

Curriculum Vitae

Vadim A. Ermolayev, PhD

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(full time)



Professional Societies AAAI, UAAIT

Vadim Ermolayev had studied Applied Mathematics and Computer Science at Samara Aerospace Institute, Russia and Dnepropetrovsk State University, Ukraine in 1979-1984. He has obtained an MSci Diploma in Applied Mathematics at Dnepropetrovsk State University in 1984 (with distinctions). In 1994 he was awarded a PhD degree in Mathematical Modelling and Computer Science at Zaporozhye State University, Ukraine. In 1997 he has received his habilitation as the Docent (Assoc. Prof.) of the Department of Mathematical Modelling and IT of Zaporozhye State University.

From August 1984 till December 1986 Dr. Ermolayev worked as a research engineer, senior research engineer at Zaporozhye Research Institute for Radio Communication. In 1987 he was affiliated as a visiting researcher at Dnepropetrovsk All-Union Pipe Research Institute. From April 1987 till now he works at Zaporozhye State University at various positions: researcher, senior researcher, director of University Computing Centre, Docent. Since 1995 he is also in charge of design and implementation of the University-wide Network and Information infrastructure as university administration adviser, project manager and principal researcher. In 1997-2001 he was the member of Technical Committee of Ukrainian National Research and Education Network (URAN). He was the member of several Europeans Networks of Excellence. Since 1991 he took and is taking part as a researcher, senior researcher, principal researcher and project manager in many research and RTD projects funded by European Commission (FP7), European Training Foundation, Ukrainian Ministry of Education and Science, German Federal Ministry of Education and Research (BMBF), European Industrial Companies, International Renaissance Foundation, Zaporozhye State University.

Since 1994 Dr. Ermolayev teaches undergraduate and graduate courses in Software Algorithms and Data Structures, the Architectures of Operating Systems and Database Systems, Advances in Information Systems, Software Engineering and Programming Technologies, Agent-Enabled e-Business, Knowledge Engineering, the Semantic Web and Web Services, Logic Programming and Artificial Intelligence. He supervised over 30 successfully accomplished master theses and several PhDs. He has also been the member

of about 20 PhD Committees. From September 2000 till July 2003 he served also as the deputy president of the University responsible for IT, networking and computing.

Dr. Ermolayev has published over 80 papers as book chapters, journal papers, refereed conference and workshop contributions, technical reports. He also (co-)authored several Software Manuals and Textbooks (both hardcopy and electronic versions). He serves as the member of Editorial Advisory Board, Editorial Review Board for international journals and book series, the program committee member for many international conferences and workshops.

Dr. Ermolayev also possesses working experience in industrial R&D. He worked at various branches of industry as a full-time employee and as a freelance sub-contractor or a research consultant. He also serves to EU FP6 and FP7 as an expert.

Dr. Ermolayev is the founder and the head of the [Intelligent Systems Research Group](#) (ISRG) at Zaporozhye National University.

Selected Career Highlights

- 1984 – 2007: **24 years of experience in research and development** at various positions in Academia and Industry
- 1993 – 2007: **15 years of experience in teaching** as assistant professor, associate professor, professor
- 1997 – 2006: **Almost 10 years in National and International Professional Bodies** (Technical Committee of Ukrainian National Research and Education Network – 1997-2001. Registered expert of EU FP6 IST, FP7 ICT – 2002-ongoing; the chair of the regional branch of the Ukrainian Professional IT Society – 2007-ongoing)
- 1998 – ongoing: **7+ years in European Networks of Excellence** (IST AgentLink, IST OntoWeb, IST AgentCities)
- 1992 – 2003: **11 years of experience at medium- and top-level University management** (Managing Director of University Computing Centre, Deputy President for IT, networking and computing).

Education

- 1991-1994: Dept. of Applied Mathematics Zaporozhye State Univ., Zaporozhye, Ukraine: **Ph.D. (Mathematical Modeling and Computer Science)**. Dissertation Thesis: Active Meta-Data Repository System for Adaptable Data Base Application Design
- 1981-1984: Inst. of Math. & Mechanics, Dnepropetrovsk State Univ., Dnepropetrovsk, Ukraine: **M.Sci. (Applied Mathematics)** with distinctions
- 1979-1981: Dept. of Appl. Math., Samara Aerospace Institute, Samara, Russia

Professional Training

- **2004:** [University of Nice - Sophia Antipolis](#), France, [International Project Management Institute](#). Course: Quality Management in Software Development Projects.
- **2001:** European Centre for **Strategic Management of Universities**, Brussels, Belgium International Institute for Educational Training, Paris, France: Certificate of Participation in the Distance Education Course on ‘The Management of University-Industry Partnerships’

Employment History

- 09.2004 – 06.2005 Department of Programming and Information Technologies, Humanitarian University “Zaporozhye Institute of State and Municipal Governance”, Zaporozhye, Ukraine – **Professor**
- 07.2003 – ongoing Department of Information Technologies, Zaporozhye State University, Zaporozhye, Ukraine – **Associate Professor**
- 09.2000 – 07.2003: Zaporozhye State University, Zaporozhye, Ukraine –

Deputy President of the University (IT, Networking, Computing)

- 04.1987 – 09.2000: Zaporozhye State University, Zaporozhye, Ukraine –
Senior Research Engineer, Head of Laboratory, Head of Computing Centre, Associate Professor
- 11.1995 – 05.1996: Swiss Academy of Engineering and Charmilles Technologies SA, Geneva, Switzerland –
Post-Doc Researcher (funded by Branco Weiss Foundation, Switzerland)
- 08.1984-12.1986: Radio Communication Research Institute, Zaporozhye, Ukraine –
Research Engineer, Senior Research Engineer

Visiting Positions

- 08.2005: Dept. of Computer Science, Univ. of Jyvaskyla, Finland, [15th Jyvaskyla Summer School](#)
- 01.2003–02.2003: [Dept. of Business Informatics and Application Systems](#), [Inst of Informatics](#), [Univ. of Klagenfurt](#), Austria – **Visiting Professor**
- 03.2001–04.2001: [Division of Mathematics and Computer Science](#), Vrije University, Amsterdam, the Netherlands – **Visiting Researcher**
- 08.1994 – 03.1995: [Swiss Academy of Engineering](#) (Branco Weiss Foundation) / [Charmilles Technologies SA](#), Geneva, Switzerland – **Visiting Researcher**
- 01.1987 – 04.1987: Dnepropetrovsk all-Union Pipe Research Institute, Dnepropetrovsk, Ukraine – **Visiting Senior Research Engineer**

STATEMENT OF CAREER GOALS

Introduction

My career goal is to increase knowledge, skills, and welfare in society through research and development that facilitates the advancement of computer science and, in particular, Distributed Artificial Intelligence, Intelligent Information Systems, Knowledge Engineering and Management. Taking part in research in these areas brings me a lot of intellectual satisfaction. It is rewarding because my field of research investigates intriguing and often challenging problems that often have significant real world impact. Therefore, I'm always keenly interested in how the results of research and development find their way to and response at industries. This work involves both the development of theory and empirical methods, including conceptual modeling, ontology engineering, algorithm design as well as implementation of intelligent software systems. Some of them are commercially fielded.

I always tried my best in seeking for the research questions that may have impact in the future. Of course, being the member of the research community always helped a lot in shaping out the research agenda. Therefore I readily accept community professional services like professional networking, reviewing, taking part in the organization of scientific events, providing expertise to international funding bodies. I also enjoy sharing my excitement with research and emerging ideas with the members of my research group and my students through mentoring and teaching undergraduate and graduate courses. This kind of generous collaboration stimulates me a lot. My interaction with colleges and students gives me a sense of passing a legacy on to the next generation of researchers and practitioners.

Research

Current Research Interests

Area of Interest	Recent Research Projects
Business performance modeling and management, business intelligence, engineering design performance	PSI , PRODUKTIV+ , ACTIVE IP
Ontology Engineering, Knowledge	PSI , PRODUKTIV+ , RACING , UnIT-Net

Management, Logics, and Reasoning	
Software Agents and Multi-Agent Systems	PSI , PRODUKTIV+ , RACING
Semantic Web and Semantic Web Services, Web 2.0	UnIT-Net , RACING
Business Process Dynamics	PSI , RACING
Evolution and adaptability in intelligent information systems	UnIT-Net , RACING

A particular research topic that thrills me throughout my research career is **capturing the dynamics and the adaptability of real world in intelligent software artifacts**.

