

## Information Systems in Distributed Environments – ISDE 2014

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DOI: 10.1145/2815021.2815035

<http://doi.acm.org/10.1145/2815021.2815035>

### Abstract

This is a report from a one-day fourth international workshop on “Information Systems in Distributed Environments” (ISDE), which was organized in conjunction with the OnTheMove Federated Conferences & Workshops (OTM 2014) October 29-30, 2014, Amantea, Calabria, Italy. The main focus of this event was to provide a venue for the discussion of challenges related to the development, operation, and maintenance of distributed information systems, and their creation in the context of global development projects. Further dissemination of research results will lead to an improvement of distributed information system development and deployment across the globe.

**Keywords:** Distributed Information System Development, Global Software Development, ISDE

### Introduction

Information System in Distributed Environment (ISDE) is swiftly becoming a prominent standard in this globalization generation due to advancement in information and communication technologies [1]. In distributed environments, business units collaborate across time zones, organizational boundaries, work cultures and geographical distances, to an increasing diversification and growing complexity of cooperation among units [1]. The main expected benefits from Distributed Software Development (DSD) are improvements in development time efficiency, being close to the customers and having flexible access to greater and less costly resources. Despite the fact that DSD is widely being used, the project managers and professionals face many challenges due to increased complexity, cultural as well as technological. Therefore it is important to take into account this evolving paradigm of distributed information system development from different perspectives [2].

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improvement is growing. Despite the fact that DSD is widely being used, the project managers and software professionals face many challenges due to increased complexity, cultural as well as various technological issues. Therefore, it is crucial to understand current research and practices with researchers and practitioners in these areas.

The increased popularity of ISDE has resulted in quite a number of research and industrial studies. Information system development and implementation in distributed environments are still evolving and present novel challenges. Therefore, it is crucial to understand current research and practices in this regard and share experiences and ideas with researchers and practitioners.

### Workshop Organization

Organizing Committee:

Alok Mishra, Atilim University, Turkey  
Jürgen Münch, University of Helsinki, Finland  
Deepti Mishra, Atilim University, Turkey

Program Committee:

Adam Wojciechowski, Poznan University of Technology, Poland  
Amar Gupta, Pace University, USA  
Allen E. Milewski, Monmouth University, USA  
Alexander Norta, Tallinn University of Technology, Estonia  
Adel Taweel, Kings College, London, UK  
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Ita Richardson, University of Limerick, Ireland  
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Jukka Kääriäinen, VTT, Finland  
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Liguo Yu, Indiana University, South Bend, USA  
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Nik Bessis, University of Derby, UK  
Orit Hazzan, Technion, Israel  
Qing YAO, Shandong University, China  
Ricardo Colomo-Palacios, Universidad Carlos III de Madrid, Spain  
Silvia Abrahao, Universidad Politecnica de Valencia, Spain  
Sri Ramaswamy, ABB Bangalore, India

## Accepted Papers

Following selected papers of ISDE 2014 international workshop in conjunction with OTM conferences present recent advances and novel proposals in this direction.

Juan Garbajosa, Agustin Yagüe, Eloy Gonzalez [3] in their work on communication in agile global software development: an exploratory study reports an exploratory study on the impact of different communication elements, including tools, obtained both from monitoring some agile distributed projects, and from getting the perceptions of team members.

In collaborative brainstorming activity results and information systems by Claude Moulin, Kenji Sugawara, Yuki Kaeri, Shigeru Fujita, Marie-Hélène Abel [4] presented the architectural design of the distributed application used for the resource channel using several tactile devices with different size that display the resources. Finally, it reports an experiment with two teams situated in Japan and France.

Liguo Yu, Alok Mishra, Deepti Mishra [5] in their empirical study of the dynamics of GitHub repository and its impact on distributed software development reviewed different kinds of version control systems and study the dynamics of GitHub, i.e., the ability and scalability of GitHub to process different requests and provide different services to different GitHub projects and GitHub users.

Patterns of Software Modeling by Wolfgang Raschke, Massimiliano Zilli, Johannes Loinig, Reinhold Weiss, Christian Steger, Christian Kreiner [6] provided an evolutionary view of software systems and models which helps to understand current problems and prospective solutions.

Jesus Vallecillos, Javier Criado, Luis Iribarne, Nicolas Padilla [7] proposed an architecture for specification, storage, management and visualization of components, built from widgets complying with the W3C recommendation, for making web user interfaces.

Jukka Kääriäinen, Susanna Teppola, Matias Vierimaa, Antti Välimäki [8] discussed significance of a systematic upgrade planning service in a distributed operational environment and presented the process description and related tools that have been composed based on an industrial case study in an automation company.

Privacy-aware agent-oriented architecture for distributed eHealth systems by Adel Taweel, Samhar Mahmoud, ARahman Tawil [9] presented an approach for privacy-preserving agent-oriented architecture that enables organizations to work together overcoming sharing sensitive data and evaluates its use within a real-life project.

In the paper policy-based authorization framework in audit rule ontology for continuous process auditing in complex distributed systems, Numanul Subhani, and Robert Kent [10] proposed a mechanism, materialized views, for frequently accessed authorized data in near real-time for distributed decision support systems.

A novel mechanism for dynamic optimization of intercloud services by Lohit Kapoor, Seema Bawa, Ankur Gupta [11] proposed a dynamic service ranking and selection mechanism which allows users fine-grained control over service consumption, while maximizing service provider revenues.

Literature review of DSD and cultural issues have been discussed by Alok Mishra and Deepti Mishra [12]. They reported although many studies have been performed in culture and distributed software development, still impact of culture in distributed software development in different dimensions and empirical comparative studies received less attention.

A distributed service-based system for homecare self-management by Adel Taweel, Lina Barakat, Simon Miles [13] reported design of a distributed system that enables homecare in the context of management of self-feeding through balanced nutritional intake.

## Summaries of Group Discussions

The event was organized in three sessions: Distributed Information System Applications, Architecture and Process in Distributed Information System, Distributed Information System Development and Operational Environment. The group discussions focused on the differences and commonalities between distributed development on the one hand and distributed systems themselves on the other hand. Although these areas are quite different, there are several similarities and dependencies. For instance, techniques for processor allocation, i.e., the optimal assignment of computation tasks to processors in a network, is very common in distributed systems and has analogies to allocating development tasks in distributed information system development projects. Communication and collaboration issues in distributed information system were also part of discussion. In addition, several concrete practices were discussed (e.g., patterns of software modeling and privacy issues in distributed information system development, distributed eHealth systems) and experience was exchanged. An open discussion followed on challenges and fundamental research questions.

## Conclusion

Overall the workshop was interesting and lively in its discussion. We look forward to organizing further workshops in the future. Merging identified challenges led to the conclusion that fundamental software engineering principles such as information hiding support both efficient development and analysis of distributed systems and efficient organization of distributed work. Therefore, a major challenge can be seen in establishing compliance to such principles while considering the specifics of distributed systems and distributed work.

## Acknowledgements

We would like to thank all the attendees of the workshop who facilitated an excellent interchange of ideas and interesting industrial case studies. We would also like to thank the organizers of the OTM conferences for providing infrastructure and support in organizing this workshop.

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