Welcome to the Smart Mobility innovation session

Moderated by
Maria Rimini-Döring | Robert Bosch
Daniel Watzenig | Virtual Vehicle

10 May 2017, Amsterdam
Jury members
Smart Mobility

Valérie Gombart
Managing partner
*Hi inov - Dentressangle Initiatives*

Birgit Thoben
Senior Innovation Manager
Corporate Research
*Robert Bosch*

Bram Hendrix
Manager Smart Mobility
*AutomotiveNL*

Randy Zadra
Senior Advisor & Director
*National Research Council of Canada*
Comodif
by Egemen Alpay

Innovation session
Smart Mobility

11 May 2017, Amsterdam
The human-machine interface, car condition data, and dynamic real-time geoinformation will become the key control points in the redistribution of profits.


www.comodif.com
Which Insights can I create from the collected Data?

How do I turn these Insights into action?

How to integrate with Car manufacturers?

Which one is the optimum device?

Am I dependend to one hardware vendor?
SOLUTION

The Freedom of choice to build your solution

Data Collection (Telematic Unit)
- Hardware independent
- Flexible / Adoptable
- Sustainable and future proof

User Experience
- Customizable
- Pre-Customized Use Cases

Data Collection
- Scalable
- Easy to implement
- Easy to integrate
- Open Source
- Algorithm Process
Focus: USAGE BASED INSURANCE

Enable Usage Base Policies
- Pay Where You Drive
- Pay How You Drive
- Pay as You Drive

Reduce the management costs, operations as a Service

R&D Project for a Driver Risk assessment and scoring – Machine Learning Based Algorithm
<table>
<thead>
<tr>
<th>PARTNERSHIP</th>
<th>Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comodif Implementation Partner</td>
<td>Kyros Mobile (12 Developers) <strong>KYROS</strong>&lt;br&gt;Luteg mobile (6 Developers) <strong>Luteg</strong></td>
</tr>
<tr>
<td>R&amp;D Partners</td>
<td>Sabancı University&lt;br&gt;Okan University&lt;br&gt;HipDriver (Norway)</td>
</tr>
<tr>
<td>Strategic Partners</td>
<td>Turkcell – Turkey’s Biggest Mobile Operator <strong>TURKCELL</strong>&lt;br&gt;ZTE – Preffered Hardware Vendor <strong>ZTE</strong></td>
</tr>
</tbody>
</table>

First Customer:

![Logos](logos.png)
### Key Figures

<table>
<thead>
<tr>
<th>Comodif Budget OPEX (EUR)</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units serviced</td>
<td>5.000</td>
<td>18.500</td>
<td>60.000</td>
<td>250.000</td>
<td>1.000.000</td>
</tr>
<tr>
<td><strong>Revenue</strong></td>
<td>383.519</td>
<td>1.628.000</td>
<td>2.850.000</td>
<td>9.500.000</td>
<td>35.750.000</td>
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<tr>
<td><strong>Cost of Goods Sold</strong></td>
<td>-361.075</td>
<td>-2.615.522</td>
<td>-2.100.000</td>
<td>-6.850.000</td>
<td>-25.600.000</td>
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<tr>
<td>Grants</td>
<td>91.250</td>
<td>250.000</td>
<td>315.000</td>
<td>1.027.500</td>
<td>3.840.000</td>
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<tr>
<td><strong>Gross Profit</strong></td>
<td>113.694</td>
<td><strong>737.522</strong></td>
<td>1.065.000</td>
<td>3.677.500</td>
<td>13.990.000</td>
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<tr>
<td><strong>Operating Expenses</strong></td>
<td>-278.626</td>
<td>-350.430</td>
<td>-398.470</td>
<td>-655.600</td>
<td>-718.900</td>
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<tr>
<td><strong>EBIT</strong></td>
<td>-164.932</td>
<td>-1.087.952</td>
<td>666.530</td>
<td>3.021.900</td>
<td>13.271.100</td>
</tr>
</tbody>
</table>

**KPI’s**

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue / Unit</td>
<td>77</td>
<td>88</td>
<td>48</td>
<td>38</td>
<td>36</td>
</tr>
<tr>
<td>Gross Margin / Unit</td>
<td>23</td>
<td>-</td>
<td>40</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>EBIT / Unit</td>
<td>-</td>
<td>33</td>
<td>-</td>
<td>59</td>
<td>11</td>
</tr>
</tbody>
</table>

*Primary KPI is Ebit / Unit, not revenue. Here assumption is all the hardware delivered by Comodif.*
thank you

Egemen Alpay
egemen@fplus.ventrues

www.comodif.com
IOTIQ
by Özer Aydemir

Innovation session
Smart Mobility

11 May 2017, Amsterdam
IO'TIQ GmbH (i.G)

‘Das Ingenieurwesen für intelligentere Umgebungen’

Özer Aydemir, CEO, Mitbegründer
Ali Buğdaycı, CTO, Mitbegründer
**Vision:** Traversing borders of cutting edge technologies in order to provide more **robust, user friendly, comfortable** products based on Internet of Things (Smart spaces, smart environments).

