



# AD4 1<sup>st</sup> WORKSHOP

## A 4D Virtual Airspace Management System: from the present to the future

### Workshop Agenda: 5<sup>th</sup> October 2005

9:30	<b>Welcome and Introduction</b> <ul style="list-style-type: none"> <li>• Head of Ciampino CRAV and Antonio Nuzzo, ENAV (Italy),</li> <li>• Luigi Mazzucchelli, NEXT R&amp;D – AD4 Project Coordinator (Italy),</li> <li>• William Wong, Middlesex University, London, UK</li> </ul>
	<b>Keynote speech (CHAIR: Luigi Mazzucchelli, NEXT)</b>
10:00-10:45	<b>The Human Factors of Time and Space in Air Traffic Control</b> <i>Prof. William Wong, Middlesex University, London, UK</i>  In this talk we will outline the key human factors challenges and the directions we have taken to drive the development of technology that can give operational users new capabilities and better visualization of time and space issues in air traffic management. Whenever we discuss 3D representations we often think about literal representations of aircraft and 3D digital terrains. How significant is pictorial realism? 3D visualizations are not new, but incorporating a 4th dimension such as time, presents new problems. Time itself has other dimensions, the past and the future, for example. The future can be predicted based on historical data such as an aircraft's track history - a causal relationship. How could intentions, such as intermediate planning and re-planning, be accommodated in a 3D/4D space? what is the impact of this on operational decision making, communications and team working?
10:45-11:00	Coffee Break
	<b>Overall results and key aspects (CHAIR: Paola Amaldi, Middlesex University)</b>
11:00-11:20	<b>The AD4 project: objectives and beyond</b> <i>Luigi Mazzucchelli, NEXT R&amp;D (Italy) - AD4 Project Coordinator</i>
11:20-11:40	<b>Using IT infrastructure for integration of ATC simulation platforms and 3D visualization</b> <i>Antonio Monteleone, NEXT R&amp;D – AD4 Project Responsible</i>  Heterogeneous systems will interoperate within AD4 and a well structured infrastructure can solve many of the problems usually encountered during the integration steps. This presentation intends to introduce the IT infrastructure used within the AD4 projects giving insights on the approach used to integrate simulation platforms and visualization components all together.
11:40-11.50	<b>A preview of the demonstration</b> <i>NEXT R&amp;D</i>
	<b>Operational Concepts, Human Factors and novel HMI approaches – (CHAIR: Dr. Luigi Mazzucchelli, NEXT R&amp;D)</b>
11:55-12:30	<b>Moving from the present to the future: Operational Concepts and 4DHMI for Approach and Tower environments</b> <i>Simone Rozzi, Peter Woodward, Middlesex University (UK)</i>  We will present an overview of the operational concept reports, the methodology and contribution of the results to the AD4 project. In particular we will present the most relevant scenarios emerged from the operational work analysis, resulting from the field study regarding the Approach and Tower control facilities. Some of the key requirements for the controllers include for the Approach Control projection of vertical separation, holding stack management and visualization of 3D obstacles. For the Tower control they will include projection of separations, runway incursion detection, visibility issues on apron taxiway and runway, runway incursion detection.



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12:30-13:15	<p><b>Moving from the present to the future: from Operational Concepts to the realization of the 4DHMIs for the Approach and Tower</b></p> <p><i>Emanuele Panizzi, Digital Video (Italy)</i></p> <p><i>Alessandro Boccalatte, Space Applications Services (Belgium)</i></p> <p>Description of operational scenarios identified by AD4 team for the Approach and Tower Controls. Highlights on safety-critical and time-critical situations managed by controllers. Considerations of controllers' workload and stress level in current airport towers. Proposed solutions, based on the use of 3D/4D visualization, analyzed with respect to operational scenarios.</p>
13:15-14:00	Lunch Break
14:00-16:30	Demonstration and parallel sessions

	<p><b>IT Tools, Architecture and Security –</b>  <b>CHAIR: Teodora Bozheva, ESI</b></p>
14:00-14:25	<p><b>MMISE: an advanced Design Tool for Human-Machine Interface.</b></p> <p><i>Alessandro Boccalatte, Space Applications Services. (Belgium)</i></p> <p>An introduction to MMISE as a tool for Human Machine Interface (HMI) specification and design. To include using MMISE by the identification of goals, task analysis deployment, the identification of HMI information and control requirements. The process of integrating human factors into the HMI. To conclude, the role of MMISE in the AD4 context.</p>
14:25-14:50	<p><b>ATC components and Simulation platforms</b></p> <p><i>Lorenzo Ghirardi, Vitrociset (Italy)</i></p> <p><i>Claudio Vaccaro, SICTA (Italy)</i></p>
14:50-15:00	Coffee Break
15:00-15:25	<p><b>Model Driven Software Development in ATM</b></p> <p><i>Julia Reznik, Fraunhofer Institute FOKUS (Germany)</i></p> <p>This presentation introduces Model Driven Software Development (MDSO) concepts in general and gives a short overview in one of the most popular approaches used in MDSO Model Driven Architecture (MDA). The presentation describes how MDSO can contribute to the development of software systems in the ATM domain and especially in the AD4 project context. At the end the AD4 tool chain for model driven development of AD4 platform will be presented.</p>
15:25-15:50	<p><b>Protecting ATC Systems: Concepts and Implementation.</b></p> <p><i>Rudolf Schreiner. CTO, ObjectSecurity Ltd. (UK)</i></p> <p>The future trends in ATC, for example a much higher level of integration and the usage of standard platforms, will raise many IT security issues. The current security solutions, mainly guards and fences, will not be sufficient anymore. In our presentation, we describe a security architecture for complex distributed systems and its usage in the ATC domain.</p>
15:50-16:30	<b>Demonstrations</b>

