CIB-W096 2011Vienna conference, TU Wien

PLANNING PRACTICE IN TRANSITION FROM FRAGMENTATION TO INTEGRATION

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Abstract: Design processes for sustainable buildings are characterised through high number of integrated planning aims linking the economical, ecological and socio-cultural aspects, beyond the classical planning goals for achievement of architectural, on Vitruvian philosophy based qualities of unity of functional, constructive and aesthetical values.

With increasing demands on building performance, the number of tools for evaluation, prediction and simulation of the energy-, cost- and emissions- efficiency is rising together with the number of experts and the relevant professional languages involved in such a planning process.

Therefore we argue that the planning processes for sustainable buildings are characterised through high level of complexity, and represent complex dynamic social systems. Special attention needs to be drawn to communication and decision making mechanisms within such processes as well as to organisational structures that would enable the optimal achievement of the aims set for desired building performance.

This paper presents the first results of the interdisciplinary research project Co_Be: Cost benefits of Integrated Planning, where experiment was conducted in order to compare the integrated with the traditional, sequential planning practice. The experiment was organised as a student-competition based, role-playing simulation of design for a temporary smoothie-bar. The results were qualitatively and quantitatively evaluated – this paper will present the first results of qualitative evaluation of student feedback.

Key words: Integrated Planning, Sustainable Building, Whole Building Approach, Planning Process Analyses

1. POINT OF DEPARTURE

1.1 Introduction

Today numerous regulations and planning targets for new as well as for refurbishment of existing buildings are required in order to meet the sustainability goals such as energy efficiency, minimisation of carbon footprint and emissions, over to socio-cultural aspects of human health and wellbeing. As a consequence, the processes for design and the management of buildings are experiencing a significant increase of complexity.

The action space for the innovative, cost-saving building design has been increasingly limited through sharpening of institutional and normative regulations such as Eurocode, concerning safety such as earthquake and fire protection codes. At the same time, the new innovative solutions are increasingly required in order to achieve “energy-plus” buildings that are the part of smart grids providing not only themselves but the whole neighbourhoods with energy (Blome, 2010). The EU targets 20-20-20 - reduction of EU greenhouse gas emissions and primary energy use by 20% at simultaneous increase of renewable energies by 20% (European Comission) is only a part of institutional actions towards low-carbon society. The future actions of the European Union for climate protection and energy supply will be based on “post-carbon society” concept, which again focuses on low energy (energy efficiency measurements), low carbon (renewable energies and withdrawal from fossil fuels) and low distance (short routes) guidelines (Vogel and Bieser, 2010). The concepts such as 2000W society as defined by ETH Zürich , (ESC 2008) and Smart City represent a step towards more holistic, integral approaches, that are not focused singularly on the optimization of performance of single building but are introducing a systemic approach, where system synergies for energy production, distribution and storage are being taken into account.

However, with the increasing level of integration, the complexity level is increasing – the number of involved experts and stakeholders is growing ever larger, together with the diversity of working methods and different professional languages and understanding. Gladstein Ancona and Caldwell (1992) demonstrated in a survey with 45 product teams in high-technology companies that negotiation and conflict resolution skills have a major impact on the process performance. Mieth (2007) survey shows that 68% of the construction managers’ work exists of tasks which are significantly influenced by social competences (32% leading, 18% communication, 18% organisation).

We argue, that the greatest potentials for optimisation of planning processes for sustainable buildings lie next to the development of tools for quantification and simulation of planning targets, even more in intangible factors such as human interaction and communication.

1.2 Problem Definition

Despite the almost revolutionary requirements on building performance, especially in terms of energy efficiency, the processes for design of “new” buildings are still following the traditional paths – this construct being also supported by the fee structure for engineers and architects.

