



# Electric Vehicle System & Technology Development in Finland

## EVE Programme 2011-2015

HEV meeting Vancouver

24.10.2014

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# Tekes provides funding for the development of innovations that aim at creating growth and new business

- R&D and innovation projects in companies
- Research projects at universities and other research organisations
- International growth of young companies

# EVE – Electric Vehicle Systems

## Need

- Innovation of new business in the growing field of electric mobility
- Creation of international partnerships for electric mobility business

## Offerings

- Well established high quality development environment
- Really demanding testing conditions for all purposes

## Users

- Enterprises, universities and research institutes
- Public authorities developing electric mobility infrastructure



## EVE

- Electric Vehicle Systems programme 2011-2015
- Budget 100 MEUR
- 100 + participants
- 80 projects ongoing
- Part of Smart Living focus area of Tekes
- Strategic partnership possibilities for technology and service developers
- [www.tekes.fi/programmes/EVE](http://www.tekes.fi/programmes/EVE)

# EVE consortia 2014-2015

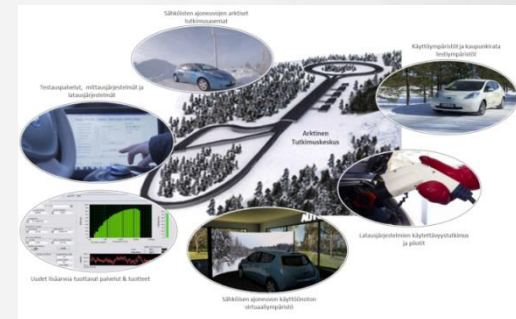
## ▪ ÄSL-Smart Electric Traffic (Eera):

- ✓ International business creation in cooperation with Finnish SME networks
- ✓ To develop services and ecosystem for electric traffic
- ✓ Demonstration, testing and R&D in energy systems and smart grids
- ✓ To create advanced home market for traffic integration and smart traffic



## ▪ EVGA-Electric Vehicles goes Arctic (Centria)

- ✓ Four companies and Centria cooperation
- ✓ To ensure Finnish companies' future role in testing and validation services for EVs, heavy machinery, systems and components
- ✓ To increase international business in this sector

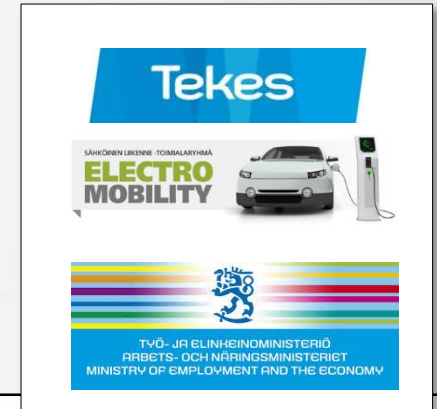


## ▪ ECV-Electric Commercial Vehicles (VTT)

- ✓ National platform for building competence and capabilities
- ✓ Supporting industry in R&D for components, EVs and mobile machinery development



# Stakeholders in Finnish e-Mobility



# EVE 2014-2015, networks, companies and research organisations

## EVGA

### Electric Vehicles Goes Arctic (Centria)

- Centria
- Northern Engineering
- Satavision
- Kemppe
- Brand Factory

## ECV

### Electric Commercial Vehicles (VTT)

- VTT
- Aalto
- TTY
- LUT
- VY
- ABB
- Lahden kaupunki
- Espoon kaupunki
- Rocla
- Siemens osakeyhtiö
- Tamware
- Hybria
- Veolia Transport
- HSL
- Fortum

- Sandvik M&C
- Cargotec
- Linkker
- Visedo
- Oy Lai-Mu Ab
- Moveko Tech

## ÄSL

### Smart Electric Traffic (Eera)

- Aalto
- KTK
- Turku Energia
- Vantaan Energia
- Jyväskylän energia
- Elenia
- Oulu energia
- Fingrid
- Liikennevirta
- Reaktor Fusion
- Plugit Finland
- Nissan Nordic Europe
- Secto Automotive
- Siemens Osakeyhtiö
- Ensto Finland
- Turun kaupunki

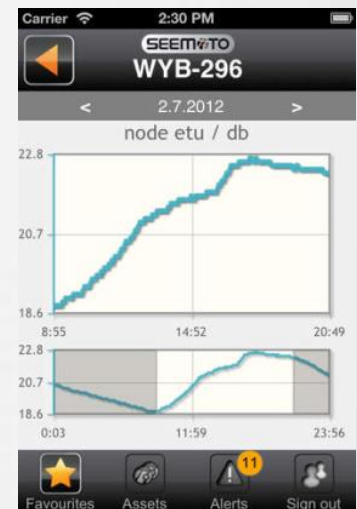
## Others

Örum  
Niinivirta

- Finavia
- Veho/Sixt
- Örum
- Elmotion
- Aidon
- Slo
- Eltel
- AC2SG Software
- Neocard
- Helsingin energia
- Solinor
- Meshworks Wireless
- HOK

