FIMA

Forum for Intelligent Machines

Network for research of mobile work machines

www.fima.fi

- Start up in May 2006
- Over 40 member companies, universities and research institutes
- Annual research volume of approx. 2 MEUR
- Project portfolio of 4-6 projects
- Contribution of 20 full-time researchers
- Over 500 participants in events annually

FIMA
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FIMA as a developer network

- launches and finances research and development projects based on a strategic research agenda
- outlines the research partners to carry out the projects
- promotes cooperation with international partners
- provides knowledge on global research and development trends in the field
- arranges project workshops and technology conferences

FIMA is an association for mobile work machine manufacturers, specialist companies, system integrators and research institutes. It promotes and outlines strategic, precompetitive research in the field in accordance with industry's requirements.

The mobile work machine industry in Finland equals approximately 5 billion euros and 20,000 employees, which is about a quarter of the entire Finnish mechanical engineering industry. Many Finnish mobile work machine manufacturers are global market leaders in their field due to strong technological competence and leading edge research.

Work machines manufactured for different purposes and operating environments share common technology and basic solutions. **FIMA**'s idea is to bring the best specialists together to define the common needs of the industry and plan the necessary measures to support the competitiveness of the companies.

FIMA's first class partners

FIMA's target is to find the best experienced partners in the main research fields. **FIMA** is open to building international cooperation with similar networks and companies in the field of mobile work machine automation.

Today, **FIMA** is engaged in close cooperation with GIM *(Centre of Excellence in Generic Intelligent Machines)*, formed by teams of researchers in two Finnish universities. GIM carries out internationally esteemed research in different fields: hydraulics, machine automation, electric drives, software systems, wireless controls and field robotics. Other research partners include VTT *(Technical Research Centre of Finland)*, different universities and research institutes in Finland.

Major benefits for members

FIMA provides members with opportunities to take part in and influence pre-competitive research projects around challenging topics.

Members receive knowledge of the technological development, research and future trends on the field and gain information on the product development needs of the industry. Networking with competent partners is also an essential benefit.

FIMA's mission

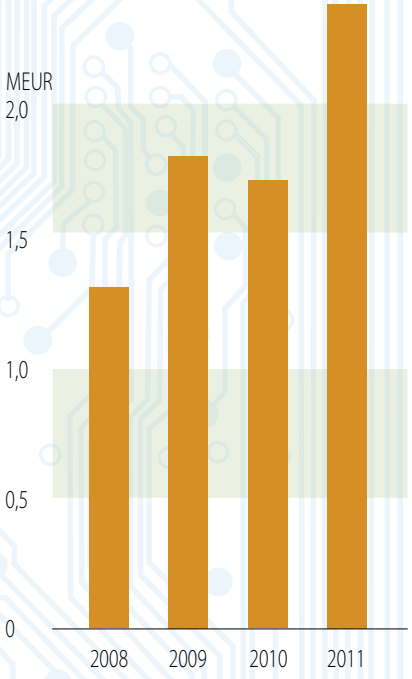
is to develop a significant number of new technologies and solutions to improve the efficiency, safety and controllability of work processes carried out with mobile work machines or machine systems and to enable work processes that wouldn't be possible without these new solutions.

Research themes

- agile design processes
- energy efficiency and hybrid work machine
- driver assistance automation in mobile work machines
- positioning, navigation and environment modelling
- task planning and multi-machine fleet management
- safety concepts of autonomous work machines
- human and machine co-operation in future worksite
- new human-machine interactions and remote controls
- architectures of embedded systems in machine systems

Research challenges

- improving productivity of a worksite through collaboration of a human and an automated work machine
- getting unmanned work machines to work together as an efficient group
- building an intelligent machine to fulfil the most demanding work missions
- mastering the control of increasingly complex machines and machine groups
- making autonomous machines faster with the help of navigation, perception and environment modeling
- shortening the product development and testing time by using virtual technology
- reaching emission targets and increasing efficiency via electrical drives and hybrid technology



FIMA research volume

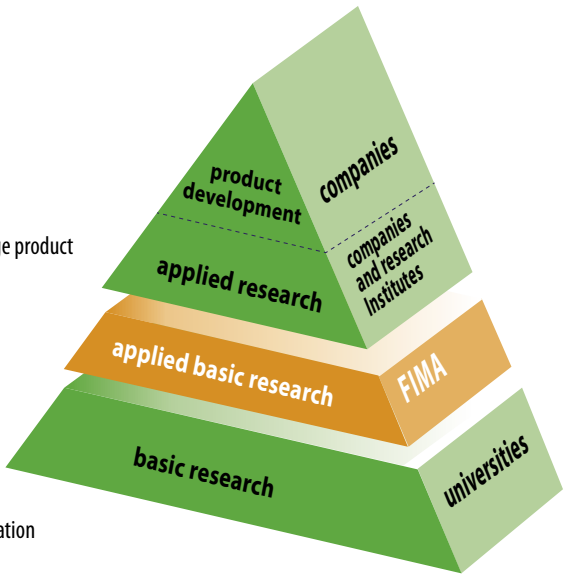
Projects on focus

FAMOUS
Future semi-autonomous machines for safe and efficient worksites

RelSteps
Methods and tools for designers to manage product dependability in early design phase

MOTTI
Control architecture and communication model for multi-machine systems

TOLKKU
Data mining methods which process the measurement data into useful information



FIMA's precompetitive applied basic research develops common technology for mobile machines.

FIMA's vision

is to transform Finland into the world's leading developer and applier of innovative, intelligent work machine solutions in collaboration with experts in the field.

Companies

Atostek Oy
Avant Tecno Oy
Bronto Skylift Oy Ab
CrossControl Oy
Creanex Oy
Cybercom Plenware Oy
DA-Design Oy
Epec Oy
Espotel Oy
Exertus Oy
Insinööritoimisto Comatec Oy
John Deere Forestry Oy
Cargotec Oyj
Kilosoft Oy
Kone Oyj
Konecranes Oyj
Mantsinen Group Oy
Metso Oyj
MeVEA Oy
MSc Electronics Oy
Navitec Systems Oy
OptoFidelity Oy
Remion Oy
Rocla Oy
Rautaruukki Oyj
Sandvik Mining and Construction Oy
Space Systems Finland Oy
Technion Oy
TTS Liftec Oy
Wapice Oy
ZenRobotics Oy

Research members

Aalto University School of Electrical Engineering
Lappeenranta University of Technology
Tampere University of Technology
MTT Agrifood Research Finland
VTT Technical Research Centre of Finland

Technology coordinators

Hermia Oy
Frami Oy
Teknologiakeskus Techvilla Oy

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