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**E-AZS PLATFORM MODEL –
THE CONCEPT OF APPLICATION OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
IN SPORTS ENTERPRISES¹**

Summary: The article presents the research concerning the description of the possible application, in sports enterprises, of an ICT system supporting the exchange of data, information and knowledge between the management, trainers providing training services, and the clients of the sports enterprise, namely the athletes.

Keywords: ICT platform, process approach, sports enterprise, monitoring of the flow of data, information and knowledge.

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1. Introduction

The article describes the results of the research concerning the development of a concept and a research methodology for the use of selected ICT tools to build an electronic communication platform for sports enterprises.² It is demonstrated that the basis for effective organisation of sport clubs as well as for the implementation of ICT systems used for monitoring their trainings system and budgets is the process approach [Cieśliński 2011]. The research aims to provide a diagnosis and a description

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of business processes, and elaborate on the functionalities of the Pe-AZS system. Additionally, desk research and analysis of the source materials from the sporting clubs allowed for a description and clarification of the role and significance of the ICT systems in managing sports enterprises. In order to effectively implement the ICT systems (Pe-AZS) it is necessary to improve the standards of operation of the clubs by introducing changes that will allow them to become process-oriented, as opposed to being focused on functional structures, which is, unfortunately, how the majority of sports enterprises continue to operate.

2. Description of the assumptions of the Pe-AZS project

The project fits into the implementation of the academic sports development strategy that emphasises the necessity of developing and introducing a system of monitoring and control over the training, organisational and financial processes, on the basis of IT support. The project covers efforts focused on the implementation of the project and process approach, and the test launch of an interactive website to be used to analyse the level of standardization of the activities undertaken by the clubs, and of the IT platform (Pe-AZS) enabling effective coordination of the work of management, trainers and athletes. The knowledge-acquisition objective of the research is to demonstrate the connection between the project and process approach adopted in the organisation of the activities of AZS Clubs (including those that follow the ACSS programme) and their organisational efficiency. It is anticipated that approximately 100 clubs will participate. The practical objective is to test the operation of the E-AZS Platform on the example of the AZS-AWF Wrocław Sporting Club. The anticipated result, therefore, will be a modern work organisation solution based on the project and process approach. Emphasis is also placed on the innovative research results (on a national level) for the improved professionalization of academic sports within the scope of possible monitoring of organisational, sporting and financial efficiency by designing, developing and testing a prototype of an interactive website and the e-AZS Platform. The Pe-AZS tool, launched on the basis of the project and process system of club organisation, will enable gathering and partial analysis of data in real time (with the use of a mobile ICT system), which will in turn contribute to the improvement of organisational efficiency and, consequently, the sporting and financial efficiency of sporting clubs, which will be verified during the period following the project evaluation. The results of the evaluation will be widely promoted in the community and actions will be taken to encourage their implementation in other institutions that follow the ACSS programme. Cooperation between schools and sporting clubs aimed at promoting competitive sports is a source of new challenges. Is it possible for the clubs that implement the ACSS programme to increase the organisational potential of their operations by adopting the project and process approach, and if so, to what degree? To what extent, if at all, can the system for monitoring the clubs' organisational efficiency be implemented

through the application of international standards of building modern business models that can be used to determine the correct development direction? To what extent can the stationary and mobile ICT systems support the work of athletes, trainers, physiotherapists, psychologists and managers, who, in the age of professionalization of sport (also the academic sport), must establish close cooperation which entails communication, exchange of data or delivering, in real time, of analyses of tests, or completion of specific training cycles (micro, meso, macro), the quantity and quality of load, training measures (general, specific or specialist), including the training methods and forms used, as well as other specialist data? The project and process approach [Cieśliński 2011] assumes that it is possible to improve the organisational efficiency of management and build standards of operations using the scale effect. The project approach is a methodology of effective management of events taking place within the club space. The process approach, on the other hand, is a methodology for building an organisational system that allows for focusing the operations of the clubs on creating value for the internal clients – athletes, trainers, managers, physicians, physiotherapists or psychologists, as well as for the external ones – the fans and stakeholders, including the universities following the ACSS programme.

