Being Smart in Project Management

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Abstract. This paper describes the real estate development projects and its management from investor's point of view, explaining why the management of such a complicated business in competitive environment needs smart solutions Authors have chosen few of managing tools that help private developers to drive successfully their projects. The paper discuss organization chart of project team, basic division of project timeline into detailed stages, role of relatively new members like foreign architect and external construction manager. Authors are employed in one of the biggest central European development company and they share experience from different projects in Slovakia and Czech Republic.

Keywords: Project management · Real estate development · Construction management · Architect · Optimization

1 Introduction

Nowadays, being smart means to save money. In private business being smart means to earn money. Real estate business in this point of view is the same as other fields of investment. An investor in Real estate sector needs to understand deeply all processes that happen since the plot is bought till the last flat is sold. From the beginning of investment development in Slovakia and Czech Republic, early 90's, developers are learning how to be smart while they manage their projects.

A peculiarity of real estate project is in its diversity. In this kind of projects many different professions take part, execution of these projects takes a lot of time, even the juristic environment and market demand change fast. Management of this process requires tools to execute, control and improve every single step.

With 25 years of experience including the decay caused by the real estate bubble, developers have set up few easy ways how to make their project successful. The complicated and long term projects were split in smaller parts, which are easier to control. To control this smaller parts, sets of rules and models were established. These rules and models are being improved by successes and failures every day and this paper describes only few of them, used by developers nowadays.

1.1 Methods

All of us work for a private investment company, which is active also in real estate development, we are focusing on residential projects. We worked on several projects

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throughout their all development stages and created several internal documents. Based on our experience and internal company know-how we tried to focus on several topics in this paper. To compose this paper we started by analyzing several books and journals. After this preliminary literature research we tried to look at the project management in bigger picture, as we do in our ordinary profession. For this purpose we synthetized the literature review and tried to point out some smart tools of project management in real estate development.

2 Tools of Smart Project Management

Up until the start of the 20th century, the history of project management was indistinct from the history of techniques or professions. At the beginning the project activity had no specific status. Project management only became a management model in the 1950s and 1960s. At the time, it became independent and standardized, in particular because differences between business sectors were perceived as less important than common preoccupations in managing engineering projects. The standardization of practices and tools was widely encouraged by major contractors who viewed them as a way of rationalizing their efforts. Around the same time, the management of engineering projects began to move towards standardized tools, practices and roles, and the emergence of a true model [1].

Any kind of management needs a tool or tools for execution. And all of them can be optimized. As one of the historically first such tool can be considered the Gantt charts, which were very well established by the mid-1920s as a general production planning tool. Their earlier applications to more general production planning and control problems have been overwhelmed by practical problems and overtaken by technological developments. Computing nowadays offers more powerful techniques for modelling these problems; but Gantt charts still have found a role providing a readily useful interface allowing users to define problems and better understand and accept solutions. Gantt charts remain popular management tools in spite of dating back over a century and in their current primary application to projects they provide an effective means for displaying important information [2].

Speaking about management tools often goes along with approaches to management strategy. There are many different approaches, but Maylor offers very interesting view on this problematics. He characterizes the traditional approach through weak link between project and organisational strategy, lack of co-ordination between partial projects and inevitable resource conflicts. Projects are usually represented by economically important set of activities. In developing the argument for a forward move in the subject area, some underlying problems are identified with the universality of the traditional approach. High-performing firms, taking a radically different approach to strategy, assessment, planning and the subject of project management itself have solved many of these problems. He synthesised these solutions into the "Beyond the Gantt Chart" approach, which is seen as a coherent, co-ordinated, focused and strategy-driven. In contrast to the traditional approach, the BTGC approach focus planning activities not only on planning, but on all activities from planning through to post project activities review and marketing of project performance. Project is

perceived as a core business process which draws on similar processes for experience and contains many elements of repetitive work [3].

This chapter is dedicated to several common tools used in real estate development, that have been optimized lately and nowadays provide effective instruments in development and management of the projects.

2.1 Project Stages Model and Organization Chart

Recent progress in project management reveals that projects are becoming more complex and wide-ranging. It leads to fact, that they can no more be held and overseen by one hand. Tendency to develop complexity also implies the need of a variety of very specialized knowledge which is usually not commonly available. Solution is in division of work and awarding subtasks to respective specialists. This solves the demand for skills and on the other hand, induces the new requirement of motivation and coordination [4].