# Business is developing...

- Foundation of national charging operator Liikennevirta Oy (12/2013)
- Arctic Research Centre for EVs to be founded 2014
- International charging technology business by Ensto Oy and Kemppi Oy
- Development of EV data collection system by Meshworks Wireless Oy
- Startups: PlugIt Oy, AC2SGOy, Elmotion Oy, Hybria Oy, Satavision Oy
- Electric bus development, Linkker Oy (startup company)



# Liikennevirta Oy – a Charging Business Platform

- A charging operator with the target to
  - enable electric vehicle charging business and
  - reduce operational costs in the EV charging network operation
- Founded in December 2013 by 17 Finnish utilities
- Connects charging stations under different ownership into common charging network that is unified from the user's point of view
- Makes it possible for EV drivers to charge country wide at all charging stations
- Makes it possible for various parties to become a part of the service network





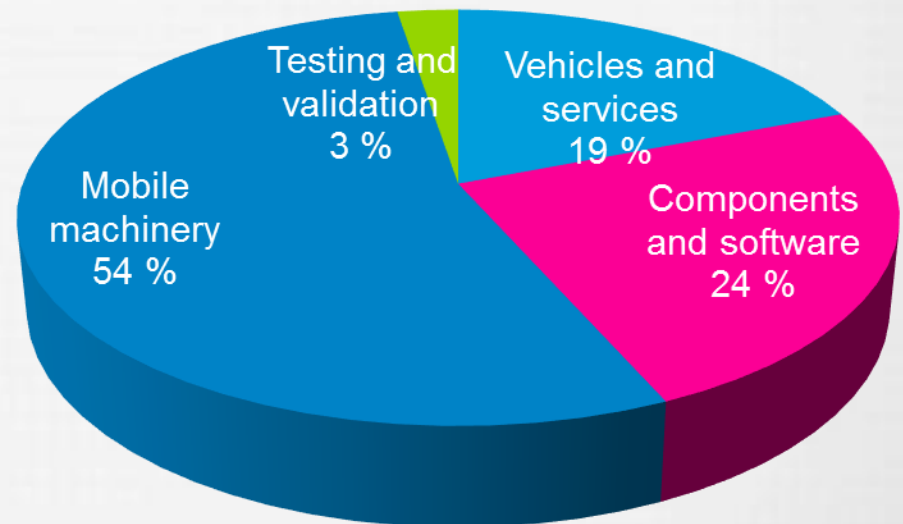
# Ensto and Symbicon Combine EV Charging and Outdoor Advertising

- A charging station to show digital advertising in order to cover the investment by Ensto and Symbicon
- In public places these charging stations provide a suitable advertising environment and enable creation of income for both private and public service providers
- The solution is being provided by out-of-home media company Clear Channel.



# The Big Potential of Finnish Industry is in Mobile Machines

- Rough estimation is that the biggest business potential is in heavy duty vehicles and their components
- The business areas in question include
  - Mining
  - Harbour
  - Construction
  - Forestry
  - Logistics
  - Public traffic
- Big operators are e.g.
  - Sandvik Mining and Construction
  - Cargotec
  - Rocla
  - Agco/Valtra
  - John Deere



# Public and Heavy Duty Traffic Going Electric...

- Finnish electric bus technology demonstration via e-bus mule by Metropolia and VTT
- Electric bus experiences in real everyday operation conditions by VeoliaTransport Oy
- HSL (Helsinki region transport) to purchase 100 e-buses by 2018
- Success in heavy machinery electrification by VISEDO Oy
- Mobile machines manufacturers collaborate in research
- Electric bus development, Linkker Oy (startup company)



# Hybrid stone crusher saving 16.000 liters of diesel



- “The new Rockster R1100DE full hybrid stone crusher using full Visedo electric drive train is now released to sales with first delivery to major French road construction company. The Rockster hybrid crusher is the first of it's kind in the market and the innovative machine brings 16 000 liters of annual diesel savings and at the same time increases the crusher productivity.”

Source: Visedo

# eSled – Electric Snowmobiles' Demo Fleet

## Need

- Tourists to experience the nature in it's purest form
- Environment friendly solution for snowmobile safaris

## Solution

- Battery electric snowmobile
- Zero emission application

## Benefits

- Low operating costs
- Silent operation
- Zero emission

## Users

- Ski resorts
- Safari operators
- Tourists

[www.esled.fi](http://www.esled.fi)

[www.ecv.fi/esled](http://www.ecv.fi/esled)



Arctic Power 2012  
Photographer Kalle Jusmaa

# Thank You!

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