Operations architecture modeling for IT-driven organizational development of a construction company

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EALab
Interuniversity Academic Center of Excellence on Enterprise Architecture

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Context, company description

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- **Medium-sized Russian construction company (BuildIt*);**
- BuildIt design and construct **non-residential buildings** (industrial facilities, schools, theatres, museums, libraries, etc.). Many unique facilities;
- **5 large-scale projects with total budget of $200 million** at the moment of our collaboration. Government contracts mostly;
- Projects are comprehensive and complicated: they involve **different subsystems of a facility under construction** (heat supply, electric power supply, water supply, IT infrastructure, etc.).
- Implementation of up-to-date technologies in buildings infrastructure including **provision of contemporary IT infrastructure**.
- **1000 employees,** payroll budget amounts for $1.5 million/month (excluding construction workers - subcontracts);
- The company has been **developing and has grown a lot** in recent years, but the company has remained a **"manually managed company"** with one and the same owner and director.

* fictitious name for confidentiality purposes. The project took place in 2012, but many raised issues are still relevant for companies in the region.

Context, problem description (1/2)

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- Project schedules are often violated due to ill planning and weak control over the situation.
- The company's director is incapable of controlling everything and struggles for automation viewing it as a way out.
- Management cycle is linked to weekly management meetings on various issues; tasks are set within such meetings and controlled within later meetings.
- Formalized processes are almost absent.
- Task and document management automation is the first intuitive request of the BuildIt management.
- The company has no formal or shared informal strategy.

Context, problem description (2/2)

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- Until recently IT didn't develop in the company. There is only a department of system administrators, which provides maintenance and support for equipment and several systems (CAD systems and some ERP modules);
- Recently, BuildIt started to pay increased attention to IT as a means of performance improvement;
- The company invited consultants on ERP systems implementation, but they did not manage to persuade the managers;
- Finally, BuildIt director invited new consultants – the authors of the paper with the team. He expected to receive a less ERP-biased approach with more solid foundations.

Goal and objectives of our project

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The final goal of the project was to implement IT in order to make the management and control system in the organization more effective.

In order to achieve this goal, it was necessary to answer the following questions:

- What should be the directions for IT development in the company?
- What should be the target state of IT support?
- How to attain the target state?

In addition to these conceptual questions, which are associated with IT strategy, it was necessary to specify requirements for the most urgent information system (IS).

Approach, key elements

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1. Componentized architecture of business operations and heat maps were used for analysis and planning;
2. Enterprise modeling tool was used to systematize and integrate work results;
3. Special attention to “soft” issues (organizational culture and management style).

1. Componentized architecture of business operations: theory and methods

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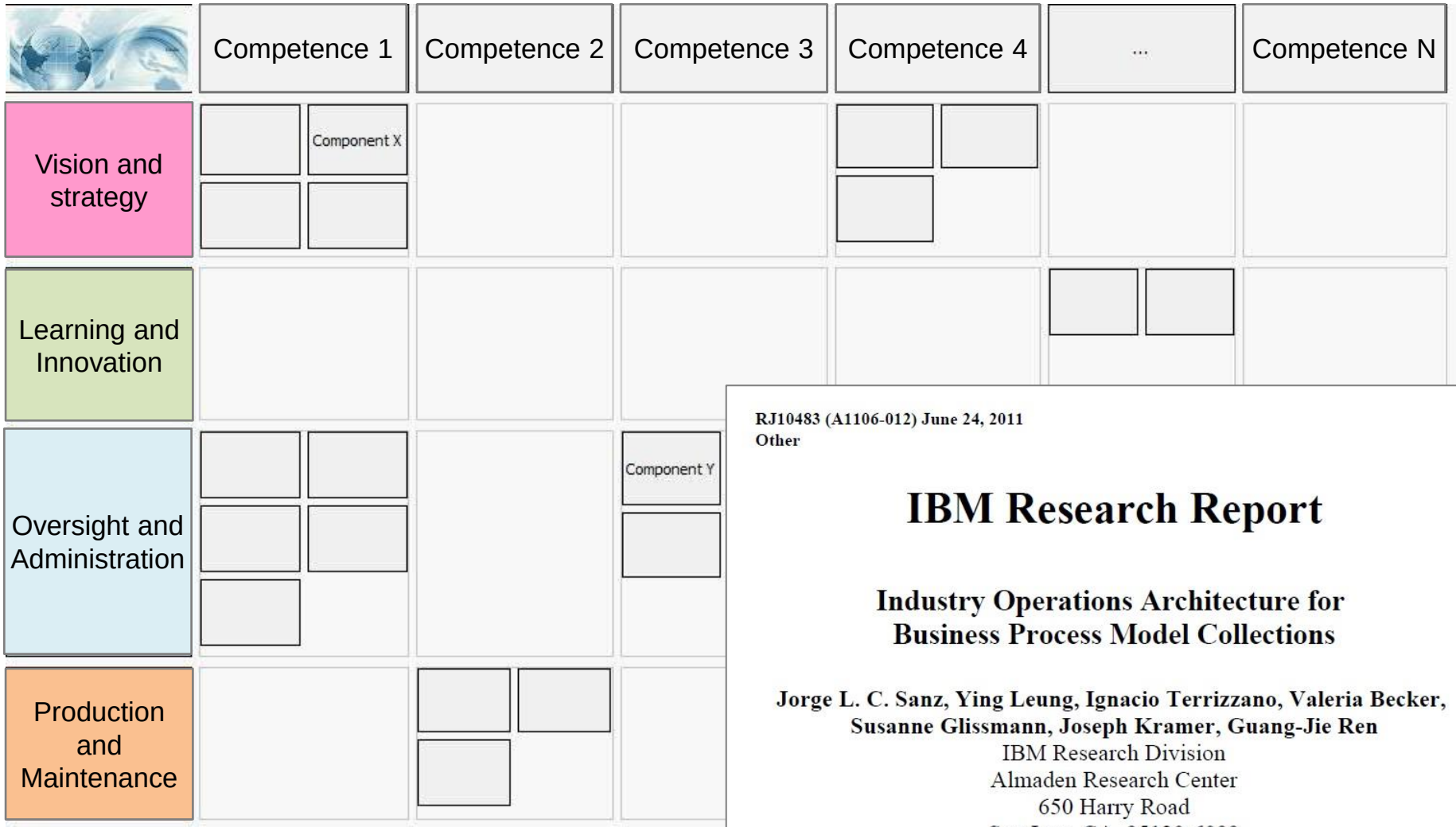

RJ10483 (A1106-012) June 24, 2011
Other

IBM Research Report

Industry Operations Architecture for Business Process Model Collections

Jorge L. C. Sanz, Ying Leung, Ignacio Terrizzano, Valeria Becker, Susanne Glissmann, Joseph Kramer, Guang-Jie Ren
IBM Research Division
Almaden Research Center
650 Harry Road
San Jose, CA 95120-6099
USA

1. Componentized architecture of business operations: theory and methods

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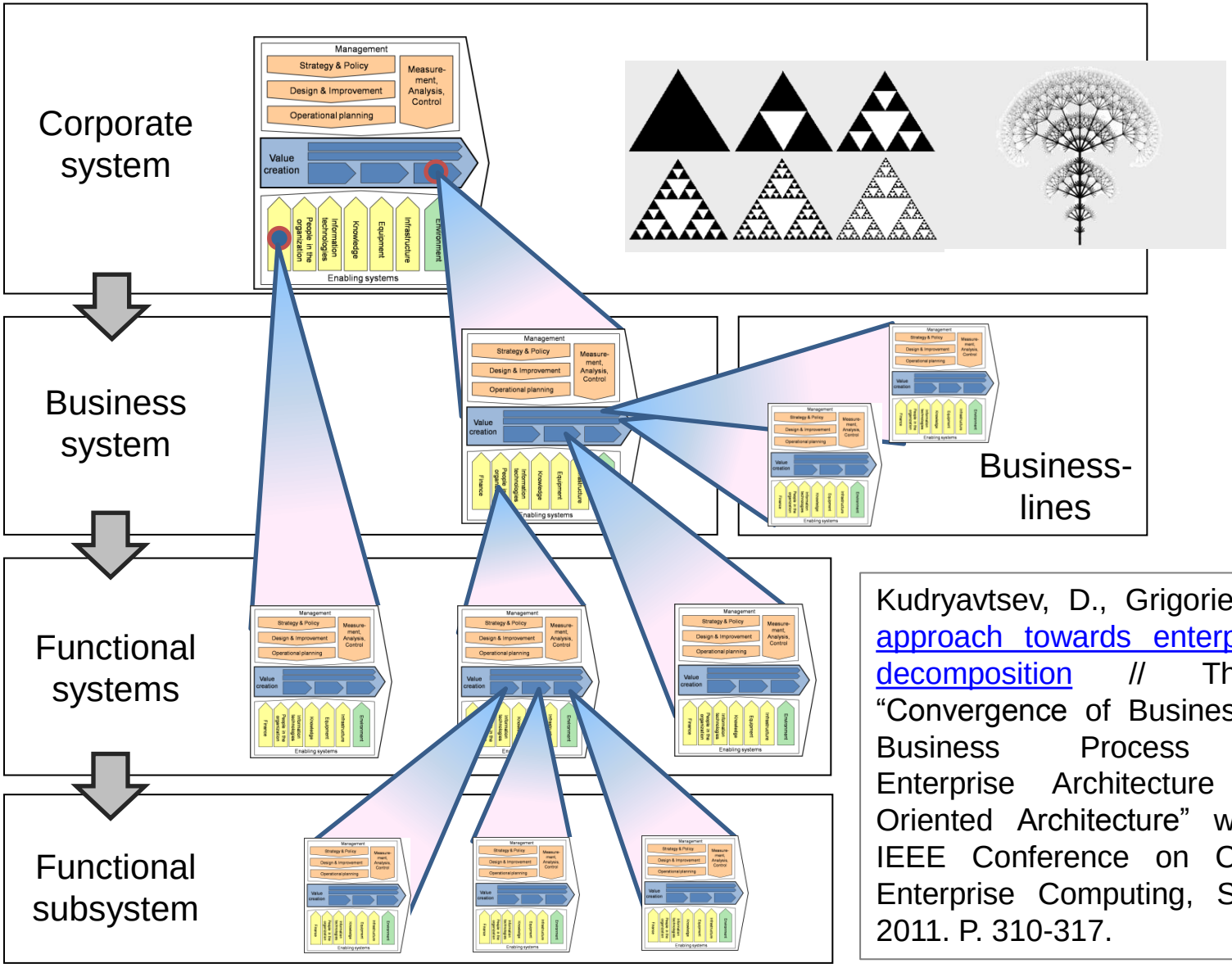

Kudryavtsev, D., Grigoriev, L. Systemic approach towards enterprise functional decomposition // The workshop "Convergence of Business Architecture, Business Process Architecture, Enterprise Architecture and Service Oriented Architecture" within the 13th IEEE Conference on Commerce and Enterprise Computing, September 5-7, 2011. P. 310-317.

1. Heat maps: theory and methods

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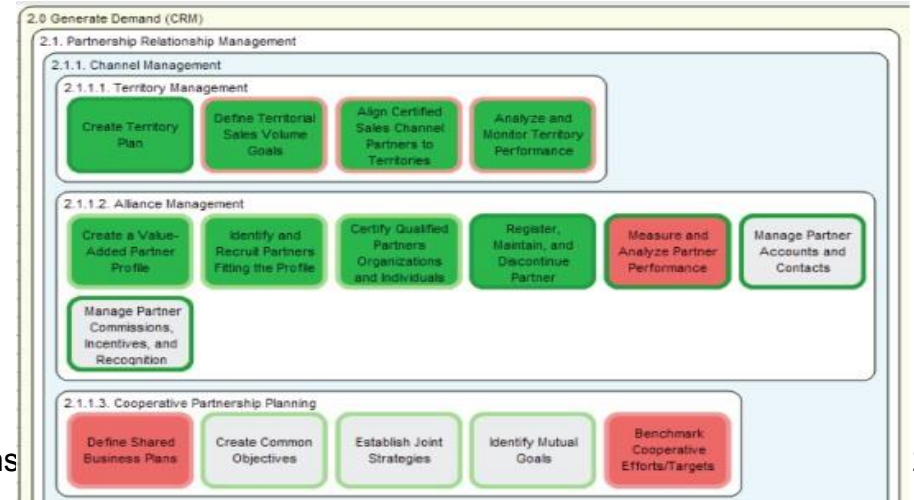
Analogy: As an owner of a house you might want to know where to invest in thermal protection. You might use a so called thermography to find out where your insulation is already sufficient and where it pays to invest in improvements.