Today’s practices are affected by the scientific approach, that tries to break a problem in possibly largest amount of smaller pieces, led by the idea that problem solution can only be achieved through understanding of separated single pieces. The same principle applies to the planning process, where large number of specialists works separately on differentiated problems, however are required to create a holistic solution such as a building. Overlapping of various disciplines is discouraged due to numerous reasons – sharpening of codes and standards and meanwhile law-dominated building practices, being some of them. Further on, specialisation is seen as competitive advantage in today’s markets.

Many scientific and practice oriented approaches understand the planning process as a complicate task, that can be solved by maximisation of the experts knowledge, with an aim to find and optimize the direct relation between cause and effect. Management Methods are based on facts (Snowden and Boone, 2007), The output of a problem-solving process that focuses on a complicated context is an “ideal process”. The authors question this approach, and argue that the “ideal process” is different for every stakeholder (multiple perspectives).

2. PARADIGM CHANGE THROUGH INTEGRATED PLANNING

Sustainability requirements for buildings, based on balance of economic, ecologic and socio-cultural issues respond to the Vitruvian view of the building as the composition of form, function and construction. Both concepts are based on holistic and overall concepts of balance and composition, much more than on fragmentation of singular aspects.

Therefore, the holistic design and planning processes for sustainable buildings should focus on creation of interfaces between different disciplines, instead of development of singular expert knowledge. To use a metaphor, the picture of a planning process has to be changed from a mechanistic machine to a living organism (Wiener, 1965). Expert knowledge represents neural nodal points, integrated planning can be seen as the interconnecting network of synapses.

In transformation from sequential planning to more integrated practice, there are several issues to overcome. First, a detachment from the theoretical construct of "ideal process" by using as much expert's knowledge as possible is necessary. Secondly, there is a necessity for a shift in the view on the planning process as a complicated to a complex problem definition. Through the various interactions and dependencies complex processes can adopt various different conditions. Malik argues that it is not possible to find a connection between cause and effect (Malik, 2011). This change in understanding of problems as complex tasks requires different methods and tools to work with. In this kind of approach the process is seen as changeable and open, knowledge gaps are accepted. The according management tools are based on interaction and communication (Snowden and Boone, 2007). One major task is still the clear definition of project goals, but the way to achieve these goals is flexible and open.

Finally, a key to the transformation of planning practice lies in education. Separated education of engineering and design disciplines, as still practiced, results with fragmentation of problem-solving, actually causing that future planners look upon the building as a sum of the parts, instead of creating the awareness that they are much more.

A significant amount of literature implies on importance of integrated planning as crucial factor for sustainable buildings especially in regard of energy efficiency issues.

Guzin Müller (2002) recommends employment of traditional planning techniques combined with implementation of new technologies for energy efficiency, strongly emphasizing social aspects of users' involvement in planning and future use of the building through participatory planning method.

Further notion is life-cycle oriented "Whole-Building-Design", based on two foci: the integrated design approach and integrated team process (Prowler, 2008). On the one side there are the design or planning requirements for building performance to be met on holistic level, identified in this particular model as: accessibility, aesthetics, cost-effectiveness, functionality, historic preservation, productivity enabling (well-being of occupants), safety, sustainability (environmental performance of building elements). On the other hand there is integrated team which includes every stakeholder of the planning process, united in so called design charette – collaborative brainstorming session encouraging the exchange of ideas but also enabling full understanding of all the parties as well as of set aims at the project start.

This concept has also been largely adapted in HOK guideline for planning of green buildings, where a flow chart and check list for the integrated planning process is precisely outlined. (Mendler, S., Odell, W., Lazarus, M.A., 2006)

Kohler introduces an Integrated Life Cycle Assessment (Kohler, 2007) which would integrate and evaluate the environmental impacts as well as initial and life-cycle cost related to gross floor area of different granulations for macro, micro elements or construction works according to relevant planning phase, already beginning from programming or project development. Such a tool would require a large amount of building related data of different granularity, in order to be applicable in every phase and by every planning stakeholder. Kohler and Lützkendorf (König et al, 2009) therefore employ a notion of IP as "performance based building", with necessity for of interdisciplinary (horizontal – planning profession related) and life-cycle oriented (vertical – building oriented) integration. Early implementation of simulation and prediction tools for later building performance for enabling of optimization in the early planning phases such as integral simulation with related databases is necessary method but hardly established on the market yet due to the lack of commercial tools.