Firstly it is very important to organize development project into smaller stages according to different processes that happen. In every stage different kind of activity is needed and each activity requires different professional with different responsibilities. In Slovakia for example, developers often follow an established model displayed below in Table 1.

At the beginning, it's the development process divided according the Building Code. Some of them are subdivided according criteria that are important to developer like size of internal project team, budget, time, etc.

Organization chart allows to see clearly all the members and relations between them during the project. Investor and his team occupy the first levels of the organization chart. Organization chart described hereafter is only one specific example, but effective and clear.

Partner or owner is the actual money carrier. They make the conceptual and strategic decisions which are executed by his internal team consisting of business development manager and technical project manager. Business development managers not only create and lead the team but they are responsible for whole project financial management, bank relationships and reporting to partner(owner). The internal team members are chosen by Business development manager and their responsibilities are specialized in four sections. The project development section takes care of land preparation, negotiation with local authorities and communication with architects and engineers. Once the plot is prepared for the construction, all permissions are issued and project documentation is finished, the project is taken by the construction management section. Members of CMS start with tendering process and they lead the construction till the permit of use is issued. Internal construction managers often hire an external construction management companies to facilitate work to internal team. Sales or leasing section prepares all marketing strategy with all its products and once the building permit is issued they start with the sale (sometimes the pre-sale starts even without any permission, through reservation contract). Property management section is mostly used in office development. Property managers takeover the building after the

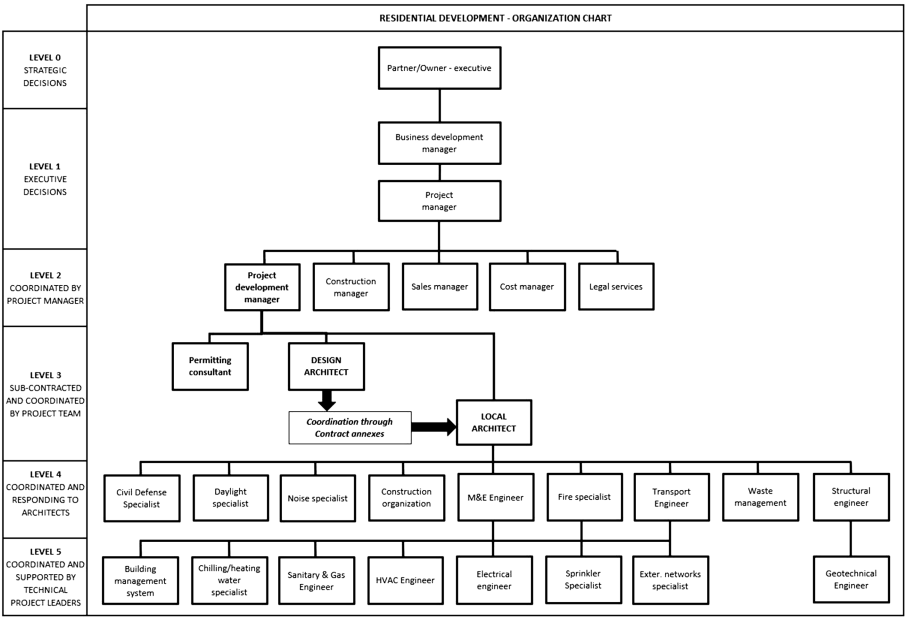
Table 1. Project stages in residential development projects, Slovakia. Source: authors' practice

Stages		Purposes and tasks
1 PREPARATION	Masterplanning	Setting up project strategy. Adjusting the whole scheme massing to meet basic technical requirements (daylight, traffic, etc.), client's Strategic Brief and site constrains. Definition of project phasing strategy, Masterplan and landscape framework.
2 DESIGN	Concept Design	Outline Architectural Concept Design including outline Proposals for structural and building services systems, outline specifications, information for cost planning. Ensures that the project is feasible technically, functionally and financially. Optional solutions provided to the Client.
	Environmental impact assessment	Information feed from Concept Design to EIA consultant.
	Planning Permit Documentation	Formal documents necessary for Full Planning Permission application submitted to Local Authority.
	Schematic Design	Detailed Proposal, full design of the project by the Design Architect including design for structure and building services systems, update of outline specifications and information for cost planning.
	Building Permit Documentation	Final Proposal based on Scheme design. Technical design and specifications sufficient to coordinate all project components and elements of the project and information for statutory standards and construction safety. Building Regulation Approval application submitted to Local Authority.
3 PRE-CONSTRUCTION	Tender Documentation	Based on architectural Leading Details. Preparation of production information in sufficient detail to enable a tender or tenders to be obtained.
	Tender Action	Identification and evaluation of potential contractors and/or specialists for the project.
	Construction Documentation	Preparation of further information for construction required under the building contract.
4 CONSTRUCTION	Construction Administration	Site Supervision, preparation of further information for construction required, review drawings from contractors.
5 USE	Completion	Documenting and handing over the building to the client.

permit of use and they manage processes like maintenance, cleaning and tenants care. Internal team usually consists of 5–10 persons according to its complexity or the stage.