Wolfgang W. Keller, HPI

Heat Maps are like Thermography for your Enterprise



2. ORG-Master - a specialized modeling tool was used to systematize and integrate work results

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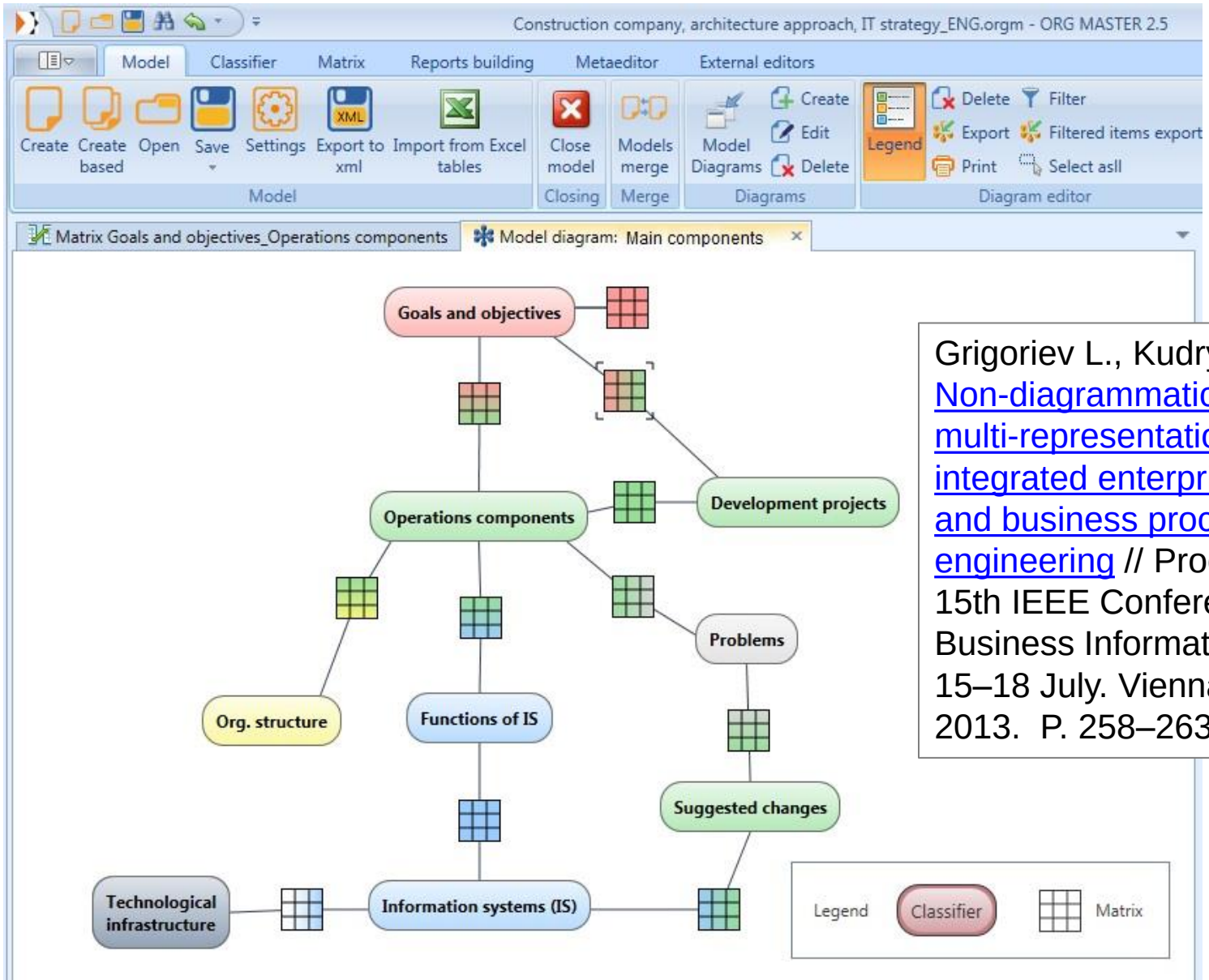

Grigoriev L., Kudryavtsev D. Non-diagrammatic method and multi-representation tool for integrated enterprise architecture and business process engineering // Proceedings of 15th IEEE Conference on Business Informatics (CBI 2013), 15–18 July. Vienna, Austria. 2013. P. 258–263.

3. Special attention to “soft” issues (organizational culture and management style)

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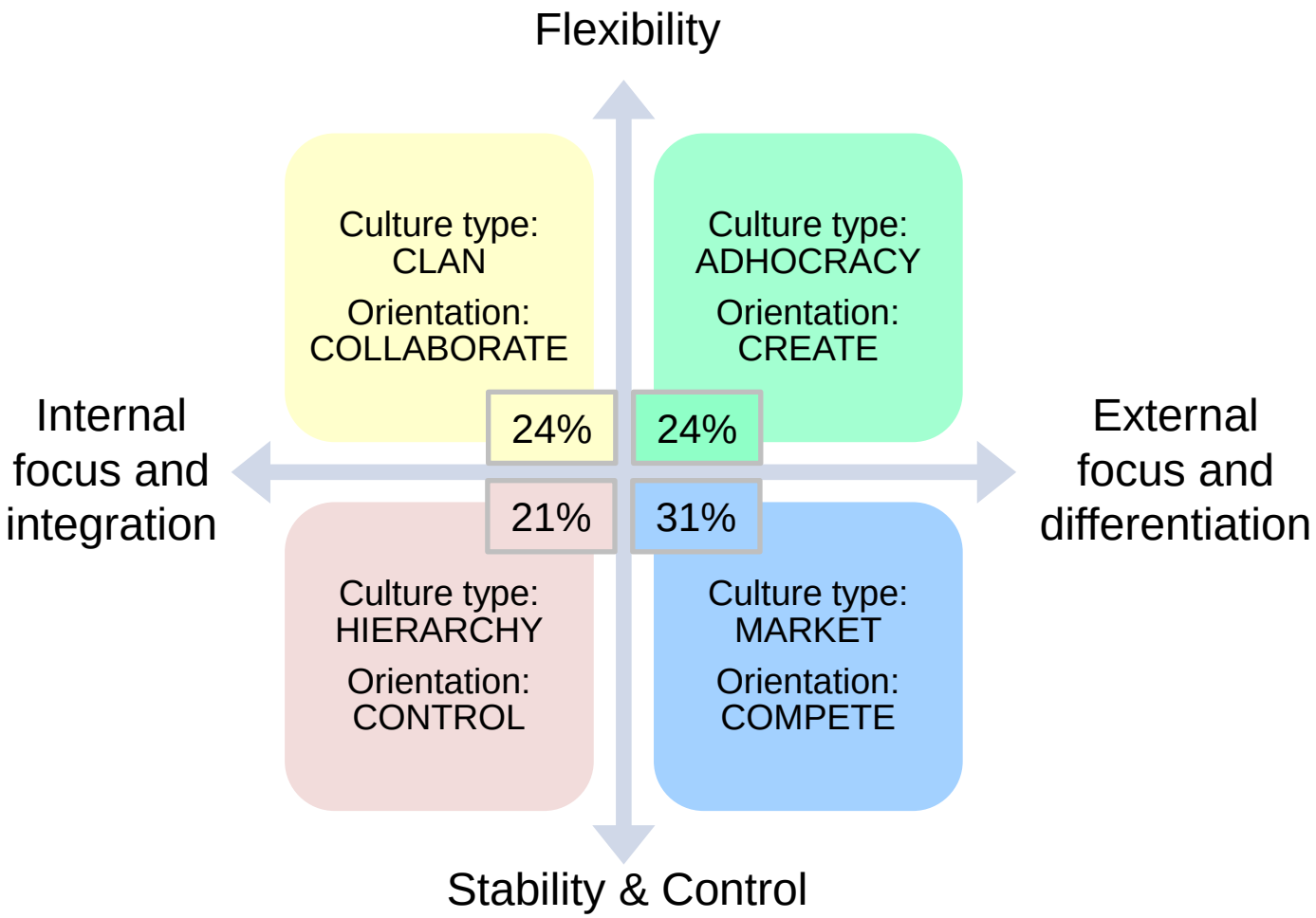
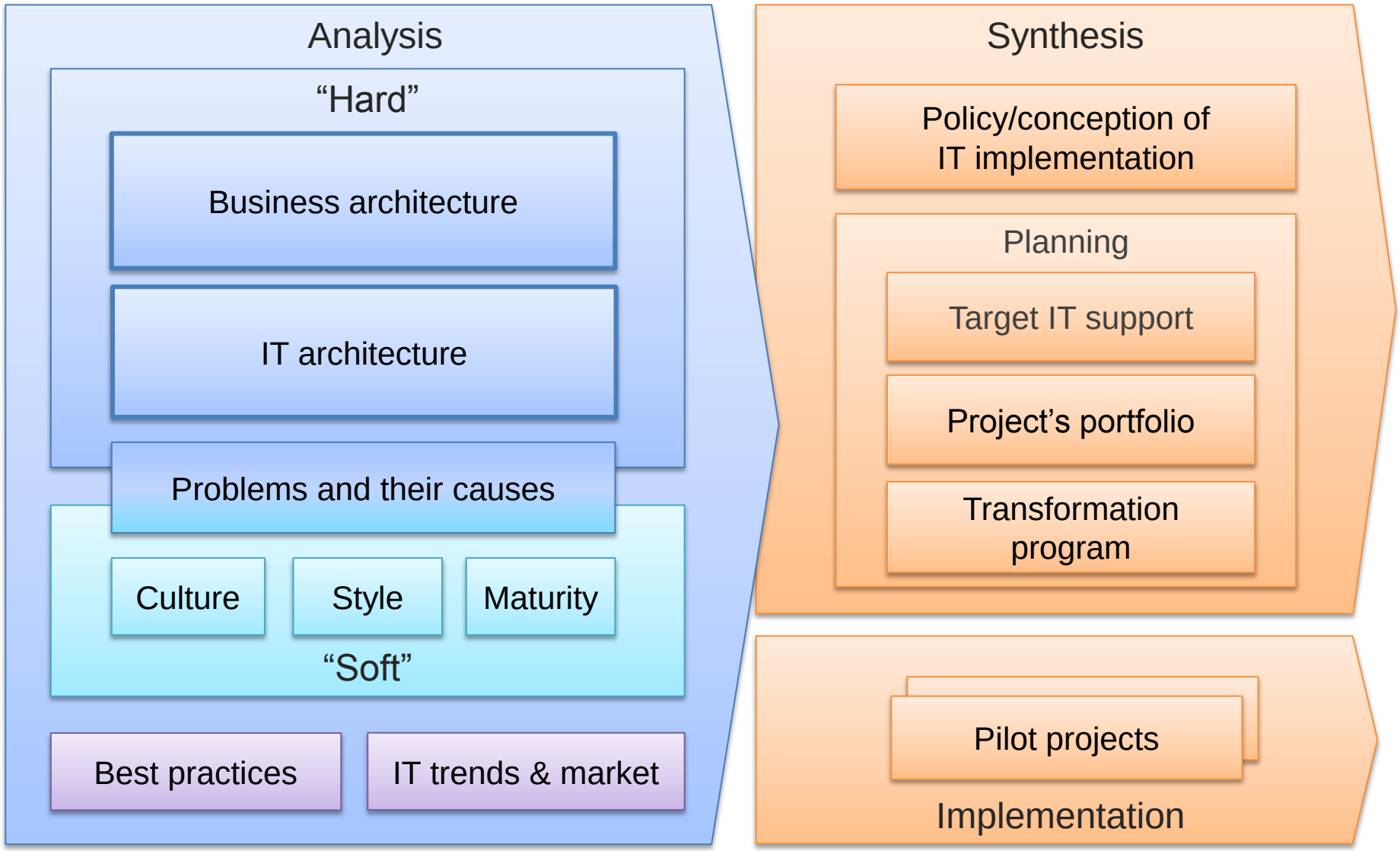


