

## Digital Single Market

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# Housework is a cinch, the social way

Imagine buying a 3D printer and deciding to produce a teacup. You would soon realise that making a printer do this task is rather complex. You could decide to devote a couple of months to program the printer by yourself. But the social solution is cheaper: via the Web, ask someone who knows more than you to provide your machine with the list of instructions. If you are lucky, you may be able to accomplish the task in 20 minutes.

Take another example - the ability to control a dishwasher through the internet, allowing you to wash dishes exactly as you want. For instance, you would be able to limit water consumption and the amount of detergent used without a loss of quality - the dishes would be clean.

Both examples would represent instances of a 'social network of facts', says the team behind the EU-funded Social&Smart project. Their concept is of a social network for sharing physical processes in place of documents, and feasible nowadays due to the increasing support available through the Internet of Things. The Social&Smart project, which began in November 2012, aims to make this concept a reality by developing a physical and computational infrastructure that allows people to control their household devices and appliances through a network.

Users would be able to virtually inject intelligence into their appliances by employing the social network - rather than by embedding them with autonomously cognitive chips as you would a robot - to develop finely tuned instructions that can then be sent to control the appliances.

This infrastructure would enable the social network to produce "recipes" of computational intelligence to be dispatched to household appliances grouped in homes through a domestic local area network (LAN). A recipe in this case would be a set of scheduled, possibly conditional, instructions to be managed by home-based middleware so it could be transmitted through suitable protocols to the right appliances for doing everyday housekeeping tasks.

The infrastructure would use household appliances as internet terminals (in the future a 3D printer could be considered as an essential home appliance, just like a dishwasher). People would join the network because they wish to accomplish their housekeeping tasks, and profile themselves in terms of the appliances they have in their home and according to their personal preferences for completing these tasks.

In Social&Smart terms, a regular network transaction would consist of a “task”, “recipes”, and “feedback”. A task would be issued by a member of the social network, which would generate a recipe or list of commands for a specific appliance. Generating recipes would be the core business of the networked ecosystem. Feedback to the social network is produced by both user and appliance in relation to the execution of the recipe. The feedback of the social network’s members, more or less experienced, would feed into a database of open source knowledge, which they may proactively share and refine with other people who own the same or other smart appliances.

## KEEPING DECISIONS IN USERS’ HANDS

Control of private information would remain in the hands of users. If a user requests a recipe, he would not want the information to be transferred to a third party, possibly an appliance manufacturer. Rather, a user would ask the social network for a recipe compliant with their specific task and personal preferences, for example in terms of green goals or wash quality, local environment conditions, and perhaps electricity rates. The final command is then made by the user, who decides whether or not to accept, modify or simply reject the recipe suggested.

## INTELLIGENCE AS THE BASIS OF SUGGESTIONS

To issue valuable recipes the network requires a suite of computational intelligence tools, able to interpret requests, mine similar ones from a database and produce a new recipe on the basis of the feedback log. It’s a networked intelligence processing distributed information coming from members.

## CONCRETE IMPLEMENTATION, NOT SIMPLY CONCEPTS

To test their concept the Social&Smart team has connected a washing machine in a lab at Italy’s University of Milano. It responds to network requests such as “I want to wash blue cotton trousers stained with grease.” The washing machine will also soon be connected to the CARTIF Technology Centre in Valladolid, Spain. A bread-making machine, also located in the Milano lab, is set up to respond to requests such as “I’d like a crusty loaf of white bread, not too soft.” The bread-making machine will also be connected to Malmö University in Sweden.

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