Efficient Project Management with IT Toolset

"Managers, like pilots, need instrumentation about many aspects of their environment and performance to monitor the journey toward excellent future outcomes"
[Kaplan and Norton]

The processes of systematization, arrangement and management of the sophisticated information flow that arises during implementation of the complex projects can be organized through development and application of individual (specially created for the project) or standard (borrowed) tools based on the software solutions. The main software platforms include MS Office products, Business Intelligence systems, remote collaborative software (groupware), and integrated cloud services for project the management.

With three classical constraints of the project management (time, cost, scope) the effective results can be achieved if the tools (including hardware and software solutions) interaction is provided at the system level.

One of the similar system solutions for the information flow management in a major project was developed by the authors of this article together with the project team during a number of the oil & gas integrated projects implementation in 2009-2013 [2, 3].

The earlier published paper [4] presents eight characteristics of the project management tools. The key ones are simplicity, clarity, visualization, simultaneous remote sharing & use, tools versatility (*see Fig. 1*).

As integrating element of the project management system the "Search" software solution of the Product Data Management (PDM) software regulates management of the project docflow and electronic archive of the project scope technical documentation. These operations are implemented in the PDM-system with differential access rights, backup function and unauthorized access protection. As an example, the system provides possibility within a few minutes to find and apply necessary technical documents from the tens of thousands ones regarding all types of equipment applicable in ongoing projects.

The mind mapping technique is widely used in development of the project's Work Breakdown Struc-ture (WBS). The ideas generated in brainstorming are combined into a summary mind map using Mind-Manager, FreeMind, XMind, ConceptDraw MindMap and other software for subsequent analysis and generation of the new ideas [6, page 115]. The mentioned software implements composition of the checklists for individual processes (Fig. 2), short-term planning with implementation control, visualization and arrangement of large amounts of information for a rapid analysis and decision making. Some software solutions apply the customized templates libraries of the project management tools. For example, the Jetpack expansion for MindManager brings project charter, status report, risk management plan and other tools (*see Fig. 2*).

Microsoft Project, Primavera, Spider Project, GanttProject, Turbo Project and other software is the most widely used at present for the time constraints management in projects. The light client-server solutions and web services are commonly applied as well. Microsoft Project is employed in the major projects to create a comprehensive network chart, bottlenecks diagrams, plan/fact analysis, and the results are applied to correct the project management course. The planning and reporting on the project implementation can be done together with customers and subcontractors with automated weekly reports at that.

Google Docs, ZOHO Docs can be used for remote control of installation and commissioning works at the project construction site. Objectives for the representative offices at the weekly meetings are set in the forms developed in the Google Docs tables. The regional managers

Table 1: Processes, tools and goals of information management in major projects.

