RAAS – Rethinking Autonomy and Safety

Examples of Domains where Autonomous Systems are Proliferating



RAAS – Rethinking Autonomy And Safety

University of Vaasa

- Interdisciplinary innovation ecosystem for autonomous systems research and development
- One-Stop-Shop access to world-class research talent
- Focus domains: 1) Maritime, 2) Land transport,
 3) Mobile work machines, and 4) Drone systems
- More information: <u>www.autonomous.fi</u>

Metropolia

ČCentria

UNIVERSITY OF HELS

UNIVERSITY OF IYVÄSKYL

RUN AMMATTIKORKEAKOUU

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Basic Facts About RAAS

Funding in 2018–2020 Partly funded by the Ministry of Economic Affairs and Employment of Finland (TEM)

Our vision One-Stop-Shop access to top research and development in autonomous systems

Our mission Solving of systemic and holistic challenges

Educational aim Securing the availability of skilled professionals



18

Finnish research organisations

> 10 International research partners

RAAS Research Task Force Main Contacts and Deputees

Research Task Force	Main contact	Deputy
Business	Magnus Hellström / ÅAU	Autonomous Work Machines Business : Miia Martinsuo / TAU Autonomous Maritime Business: Antti Saurama / UTU Autonomous Land Transport Business: Jukka Laitinen / VTT Drone Business: Timo Lind / VTT
Ethical, Acceptability, Desirability and Impact Assessment	Virpi Roto / Aalto	Mika Nieminen / VTT
Legal	Henrik Ringbom / UiO	Mika Viljanen / UTU
Artificial Intelligence & Data-Intensive Analytics	Moncef Gabbouj / TAU	Ville Kyrki / Aalto
Operational Design & Development Processes	Eetu Heikkilä / VTT	Johan Lilius / ÅAU
Situational Awareness & Intelligent Control	Laura Ruotsalainen / UH	Kalevi Huhtala / TAU
Connectivity	Tuomo Hänninen / UO	Tiia Ojanperä / VTT
Cyber security	Jouni Isoaho / UTU	Sami Lehtonen / VTT
Remote Monitoring and Operation & Reliability and Maintenance of Autonomous Systems	Mirva Salokorpi / Novia	Kari Tammi / Aalto

RAAS Activities (1/2)

Round table sessions

- One day "think tank" especially for SMEs on development challenges, finding partners, etc.
- Project accelerator service
 - Short-term effort to define basic concept and consortium for multilateral R&D project entity



Innovation challenges

- "Hackathon" competition leading to piloting of winner solution
- Startup/SME teams + researcher teams



RAAS Activities (2/2)

Securing the availability of skilled professionals

- Doctoral school of Industrial Innovations for autonomous systems
 - Organized on national level with special role for each university
- Re-education of adults, life-long learning possibilities
- Building strong links to business-relevant testbeds
 - Company, ecosystem, city and research testbeds
- High-profile seminars and workshops
- Keeping up-to-date, via e.g., newsletters,
 - Possibilities for cross-domain benchmarking
- Recruitment, course work and education/training possibilities from the involved universities



Key on-going RAAS ecosystem preparations

- Finnish drone accelerator
 - Piloting of drone concepts and business models
- Smart forestry
 - Data, automation & situation awareness in forestry

SYSTECO

- Autonomy-driven systemic change in port and logistics chain ecosystems
- + Many project preparations for the EU Horizon 2020's Security, ICT and SESAR calls
- Interested in joining these ecosystem-type project preparations? Contact <u>hannu.karvonen@vtt.fi</u>







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Future RAAS activities

- Special attention will be paid to:
 - 1. Coordination of the education and training of autonomy professionals
 - Digital teaching methods/platforms, online education, and micro-credentials
 - A big challenge: sufficiency of experts and keeping up to date with knowledge in the rapidly developing area
 - 2. Expertise and services to help companies certify and demonstrate the safety of autonomous AI solutions to authorities
 - Special focus area: simulation-based verification, validation, and qualification





Building trust in autonomous mobility Al

Systematic way to build evidence-based trust



Commission's strategies for data and Artificial Intelligence (Feb 19, 2020): "The EU's approach to artificial intelligence (AI), based on trust and excellence, will give citizens the confidence to embrace these technologies while encouraging businesses to develop them.... authorities must be able to check AI systems as they check cosmetics, cars or toys..."

Citizens' acceptance and appropriate trust (& desire) in autonomous mobility solutions

Trust building process

Public authorities' capability to boost citizens' trust & positive regulatory guidance

Regulatory compliance process: Evidence through virtual & physical testing

RAAS as a booster of citizen–authority–industry trust building

Human-centric systems engineering process for development & validation

Industry's need to develop safe, attractive and efficient autonomous mobility solutions



Case 1: Mobile work machines & urban mobility E.g., autonomous machines meet other vehicles on public roads



Case 2: Marine industry

E.g., safe port-to-port autonomy or autonomy-ready VTMS



Do you want to join or have comments/questions?

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