

# EMERGENT CONFIGURATION FOR IOT SYSTEMS (ECOS+)

Supporting users to easily achieve their goals in changing IoT environments.

## WHY?

It's not always straightforward to use things and devices that are connected to the internet. There are often several devices in one environment, which together form a "system". This system is (re)configured when, for example, you move into another environment, or when your smartwatch-equipped friend enters the room.

How can you be made aware of what services a particular configuration of devices offers? And how can the system be made aware of what goal you are trying to achieve? The aim of the ECOS+ project is to help users get the most out of the Internet of Things (IoT) by supporting them to easily achieve their goals in changing environments

## WHAT?

Lisa is about to give a presentation at work. She enters a meeting room that she has never been into before. The room is equipped with temperature and light sensors, curtains and lights actuators, an LCD screen, and a projector.

Lisa expresses her goal – to give a presentation – through an application installed on her laptop. The application interprets her goal and a set of "things" that will achieve her goal are automatically chosen: The projector is turned on, the curtains are drawn, the lights are dimmed, and the temperature is lowered to compensate for the heat from the projector and the people in the room.

During her presentation, the projector suddenly turns off. The failure is automatically detected and Lisa is proposed to continue the presentation using the LCD screen.

What we have described above is what we call an Emergent Configuration (EC). We define an EC as a set of "things" (any connected object or device) that connect and cooperate temporarily to achieve a goal defined by a user.

## HOW?

There are many research challenges to this. For example, how do you design emergent configurations that achieve the correct goal in a given context? And how should the mechanism for feedback from the user work?

**Project partners:** Data Ductus, Sigma Connectivity, Sigma Technology and TerraNet  
**Application area:** SMART LIVING, SMART TRANSPORTATION, SMART LEARNING  
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## USE AND ABUSE?

The vision in the ECOS+ project is that IoT systems should take initiative and make decisions for users. But, where do you draw the line between what is an acceptable vs. an invasive level of system autonomy? This is a challenge.



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