Software systems in general, information and business management systems in particular are increasingly expected and developed to possess more intelligence, robustness, and adaptability to users' needs. Following the trend of information, knowledge, and business distribution they become more de-centralized. Last, but not least, they become more agile – capable of adapting themselves to changing requirements and to the changes in their environment. These factors outdate and invalidate software engineering assumptions that: (i) a central designer controls the behavior of all system components and (ii) the particularities of the requirements and system's behavior may all be hard-coded in the software. Hence, today's software engineering methodologies necessarily involve more declarative and knowledge-based approaches than, for instance, a decade ago.

Making an information system or another software system more distributed, adaptable, and intelligent is a challenging task which is on the research agenda in many fields. In particular, it is a high-priority problem for Distributed Artificial Intelligence, Service Oriented Computing, the Semantic Web, Knowledge Engineering communities. My main research goal is to develop knowledge-based means to constructing distributed, self-adapting, intelligent software systems which are responsive to the dynamic features of their application domains. This paves the way to building distributed systems that are robust against uncontrolled external influences and capable to pro-actively adapt themselves to the changes in the environment to optimize their performance in dynamics, at run-time.

Dynamics and Adaptability in Information Systems

My first attempt to solve the challenging problem of information system adaptability was undertaken in my Ph.D. research. This research has been carried out in frame of the project funded by Ukrainian Government in 1991-1994. In a conventional RDBMS a MetaData layer is a declarative means describing the structure of data. I used the metaphor of a data dictionary and extended it by adding the capabilities of describing the interrelationships among the data structures and the code of an information system. This enhancement allowed designing information systems which loosely depend on the changes in MetaData and Business Logic. Resulting Active MetaData Repository Framework [C29, R17] has been used in designing and developing information systems in the Domains which are substantially dynamic. Some of the software artifacts which have been later developed using my framework are commercialized. The first commercial development was the "University Entrant" Information System [C26-C28] which has been and is used in different versions at several Ukrainian Universities since 1994. I also used the framework in my Post Doc research and development project funded by the Swiss Academy of Engineering and Charmilles Technologies SA (CT) to design and develop "CT Techno Cookee" Information System [R16, M1, M2] for managing technology files of CT EDM machines. As a follow-up to my Ph.D. work I continued evaluating my Active MetaData Repository Framework by applying it to the development of new information systems from scratch or to the refinement of the legacy information systems in Zaporozhye State University. This work resulted in the development of Integrated Computational Media at Zaporozhye University.

Currently I consider this R&D topic out of my focus and do not plan investing resources in it.

Intelligent Information Systems and Enterprises

My further search for more effective ways to capturing dynamics and adaptability in software systems brought me to the conclusion that the most promising approach is making a system more intelligent – i.e.

being capable of perceiving environmental influences and pro-actively adapting itself to more optimally pursuing its goals. This understanding led me to the study of Agent-Oriented paradigm. I have chosen intelligent integration University Information Systems as a kind of a test bed for evaluation. We have tried and prototyped a very simple agent-based wrapper-mediator architecture integrating three University information systems as a proof of concept implementation in our Virtual University project (1999-2002). The major conceptual paradigm developed in this project was the Unified Information Space (e.g., [C19]). In the Unified Information Space software agents have been used as intelligent wrappers of the services provided by the legacy information systems in a distributed environment. We also did some work in developing graphical geo-spatial user-friendly interfaces for this mediator system. The work on intelligent service wrappers led us to the necessity to capture the dynamics of business processes as the assemblies of those services. Agent-based framework for planning process modeling [C21] was one of the interesting results we obtained out of this research. At this time my group has become a member of AgentLink OntoWeb European Networks of Excellence. Participation in these networks gave us valuable research stimuli and led to more thorough work in developing descriptive theories (ontologies) for our research field. Our first ontologies describing task planning knowledge using contracting negotiation based framework [W17] have been developed in result. As a visiting researcher at the group of Dieter Fensel at Vrije University Amsterdam I spent some effort in verifying if our framework may be used in e-Business Domain. I found out that the answer is positive. This gave my group an extra push in studying the dynamics and adaptability of business processes in such vibrant fields as e-Business and the emerging Semantic Web.

My current research focus in the field of Intelligent Information Systems and Enterprises is Business Process Adaptability and Dynamics.

Business Process Dynamics

As mentioned before, our approach in developing business process models emphasizes business process dynamics. We consider that the topology of a business process can not be fully shaped out at design time but is formed by its intelligent participants at run time using task and activity patterns as small chunks. Such an approach, though more computationally expensive, is capable of modeling and simulating complex real world processes where decisions on either the path of continuation or the termination of a process are made and taken at run time. The approach is very similar to that of problem solving in Distributed Artificial Intelligence and, particularly in Dynamic Distributed Planning. Therefore, it is natural that agent and agency paradigms are its central piece. Our first version of a dynamic business process modeling framework has been developed in RACING project and used the outcomes of the Virtual University project. We tried and continue applying this framework to developing an approach for dynamic agent-based Semantic Web Service composition [J5, B1], the architecture for intelligent distributed information retrieval [C14], a fine-grained descriptive theory of a Dynamic Engineering Design Process in Microelectronics [B2]. These applications help us refining the approach as a whole as well as its central components: the model of a dynamic business process based on dynamic coalition formation [J5, C14, C16]; negotiation model and negotiation ontology [W17, C7]. Software implementations using different variants of this framework are referenced below.

This research remains one of my priority focuses. My research goal is to further develop and validate the framework for adaptable execution and re-planning with changing goals and stochastic environmental influences.

Intelligent Distributed Information Retrieval

The Domain of Distributed Information Retrieval has become the field of our research interest as one of highly dynamic e-Business Domains. Our research in the field was run in two of our projects. RACING developed an agent-based mediation framework and architecture for distributed information retrieval on the Web. The approach [E1, C14] was based on the idea that an information resource is an autonomous object which is wrapped by a rational software agent providing information retrieval service. RACING framework assumed that many heterogeneous and autonomously evolving resources are mediated by a centralized mediator multi-agent system. This mediator provided services of user query decomposition and processing, resource wrapper(s) matchmaking, ontology alignment. RACING software prototype has been fielded. One of the central pieces of the RACING framework is the formal framework for designing strategies for multi-

issue non-symmetric meaning negotiations among software agents in a distributed information retrieval system [C8]. Such a strategy compares the contexts of two background domain theories not concept by concept, but the whole context to the other context by accounting the relationships among concepts, the properties and the constraints over properties. It contains the mechanisms for measuring contextual similarity through assessing propositional substitutions and to provide argumentation through generating extra contexts. It uses presuppositions for choosing the best similarity hypotheses and to make the mutual concession to the common sense monotonic. It provides the means to evaluate the possible eagerness to concede through semantic commitments and related notions of knowledgeability and degree of reputation. RACING project web site can be found at <http://www.zsu.zp.ua/racing/>.

UnIT-Net project in its research part was focused on the development of the software infrastructure of intelligent information interchange among Universities. UnIT-Net framework [I13, C12, J4] was conceptually based on RACING, but used semantically reinforced Web Services [J4] instead of software agents. UnIT-Net project web site can be found at <http://www.unit-net.org.ua/Default.aspx?page=1&lng=2>. Trying different basic software engineering frameworks gave us extensive experience in prototyping distributed intelligent systems based on different architectural principles.

Currently I do not plan having projects in distributed intelligent information retrieval. Though the topic is very interesting and important, I plan focusing on Semantic Web Agents, Ontology Engineering and their applications in Business Performance research.

Semantic Web and Semantic Web Services

Semantic Web Services are the emerging technology enhancing conventional Web Services and promising to become one of the key enablers of the Semantic Web. Being self-described and self-contained modular active components, Semantic Web Services will become the key elements in assembling intelligent software infrastructures in the near future. I believe that the challenge in this research field is to make Semantic Web Services automatically tradable and usable by artificial agents in their rational, proactive interoperation and collaboration on the next generation of the Web. In [B1] we called this emerging synergy involving software agents, Semantic Web Services and other Semantic Web technologies (like ontology representation languages) *Semantic Web Agents*. The challenge of designing and implementing Semantic Web Agents may be solved by creating frameworks, standards, and re-usable generic software for automatic Web Service discovery, execution, composition, interoperation and monitoring. In addition to these important capabilities, the list should be extended by the means making services the object of automated negotiation and trade. It is also important for future service enabled Semantic Web infrastructures to cope with business logic, reputation and trust with respect to services and service providing agents, dynamic character of assembled business processes. Our main fundamental results in the Semantic Web and Semantic Web Services domain are: the framework for agent-based rational Semantic Web Service Composition [J5, B1]; the framework for building meaning negotiation strategies for Semantic Web Agents [C8]; an upper-level Negotiation Ontology [C7].

