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Integrated Airport Apron Safety Fleet Management

The enhancement of efficiency and safety on the apron is the core objective of the AAS project (Integrated Airport Apron Safety Fleet Management), co-funded by the EC – Directorate General Transport and Energy in the 7th Framework Programme. A decision support tool for real time assignment of staff, tasks and equipment is being developed. At the same time the technology used will enhance safety by geo-fencing of restricted areas, and access control to vehicles will be implemented.

Further, it provides open interfaces towards existing airport operations systems, including A-SMGCS.

This newsletter informs about the milestones reached in the second project year:

- Successful pilot-tests in Berlin
- Definition of validation indicators
- Market analysis
- Dissemination activities.

AAS | Tests in Berlin & Oporto

The AAS system is currently being demonstrated at the Berlin-Tegel and Oporto Airport test sites for operational trials. On March the 6th, 2010 functionality was presented to a group of experts consisting of airport operators, ground handlers and airlines. Visitors had the chance to find out more about the AAS approach at the company headquarter of project partner GlobeGround Berlin. On the 5th and 16th of July 2010, the online systems of both test sites were presented to the European Commission.

The need to improve efficiency and safety of airport apron operations was obvious to all participants. There is a particular need for real-time information about the position of Ground Support Equipment (GSE) performing a wide range of tasks: from passenger transport and baggage handling to refuelling, cleaning and aircraft maintenance in the phase between landing and take-off. Every year, accidents and incidents involving GSE result in damages of \$4 billion.

In the AAS project twelve partners from Germany, Austria, Italy, Spain, Portugal and Finland



Fleet of Ground Handling vehicles awaiting call

collaborate (coordinator TSB-FAV) to develop a system providing real-time resource allocation through positioning (EGNOS) and communication (GPRS, Wi-Fi) technologies.

Apart from the increase in efficiency, cost effectiveness and environmental sustainability will improve and positive safety effects are to be expected primarily through dynamic geo-fencing and innovative vehicle access controls.

Besides functionality tests, there will be exercises and data analysis to demonstrate operational benefits of the system. To this end, both the demonstrations at Berlin-Tegel and at Oporto airport will be integrated into day-to-day operations over a period of 6 months.

Provided that AAS meets its test and validation goals, the project may well be seen as a contribution to improved turnaround management targeted in the Single European Sky ATM Research program (SESAR and the data generated may benefit future Total Airport Management concepts.

AAS | Indicators & Validation

In an environment as complex as the airport apron it is difficult to attribute improvements to any one specific factor, like the introduction of a new system such as AAS. Therefore, considerable effort was put into identifying a suitable set of indicators for validation of AAS feasibility and benefits.

Areas that were considered fit to measure success are:

- Functionality
- Acceptance
- Safety
- Cost Effectiveness
- Efficiency
- Environmental Sustainability

A set of specific indicators is used to test function and acceptance while Key Performance Indicators (KPI) originally used in SESAR were adopted for capturing benefits.

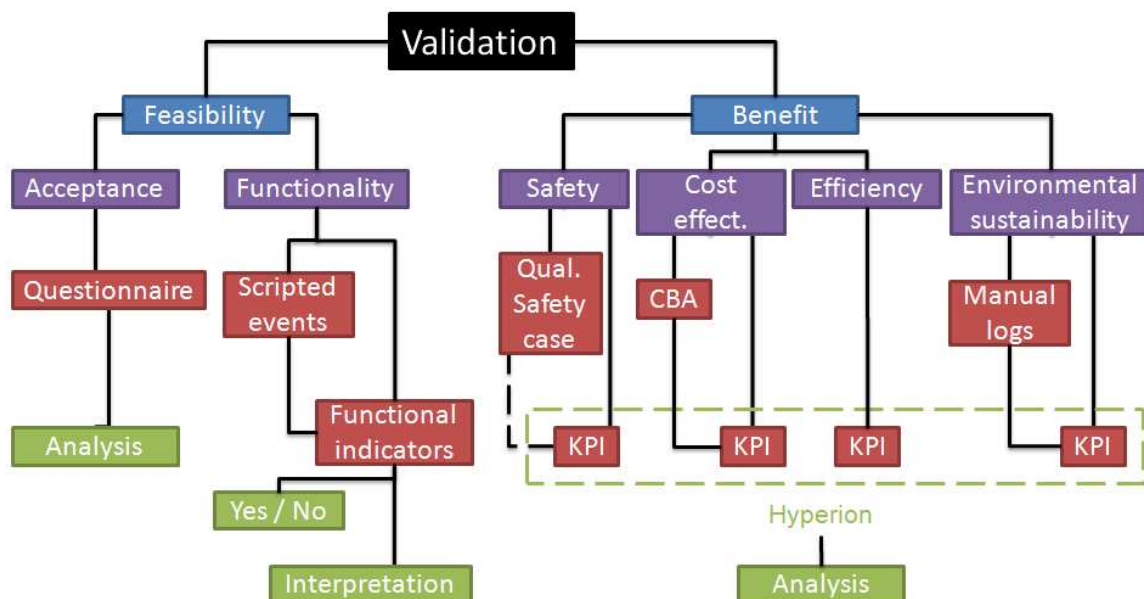
AAS functionality is assessed in field trials and demonstrated in scripted events. Each of the test sites (TXL and OPO) is entitled to focus on what seems most important to them. Yet, the overall testing and validation plans make sure that all the key functions are tested sufficiently.

