A CONTINGENT AND FLEXIBLE APPROACH FOR URBAN PLANS

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Keywords: Planning process; Uncertainty; Contingency; Programming; Management

Abstract

When the whole world is facing a global crisis, the efficiency and efficacy of urban planning process must increase in order to achieve more "value for money", especially when we are dealing with diminishing public resources. This crisis, due to the increased uncertainty, affects significantly all kinds of projection exercises and, consequently, the planning process that requires a prediction of context evolution in order to adequately schedule the actions proposed.

Usually the urban planning process, even in the operational level, has its action in medium/long term (10 to 12 years), which requires the adoption of new, more flexible approaches, allowing for a continuous adaptation to an ever-evolving context.
Once the urban plan is approved, the implementation process starts. It is in this phase that the programming and management are fundamental.

We propose a new approach to the programming, and implementation management of urban plans that aims at improving its chances of success and make the most of good opportunities. The basis for this new approach derives from the methodologies used in project management, so it becomes useful to understand it through the discussion of the differences and the parallels between a project and a plan. An urban plan process can be seen as a very complex project, with a large expected time of duration, a lot of relationships with other different projects, strong dependence from external environment, stakeholders from distinctive areas, and no strict time and budget limits.

The Portuguese law imposes that all urban plans have an execution program and a financial plan to support their implementation, but the vague and insufficient requirements and guidelines lead to incomplete and lacking roadmaps for an effective implementation. Given this situation, there is a need to (re)think how to program and manage the urban plans, namely through the introduction of new themes (the phenomenon of uncertainty and contingency).

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According to all aspects referred above the main objective of this work is the development of a programming and management model for urban plans which is able to incorporate different kind of contingent factors and has the ability to adapt easily to an evolving reality – a model that will face the uncertainty without stresses, while providing a flexible and adaptive way to adequately implement the strategy drawn on paper in the real world.

1 – Urban planning theory

Urban planning has, for a long time, been seen implicitly as a process of professional activity though, until the mid-1960s, it was practiced principally as an art form within a traditional design context (Bracken, 1981).

In general, definitions of planning from the 60's and 70's, emphasized its proactive and rational nature, characterized as: a mental process and a method to achieve decisions regardless of the planned phenomenon (Weber, 1965); an activity centered between knowledge and organized action (Friedmann, 1974); and a mental process of influencing the future (Faludi, 1976).

(Faludi, 1973) distinguishes different dimensions of planning, or concepts related to the way of planning, which are expressed as opposites and that are related to the different attitudes of the planning stakeholders and the socioeconomic and political context in which it develops.

The 1st dimension opposes the *plan-document* to the *plan-process*. On the *document* are defined not only the objectives but also the precise manner of achieving them, while according to the *process* view the established plan is adapted during the implementation whenever new information requires changes.

The 2nd dimension analyzes the rational/integrated planning against the unbundled/developmentalist planning. The first type of planning believes that all possible actions should be identified and evaluated according to all purposes, while the second considers that it would be impossible and undesirable to evaluate all actions that will be undertaken for all purposes.

(Kaiser, 1995) introduces the adaptive rational planning model as a logical and systematic path, from the definition of the objectives through to implementation. This model considers feedback cycles which may produce revisions to the process all the way back to its starting point, unlike the rational planning model, which doesn't consider the necessary changes over the time in order to, namely, gain acceptance by the community and to respond better to the transformation processes.

Based on the presented framework the authors identify themselves with the *planning as a process* concept in which the plans shouldn't be seen as *plan-product*, an expression of passive planning that starts with a commission and ends with a delivery, but rather as a structure and framework to support the decision making.

2 – Planning process

The act of appropriating the territory requires a conscientious judgment and achieves its most proactive dimensions through the changes made to the land use (Costa Lobo et al, 2000). These changes in the territory can be made through a spontaneous mode or based on a planning process.

Nevertheless, the concept of *planning process*, through which these changes are introduced to the territory, can have diverse definitions:

