

# Developing a System of Indicators for Local Community Results from the Developmental Planning Point of View

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*This article discusses the issue of strategic planning support within local communities. The preparation and implementation of a strategy is a task that demands a high level of motivation and knowledge from all the participants. An environment for transmitting theoretical knowledge and exchanging experience, or some sort of development advisory center, must be provided. This kind of a center requires appropriate IT-support in order to function properly. The issue must therefore be resolved at both the organizational level and the IT level. The article thus suggests a comprehensive multi-level resolution of the issue and gives a detailed view of the IT support model that has been developed at the Faculty of Administration. This model comprises the budget indicator information and selection, as well as a software application that uses a fuzzy aggregation tree to establish an indicator structure and calculate and display the results. The article concludes with a discussion on the experience gained in two case studies in which this software is used, that are currently underway in two local communities in Slovenia.*

## Introduction

Developmental planning and hence formulation and ensuring the prosperity of communities (local communities, regions, states) is one of the central topics in regional development considerations. The desired outcomes should be planned (strategically, tactically), and the achievements should be controlled. The strategic planning approaches and models require that the planning methods be implemented jointly. The strategy formulation process starts with the assessment of current results, the analysis of the organizational current efficiency and ends with evaluation and control (Figure 1: Strategy formulation and implementation).

A thorough insight into the strategic planning structure is based on the balanced scorecard implementation [10], where the structure development goes from mission, to basic values, to personal goals, while the performance measurement goes from an individual in the organizational hierarchy to the final results the organization achieved as a whole.

Strategy development calls for a fully managerial approach, where as many as possible participants should be included. The task is a complex one and the organizations, and especially top management, do their best to develop and implement the strategy. In the local community, which has to observe the interests of numerous members, these being of various kinds and priorities, the task is even more complex. This is the reason that in the numerous strategies of the Slovenian municipalities we practically cannot find any integral strategic documents that would contain all the elements necessary for a successful implementa-

tion of strategies and timely reactions in case they might be departed from for any reasons. In order that this situation be resolved, it is necessary that the approach be consolidated, that the selected objectives be clearly defined and that the tools for data gathering

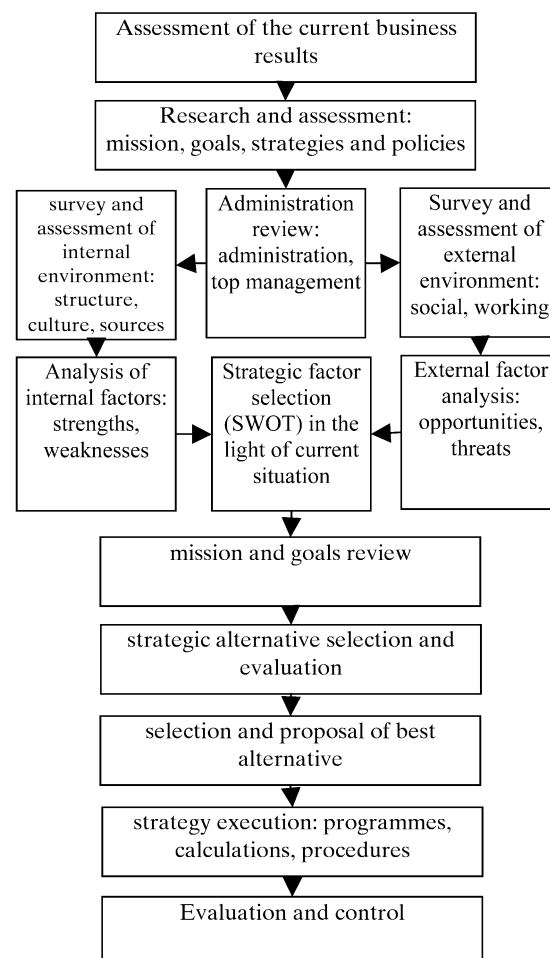


Figure 1: Strategy formulation and implementation [20]

and processing, as well as for the reporting of outcomes, be provided. It is in this way that we can achieve comparability and ensure that the results of more local communities be consolidated into collective results (for the regions and on the state level).

