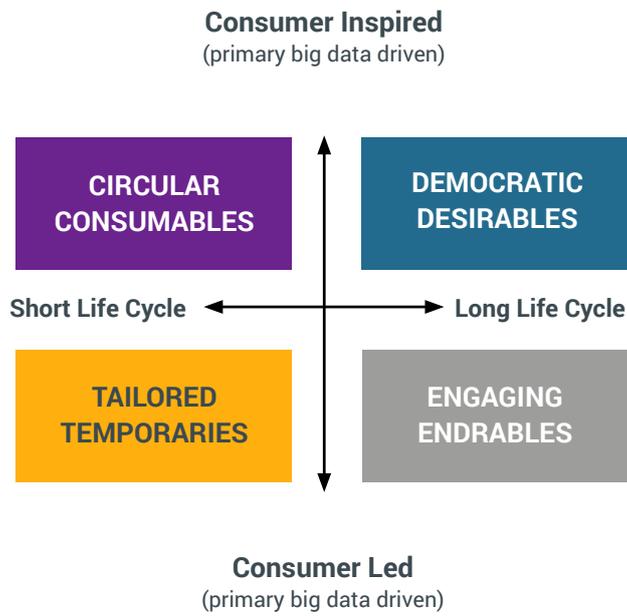


Figure 3a Business as Unusual scenarios

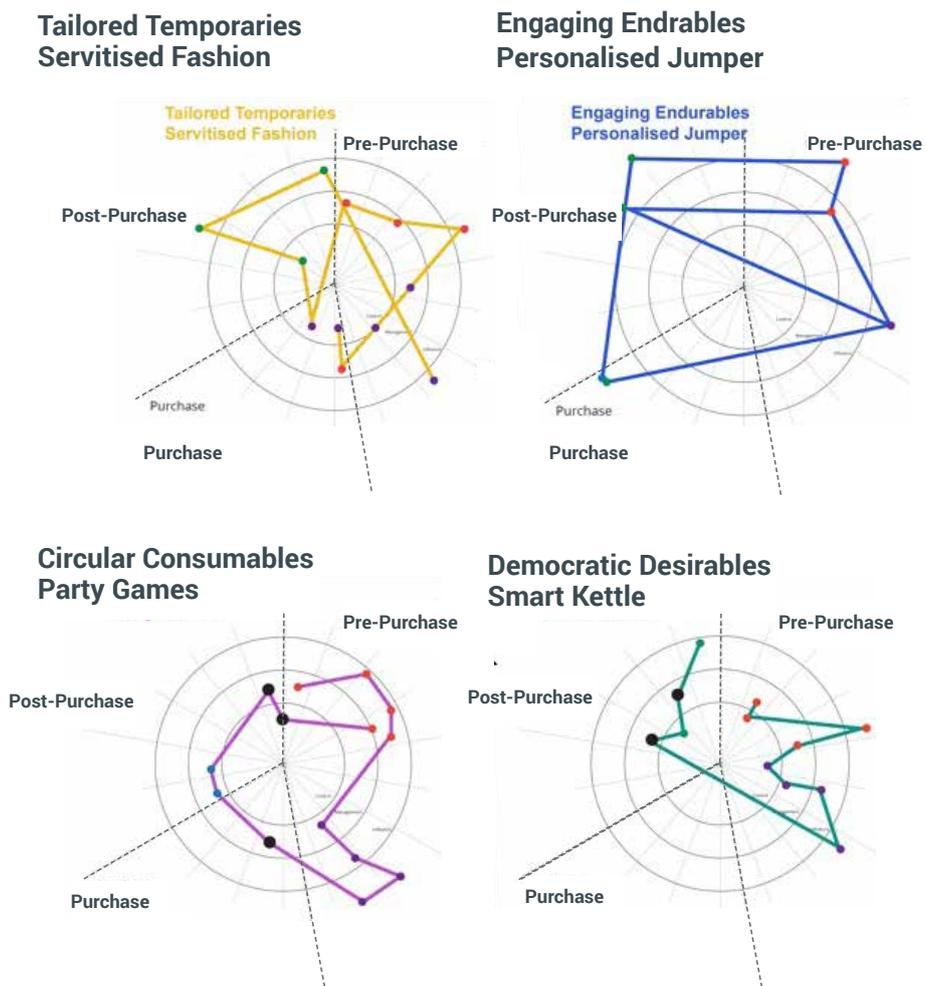


Figure 3b Business as Unusual scenarios ideal journeys

- **Envisioned** models, future work and enablers towards transforming product design and manufacturing through RdM types of organisation. As the findings from the two delve phases of this research began to build a picture of how people-product interactions can transform product design and manufacture towards RdM, four scenarios of Business as Unusual were developed (Figure 3a and 3b).

Each scenario puts forward a different vision of the future for different types of product and company. When developing the scenarios, the investigators could infer potential products and services in each of the four scenarios based on their work.

However, to test their applicability for imagining completely novel systems, we held a workshop in which these basic outlines were used to develop new product concepts. The main results of the workshop showed novel touchpoints on product-people interactions, being collaboration, responsiveness and business models the far-reaching implications on the way new products are designed.

### Impact and future research

This feasibility study was one of five feasibility studies on re-distributed manufacture, consumer goods and big data. Primarily the study investigated: How could we engage users in NPD in future re-distributed models of sustainable production and consumption? To answer this question, the study mapped the different product-people interactions to identify the challenges and opportunities for user engagement in design and manufacture, to further investigate their application to bridge the gap between users, companies and the products that they produce. To further analyse these opportunities, two different product-people interactions were delved into, to understand how new forms of engaging people across the life cycle can achieve more localised and responsive structures of manufacturing and product adoption. The results of these investigations helped to envision four contrasting scenarios of Business as Unusual, and generate conceptual business models and touchpoints to support these novel systems of consumption and production. Within all phases of this feasibility study, several specific opportunities for RdM were identified that can be used to facilitate the realisation of more collaborative, responsive business models:

