Preface

Through recent advancements in network technologies, graphics cards and displays, a new type of Real-time Online Interactive Applications (ROIA) has become increasingly popular. Everyday life is currently being affected and transformed not only by the use of Web technologies, but also by collaborative multimedia applications, networked computer games, cooperative scientific visualisations, networked virtual environments and real-time graphics displays. Computer-Supported Cooperative Work (CSCW) and Massively Multiplayer Online Gaming (MMOG) are two huge growing sectors worldwide with challenging demands with respect to real-time distributed and interactive technologies.

ROIA 2009 is the second edition of this workshop organised in conjunction with the Euro-Par conference at the Technical University of Delft, Netherlands. The focus of the workshop is on all areas of real-time distributed technologies, from research of basic real-time methods, to applications in real-world environments. The ROIA workshop has offered possibilities to discuss the benefits of real-time applications for human users, to show the latest results, products or research prototypes, and to establish connection between developers and users of associated technologies.

The topics of interest discussed at the workshop included real-time interactive parallel and distributed tools and environments, real-time interactive distributed (massively multiplayer) online gaming, real-time interactive e-learning applications, integration of Cloud computing virtualisation technologies with real-time interactive applications, techniques for real-time Quality of Service (QoS) monitoring and enforcement, utility business models and Service Level Agreements (SLA) for ROIAs, and experiences in deployment and use of real-world distributed ROIAs.

This year's workshop organised by the FP6 IST-034601 edutain@grid STREP project consortium accepted six technical papers and two tutorials scheduled over two half days. To ensure high quality, each paper underwent two rounds of reviews carried out by at least three international experts.

The first day has been dedicated to presentations regarding the edutain@grid project that targeting real-time scalability, resource management and business support for ROIA in Grid environments.

The first paper by Stuart Middleton et al. titled "Bipartite Electronic SLA as a Business Framework to Support Cross-Organisation Load Management of Real-Time Online Applications" presents a novel Grid-based business framework that makes use of bipartite SLAs and dynamic invoice models to model complex business relationships in a massively scalable and flexible way. For evaluation it looks at existing and extended value chains, the QoS metrics measured and the dynamic invoice models that support this work. The causal links from customer quality of experience (QoE) and service provider quality of business (QoBiz) through to measured quality of service are examined. Finally it discusses a shared

H.X. Lin et al. (Eds): Euro-Par 2009 Workshops, LNCS 6043, pp. 241–243, 2010.
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reward business ecosystem and suggests how extended SLAs and invoice models can support this.

The second paper by Vlad Nae et al. titled "Monitoring and Fault Tolerance for Real-Time Online Interactive Applications" presents a monitoring system which collects data from all resources in a distributed environment and from the ROIA managed by the edutain@grid platform. It also describes a fault tolerance service which addresses not only the faults commonly encountered in distributed systems, but also faults manifesting at service level, within the platform's management services. Finally, a use-case consisting of the platform running a MMOG as a concrete ROIA demonstrates the roles of the monitoring and fault tolerance services.

The third paper by Frank Glinka et al. titled "A Service-Oriented Interface for Highly Interactive Distributed Applications" describes a service-oriented interface that comprises a Real-Time Framework (RTF) supporting a high-level application development process which frees the software developer from the low-level details of distributed computation and communication, and the Hoster Management Interface (HMI) supporting transparent resource management for a running application, in particular the creation, controlling and monitoring of ROIA instances. The paper presents an efficient implementation of the interface and describes its use for two particular distributed application scenarios.

The first day of the workshop concluded with a tutorial by Alexander Ploß et al. on "Scaling Real-Time Games on Grid Resources". The tutorial addressed had two goals targeted towards two demographic audiences, namely real-time application developers and edutain@grid platform hosters, both being platform-users, but as different business actors. The first goal of the tutorial was an introduction to the utilisation of the RTF library, enabling real-time applications to be managed within edutain@grid. The second target familiarised the participants with the edutain@grid management services and their functionality accessed through a special purpose management portal. Both parts contained live demonstrations of the involved concepts.

The workshop continued on the next day with a tutorial by Stuart Middelton et al. on "Dynamic SLA, QoS Measurement and Invoicing Support for ROIA in edutain@grid" that showed how the edutain@grid business layer framework supports the three stages of SLA management, contract definition, negotiation, and enforcement, in a way suitable for ROIA requirements.

The first technical paper of the second day by Eryk Ciepiela et al. titled "CompTalks – From a Meta-Model Towards a Framework for Application-Level Interaction Protocols" introduces a new concept of conversation protocol to enable custom fine-grained and elaborate message exchange between distributed yet tightly-coupled parties. The framework is successfully applied to develop a protocol for GSEngine which serves as the runtime system of the ViroLab virtual laboratory, enabling development and execution of complex collaborative applications.

The second paper by Alexandru Iosup titled "CAMEO: Continuous Analytics for Massively Multiplayer Online Games on Cloud Resources" introduces a new

architecture that provides various mechanisms for MMOG data collection and continuous analytics of a pre-determined accuracy in real settings. The paper assess the capabilities of the proposed approach by taking and analysing complete or partial snapshots from Runescape, one of the most popular MMOGs with a community of over 3,000,000 active players. Notably, it shows evidence that CAMEO already supports simple continuous MMOG analytics, and give a first estimation of the costs of the analytic process.

The last paper presented at the workshop by Tomasz Jaskiewicz titled "Complex Multiplayer Urban Design System – Concept and Case Studies" explores the idea of creating a software and hardware system supporting collaborative urban planning and design. The paper demonstrates several working case studies of various parts of such system and illustrated a selected strategy for a computer supported cooperative work for the field of architectural and urban design and planning.

As Program Chair, I wish to acknowledge all those that contributed to the success of ROIA 2009, in particular to the authors of the submitted papers, and to the Program Committee members for their valuable time and expertise to the selection process.

December 1, 2009

Radu Prodan
Program Chair
ROIA 2009