



CV Jan Werewka

<http://home.agh.edu.pl/~werewka/research/scientific-achievements/>

Biography

I have received a M.Sc. degree in electronic data processing from the Technical University of Dresden, Germany and a Ph.D. degree (with honors) in the field of automatic control in the Electrical Engineering Department of the AGH University of Mining and Metallurgy in Cracow, Poland.

In 1989, I was granted a D.Sc. degree (habilitation) in computer science from the Humboldt University of Berlin in the Faculty of Mathematics and Natural Sciences.

Currently, I work at the Department of Applied Computer Science in the Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering, as a professor of the AGH University of Science and Technology.

My main research areas are IT enterprise system modelling and IT project management.

Academic auspices and supervision of PhD dissertations

A list of PhD programs (dissertation supervision, reviews, PhD panels)

The supervision over the finished PhD programs in the Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering at AGH University of Science and Technology.

Rak, T.: Modelling and analysis of interactive Internet systems servicing the high-frequency offers. (In Polish: Modelowanie i analiza interaktywnych systemów internetowych realizujących obsługę szybkozmiennych ofert.) 20 December, 2007.

Dach, M.: Issues relating to the construction of primary control and diagnostic real-time systems based on the CAN bus. (In Polish: Zagadnienia konstrukcji nadrzędnych systemów kontrolno-diagnostycznych czasu rzeczywistego bazujących na magistrali CAN.) 7 July, 2005.

Piórkowski, A.: Optimization of asynchronous communication in distributed real-time systems. (In Polish: Optymalizacja komunikacji asynchronicznej w systemach rozproszonych czasu rzeczywistego.) 24 February, 2005.

Drwal, A.: Designing the local bus structures for distributed control systems. (In Polish: Projektowanie struktur magistral miejscowych dla rozproszonych systemów sterowania.) (dissertation awarded) 27 June, 2002.

Żaba, S.: The time analysis of the distributed control systems based on the local buses. (In Polish: Analiza czasowa rozproszonych systemów sterowania bazujących na magistralach miejscowych.) (dissertation awarded) 11 December, 2001.

Gajer, M.: The analysis and design of the real-time systems for multiprocessor DSP systems on the example of a robot vision system. (In Polish: Analiza i projektowanie systemów czasu rzeczywistego dla wieloprocesorowych układów DSP na przykładzie systemu wizyjnego robota.) (dissertation awarded) 26 October, 2000.

Reviews of PhD dissertations

Rzońca, D.: Methodology for the specification and validation of field communication protocols using timed colored Petri nets. (In Polish: Metodyka specyfikacji i walidacji polowych protokołów komunikacyjnych z wykorzystaniem czasowych kolorowanych sieci Petriego.) 25 September, 2012.

Skrzyński, P.: Using the collective intelligence theory to analyse the invisible hand of the market paradigm. (In Polish: Zastosowanie teorii kolektywnej inteligencji do opisu paradygmatu niewidzialnej ręki rynku.) 24 February, 2011.

Turek, M.: The concept of cascade shape grammars as a model for processing graphical shapes in basing systems. (In Polish: Koncepcja Kaskadowych gramatyk kształtu jako modelu przetwarzania kształtów graficznych w systemach bazujących.) 24 February, 2011.

Rogus, G.: Application of the LOTOS language to support the development of correct software for reactive systems. (In Polish: Zastosowanie języka LOTOS do wspomaganie wytwarzania poprawnego oprogramowania systemów reaktywnych.) 7, July, 2005.

Piwowarczyk, J.: Modelling and analysis of highly integrated systems using coloured Petri nets. (In Polish: Modelowanie i analiza systemów wysokozintegrowanych z wykorzystaniem kolorowanych sieci Petriego.) 24 February, 2005.

Trybus, B.: Application of coloured Petri nets to the structural analysis of real-time systems. (In Polish: Zastosowanie kolorowanych sieci Petriego do analizy strukturalnej systemów czasu rzeczywistego.) 28 October, 2014.

Straś, A.: Uniform communication model for multiprocessor and distributed systems. (In Polish: Jednolity model komunikacji dla systemów wieloprocesorowych i rozproszonych.) 29 November, 2001.

Mikoś, Z.: Problems in the implementation of programmable real-time control and regulation systems. (In Polish: Problemy implementacji programowalnych systemów sterowania i regulacji w czasie rzeczywistym.) 16 December, 1999.

Lasoń, A.: Analysis of work quality of FDDI and Frame Relay networks. (In Polish: Analiza jakości pracy sieci FDDI i Frame Relay.) 25 February, 1999.

Participation in PhD panels

Usually, participation in 2 – 5 PhD panels annually.

Current fields of interest and expertise

The described research and solution implementation activities concern area “Architecture, Software and Product Development”. The activities are performed by a group consisting of the following members: Jan Werewka, Grzegorz Rogus, Paweł Skrzyński, Piotr Szwed, Michał Turek, and PhD students: Kamil Sztandera and Dariusz Pitulej.

