



# A SMART SOLUTION FOR A CIRCULAR ECONOMY

## CONNECTED PRODUCT SHOWS THE WAY TOWARD SUSTAINABILITY AND A BETTER PLANET

### Background

Organizations are committing themselves to a circular economy, which serves a dual purpose: It helps organizations recover and recycle their products – which reduces input costs – and addresses climate change by making their products more sustainable. But for their efforts to be successful, they need a solution that makes it easier for all the stakeholders – the organization, their customers, and the partners – to participate.

### Challenge

A detailed study conducted by a student from [Universidad Pontificia Comillas ICAI](#) in Spain highlighted the need for ecologically safe and sustainable products. While recycling plays an important role in the circular economy, many consumers don't recycle for a variety of reasons, including lack of space, inconveniently located recycling centers and collection containers, or distrust and/or disbelief in the recycling process. Organizations needed a model that made recycling easier and more accessible for everyone.

### Solution

The first step toward this new circular model of production and consumption is to transform waste into raw materials ready for production once again. This demands producers and consumers alike rise to the challenge. Consumers represent the starting point in this model, and by making the recycling process easier, companies can use waste as raw materials or reuse them directly. Altair® SmartWorks™ IoT provided all that was needed to quickly build scalable and secure web, mobile, and edge applications, that could then iterate fast to find product and market fit. In this project it was essential to accelerate the IoT smart application development.



USER SCANS OWN QR CODE FOR AUTHORIZATION



USER SCANS BOTTLE FOR BRAND VERIFICATION



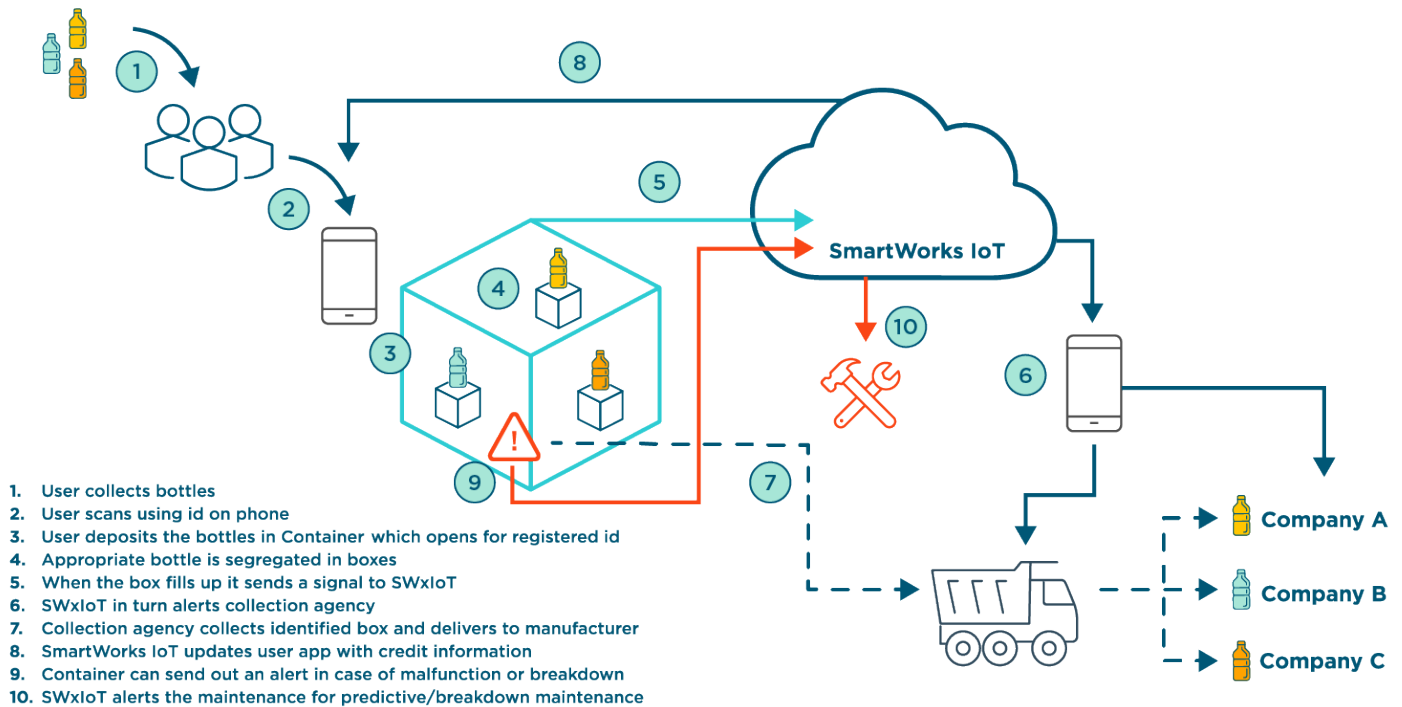
SYSTEM/EQUIPMENT VERIFIES AND ACCEPTS THE BOTTLE



USER GETS REWARDED

Thanks to the tools provided - developing, deploying, and monitoring automation at the edge is also simple for the container designed. A set of modular services was used to customize such that the solution has the configuration needed for the backend application development process. Built-in access control offers the management mechanism to set authorization rules for every piece in the IoT platform, including the tools to control external access to the application, and provision security keys.

Real time data visualizations provide each user with a dashboard tailored to their requirements that shows only the data relevant to them.



## Results

The Altair SmartWorks IoT solution helps people and organizations implement a circular economy that encompasses all stakeholders. It gives each user access to their recycling data, including accumulated rewards. For instance, if the bottles a user recycled are from one of the companies that has an agreement with the project, that user will receive a discount for that brand's products. The dashboards also display nearby containers if the user's normal recycling receptacle is full and due for collection.

The information helps the transportation company know the volume of bottles stored to decide when they need to collect them, when to empty them, and when they should optimize collection routes.

In addition, the system alerts maintenance workers about failures and the system's predictive analytics components allow them to proactively manage needs before they become problems. Lastly, the beverage company receives neighborhood-level information about recycling trends and consumption, and they'll be able to analyze area-wise consumer types so they know which of their products are the most popular in a particular area or what projects to promote to raise awareness about recycling.

To learn more, please visit [altair.com/smartworks-iot](https://altair.com/smartworks-iot)

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