External teams are much bigger, always chosen with many criteria like experience, price, references… The importance to the project and time of their collaboration depends of the specifics of their role in the project. If they serve only as a consultant in a limited area, the collaboration is used to be short. External partner with long term participation on the project are architect and Engineers Company and construction Management Company. Architects give the physical form to the investor's expectation and with all its subordinates create project documentation through all stages of project development. Example of organizational chart showing several levels of the whole project team, internal and external as well, is shown below in Table 2. The role of external construction manager is better described in following chapter.

Table 2. Example of organization chart in residential development projects. Source: authors' practice



In order to maintain effective communication between the Project Manager, the Design Team, the Investor and later the Contractor it is important that regular meetings are conducted.

Meetings of all types shall be minimized in both duration and frequency. Careful consideration is to be given to the necessary attendee at each meeting. It is an aim that all meetings should have a brief agenda circulated to all participants, the Project

Manager and the Client at least 24 h in advance and that minutes be distributed within 48 h of any meeting and Actions be incorporated into Action Plans.

2.2 Foreign Inspiration

Local habits appear as in architecture as in other parts of our lives. That's why the investors are used to hire foreign architects, lately. To bring fresh ideas and unseen solutions as one of the advantages in a competitive struggle. Foreign architects design only conceptual part of the project like master plans and/or concept and schematic design for example, but the execution part will still be taken by local firms. It is not like there are some foreign architects "stealing" the job from local ones, it is always, or at least should be a win–win cooperation, because foreign architect (also called Design architect) always need some local support of Local architect. If the personal chart and every member's responsibilities are well set up and clear, than the contribution of foreign architect to the success of the project is obvious.

Design Architect. Produces an architectural Concept Design, Schematic Design and Leading Details (architectural part of Tender Documentation), while incorporating all consultants' and local team's technical and legal requests. Design architect retains full aesthetic design control and responsibility through all project Stages.

Local Architect. Is an production Architect – Planning Permit Documentation and Building Permit Documentation. Local Architect is responsible for technical (solutions,

Table 3. Task distribution in different stages. Source: authors' practice

Stages		Design architect	Local architect	Investor
1	Masterplanning	**x**	s + r	r
2	Concept Design	**x**	**s + r**	**r**
	Environmental Impact Assessment Information Feed	s	**x**	s
	Planning Permit Documentation	s + r	**x**	r
	Schematic Design	**x**	s	r
	Building Permit Documentation	s + r	**x**	r
3	Tender Documentation	s + r	**x**	r
	Tender Action	s + r	s + r	**x**
	Construction Documentation	s + r	**x**	r
	Changes to documentation incurred by the future owner		**x**	s + r
4	Construction Administration	s + r	**x**	s + r
5	Completion		**x**	s

x – responsible for specific Stage completion
r – review
s – support

construction practice) and legal assistance (planning issues, local Building Code) through Concept Design and Schematic Design Stage to Design Architect.

Local Architect is responsible for detailed co-ordination of architectural and specialist consultant work, production of Tender Documentation and Construction Documentation. Local Architect is responsible for Construction Administration and Project Completion. Local Architect will provide full support to the Client sales and marketing team at the coordination and management of changes incurred by future owners as well. Different responsibilities of Design and Local architect in different project stages are shown below in Tables 3 and 4.