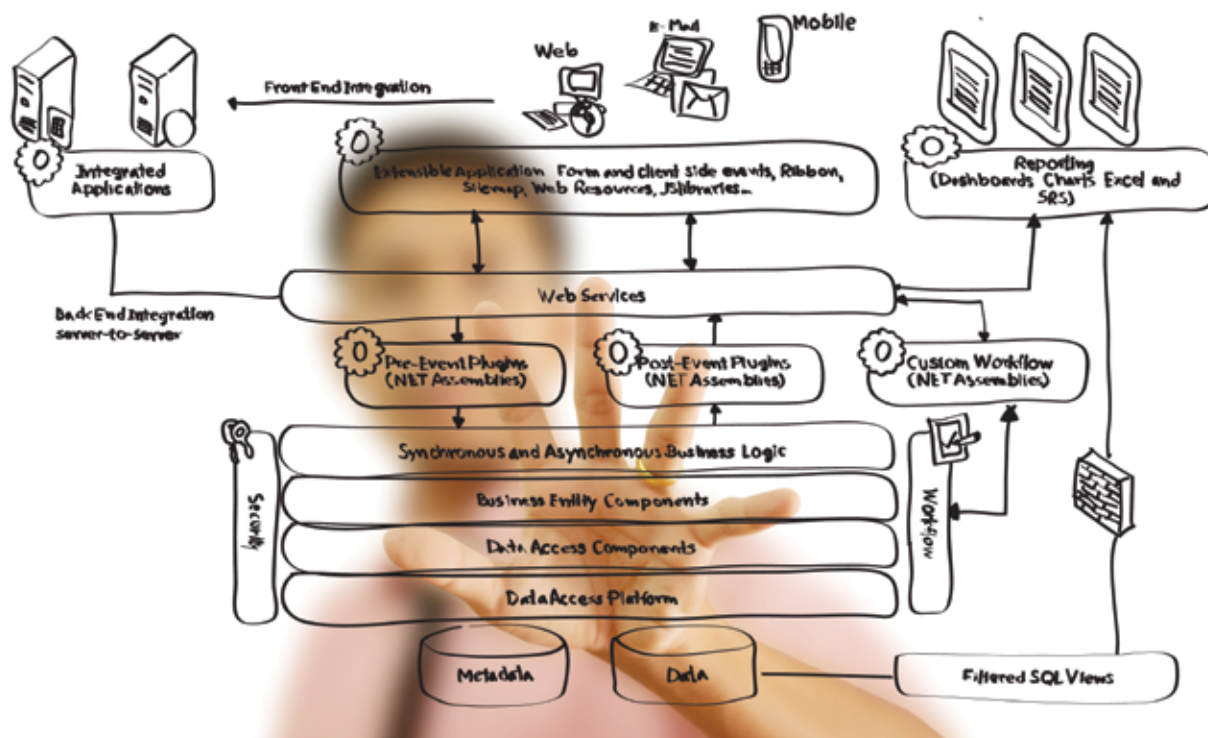|	Process	System	Tool (example)	Goal
1	Product data management	PDM	Search	Possibility within a short time to find and apply the necessary document among tens of thousands of the project ones
2	Mind-mapping	MM	MindManager	Work Breakdown Structure with visible relations, terms, responsible persons for decision making
3	Planning	EPM	MS Project	Project timeline management
4	Budget management	BMS	MS Excel/Project Expert	Budget management of the project
5	Content management	CMS	Physical control panels & XWiki	Information provision (sharing) to the project team, coordinator and sponsor.
6	Customer relationship	CRM	1S-Bitrix	Quality interaction with external customer
7	Visualizing	Diagramming software (DS)	MS Visio	Compact and easily perceived representation of complex information
8	Performance evaluation	BI	QlickView	Corporate management decision by operational analysis of the project key indicators
9	Site management	SMS	Google Docs, Google Coordinate	Quality interaction with service divisions

