

# SYSTEM-OF-SYSTEMS THAT ACT **LOCALLY FOR** OPTIMIZING **GLOBALLY**

## **LOCAL<sup>4</sup>GLOBAL PRODUCTS**

Brief description of Local<sup>4</sup>Global products and  
respective market potential analysis

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# PRESENTATION OUTLINE

- Product#1: L4G in building applications
    - Product architecture
    - Expected Costs
    - Expected Impacts
    - Identifying market potential
  - Product#2: L4G in traffic applications
    - Product architecture
    - Expected Costs
    - Expected Impacts
    - Identifying market potential
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# Product#1: L4G in building applications

- An easy-to-deploy system for significantly reducing energy bills

# PRODUCT#1: PRODUCT ARCHITECTURE

	Version 1: High Infrastructure Premises	Version 2: Medium Infrastructure Premises	Version 3: Low Infrastructure Premises
Available Infrastructure	<p><b>Compatible</b></p> <ul style="list-style-type: none"> <li>the in-door sensors can provide through a device, the measurements. (BMS, or similar system not</li> <li>• L4G-platform covers the whole range of potential customers</li> </ul>		
Local Interfacing	<p><b>Easy-to-deploy</b></p> <ul style="list-style-type: none"> <li>Smart Meter/ Watt-meter</li> <li>(1) Smart Meter/ Watt-meter</li> <li>(2) The Internet</li> <li>(2) The Internet</li> <li>(3) In-door Sensors</li> <li>(3) In-door Sensors</li> <li>(4) Actuators of HVACs, appliances</li> <li>(4) Actuators of HVACs, appliances</li> <li>(5) Customer (through GUI)</li> <li>(5) Customer (through GUI)</li> </ul>		
Users Inputs Communications	<p><b>User friendly</b></p> <ul style="list-style-type: none"> <li>the Overlay Communication Network:</li> <li>• Plug-n-Play interface abilities</li> <li>• Scalability issues preserved</li> <li>the Overlay Communication Network:</li> <li>Deployment Questionnaire</li> <li>User Preferences</li> <li>• Respects user preferences</li> <li>• Alternative scenarios/solutions provided</li> <li>• Energy performance analysis enables non-expert users to select efficient scenarios</li> </ul>		
Optimal Decisions	<p>(4) Fully automatic realization of optimal decisions to completely L4G-governed equipment</p> <p>(4) Fully automatic realization of optimal decisions to completely L4G-governed equipment</p> <p>(4) Fully automatic realization of optimal decisions to completely L4G-governed equipment</p>		

# PRODUCT#1: EXPECTED COSTS

- Very low operational costs (costs for minimum required infrastructure):
  - ❑ Energy/Smart Meter (if already not present)
    - Purchase cost
    - Installation cost
  - ❑ Licence fees to weather website repository (if already no licence exists)
  - ❑ Licence fees to L4G-platform owners (periodic licence renewal).
  - ❑ Negligible installation costs due to L4G-platform Plug-n-Play interface nature
- Very low individual L4G-platform costs:
  - ❑ Can be purchased even by single customers
  - ❑ Purchase price of 100€ is foreseen for single customers
    - energy savings expected: **20% to 80% ???** of current energy bills
    - payback period: few months (or, even less, in cases of large buildings)
  - ❑ This price can be further reduced in case of large orders

# PRODUCT#1: EXPECTED IMPACTS

- Significantly more efficient and better exploitation of energy use and especially of the renewables (free power efficient utilization)
- More stable and reliable operation of the power grid (grid stability, privacy, security)
- Significant reduction of load peaks (network security, cheaper power generation for power distribution companies)
- Energy bill reductions (>20%) (attractive tangible benefits)
- No need for deployment and operation of expensive system (easy-to-deploy, short payback period)
- Interoperability of L4G tools and communication through the use of **wireless, interoperable and scalable communication technologies, capable of utilizing components from different suppliers** (important for the **commercial valorisation** L4G tools)
- No need for a large number of customers, major changes in the grid or the customer's premises: **significant savings to customers – with existing grid operations or additional functionalities in the future, without requiring the deployment of a new infrastructure**

# PRODUCT#1: EXPECTED IMPACTS

- L4G-platform and its ability to literally implement any type of policy, rule or scheme, the L4G-platform can serve as a one of the basic test beds for testing **new policies, market rules, legislation and/or incentives schemes for blocks-of-buildings infrastructure** before implementing them in full scale.
- Increase energy-awareness to users in every aspect of their everyday lives – and in that sense, initiate **behavioural changes in the society at large**.
- **Strengthened and consolidated European excellence in engineering at the intersection of control, thermal simulation, sensors, energy, building technologies.**
- **Environmental gas emissions decrement.**
- *L4G-platform can serve as one of the basic pillars towards convincing different types of users to enter the Block of Buildings equation.*