My research goal in Semantic Web Agents is to bridge the gap between the Semantic Web and Distributed Artificial Intelligence (Software Agents) by building agent-based approaches solving Semantic Web problems. This work is tightly linked to the activities of my group in business process dynamics and ontology engineering and knowledge management. In the field of Semantic Web Agents we see our challenge in building prototyping and fielding intelligent distributed agent-based software capable of reaching agreements both on business-related and semantics-related aspects.

Ontology Engineering and Knowledge Management

I consider this research field as central for my group. In ontology engineering and knowledge management we focus on developing frameworks and tools enabling the evolution of knowledge in the form of ontologies. These research activities are both fundamental and application oriented.

The topic for our basic research is ontology evolution and ontology instance migration. The work on ontology evolution is done together with Natalya Keberle. Our first results in classifying different types of ontology changes [C18] resulted in defining the requirements for the formal model of ontology evolution.

Natalya's further work resulted in Ontology Evolution Framework comprising the formal logical extension of OWL language with the constructs enabling reasoning using modalities and metric time, OWL-MeT [W3]. The development of OWL-MeT has been supplemented with the extension of Pellet reasoner [W3] to enable inferences on ontology versions in discrete metric time space. The most recent results in OWL-MeT development may be retrieved from <http://ermolayev.com/owl-met/>. Our work with Vladimir Vlaimirov on developing the framework and the proof of concept software tool implementation for ontology instance migration between different ontology versions [J1] resulted in the partial tool support for our Ontology Evolution Framework. I plan continuing this work in further projects. These results may be further used to design methodologies for ontology engineering and ontology evolution support in collaborative distributed settings for different subject domains.

Another focal aspect of ontology engineering gaining particular importance as a distinct research topic after the emergence of Web 2.0 is collaborative ontology design and evaluation. An initial attempt of my group to develop a semantically rich graphical language for collaborative ontology debate and design has been undertaken in 2002. We have presented our early results at the regular meeting of OntoWeb SIG on Content Standards [I4]. One more important capability of a distributed intelligent system (a tool) for collaborative ontology design is its ability to assist in making agreements on the semantics of different ontology concepts and their contexts. In RACING we have developed a formal framework shaping out meaning negotiation strategies in a distributed agent-based system with heterogeneous ontologies developed by different owners [C8].

Yet one more ontology engineering challenge of reliable ontology evaluation is in the focus of our research. Ontology, though being a shared and agreed specification of conceptualization, still reflects the subjective views of its creators. Indeed, it is possible to build different ontologies which formally represent the same body of knowledge. Ontology evaluation provides a way to select an ontology satisfying a set of predefined criteria, ranging from the presentation of the required level of structural knowledge granularity to matching the corpus of known factual information about the domain or task, acquired from appropriate documents or standards. A "golden standard" ontology may exist for a domain if the formal specification of its conceptualization is shared and committed to by the majority of domain experts. This widely accepted ontology is normally used to develop knowledge-intensive applications or to formalize the corpus of domain facts and data. A newly developed ontology of such a domain may be evaluated against the "golden standard". Such an evaluation answers how well the evaluated ontology matches the existing applications and knowledge corpus – the agreement and the commitment of the majority of domain experts. A new ontology may also be evaluated against the set of non-formalized criteria, norms, rules characterizing the domain in question. Unfortunately, "golden standard" theories do not exist for many interesting domains. If so, an ontology may be evaluated using a purely logical approach applying the techniques like OntoClean or using statistical approaches. The weakness of these methodologies is that they provide meaningful results only for taxonomies. The question about how to reliably evaluate complex ontologies with richer relationships between their concepts is still open. Our current results [C4] propose a partial answer to this important research question. In our approach a meta-layer of the evaluated ontology is built and the attempt to map it to the upper-level common sense ontologies is undertaken. If the ontology in question maps well to the common sense one may expect that the commitment of domain experts to it may be reached considerably easily. If the mapping is bad then the ontology is either the extension of the common sense conceptualization or is badly designed. The meta-layer is designed as taxonomy. Therefore, formal logical or statistical frameworks mentioned above may be also used for its evaluation. In PSI project we evaluated the Suite of PSI ontologies v.1.6 by mapping them through PSI Meta Ontology to several well known upper level ontologies – SUMO+WordNet and DOLCE. We found out that ontology evaluation in this case is actually the process of mapping of the evaluated ontology to common sense formalized in the upper-level theories. This process is obviously twofold: both a foundational ontology and the evaluated ontology may benefit from each other, as far as even the creation of foundational ontology is incremental. Evaluated domain ontology may benefit from detection of its discrepancies with common sense, which obviously may be the obstacle for ontological commitment. A foundational ontology may also benefit from the alignment of a new Domain ontology to it. Bad alignment results might be a signal to start thinking about the refinement of a foundational theory as well. Moreover, mapping to several foundational ontologies may also reveal the differences between the targets: different focuses, completeness, etc.

Our applied research in Ontology Engineering is engineering upper-level descriptive theories and coding them in ontology specification languages. In the last several years we engineered several ontologies in different projects. In RACING project we designed Task and Negotiation Ontologies [W17] as generic (upper-level) theories describing the content of collaborative task execution and contracting negotiations for dynamic agent coalitions in distributed information retrieval. We also designed User Profile ontology for aligning semantics in personified intelligent query processing [C15, C12]. In UnIT-Net project we designed the suite of ontologies for UnIT-Net mediator system (Mediator Domain Ontology, Resource-Domain Mapping Ontology) and several ontologies describing our Case Study information resources [C12, I13, J4, J2, R8]. In PSI project we designed and implemented several consecutive versions of PSI Suite of Ontologies. PSI Suite of Ontologies is a modular descriptive theory of the Domain of Dynamic Engineering Design Processes in microelectronics and integrated circuits [W9, T10, C6, C2, B2]. In PRODUKTIV+ project we assisted in developing several extension ontologies for the domain of performance management in engineering design. We also develop the core Performance Ontology [C1].

My personal research focus in Ontology Engineering and Knowledge Management is the development of conceptual and formal theories for business process dynamics, actor coalitions and collaboration, reaching agreements. These theories are evaluated in our projects through implementation as different ontologies and through their use in software. Another research focus of my group is developing theoretical frameworks and prototyping software tools for ontology evolution.

Engineering Design Performance

Performance management is very much en-vogue in virtually every area of human activity. However, performance management as a rigorous discipline is still in an embryonic state. A mature or at least a suitably grounded framework of the non-linear performance management is highly demanded in different industries. Despite significant research efforts, the result is not the shortly expected one. Probably the main reason for this unsatisfactory situation is the highly interdisciplinary nature of performance management research, involving many fields of varying states of maturity and methodological practice. Disciplines that play a vital role in performance management research are for example: economics, engineering science, management theory, cultural anthropology, information technologies, psychology, education, artificial intelligence, philosophy, and so on. Today's performance measurement and management practices are based mostly on strategic level benchmarking. The prevailing methodology is the use of balanced scorecards. Such an approach, though providing reasonably sound indications of what is good or bad in terms of performance, does not help well enough in revealing the reasons. Moreover, these measures are generally based on the past and do not help predicting what will happen in the future.

My activity as a research consultant of Cadence Design Systems GmbH aims at developing a rigorous theory of engineering design performance which is capable of assisting in such forward-looking assessments. In order to make more grounded and predictive assessments of engineering design performance at the required level, we have to apply the measures at the level of engineering design processes and use much finer grained bits of information for that. A negative consequence of taking this way in performance assessment and management is that the volume and the complexity of data to be processed are far too high to perform such an analysis by hand before the changes pass the point of no return. Therefore, a methodology and an intelligent software tool capable to automate such analyses is required as one of the important factors ensuring better performance of a design system.

The objective of our PSI and PRODUKTIV+ projects is to develop such a methodology and a tool capable to discover the reasons for the weaknesses of a design system and accounting for the pro-activity of human designers and the stochastic character of the external factors. The approach is to simulate a design system as a social and self-regulating team of autonomous actors having differing professional and cultural backgrounds. Some information about PSI can be retrieved from <http://ermolayev.com/ISRG/ISRG-projects-PSI.htm>. PRODUKTIV+ project web site is at <http://www.edacentrum.de/produktivplus/>.

Publication Highlights

5 book chapters, 22 journal articles, 34 refereed conference and workshop papers. Details are given in the Publication List below.

Teaching

In addition to pursuing my career goals in research, I want to continue high quality teaching and effective mentoring of students. I derive satisfaction from being able to communicate complex ideas in simple ways, usually using examples in my lectures. My style is to make students think through problems incrementally during class in a discussion format. Based on the observed students' progress during my courses, I believe this approach works well. I have also found that teaching had made me a better researcher, writer, and presenter.