**Mission:** Commercialization of Research and Development and bringing value added services/products by strongly co-operation with industrial partners across Europe.
IOTIQ - Blueprint

- Having strong R&D oriented team
- Constructing solid SERVICE - PRODUCT - CONTRACT triangle.
- Stabilize in three years with a total investment around 1.5M Euro
  - 310K Self fund, 300K GRW, at least 890K from business and co-operated R&D projects.
IOTIQ is going to build an IoT Platform which will be based of its commercial product set.

At the 18th month, Platform 1.0 and first application will be released.

Platform will come up with a toolset where each tool will resolve one vertex of the smart environment creation lifecycle.

On top of the platform there will be brand new IOTIQ IoT Applications with REAL Intelligence
Motivation

Today’s commercial environments

- Wealth of different, but isolated automation, management and information systems
- Integration of the different systems requires high engineering effort

Future integrated smart environments

- Integration of legacy and novel automation systems with minimal engineering effort
- Convergence of automations and ICT systems
- Uniform Information Model and comprehensive Semantic Knowledge
- Value-added environment services on top of integrated automation and ICT systems
Mobility and IOT

Mobile wireless devices brought comfort to human life since the last decade of 20th century. People get used to be mobile with their devices. However in a near future:

- There will be hundreds of IoT devices we are interacting daily base
- It will be unpractical to be mobile with the physical devices

With IOTIQ approach, SOFTWARE will be mobile and personal through our SMART ENVIRONMENTS.
IOT Market Perspective

MARKET SHARE OF BIOT CONTRACT 2014 & 2020

2014
- 15% IoT Services
- 17% Enabling Hardware
- 13% Network Communication Services
- 55% IoT Services & Big Data

2020
- 26.5% IoT Services
- 22.5% Enabling Hardware
- 11% Network Communication Services
- 40% IoT Services & Big Data

Revenue opportunities from the Internet of Things.

2014
- $56.519.93
- $16,186.42
- $129.60
- $127.48

2017
- $248.48
- $138.48
- $527.33
- $582.78

2020
- $307.89
- $460.78
- $787.65
- $180.26

Managed Services
- $56.519.93
- IoT analytics
- Integration services
- Cloud computing

Enabling Hardware
- $16,186.42
- Secure attachment
- Remote diagnostics

Network Services
- $129.60
- IoT device management
- Device monitoring

Billion in Revenue in 2014

180+
IOT Platform - Lifecycle

Development → Design → Optimization → Operation → Commissioning → Engineering → Development
Sample Applications on top of the IOTIQ Platform

- Smart Meeting Room
- Smart Metering (Electricity)
- Smart Factory
- Surveillance in Smart Spaces
- Smart Lighting
Business Ambitions for 3 years

Conservative (Minimum)
- To reach 10 people
- 1.35 M Euro Total Revenue
- 3 marketable products on top of IoTIQ Platform
- Member of 2 R&D consortiums

Mediocre (Expected)
- To reach 17 people
- 2 M Euro Total Revenue
- 5 Marketable products on top of IoTIQ Platform
- Member of 3 R&D Consortiums

Brave (Optimistic)
- To reach 50 people (25 in Germany, 25 in Turkey)
- 4 M Euro Total Revenue
- Well known platform and more than 6 products
- Member of 4 R&D Consortiums

- Reached around 40 people
- More than 10 M Euro total revenue
- 2 main marketable products on rich media streaming and EMM
- Member of 4 R&D consortiums
MPPA® for High-Performance Embedded Computing

Kalray’s MPPA® processors will find their way into cars, drones and aerospace

Benoît Dupont de Dinechin, CTO, Kalray
May 11, 2017
Launched in 2008
Spin-off of the “CEA” (French Department of Energy)

Pioneer in manycore processors
- Focus on low latency, low-power, compute intensive processing
- Core market: Data Centers and Critical Embedded

Comprehensive product offer
- MPPA® processors, acceleration cards, associated software
- Strategic partnership with TSMC

1st COMMERCIAL PROCESSOR TO BREAK THE “100 COMPUTING CORE WALL” - 2013

TOP 20 “MOST PROMISING HPC SOLUTION PROVIDERS” – CIO REVIEW - 2016

21 NUMBER OF GRANTED PATENTS HELD BY KALRAY FOR ITS MANYCORE ARCHITECTURE

Two offices
Grenoble, France & Los Altos, CA, USA

Experienced technical team
World-leading multicore/manycore talent, with experience in both hardware & software
AUTONOMOUS VEHICLE CHALLENGES

Autonomous cars will have to do a lot...