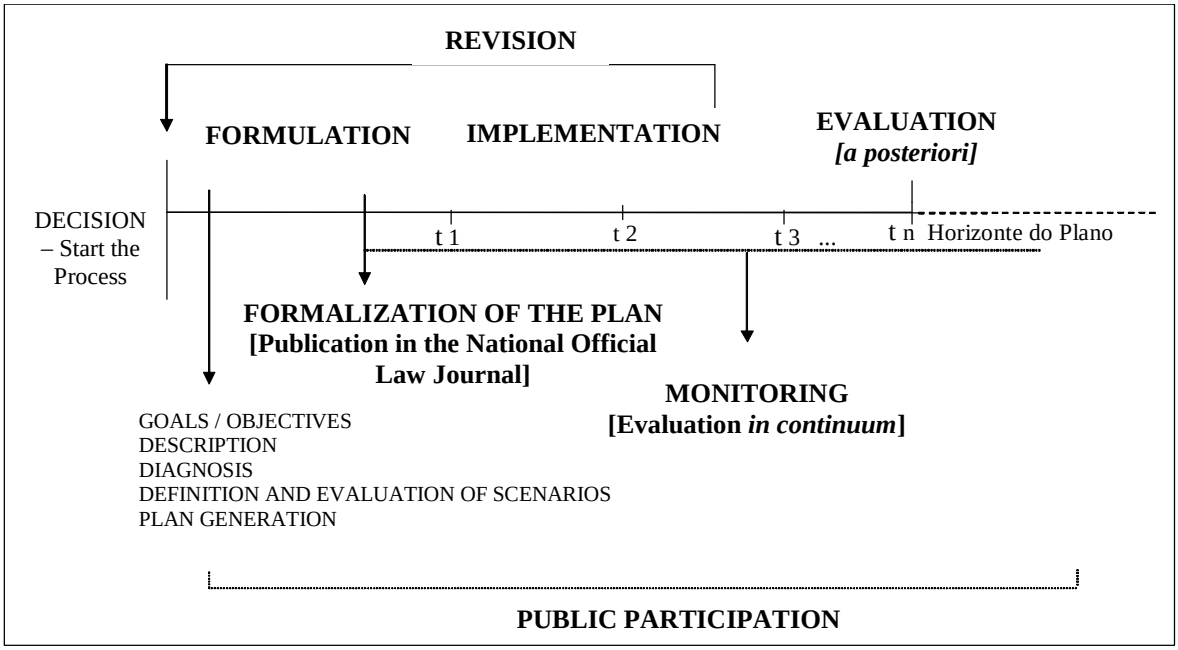
"(...)Planning is the deliberate social or organizational activity of developing an optimal strategy of future action to achieve a desire set of goals, for solving novel problems in complex contexts, and attended by the power and intention to commit resources and to act as necessary to implement the chosen strategy." (Alexander, 1992)

"Planning is an ongoing process that supports the practice of management which suppose a framework of responsibilities, skills and tools (…) Planning is therefore an optimization and urban management process which should be interactive in transversal subjects and in time line" (Costa Lobo et al, 1995)

For us the planning process needs to be continuous on the time and all its phases must be a sequence of cycles and not only one linear path. The figure of the *Plan* is very important throughout the process because it's assumed as the main tool for decision support in the implementation of objectives and actions.

The existence of the plan is important but not synonymous to the process' success because the reality isn't static, as such, the plan can't be limited to the status of administrative regulation without the management component. For this component to be effective, it is critical to conduct the monitoring and evaluation activities which allow the creation of alternative options and adapt the plan in face of new realities (not predictable at the first formulation).

Figure 1 – Urban Planning Process Model



3 – Portuguese planning system

The Constitution of Portugal is the highest regulatory instrument of the law at the national level. It intended to be a political project of desirable society. In it are laid down unequivocally the basis of a virtual model of territorial organization (…) with general objectives, based on principles of equality, economic and social justice in order to improving the quality of life, increasing social justice and defense the collective public interest (Alves, 2001).

During the 90's more attention was given to the organization and management of urban systems and to the deepening of the environmental component, in the context of territorial planning and the operationalization of the arrangements for safeguarding and protecting natural resources (Alves, 2001).

In 1998 was published the Law of Bases for Territorial Planning and Urbanism (Law n.º 48/98, 6th August) which sets the policy framework for planning and urbanism such as the territorial management tools that materialize it. This law also regulates the relationship among the various levels of public administration, between this one and population and with the different social and economic interests' representatives.

This law states the purposes, principles and objectives for land use planning and urbanism which should be pursued in the country, creates a territorial management system that is organized in 3 different scales (national, regional, municipal) and developed through a set of planning and land use management instruments. (Alves, 2001)

The regulation of the Law n. º 48/98 was made in the following year, with the Decree-Law n. º 380/99, 22th September. It defines the coordination between the different scales of the territorial management system, the general system of land use and the system for preparation, approval, implementation and evaluation of the territorial management instruments.

Table 1 - Type and scale of the Territorial Management Instruments: Portuguese context

TYPE		SCALE
PNPOT (National Program of the Planning Policy)		National
PS (Sectoral Plans)		National / Regional
PEOT (Special Plans)		National / Regional
PROT (Regional Plans)		Regional
PIOT (Inter-municipal Plans)		Regional / Municipal
PMOT (Municipal Plans)	**PDM** (Municipal Master Plan)	Municipal
	PU (Urbanization Plan)	Municipal
	PP (Urban Detail Plan)	Municipal

The issue of territorial scope (scale) plays a relevant role in the territorial management system embodied in the fact that the national, regional and municipal can't be understood singly. The main planning options and guidelines defined by the plans with a wider territorial scope and represented in small scales (eg. PNPOT-1.1000000; PROT-1.100000) need to be more detailed in the municipal level with the PDM (1.25000), PU (1.10000) and PP (1.2000) where the programming component is more tangible. In face of this reality, we think the most appropriate scale to address in this communication is the municipal (PMOT), whether by the proposed actions / interventions are more effective over the territory but also because in these plans there is a directly binding of the private landowners through spatial planning.