The building certificates such as DGNB/ÖGNI (DGNB), Leed and similar are considering the necessity of integrated planning method instead of traditional, sequential method as essential for achievement of sustainability aims, and include indicators for evaluation of implementation of integrated planning.

3. PROPOSAL FOR A HOLISTIC INTEGRATED PLANNING APPROACH

In field of design process research much has been explored on more time-, cost- and quality-effective design processes for complex projects (Yazdani, Holmes (1999), Aken (2003)).

The optimized planning models originate from the realm of automotive or aeronautical industry, with high levels of technology, automation and skilled manpower. The current Central European (CE) construction sector still works with relatively low levels of automation, and with low-educated work force. Further on, the major bulk of research on design of design processes has been conducted in Western Europe, where architectural planning and construction practice is organised and executed differently than in the CE, partially due to the different building tradition. The Anglo-Saxon model is strongly involved in concept and design, however manages the latter phases mostly through specifications and contracting (Mendel et all, 2006). The CE planning practice is deeply involved in all planning and construction phases of a project (HOAI, 2009), which again adds to the complexity.

We argue that buildings and built environment as such are composition of both tangibles (quantities) and intangibles (qualities), where intangibles are often reflection of “irrational” realm of clients’ wishes and desires or designers dreams. The different mind maps of different planning process stakeholders bring to the difficulties in communication and definition of quantifiable and understandable planning aims.

Therefore, we propose a holistic integrated planning approach for design and construction of buildings, which, distinguished from already established design-models from the automotive or aeronautical industry, introduces the component of People.

The model defines two main components of Building (Object) and People (Stakeholder of Planning Process), which reflect two main fields of interest of analysis. The Tools for integrated planning are seen as integrating element among People and Building – connecting the building (virtual or real), with ideas, knowledge and needs of People – creating the interfaces (Figure 1).

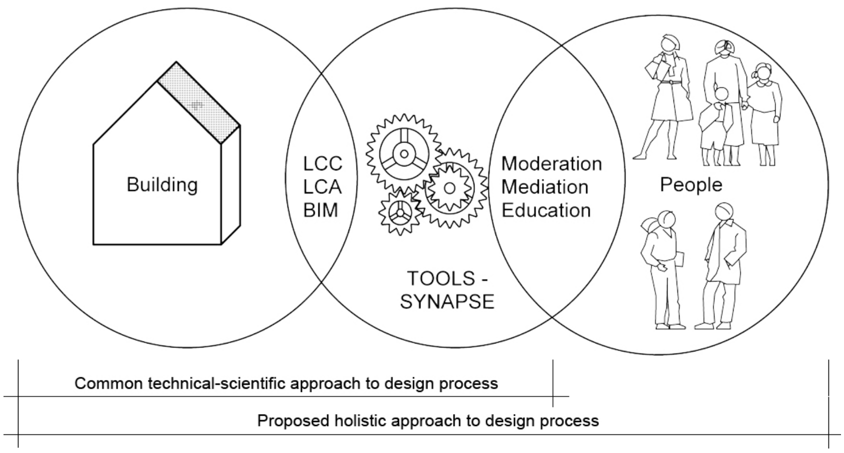

Figure 1. Relation between People, Tools and Buildings

The Tools can be seen as software tools, such as BIM (Building Information Model), Energy Simulation and Parametric Design Tools or as skills such as communication, mediation and moderation skills.
The next chapters will offer a closer outline of components Building and People and refer to relevant tools.