... leading to processing challenges:

- High performance computing
  - Computer vision, machine learning
- Low-latency I/O from sensors
  - Camera, lidar, radar: Ethernet and LVDS
- Functional safety
  - Freedom from interference (ISO 26262)
- Cyber-security
  - Root of Trust, software IP protection

Failing to address these challenges will put passengers’ lives in danger
KALRAY’S MPPA® OFFERS A UNIQUE SOLUTION

MPPA® (Multi-Purpose Processing Array) Platform

**Hardware**
- Manycore CPU architecture
  *Compute clusters of 16 high-performance CPU cores with local memory*
- DSP-like timing predictability
  *‘Fully timing compositional’ cores for accurate static timing analysis*
- Service guarantees of local memory system and network-on-chip
- FPGA-like I/O capabilities
  *8x 10Gbps Ethernet, 16x PCIe Gen3, 2x DDR3 controllers*

**Software**
- CPU programming
  *Standard C/C++/OpenCL, OpenVx*
- Model-based (SCADE Suite®, Simulink®)
THE MPPA® VALUE PROPOSITION

1. ENERGY EFFICIENT
   The MPPA®'s architecture is highly energy-efficient on integer, simple and double precision floating-point computations.

2. FUNCTION CONSOLIDATION
   The MPPA®'s clustered architecture enables consolidation of independent functions onto the same chip.

3. MIXED-CRITICALITY COMPUTING
   Depending on usage domains, MPPA® clusters are configured to operate in hard real-time or soft real-time.

4. SCALABLE PERFORMANCES
   MPPA® processors can be tiled through network-on-chip extensions to offer more compute and I/O capabilities.

All on the same chip! >>>
MPPA® PROCESSOR EVOLUTION


**MPPA® BOSTAN**

- TSMC 28HP
- 256 cores at 600 MHz
- Up to 700 GFLOPS 32-bit and 16-bit FMA
- 32 MB of local memory
- Core accelerators for AES including GCM and secure hashing

Tomorrow (2018)

**MPPA® COOLIDGE**

- TSMC 16FFC
- 80 cores at 1200 MHz & 80 co-processors
- Up to 3 TFLOPS 16-bit FMA in core accelerators for computer vision and machine learning
- 20 MB of local memory
- Hardware root of trust
- ISO 26262 ASIL-B

*Autonomous Cars Hit the Roads with Kalray Processing Solutions*

*Prototypes with MPPA® currently in development*
DEEP LEARNING SOLUTION

THE OFFER:

Kalray Neural Network (KaNN)
Evaluation Kit & Development Kit
Code generator for deep learning (Berkeley Caffe & Google TensorFlow)

MPPA® Processor
Hardware & AccessCore SDK

Performance on GoogleNet = 65 fps @500Mhz
Un-modified Berkeley Caffe
MPPA® Bostan

360 fps
MPPA® Coolidge

Optimized architecture for deep learning
Supports both floating or integer high performance computing
Dedicated co-processor for vision and learning

Fully programmable solution, enabling custom neural networks and vision algorithms
KALRAY S.A. - GRENOBLE - FRANCE
445 rue Lavoisier,
38 330 Montbonnot - France
Tel: +33 (0)4 76 18 09 18
email: info@kalray.eu

KALRAY INC. - LOS ALTOS - USA
4962 El Camino Real
Los Altos, CA - USA
Tel: +1 (650) 469 3729
email: info@kalrayinc.com

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Livedrive
by Pedro Mouta

Innovation session
Smart Mobility

11 May 2017, Amsterdam
“Your car's data may soon be more valuable than the car itself.”

Matt McFarland, Washington Post
February 2017
INTELLIGENCE TO DRIVE
SLIDE I: OUR UNIQUE SELLING PROPOSITION

Data Privacy and Confidentiality

- i2D is compliant with the new European privacy legislation going out in 2018, and Privacy goes way beyond the technology.
- The vast majority of GPS based solutions are not compliant with EU 2018 Privacy directives.
- Why would anyone put a monitoring device in their car board?
- The right to be forgotten belongs to the Driver.