4 – Programming

4.1 What is it?

From the operational point of view a plan can be seen as a set of listed actions to respond to the defined objectives. To transpose the plan's objectives to the reality it's important to have all actions well described, scheduled over the time, with the allocation of available resources and funds and define the priorities depending on the imposed restrictions.

4.2 How to do it?

In the programming of urban plans there are some key procedures which are important to have a good roadmap for the implementation phase.

a) Inventory and description of the actions
A plan as a complex project needs to be structured into a set of actions which must be clearly defined with an individual codification and attributes for each action as well as the description of the tasks that integrate these actions.

b) Budjeting of the actions
In order to implement any action the balance between available financial resources and costs is essential. There needs to be an estimate of the costs through past similar actions or a compounded global cost based on the current unit costs.

c) Scheduling of the actions
On the actions' phasing it is crucial the estimation for durations which are many times associated with uncertainties. The scheduling procedure are influenced by some constrains such as sequential relationships, financial capacity and resources, and the political options. There are methods well known for scheduling that are very used in project management, such as PERT (Program Evaluation and Review Technique) and CPM (Critical Path method).

4.3 What the law requires?

The territorial management instruments that assume, clearly and unequivocally, a dimension of programming, are the PMOT's in the sense they are the only, together with the PEOT's, bind directly and immediately landowners. They are equally those for which the law gives the responsibility to pre-order the implementation and schedule tasks.

In the Decree-Law n. º 380/99 the programming for PMOT's is stipulated by the need to formulate an implementation program in association with a financing plan. To illustrate the law's requirements on this subject we present below the transcription of the articles.

Article 86. º nº2 d)[PDM] –implementation program, including namely indicative provisions about the provided municipal interventions as well as its financing means.
Article 89. º nº2 c) [PU] - implementation program, including namely indicative provisions about the provided municipal interventions as well as its financing means.
Article 92. º nº2 d) [PP]- implementation program for the provided actions and respective financing plan.

Thus we must take into consideration, to characterize this legally mandated programming, the level and type of PMOT that is in concerned.

In the case of a PDM (Municipal Master Plan), given the scale at which it's developed, this programming can not mean a rigorous definition of all steps, procedures and times of completion / achievement for the defined actions. This solution is moreover enhanced by its strategic nature which appeals for a programming type that, although it should maintains some accuracy, should not conform a very inflexible scenario in the implementation phase.

In the case of the PU (Urbanization Plan), being a planning instrument which focuses specifically on the use, occupation and transformation of the soil in urban and urban expansion areas, the programming must ensure that the main components of the urban system remain coherent between each other, and that the execution of needed interventions on it doesn't cause disruption on the urban life operations.

The Portuguese legal framework includes the figure of UOPG, an operational spatial unit for planning and management, which can appear either in PDM or at PU. These units admit a generous flexibility because only point their objectives and reference terms for future interventions or more detailed plans. Thus it's allowed a reasonable portion of modeling at the time of PDM's and PU's implementation, either by the possibility of actions re-priorization or still by identifying the concrete execution procedures.

The PP (Urban Detail Plan) establishes the distribution of functions, define the urban parameters, urban design, circulation and parking places, alignments, volumetric distribution, location facilities and green areas; it is the most detailed PMOT and very close to the architectural project concept. In this PMOT type the private biding has a high and strict level which, combined with its technical features, requires a programming much more detailed than in a PDM or in a PU. It is desirable that the land owners be involved in the plan since the beginning of the process.

4.4 Is the reality deterministic?

The concept of programming is appealing in pursuing the need for the plan to become more accurate, in terms of implementation; one must not forget, nevertheless, that the precise procedures / methodologies should be used only when

there is certainty in the possibility of effectively implementing the original plan, without further adaptation.

Planning is about changing the future, or at least the expected future. Therefore, understanding what is known and unknown about the future, the links between the past, the present, and the future, and how we act based on this understanding, are critical issues and challenges (Abbott, 2005). That is why planning means, essentially, controlling uncertainty – either by taking action now to secure the future, or by preparing actions to be taken in case an event occurs (Marris, 1987).