I have generated several new courses and taught them at different European Universities. These are listed in the attached documentation. The course materials that I generated from scratch can be found on the courses' web pages almost in every case. I have taught courses that consisted of undergraduates, ones that mainly consisted of M.Sci.- level students, and ones where most of the students were at the Ph.D.-level. As a part of my Associate Professorship duties at Zaporozhye National University I contributed to the development of the new Informatics program.

Besides regular university teaching, I enjoy giving my courses at Summer Schools. One of my courses has been developed initially for a Summer School¹. I have also prepared and taught several tutorials at conferences and industrial sites.

Apart of contributing to knowledge transfer to a new generation of researchers and practitioners, my goal in teaching is pragmatic selection of those individuals who are best capable for and are willing to invest themselves in research.

RESEARCH EXPERIENCE

Previous Scientific Activities/Positions

Position	Institution	Dates (from-to)
Prof	Dept. of Programming and IT, Humanitarian Univ. "Zaporozhye Institute of State and Municipal Governance", Zaporozhye, Ukraine	09.2004 – 06.2005
Principal researcher and local project co-ordinator	Zaporozhye State Univ., Zaporozhye, Ukraine (UnIT-Net: IT in University Management Network TEMPUS/TACIS multiplier project MP-JEP-2010-2003)	09.2003 – 11.2005
Principal researcher and project co-ordinator	Zaporozhye State Univ., Zaporozhye, Ukraine (RACING – research project funded by Ukrainian Ministry of Education and Science)	01.2002 – 01.2005
Main researcher	Zaporozhye State Univ., Zaporozhye, Ukraine (Agent-Enabled Unified University Information Space – research project funded by Ukrainian Ministry of Education and Science)	01.1999 – 12.2001
Senior Researcher	Zaporozhye State Univ., Zaporozhye, Ukraine (Development of Integrated Computational Media of a University – research project funded by Ukrainian Ministry of Education and Science)	01.1997 – 12.1998

¹ Course title: Agent Technologies on the Semantic Web. Course materials can be found at: <http://ermolayev.com/ASW/>. It was first taught at the 15-th Jyvaskyla Summer School in 2005.

Senior Researcher	Zaporozhye State Univ., Zaporozhye, Ukraine (Mathematical Models for Complex Dynamic Systems – research project funded by Ukrainian Ministry of Education and Science)	01.1995 – 12.1997
Subcontractor	Charmilles Technologies SA, Geneva, Switzerland	11.1995 – 05.1996
PostDoc Researcher	Swiss Academy of Engineering / Branco Weiss Foundation, Charmilles Technologies SA	08.1994 – 03.1995
Senior Researcher	Zaporozhye State Univ., Zaporozhye, Ukraine (Methods and Tools for Database Applications Flexibility Enhancement – research project funded by Ukrainian Ministry of Education and Science)	01.1991 – 12.1994
Senior Researcher	Scientific Research Dept., Zaporozhye State Univ., Zaporozhye, Ukraine	02.1990 – 05.1991
Senior Researcher	Dept. of Applied Mathematics, Zaporozhye State Univ., Zaporozhye, Ukraine	12.1989 – 02.1990
Senior Research Engineer	Dnepropetrovsk All-Union Pipe Research Institute, Dnepropetrovsk, Ukraine	01.1987 – 04.1987
Research Engineer, Senior Research Engineer	Research Institute for Radio Communication, Zaporozhye, Ukraine	08-1984 – 12.1986

Involvement in Research and Development Projects

2008 – ongoing: ACTIVE – Enabling the Knowledge Powered Enterprise (<http://www.active-project.eu/>)

Project Objectives: ACTIVE aims to increase the productivity of knowledge workers in a pro-active, contextualised, yet easy and unobtrusive way. The aim is to convert tacit and unshared knowledge – the "hidden intelligence" of enterprises – into transferable, interoperable and actionable knowledge to support seamless collaboration and to enable problem solving. A key aspect will be support for informal procedural knowledge - the informal collaboration and problem-solving tasks that drive much knowledge work in the enterprise.

Funded by: EU Framework Program 7, **Instrument:** Integrating Project (IP)

Involved as: a research consultant of Cadence Design Systems GmbH (member of Cadence team)

2005 – ongoing: PRODUKTIV+: Reference System for Measuring Design Productivity of Nanoelectronic Systems (<http://www.edacentrum.de/produktivplus/>)

Project Objectives: modeling, measurement and assessment of the productivity aspects of all components of the design system as well as the connection to business-management key data systems. For this purpose, research work is conducted on the following interrelated aspects:

- Development of a productivity model that covers the aforementioned components of the design system
- Automated data compilation of the quantities relevant to the productivity model,
- Computerized analysis and simulation procedures, as well as
- Exemplary application of the research results to different design projects that cover different job specifications for the circuit design.

Funded by: German Federal Ministry of Education and Research (BMBF)

Involved as: a research consultant of Cadence Design Systems GmbH

2004 – ongoing: PSI: Performance Simulation Initiative (<http://ermolayev.com/ISRG/ISRG-projects-PSI.htm>)

Project Objectives: To develop the agent-based framework and the prototype of a multi-agent system for assessing and monitoring the productivity of dynamic engineering design processes in microelectronics design

Funded by: Cadence Design Systems, GmbH

Type: Industrial research project
Involved as: a research consultant

2003 – 2005: UnIT-Net: IT in University Management Network (<http://www.unit-net.org.ua/>)

Project objectives: To create the Unit-Net Network to disseminate best practices in IT for University management. To establish the Software Testing Laboratory to support collaborative activities in frame of Unit-Net Network. To develop the set of Specifications and the software prototype of Ukrainian Infrastructure for Electronic Data Interchange

Funded By: TEMPUS/TACIS (ETF, <http://www.etf.eu.int/>)

Type: TACIS Multiplier Project

Involved as: principal researcher, local coordinator

2002 – 2005: RACING: Rational Agent Coalitions for INtelliGent Mediation of Information Retrieval on the Net (<http://www.zsu.zp.ua/racing/>)

Research Project is financed by Ukrainian Ministry of Education and Science.

Involved as a **principal researcher** and **project coordinator**

1999 - 2002 - Design of Mathematical Models and Methods of Description and Co-operation of the Elements of Unified Information Space in a University - wide Network based upon the Principles of Diakoptics and Master - Agent Architectures.

Research Project financed by Ukrainian Ministry of Education.

Involved as a the **principal researcher**

Personal Contribution: Project idea and proposal. The architecture of the Unified Information Space. The framework for design and implementation of Information Space functional components based upon evolving intelligent agent communities. The model for business process representation within the Unified Information Space.

1997 - 1998 - Development of Integrated Computational Media of a University (Design and implementation of integrated network computational media including integrated university database shell based upon Internet and Intranet technologies as well as upon Active MetaData Repository Framework).

Research Project financed by Ukrainian Ministry of Education.

Involved as the **project manager** and the **principal researcher**

Personal Contribution: Project idea and proposal. Project management. The model and the Architecture of University-wide Information Media. Project intermediate and final deliverables. Project reports.

1995 - 1997 - Mathematical Models for Complex Dynamic Systems: (Design of the methods for modelling of various Complex Dynamic Systems in different Application Domains).

Research Project financed by Ukrainian Ministry of Education.

Involved as the **senior researcher**

Personal Contribution: The model for evolving and adaptable information systems based on diakoptical principles. The chapters in the Intermediate and the Final Project Deliverables (Reports).

1991 - 1994 - Methods and Tools for Database Applications Adaptability Enhancement: (Development of the methods and software tools based upon Active MetaData Repository approach for enhancing the properties of adaptability and reusability of Database Applications (RDBMS)).

Research Project financed by Ukrainian Ministry of Education.

Involved as the **researcher**

Personal Contribution: The methodology and (partially) the Toolkit for the design of adaptable Client - Server Applications. Implementation of a case study application.

Participation in Networks of Excellence

1998 - 2005 [AGENTLINK](http://www.agentlink.org/), [AGENTLINK II](http://www.agentlink.org/) and [AGENTLINK III](http://www.agentlink.org/) – Europe's Network of Excellence for Agent-Based Computing (<http://www.agentlink.org/>) SIG on Intelligent Information Agents (I2A) (<http://www.dbgroup.unimo.it/I2A/>)

2001 - 2004 [ONTOWEB](http://www.ontoweb.org/) - Ontology-based information exchange for knowledge management and electronic commerce (<http://www.ontoweb.org/>) SIG on Contents Standards (http://zeus.ics.forth.gr/forth/ics/isl/projects/ontoweb/content_standards.html)

2002 - 2003 AgentCities WG for Service Coordination for Emergency Response Applications (<http://www.agentcities.org/Activities/WG/Rescue/>)

Cordination of RTD Projects

2002 Publication of Scientific Almanac "Southern Ukraine" on the Internet Project funded by [International Renaissance Foundation](#) (IRF), Grant No: 2129521

2001 Electronic Encyclopedia of Ukrainian Cossacks [Electronic version of the book](#) published by Zaporozhye Institute of Ukrainian Cossacks

2001 Zaporozhye Region - 10 Years of the Independence of Ukraine Multimedia CD designed for [Zaporozhye Chamber of Commerce and Industry](#)

1995 - 1996 CT Techno Cookee Information System designed for [Charmilles Technologies SA](#) (CT), Geneva.