Designing, developing, deploying and maintaining enterprise software is a major challenge for both the organisation developing and deploying the software and the one which is to use it. This methodology concerns the operation and cooperation of two organisations (enterprises). One of these organisations is an IT company supplying the software (SDE – Software Delivering Enterprise) for the main business line of the second company, operating on the market (MOE -Market Operating Enterprise). To ensure that these organisations cooperate effectively, it is necessary to build broader and deeper relationships going beyond the simple rules of cooperation between the client and the contractor. The methodology SMESDaD (Synergetic Methodology for Enterprise Software Development and Deployment) should find optimal solutions on the enterprise level.

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Business benefits

The research novelty in the proposed solution is to take into account the enterprise architectures of both companies in order to obtain additional business benefits. The business benefits reaped from the methodology will arise from the optimum selection of solutions concerning: the structures of both enterprises ensuring their efficient operation, optimisation of processes as a result of business analyses and the assessment of previous effects of activities, selection of technologies that are easy to deploy and fully utilise, the ability to reach target customers using the software and maintain their satisfaction.

The synergy should be obtained between the following activities:

Product and project management. The main goal is to find optimal solutions concerning product and project management, basing on scalable, agile and lean approaches.

Architecture development governance in software product development life cycle, concerning all enterprise architecture levels (motivation, business, application, technology, implementation and integration).

Software development processes based on software product lines.

Competency in architecture, software development, product and project management.

The purpose of enterprise approach is to balance the quality of reactions to changes in the environment (objective: agility) relative to the coherence of solutions resulting from these changes (objective: coherence). Balancing the changes resulting from the need to react to the environment

(agility) and the coherence of areas and layers within the enterprise, is not just a task, but a challenge for the corporate architecture. A selective look at the enterprise architecture by monitoring only a part of it, will not lead to a situation in which, by measuring the quality of this architecture, we will be able to draw conclusions which afterwards could be considered objective.

“Architecture, Software and Product Development”

Below, some selected research results concerning “Architecture, Software and Product Development” are briefly described and supplemented by selected publications.

These publications describe solutions to three problems, which seem extremely important in the field of project management and project process organization and arouse interest in the scientific and industrial community:

the scalability issue in classical and agile methodologies,

the issue of adapting the existing standards of project management to the conditions in a given environment,

and the problem of integrating agile and classical methodologies.

Werewka, J., Lewicka, D. and Zakrzewska-Bielawska, A.: “Project management in IT company. Vol. 1, Methodology and management strategy.”, AGH University of Science and Technology Press, Kraków, 2012.

Werewka, J. Tadeusiewicz, R., Rogus, G. and Skrzyński, P.: “Project management in IT company. Vol. 2, Company knowledge acquisition and business modelling.”, AGH University of Science and Technology Press, Kraków, 2012.

Werewka, J., Nalepa G. J., Turek, M., Włodarek, T., Bobek, S. and Kaczor, K.: “Project management in IT company. Vol. 3, Project management and software development process.”, AGH University of Science and Technology Press, Kraków, 2012.

The next publication presents an example of using ontological models to integrate agile and classical methodologies.

Werewka, J., Szwed, P. and Rogus, G.: “Integration of classical and agile project management methodologies based on ontological models”. in: “Production engineering in making”, ed. Piotr Łebkowski, AGH University of Science and Technology Press, Kraków, 2010 (pp. 7-28).

Another publication constitutes an example of mapping the cooperation between the company developing software and the company at which the software was deployed. The presented methodology has to determine the best solutions from the field of corporate modelling, architectures oriented towards services and models of deploying the software.

Rogus, G., Skrzyński, P., Szwed, P., Turek, M. and Werewka, J.: “SMESDaD – synergetic methodology for enterprise software development and deployment”. Journal: *Pomiary Automatyka Robotyka*, No. 12, AGH, Kraków, 2011 (pp. 196-209), Read the publication: [SMESDaD – synergetyczna metodyka rozwijania i wdrażania oprogramowania korporacyjnego.pdf](#)

The publications below pertain to the issues of making right architectural decisions with reference to SOA, and with the application of the ATAM approach.

Szwed P., Rogus G., Skrzyński P., Turek M. and Werewka J.: “Towards an ontology approach to ATAM based assessment of service oriented architectures. Semiannual *Automatics (Automatyka)*, Vol. 16, No. 2”, AGH University of Science and Technology Press, Kraków, 2012 (pp. 175–187),

Szwed P., Skrzynski P., Rogus G. and Werewka J.: "Ontology of architectural decisions supporting ATAM based assessment of SOA architectures. Preprints of the Federated Conference on Computer Science and Information Systems", Kraków, 2013 (pp. 287–290)

One of the main objective regarding architecture governance is to develop ECORA (Extended Common Reference Architecture). The publication below introduces a common presentation layer model for all possible system endpoints in the ECORA presentation layer.

Sztandera K., Turek M., Werewka J., Rogus G.: "Software Solutions Assessment for Presentation Layer based on ECORA Reference Architecture."

The papers listed below present a synergy between teaching project management and enterprise architecture design. Colleges oriented to training computer specialists can use the suggested solution do develop a curriculum in accordance with the demand of the IT industry.

Werewka J., Jamróz K., Pitulej D., Stępień K.: "A problem of development and assessment of architecture competences in IT companies."