The core of each strategic approach is a qualitative planning and monitoring of the results. It is necessary that a system of indicators be established to represent the objectives we set and to report on how successfully these objectives are being achieved. An integral insight into how the local community functions brings forth a large number of all types of goals measured by an equally large number of various indicators which can be made clearer to local communities only with the aid of IT support. This must act on two levels:

- set of indicators
  - ensures access to appropriate indicators,
  - ensures the maintenance of the set of indicators (setting new ones, adjustment of the existing and leaving out the unnecessary ones),
  - ensures access to data sources for the indicator value calculation,
- indicator structure
  - allows for the building of a hierarchical organizational structure and the hierarchical indicator structure,
  - supports (completing) structures with data,
  - aggregates values by structure,
  - presents the results on all the defined levels of the structure.

The problem will be dealt with in the following chapter, on both levels. First, we present an analysis of certain examples of indicator models on the basis of which we will be able to set up a framework for a system solution to provide the set of indicators for local communities. The local community indicators are rather fragmentary at the points of their origin, the goals of various subjects in local communities may vary considerably. In order to understand and resolve the problems of indicator structuring we, therefore, need an adequate methodological approach. For that purpose we have chosen a successful example of indicator modelling by using a balanced scorecard. We conclude the chapter with a short presentation of the approach to aggregation of hierarchically structured values of indicators. The third chapter is devoted to the discussion of the solutions to problems and the presentation of the logistic IT solution. We conclude the paper with a discussion on the problems emerging in the field of establishing a system for measuring the local communities performance and the preliminary findings of case studies that were being conducted at the time this paper was prepared.

## Locaj communities performance measuring methods

In searching for the solution to the problem we conducted an analysis of certain indicator models, tested the method of the balanced scorecard implementation in the local communities and built a model for the indicator hierarchical structure aggregation. In so doing, we provided the necessary elements for creating the solution model which is the basis for building a system for results evaluation system and the comparison between the local communities.

### *Examples of indicators for local community performance evaluation*

Our starting point in analysing the problem is a number of examples of indicators which will further prove to be a basis for contemplations on an adequate approach to measuring and evaluation of the municipality, or the local community performance. The survey begins with four examples of indicators from Slovenia, the index of developmental threats to Slovenian municipalities [17], the index of development potential of Slovenian municipalities [13], and the financial indicators of the municipality [5]. This set of examples is completed with the national indicators for local authorities and partnerships in the United Kingdom [15], indicators for regional development monitoring in the Alps [19], and the system of strategic assets of the cities [16]. We use these examples to give a detailed review of good practice and the core of the problem of IT logistics for a performance indicator system of a local community.

The index of developmental threats, together with the Law on municipality financing [21] is taken as a measure for co-financing investments by the state.

**Table 1:** *Development threats index calculation indicators [17]*

<b>1. Development level:</b>
a. GNP per inhabitant (2001–2003)
b. Gross tax base on income per inhabitant (2001–2003)
c. GNV econom.soc/employee (2002–2004)
d. formal (registered) employment rate(2002–2004)
<b>2. Developmental threats:</b>
e. registered unemployment rate (2002–2004)
f. population age index (2002–2004)
g. number of population supplied with sewerage system (census 2002)
<b>3. Development opportunities:</b>
h. Average number of years of education (census 2002)
i. number of work places per work active population in the region (2002–2004)
j. share of the area of the Natura region 2000 (status 2004)
k. population density of the region (census 2002)

The key advantages of the model are that the number of indicators can be controlled and that the data are available. Certain indicators are only occasionally measured, therefore they are less adequate in monitoring the dynamics of local communities development. The data sources are the databases of the Statistical Institute of the Republic of Slovenia which, unfortunately, do not allow for creating a single chart with arbitrary data, but rather the indicators have to be integrated into the chart by hand. Besides, the data on the GNP per inhabitant and the number of years of education for the population are available only on the statistical region level. The data processing algorithms are defined, however, there are no tools to perform the data calculation. The algorithms are not included into the context of the problem as a whole, the possible cause-effect relation of the given indicators with other findings is not defined. As regards its basic purpose (classification of municipalities and regions in order to determine the share of investment projects co-financing) it would be interesting to see how the value of individual indicators affect the orientation of investing and the selection of projects to be co-financed.