Trustworthiness

- i2D crosses more than 30 variables to validate the data and takes reliability to a whole new level.
  - Forging a GPS signal is quite simple, and that’s why courts do not accept it.
  - Cross-validating data from different sources (own sensors and car manufacturers’) information becomes trustable, truly reliable.

The Value Scale

- The 1M$ question
  - Why should I put a monitoring device on my car?

- The right to be forgotten belongs to the Driver.

Drivers

- How fast?

Clients

- Where?
- When?

Balance

- Having the drivers on our side.

- i2D is about bringing VALUE to clients and drivers because you need both sides of the equation to scale.

This will allow implementation of new governmental car policies, new institutional directives, new tools to the car insurance business, etc.
ROAD MOBILITY SUSTAINABILITY

SLIDE II: THE PROBLEM WE’RE SOLVING

The large scale problem

Yearly average costs of Road Mobility

According to the European Road Safety Observatory

<table>
<thead>
<tr>
<th>Area</th>
<th>Europe</th>
<th>Portugal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidents</td>
<td>€140 bi</td>
<td>€2,5 bi</td>
</tr>
<tr>
<td>Environment</td>
<td>€40 bi</td>
<td>€0,7 bi</td>
</tr>
<tr>
<td>Energy</td>
<td>€20 bi</td>
<td>€0,4 bi</td>
</tr>
<tr>
<td>Total</td>
<td>€200 bi</td>
<td>€3,6 bi</td>
</tr>
</tbody>
</table>

European targets

According to the 2008/50/EC Directive, Gothenburg

<table>
<thead>
<tr>
<th>Area</th>
<th>By 2050</th>
<th>By 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidents</td>
<td></td>
<td>-20%</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Two particular industries we can help

Car Insurance

3 Main cost areas:
- 10% in Customer Service costs
- 30% in Claims and Internal Processes costs
- Fine-tune risk assessment engines

Car Fleets

2 Major issues:
- The cost-benefit relation for corporations
- The data privacy concerns

What’s our solution

1. Car Technology
2. Regulation and Infrastructures
3. Driving Behavior

Influencing the driver’s behavior through we know it requires a cultural change.

To efficiently foster cultural changes, it is paramount to work on the binomial Punishment / Incentive

A product that solves both industries’ problems

Fleetdrive

A next generation fleet management solution that:
- does not rely on geolocation features
- provides sensitive insights about the driver without breaking his privacy and in a trustworthy way.
HOW DOES I2D WORK

SLIDE III: THE TECHNOLOGY
i2D - a black-box solution

i2D unique “Standard-Vehicle” Concept

Using i2D technology, any fleet manager can define their Fleet Standard Car (e.g. - a 110 hp, diesel, 1.900 cc, 1,400 Kg car).

Then, i2D algorithms will compare each driving behaviour to that standard car and calculate the respective fuel consumption. So, we can compare the real driving behavior impact on fuel consumption, either someone is driving a Mercedes 500 S or a Fiat 500.

GPS-less presentation mode (3D)

How we process the information

i2D technology runs on top of unique and powerful algorithms to build reliable information that is trustworthy for whoever uses this information.

Through this technology, we’re able to measure in a 100% objective and reliable way the:

1. VEHICLE INFORMATION
   Measurement

2. DECONTEXTUALIZED DRIVING
   UNIQUE ALGORITHMS
   Real-Time Measurement

3. DRIVING BEHAVIOR
   UNIQUE ALGORITHMS
   Real-Time Measurement

VIV - Vehicle-Infrastructure-Vehicle

VIV safety applications started in 2014, with a demonstration project that we ran in USA with the NCSU / ITRE. A couple of predefined alarms were designed and successfully tested, warning an anonymous driver from a particular traffic condition.

Data analytics readiness

All the data is stored and processed in a way that allows any big data analytics. This was a decisive point for our solution to be chosen by the USA universities.

Security

i2D protects data and communications from unauthorized access and/or manipulation and car electronic circuits.
i2D TELEMATICS

SLIDE III: ILLUSTRATIONS OF THE TECHNOLOGY

Second by Second trip reconstruction

Fuel cut-off
1- Decelerating (using gear box and engine as a break) → a defensive and efficient driver...