Working for Industry

- 11.1995-06.1996. Subcontractor, Charmilles Technologies SA, Geneva, Switzerland
Duties: Project planning & development, requirements analyses, workflow and data modelling, database implementation, prototype software design, technical report writing, software design, software testing (ISO 9000), software manuals writing, imposing.
- 12.1987 - 03.1988. Senior research engineer, All-Union Pipe Research Institute, Dnepropetrovsk, Ukraine
Duties: Business process analyses (research planning and management); System programmers and administrators team consulting (IBM Mainframe, MVS, VM SP); Preparation of the pre-proposal for Research Planning and Management IS Design and Implementation project. Writing several programs for Mainframe workload analysis.
- 08.1984-03.1988. Engineer, Senior Research Engineer Research Institute for Radio Communication, Zaporozhye, Ukraine
Duties: Application and system software programmer, database administrator (IBM Mainframe; SVS, MVS, VM SP; ADABAS; IBM 370 Assembler, Fortran, PL/1).

Consulting Services (SINCE 2000)

- Cadence Design Systems GmbH, Germany
- The Ministry of Health Care of Ukraine
- Regional Chamber of Commerce and Industry, Zaporozhye, Ukraine
- JSC AutoZAZ-Daewoo, Zaporozhye, Ukraine
- Regional Branch of the National Bank of Ukraine, Zaporozhye, Ukraine
- JSB PromInvestBank, Zaporozhye, Ukraine
- Canada-Ukraine Agrarian Development Foundation, Canada
- South Island Technologies Inc., Saskatchewan, Canada
- HS Magdeburg-Stendal, Germany
- Association of Attorneys, Zaporozhye, Ukraine

EVIDENCE OF TEACHING PERFORMANCE

CURRICULUM PREPARATION

All listed courses have been developed from scratch

Introduction to Logic Programming and Artificial Intelligence
graduate, 2 modules, in progress: <http://kit.zsu.zp.ua/iLec/7sem/LPAI/>

Knowledge Acquisition and Ontology Engineering

graduate, 6 modules, in progress

Agent Technologies on the Semantic Webgraduate, (summer school) 1-semester course, <http://ermolayev.com/ASW/>**Knowledge Bases and Expert Systems**undergraduate, 1-semester course, <http://virtuni.education.zp.ua/lib/program/eva/OKB/e-book/>**Agent-Enabled e-Business Technologies**graduate, 1-semester course, <http://www.zsu.zp.ua/ameb/>**Basic Data Structures and Algorithms** (undergraduate, 2-semester course).Part 1. **Basic Algorithms and Data Structures**<http://www.zsu.zp.ua/lab/MathDep/ApMath/SWPCI/kurs.html> (course materials in Russian)Part 2 **Sorting Algorithms** <http://www.zsu.zp.ua/lab/MathDep/ApMath/SWPCII/kurs.html> (course materials in Russian)**Architectures of Operating Systems and Database Systems**

graduate, 1-semester course

Contemporary Software Applications and Systems

graduate, 1-semester course

Software Engineering and Programming Technology

undergraduate, 1-semester course

COURSES TAUGHT by year and semester (since 2001):

Semester	Course Title	Where
2008		
Fall	The Basics of Computer Software . Part 2. Sorting Algorithms	Zaporozhye National Univ.
	Introduction to Logic Programming and AI	Zaporozhye National Univ.
Spring	The Basics of Computer Software . Part 1. Basic algorithms and Data Structures	Zaporozhye National Univ.
	Knowledge Bases and Expert Systems	Zaporozhye National Univ.
2007		
Fall	The Basics of Computer Software . Part 2. Sorting Algorithms	Zaporozhye National Univ.
Spring	The Basics of Computer Software . Part 1. Basic algorithms and Data Structures	Zaporozhye National Univ.
	Knowledge Bases and Expert Systems	Zaporozhye National Univ.
2006		
Fall	The Basics of Computer Software . Part 2. Sorting Algorithms	Zaporozhye National Univ.
Spring	The Basics of Computer Software . Part 1. Basic algorithms and Data Structures .	Zaporozhye National Univ.
	Knowledge Bases and Expert Systems .	Zaporozhye National Univ.
2005		
Fall	The Basics of Computer Software . Part 2. Sorting Algorithms	Zaporozhye National Univ.
	Agent Technologies on the Semantic Web 15th Jyvaskyla Summer School,	Univ. of Jyvaskyla
Spring	The Basics of Computer Software . Part 1. Basic algorithms and	Zaporozhye State

	Data Structures.	Univ.
	The Basics of Databases.	Zaporozhye Humanitarian Univ.
2004		
Fall	The Basics of Computer Software. Part 2. Sorting Algorithms	Zaporozhye State Univ.
	Knowledge Bases and Expert Systems	Zaporozhye Humanitarian Univ.
	Information Systems and Data Structures	Zaporozhye Humanitarian Univ.
Spring	The Basics of Computer Software. Part 1. Basic algorithms and Data Structures.	Zaporozhye State Univ.
	Software Engineering and Programming Technology	Zaporozhye State Univ.
	The Architectures of Operation Systems and Database Systems	Zaporozhye State Univ.
2003		
Fall	The Basics of Computer Software. Part 2. Sorting Algorithms	Zaporozhye State Univ.
	Agent-Enabled e-Business Technologies	Zaporozhye State Univ.
Spring	Agent-Enabled e-Business Technologies	Inst of Informatics, Univ. of Klagenfurt, Austria
	The Basics of Computer Software. Part 1. Basic algorithms and Data Structures.	Zaporozhye State Univ.
2002		
Fall	The Basics of Computer Software. Part 2. Sorting Algorithms	Zaporozhye State Univ.
Spring	The Basics of Computer Software. Part 1. Basic algorithms and Data Structures.	Zaporozhye State Univ.
2001		
Fall	The Basics of Computer Software. Part 2. Sorting Algorithms	Zaporozhye State Univ.
Spring	The Basics of Computer Software. Part 1. Basic algorithms and Data Structures.	Zaporozhye State Univ.

STUDENT MENTORING

PhD Thesis Supervision

Davidovsky, M. V.:	Agent-based Ontology Allignment in P2P Systems
Keberle, N. G.:	Methods for Dynamic Ontology Modification, Adaptation and Conversion in Distributed Mediator IS
Plaksin, S. L.:	Co-ordination Patterns and Models for Business Process Management and Service Provision
Petruchek, V. V.:	Agent-Based Framework for E-Content Management on the Semantic Web
Vladimirov, V. N.:	Ontology-Based Meaning Negotiation and Ontology Debate

BSci/MSci Thesis Supervision (over 30)

Examples (worth mentioning):

Year	Author, Title
2008	<p>Juriy Litvinenko (MSci): A Software Tool for Semantic Search and Analysis.</p> <p>Juriy Gordeyev (MSci): The Analysis of Natural Language Texts for Ontology Elicitation.</p> <p>Maxim Davidovsky (MSci): Agent-Based Implementation of Semantic Context Negotiation.</p> <p>Anton Kopylov (BSci): The Visualisation of OWL Ontologies as UML Class Diagrams</p> <p>Alexey Melentyev (BSci): The Study of the Applicability of Petrie Nets for Business Process Analyses</p>
2007	<p>Juriy Litvinenko (BSci): Software Implementation of OWL-MeT (temporal extension of OWL). A workshop paper based on the results has been published</p> <p>Juriy Gordeyev (BSci): Software implementation of the OWL-MeT reasoner based on PELLET. A workshop paper based on the results has been published</p>
2004	<p>Andrey Virotschenko (MSci): Modeling of the Interaction of Mobile Robots in Nuclear Waste Collection Scenarios</p> <p>Alexandre Fedorov (MSci): Analysis and Prognosis of the Workload of Internet Communication Channels</p>
2003	<p>Evgeny Malyar (MSci): Algorithms for the Determination of the Chromatic Value of the Cubic Graphs</p> <p>Valentin Petruchek (MSci): Semantic Generator of the Generic Interfaces to Information Resources</p>
2002	<p>Evgeny Malyar (BSci): Thematic Classifier for the Web-Portal of Scientific Publications in Computer Science</p> <p>Valentin Petruchek (BSci): The Methodology and the Tool for Web-Based Collaborative Ontology Design</p> <p>Sergey Kholod (MSci): Agents Community Negotiation Model for Optimal Faculty Load Planning</p>
2001	<p>Sergey Plaksin (MSci): Agents Community Co-ordination Models and Primitives in the Scenarios of University Document Processing</p>
2000	<p>Sergey Plaksin (BSci): Design and Implementation of the Role Specialization Macromodels for Agent Community Co-ordination Agent</p> <p>Vladimir Mikhailichenko (BSci): Design and Implementation of Message Transport Primitives for the Community of Personal Assistant Agents</p>
1999	<p>Natalya Guk: Data Models and Algorithms for the Maintenance of University Information Space Structural Projection</p> <p>Elena Yermolayeva: Data Models and Algorithms for Implementation of Personal Assistant Agents for University Publishing Department</p>
1998	<p>Marina Ivanuk: Formal Enhancement of Relational Data Model by the properties of Program Code - Data Interaction</p> <p>Sergey Pletskey: Design of Data Model and Information Support Algorithms for the Local Level of the Architecture of University Information Space</p>
1997	<p>Arthur Filobok: Design of Data Model of the Server Part of Information System "STUDENT"</p> <p>Natalya Keberle: The Analyses of Undiscrepancy of Enhancement of the Descriptive Part of Relational Data Model by Adding the Property of Computability to Relational Attributes</p> <p>Vladimir Shapar: Design of Data Model of the Client Part of Information System "STUDENT"</p>