The set of indicators is the result of the project named The Number of Tools for Defining and Monitoring the Regional Development Policy [11] and stems from a broader set of indicators used in evaluation of the sustainability of the regions.

The Development potential scale of the Slovenian municipalities stems from the models developed by the Institute of Robert Hugging Associates on which the World knowledge scale of regions [9] and the European competitiveness scale of regions are based [8]. In making a choice of indicators, the data availability and the excellence model principles were employed.

Table 2: Slovenian municipalities development potential index structure [13]

ECONOMIC INDICATORS	
Indicators, or indicator groups	%
<i>Infrastructure (points in total)</i>	5
New apartments in m <sup>2</sup> ·1000	5
<i>Economic performance (points in total)</i>	47.5
Income tax for citizens	17.5
Gross returns of companies population.	10
Number of employees:1000	10
Number of s.p. 1000	5
Number of farmers:1000 (neg. cor.)	5
<i>Development investments (points in total)</i>	7.5
Building leases for non-residential objects m <sup>2</sup> ·1000 inhab.	7.5
<b>TOTAL ECONOMIC INDICATORS</b>	<b>60</b>

HUMANFACTOR	
Individual indicator	%
<i>Demographic potential (points in total)</i>	20
Natural population growth	4
Number of children in kindergarten · 1000 inhab.	4
Number of elementary school children ·1000 inhab.	4
Number of weddings:1000	4
Weddings divorces ratio	4
<i>Education (points in total)</i>	20
Number of pupils:1000 inhab.	5
Number of students:1000 inhab.	5
Graduated from levels 4 and 5 ·1000 inhab.	5
Graduated from levels 6, 7 and higher:1000 inhab.	5
<b>TOTAL HUMANFACTOR INDICATORS</b>	<b>40</b>
Corrective factor: 5 points as regards the sum of all the ranks are taken into consideration by the above calculation	

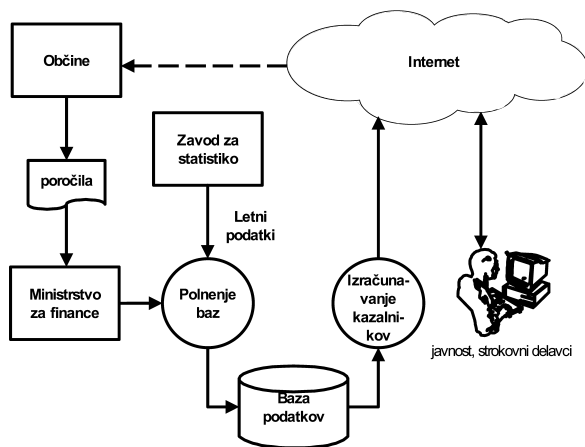
In its contents the model is rather similar to the developmental threat index; the indicators measure similar properties; however, in the former case the focus is on observing the threatened local communities, while in the latter, it is on observing the local communities with the strongest developmental potential. Contrary to the developmental threat index, all indicators are measurable on the municipality level. Our intention was not to provide a detailed analysis of individual indicator examples, hence we compared the findings in general terms and found that a number of municipalities are classified in a similar way, according to both indicators, however, there are numerous examples where these models yield practically adverse results.

A short survey of two examples of indicators in the Slovenian environment already reveals a range of problems we encounter in the models of measuring performance and classification of local communities:

- content analysis of issues is missing, as is the cause-effect analysis, the relationships between initiatives and/or measures for improving performance,
- there is no guarantee of consistency, seemingly similar approaches may result in different findings, there is no consistent context of indicators from which consistent subsets of indicators could be chosen,
- data are gathered from different sources, there is no mechanism which could make the input data gathering simple and prompt,
- indicator aggregating algorithms are different, there are no aggregating tools, that is, they are available only to the indicator creators.

At the Faculty of Administration we have developed a model of financial indicators for each municipality and implemented it in the system presented on the web-site and thus available to all the interested users.