3.1 Building (Object)

In order to achieve a transformation in planning practice from fragmented process into the more integral one, a change in perception of building as static object towards the one of dynamic system is necessary. The life-cycle oriented, mid- and long-term strategies instead of short-term oriented planning aims are required for the realisation of sustainability objectives.

The current life duration of commercial real estate has been predicted by real estate investment management companies to lay somewhere around 50 years (Schulte, 2002).

Buildings change their original use two to three times throughout their lifecycle. The consumption of energy and resources is constantly progressing through building's lifecycle with its multiple changes and mutations. The basic hypothesis states, that building itself is not a stabile, static object but rather a dynamical system.

To demonstrate the changes of building in time, the flow analysis concept developed by Kohler (Kohler, 1998) is used. A building is represented through superposition of different flows taking place throughout its life-cycle: materials, energy, capital and information (Kohler, 1999). Moreover, different layers of building can be identified, according to their life-duration; which again experience different temporal changes: rhythms, cycles and phases. Brand (1994) proposes a "6s" building model, consisting of slow and long-lasting layers like site (eternal) and primary structure (50 - 60 yrs.), and fast and changing elements of short life duration such as skin (20 yrs.), services (7-15 yrs.), space plan (3 yrs.) and stuff-mobilia (monthly).

The ambivalent nature of a building as composition of "tangible - quantities" and "intangible-qualities" aspects brings problems for development of both clearly defined planning aims as well as of performance evaluation strategy.

As tangible data a building's quantitative characteristics concerning the ecologic and economic issues can be defined. The intangible data is expressed through quantitative characteristics such as formal, cultural and functional aspects.

Parametric model for performance evaluation can be built upon a system of sustainability indicators (BNB, 2011), describing building performance in terms of:

- ecology: construction demand, land consumption, soil pollution, CO2 emissions, energy consumption, substitution of fossil energy sources through regenerative energy sources, innovative technologies in energy efficiency
- economy: construction costs, investments, yields, LCC (heating and cooling, ventilation, lightning, maintenance, inspection and service), flexibility for further use
- socio-cultural aspects: relationship to the landscape, barrier free building, creation of liveable urban identity, accessibility of workplace residence quality for all ages, consideration of balanced income structure regarding working places, integration foreign co-citizens.

3.1.1 Tools

Building Information Modelling software such as Revit (2011) offers high level of integration of differently granulated and structured information in a one single model, and offers the possibility for simultaneous work of different disciplines such as architecture, structural engineering, building services etc. Through additional modules energy simulation and life cycle assessment is possible.

The life cycle cost calculation tools are rarer – in Central European space LEGEP (2011) is certainly the most reliable one, even though often criticised for not being suitable for the cost estimation and variant-evaluation in the early planning phases.

Numerous emerging international (DGNB, Leed, Bream) and national (ÖGNI, TQB) building certificates, offer systems for evaluation of different aspects of sustainability, and try to promote a holistic view on the building performance. Thorough extensive catalogue of indicators they also offer a source for visualisation of quantifiable planning aim for clients in early planning phases.

3.2 People

As shown before, an integrated planning process is open, flexible and can react to the changes of complex process surroundings. In the past, the majority of scientific and practical knowledge-creation was achieved by monitoring the processes detached from the involved people. To understand complex process conditions, it is crucial to involve the people who are creating the processes. It is not possible to handle these conditions only by measurable data and hard facts. Qualitative soft facts are becoming increasingly relevant and have to be integrated in the working process with complex systems, in order to create a more adequate process picture (Vester, 2002). This approach calls for an understanding of a planning process as a part of a social system.