Tutorials Taught:

- **Modeling and Simulation of Dynamic Engineering Design Processes.** Tutorial at the 24th Int. [Conference on Conceptual Modeling \(ER2005\)](#), Klagenfurt, Austria, October 24-28, 2005.
- **Basics of Software Agents** (based on my course on Agent-Based e-Business Technologies). Taught at Cadence Design Systems GmbH, January, 2004
- **Agent-Enabled Business Process Modeling.** Taught at Cadence Design Systems GmbH, January, 2004

- **Software Agents for Business Process Modelling and Management in Micro-economic Systems.** Tutorial at VII [Ukrainian National Conference on the Problems of Economical Cybernetics \(PEC'2002\)](#), Sept. 11-13, 2002.

MANAGERIAL EXPERIENCE

- 01.1997 – ongoing: **The founder and the head** of Intelligent Systems Research Group at Zaporozhye National University, Ukraine
- 09.2000 – 07.2003: **Deputy President** of Zaporozhye State University (IT, Networking, Computing), Zaporozhye, Ukraine
Duties: Department co-ordination, project management, project planning & development, hardware & software maintenance co-ordination, university-wide network implementation, maintenance and administration management, classes & research supply.
- 04.1992 – 09.2000: **Managing Director** of University Computing Centre, Zaporozhye State University, Zaporozhye, Ukraine
Duties: Management, Project planning & development, hardware & software maintenance co-ordination, university-wide network implementation, maintenance and administration management, classes & research supply.

COMMUNITY SERVICES:

Reviews for Journals and Book Series

- Member of the **Editorial Review Board** for the [International Journal of Web Services Research \(JWSR\)](#) - a [journal](#) published by [Idea Group Publishers](#)
- **Conscientious Reviewer** of [Integrated Computer-Aided Engineering](#)
- Member of the international **Editorial Advisory Board** of the Advances in Web Services Research (AWSR) Book Series, [Idea Group Publishers](#)
- **Reviewer** for the [Transactions of Knowledge and Data Engineering \(TKDE\)](#)
- **Reviewer** for the [International Journal of Agent-Oriented Software Engineering \(IJAOSE\)](#), Special Issue on [Software Agents in e-Business: Concepts, Development and Applications](#), 2008
- **Reviewer** for the [Multiagent and Grid Systems - an International Journal](#), [Special Issue on Engineering Semantic Agent Systems](#), 2007
- **Reviewer** for IEEE COMPUTER [Special Issue on Web Services Computing](#) 2004

Conference/Workshop Organization

- **Co-organizer** (with W.-E. Matzke): Special Session on [Performance in Industrial Holonic Systems](#) at 3^d Int Conf on [Industrial Applications of Holonic and Multi-Agent Systems](#) Sept. 3-5, 2007, Regensburg, Germany in conjunction with [DEXA 2007](#)

Program Committees (since 2000)

3d International Symposium on **Intelligent Distributed Computing (IDC 2009)**, Ayia Napa, Cyprus, Oct. 12-14, 2009

8th Int. Conf. on **Information Systems Technology and its Applications (ISTA 2009)**, part of the **United Information Systems Conferences (UNISCON 2009)**, Sydney, Australia, Apr. 21. – 24, 2009

8th Int. W-shop on **Conceptual Modelling Approaches for e-Business (eCOMO 2009)**, part of the **United Information Systems Conferences (UNISCON 2009)**, Sydney, Australia, Apr. 21. – 24, 2009

1st Int. **Symposium on Services Science (ISSS 2009)**, Leipzig, Germany, Mar. 23-25, 2009

Technical Track the **Semantic Web and Applications (SWA)** at the 24th Annual **ACM Symposium on Applied Computing**, Waikiki Beach, Honolulu, Hawaii, USA, March 8-12, 2009

35th Int. Conf. on **Current Trends in Theory and Practice of Computer Science (SOFTSEM 2009)**, Hotel Arnika, Špindlerův mlýn, Czech Republic, Jan. 24-30, 2009

2nd Int. W-shop on **Ontologies and Information Systems for the Semantic Web** ([ONISW 2008](#)) in conjunction with **ACM 17th Conference on Information and Knowledge Management** ([CIKM 2008](#)), Napa Valley, California, Oct. 26-30, 2008

3rd International Workshop on **(Multi-)Agent Systems in E-Business: Concepts, Technologies and Applications** ([MASeB 2008](#)) in conjunction with 8th International Conference on **Intelligent Systems Design and Applications** ([ISDA 2008](#)) Kaohsiung, Taiwan, Nov. 26-28, 2008

27th Int. Conf. on **Conceptual Modeling** ([ER 2008](#)), Barcelona, Catalonia, Spain, Oct. 20-23, 2008

2008 IEEE **International Conference on Web Services** ([ICWS 2008](#)), Beijing, China, Sept. 23-26, 2008

2nd International Symposium on **Intelligent Distributed Computing** ([IDC 2008](#)), Catania, Italy, 18-20 Sept. 2008

3rd Int. Workshop on **Engineering Semantic Agent Systems** ([ESAS 2008](#)) in conjunction with 31st IEEE Annual International **Computer Software and Applications Conference** ([COMPSAC 2008](#)), Turku, Finland, July 28 - August 1, 2008

7th International Conference on **Information Systems Technology and its Applications** ([ISTA 2008](#)), Klagenfurt, Austria, April, 22 – 25 2008

7th Int. W-shop on **Conceptual Modeling Approaches for e-Business** ([eCOMO 2008](#)) in conjunction with **United Information Systems Conferences** ([UNISCON 2008](#)), Klagenfurt, Austria, April, 22 – 25 2008

Technical Track the **Semantic Web and Applications** ([SWA](#)) at the [23rd Annual ACM Symposium on Applied Computing](#), Fortaleza, Ceara, Brazil, March 16-20, 2008

2nd Int. Workshop on **Multi-Agent Systems in E-Business: Concepts, Technologies and Applications** ([MASeB'2007](#)) in conjunction with [WI/IAT/GrC/BIBM 2007](#) conferences, Silicon Valley, USA, Nov. 2-5, 2007

26th Int. Conference on **Conceptual Modeling** ([ER 2007](#)), Auckland, New Zealand, Nov., 2007

3rd **IEEE Workshop on Situation Management** ([SIMA 2007](#)) in conjunction with [MILCOM 2007](#), Kissimmee, Florida, Oct. 29-31, 2007

1st **Int Symposium on Intelligent and Distributed Computing** ([IDC'2007](#)), 18-20 Oct., 2007, Craiova, Romania

3rd Int. Conference on **Industrial Applications of Holonic and Multi-Agent Systems** ([HoloMAS 2007](#)), Regensburg, Germany, Sept. 3-5, 2007 (in conjunction with [DEXA 2007](#))

2nd Int. Workshop on **Engineering Semantic Agent Systems** ([ESAS 2007](#)) in conjunction with **30th IEEE Annual International Computer Software and Applications Conference** ([COMPSAC 2007](#)), Beijing, July 24-27, 2007

2007 IEEE **International Conference on Web Services** ([ICWS 2007](#)), Salt Lake City, Utah, USA, Jul. 9-13, 2007

6th International Conference on **Information Systems Technology and its Applications** ([ISTA 2007](#)), Kharkiv, Ukraine, May 23-25, 2007