The evaluation of BuildIt culture using Cameron and Quinn [2006] method

Main steps and deliverables of the suggested approach



Data collection methods we used at BuildIt

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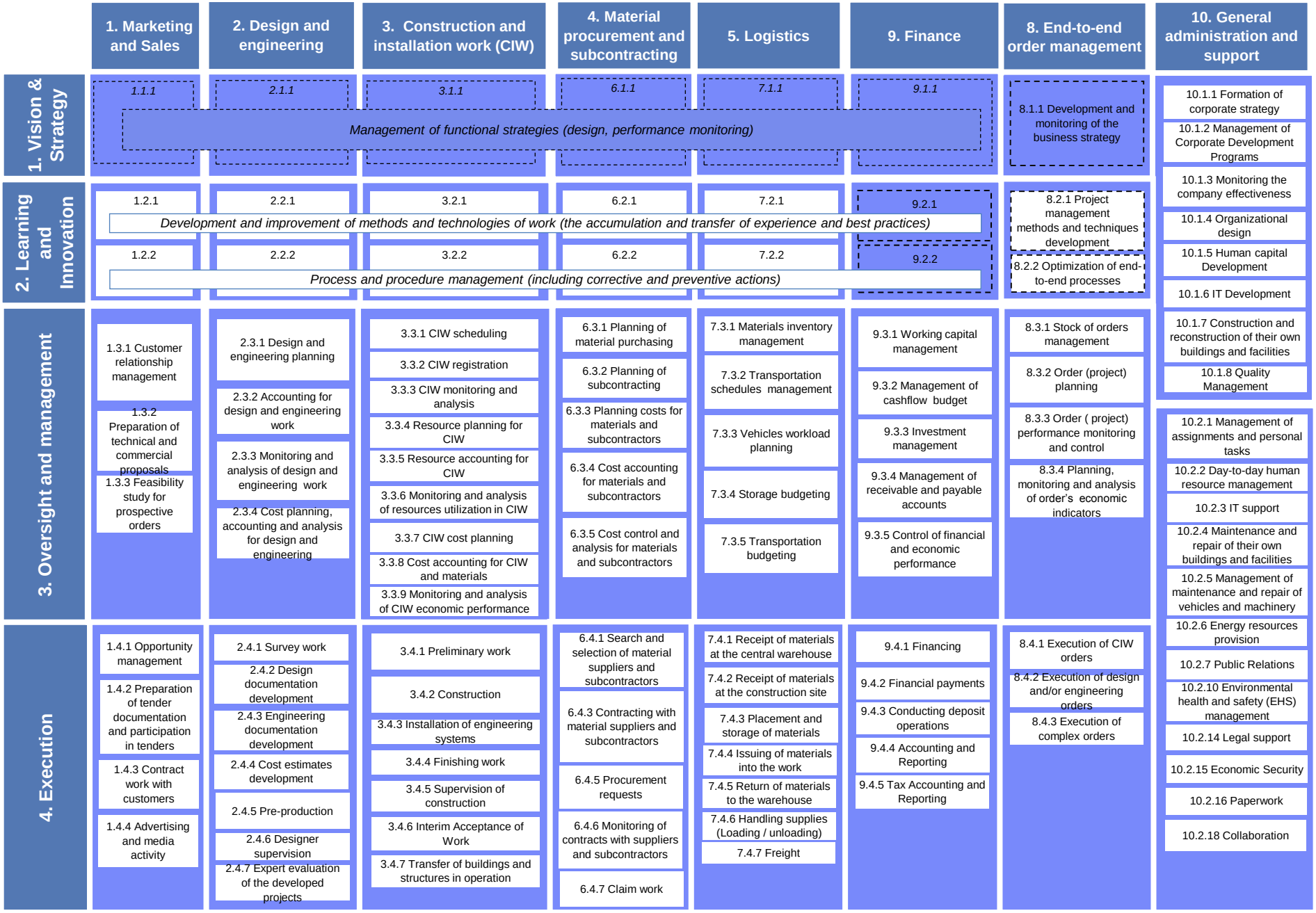
- ***Interviews*** with top managers and relevant specialists of the company;
- **Surveys** – several online questionnaires were rolled out;
- ***Observation / ethnography*** (e.g. participation in weekly management meetings, etc);
- ***Analysis of documents*** (regulatory documents, etc.) and BuildIt website.

Application of the approach: Componentized operations architecture



1. Componentized operations architecture (as a tree in ORG-Master)

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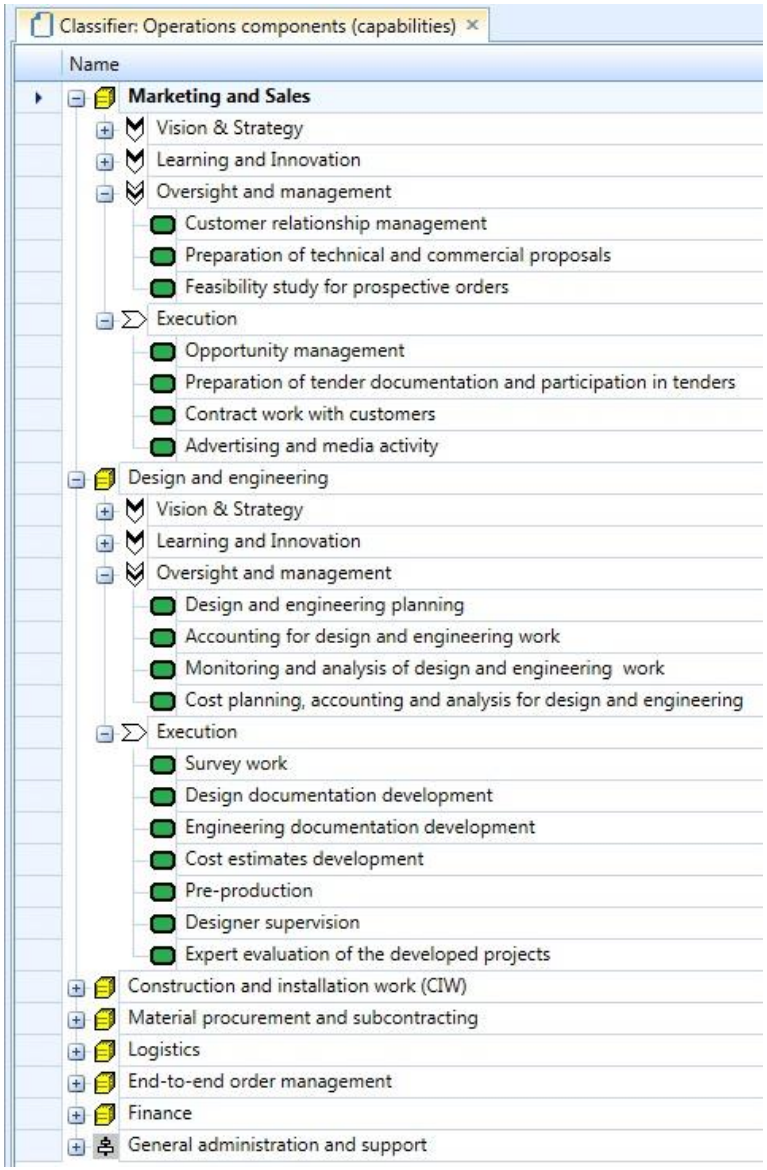

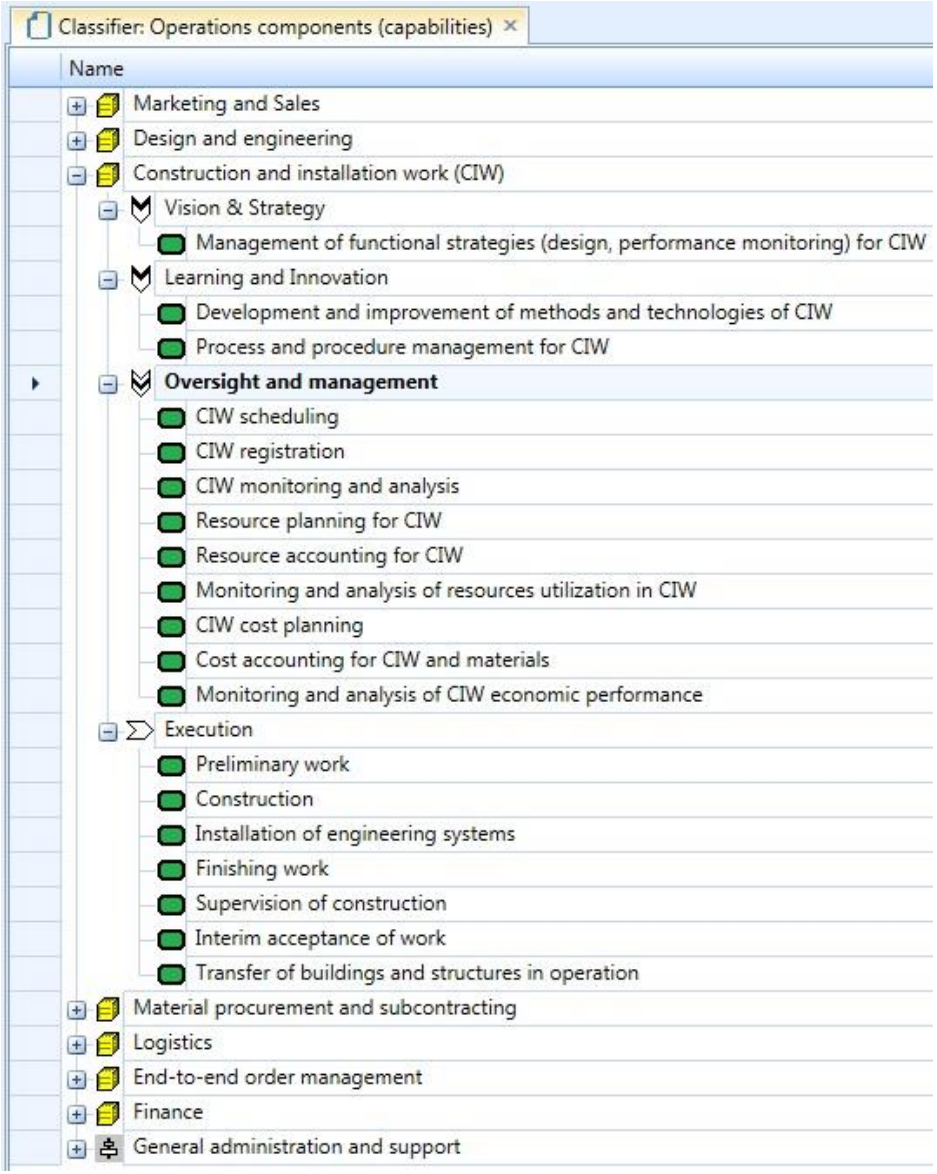

Heat map analysis

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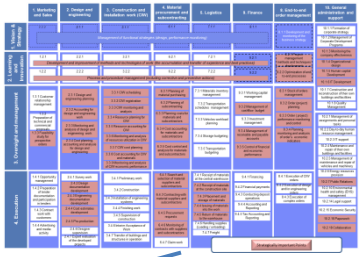
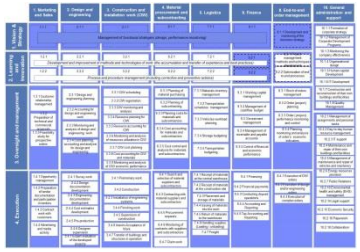
Problematic areas