The model includes five aggregate indicators computed from the basic data for calculation. The system has a database which is annually updated from the data provided by the Statistical Institute of the Republic of Slovenia as well as a program module for data calculation and transfer to the users' computers (Figure 2). It offers the full IT support for the provision and implementation of indicators, the necessary data and aggregation mechanisms for computing aggregate indicators. The solution does not allow for the set of indicators to be extended, nor does it allow for data aggregation in any other ways, however, each user can manage processing of this kind using the table processing program.



**Figure 2:** Chart of indicator calculation systems for municipalities in RS [18]

The given examples of indicators are, similarly to the European competitiveness index [8], performance oriented and are in no way attached to development potentials and factors. They tell the community in which areas it lags, but do not explain what steps should be undertaken so that performance be better.

A similar approach can be perceived in the single set of 198 national indicators which make up the framework for measuring the performance of local authorities and local partnerships in the United Kingdom [15]. Here we deal with a planned approach to building a consistent system of indicators, however, not even these numerous indicators can cover the overall activities of local communities, but only the portion directly controlled by the government. Such an approach certainly helps solve a large number of issues related to measuring the performance of territorial communities, especially when fully supported by the data sources.

So far, the examples we mentioned are designed as measuring instruments, therefore they are not employed in performance interpretation.

The following two cases of indicators are presented as two more approaches that try to highlight the contents as well as to assign the content value to the performance.

The system for monitoring the regional development in the Alps, DIAMONT [19], builds on the basic approach to the indicator study by defining the phenomena (issues) they relate to. Thus it introduces a dynamic observation of indicators and allows for linking the indicators to problem solving, limitations and goals. Such a system is problem solving oriented and allows for the linkage of the performance in the permanent development evaluation by the performance improvement measures.

**Table 3:** Communities capital and strategic issues concerning their growth [16]

Assets	Regions
Intellectual assets	<ul style="list-style-type: none"> <li>human, organizational (social, innovational, procedural)</li> </ul>
Democratic assets	<ul style="list-style-type: none"> <li>insisting on a higher level of publicity</li> <li>optimization of democratic participation</li> <li>establishing new types of partnerships</li> </ul>
Cultural assets	
Environmental assets	<ul style="list-style-type: none"> <li>cleanliness</li> <li>safety</li> <li>attractive appearance</li> </ul>
Technical assets	<ul style="list-style-type: none"> <li>organizational</li> <li>IT IS e-administration</li> <li>infrastructure (energy, transport, buildings premises)</li> </ul>
Financial assets	<ul style="list-style-type: none"> <li>public private partnership</li> <li>addressing other parties privatization</li> <li>financial discipline</li> </ul>

In defining the expectations for results we are, by a rule, oriented towards the end-values of indicators that express the desired objectives. Territorial communities are complex systems where numerous factors affecting the expected results should be taken into consideration. The administrative system of the territorial units, in the majority of activity areas, allows for / does not allow for, supports / impedes, enhances / hinders the development and result achievement. On the other hand, the measurable changes in the end results are often visible only after a period of time and at the moment we register difficulties, it is usually too late to undertake any steps towards resolving the problems efficiently. It is for this reason that the system of strategic assets – city, or region assets, is the approach that surpasses numerous limitations related to measuring the efficiency and performance of a territorial community [16] (Table 3). The growth of capital is related to the crucial strategic issues that make the

starting point for both the strategic planning of a community and the creation of the system of indicators for monitoring the achievement of the set objectives.

The analysis of various models of performance measuring indicators displayed two crucial flaws. The analysis of territorial communities on different levels (local, the association of local communities, region, association of regions, state, association of states) is not consolidated. The ultimate objectives, “good life“ of a community member (citizen, local) is often poorly presented in the sets of indicators, therefore it is not clear in which way the good performance within the model really affect the improvement of the quality of living in the local community. The essential problem, however, is not the different approaches, nor poor understanding, but the fact that, the problems of the territorial communities fail to be solved, due to the orientation towards satisfying specific, expert requirements within the tasks and the projects.