18th **Information Resource Management Association** ([IRMA](#)) [International Conference](#), Vancouver, Canada, May 19-23, 2007

Technical Track **Semantic Web and Applicatios** ([SWA](#)) at the [22nd Annual ACM Symposium of Applied Computing \(ACM SAC\)](#), Seoul, Korea, March 11 - 15, 2007

4th IEEE **European Conference on Web Services** ([ECOWS 2006](#)), Zurich, Switzerland, 4-6 December 2006

5th Int. **Semantic Web Conference** ([ISWC 2006](#)), Athens, GA, USA, Nov. 5 - 9, 2006

1st Int. Workshop on **Semantic Web Applications: Theory and Practice** ([SWAT 2006](#)) in conjunction with 25th **International Conferences on Conceptual Modeling** ([ER 2006](#)), Tucson, Arizona, USA, November 6-9, 2006

1st Int. Workshop on **Engineering Semantic Agent Systems**([ESAS 2006](#)) in conjunction with **30th IEEE Annual International Computer Software and Applications Conference** ([COMPSAC 2006](#)), Chicago, USA, September 18-21, 2006

2006 IEEE International Conference on Web Services ([ICWS 2006](#)), Chicago, USA, September 18-22, 2006

5th Int. Conference on **Information Systems Technology and its Applications** ([ISTA'2006](#)), Klagenfurt, Austria, May, 30-31, 2006

3^d European Conference on **Web Services** ([ECOWS 2005](#)), Sweden, November 14-16, 2005

24th Int. **Conference on Conceptual Modeling** ([ER2005](#)), Klagenfurt, Austria, October 24-28, 2005.

17-th International **Conference on Advanced Information System Engineering** ([CAiSE'05](#)), Porto, Portugal, June 13-17, 2005

4-th Intl. Conference on **Information Systems Technology and its Applications** ([ISTA'2005](#)), Massey University Palmerston North, New Zealand, May 2005

5-th **Int. Workshop on Conceptual Modeling Approaches for e-Business: Model-Driven Design Value Proposition** ([eCOMO'04](#)), in conjunction with the **23rd Int. Conf. on Conceptual Modeling** ([ER 2004](#)), Shanghai, China, Nov. 8-12, 2004

2-nd **European Conference on Web Services** ([ECOWS'04](#)) to be co-located with 5-th Annual **Int. Conference on Object-Oriented and Internet-Based Technologies, Concepts, and Applications for a Networked World** ([Net.ObjectDays 2004](#)), Erfurt, Germany, September 27-30, 2004

3-d Intl. Conference on **Information Systems Technology and its Applications** ([ISTA'2004](#)), Salt Lake City, Utah, USA, July 14-16, 2004

2-nd International Workshop on **Web Based Systems and Applications** ([WEBSA](#)) to be held in conjunction with the **28th IEEE Annual International Computer Software and Applications Conference** ([COMPSAC 2004](#)), Hong Kong, Sept. 28-30, 2004

7-th World Multiconference on **Systemics, Cybernetics and Informatics** ([SCI'2003](#)), Orlando, Florida, USA, Jul. 27-30, 2003

4th Int. Workshop on **Conceptual Modeling Approaches for e-Business: Dealing with Business Volatility** ([eCOMO'2003](#)) to be held in conjunction with the **22-nd International Conference on Conceptual Modeling** ([ER'2003](#)), Chicago, Illinois, USA, Oct. 13-16, 2003

10th ISPE International Conference on **Concurrent Engineering: Research and Applications** ([CE'2003](#)), Madeira Island - Portugal, July 26 - 30, 2003

Int. Conference on **Information Systems Technology and its Applications** ([ISTA'2003](#)), Kharkov, Ukraine, June 19-21, 2003

The First International Conference on **Web Services** ([ICWS'03](#)), Las Vegas, Nevada, USA, June 23 - 26, 2003

[Workshop on Ontologies for Multi-Agent Systems](#) of the 13th International Conference on **Knowledge Engineering and Knowledge Management** (EKAW 2002)

Intl. **Workshop on Multimedia Distance Education Systems and Technologies** ([MDEST'2002](#)) in conjunction with the Eighth International Conference on Distributed Multimedia Systems (DMS'2002)

VII Ukrainian national Conference on the **Problems of Economical Cybernetics** ([PEC'2002](#))

3-rd Int. Joint Workshop on **Conceptual Modeling Approaches for e-Business: A Web Service Perspective** ([eCOMO'2002](#)) to be held in conjunction with the 21st **International Conference on Conceptual Modeling** ([ER'2002](#))

2-nd Intl. **Scientific - Practical Conference on Programming** ([UkrPROG'2000](#))

Chairing Conference Sessions

3rd Int. Workshop on **Engineering Semantic Agent Systems** ([ESAS 2008](#)) in conjunction with 31st IEEE Annual International **Computer Software and Applications Conference** ([COMPSAC 2008](#)), Turku, Finland, July 28 - August 1, 2008. Session 4: Multi-Agent Systems

7th International Conference on **Information Systems Technology and its Applications** ([UNISCON/ISTA'2008](#)), Alpen Adria University, Klagenfurt, Austria, Apr. 22-25, 2008. Session 3: Information Systems Theory II

6th International Conference on **Information Systems Technology and its Applications** ([ISTA 2007](#)), Kharkiv, Ukraine, May 23-25, 2007. Session 6: Natural Language Processing in Information Systems

5th International Conference on **Information Systems Technology and its Applications** ([UNISCON/ISTA'2006](#)), Alpen Adria University, Klagenfurt, Austria, May 30 - June 2, 2006. Scientific Session 2

24th Int. **Conference on Conceptual Modeling** ([ER2005](#)), Klagenfurt, Austria, October 24-28, 2005. Session 9: **Ontologies**

4th International Conference on **Information Systems Technology and its Applications** ([ISTA'05](#)), Massey University, New Zealand, May 23-25, 2005. Session: **Users**

Int Conference on **Information Technologies in University Management**, Kherson, Ukraine, August 26-27, 2004. Session: Information systems and electronic data exchange

3-d Int. Conference on **Information Systems Technology and its Applications (ISTA'2004)**, Salt Lake City, UT, USA, July 15-17, 2004. Session: **Transformation and Mapping**
2-nd Int. Conference on **Information Systems Technology and its Applications (ISTA'2003)**, Kharkov, Ukraine, June 19-21, 2003. Session: **Web Content Management, Categorization and Quality**
VII Ukrainian national Conference on the Problems of Economical Cybernetics (**PEC'2002**), Zaporozhye, Ukraine, Sept. 11-14, 2002
2-nd **Intl. Scientific - Practical Conference on Programming (UkrPROG'2000)**, Kiev, Ukraine, 23-26 May 2000
Intl. Conf. **IS2000**, Special Session on **Virtual Universities and Distance Education**, Aizu-Wakamatsu, Japan, Nov., 2000

Affiliation with European Commission

Registered expert in the: EU [Sixth Research Framework Program](#), EU [Seventh Research Framework Program](#)

EC reviews, evaluations:

- **DIP**: Data, Information, and Process Integration with Semantic Web Services (<http://dip.semanticweb.org/>), IP, FP6, IST – involved as a reviewer
- **MUSING**: Multi-Industry Semantic-Based Business Intelligence (<http://www.musing.eu/>), IP, FP6 IST – involved as a reviewer
- **FP7 ICT call 1**, objective “Intelligent Content & Semantics” – involved as a proposal evaluator
- **FP7 ICT call 3**, objective “Intelligent Content & Semantics” – involved as a proposal evaluator

LIST OF PUBLICATIONS²

The publications are listed in the reversed chronological order. The prefixes in the numbers are introduced to distinguish the type of the publication: B – a book or a book chapter; J – a journal paper; C – a conference paper; W – a workshop paper; I – invited paper or talk; E – electronic publication; R – a technical report; T – a tutorial; M – a manual. The numbers are used for references elsewhere in the CV.