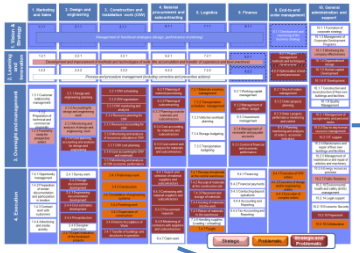
Strategic areas



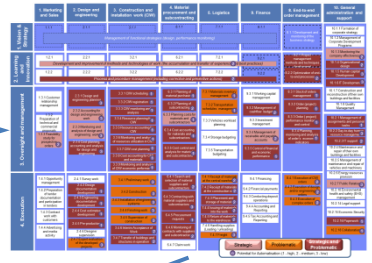
Operations architecture



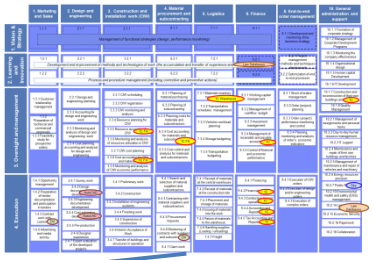
Critical areas



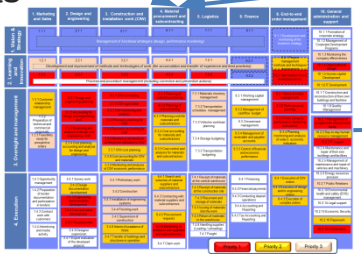
+ Potential for IT support

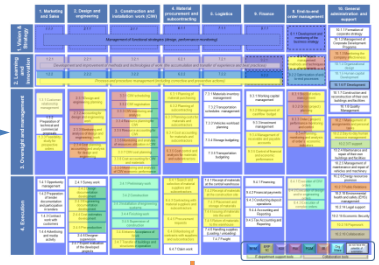


Existing IT support

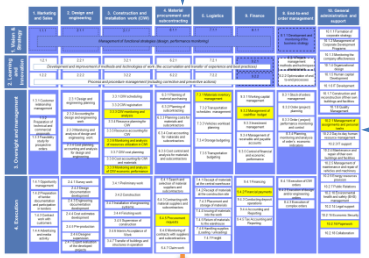


Priority areas for IT implementation





IT support for priority areas



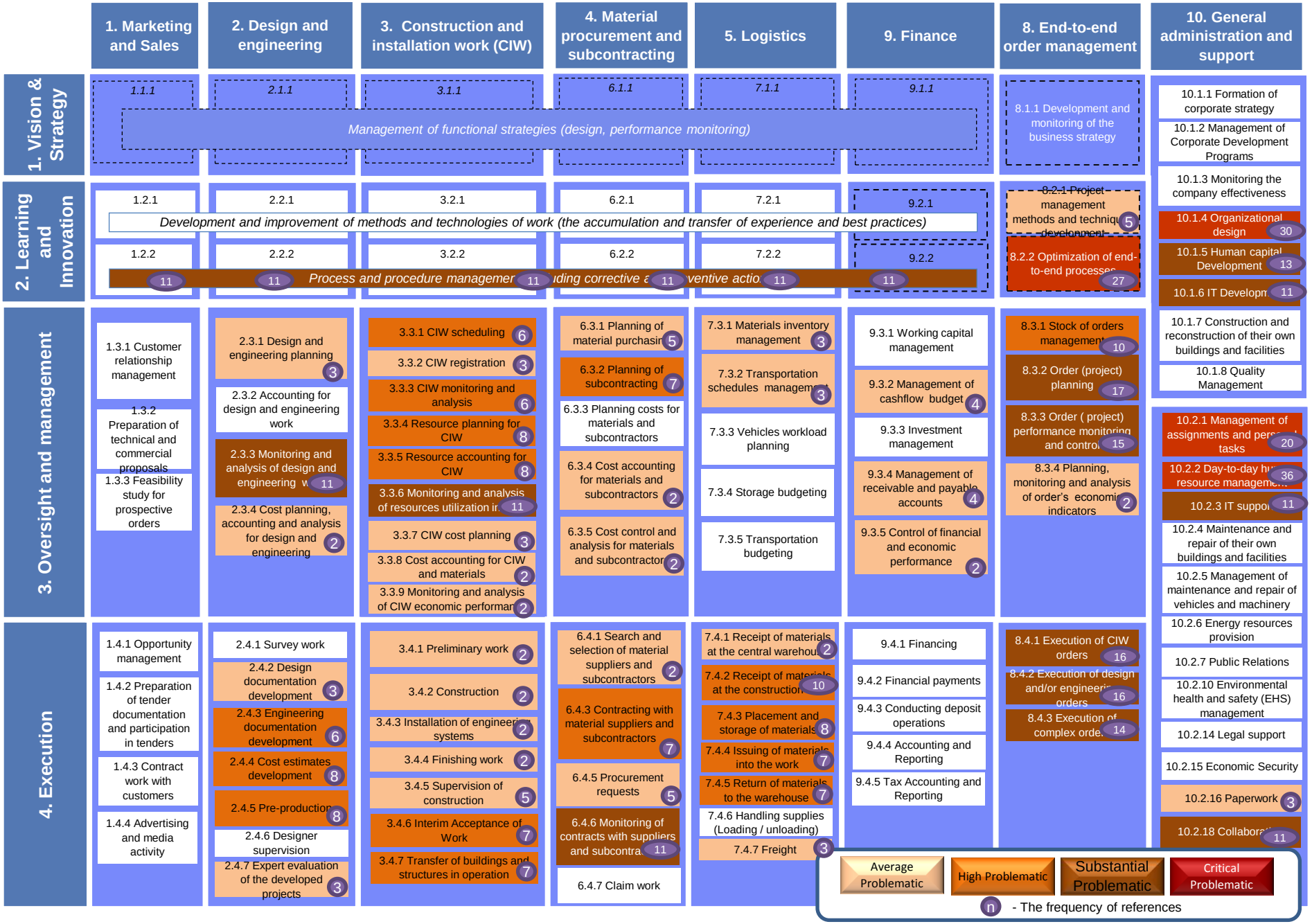
"Quick wins" areas

Project portfolio

Transformation program

Operations architecture modeling …, Kudryavtsev D., Arzumanyan M., 2016

Problematical areas



Justifications, links with problems

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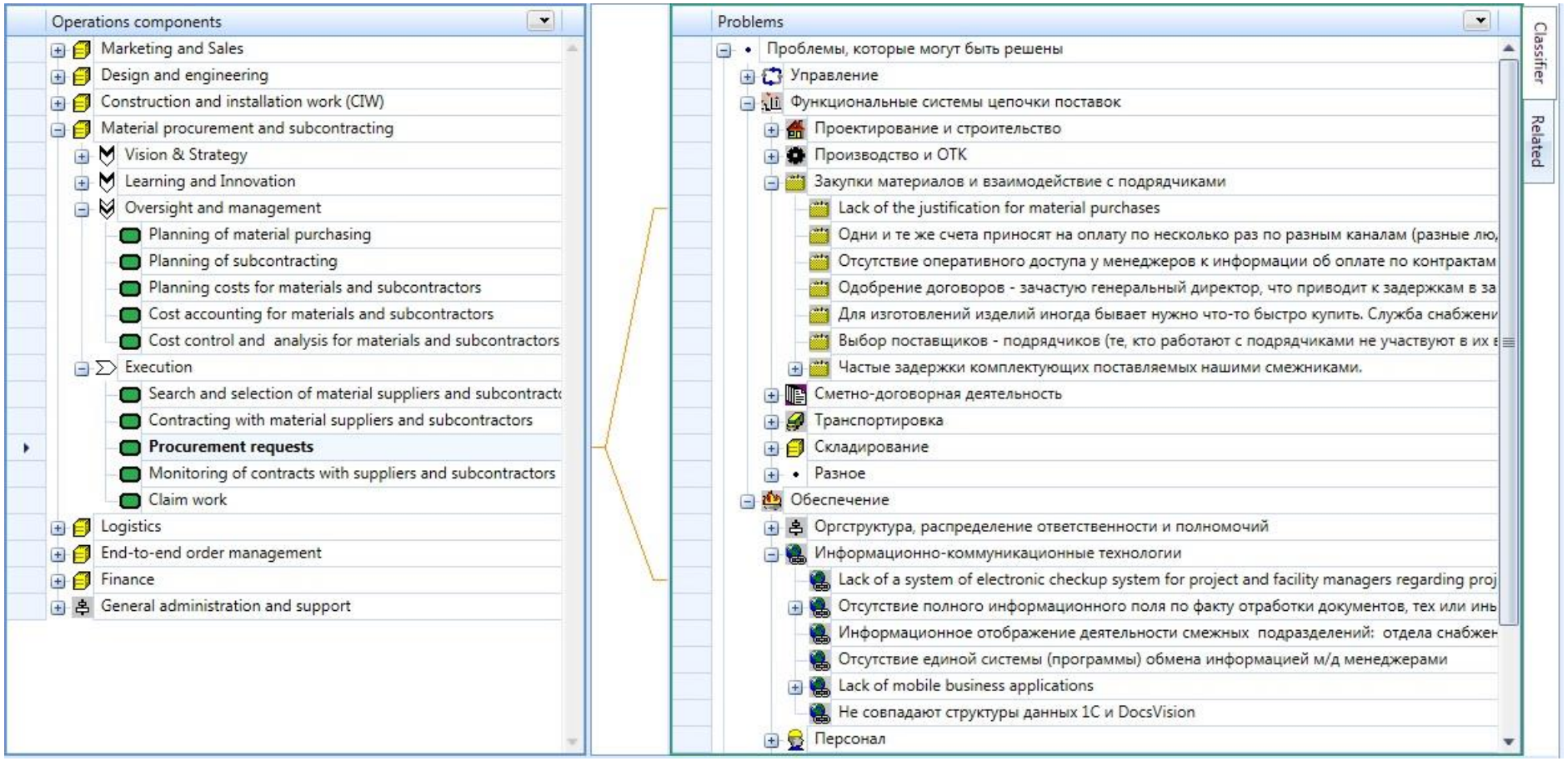