As in complex surroundings the consecutive incidents are open, the atmosphere of uncertainness for the people involved is the consequence. The sociologist Niklas Luhmann showed, that complexity of a social system can be reduced by trust (Luhmann, 1996). For example, a planning meeting where all participants have to think about the "hidden agendas" of the other meeting attendees has significantly more complexity, than a meeting that is based on trust, where declarations can be taken without additional cognitive activities. Luhmann also demonstrates that a difference between a collective of single individuals and a connected social system occurs through communication. Additionally, the demand of social interaction through communication increases with the complexity of the process (Pawlowsky and Mistele, 2008), which is also a major aspect due to the increasing planning process complexity shown before. Also Orpen showed in a sample of 135 managers from 21 different firms in a variety of industries, that the quality of communication has a major impact on the satisfaction and the motivation of managers (Orpen, 1997). It is obvious, that motivation and satisfaction of employees has an impact on the quality of a planning process. As a conclusion, it can be stated that one major aspect for the performance of a planning process is the way how people interact in the process.

To enhance and develop the quality of the project participant's interaction, insights from sociological and medical sciences can help to improve current planning processes. Contrary to the common belief, communicational skills are learnable. The knowledge gain of the relatively new sciences such as neurosciences, with its non-invasive examination methods, has gained a new and differentiated understanding of human behaviour. To improve communicational skills and implement this knowledge, new ways of education and continuing education should be implemented. It is important to consider the interaction of people in educational programs. A separation into subjects, where each student has to improve as a single individual cannot contribute to development of any social competences. Another major skill is the ability to reflect own behaviour, which builds a base for social learning and the development of social skills. Educational programs should provide the space for the participants to rethink their own assumptions and behaviour (Schön D.A., 1983).

An integral planning process can handle more complexity, but it needs much more coordination between the participants compared to a sequential process approach. This also has effects on the leadership of integral process leaders. In an integrated team the responsibilities are also decentralised, which leads to more self confidence for all process participants. The leadership-characteristic is based on sense. Hüther assumes that the search for sense is a necessity which is resulting out of the structure and operation mode of the human brain (Hüther, 2007). Strict hierarchical structures are counterproductive for a team-based and self-organising process. The role of the process leader is characterised by coordinating activities. These open and variable boundary conditions also have to be considered in the contracts. Today´s contracts often focus on the clear detachment of responsibilities which prevents the team-based problem-solving processes. To ensure a holistic approach, the overlapping parts between different stakeholders are the major issue of consideration.

3.2.1 Tools

The tools to advance interaction and communication qualities between people are various. The proposed holistic integrated process approach demands an attitude of togetherness. Disciplines like mediation or the implementation of mediative know-how is focusing on this attitudinal level. As the core business of mediation is the dealing with conflicts, its fundamentals can be learned and implemented in the daily communication. The main characteristic is the changing from positions to interests. For the optimization of the process-performance, an interest-based communication can be crucial for the prevention of escalating conflicts and protection of effective teamwork.

Another major team-creating effect can be initiated by well designed kick off events. These events can bring people closer together and create a common picture of the task the team is focussing. Additionally, the level of trust can be increased through reduction of process complexity. Arranging this event the so called "forming" phase of a team development process can be initiated (Tuckman, 1965).

According to the size of the project and the number of process participants, it can be effective to introduce for the designing and guiding of the process-communication responsible person. This person can moderate relevant project meetings and is the confidant in case of conflicts. To be impartial, it is crucial that this person is only reliable for the process communication and has no other tasks otherwise the guiding of communication can be in conflict with her own process interests.

There are various other tools coming from different disciplines like moderations, group dynamics, and psychology or consulting. As the process is open and flexible, the application of social-interactive methods is diverse and the effectiveness depends on a specific situation. Concluding can be stated, that the social competence of the process-participants and the creation of interaction between the people involved, is one of the major realms for improvement for today´s planning processes.

4. METHODOLOGY

This paper presents preliminary results of an **experiment** for the comparison of integrated and traditional, sequential planning, carried out within the research project **Co_Be**: Cost Benefits of Integrated planning. The aim of the project is qualitative and quantitative analysis and simulation of the life-cycle cost-benefits of Integrated Planning (IP). The final goal is the compilation of 3-module Integrated Planning Guidelines for planers, investors and policy makers. Middle-term goal is implementation of strategic steps for integration of climate protection and energy efficiency aims within planning processes through policy but also through growing awareness among stakeholders (investors, users).