The implementation of the principles registered in the above mentioned cases, however, clearly leads to an applicable model. It is necessary that we start from the uniform offer of indicators. The local communities must be offered a uniform set of indicators made up of an adequate number of compulsory indicators, and of other, optional indicators that the community implements on the basis of its own estimate. They must be content structured, each must be accompanied with an explanation of meaning, instructions for use and the data source. The set of indicators must be permanently controlled, adjusted and harmonized.

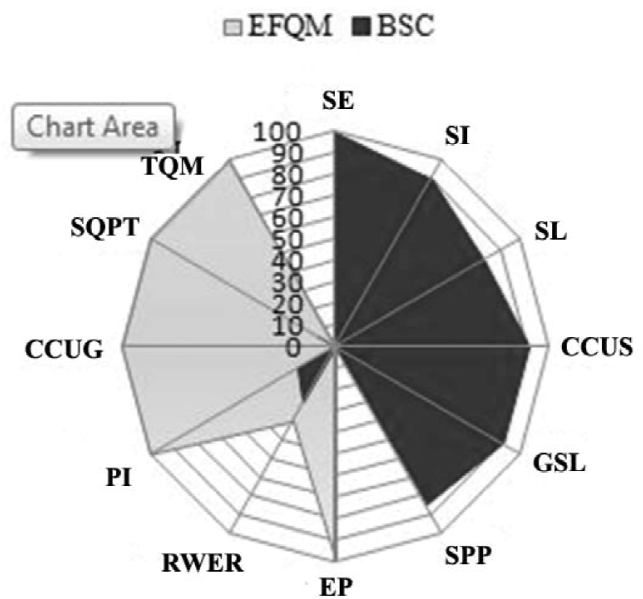
*The Balanced Scorecard System for Public Sector (BSC)*

The planning system has to link the planning steps into the activity, validation and adjustment cycles. The balanced scorecard system includes strategic planning focusing upon strategy implementation. It focuses upon measuring performance, hence it is quite appropriate in resolving a given problem. It observes the varied aspects of organizational business operations. The original version has four perspectives. The end performance is measured by the financial perspective, the operation flow is defined by the customer perspective and the perspective of internal processes. The development orientation and developmental opportunities are measured by the perspective of growth and learning [10]. The public sector can be treated in a similar way, only the end performance is by a rule measured by the customer value, therefore the customer perspective becomes the end performance measure [14].

Before we continue discussing the balanced scorecard, we would like to point out that this system is comple-

mentary with the excellence models (EFQM, CAF, [6]), where the excellence models are oriented towards quality provision and achievement, while the balanced scorecard is oriented towards strategy formulating and implementation (Figure 3) [4], [12]. Both approaches intersect in the area of performance measurement.

As we will see, the issue of choice of the value of pooling (perspectives) basically depends on the circumstances, and the basic logic in goal monitoring certainly remains the driving force of every BSC. The ultimate objectives of a territorial community are related to the community members’ quality of living (Figure 4).



Explanation	
SE	strategy execution
SI	strategy implementation
SL	strategic learning
CCUS	creating common understanding of strategz
GSL	great strategic leaps
SPP	strategic project prioritizing
EP	excellence of performance
RWER	reasoning within extending relations
PI	permanent improvements
CCUQ	creating common understanding of quality
SQPT	sensitivity to quality in participating together
TQM	total quality management

Figure 3: EFQM and BSC as analogous, complementary models [4]

The above mentioned perspectives for strategy formulation may be too generalized, and the additional problem is that the standard BSC form is already rather widespread, therefore the features of the standard model came to be taken as the standard form of treating the issue. Hence the author of the above chart proposes that