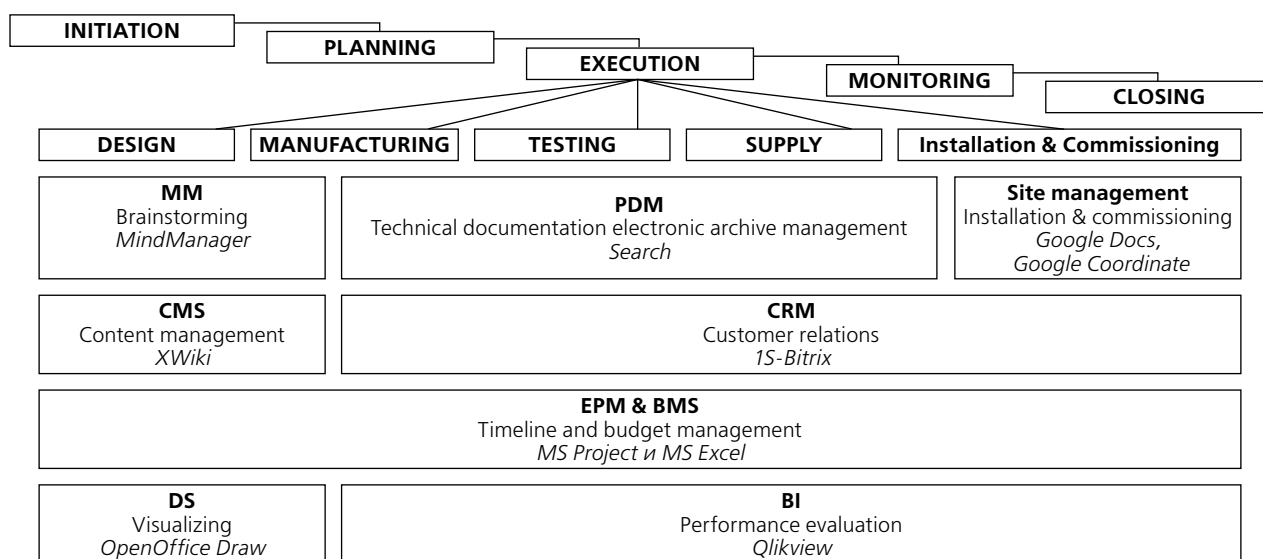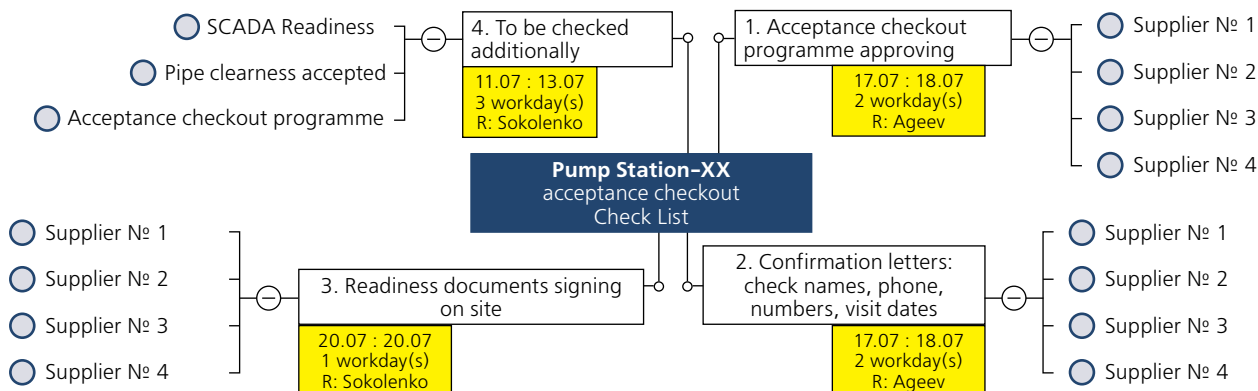*Figure 1. Information management tools system in a major project.*

Figure 2. A checklist of the oil pumping station's status for an acceptance checkout in the Purpe-Samotlor project implemented by HMS Group in 2011.

Full archives of all articles of Petroleum magazine for 14 years (2000-2013), texts of legislative acts, statistics on production and processing are available at www.petroleumjournal.kz

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receive all the necessary information about the task from their PDAs and transmit their reports on the works status.

At the project's phases "Execution" and "Monitoring" it is particularly important for the project team to ensure decision-making efficiency at potential deviation off the planned indicators. Alike the pilot's dashboard, the project control center tools currently implement metrics and the key performance indicators combined into the control panels [7]. The Business Intelligence class software providing the opportunity to work with those tools is presented by such solutions as QlickView, IBM Cognos, SAP BusinessObjects, Contour BI and several dozen other systems. In relevant software a base model of the measurable indicators (metrics) is chosen as necessary and sufficient for the project effectiveness evaluation and feasible for the project course control. For major projects it is recommended to apply eight key metrics (Fig. 3). Being implemented in the control panel interface in a tablet of CEO or the project office leader, the metrics change information helps to make effective decisions at the company's projects portfolio management (*see Fig. 3*).

As a necessary result of operation, the project information management tools system shall find its reflection in the company's specific "body of knowledge" as a meta-tool - a library of tools to support the company's operations management processes [9]. A library of the best practices and lessons learned from own and borrowed experience is formed for subsequent share use at that. The projects team shall actively support this corporate database of cases, including internal competencies exchange programs.

CONCLUSION/FINDINGS

1. A system solution is offered in the field of information flow management in major industrial projects. A library of templates was created, a model of metrics was formed, and a database of the best practices and learned lessons was generated. The implemented solution showed high efficiency in managing major oil and & projects in 2009-2013. The designed tools are widely used in the management of the projects portfolio and in individual projects of the company.

2. Currently, high-quality and timely implementation of a major project is impossible without a combination of software and hardware complexes into one integrated system. The presented approach can serve as a basis for such integration.

3. The proposed solution is a quite versatile and can be customized for the project management in small and medium-sized businesses, as well as for non-commercial projects. ◼

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Fig. 3. Major project metrics model.