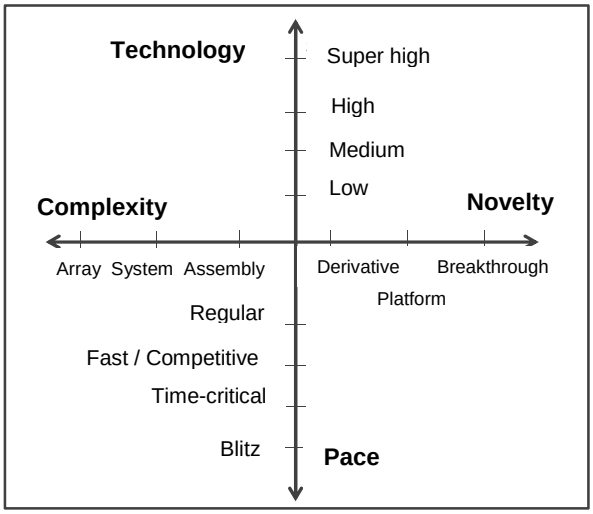
The definition of uncertainty isn't easy and clear but it is known that it is created either by the planning process itself, or through changes in the environment or planning context. A concept related with the uncertainty is the risk, which is more noticeable and well defined.

The PMBOK (Project Management Body of Knowledge), a reference in project management, defines risk as an uncertain event or condition that, if occurs, has a positive or a negative effect on at least one project objective, such as time, cost, scope or quality. For the authors, in the context of urban planning, a risk is an event that compromises the achievement of plan's fundamental objectives, which can be measured by quantitative (probability; intensity) or qualitative methods and be affected by internal or external factors.

A contingency approach, both at the programming and managing stage, can be a way to deal with the uncertainty and risk as well as their effects. The PCT (Project Contingency Theory) argues that the best approach to managing a project depends on context: different conditions require different project organizational characteristics, and the effectiveness of the project is related to how well organization and conditions fit each other.

According to Shenhar et al. (2005), the "myth" that a single method can fit all types of projects (one size fits all) has led to dissatisfaction with the field of project management. As a result of this, they argue in their research, that the ''one size fits all" approach is suboptimal, and that a project's structure and management practices should be tailored to suit its context. They proposed a model which is composed by 4 contingency factors (novelty-V; complexity-C; technology-T; pace-P), very focused in engineering-based projects, but which may equally have application in the programming and managing of urban plans.

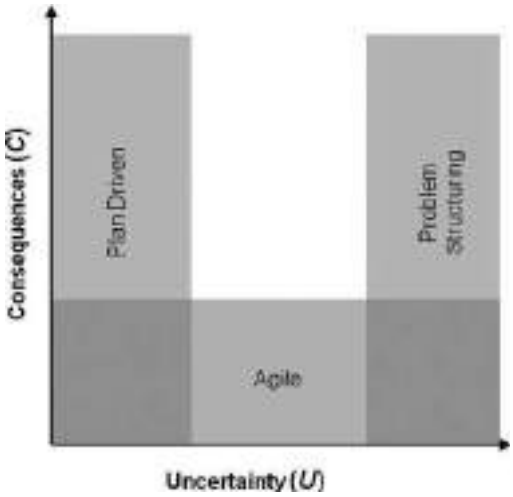
Figure 2 – NCTR Diamond Model



Source: *Adapted* Shenhar et al., 2007

A project contingency framework, proposed by Howell et al. (2009), UC Framework, can be used to identify which process models are appropriate for programming and managing a particular project, or stage of a project. It identifies three different examples of project management process models: ‘‘plan-driven”, ‘‘problem structuring”, and ‘‘emergent”.

Figure 3 – UC Framework



Source: Howell et al., 2009

The first process model considered is the “plan-driven”. This model can be defined as the group of methodologies which broadly consists of:

- Identifying project goals and the necessary steps to achieve them;
- Organizing the steps into an optimal sequence given resource and other constraints to form a project plan;

- Following the plan, with the objective of management being to administer the activities, to deal with deviations from the plan, and where deviations cannot be dealt with, to manage revision of the plan.

This process model includes methodologies such as PERT and CPM. For this model, the objective of planning is to anticipate and avoid surprises, their consequences are irrelevant and so the plan is inevitably based upon assumptions about the goal, methods, required effort and resource constraints among other things. As uncertainty increases, these assumptions will be less valid, but can be partially compensated for by increased planning effort; however, there are cost and practicality limitations to this, and in any case not all events can be anticipated – eventually the ‘‘unknown unknowns” (Pich et al., 2002) become significant factors.

The second model considered is the “problem structuring” model. This is defined as a group of methodologies which:

- Presume that the dominant issue to be dealt with in the project is the understanding of its objectives and environment;
- Attempt to elicit this information by modeling of cause/effect relationships.

