

# Traceability and Circularity of Electrical and Electronic Devices and their waste



**Generalitat de Catalunya**  
Government of Catalonia

Content of the Session organized on the 20<sup>th</sup> of  
October as a Partner Event of the **European  
Green Week 2020**

EU  
**GREEN**  
WEEK

An initiative  
of the  European  
Commission

# About the session:

**Digital technologies and Innovation policies** are key elements to address our current environmental challenges. With this in mind, and in the context of the [European Green Week](#), the Delegation of the Government of Catalonia to the EU organized an on-line partner event to present an **up-coming R + I project**, co-financed with European Regional Development Funds (ERDF), to find innovative solutions in the field of **Circular Economy** and **Waste Management**. This document summarizes the main ideas of the session.

## About the speakers:

**Maria Vidal**, Head of Promotion of Valorisation at the **Waste Agency of Catalonia**, holds a Degree in Environmental Sciences and Postgraduate degree in Eco-design. She started working in waste issues in 2000, in a Catalan waste management company. In 2005, she started working at the [Waste Agency of Catalonia](#), where she is, since 2010, Head of the Department for the Promotion of the Recovery of the Circular Economy Area.

**Daniel Marco**, Director General for Innovation and Digital Economy at Government of Catalonia, is an Electronic Engineer from Polytechnic University of Catalonia and holds a Master in Business Administration from ESADE Business School. He is currently Director General at the [Department of Digital Policies and Public Administration](#), where he has held other responsibilities. Previously he developed his career in the private sector in the field of strategic consulting in the sector of ICT and in R & I.

**Daniel Lopez**, Director of Digital Innovation Management Office at **i2CAT**, is a Computer engineer and holds a Postgraduate in Advanced Telecommunications Systems, an Executive MBA and a Master Degree in Innovation and Digital Transformation. Previously to [i2CAT](#), he has worked as corporate manager of innovation and technological planning and as IT Director in different international companies

**Jean-Benoît Bel**, Senior Project Manager at Association of Cities and Regions for Recycling and Sustainable Resource Management ([ACR+](#)), was in charge of the moderation.

### More information about the session at:

**Delegation of the Catalan Government to the EU**

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# R + I Policies in the Government of Catalonia

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Due to its classification within the EU Cohesion Policy, Catalonia has to use 80% of ERDF for innovation actions. With this in mind, the Catalan Government created the **Program in Advanced Digital Technologies (ADT)**, an initiative to develop new solutions to improve the efficiency of public administration and innovate by using advanced digital technologies. To come up with these solutions, the different Departments of the Government of Catalonia identified **challenges and ideas** that could be addressed through this program. After a public consultation, these ideas evolved into **project proposals**, which will be implemented in the coming years (being the Project of *Circularity and Traceability* one of them).



The ADT program has followed a **mission-driven** approach, based on the strategic objectives of the Government and its Departments, and the **Ris3 quadruple helix model** (involving citizens, companies, research centers and administration). This program aims at transferring the results achieved by the public sector to the private sector so to create economic growth and achieve global leadership (**dual – use**). This program also represents the efforts to boost and coordinate the different **Research and Innovation actors of the ICT sector** to transform Catalonia into a European and global hub in transformative digital technologies for the economy and society.

## Problem and need the project proposal wants to address

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**Electric and Electronic Equipment (EEE)** contain valuable, scarce and strategic components that should be **preserved and reintegrated into the manufacturing chain**, especially taking into account that some of these compounds are not available in the EU and the sources of some of these raw materials are in countries that are in conflict. Additionally, the production and consumption of EEE and therefore, **their waste (WEEE), continues to grow**.

Although WEEE management regulations state that the manufacturers are responsible for financing the management of these devices once they become waste, it often goes beyond legal channels, exported to third countries and / or managed by informal collectors<sup>1</sup>. Aware of this problem, European, and later, Spanish regulations have provided for greater controls in the management of WEEE, which include, among others, **new information requirements from manufacturers to waste treatment agents**.

**In Catalonia, there is a wide network of WEEE treatment agents**, with enough potential to achieve high efficiency in the separation and, in some case, reuse of the WEEE valuable components. However, **this potential is diluted if waste treatment agents do not have good information** about the composition of the devices and the way to treat them once they become waste.

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<sup>1</sup> These collectors may not have the authorization and only extract the valuable components while leaving the rest on public spaces and polluting the environment.

## Description of the proposal

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The aim of the project is to demonstrate the feasibility of having a **system to trace and locate the EEE** marketed in Catalonia from the moment of their manufacture. This traceability would include accurate **information about their strategic components**. The project also aims to create a **chain of trust** so that the distribution of the financial resources that manufacturers have to provide for the proper management of WEEE takes place honestly and safely among the different agents involved. In this project, Advanced Digital Technologies should allow to:

- **Identify**, by electronic labeling or similar, the EEE from the manufacture.
- **Trace** the condition and location of the devices during their useful life.
- **Trace** the condition and location of the appliances when they become waste
- **Give access to the information** on the EEE that allow a correct management of the WEEE
- **Identify and trace** the location of the strategic components contained in WEEE.
- **Create a chain of trust** (i.e, *Blockchain technology*) for the transmission of economic resources provided by producers for the proper waste management.

To make this project a success, it is essential to have the **active collaboration of the agents involved throughout the chain**. Besides, taking into account that the EEE manufacture often takes place in countries outside the EU, the project must take into account the future viability of the application and **extrapolation of the proposed technologies for all existing EEE manufacturers**.

## Implementation of the Project

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[i2CAT](#) is a non-for profit Research and Innovation Centre that promotes mission-driven knowledge to solve business challenges, co-create solutions with transformative impact and empowering citizens through open and participative digital social innovation. **It is the Centre responsible for coordinating and implementing part of the project**. The main challenges i2CAT will have to address to develop the solutions are:



- **The creation of an environment to improve awareness and involve the manufacturers and citizens** to accept and execute their responsibilities as producers and consumers. This could be solved with social innovation through gamification (points, discounts, reputation, taxes...).
- **The tracing of devices and their components from the beginning**, which could be solved by pushing for sustainable design and with the collaboration of the manufacturer.
- **The creation of the right relationship between all stakeholders** with fairness, transparency, security and, at the same time, safeguarding and protecting industrial secrets. A possible solution could be with *blockchain technology*, a robust but simple system, easy to use by all ecosystem members.
- **The identification of hazardous components and detection of strategic components for a second life or recycling**, which could be solved through AI and Computer Vision as well as a Chemical Detection Arc for components and materials.



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