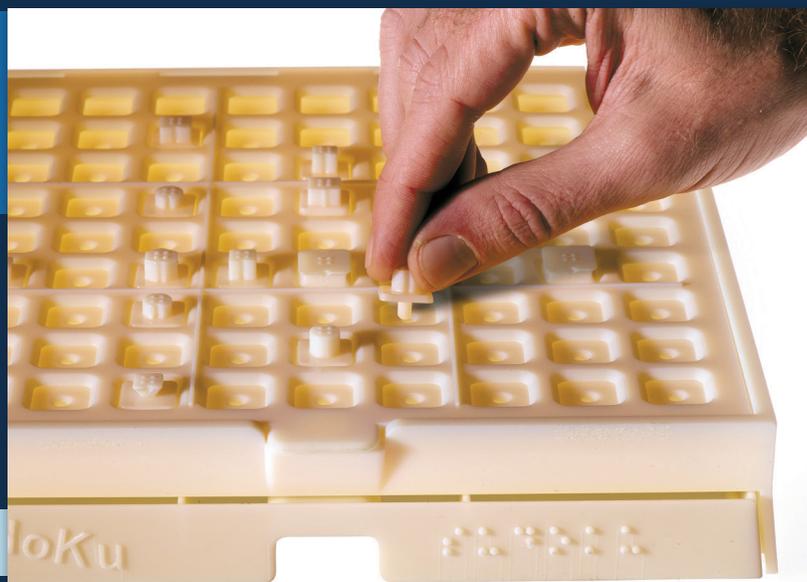


# TOUCH TEST



## Spanish National Organization for the Blind Accelerates Tactile Testing with 3D Printing

*"We can now test and make changes in a significantly shorter amount of time."*

— Gema Carrillo de Albornoz Nuño

*The Objet 3D Printer produced prototypes, like this Sudoku game for the blind, that could be tested tactilely.*

The Spanish National Organization for the Blind (ONCE) is a non-profit corporation focused on improving the quality of life of the blind and people with visual disabilities throughout Spain. Run democratically, it also works hand in hand with the Spanish government through the Ministries of the Economy, the Budget, Work and Social Affairs and the Interior.

A key responsibility for the ONCE Centre for Braille Research, Development and Application team (ONCE-CIDAT) is to design and manufacture special devices that help resolve difficulties in the daily life of people with a visual disability. Spain has seen increased demand for these products such as a keyboard with Braille, a Sudoku game with numbered pieces written in Braille and a special computer mouse.

The manufacturing quantities for these products are smaller than regular products and the models have to be tested tactilely since they will be touched rather than seen. As a result, techniques usually used only for manufacturing finished goods have to be used early in the design process. These more expensive modeling processes resulted in many products being withdrawn from production.

### A New Solution

Over time, ONCE-CIDAT installed a variety of tools to improve the various phases of production. But the need to manufacture prototypes more time and cost-efficiently remained its biggest challenge. Designs sent to service bureaus for model creation meant changes were expensive and time-consuming.



*ONCE-CIDAT produces a wide range of products for the visually impaired, like this Sudoku game.*

ONCE-CIDAT realized that it needed a 3D printer in-house to create tactile-realistic models for testing. The 3D printer needed to be easy to use in an office environment and fit the available space. It needed to be capable of producing both rigid and flexible parts with sufficient mechanical properties both to develop prototypes and to make end-use parts for short production runs.

After conducting a thorough study of rapid prototyping technologies, ONCE-CIDAT chose the Objet® Eden350V™ 3D Printer for its accurate model creation and small footprint.

### 3D Models Eliminate Design Bottlenecks

“Before purchasing the Objet 3D Printer, we had to wait a long time for delivery of prototypes from outside service bureaus,” said Gema Carrillo de Albornoz Nuño, manager of the design office. “The 3D printer eliminated our biggest bottleneck: delays in modifying intermediate prototypes. We can now test and make changes in a significantly shorter amount of time.”

In addition to the Sudoku game, ONCE-CIDAT has developed many other products using prototypes such as housings for electronic devices, parts for mechanical assemblies, games and parts made of elastic materials. 3D printing enabled immediate design confirmation, resulting in a faster and more effective decision-making process.

An in-house 3D printer allowed blind testers to test ONCE-CIDAT’s models immediately, rather than waiting for the prototype to come back from the 3D printing agency. The testers have been very satisfied with the quality of the pieces, stating that their high expectations of accurate shape and feel were met.

Testers stated that the prototypes are also stronger than previous prototypes and that the thickness of the shell, being greater, used to make prototypes weaker, to the point where the prototype shells would break. This does not happen with models developed with the Objet 3D Printer.

With its in-house 3D printer, ONCE can design more accurate models faster and more cost-effectively, and thus deliver the products to the visually impaired more rapidly.



*The high accuracy of the Objet 3D Printer has greatly improved production of tactile-realistic models that visually impaired people can test.*



*The Objet 3D Printer has also substantially improved the product development decision-making process.*

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