The holistic, integrated planning approach as presented in previous chapter builds theoretical base for the research project. One part of the research is the practice oriented case-study, through which the planning-processes for best practice energy-efficient buildings are analysed and documented.

The second part of the research covers the evaluation of the effects of the integral design and planning (IP) methodology and compares them to those of a traditionally sequential planning process (SP), for which a laboratory experiment was conducted. This first exploratory study of the integral and sequential planning was carried out with students in order to obtain large amount of qualitative and quantitative data and due to the long duration of experiment. In order to verify the results, a workshop with practitioners will be held, as the next step.

For the experiment-evaluation both qualitative and quantitative empirical research methods from social studies will be employed. Through the pre- and post questionnaires and time-sheets the quantitative data was collected. The qualitative data gathering was organised through experience-workshop in a post-experiment event. The informal observation throughout the experiment and the pilot-experiment the insights especially in the communication, stress-level and conflicts within the planning teams were gathered. The practice-oriented perspective was brought in through the student competition character of the experiment, where an independent jury evaluated the projects on the pre-defined categories of: design quality, structure quality and realisation, cost-efficiency, renewable energy.

5. EXPERIMENT

The role-playing experiment was organised as student competition within the course “Building Process Management” for students of fourth semester of civil engineering together with higher semester architecture students. Planning teams included four roles of an architect, civil engineer for structure and building services, client and business advisor. The planning task was a design of a temporary smoothie-bar, based on renewable energies (solar gains) and resources (wood) in exact given time amount of eight hours. In order to achieve comparability of results, it was crucial that all experiment-participants have the same information-level, therefore use of internet and electronic devices was prohibited. Handouts, product information sheets, tables for calculation of solar gains, energy consumption, investment and return of were given to all participants.

The teams were split into two treatments: traditional, sequential planners (SP) and integrated planners (IP). In IP treatment the design-team members were grouped together at the same table, and worked on the given assignment simultaneously. In the SP treatment the roles, instead of teams were grouped together, e.g. all the architects were situated in one room. The work on the assignment was organised consecutively - scripts for temporal scenarios were developed as follows: in first step the client briefs the architect, only after the pre-design is satisfactory the engineer may be contacted by the client. After completion of the engineering and structural concept, which has to be approved by architect, the business advisor may be contacted – it is likely that he will change the concept significantly since his knowledge on core-business is much higher than that of other team-members. Further rule is, that only two team-members (planners) may be in the same room simultaneously, in order to represent the reality of traditional planning practice.

Figure 2. Traditional Planners’ Treatment

Figure 3. integrated Planners’ Treatment

5.1 Evaluation of the first qualitative results

At the award event additional information from the participants was obtained by means of a small feedback workshop, in order to obtain the qualitative information on advantages and disadvantages of sequential and integral planning processes. This was done to blend the results from the quantitative analyses with qualitative information. Students were assigned to groups consisting of two members of the IP and two members of the SP treatment in the experiment and asked to name the advantages and disadvantages of integrated and sequential planning and to identify the main differences they experienced (qualitative results of this workshop are summarized in Table 2).

	IP	SP
Pros	• time saving • teamwork • better communication • better outcomes	• focus on the own task • self-determination
Cons	• higher conflict potential • ‘over’-integration	• communication problems • unequal workload • cooperation problems

Table 2. Summary of the workshop on pros and cons of integral and sequential planning

The advantages of sequential planning are above all seen in the possibility to focus on the own tasks (“more concentration on own task”, “focusing”), self-determination (“independent working is possible”). The list of disadvantages experienced in sequential planning was longer including communication problems (“long communication distances”, “ambiguities in communication”, ”bad information flow”, “bad communication”), unequal distribution of the workload over roles or time (“stress”, “lot of work for the client”) and problems in cooperation in a sequential planning process (“no influence on design proposals of other disciplines”, “common solution finding is not possible”).