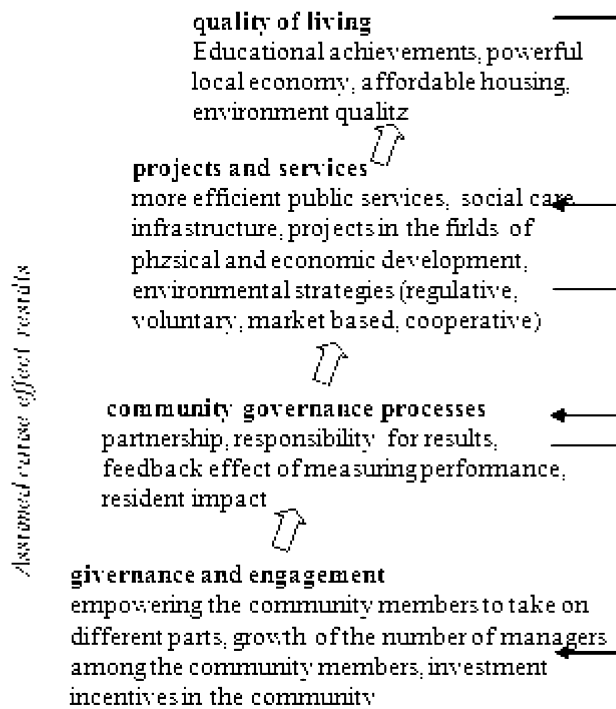


Figure 4: Causus-effect relations in viewing BSC territorial community [7]

the perspectives be renamed and makes the link with the original BSC perspectives:

- governance and engagement  $\leftrightarrow$  learning community / learning and growth,
- community governance processes  $\leftrightarrow$  community performance (task and project accomplishment) / processes,
- processes and strategies  $\leftrightarrow$  community economy /finances,
- quality of living  $\leftrightarrow$  community priorities (desired outputs) / parties.

In implementing the BSC in the public sector different perspectives are used, their structure varying from one example to another. The analysis of examples and conditions in the Slovenian municipalities has shown that the quoted set of perspectives of the Slovenian local community would, in fact, be adequate, although the aspect of finances had better be classed within the community competences (assets – Table 3). Thus there would be three, instead of four perspectives – competence, efficiency and performance. Even though the financial capital in the local community is considered to be a middle-term category (bigger changes in a shorter period of time are an exemption), we have formulated the BSC on the basis of the already presented starting points (Figure 5) which is more intelligible in comparison with the case of its predecessors, at least according to the first reactions in the studies. A key advantage appears to be that the perspectives are rather generalized, but are much easier to understand in practice.

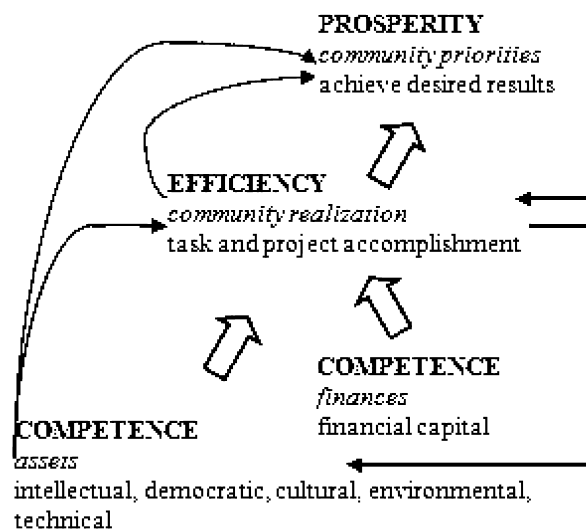


Figure 5: BSC territorial units charts

The balanced scorecard for a territorial community shows three levels of activity:

- planning the performance – deciding in favour of successful performance,
- accomplishing tasks and projects towards achieving planned results,
- developing competences – provision of finances and growth of other types of assets.

The members (subjects) of the territorial community are the creators and the consumers of its performances. Each unit monitors its goals which contribute to the mutual objectives. The individual (subject) can be a creator of the end objectives and thus directly contribute to the end performance. His end goal is simultaneously the end objective of the community. Numerous subjects contribute to the growth of competences or support the task, or project, accomplishments. They contribute to the end objective indirectly, and their end goals are oriented towards ensuring efficiency or competence.

The objectives and the performance are then integrated upwards, in accordance with the community structure; namely, a number of local communities follows mutual regional objectives, a number of regions follow the state objectives ... the structure of units and their goals (indicators) may be rather complex and branching, hence such an approach can be introduced into a community only accompanied by an appropriate IT support.