Acceptance will be tested with the help of users participating in operational trials. The survey will address drivers, dispatchers, as well as managers. All will have previously undergone training on how to use the system. Feedback will be collected online during the tests, in questionnaires administered at the end of the trial period, in interviews and group discussion.

Generic KPIs measure performance areas such as safety, efficiency, cost effectiveness and sustainability. They are expressed in units that are common to other validation exercises like the ones used in ATM and will allow benchmarking with other projects. Benefit indicators were derived from generic KPIs in a five-phase selection process. Each process step culminated in a 'selection-gate' and the elimination of unsuitable indicators.

Specific KPIs were defined in order to allow quantification of benefit areas unique to the airport apron environment.

For most indicators performance data is automatically logged throughout the operational trials. For some indicators this input is further complemented by manual logs and qualitative analysis. Tests will run until the end of this year.



The AAS validation process

AAS | Market analysis

AAS addresses the need for improving efficiency and safety expressed by airports and ground handlers. Forecasts for these markets see growth both in terms of passengers and services. The ground handling market is expected to keep growing at a 4% CAGR. The estimated value for the overall market potential is about 800 million Euro in 2020.

Airports are facing bottlenecks caused by the steep increase in traffic. Airlines demand reductions in turnaround times while keeping or increasing levels of service. Thus ground handlers are confronted with fierce competition and cost pressure. This is why over the last years decision makers shifted their expenses from capital spending towards operational spending. Improving efficiency and safety rank highest in their list of goals.

The ground handling market is determined by both the overall development of aviation, and specific trends like deregulation (in the EC) and market concentration. Albeit the decrease during the economic crisis, the total number of passengers is expected to grow to a total of 4.6 billion in 2020. Likewise the ground handling market is expected to keep growing at a 4% CAGR, from a market value of 31 billion Euro in 2007. Independent ground handlers account for 50% of this figure, self-handling of airports and airlines make up the other half. While the market share of independents is increasing steadily, there is an ongoing consolidation in the number of entities offering these services.

The AAS system addresses fleet operators at large and medium sized airports. The overall market potential will be about 800 million Euro in 2020. The segment is expected to dramatically outperform the overall ground handling market in terms of growth. The AAS system is expected to capture about 30% of the European market by 2020.

Competition is deemed to be oligopolistic, with consortia rather than companies offering solutions similar to AAS. Yet experts value the unique combination of know-how in fleet management, airport optimisation and resources management present in the AAS consortium.

AAS | Dissemination activities

2010 is a busy year for the dissemination of the AAS approach.

The project has been presented at several high-profile events this year.

- AAS was presented as an example of a successful FP7-project at a EuroTeleServ Workshop with the attendance of GSA and the EC representatives in Oberpfaffenhofen (Germany) on May the 6th, 2010

- On March 6th, 2010 the AAS system was presented to industry experts from both airport operators, ground handlers and airlines during pre-tests preceding the 6-months test run at Berlin-Tegel and Oporto Airport.

Furthermore, the AAS validation approach was published in a reviewed article in the Int. J. Shipping and Transport Logistics: "Stakeholder-oriented performance measurement system framework for groundhandling" IJSTL, Vol. 2, No. 3, 2010, p300

Upcoming events include:

- **Inter Airport China**, international exhibition on the airport systems market, Beijing (China), 14.-16.09.2010.

- **Airport Exchange**, international air transport event, Istanbul (Turkey), 04. - 06.10.2010

- **12th Annual Ground Handling International Conference**, Vienna (Austria), 29.11. - 1.12.2010

Further scientific publications are foreseen.



Vehicle towing plane