Table 4. Task distribution in different stages. Source: authors' practice

General tasks/responsibilities	Design architect	Local architect	Investor
Project management			**x**
Design process management and Project Architect team coordination	**x***	**x***	
Concept team management	**x**		
Local team management		**x**	
Contractors communication for design and cost purposes	**x***	**x***	
Contractors communication for tender purposes	s	s	**x**
Project meetings attendance	**x**	**x**	**x**
Local authorities communication for design purposes		**x**	s
Local authorities communication for formal proceedings		s	**x**
Project Brief definition and updates	s + r	s + r	**x**
Site survey request - specification of site surveys required to progress design		**x**	
Site surveys	s	s + r	**x**
Local authorities constrains conformity	**x**	**x**	r
Local Building code and regulations conformity	**x**	**x**	
Architecture and Design development	**x**	s + r	r
Technical development	s + r	**x****	r
Value Engineering	**x***	**x***	r
Cost control	s + r	**x**	r

x – responsible | * fluctuating depending on project Stage | ** based on concept team solutions
r – review | s – support/shared responsibility

2.2.1 Pros and Cons of Design and Local Architect Cooperation

+ International and skilled know-how
+ Positive PR and marketing
+ "Different" and unprejudiced approach in project design

- Complex and careful choice of foreign architect
- DA do not understand the complexities of doing business in foreign country
- difference in approach between local and foreign firms
- more difficult and complicated in coordination and communication

2.3 Construction Management

Supposing investor as the money carrier, it is very important to him to have an expert support which is motivated by the success of the project, not his own financial profit. Collaboration with a construction management company is based on the Contract of work. Construction manager is as an external member of the project team. His role is to bring smart ideas in the technical field of the project. Construction management and construction managers have many possible roles during the different phases of the project:

- **Project documentation management.** Construction manager is unique administrator of project documentation. He manages and updates all physical and digital files including revisions, controlling the project documentation is complete and in preferred quality. Construction management redistributes the project documentation between all contractors.
- **Project documentation revision.** After the project documentation is submitted, construction managers control its correctness, technical solutions and if needed, they propose better or cheaper options. The construction management check up the project documentation is up to investor's demand.
- **Cost management.** Considering the budget one of the most important piece of development project, its creation and controlling is given to that member of project team which is able to analyze every single input to the project.
- **Financial optimization.** Once issued the project cost plan, construction managers start to optimize it. It's necessary deep knowledge of the project, investor's demand and technical skills to propose savings without reducing quality of the final "product".
- **Tendering process.** One of the most important roles of construction management is during the tendering process. Construction managers prepare the tenders way that every needed piece of the project is bought and it's bought just once. This process must be as transparent as possible, allowing the investor control it anytime and compare it with approved budget. With purpose of cost reduction, the construction managers tender each item of the project with a very low degree of aggregation.
- **Construction control and coordination.** The most important contribution of construction management to the success of the project is during the 4th stage– Construction. CM controls the quality of all works every day. Their goal is to look after the building is being built up to investor's expectation.

Real estate investments with external Construction management require split the construction process in more stages – packages than it is with general contractor. This technique is called "package strategy". The amount of packages depends of the amount of the contractors that are needed. For example, these packages are used:

2010 – Excavation works
2600 – Structural constructions
3000 – Facade
4000 – Internal walls and floors, finishers
6000 – HVAC systems
7000 – Electrical installation
7500 – Elevators
9020 – Infrastructure – external works
9500 – Landscape

This package strategy appears already in the project documentation structure. Every package needs to have its documentation that is given to possible future contractors during the tendering process. Big advantage of this method is in time savings. This approach allows to start the tenders of first packages (Excavation works, structure…) in the beginning of the projection, so the projection of others packages and the tenders of first packages are happening simultaneously. During the construction each contractor is responsible only of his part of "delivery" and possible future complaint about the quality are deeply investigated to figure out who had done it wrong.

2.3.1 Pros and Cons of Building with Construction Management Instead of General Contractor

+ Objective and technically specialized member of the project team
+ Good building quality reputation
+ Absolutely transparent activities of all participants during every stage
+ Investor's control during all stages of the project
+ Time savings
+ Transparent cost planning
- More internal specialized members of project team needed
- The structure of project documentation is more complicated and more extensive, and also more expensive

3 Conclusion

The project management in Slovak and Czech Republic is saturated of many developers from small ones to the bigger ones. All of them use tools to manage their projects. These tools are mostly similar with a low degree of deflection according to the type of project they dedicate, but all of them have in common an intention to have the tools smart. Every failure is a lesson learnt that improves existing tool. In this paper, only few of the tools were mentioned above. Organization chart and project stages structure are permanent type of tool. The foreign architect or external construction managers are considered to be new tools that improved the old set of tools the developers had in past. Nowadays, project management in real estate development isn't perfect process at all. There are still difficulties that increase the risk or possibility to mislead. Therefore new tools are still needed to prevent all this uncertainties that come along with dynamic and changing market demand and environment.

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