#### Fuzzy Aggregation Tree

In analysing the hierarchical structures created using the balanced scorecard, we have at our disposal a number of IT solutions, each with certain limitations. In exploring the possibility to implement the fuzzy logic to aggregate the tree structures [1] and [2] we came to the model so-

lution to aggregating tree structure with arbitrary variables on the leaves (children) and in the nodes of the fuzzy aggregation tree [3]. The theoretical model was then applied within the IT solution that allowed for creating an organizational tree structure as well as the tree structure of the balances scorecard system for each organizational unit.

As we now do not intend to conduct a detailed discussion on the theoretical foundations of the model (a curious reader can learn more about the issue in [3]), we will primarily present here the applicable properties of the model and the IT solutions. The basic idea of the fuzzy aggregation tree model is the implementation of the fuzzy logic theory in the tree structure. The variables in the leaves and in the nodes are noted in three forms (real value, fuzzy set, or fuzzy number and linguistic value). The input value of the variable can be any of the three mentioned. Transformations among the types of notations are defined within the model. With each change in the value the input value is reflected into the other forms of notation. All the variables in the tree can be expressed in three equivalent ways. The model defines the methods of aggregation, which are in their simplest varieties expressed as the calculation of the weighted arithmetical mean. We aggregate fuzzy numbers. At each node of the tree we calculate the sprouts (children) from this point, therefore the model can be implemented without any limitations as regards the number of levels in the tree, or the number of nodes, or the number of children on individual nodes. In the presentation we commonly employ linguistic values, the power of the noun segment of the set of values of the linguistic variable; the number of nouns is arbitrary, and we usually use the 3, 5 or 7-noun sets. Thus we come to an intelligible presentation of performance, where at the moment of defining the variables we can choose the value granulation arbitrarily.

The target values are determined using the definition of transformation among values, while the granulation and the acceptable deviations of linguistic values are determined by the definition of noun values for the linguistic variable.

The model was implemented in the web IT solution<sup>1</sup>; to access the system it is necessary to provide a user name and a password, which a curious reader can do on the web address at the bottom.

### **Local community scorecard solution model**

In order that a quality planning be ensured in the local communities it is necessary that an appropriate support should be provided. The crucial elements of this activity

are the motivation and the knowledge transfer. In this paper, we primarily focus upon the IT support perspective that can be defined on two levels. On the general level, meant for all the system users, it must ensure the creation of the consistent system of indicators for the local communities as well as an access to the data sources. For individuals who wish to create a balanced scorecard it has to provide the tools for defining the hierarchical organizational structure of the system under consideration and the BSC tree structures for each organizational unit. The activity of an individual is organized for each case of performance separately, while for the support to the whole system it is necessary to provide an appropriate form of activity on the level of the local community associations or within a respective state agency (in Slovenia, it is the RS Government Agency for Regional Development). For a quality system to be established and functional, an appropriate level of knowledge is required, and the system will have to include a permanent surveillance and the test of the indicator set consistency.

### *The Local Community Indicator System Model*

On the operational level, the local community indicator system model includes the functions presented in the example of the financial indicators for the municipality (Figure 3), as follows:

- indicator definition (meaning, calculation method, data source);
- database for indicator calculation;
- indicator value calculation tools;
- methods and tools for consistency validation and the set of indicators rationalization.

In this case we deal with a fixed set of indicators. The system model assumes a dynamic generation of the indicator systems, which means that the existing solution should be upgraded by the the indicator system dynamic definition module, within which the life cycle of the indicator will flow, from the moment the indicator is proposed, to a detailed definition of the indicator and its allocation into the set of indicators, to an indicator adjustment and its discarding if necessary. The solutions must contain the built-in methods for system consistency assessment which will ensure that the set of indicators be optimal, without being burdened with ambiguous or redundant definitions.

Also, the entire indicator structure should be consolidated, starting from the general definition of the balanced scorecard for local communities (Figure 7). Significant differences among local communities do make it impossible to consolidate the system entirely, however, it is

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<sup>1</sup>[http://www.sqrbrowse.com/scorecards\\_beta/](http://www.sqrbrowse.com/scorecards_beta/)

necessary that a comparison be possible among the communities with similar characteristics.

