

 Content archived on 2024-05-27



# Object-oriented co-design and functional test techniques

## Results in Brief

### Executable specifications for a higher level of abstraction

Aiming to bridge the gap between the design complexity of embedded software/hardware components and the designer's ability to grasp their complete behaviour, the level of abstraction in designs has been raised. The overall aim is a rapid increase in designer productivity, matching the increase in design complexity.



DIGITAL ECONOMY



© Shutterstock

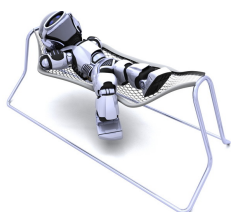
As the complexity of electronic systems constantly increases and at the same time design schedules become tighter, interest in new electronic design automation (EDA) methods and tools is growing. An interesting development is the adoption of executable specifications as a potential replacement for conventional written specifications, which promise to provide unambiguity and completeness.

For designers to be able to develop such executable specifications, the European project ODETTE introduced object-oriented methods into the design of digital hardware for embedded software/hardware systems. While objected-oriented methods have been a matter of course in software development for a long time, it was not possible to use them in designing integrated circuits until recently.

With the definition of object-orientated extensions to hardware description language SystemC, the development of synthesis tools supporting the design of integrated circuits at high level of abstraction was rendered possible. The high level synthesiser proposed by project partners at OFFIS laboratories supports the transition from an algorithmic-level specification of a digital system to a register-transfer-level (RTL) structure, implementing its behaviour. The resulting hardware model features the same simulation results as the input model and, more importantly, it can be processed by current EDA tools.

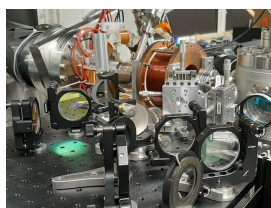
The extended SystemC synthesis subset contains language concepts that hold the promise for higher productivity of embedded hardware/software components. Furthermore, the synthesiser's flexible architecture allows for future enhancements, which even include support for additional data types that were not originally considered, as well as for alternative input language subsets.

## Discover other articles in the same domain of application



[Dream-like processes could help build more human-centric robots](#)

30 September 2019



[Ultrafast laser pulses shine a light on future computing](#)

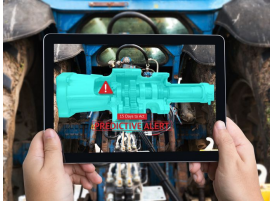
29 January 2021





## Reservoir computing for multitasking sensors

27 March 2019



## An AI-powered platform for predictive maintenance solutions

25 October 2021



### Project Information

#### ODETTE

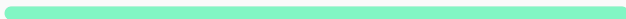
Grant agreement ID: IST-1999-11476

[Project website](#)

Project closed

**Start date**  
2 May 2000

**End date**  
31 July 2003



#### Funded under

Programme for research, technological development and demonstration on a "User-friendly information society, 1998-2002"

#### Total cost

€ 5 703 050,00

#### EU contribution

€ 3 536 629,00

#### Coordinated by

KURATORIUM OFFIS E. V.  
 Germany

**This project is featured in...**

RESEARCH\*EU MAGAZINE



**Results Supplement No.  
006**

RESEARCH\*EU MAGAZINE



**Results Supplement No.  
003**

RESEARCH\*EU MAGAZINE



**Results Supplement No.  
021**

RESEARCH\*EU MAGAZINE



**Results Supplement No.  
004**

**Last update:** 31 March 2008

**Permalink:** <https://cordis.europa.eu/article/id/83916-executable-specifications-for-a-higher-level-of-abstraction>

European Union, 2025