Strategic Areas

	1. Marketing and Sales	2. Design and engineering	3. Construction and installation work (CIW)	4. Material procurement and subcontracting	5. Logistics	9. Finance	8. End-to-end order management	10. General administration and support
1. Vision & Strategy	1.1.1	2.1.1	3.1.1	6.1.1	7.1.1	9.1.1	8.1.1 Development and monitoring of the business strategy	10.1.1 Formation of corporate strategy 10.1.2 Management of Corporate Development Programs
	Management of functional strategies (design, performance monitoring)							10.1.3 Monitoring the company effectiveness
2. Learning and Innovation	1.2.1	2.2.1	3.2.1	6.2.1	7.2.1	9.2.1	8.2.1 Project management methods and techniques development	10.1.4 Organizational design
	Development and improvement of methods and technologies of work (the accumulation and transfer of experience and best practices)							10.1.5 Human capital Development
	1.2.2	2.2.2	3.2.2	6.2.2	7.2.2	9.2.2	8.2.2 Optimization of end-to-end processes	10.1.6 IT Development
	Process and procedure management (including corrective and preventive actions)							10.1.7 Construction and reconstruction of their own buildings and facilities
								10.1.8 Quality Management
3. Oversight and management	1.3.1 Customer relationship management	2.3.1 Design and engineering planning	3.3.1 CIW scheduling	6.3.1 Planning of material purchasing	7.3.1 Materials inventory management	9.3.1 Working capital management	8.3.1 Stock of orders management	10.2.1 Management of assignments and personal tasks
	1.3.2 Preparation of technical and commercial proposals	2.3.2 Accounting for design and engineering work	3.3.2 CIW registration	6.3.2 Planning of subcontracting	7.3.2 Transportation schedules management	9.3.2 Management of cashflow budget	8.3.2 Order (project) planning	10.2.2 Day-to-day human resource management
	1.3.3 Feasibility study for prospective orders	2.3.3 Monitoring and analysis of design and engineering work	3.3.3 CIW monitoring and analysis	6.3.3 Planning costs for materials and subcontractors	7.3.3 Vehicles workload planning	9.3.3 Investment management	8.3.3 Order (project) performance monitoring and control	10.2.3 IT support
		2.3.4 Cost planning, accounting and analysis for design and engineering	3.3.4 Resource planning for CIW	6.3.4 Cost accounting for materials and subcontractors	7.3.4 Storage budgeting	9.3.4 Management of receivable and payable accounts	8.3.4 Planning, monitoring and analysis of order's economic indicators	10.2.4 Maintenance and repair of their own buildings and facilities
			3.3.5 Resource accounting for CIW	6.3.5 Cost control and analysis for materials and subcontractors	7.3.5 Transportation budgeting	9.3.5 Control of financial and economic performance		10.2.5 Management of maintenance and repair of vehicles and machinery
			3.3.6 Monitoring and analysis of resources utilization in CIW					10.2.6 Energy resources provision
			3.3.7 CIW cost planning					10.2.7 Public Relations
			3.3.8 Cost accounting for CIW and materials					10.2.10 Environmental health and safety (EHS) management
			3.3.9 Monitoring and analysis of CIW economic performance					10.2.14 Legal support
4. Execution	1.4.1 Opportunity management	2.4.1 Survey work	3.4.1 Preliminary work	6.4.1 Search and selection of material suppliers and subcontractors	7.4.1 Receipt of materials at the central warehouse	9.4.1 Financing	8.4.1 Execution of CIW orders	10.2.15 Economic Security
	1.4.2 Preparation of tender documentation and participation in tenders	2.4.2 Design documentation development	3.4.2 Construction	6.4.3 Contracting with material suppliers and subcontractors	7.4.2 Receipt of materials at the construction site	9.4.2 Financial payments	8.4.2 Execution of design and/or engineering orders	10.2.16 Paperwork
	1.4.3 Contract work with customers	2.4.3 Engineering documentation development	3.4.3 Installation of engineering systems	6.4.5 Procurement requests	7.4.3 Placement and storage of materials	9.4.3 Conducting deposit operations	8.4.3 Execution of complex orders	10.2.18 Collaboration
	1.4.4 Advertising and media activity	2.4.4 Cost estimates development	3.4.4 Finishing work	6.4.6 Monitoring of contracts with suppliers and subcontractors	7.4.4 Issuing of materials into the work	9.4.4 Accounting and Reporting		
		2.4.5 Pre-production	3.4.5 Supervision of construction	6.4.7 Claim work	7.4.5 Return of materials to the warehouse	9.4.5 Tax Accounting and Reporting		
		2.4.6 Designer supervision	3.4.6 Interim Acceptance of Work		7.4.6 Handling supplies (Loading / unloading)			
		2.4.7 Expert evaluation of the developed projects	3.4.7 Transfer of buildings and structures in operation		7.4.7 Freight			

Strategically Important Points

Strategy analysis: Competitive advantages

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1. Comprehensive solution (stage by stage, from investments to operation; all systems)
2. Terms of works/services provision

Sources of short terms: monitoring and implementation of up-to-date technologies, employees' training.

3. Works/services cost

Sources of competitive prices: discounts from partners (direct relations with vendors/lagre suppliers), comprehensive solutions (all kinds of works), own production, own design.

4. Business reputation

Sources of positive image: successful projects portfolio (good feedback from clients), application of up-to-date information and communication technologies (for example, tables computers for operational staff), QMS/ISO.

5. Innovations (interesting designs, modern materials, experts involvement)
6. Financial sufficiency and corresponding payment conditions: "we may start works without advanced payment".

Sources: Projects portfolio, good credit rating, assets that may guarantee loans.

7. Extended warranty

Sources: reliable and experienced suppliers (for example, for utility equipment).

Strategy analysis: Sources of *competitiveness*

EALab

1. Human factor and human relations ("everything reposes on people with common sense", "people stay in the company because of good climate and good attitude of the management", "heroism of some employees").
2. Reliable partners and set relations with them

Partners bring in their name and experience. Opportunity to establish a strong companies' syndicate aimed at tender and works.

3. Portfolio of successful and significant projects
4. Sustainable revenue from production
5. Good credit rating

Strategic goals

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1. ***Comprehensive solutions***, which means that we can come up with a solution covering various stages of the facility's life cycle (design and engineering, construction and installation work) and combining works related to all the engineering systems of a building / construction (power supply, ventilation, telecommunications etc.).
2. ***Functioning as a management company***, i.e. as a customer, general contractor or general designer. Order management.
3. ***Economic efficiency,*** i.e. raising construction profitability up to 10-20%.
4. ***Image as of an innovative and reliable company***, meaning that construction market players must be sure that "BuildIt" is able to carry out complex projects by using cutting-edge technologies of construction, design, management and interaction with the parties concerned.

Strategic objectives

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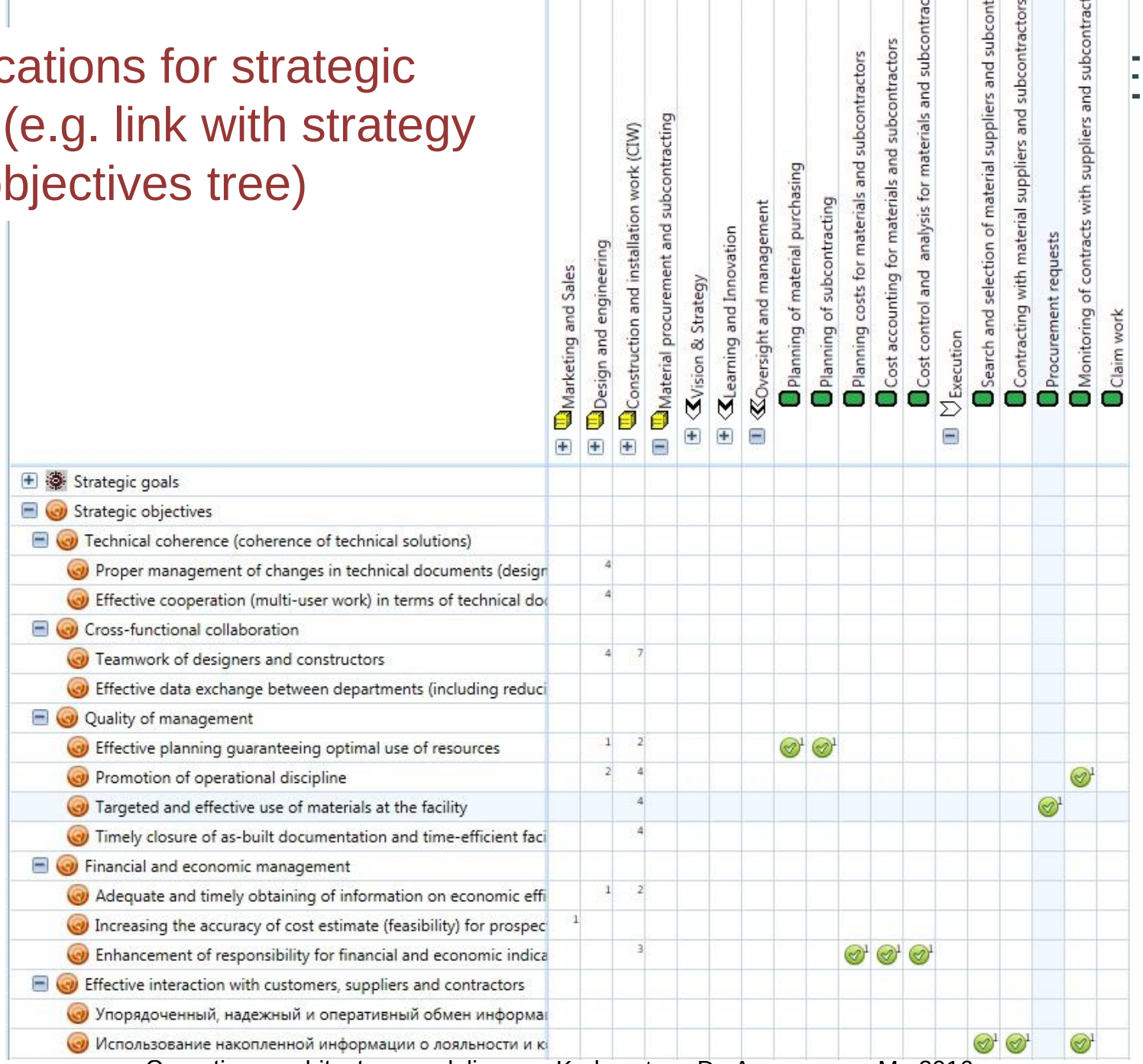
Justifications for strategic areas (e.g. link with strategy map/objectives tree)