### *IT Solution for Organizational Tree and for Balanced Bcorecard Tree*

Each organizational or a local community unit contributes to the system with its own organizational structure and the chosen indicator structure. All the units are integrated by the organizational structure into a unique system. Hence the IT solution includes two tree structures, the organizational tree and the balanced scorecard tree. In the former, we define the structure of the organizational system we observe. On the local community level, these are all the subjects that participate in achieving the set objectives. We can further integrate the local communities themselves into higher organizational structures (regions, states, ...). In the latter, we define the structure of the balanced scorecard for each node of the organizational tree. The input indicators (the BSC leaves) are transferred upward by the organizational structure, in which process the equal indicators of subordinate units integrate into an aggregate indicator of an assumed unit. The performance of each organizational unit integrates the performances of all the subordinate units and the performance of the unit under consideration itself.

The connectivity of input indicators with data sources is not yet implemented, since it depends on the system in which the indicators are defined. The integration of both systems is not anticipated; the approach to the set of indicators would be a special application, since the proposed balanced scorecard approach in the organizational structure is only one possible solution. For specific purposes, different, purpose-specific approaches will certainly be implemented in individual content areas.

The levels of IT support for the indicator system are planned separately, their development and implementation are performed separately. They overlap in the methodology area, since, presumably, the same methodological starting points should be used in either of the sub-systems.

### **Discussion and conclusion**

The solution model is developed from organizational orientations, sets of methods and the already implemented IT solutions. Much is still left to be desired until its full implementation, however, at this level of development it already defines the organizational and methodological starting premises that allow for a goal oriented system development. The model is the result of the research conducted so far and includes two applicable solutions,

financial indicators of Slovenian municipalities that allow for the benchmarking of local communities from the budgeting point of view, and the web-program solution to creating the balanced scorecard system. The former have been in use for some some now and municipalities may implement them in the performance analysis and planning. The web program solution is still in the testing phase, and the balanced scorecard system is being established in two municipalities in Slovenia.

In introducing the solutions to the balanced scorecard system we were happy to find that the employees in the municipal administration were only too willing to participate in the project, however, we did encounter some problems in the execution of the project. One is the understanding of the role of the municipality and the municipal administration in the local community. The municipal administration somehow do not consider themselves responsible for the end performance, since the general opinion was that the task and project executors were either public agencies or contracted partners. Hence it was necessary that we first analyse the roles in the system. The result of the investigation into the problem was the definition of the perspectives of the balanced scorecard system (Figure 7). We crossed the basic barrier by introducing the notions of competence, efficiency and excellence. The municipal administration officials took on the roles of the citizens, consumers of services, or performance and thus gained a broader view on the community and the understanding of the role of the municipal administration itself. Not all the barriers were lifted, though, since it was difficult to find concrete, quantitatively oriented indicators. The participants expected to be offered a set of indicators from which they would choose those they consider to be most adequate for their purposes. The problem highlighted the need for a full solution model to be defined. The full knowledge of the local communities activities and of measuring performance requires to be formalized and the access should be granted to whoever is interested. At the time this paper was being prepared we were engaged in making an inventory and defining the indicators. In addition to the issue of defining the set of indicators, the issue of defining the end goals emerged. Of great help in solving this problem was the presentation of performance with linguistic values that we determined for all those results that do not have any specific requirements and that still take the mean value to be the one from the previous periods, marked as "good". A general conclusion is that in the project planning we have underestimated the elements affecting the scope of work and the duration of the project, and to a large extent.

In the work in this field, the research work overlaps with the applicative development of the solution. In the field



of reasearch we contributed the structure of the perspectives of the balanced scorecards systems for local communities and the solution to aggregating the values to the tree structure of the organizations and the indicators. In the former case, we will continue our research and search for the balanced scorecard solutions to individual areas of the communal activities, while in the latter case we will introduce and test new methods for indicator aggregation and the presentation of performance.

The applicative development of a full solution will require much work and funding. The provision of sources for the development would certainly be much easier if cooperation among institutions from various countries were established. Hence, in conclusion, we invite all the researchers engaged in similar matter and planning similar projects to collaborate. The environment we offer for an exchange of knowledge and experience is the forum on the balanced scorecards solutions<sup>2</sup>.

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