3. Sports enterprise as a research object

A sports enterprise is an energy-informative system. The energy admissions in a sports enterprise are the sports results, being the product of basic processes including: the processes of providing training services, organisation of training camps, transfer of athletes, and sale of broadcasting rights. The energy in the form of the sports result is transformed into a source of data and information used primarily by auxiliary processes, such as: the marketing process, including the process of managing the media value of a sports enterprise, training of trainers and judges, and others. The transformation of the generated energy – the sports result – into information, and coordination of its flow allows for achieving results in the form of material admissions, including objective and financial admissions. Material admissions are realised in administrative processes of sports enterprises, including; management of human resources, finances, logistics and organisational infrastructure (objects). A simple cybernetic feedback system is presented in Figure 1. The e-AZS Platform is therefore intended to support the navigation, control and coordination of the flow of data, information and knowledge in the broadly understood system of management of a sports enterprise. In any case, regardless of the level of sports achievements or the organisational and legal frame, or the level of professionalization of operations of an enterprise (professional clubs, associations), it is important that the system should coordinate the flow of information in a manner providing the end users with access to information they consider the most useful. Therefore, the degree of access to information is determined by the user – depending on whether he is at

the level of the management of the enterprise, the trainer, athlete, or the administrator. The user interface should be adjusted to the role of the user within the organisation. Below a description of the assumptions of the concept of the P-e-AZS information and communication platform is provided.

ENERGY ADMISSIONS

INFORMATION FLOW

MATERIAL ADMISSIONS

(sports result)

(training and marketing system)

(financial result)

Figure 1. Model of operation of a sports enterprise

Source: own elaboration, based on [Cieśliński 2011].

Sports enterprises rely on an organisational mechanism in which the crucial links are the athletes and the relations between them and the other system elements (trainers, managers, fans, associations, media and federations). The fundamental organisational elements of sports enterprises, namely the actors that form it, create, through mutual relations, sets joined by the vision of growth and the adopted business model. The integrating element and the transmitter and carrier of sports results translatable into financial results is the organisational mechanism, and in particular the mechanism of creating a cohesive system of data, information and knowledge management, enabling a dynamic growth of the adopted business model. The basis for this mechanism is the process approach utilizing the cybernetic feedback model.

As a subject of studies, a sports enterprise is the management of the sports training processes, including planning, organisation, control and motivation, which acts as an element that joins these functions.

4. Process approach as a source of change and implementation of ICT technology – model of knowledge flow control in sports enterprises

The basis for designing information and communication systems is the process approach [Cieśliński 2011]. Such systems are described using a variety of tools. One of them is the Business Process Model and Notation. It reduces the time needed to create and edit the process models, enables hierarchization of processes, and saves time by making it possible to reuse the defined sub-processes. Its fundamental disadvantage is the lack of description of processes in the form of a map that includes the organisational space and time. In short, it is necessary to build diagrams illustrating the flow of work, documents, information, data and knowledge as a spatiotemporal configuration [Cieśliński 2011]. The maps are also used to describe the value-added stream flow. One of the better functioning systems available on the market, capable of describing the spatiotemporal conditions of flows and indicating who is to do what