The effectiveness of this process model is again independent of the C axis but varies again along the U axis. At low uncertainty levels, where the situation is relatively clear, the process of understanding the problematic situation becomes a trivial one. In this situation, problem structuring methods become irrelevant. The problem structuring process model is thus also limited by uncertainty, but the limit is at the lower bound, as shown in Figure 3.

The third model, the “emergent” model, is defined as the group of methodologies which involve:

- A presumption that the project goals will be ill-defined at the initial stages;
- A highly iterative process involving partial implementation of the goals, followed by redefinition of those goals based on feedback from this implementation.

In the ideal case, the emergent model’s effectiveness is independent of U (uncertainty). The approach assumes high uncertainty level so if in practice it is low, this has no effect on effectiveness. However the model’s effectiveness is limited in the C (consequences) dimension which means a lack of a robust overall project plan may run away to disaster if any event which the team is unable to handle occurs.

Finally, as the model relies on the team’s ability to react to events, it is less effective where the team is less empowered to do so. These factors mean that the process model is restricted to situations where the team’s ability to handle unexpected events is high (meaning small and expert teams), and ‘‘failures” cannot be overly serious: the model is “consequence limited”.

After this exposition, the main idea to retain is that the planning process needs to deal effectively with the uncertainty and risk and must have the capacity to adapt to all future events.

5 – Management

5.1 Implementation

Is in this phase that takes place the implementation of the objectives, goals and actions, which were just written words or intentions in the plan-document, therefore finally having to deal with bureaucratic delays and legal difficulties by adjusting the appropriate schedules and deadlines, as well anticipate alternative actions.

Planning and its implementation are often regarded as separate processes with their own actor networks and their interests and, as such, even considered as being rather opposed. We could say there is an "implementation gap" linked to the knowledge disconnection between plan formulation and implementation.
The modelling of a conventional urban planning and implementation process indicates that the end of a plan's formulation, the moment when it is "finished", is also a point where, usually, discontinuity occurs in the process. For this gap contribute some factors such as:

Time

The time periods between the 2 processes may be exceptionally long and so have the consequences of the actors in the network change over time, socioeconomic trends may shift their direction totally, and the preferences and tendencies may transform dramatically.

Political-institutional context

The political-institutional structure for the implementation process (eg. coordination mechanism for effective working and relations between the different entities/departments with responsibilities), the influence exerted by persons with political or economic interests during the implementation, and the role of the planning team in the implementation process have a large importance in the effectiveness of the plan's implementation.

Attributes of the plan

The planning techniques used, the goals articulated, and any other attributes associated with the quality of the plan have also importance. Here it's relevant to highlight that over half of the plans' report typically discusses existing data and proposals about different territory sectors such as facilities, environment, transport and infrastructure but have few information about the implementation mechanism for

those sectoral policies. So it seems to perpetuate an attitude "more interested in formulation plans than implementing them".

Due to the gap between these two processes there is the need to better articulate the programming and the implementation of the plan. For this articulation the monitoring and the evaluation procedures will have a relevant role.

5.2 Evaluation

Accompanying the era of the modernist planning approach, the focus of the plan evaluation (also known as plan assessment or plan appraisal) was on developing criteria for determining "good plans". As (Alexander, 1989; Faludi, 1989) noted "If planning is to have any credibility as a discipline or a profession, evaluation criteria must enable a real judgment of planning effectiveness: good planning must be distinguishable from bad."

Evaluation may be designated as an analysis process of outputs, outcomes, impacts, and also implementation mechanisms, aimed at setting how the objectives and results are to be achieved. In this process there are some strategic issues which should be listed such as:

a) Relevance – Are the proposed actions a good idea in terms of improving the current state?
b) Impact – What are the positive and negative outcomes of the plan?
c) Effectiveness – Were the objectives, activities and outcomes achieved? What is being done is the best way to maximize impact?
d) Efficiency – Are the resources being used optimally? What could we do to maximize the (positive) impact at an acceptable cost?