As advantages of integral planning students mentioned the time saving (“Time saving” and “takes longer” as a disadvantage of sequential planning”), teamwork (“you are not alone”, “team spirit”, “teamwork functioned well”) better communication (“good information flow”, “conflict solving possible”, “feedback”) and better outcomes (“melting of ideas”, “rounder result”). Students found the conflict level in the integral planning process to be a negative aspect (“less peace”, “differences in opinion”), furthermore too much integration may also be conceived negative (“difficult to find a common language”, “everybody is meddling in the discipline of the other”).

As both planning processes have their pros and cons there might not be immediate differences in the satisfaction with the process itself and its outcome. However, the communication and team functionality is better for integrated planning teams and the student feedback throws light on the causes of these differences.

Through the informal observation was noticed, that the SP teams had to cope with lot more stress, especially the role of the architect. The architect of the pilot-experiment points out:” ...I wished I had three students that would draw for me, as the time was running out!” Also, the general conflict potential was notably higher, and was culminating with the time progress and as the deadline was approaching.

In general IP is seen by the students as more time efficient and offering more time for discussion (which also might lead to conflicts). SP consumes more time for coordinating and managing the process and also for communication loops as direct feedback in not possible. This leads to the conclusion, that the resource time is more efficiently used in the integral planning process, so that more time can be used on solving the design problem as not so much time needs to be spent on organizing the planning process or compensating its deficiencies. We expect that the detailed analyses of the planning processes on the quantitative basis of the records on conflict level, workload and task duration and distribution, which are currently performed, provide further insights about the detailed differences of the sequential and integral building planning process.

6. CONCLUSION

Through a discourse on rising complexity of the design and planning process caused by the demand for sustainable, energy-efficient buildings, was shown that a **transition** from traditional, fragmented planning practice towards more integrated practice is necessary.

The transformation of the traditional design and planning process requires on the one hand a change in the perception of buildings themselves – a lifecycle oriented approach in opposition to the short-term investor thinking enables development of long term strategies, necessary for realisation of sustainability aims. On the other hand, the design and planning processes themselves due to the raising complexity and large number of stakeholders need development of new working methods.

We argue that the greatest optimisation potentials for planning processes of sustainable buildings are to be found in the intangible realm, such as human interaction. For the achievement of successful sustainable buildings, we propose a **holistic integrated planning** approach, based on a two component model of Building and People, and the interface of Tools for Integrated Planning which builds synapse between two components. Through such approach, the consideration of "irrational" aspects within a design process can be achieved, and decision-making process supported not only through quantifiable, objective tools but also through design of human communication and interaction.

In order to compare and evaluate the integrated with the sequential planning process a role-playing experiment was conducted. As the first qualitative results of the experiment the advantages of integrated planning as being time efficient and more satisfactory for the team, were confirmed. However, the issue of high possibility of arousal of direct conflicts and arguments, through interfering in the realm of other disciplines underlines the necessity for development of new skills which are necessary for successful functioning of integrated teams. As advantage of IP also a building of team spirit was identified, that resulted with an overall rounder result through melting of ideas – which again underlines the importance of interlinking instead of fragmentation.

Further research will focus on the interpretation of quantitative data, through analysis of time sheets and pre- and post questionnaires. The performance of each discipline within treatment will be evaluated as well as across treatments. In this way it will be possible to identify the time-consuming activities within planning process, evaluate the number of feed-back loops, to measure the stress levels. Based on the pre-questionnaires, the personality structure (e.g. introverted-extroverted) will be linked to the satisfaction and work performance within the treatment. Based on these results a customised, personality-oriented team work can be designed, in order to increase the trust and reduce number of conflicts in the construction business, as is yet the case.

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