

## Bandit solves chip problem

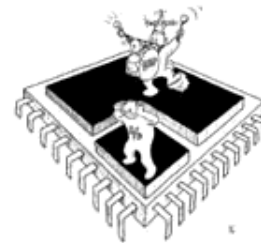
**An old research dream is about to come true. To place an entire system on a single silicon chip.**

A three-year European program of research cooperation was started recently to solve problems caused by disturbances that arise when different components are packaged in the same capsule. Called the Bandit Project, the program is based on research cooperation between Ericsson, IMEC and the Catholic University of Leuven, in Belgium.

The problems are far from simple. Different components interfere with each other's operations, for example. The pulsed signals from the digital signal processor, created by turning the power on and off, can cause disturbances in analog sections of the components that receive incoming analog radio signals and convert them to digital signals.

The most serious disturbances are those which propagate in the actual substrate. Today's increasing use of high frequencies exacerbates the problem by disrupting more than just low frequencies. Another distinctive quality of the one-chip technology is that it leaves no margin for error. Everything must be done correctly from the start.

"The project has several objectives," says Peter Olanders, manager of radio technology research at Ericsson Radio. "Project directors intend to study a concrete case. The researchers have selected products for the present WLAN wireless data network. They plan to pinpoint and analyze the disturbances that arise and try to develop methods that will reduce digital disturbances and the sensitivity of AD converters to transmission interference."



The research project will seek solutions to the very daunting challenge of integrating "everything" on a single chip. It will try to find new methods to eliminate transmission interference and disturbances between analog/ digital converters and digital signal processors.

Illustration: Jens Olow

The ultimate objective of the project,



The starting shot has been fired for the European Bandit Project, which aims to fit an entire system on a single chip; Ericsson will be represented by Svante Signell and Tony Fondén. Photo: Kurt Johansson

The ultimate objective of the project, however, is to develop generally applicable methods to integrate components in a single chip - a technical advance that would greatly benefit Ericsson.

The Bandit Project is one of several ongoing EU projects designed to establish a position of European leadership in Information Technology (IT).

"On the whole, Europe is probably the world leader today. It's essential that we maintain our lead in IT, from circuit boards to complete systems," Peter Olanders continues.

Ericsson will be represented by Svante Signell and Tony Fondén, who will work together on the Bandit Project. Ericsson's expertise will focus on systems know-how and verification, while IMEC will bring its special skills in Digital Multirate. The University of Leuven, in turn, offers competence focused on AD converters.

"Although we may not develop any actual products in the Bandit Project, we shall certainly build chips that can be used in realistic tests and measurements of various transmission disturbances," Tony Fondén says. "We shall try to tackle relatively difficult problems and, for this reason, we have selected the preliminary standard for WLAN."

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