Fuel cut-off
2- idem, down-hill

Altimeter
The only way to accurate driving efficiency and safety scoring
i2D TELEMATICS

SLIDE III: ILLUSTRATIONS OF THE TECHNOLOGY
## IN THE PRESENT MOMENT

### SLIDE IV: CUSTOMERS, STRATEGIC PARTNERSHIPS AND TOP PRIORITIES

<table>
<thead>
<tr>
<th>Current customers</th>
<th>Strategic partnerships</th>
<th>Top priority customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 worldwide innovation centers, from which we highlight two:</td>
<td></td>
<td>Long-term perspective: 3 to 5 years</td>
</tr>
</tbody>
</table>
| - NCSU (North Carolina State University); running 90 i2D units. | **Car Driving Training**  
Partnering up with a key reference in the driving training industry to guarantee that our offer generates the expected results. | - **Fleet Management**: all kinds of fleets, from corporate to professionals (logistics), to renting companies, to the government fleets, etc. |
| - UMD (University of Maryland; running 150 i2D units. | **Energy Certification for Vehicles**  
Partnering up with ADENE – National Agency for Energy – in the way to Fleet Energy Certification through the use of telematics. | - **Car Insurance**: also, every insurance firm who provides car insurance will be a potential user of our telematics solution. |
| These 2 main clients we currently have, both in the USA, are presently running two R&D relevant projects (from 5 to 6 million USD each) are they are doing so based on the i2D platform. | **Insurance**  
Partnering up with an insurance firm to develop the potential associated with TBI – Telematic-Based Insurance | - **Mobility**: finally, once we have massive and critical data from drivers’ behaviour, we’ll be able to work together with municipalities and government to affect road mobility directly. |

**Short-term perspective: today**

**Corporate Car Fleets**: large corporations that have a mandatory security policy and a car fleet composed by cars they give to their employees as a compensation perk.
THE BUSINESS MODEL

SLIDE V: ACTION STEPS

Business Models

Car Fleets
- FleetDrive is a SaaS model
- We’ll have an entry-product like a simple energy auditing
- We’ll convert clients to our FleetDrive product from the entry-level one
- We’ll cross-sell a training package

Insurance
- Every car insurance business will become a Telematic-Based Insurance company
- It is highly likely that we’ll charge an annual fee to provide our technology to insurance businesses.

Key goals

1. **Where we are today**
   - **2012-2016**: leveraging national funding from FAI (€ 1,4 M project), and Horizon 2020.
   - **2017**: running Portugal 2020 funded project (€ 1,1 M), go-to-market oriented

2. **What are we looking for: a €1.1M funding**
   - €600k to launch FleetDrive in the market
   - €500k to support i2D in the design and development of a solution that integrates i2D telematics technology with Claims and Risk solutions of Insurance companies

3. **Our proposal to investors: Challenge us**
   There are 2 universities in the USA investing $12M in projects with our technology. The potential of what we can do and the applications of i2D Telematics are limitless.

   We’d like to invite you to challenge us!

Current cap table:
€ 2.100.000

Areas of investment:
Technology development
Marketing
Business Development

Market potential
A € 7,5* Bi potential market by 2022
Growing 30% per year
- Insurance + Fleets

Long-term perspective
Business potential will be expandable to the global Mobility industry as we have massive data and historical.
MOBILITY ELEVATED TO HIGHER LEVELS OF EFFICIENCY
i2D ARCHITECTURE
BACKUP SLIDE ON DATA PRIVACY

Data Base Area 1
- Data Base 1: RAW DATA
- Data Base 2: Processed DATA
- Data Base 3: Vehicles’ & Drivers’ anonymous characteristics

Data Base Area 2
- Data Base 4: Temporaty DATA

BUSINESS AREAS & CLIENTS
- FLEET MANAGEMENT
- INSURANCE
- MOBILITY
- SUSTAINABILITY
- SAFETY
- TRAINING
- PERSONAL GADGET