Critical areas

	1. Marketing and Sales	2. Design and engineering	3. Construction and installation work (CIW)	4. Material procurement and subcontracting	5. Logistics	9. Finance	8. End-to-end order management	10. General administration and support
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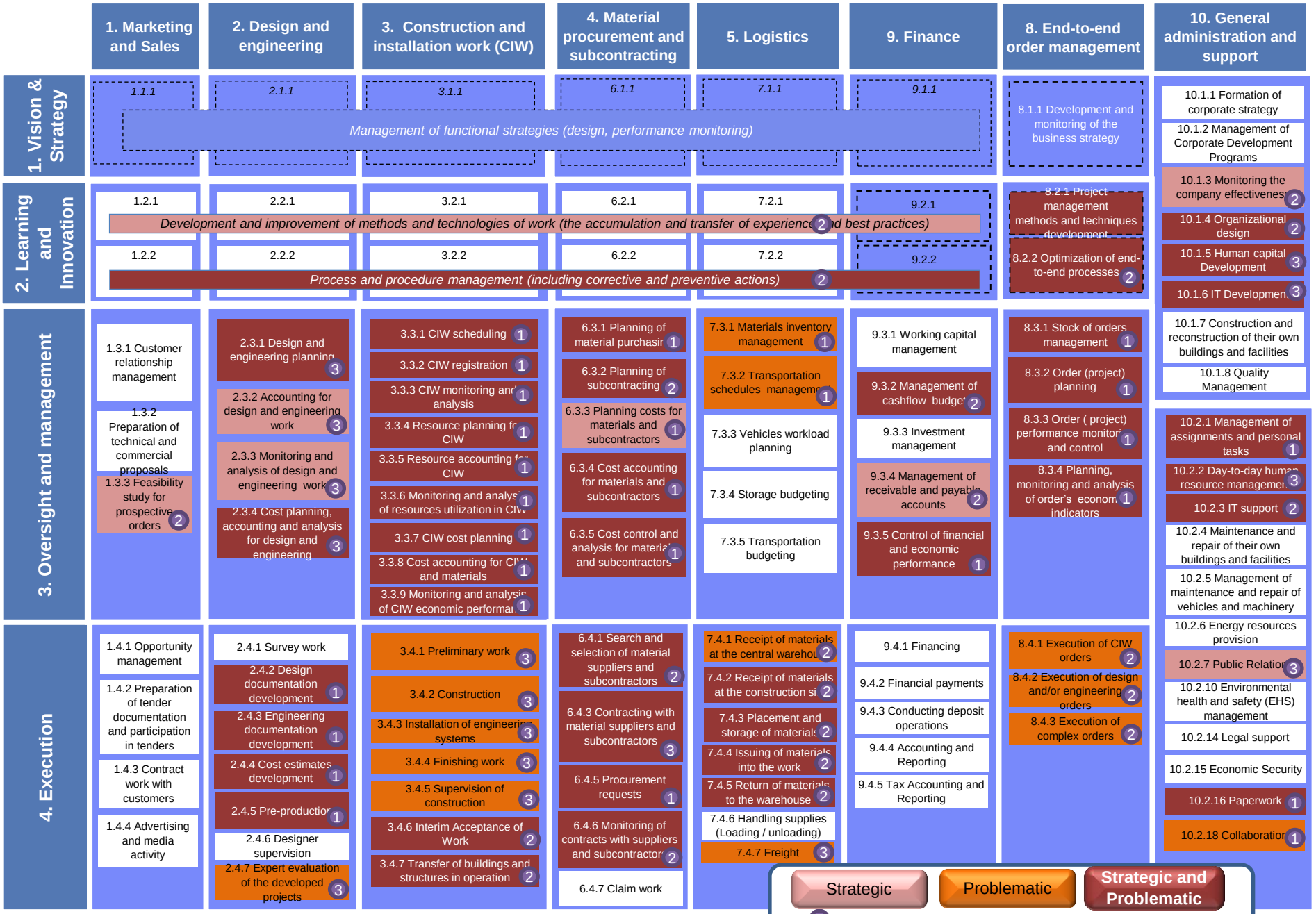
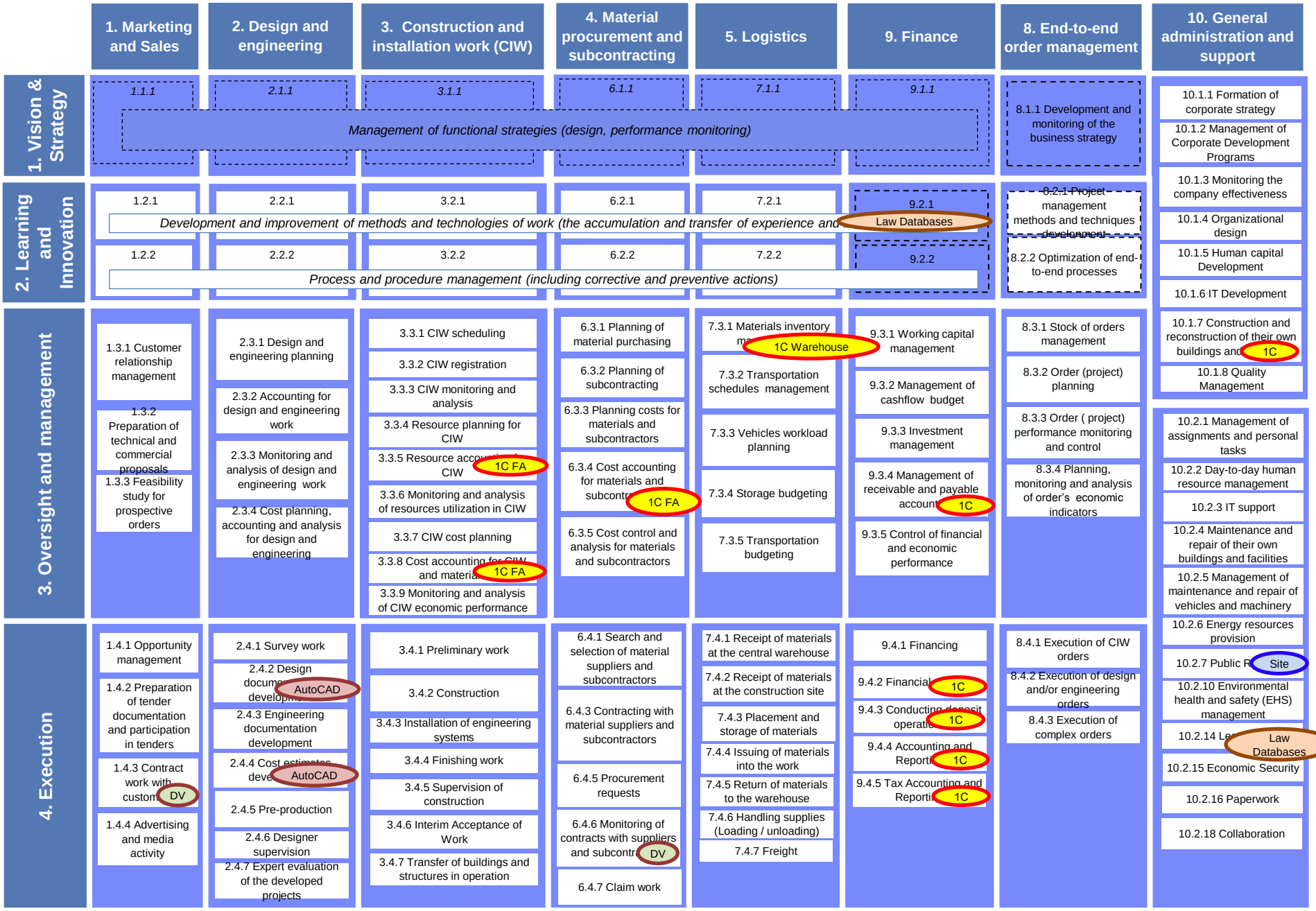
	Development and improvement of methods and technologies of work (the accumulation and transfer of experience and best practices)							
	1.2.2	2.2.2	3.2.2	6.2.2	7.2.2	9.2.2	8.2.2 Optimization of end-to-end processes	10.1.7 Construction and reconstruction of their own buildings and facilities
	Process and procedure management (including corrective and preventive actions)							10.1.8 Quality Management
3. Oversight and management	1.3.1 Customer relationship management 1.3.2 Preparation of technical and commercial proposals 1.3.3 Feasibility study for prospective orders	2.3.1 Design and engineering planning 2.3.2 Accounting for design and engineering work 2.3.3 Monitoring and analysis of design and engineering work 2.3.4 Cost planning, accounting and analysis for design and engineering	3.3.1 CIW scheduling 3.3.2 CIW registration 3.3.3 CIW monitoring and analysis 3.3.4 Resource planning for CIW 3.3.5 Resource accounting for CIW 3.3.6 Monitoring and analysis of resources utilization in CIW 3.3.7 CIW cost planning 3.3.8 Cost accounting for CIW and materials 3.3.9 Monitoring and analysis of CIW economic performance	6.3.1 Planning of material purchasing 6.3.2 Planning of subcontracting 6.3.3 Planning costs for materials and subcontractors 6.3.4 Cost accounting for materials and subcontractors 6.3.5 Cost control and analysis for materials and subcontractors	7.3.1 Materials inventory management 7.3.2 Transportation schedules management 7.3.3 Vehicles workload planning 7.3.4 Storage budgeting 7.3.5 Transportation budgeting	9.3.1 Working capital management 9.3.2 Management of cashflow budget 9.3.3 Investment management 9.3.4 Management of receivable and payable accounts 9.3.5 Control of financial and economic performance	8.3.1 Stock of orders management 8.3.2 Order (project) planning 8.3.3 Order (project) performance monitoring and control 8.3.4 Planning, monitoring and analysis of order's economic indicators	10.2.1 Management of assignments and personal tasks 10.2.2 Day-to-day human resource management 10.2.3 IT support 10.2.4 Maintenance and repair of their own buildings and facilities 10.2.5 Management of maintenance and repair of vehicles and machinery 10.2.6 Energy resources provision 10.2.7 Public Relations 10.2.10 Environmental health and safety (EHS) management 10.2.14 Legal support 10.2.15 Economic Security 10.2.16 Paperwork 10.2.18 Collaboration
4. Execution	1.4.1 Opportunity management 1.4.2 Preparation of tender documentation and participation in tenders 1.4.3 Contract work with customers 1.4.4 Advertising and media activity	2.4.1 Survey work 2.4.2 Design documentation development 2.4.3 Engineering documentation development 2.4.4 Cost estimates development 2.4.5 Pre-production 2.4.6 Designer supervision 2.4.7 Expert evaluation of the developed projects	3.4.1 Preliminary work 3.4.2 Construction 3.4.3 Installation of engineering systems 3.4.4 Finishing work 3.4.5 Supervision of construction 3.4.6 Interim Acceptance of Work 3.4.7 Transfer of buildings and structures in operation	6.4.1 Search and selection of material suppliers and subcontractors 6.4.3 Contracting with material suppliers and subcontractors 6.4.5 Procurement requests 6.4.6 Monitoring of contracts with suppliers and subcontractors 6.4.7 Claim work	7.4.1 Receipt of materials at the central warehouse 7.4.2 Receipt of materials at the construction site 7.4.3 Placement and storage of materials 7.4.4 Issuing of materials into the work 7.4.5 Return of materials to the warehouse 7.4.6 Handling supplies (Loading / unloading) 7.4.7 Freight	9.4.1 Financing 9.4.2 Financial payments 9.4.3 Conducting deposit operations 9.4.4 Accounting and Reporting 9.4.5 Tax Accounting and Reporting	8.4.1 Execution of CIW orders 8.4.2 Execution of design and/or engineering orders 8.4.3 Execution of complex orders	

Strategic | Problematic | Strategic and Problematic

Critical areas and potential for IT support



Existing systems



Priorities for IT implementation (incl. interrelationships)

	1. Marketing and Sales	2. Design and engineering	3. Construction and installation work (CIW)	4. Material procurement and subcontracting	5. Logistics	9. Finance	8. End-to-end order management	10. General administration and support
1. Vision & Strategy	*1.1.1*	*2.1.1*	*3.1.1*	*6.1.1*	*7.1.1*	*9.1.1*	8.1.1 Development and monitoring of the business strategy	10.1.1 Formation of corporate strategy 10.1.2 Management of Corporate Development Programs 10.1.3 Monitoring the company effectiveness 10.1.4 Organizational design 10.1.5 Human capital Development 10.1.6 IT Development 10.1.7 Construction and reconstruction of their own buildings and facilities 10.1.8 Quality Management
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	Development and improvement of methods and technologies of work (the accumulation and transfer of experience and best practices)							
	1.2.2	2.2.2	3.2.2	6.2.2	7.2.2	9.2.2	8.2.2 Optimization of end-to-end processes	
	Process and procedure management (including corrective and preventive actions)							
3. Oversight and management	1.3.1 Customer relationship management 1.3.2 Preparation of technical and commercial proposals 1.3.3 Feasibility study for prospective orders	2.3.1 Design and engineering planning 2.3.2 Accounting for design and engineering work 2.3.3 Monitoring and analysis of design and engineering work 2.3.4 Cost planning, accounting and analysis for design and engineering	3.3.1 CIW scheduling 3.3.2 CIW registration 3.3.3 CIW monitoring and analysis 3.3.4 Resource planning for CIW 3.3.5 Resource accounting for CIW 3.3.6 Monitoring and analysis of resources utilization in CIW 3.3.7 CIW cost planning 3.3.8 Cost accounting for CIW and materials 3.3.9 Monitoring and analysis of CIW economic performance	6.3.1 Planning of material purchasing 6.3.2 Planning of subcontracting 6.3.3 Planning costs for materials and subcontractors 6.3.4 Cost accounting for materials and subcontractors 6.3.5 Cost control and analysis for materials and subcontractors	7.3.1 Materials inventory management 7.3.2 Transportation schedules management 7.3.3 Vehicles workload planning 7.3.4 Storage budgeting 7.3.5 Transportation budgeting	9.3.1 Working capital management 9.3.2 Management of cashflow budget 9.3.3 Investment management 9.3.4 Management of receivable and payable accounts 9.3.5 Control of financial and economic performance	8.3.1 Stock of orders management 8.3.2 Order (project) planning 8.3.3 Order (project) performance monitoring and control 8.3.4 Planning, monitoring and analysis of order's economic indicators	10.2.1 Management of assignments and personal tasks 10.2.2 Day-to-day human resource management 10.2.3 IT support 10.2.4 Maintenance and repair of their own buildings and facilities 10.2.5 Management of maintenance and repair of vehicles and machinery 10.2.6 Energy resources provision 10.2.7 Public Relations 10.2.10 Environmental health and safety (EHS) management 10.2.14 Legal support 10.2.15 Economic Security 10.2.16 Paperwork 10.2.18 Collaboration
4. Execution	1.4.1 Opportunity management 1.4.2 Preparation of tender documentation and participation in tenders 1.4.3 Contract work with customers 1.4.4 Advertising and media activity	2.4.1 Survey work 2.4.2 Design documentation development 2.4.3 Engineering documentation development 2.4.4 Cost estimates development 2.4.5 Pre-production 2.4.6 Designer supervision 2.4.7 Expert evaluation of the developed projects	3.4.1 Preliminary work 3.4.2 Construction 3.4.3 Installation of engineering systems 3.4.4 Finishing work 3.4.5 Supervision of construction 3.4.6 Interim Acceptance of Work 3.4.7 Transfer of buildings and structures in operation	6.4.1 Search and selection of material suppliers and subcontractors 6.4.3 Contracting with material suppliers and subcontractors 6.4.5 Procurement requests 6.4.6 Monitoring of contracts with suppliers and subcontractors 6.4.7 Claim work	7.4.1 Receipt of materials at the central warehouse 7.4.2 Receipt of materials at the construction site 7.4.3 Placement and storage of materials 7.4.4 Issuing of materials into the work 7.4.5 Return of materials to the warehouse 7.4.6 Handling supplies (Loading / unloading) 7.4.7 Freight	9.4.1 Financing 9.4.2 Financial payments 9.4.3 Conducting deposit operations 9.4.4 Accounting and Reporting 9.4.5 Tax Accounting and Reporting	8.4.1 Execution of CIW orders 8.4.2 Execution of design and/or engineering orders 8.4.3 Execution of complex orders	

