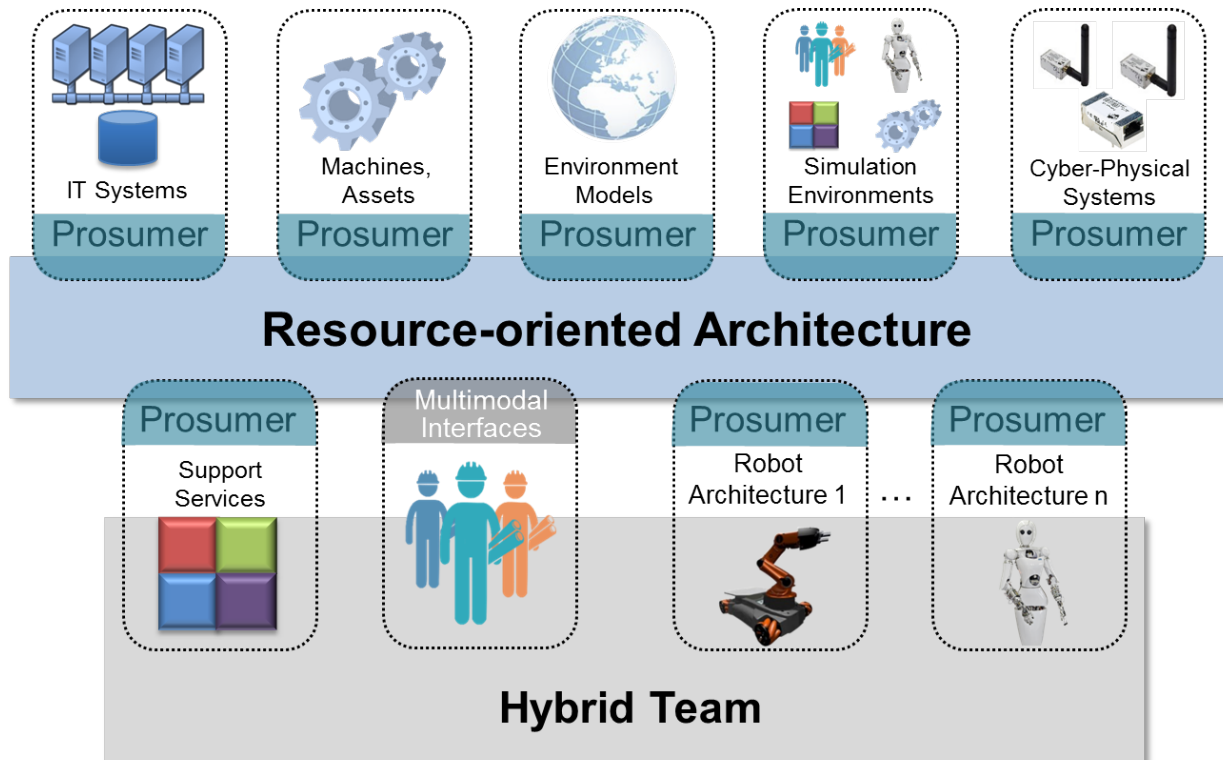


Hybr-iT

Hybrid and intelligent human-robot collaboration – hybrid teams in versatile, cyber-physical production environments



The aim of the Hybr-iT joint research project funded by the Federal Ministry of Education and Research (BMBF) is to intensify flexible collaboration between humans, robots, and production systems. An innovative approach in Human-Robot Collaboration (HRC) is taken to design participatory work structures: Self-organization and communication by team members will be interlinked and effectively coordinated with traditional production scheduling. The project's official kick-off event took place at DFKI in Saarbrücken on January 11, 2017.

Hybr-iT provides a substantial contribution towards achieving future requirements for conversion capability and optimal capacities in manufacturing and assembly plants. INDUSTRIE 4.0 promises to make production more economically profitable – even for low volume runs. The foundation of production technologies are the extremely versatile manufacturing systems that can

flexibly and quickly adapt to constantly changing requirements. Although available production systems are already largely digitalized, networked, and even partially capable of conversion, they are not adequately equipped for the actual collaboration between humans and robots. In addition to these manufacturing challenges, Hybr-iT addresses the issues of socio-technical controllability.

Hybr-iT focuses on the development and industrial testing of hybrid teams, in which humans and robots work together with software-based assistance systems in intelligent production environments. Hybr-iT researches and evaluates the components required for planning and optimizing hybrid teams in an industrial context – in terms of their integration in existing IT and production systems and as necessary for their control in a production operation.

Contact:
DFKI GmbH

Project management:
Phone:
E-mail:
Website:

Dr. Anselm Blocher
+49 681 - 85775 - 5262
Anselm.Blocher@dfki.de
www.hybr-it-projekt.de

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Prof. Dr. Wolfgang Wahlster, overall project manager in Hybr-iT and CEO of DFKI explained further: "We take a holistic view of the individual disciplines of Human-Robot Collaboration, intelligent planning environments, assistance systems, and knowledge based robotics. The human workers in the production processes should be assisted by robots, making teamwork safer, more efficient, and ergonomic for people."

From an IT perspective, this will involve heavily distributed systems with very heterogeneous sub-systems (such as plant and robot controls, safety, logistic, database, assistance, tracking, simulation, and visualization systems), which are implemented together in a comprehensive resource oriented architecture (ROA).

The results of the Hybr-iT project are to be applied and evaluated in the production processes of the automotive and aviation industries that involve a high level of manual assembly work.

Together with the industrial partners, DFKI will implement two evaluation scenarios for the demonstration of hybrid teams in the automotive and aerospace assembly. Several DFKI research groups work together in the project Hybr-iT. The Robotics Innovation Center has its focus on the development of safe and intuitive human-robot collaboration and the therefor required robot skills.

Duration: 11/2016 – 10/2019

Partners:



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