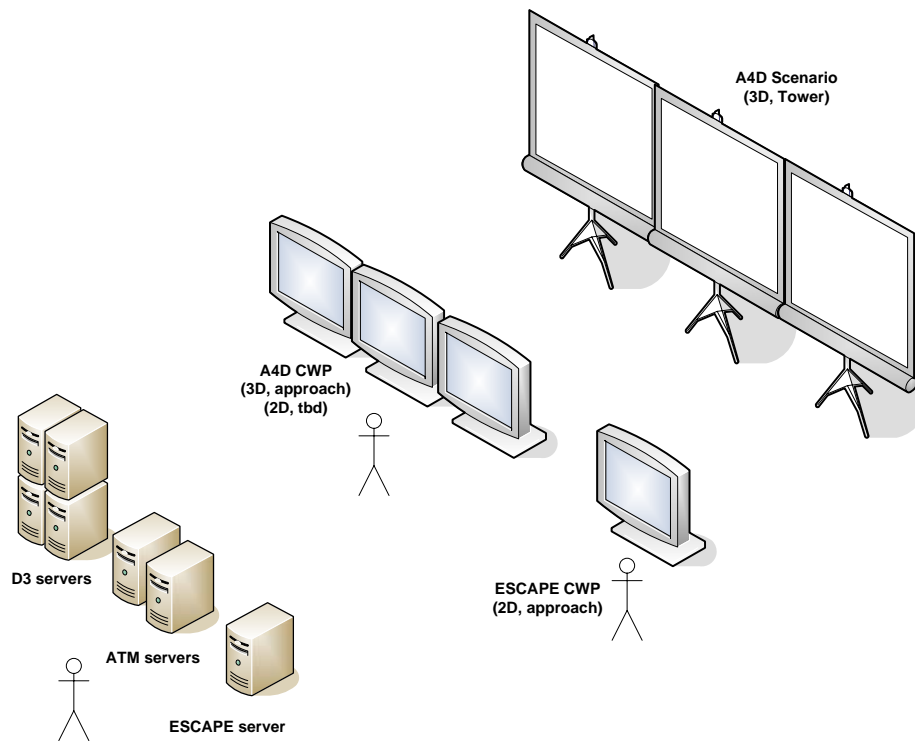


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	Conference feedback CHAIR: Peter Woodward, Middlesex University
16:30-17:30	This session will be used to allow conference attendees to discuss the contents of the presentations and demonstrations
17:30	End of Workshop

	Demonstration sessions
10:30-13:15	The AD4 mock-up: demonstration <i>NEXT R&amp;D</i>
14:00-16:30	The AD4 mock-up: demonstration <i>NEXT R&amp;D</i>



AD4 system infrastructure

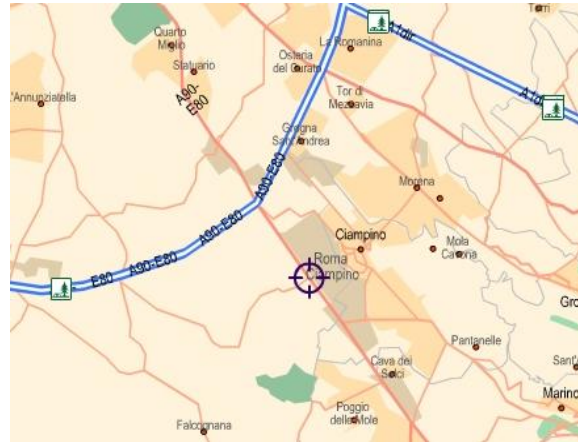


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### Useful Information:

- The registration of participants will start at 9:00.
- Participation is free of charge and can be obtained at the AD4 project Web Site <http://www.ad4-project.com>
- The AD4 Workshop will take place at the Conference Room of Ciampino CRAV via Appia Nuova, 1491 - Ciampino Airport (ROME, Italy)



### Workshop organisation

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### Per additional information.

<http://www.ad4-project.com>  
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