Priority 1 | Priority 2 | Priority 3

Categories of IS for priority areas

	1. Marketing and Sales	2. Design and engineering	3. Construction and installation work (CIW)	4. Material procurement and subcontracting	5. Logistics	9. Finance	8. End-to-end order management	10. General administration and support
1. Vision & Strategy	1.1.1	2.1.1	3.1.1	6.1.1	7.1.1	9.1.1	8.1.1 Development and monitoring of the business strategy	10.1.1 Formation of corporate strategy 10.1.2 Management of Corporate Development Programs
	Management of functional strategies (design, performance monitoring)							
2. Learning and Innovation	1.2.1	2.2.1	3.2.1	6.2.1	7.2.1	9.2.1	8.2.1 Project management methods and techniques development	10.1.3 Monitoring the company effectiveness 10.1.4 Organizational design 10.1.5 Human capital Development 10.1.6 IT Development 10.1.7 Construction and reconstruction of their own buildings and facilities 10.1.8 Quality Management
	Development and improvement of methods and technologies of work (the accumulation and transfer of experience and best practices)							
	1.2.2	2.2.2	3.2.2	6.2.2	7.2.2	9.2.2	8.2.2 Optimization of end-to-end processes	
	Process and procedure management (including corrective and preventive actions)							
3. Oversight and management	1.3.1 Customer relationship management 1.3.2 Preparation of technical and commercial proposals 1.3.3 Feasibility study for prospective orders	2.3.1 Design and engineering planning 2.3.2 Accounting for design and engineering work 2.3.3 Monitoring and analysis of design and engineering work 2.3.4 Cost planning, accounting and analysis for design and engineering	3.3.1 CIW scheduling 3.3.2 CIW registration 3.3.3 CIW monitoring and analysis 3.3.4 Resource planning for CIW 3.3.5 Resource accounting for CIW 3.3.6 Monitoring and analysis of resources utilization in CIW 3.3.7 CIW cost planning 3.3.8 Cost accounting for CIW and materials 3.3.9 Monitoring and analysis of CIW economic performance	6.3.1 Planning of material purchasing 6.3.2 Planning of subcontracting 6.3.3 Planning costs for materials and subcontractors 6.3.4 Cost accounting for materials and subcontractors 6.3.5 Cost control and analysis for materials and subcontractors	7.3.1 Materials inventory management 7.3.2 Transportation schedules management 7.3.3 Vehicles workload planning 7.3.4 Storage budgeting 7.3.5 Transportation budgeting	9.3.1 Working capital management 9.3.2 Management of cashflow budget 9.3.3 Investment management 9.3.4 Management of receivable and payable accounts 9.3.5 Control of financial and economic performance	8.3.1 Stock of orders management 8.3.2 Order (project) planning 8.3.3 Order (project) performance monitoring and control 8.3.4 Planning, monitoring and analysis of order's economic indicators	10.2.1 Management of assignments and personal tasks 10.2.2 Day-to-day human resource management 10.2.3 IT support 10.2.4 Maintenance and repair of their own buildings and facilities 10.2.5 Management of maintenance and repair of vehicles and machinery 10.2.6 Energy resources provision 10.2.7 Public Relations 10.2.10 Environmental health and safety (EHS) management 10.2.14 Legal support 10.2.15 Economic Security 10.2.16 Paperwork 10.2.18 Collaboration
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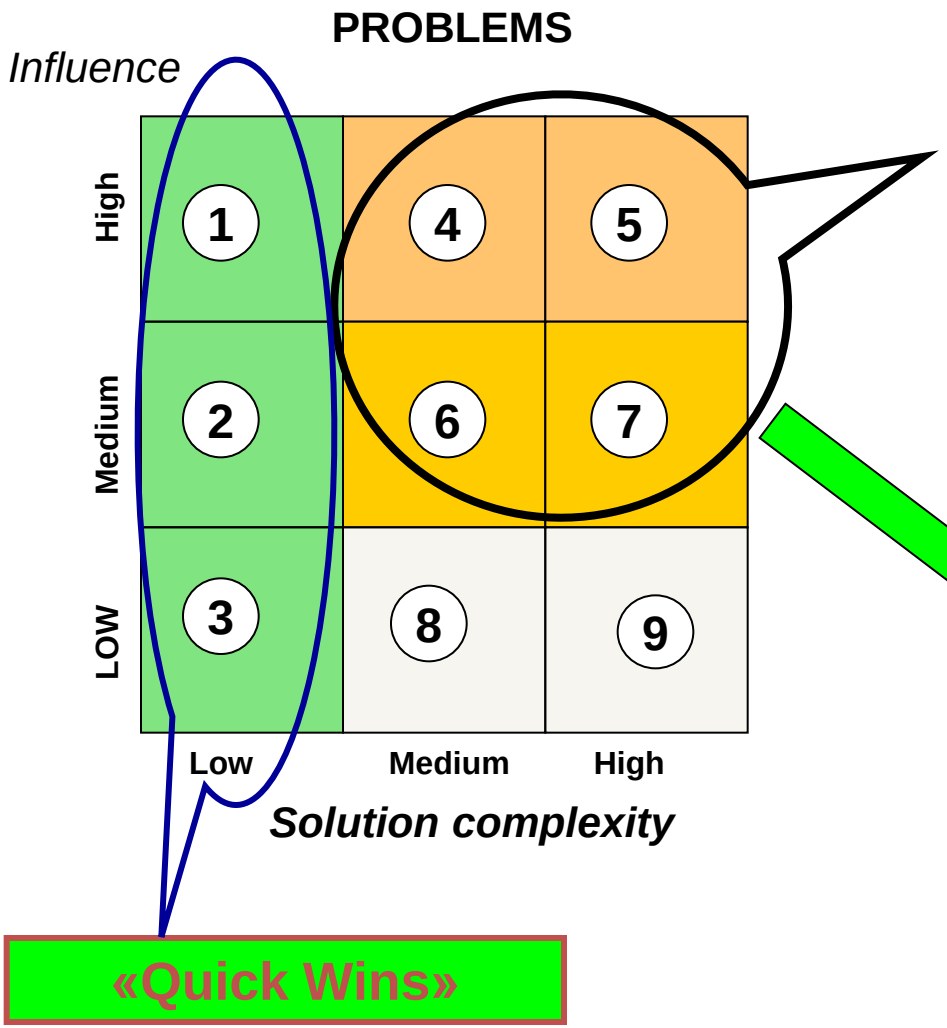
BPM | ERP 1C | KM | PM | PDM | BI | Org Ware | Do not have the potential of automation

IT-department support tools | Collaboration tools

Two types of projects



Can be solved by mean of the Systemic improvement of operating model. They are considered together with strategic priorities.

Step 2 (Transformation concept and roadmap)

Comprehensive development projects

- Information technologies
- Processes
- Org. structure and responsibilities
- People

Step 1 (requirements specification)

Quick wins

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	Management of functional strategies (design, performance monitoring)							
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	Development and improvement of methods and technologies of work (the accumulation and transfer of experience and best practices)							
	1.2.2	2.2.2	3.2.2	6.2.2	7.2.2	9.2.2	8.2.2 Optimization of end-to-end processes	
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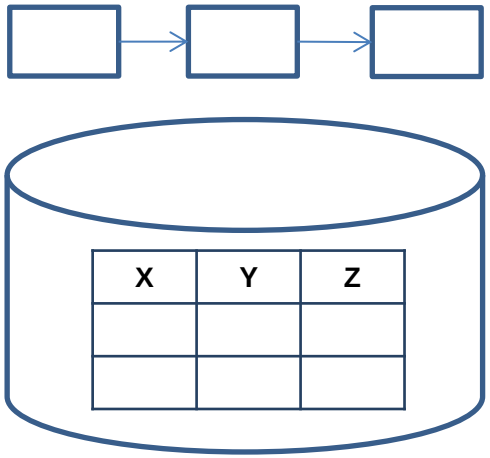
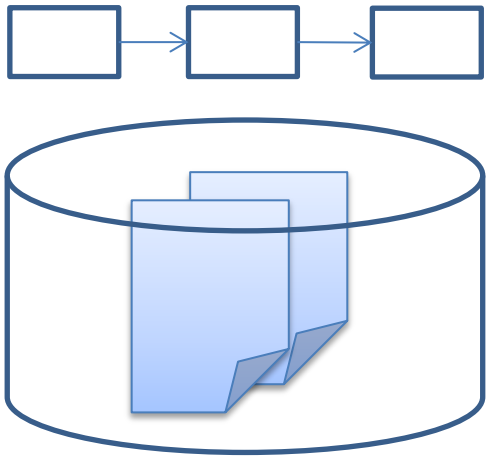
Controversial issue

ERP modules

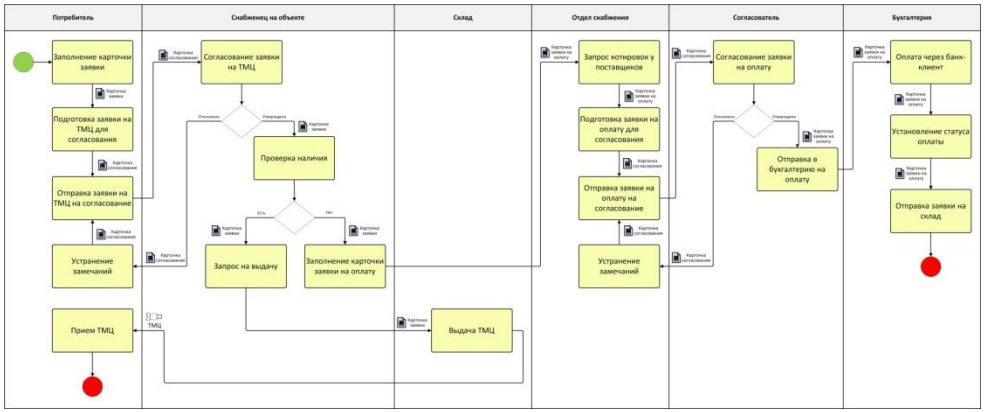


OR

Workflow management system (WFMS)