B2B APPLICATIONS
- Exception Rules

B2C APPLICATIONS
- Individual property

INDIVIDUAL DRIVERS
- PERSONAL IDs
COMPANY INTRODUCTION

MIKKO HURSKAINEN, TECHNOLOGIST
10 YEARS IN EMBEDDED SOFTWARE BUSINESS

200+ AUTOMOTIVE SOFTWARE PROJECTS DELIVERED

60+ TOP NOTCH PROFESSIONALS BUILDING THE PRODUCTS

5 LOCATIONS AROUND THE GLOBE


NOKIA
MeeGo
DENSO
Pioneer
AISIN
Cambistun

maemo
RENESAS
TOYOTA
MTA
RENault
HISTORY OF DISRUPTION

1890
100 YEARS
1 disruption
2017
2018 - 2028
10 YEARS
4 disruptions

COMBUSTION ENGINE

AUTOMOTIVE MEGATRENDS

CONNECTIVITY
ELECTRIFICATION
CAR SHARING
SELF DRIVING
CONSOLIDATE ECUS

CONVENTIONAL ARCHITECTURE

SOFTWARE CENTRIC ARCHITECTURE
vECU ARCHITECTURE

- Instrument Cluster vECU
- IVI vECU
- HUD vECU
- Rear-view camera vECU
- Secure Connected Gateway vECU
- Telematics vECU
- Diagnostics vECU
- OTA/FOTA vECU
SECURE CONNECTED VEHICLE

- Designed with security focus from day zero
- Proven security technologies, working with world class experts
- Unique security architecture

Cloud Services

Auto OS

Secure Container

IVI OS

IC GUI

Telematics

IVI GUI

Vehicle Network API

Vehicle Network API

Vehicle Network API

Vehicle Network Controller

Vehicle Access Controller

Vehicle Access Gateway

CAN
ATMACA
by Sergun Özmenen

Innovation session
Smart Mobility

11 May 2017, Amsterdam
AIR TRAFFIC MANAGEMENT & COMMUNICATION APPLICATIONS

Capt. SERGUN ÖZMEN
B737-800 Pilot - Solution/Software Architect
OVERVIEW

• ATMACA is an Aeronautical Communication and Management Platform

• Replacement of Air to Ground Voice Communication between Pilots and Air Traffic Controllers

• Text Based Air Traffic and Operation Management

WHATSAPP for PILOTS
PROBLEM / OPPORTUNITY

• All communication between the aircraft and ground personnel is performed by the flight crew using voice communication, using Radio Technology
  • LOW VOICE QUALITY
  • LINE OF SIGHT SYSTEM IS NOT PRACTICAL
  • USER’S MOTHER LANGUAGE IS NOT ENGLISH
  • NOT ENOUGH FOR INCREASING FUTURE DEMAND
  • NO ENOUGH COVERAGE ALL AROUND THE WORLD

• Text based Air Traffic Management for Air Traffic Control Authorities are Eurocontrol, FAA and National Authorities

• Text based Flight Operation Management for Airline Operators and Ground Handling Companies

PROTOTYPE READY
TECHNOLOGY / INNOVATION

• Air to Ground Communication using Broadband Satellite
  • VHF (Radio Communication Technology) Like Packet Networking

• It is an Packet based Architecture that supports
  • Commercial off the shelf technology,
  • Link independent,
  • Rapid convergence time,
  • Policy based routing.

ANYTIME/ANYWHERE CONNECTIVITY
GLANCE TO MARKET

MARKET `SEGMENTATION

• AUTHORITY Segment: Eurocontrol, National Authorities. Etc.
• OPERATOR Segment: Airlines and Private Jets
• AERONAUTICAL SERVICE Segment: Airport Management, Ground Handling Companies and autonomous services

APPLICATIONS

• Air Traffic Management
• Aeronautical Operation Control
• Autonomous Control and Management

SOLUTION PARTNER

• INMARSAT: Broadband Satellite Network
• COBHAM: Inmarsat Antenna for Aircraft

MARKET VOLUME
approx. 70.000.000$
BUSINESS MODEL

Revenues are broken down into two major classifications:

- **License Sales (Subscription based):** License revenues for one-time license sales without customization are recognized upon delivery of the software to the customer.

- **Services (application based):** Service revenues performed for customization, addition to and installation of features on initial package.

Funding Required for 18 months

<table>
<thead>
<tr>
<th>Equipment Cost:</th>
<th>$780,000 all applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D Cost:</td>
<td>$930,000 all applications</td>
</tr>
<tr>
<td>Marketing Cost:</td>
<td>$96,000 initial</td>
</tr>
<tr>
<td>Staffing Cost:</td>
<td>$1,260,000 for 18 months</td>
</tr>
</tbody>
</table>

Target Market (Yearly Projection)

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td>20%</td>
</tr>
<tr>
<td>Second Year</td>
<td>35%</td>
</tr>
<tr>
<td>Third Year</td>
<td>60%</td>
</tr>
<tr>
<td>Fourth Year</td>
<td>75%</td>
</tr>
</tbody>
</table>
Questions?
Thank you for your attention