

# Communication, Management and Teambuilding Issues in Austrian-Ukrainian Outsourcing Project: 10 Years of Experience and Future Challenges

Walter Khom<sup>1</sup>, MykolaTkachuk<sup>2</sup>, Volodymyr Sokol<sup>3</sup>, Oleksiy Kosmachov<sup>4</sup>, and Vladyslav Sokol<sup>5</sup>

**Abstract:** Outsourcing von Softwaredienstleistungen gehört heute zu den wichtigsten und stetig wachsenden Wirtschaftsfaktoren. Outsourcing bietet nicht nur Kosteneinsparungspotenziale, sondern vielmehr auch die Möglichkeit des ad hoc Aufbaus und Zugriffs auf Personalressourcen. Jedoch erfordert Outsourcing eine gute Organisation bzw. ein effizientes Management um auch die gewünschten positiven Ergebnisse zu erzielen. Eine der häufigsten Problemfelder bei Software-Outsourcing sind kulturelle Unterschiede und verschiedene Denkweisen zwischen Auftraggeber und Outsourcing-Dienstleister. Das Bewusstsein darüber gehört zu den kritischen Erfolgsfaktoren einer effizienten Kommunikation und eines effizienten Managements, gleichermaßen wie die passende Organisations- und Teamstruktur auf beiden Seiten. Dieser Artikel stellt einen Erfahrungsbericht aus 10 Jahren Software-Outsourcing zwischen Unternehmen in Österreich und der Ukraine dar und behandelt insbesondere aktuelle und künftige Herausforderungen einer solchen Kooperation.

**Keywords:** Software Outsourcing, Kulturelle Unterschiede, Mehrsprachige Kommunikation, Agiles Projektmanagement, Organisationsstruktur, Teambuilding.

## 1 Introduction

Nowadays software outsourcing becomes a very important industrial driver in the globalized world, especially for the countries with transition economy. It concerns surely Ukraine where according to some last statistical studies, e.g. in [ITU16], the IT-sector during 2014-2016 is grown ca. in 18 %, and the essential part of Ukrainian IT-companies (ca. 59 %) are dealing actively with outsourcing projects. That is why the problems of effective outsourcing projects management (OPM) and international cooperation become more important for a lot of middle-and small Ukrainian IT-companies [ITU16].

During the last dozen years many publications were issued in the field of outsourcing project management, especially dedicated for definition of *key success factors* (KSF) in

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<sup>1</sup>bitmedia e-solutions GmbH, Kärntner Straße 337, 8054 Graz, Austria, Walter.Khom@bitmedia.at

<sup>2</sup>National Technical University “Kharkiv Polytechnic Institute” (NTU “KhPI”), Dept of Software Engineering and Management Information Technologies (SEMIT), Frunze str., 21, 61002 Kharkov, Ukraine, tka.mobile@kpi.kharkov.ua

<sup>3</sup>NTU “KhPI”, Dept of SEMIT, Frunze str., 21, 61002 Kharkov, Ukraine, vlad.sokol@gmail.com

<sup>4</sup>NTU “KhPI”, Dept of SEMIT, Frunze str., 21, 61002 Kharkov, Ukraine, alexey.kosmachev@gmail.com

<sup>5</sup>Academy Smart LTD, Nauky Ave., 56, 61000 Kharkiv, Ukraine, vladyslav.sokol@academysmart.com.ua

this domain. E.g., the comprehensive review of IEEE sources given in [KK13] lists the following KSF: *Contract Flexibility, Trustworthy Relationship Management, Corporative Knowledge Sharing, Conflict Reconciliation Mechanism* and some others. One of such critical important KSF within the whole OPM-framework is the necessity to deal with cultural differences and mindsets between customer and outsourcing IT-company. This issue is also discussed intensively in a lot of publications (see e.g. in [THT04], [Ba09], [HHM10]), and one of the recognized expert in this area G. Hofstede [HHM10] defines the following four main dimensions to distinguish specific national cultures, namely: *Power Distance, Uncertainty Avoidance, Individualism vs. Collectivism, Masculinity vs. Femininity, Long Term vs. Short Term Orientation, and Indulgence vs. Restrain.*

The objectives of this paper is to report our lessons learned from 10 years of experience in the real-life software outsourcing project between Austrian and Ukrainian IT-companies, and to figure out some future challenges to be met in this cooperation. The rest of this paper is organized in the following way: Section 2 describes our project background, its main features and technological evolution. In Section 3 we present our multi-language agile project management framework, and in Section 4 the competency-centered and university-joined approach to teambuilding in our cooperation is briefly outlined. Section 5 concludes the paper with a short summary and provides an outlook on the next steps to be done in order to improve the presented OPM-framework.