Example object of IT support: Process of materials request

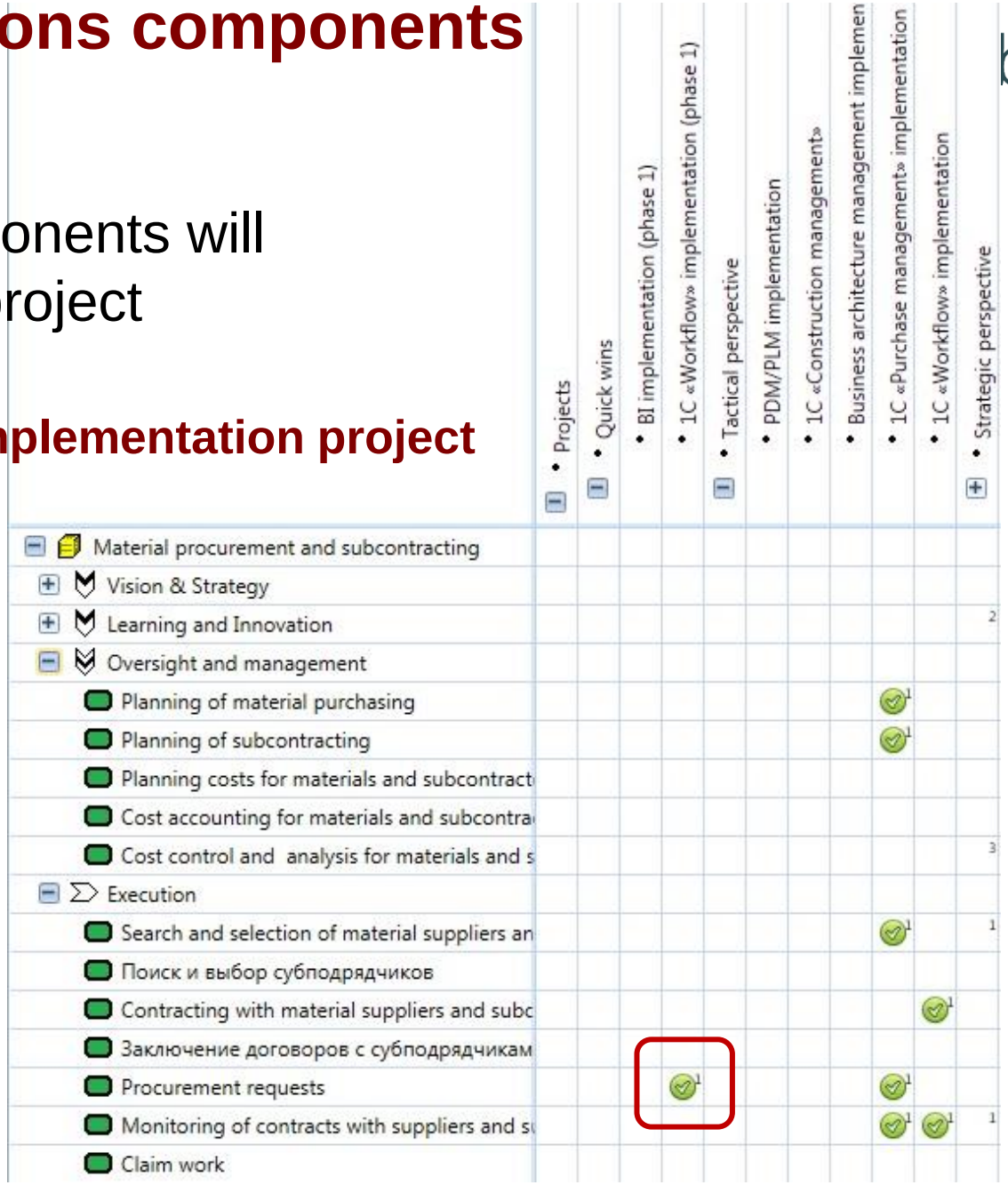


Operations architecture modeling …, Kudryavtsev D., Arzumanyan M., 2016

Projects – Operations components matrix

What operations components will be improved by what project

Example: 1C Workflow implementation project for materials request

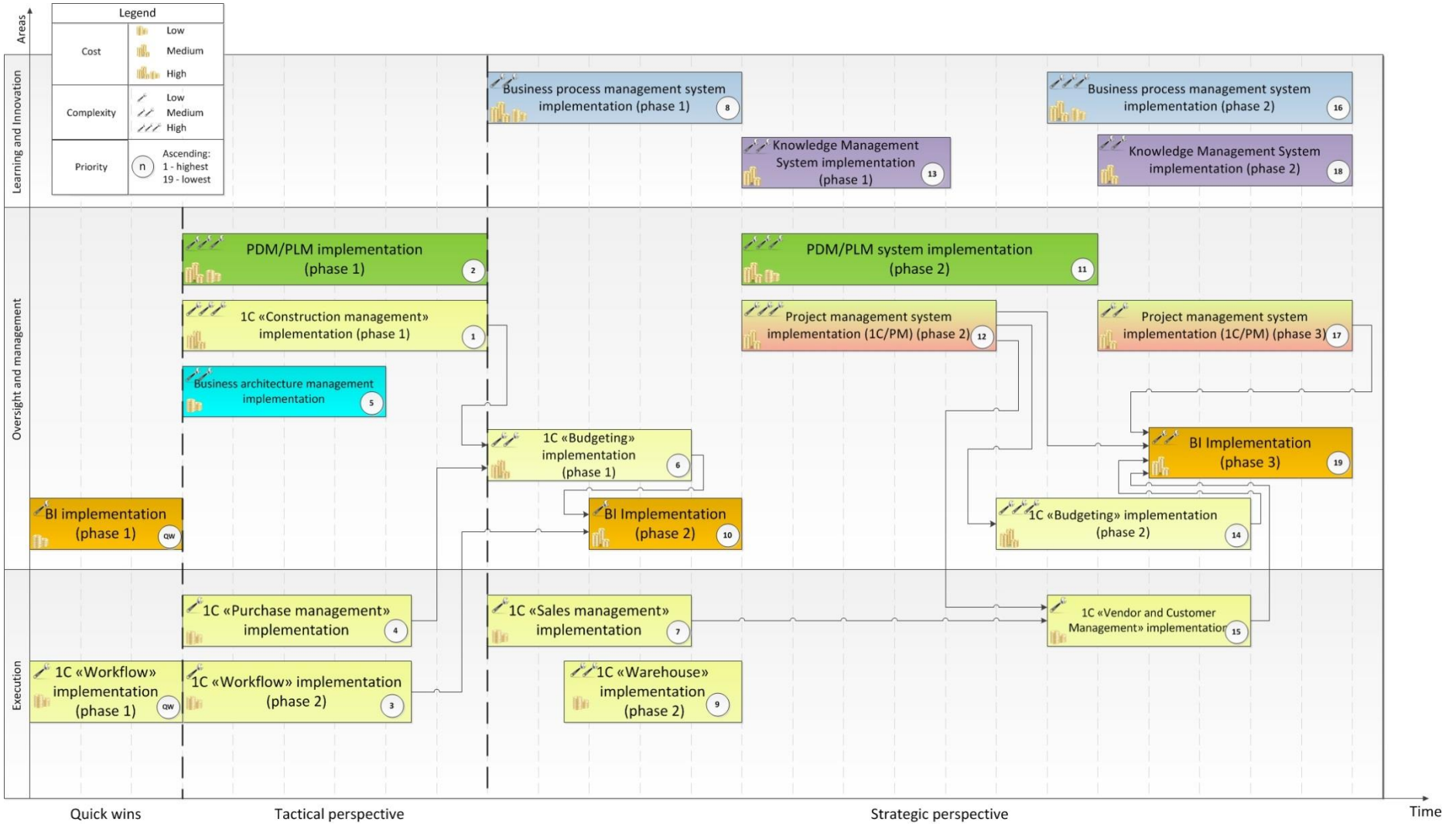


Project portfolio from “quick wins” category

EALab

	№	Project	Supporting projects	Vendor	Goals
Document management	1	Processing and registration of incoming and outgoing documents.	Development of new regulations	1C	Ensure timely delivery, storage, and retrieval of documents
	2	Issue and control of assignments based on incoming documents	Development of new regulations, process optimization	1C	Provide performance discipline
Task management	3	Issue and execution control of tasks	Equipment with devices, development of new regulations	1C	Provide performance discipline
	4	**Ordering construction materials and execution control for orders**	Equipment with devices, development of new regulations	1C	Provide relevant information for applicants about the status of their material request
BI	5	Visualization of construction work plans	Equipment with devices	SAP	Raise awareness of managers and employees at facilities
	6	Visualization of statistics for task execution	Equipment with devices	SAP	Raise awareness of top managers

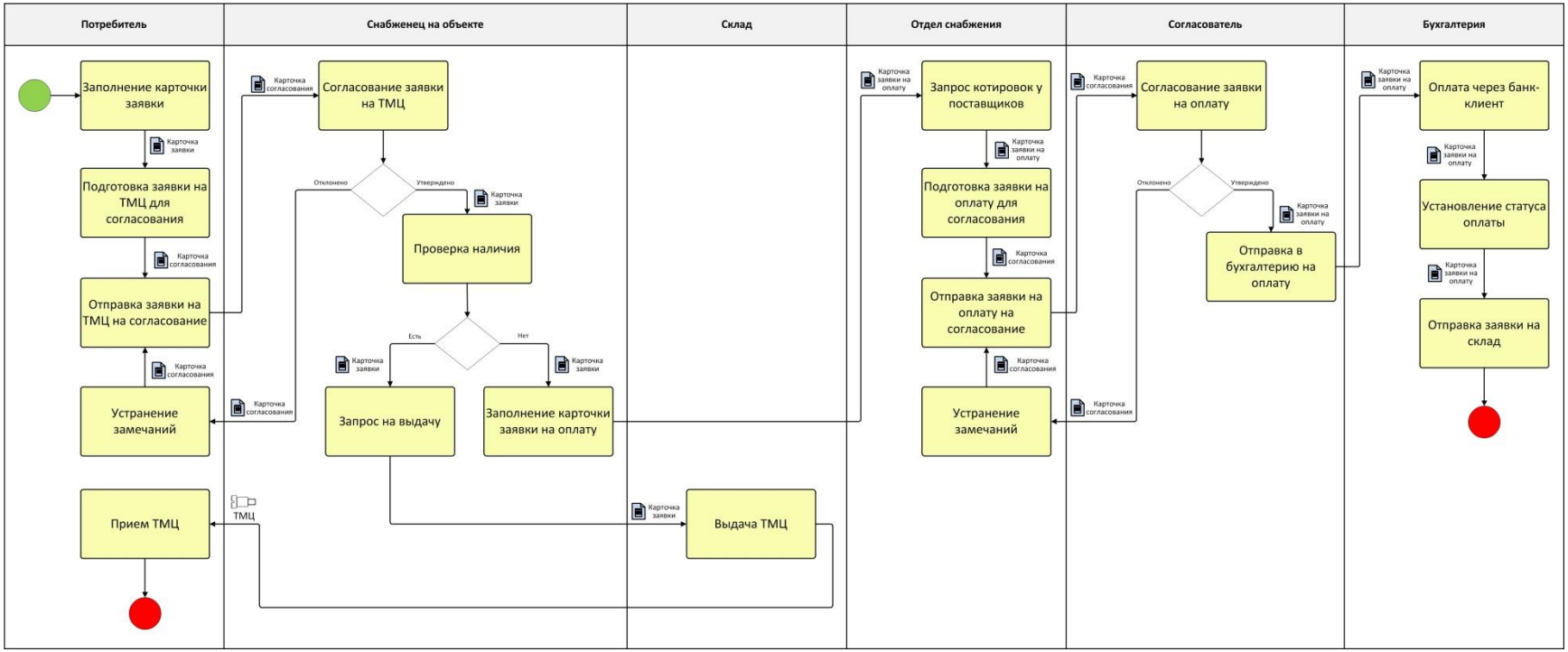
Transformation program



Requirements specification for “quick wins” information systems (IS)

EALab

Business process analysis and design …



… and other standard IS implementation activities

Results

As far as there were no regularly measured performance indicators for internal processes at BuildIt, the effects of the described project can be assessed only qualitatively.

The suggested transformation program (for IT implementation) was positively evaluated by BuildIt management.

Projects from “quick wins” category were successfully implemented.

Lessons learned

EALab

1. Componentized architecture of business operations together with heat maps are good tools for communication at business level and decision making process, which provide a common language within a project.
2. We used a simplified approach for modeling and analysis of business architecture (“business operations”)
3. The developed models are a significant investment in the management infrastructure of BuildIt. Return-on-modeling question.
4. It is crucial to take into consideration "soft" aspects and maturity level of an enterprise.
5. It is better to move from pure “waterfall” model to more iterative and incremental ones.

THANK YOU

Questions?

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