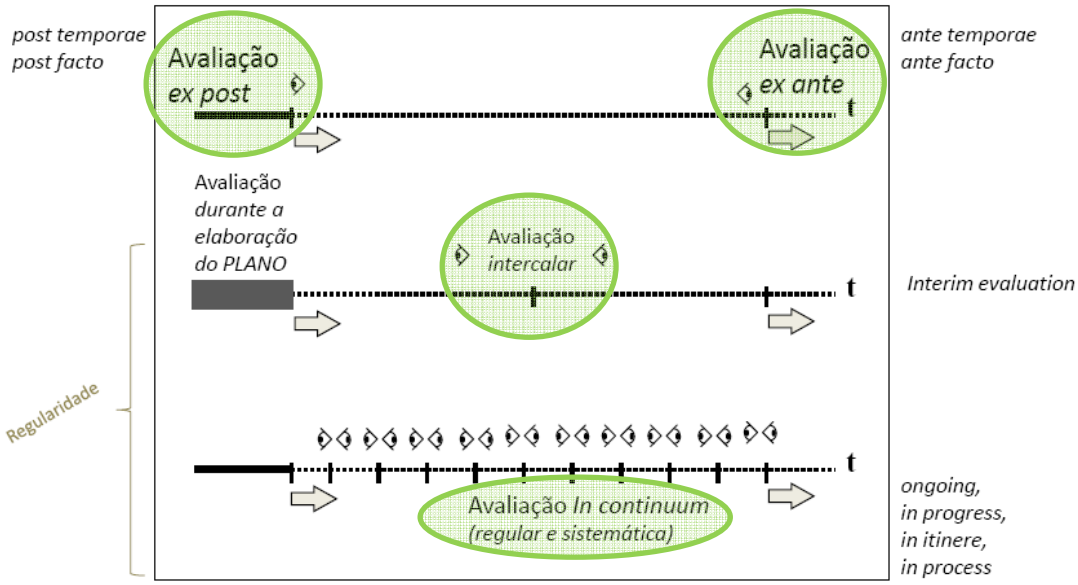
The evaluation process which occurs at different periods of the project or plan's lifecycle can be classified, according to (Voogd, 1983) and (Baptista e Silva et al., 1999), as evaluation *ex ante*, evaluation *in continuum*, and evaluation *ex post*. Recently, Baptista e Silva et al. (2009) introduced a new typology called intercalary evaluation.

In the evaluation *ex post* prevails the view about the past, focusing on what happened with the plan. It is primarily a retrospective assessment that checks whether the objectives and the actions programmed in the plan continue to make sense.

The evaluation *ex ante* has an anticipatory character related to a rational paradigm where the vision of future is dominant and the focus is on what will happen. Among the possible alternatives, the choice will go for the ones which are considered best to achieve better results and mitigate possible future shifts on the plan's implementation.

The evaluation *in continuum* is understood as an ongoing systematic process with a pre-determined frequency and which follow the entire duration of the plan. It is in fact a type of evaluation that intends to give meaning to the idea of plan-process, in view of the plan's ongoing appreciation. It equally aims to be a support for future decisions about the plan's revisions or changes.

Figure 4 – Types of evaluation: time perspective



Source: Baptista e Silva et al.

There is a set of tools that can be used for the evaluation process and much of them come from the management science. Our proposal will focus on some of these tools which we believe are applicable to the context of urban planning.

5.3 Monitoring

The notion of monitoring is not univocal: while some authors define it as a complementary method to the evaluation, others believe that it is only one type of evaluation.

For the authors, monitoring is related to the review, on an ongoing basis, of the degree to which the activities are completed and the goals achieved. This is an important tool for the planning process because it gives flexibility in face of uncertainty / risk and allows for taking corrective actions during the implementation phase.

(Baptista e Silva, 1999) indicates two basic concepts of monitoring: the perspective of compliance and performance. He argues that the first perspective corresponds to the classic monitoring vision, focusing on ex-post evaluation, means-aims reasoning,

correspondence between intentions and outcomes of planned activities, and can be subdivided into four sub-types:

a) Evaluation of the level of objectives' fulfillment: deals with the analysis of agreement between results and initial intentions;
b) Assessment of impacts: is concerned with all the results of the plan and not just those arising from the defined objectives;
c) Effectiveness evaluation: focuses on cause-effect relationship between the obtained results and the measures and actions implemented.
d) Performance evaluation: focuses only on the plan, trying to determine whether or not it is to be implemented.

Through the second perspective, the performance evaluation, results the idea that the mere compliance is not the only measure of a plan's success. In fact it is ever-more-clear that results less compliant to an original design or expectation don't necessarily entail a lower effectiveness in the achievement of the objectives and actions, and therefore a negative evaluation of the planning process.

One of the most important principles of monitoring is that by providing information for management it ensures a future benefit that will come from the changes to the process introduced based on that information.

So to collect the information referred to above it is imperative to define good indicators. The indicators must be simple, measurable, intelligible (easily understood even by those who aren't experts) and reliable. In the context of urban planning the indicators focused in the political choices must be concerted with the ones which refer to the planning solutions.

For the development of a monitoring system it is relevant that we are able to build a specific plan in which is determined: Who does what? How? What schedule is applied? What are the indicators to measure the effectiveness and the efficiency of the activities? and other elements that return important results for the planning process.

6 - Programming and management model for urban plans

After highlighting the relevant issues about programming and management of the plans, it is now time to present our proposal for a model that may contribute for a greater success of these.

This proposal intends to be applied to different PMOT (PDM; PU; PP) even though it may require some adjustments depending of the plan's scale.