# PRODUCT#1: MARKET POTENTIAL

- **Market solution going far beyond modern EIMS**
- **Potential Customers:** Building Energy Management companies/groups, Energy Service Companies (ESCOs), Energy distribution companies and corporations, municipal/public sector authorities, individuals
- **Active participation of prosumers/stakeholders, any type of new players in the energy markets** (*plug-n-play, highly inexpensive solution for significantly reducing electrical bills while maintaining user preferences, needs and comfort*)
- **New business opportunities in 3 main management functions of energy grid, namely monitoring, reporting and controlling** (new measurement tools, digitalized system development, new communication standards, communication interfaces for heterogeneous sensors and devices, mechanisms for reliability, tolerance and security, algorithms for control, mechanisms for reporting and ending up with optimization tools that integrate the specifics of the physical network as well)
- **Empower available services and products** with a new feature, increase efficiency with elaborate and cost appealing tool, increase market penetration and customer's network



## Product#2: L4G Speed Navigator

- An easy-to-deploy system for significantly reducing fuel consumption/travel times
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# PRODUCT#2: PRODUCT ARCHITECTURE

	Version 1: Personalized SpeedNavigator	Version 2: Public Transport SpeedNavigator	Version 3: "Moving Traffic Light" SpeedNavigator
Available Infrastructure	Interface-able standard GPS-navigator or Smartphone	Interface-able standard GPS-navigator or Smartphone	Interface-able standard GPS-navigator or Smartphone (around 10% of network's vehicles must use the SpeedNavigator)
Local Interfacing		(1) GPS Navigator screen (2) The Internet (3) GPS	
Communications	<p><u>Inputs from the overlay communication network</u>            Geographical data, location of the vehicle, 3D GIS information (e.g. slope of the road)            Current weather real-time information flow            Weather forecasts real-time information flow            Current real-time traffic conditions</p> <p><u>Outputs to the overlay communication network</u>            Current real-time vehicle location            Location of the vehicle in case it follows the desired speed (carpet)</p>		
Users Inputs		Number of gas litters filled Whether the desired location is "reachable" so as to re-adjust system	
Optimal Decisions	(1) System readjustment for non-feasible commands (2) Alternative speed recommendations to the user (3) Estimation of potential fuel / time savings (4) Custom driver profile creation, making the guidance even more accurate	(1) System readjustment for non-feasible commands (2) Alternative speed recommendations to the user (3) Estimation of potential time-headway between public transport vehicles	(1) System readjustment for non-feasible commands (2) Alternative speed recommendations to the user (3) Estimation of potential fuel / time savings (4) Custom driver profile creation, making the guidance even more accurate (5) Traffic homogenization by slowing down some of the vehicles which results in tremendous impact on delaying or even neglecting congestions

# PRODUCT#2: EXPECTED COSTS

- Very low operational costs (costs for minimum required infrastructure):
  - ❑ GPS-Navigator (if already not present) or Smartphone
    - Purchase cost
  - ❑ Licence fees to weather website repository (if already no licence exists) and 3D GIS information
  - ❑ Licence fees to L4G-platform owners (periodic licence renewal).
  - ❑ Negligible installation costs due to L4G-platform Plug-n-Play interface nature
- Very low individual L4G-platform costs:
  - ❑ Can be purchased even by single customers
  - ❑ Purchase price of **???**€ is foreseen for single customers
    - fuel consumption/travel time savings expected: **20% to 40%** of current costs
    - payback period: few months (or even less, in cases of many km/month travelled)
  - ❑ This price can be further reduced in case of large orders

# PRODUCT#2: EXPECTED IMPACTS

- No extra manufacturing costs (e.g. additional hardware, sensors) for the car's owner
  - Sales profits for GPS-navigator manufactures / Automotive industry
  - Real-time desired speed calculation through a very safe and non-distractive manner
  - 20-40% fuel consumption reduction
  - 20-40% travel times savings
  - 30% improvement in Urban Transport passenger's waiting times
  - Better rendering of Transportation services
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# PRODUCT#2: EXPECTED IMPACTS

- Delaying or even neglecting congestions through traffic homogenization
- No need for deployment and operation of expensive system (easy-to-deploy, short payback period)
- Environmental gas emissions decrement

# PRODUCT#2: MARKET POTENTIAL

- **National/Global market solution** augmenting standard GPS-navigators with an additional feature to ensure safe and economical travelling/transportation
- **Potential Customers:** GPS-navigator manufacturers, Road/Urban/Public transport Organizations, Automotive industry, Car, bus and/or truck drivers
- Solid commercialization concept taking into account the expected increase in the volume of travel and moving vehicles in coming years
- **Empower available navigation services and products** with a new feature, increase efficiency with elaborate and cost appealing tool, increase market penetration and customer's network