BOOK CHAPTERS

- B1. **Ermolayev, V., Keberle, N., Kononenko, O., Terziyan, V.**: Chapter XI. Proactively Composing Web Services as Tasks by Semantic Web Agents. In: Zang, L.J. (Ed.) *Modern Technologies in Web Services Research*. IGI Publishing, Hershey New-York., 2006, 217-246, ISBN: 978-1-59904-280-0.
- B2. **Ermolayev, V., Jentzsch, E., Karsayev, O., Keberle, N., Matzke, W.-E., Samoylov, V., Sohnius, R.**: An Agent-Oriented Model of a Dynamic Engineering Design Process. In: Kolp, M., Bresciani, P., Hendersen-Sellers, B., and Winikoff, M. (Eds.): *Agent-Oriented Information Systems III*. 7th International Bi-Conference Workshop, AOIS 2005, Utrecht, Netherlands, July 26, 2005, and Klagenfurt, Austria, October 27, 2005. Revised Selected Papers, 168-183, 2006, LNCS Vol. 3529
- B3. **Ermolayev, V., Terziyan, V., Kaykova, H.**: *SW@Ukraine.Semantic Web Factbook*, 2005, Lytras M. (eds), Preliminary edition, AIS SIGSEMIS and OPEN RESEARCH SOCIETY publications, ISSN: 1556-2301, May 2006.
- B4. **V. A. Tolok, V. A. Ermolayev**: IT-Enabled Teaching and Learning in Today's Higher School In V. P. Andruschenko, M. I. Mikhailichenko, V. G. Kremen (Eds.) "Higher Education in Ukraine: Methodological and Socio-Pedagogical Problems of Modernization", Kiev, 2001, 440 p., ISBN 966-000-000-4, 221-247 (Ukrainian)
- B5. **V. A. Ermolayev, V. A. Tolok**: Modelling Distant Learning Activities by Agent Task Coalitions. In: Q. Jin, J. Li, J. Cheng, C. Yu and S. Noguchi (Eds.) *Enabling Society with Information Technology*, Springer-Verlag, Tokyo, 2002, ISBN 4431703276, 316-326

JOURNAL ARTICLES

- J0. **Ermolayev, V., Spivakovsky, A., Zholtkevych, G., Bulat, A., Keberle, N.**: UnIT-Net IEDI: an Infrastructure for Electronic Data Interchange. *Information Technologies in Education* 1(1), 2008, 26-42
- J1. **Vladimirov, V., Sohnius, R., Ermolayev, V., Matzke, W.-E.**: Semi-Automated Instance Migration between Evolving Ontologies. *Herald of NTU KhPI. Special Issue: System Analysis, Management, and IT*. No 7, 2007, 130-144

² Some early papers are not included – nothing really significant. The drafts of the selected papers are available on-line at http://ermolayev.com/eva_personal/evapubs.htm.

- J2. **Keberle, N., Ermolayev, V., Vladimirov, V., Dzhurinsky, E.**: Visual Semantic Query Formulation and Execution in UniT-NET IEDI. "Mathematical Modeling, IT, Automated Control Systems" series of the Herald of Kharkiv National University, No 703, ISSN 0453-8048, p. 95-108
- J3. **Ermolayev, V., Plaksin, S.**: Workflow Management by Multi-Agent Systems. "Mathematical Modeling, IT, Automated Control Systems" series of the Herald of Kharkiv National University, No 629, 2004(Issue 3), ISSN 0453-8048, p. 132-143
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12. **Vadim Ermolayev**: Ontologies in Agent-Enabled Distributed Information Retrieval. Talk at the Meeting of AgentLink III TFG on Intelligent Information Agents for Web Economies, Rome, 30.06.2004
13. **Vadim Ermolayev**: Semantic Web Technologies in UnIT-Net Infrastructure for Electronic Data Interchange. Plenary Talk at UkrPROG'04, Kiev, 02 June, 2004
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15. **Vadim Ermolayev and Nicola Guarino**: Web-based Ontology Discussion. Presentation at OntoWeb Content Standards SIG meeting, Innsbruck, Austria, 17.12.2002
16. **Vadim Ermolayev, Nicola Guarino, Heinrich Mayr (Mod.), John Morris, Jari Palomäki, Bernhard Thalheim, Yair Wand**: Do we need an Ontology of Ontologies? Panel discussion at ER'2002, Tampere, Finland, 10.10.2002
17. **Ermolayev, V. A.:** Software Agents for Business Process Modelling and Management in Micro-economic Systems Invited talk at VII Ukrainian national Conference on the Problems of Economical Cybernetics (PEC'2002), Zaporozhye, Ukraine, Sept. 11-13, 2002
18. **V. A. Ermolayev**: Development of Information Resources in Regional Scientific and Educational Networks. Inv. Talk at the Intl. Symposium on Contemporary IT for Libraries and Management of Scientific and Educational Networks. Kiev, Oct. 2001
19. **V. A. Ermolayev**: Dynamic Agent Coalitions for Mediating EC B2B Activities. The talk at the Division of Mathematics and Computer Science of Vrije University Amsterdam, 04.2001
110. **S. U. Borue, V. A. Ermolayev, V. A. Tolok**: Evolving Agent Communities for Intelligent Information Processing in WEB-Based Enterprise-Wide Information Systems. Inv. talk at Intl. Conference on Intelligent Information Processing (IIP'2000), Crimea, Ukraine, 12-16 June 2000.
111. **V. A. Ermolayev, V. A. Tolok**: Interfaces and Human - Agent Interaction in Virtual Information Spaces. AgentLink SIG on Intelligent Information Agents meeting, London, GB, Apr. 21-23, 1999
112. **V. A. Ermolayev, V. A. Tolok**: Perspectives of Intelligent Agent R&D for Organisational Management and Teaching in Eastern Europe. AgentLink SIG on Intelligent Information Agents meeting, London, GB, Apr. 21-23, 1999
113. **V. A. Ermolayev, V. A. Tolok**: Intelligent Agents in the Architecture of Unified Information Space of a Virtual University. AgentLink SIG on Intelligent Information Agents meeting, Brussels, Belgium, Sept. 22-24, 1998
114. **V. A. Ermolayev**: Active Data Dictionary Approach in Database Application Design. Invited talk at the Seminar of the Institute of Informatics, Umea University, Sweden, Nov. 1993

EVIDENCE OF EXTERNAL REPUTATION

Individual Grants and Scholarships:

- A Young Scientist Scholarship of Swiss Academy of Engineering (Branco Weiss Foundation), 1994

Invited Papers:

- Our journal paper “Towards a framework for agent-enabled semantic web service composition” [J5] has been invited for revision and publication as a book chapter in Zang, L.J. (Ed.) Modern Technologies in Web Services Research. IGI Publishing, Hershey New-York., 2006 [B1]
- Our AOIS@ER-2005 workshop paper “Modeling Dynamic Engineering Design Processes in PSI” [W9] has been invited for extension and publication as a book chapter in Kolp, M., Bresciani, P., Hendersen-Sellers, B., and Winikoff, M. (Eds.): Agent-Oriented Information Systems III. Revised Selected Papers, 2006 [B2]

- Our ICWS-Europe'2003 conference paper "Towards Agent-Based Rational Service Composition -- RACING Approach" [C14] has been invited for extension and publication in the inaugural volume of the Int. J. of Web Service Research, 2004 [J5].
- Our ISTA'2003 conference paper "Capturing Semantics from Search Phrases: Incremental User Personification and Ontology-Driven Query Transformation" [C15] has been invited for the publication in the Herald of NTU KhPI, Sp. Issue "System Analysis, Control, and IT", No 1, 2004 [J6]

Invited Talks

Keynotes at Conferences, Symposia, and Workshops:

- Engineering Design Performance. Invited talk at United Information Systems Conferences (UNISCON 2008), Klagenfurt, Austria, Apr. 22 – 25, 2008.
- Semantic Web Technologies in UnIT-Net Infrastructure for Electronic Data Interchange. UkrPROG'04, Kiev, 02 June, 2004
- Software Agents for Business Process Modelling and Management in Micro-economic Systems. VII Ukrainian National Conference on the Problems of Economical Cybernetics (PEC'2002), Zaporozhye, Ukraine, Sept. 11-13, 2002
- Development of Information Resources in Regional Scientific and Educational Networks. Int. Symposium on Contemporary IT for Libraries and Management of Scientific and Educational Networks. Kiev, Oct. 2001
- Evolving Agent Communities for Intelligent Information Processing in WEB-Based Enterprise-Wide Information Systems. Int. Conf. on Intelligent Information Processing (IIP'2000), Crimea, Ukraine, 12-16 June 2000

Talks at Academic Institutions:

- Towards Cooperative Distributed Service Composition on the Semantic Web. IFI, University of Klagenfurt, Austria, 06.02.2003
- Dynamic Agent Coalitions for Mediating EC B2B Activities. Division of Mathematics and Computer Science, Vrije University Amsterdam, 04.2001
- Active Data Dictionary Approach in Database Application Design. Seminar of the Institute of Informatics, Umea University, Sweden, Nov. 1993.

Invited Panels:

- Do we need an Ontology of Ontologies? Panel discussion at ER'2002, Tampere, Finland, 10.10.2002 (together with Nicola Guarino, Heinrich Mayr (Mod.), John Morris, Jari Palomäki, Bernhard Thalheim, Yair Wand)