## **2 Our Project Background, its Main Features and Technological Evolution**

The SITOS e-Learning platform project has history from year 2000. This is a learning management system that supports modern e-learning and communication methodologies. SITOS e-Learning platform proposes web platform with responsive design for all conventional devices and allows on-site installation [Si16]. The main goal of the project was to develop a flexible software that may be operable in different environment, easily customizable, with intuitive user interface and low costs of maintenance. Starting from 2006 the SITOS development and maintenance activities are carried out mainly as the outsourcing project by the developer team located in Kharkiv, Ukraine.

In order to rapid react on customer needs, and to provide easy and low project implementation costs the well-proved PHP technology was chosen. The application software is developed to allow flexible system configuration according to the customer requirements. It includes:

- maintain base core functionality of learning management system and collaboration features;
- provide API for software extension;

- design tools for customization of web UI design;
- support multiple versions and configurations according to customer requirements;
- role-based access control to system information resources.

The structural change in software leads to evolution of used system architecture (see Table 1.). It includes development of single sign-on interfaces to access corporative data resources, and Web-services to provide API for peer-to-peer integration with other software e. g. WBTplus Authoring Tool[WB16]. All added features are marked with “+” sign.

System architecture & technologies used / Years	2006-2007	2008-2010	2011-2016
2 – tier client server & PHP	+	-	-
3 – tier client server & PHP	-	+	+
SOA (Web services)	-	-	+

Tab. 1: SITOS-project evolution (architecture & technology used)

It is well known that long lasting software development leads to degradation of software structure that gives problems for maintaining current system configurations and for future extension of the software. Therefore, the approach to software refactoring was proposed, which now is performed with respect to such methods:

- usage of modern general purpose PHP framework[Yi16];
- separation of business logic from data presentation functionality;
- apply of modern UX components and design tools;
- support of development process by providing of electronic tools to document new system features and elaborated software solutions.

This refactoring framework allows quick implementation of requirements changes and integration of software with different systems infrastructures. However, it would be interesting to extend software by making supporting of Experience API [Ex16a]. This standard implies to make Learning Record Storage to save the learning progress of different activities and sharing information of personal learning results.

That gives chance to build social networks based on current software functional capabilities. The main concept of such network is described in [Ex16b]. This kind of network represents semantic web that allows sharing and structuring learning content, personal learning profiles and build learning programs according to individual goals and recommendation and experience of passed courses. This requires shifting in future to multi-tier RESTful Web Services architecture [RR07].

### 3 Multi-language Agile Project Management Framework

An efficient communication is one of the main KSF for any project, and, of course, it becomes one of the critical important KSF in our OPM framework. Especially, that is true for modern software projects with agile development methodology, e.g. in Scrum-based teams, where the customers and developers are supposed to communicate each other immediately and intensively in all project phases and iterations. During our cooperation, we have gone through three main stages:

a. Development on Ukrainian side, all other activities are on Austrian side. Such approach allowed us to make a fast start, however link between those two entities were weak and therefore performance was not sufficient. Typical customer requirements document was in German, so translation chain looked like German ↔ English ↔ Russian (although our company resides in Ukraine, the major speaking language is Russian), what brings additional “lost in translation” effect. While technical issues usually can be translated with not too much distortion, this aspect is very critical with respect to cultural differences of user interfaces etc.

b. As above with addition of some intermediate project manager on Ukrainian side with German language skills and QA- engineer on Austrian side with Russian language skills. It allowed to reduce translation efforts and to improve communication; however, the Ukrainian project manager was far away from Austrian customers and therefore cannot communicate effectively with them directly. That means there was need to have project management on both sides, which brings additional overhead. There are still some communication issues and for small bug reports it took too much time for communicate than there was actual effort to fix.

c. Rollback to the first structure with addition of QA and Team Lead/PM on the Austrian side, with both Russian and German language skills. This structure fits the best, since there is clear understanding of what to do on both sides, small issues can be handled immediately without sending them to Ukrainian team.