and when, which is the best recommendation, is the iGrafx Professional for Six Sigma programme. Data, information and knowledge flow horizontally and across the organisation, integrating areas of previously poor cooperation. Preparing the enterprise, in advance, for the evolution towards process orientation can improve the efficiency of process implementation and functioning. The analysis of this aspect of relations and dependencies should identify the areas that require changes in order to effectively use the modern IT systems. Recent years have witnessed intense development of information management support tools. Their implementation forces organisations to become process-oriented as they seek opportunities to effectively implement and improve IT systems, for example by creating and improving standards related to the process approach, that is the business process maturity model. Modern, advanced IT systems supporting business management processes are a factor that strongly modifies the behaviour of people operating within the framework determined by the management systems. Implementations are accidental, performed without process and pre-implementation analyses, without applying standard methodologies used firstly to assess the business process maturity and secondly to determine the environment in which a given enterprise functions. One could say that during the birth stage, the domain systems and MRP class systems can be implemented – the environment must be stable. During the growth stage it is possible to effectively plan and implement, without any great risk, the ERP class systems – the environment can be changeable. During the maturity phase it is possible to effectively and rationally plan the implementation of the BI class systems – the environment can be turbulent. At the same time the table also shows (through the use of vectors) the direction of increase of the risk resulting from the inability to prepare a rational process and pre-implementation project due to not knowing many variables covered by the project.

Table 1. Model of selection of a management support system depending on the BPO phase and the type of environment

BPO phases /Type of environment	Stable	Changeable	Turbulent
Birth	Domain systems (module; F-K, production, sales, logistics, MRP, MRP II)	medium system implementation risk	high system implementation risk
Growth	medium system implementation risk ←	Integrated systems (e.g.: ERP, ERP II)	high system implementation risk →
Maturity	low system implementation risk ←	medium system implementation risk	Intelligent systems (e.g.: EIS – Executive Information Systems, DSS – Decision Support Systems, MIS – Management Information Systems, ICT)

Source: own elaboration, after: [Cieśliński 2011].

These include the environment conditions (expectations of the clients, legal requirements), stable or unstable functioning of process teams, stability and predictability of processes and predicting the results of their functioning. The co-dependencies described are presented in Table 1.

There are no universal IT systems, just as there are no absolute and unchangeable business management concepts. This necessitates a response to changes not only within businesses, but also among the providers of IT systems, and enforces cooperation between the designers and scientists working on recognizing the process approach in creating modern management systems (as in the case of cooperation with the US Department of Defense, which has resulted in the creation of a model standardizing the operation of software developers). The Capability Maturity Model and its further versions: the Capability Maturity Model Integration ver. 1.2 and the Personal CMMI, and supporting models: PSP – Personal Software Process, TSP – Team Software Process, TCD – Team Coaching Development, and others serve as a basis for such cooperation, which resulted in the spreading of this type of models to other sectors of the economy, and not only in the area of IT systems [Cieśliński 2011].

5. Conclusions

The e-AZS Platform will be a tool integrating, in terms of information and communication, the operations of all parties involved in a sports enterprise, such as: the manager, the trainer and the athlete. It is assumed that there are two levels of system functioning: the operational level: the computer aided process of sports training, and the strategic level: the system of monitoring organisational and management processes of sports enterprises. ICT changes reality, influences the speed of completion of business processes, overcomes time and space barriers, enables communication in real time [Chomiak-Orsa Perechuda, Cieśliński 2013]. A simple model of an information and communication process is the identification of signs, gathering of data, their transformation into information, creation of knowledge, including building a database of explicit knowledge, and building tacit knowledge. Therefore, efforts will continue to identify system functionalities that enable integration of the parties involved in the operation of the clubs, and that ensure that the information provided by the system is available irrespective of the location of the user, and in real time.

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MODEL PLATFORMY E-AZS – KONCEPCJA APLIKACJI TECHNOLOGII INFORMACYJNO-KOMUNIKACYJNEJ W PRZEDSIĘBIORSTWACH SPORTOWYCH

Streszczenie: w pracy opisano system komunikacji i przepływu informacji nazwany Platformą e-AZS. Narzędzie to służy poprawie przepływu informacji między podmiotami klubu sportowego AZS-AWF Wrocław. W szczególności chodzi o system przepływu danych i informacji w czasie rzeczywistym pomiędzy władzami klubu, trenerami oraz zawodnikami, a także z szeroko rozumianym otoczeniem klubu sportowego.

Słowa kluczowe: platforma, procesy, przedsiębiorstwa sportowe, monitorowanie przepływu danych, informacji i wiedzy.