- Gaming portals and algorithms for interpreting data could be utilised to actively involve people in the NPD process from the earliest stages of development, and support the production of products that are tailored for local requirements in real time. This can reduce the waste of generating unwanted products, and promote an open dialogue with end users in specific areas.
- Modes of product maintenance and recovery should be encouraged and developed to build relationships between companies and customers in the latter stages of the product lifecycles (beyond purchase). An example of this is encouraging the hacking and adaptation of products, thus handing control to the customer and enabling them to build enduring personal relationships with products. This could include both designing products to enable hacking, and encouraging adaptation through service provision and communication.
- Service models should be expanded and employed to not only support maintenance and recovery, but also to facilitate new points of collaboration with users in the early phases of design and manufacture. These should focus on enabling the customer to have more control and influence on the design and development of their products. In this way, new models of service could be enabled by new ways of collecting data from products, new ways of providing the designer as a facilitator, and new portals for collaboration and exchange.

In many cases, technological developments could be used to unlock new business opportunities for RdM, through which enhanced people-product interactions can create stronger relationships between companies and people. This will enable the realisation of models of production and consumption that are more responsive; allowing flexibility to respond and adapt to users' needs and uncertainties.

Alongside these observable opportunities, the importance of building relationships with customers, and the opportunities and challenges involved have been highlighted. Future research should therefore focus on setting up mechanisms that could inform which data is meaningful to be able to respond effectively to the intertwined desires, motivations, and needs of people within this envisioned RdM landscape.

As such, further research is needed to delve into other possible people-product interactions, and map out other plausible futures that could enable a more productive, responsive, and ultimately sustainable future

---

<sup>1</sup>Panagiotis Tsimiklis and Charalampos Makatsoris\*, (2015), "An Open Innovation Framework for Market Driven Sustainable Food Manufacturing", Food Studies: An Interdisciplinary Journal, Volume 5, Issue 3, pp.1-21