The main objectives of this model's conception are to:

a) Generate a system which allows to compile, process and analyze the information regarding the progress made by the plan;
b) Provide information to the decision-makers on the compliance of the programmed activities;
c) Establish mechanisms for regular changes and reviews;
d) Create channels that allow the different actors in the implementation process to participate in the systematic process of reformulation and review.

Ahead we propose a few ideas for the programming and management phases, which represent the structure of the model.

WBS of the Plan

A work breakdown structure (WBS) is an usual project management tool which defines and groups a project's discrete work elements in a way that helps organize and define the total work scope of the project. This also provides the necessary framework for detailed cost estimating and control, along with providing guidance for schedule development and control. So from our point of view this tool can be applied and adapted to the context of urban plans.

To create a WBS for an urban plan, we identified the following fields, which are important to structure all information about the process in the beginning, and subsequently assist in the monitoring/evaluation procedure.

a) **ID** – In this field, apart from the chosen codification type, it is important to reveal clearly the hierarchical structure adopted;
b) **Name** – Must be concise and self-explanatory;
c) **Description** – Has more relevance in the levels of the WBS which have more detail (eg. tasks);
d) **Estimated duration** – Important for the scheduling all activities and its tasks;
e) **Priority** – It is relevant to allocate the available resources and means, especially the financial;
f) **Start and finish date**
g) **Status** – To understand at which stage we are and what is the volume of effort needed to implement the activity or task;
h) **% completed** – To see if the progress is on the right track and according to the programmed schedule;
i) **Monitoring dates** – Even if the monitoring is a ongoing process, a plan is much more complex than a project, and so there is the need to choose with which frequency the evaluation procedure is to be executed;
j) **Performance indicators** – They are the basis for the monitoring and evaluation procedure and for that it is relevant to collect all information about them;

k) **Risk level** – In the programming phase it is important to have an idea about the risk level of each activity or task in order to devote special attention to the higher risk level activities;
l) **Responsibility** – In any implementation process the responsibility is a key-issue because it allows to always knowing who to ask about something related to a specific activity or task.

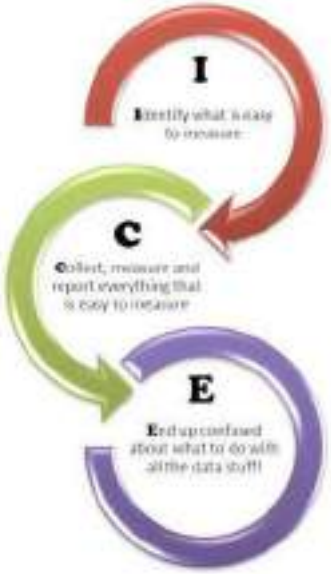
Concerning the risk level, we believe it is an added value to use a qualitative approach as NCTR Diamond Model, already exposed above, because it consists of a smart method and easy understandable for all people.

MES of the Plan

The monitoring and evaluation system (MES) of the Plan needs information and this is collect through indicators. The selection of indicators should be done responsibly and with caution, since its careless use can lead to loss of information, or on the other hand, create some "noise" and entropy in decision-making process.

In the management science there is the concept of Key Performance indicators (KPIs) which are commonly used to evaluate the organization's success or the success of some specific activity within the organization. For the specific context of the urban plans what we intend is to achieve specific indicators for each activity/task but also global indicators for the plan as a whole, characterizing the performance during its completion, and so as to allow comparisons between alternative implementation strategies.

Figure 5 – Identifying process of KPIs: ICE approach



Source: Advanced Performance Institute

Performance indicators' selection is often associated with the use of various techniques. One of these is the ICE approach presented at the Figure 5 which gives a simplified itinerary to define the best performance indicators for each case.