It is to mention that during whole time of SITOS outsourcing development the special attention was paid to the improvement of language skills in the Ukrainian developer team. In the Table 2 the average data related to this issue are shown.

Foreign language skills in Ukrainian team / Years	2006-2009	2010-2013	2014-2016
English	Intermediate	Intermediate	Advanced
German	Beginner	Beginner	Intermediate

Tab. 2: Average data about foreign language skills in Ukrainian project team

The Austrian-Ukrainian cooperation was faced with several issues that ranged from of understanding foreign languages till more sophisticated cultured-specific and mindsets differences which are briefly discussed in the next Section 4,

## 4 Competency-centered and University-joined Approach to Teambuilding

In order to understand some culture-specific and mindsets differences in our cooperation project it is reasonable to consider the appropriate indicators based on Hofstede's culture model dimensions [HHM10] for both project teams, which are presented in the Table 3.

Country (Team) / Culture Dimensions	Power Distance	Individualism vs. Collectivism	Uncertainty Avoidance	Masculinity (M) vs. Femininity (F)
Austria	small	individualism	weak	more M
Ukraine	large	collectivism	strong	more F

Tab. 3: Main cultural differences between Austrian and Ukrainian teams

It is to mention that another 2 dimensions [HHM10]: *Long Term vs. Short Term Orientation, and Indulgence vs. Restrain* are not presented in this table because they are not so valuable for our analysis taken into account specific features of our research domain: long-term outsourcing software development in small-size team [Si16].

The core of Ukrainian development team was formed initially from postgraduate students on SEMIT Department at the NTU "KhPI" ([www.kpi.kharkov.ua](http://www.kpi.kharkov.ua)), who already had been trained in the universities in Austria, particularly in Alpen-Adria University of Klagenfurt (<http://www.aau.at>) and Carinthia University of Applied Science in Villach (<http://www.fh-kaernten.at>). At the first projects phase the selection of new employees were mostly performed among Ukrainian university students, with obligatory basic knowledge of English and German languages. A special attention was paid to their professional IT - skills, as well as such individual features like communication skills, ability to work under pressure and with deadlines. The importance of development team members in sense of their responsibility and self-confidence (w.r.t. some cultural "gaps" shown in Table 3) can be illustrated with the following example:

There was a problem with one of the staff member (call him B.), because he became inattentive, and was not well enough to perform current project tasks. He repeatedly was criticized, but it did not produce results, and it had even been decided to assign to B. a special supervisor for additional control. Obviously, this way would lead to unnecessary project costs and time missing. Then one of team-managers offered the alternative solution: instead of doing more control and more observations for B., the responsibility to manage a new junior in the project was assigned to him, i.e. the developer B. himself became a supervisor. After some time, he started to perform his duties more carefully, and he not only begun himself to work with better quality, but also he helped new junior more quickly to understand the project tasks, solutions etc.

The approach to teambuilding mentioned above allowed us to improve consequentially the quality of our developer team (see Table 4).

Staff Position (%) / Years	2006-2009	2010-2013	2014-2016
Junior	60%	50%	30%
Middle	25%	15%	40%
Senior	15%	35%	30%

Tab. 4: Qualification changes in Ukrainian project team

## 5 Conclusions and Future Challenges

The elaborated approaches to teambuilding and project management as well as the evolution of software tools provided an opportunity for successful product development for the past ten years of cooperation between our Austrian and Ukrainian IT-companies. The actual state of communication framework and project development gives us a chance to improve the current product in architectural perspective to move to multi-tier distributed application in order to gain a new quality of software solutions and business issues.

Finalizing our applied research, we can conclude that real understanding and accounting of Hofstede's statements, presented in our case with concrete values in Table 3, help us to provide more efficient and comfortable operation in our multi-language agile project management framework. In future in order to improve our team structure and communication it would be interesting to implement a virtual team structure [Ch10] that allows to attract most perspective specialists to development by proposing a high flexible working schedule.

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