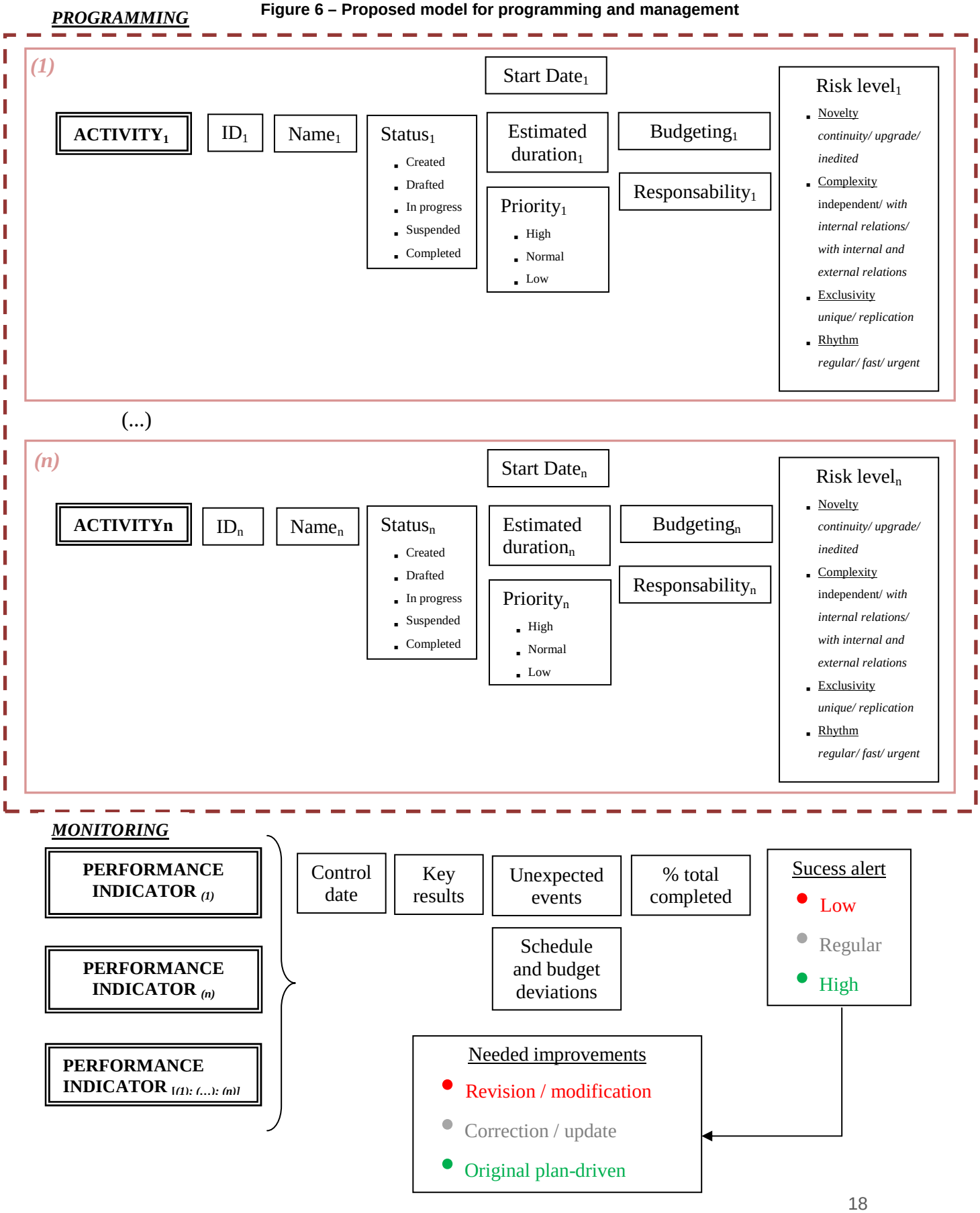
In our vision for the proposed model, after the definition of the performance indicators, an alert mechanism must be created that will allow the measuring and success rate of the initially programmed activities and tasks. This mechanism is relevant for its interpretative dimension and helps the decision-makers have an easier visual thinking capacity in the decision-making moments.

The monitoring process is many times associated to the identification of potential improvements, and as a consequence, performance indicators are routinely associated with performance improvement initiatives. So the proposed alerts mechanism intends to address the deviations from the future scenario that was built at the beginning of the plan formulation, and permit the adoption of improvement initiatives in a timely fashion. Finally it is noted that when almost all performance indicators are in red the decision-makers need to be careful about its analysis because it might mean that the scenario chosen at the beginning is no longer adjusted to the present reality and there is the need for a deep revision of the plan or even a new plan.

In our point of view, for managing the plan we can adopt the "emergent" model referred in a previous section. This takes full advantage of the monitoring and evaluation results and it remains a highly iterative process with the implementation of the activities / tasks being followed by the possible redefinition of those activities / tasks based on feedback from their implementation.

In the Figure 6 we present our global concept for the proposed model.

Figure 6 – Proposed model for programming and management



7 – Conclusions / Steps forward

To conclude the communication, we have more elements that can contribute to solve the problem of uncertainty and risk at the urban plan's implementation. In the complex context of urban planning it is impossible to generate a plan which covers all possible contingent factors; as such, the sole way to surpass this barrier is to have a flexible programming model associated to an ongoing evaluation system. Together, these will allow the adjusting of the plan to a permanently changing reality.

Our proposal intends to meet this challenge through a proactive model which does not only want to track the changes in reality but that provides an effective proactive stance for when these changes take place.

For the future, we aim to:

- Test adjustments of the model for the different type of PMOT (PDM, PU; PP);
- Develop performance indicators adapted to the urban plans;
- Study and propose the action mechanisms for needed improvements

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