

DETERMINATION OF ENTERPRISE 2.0 DEVELOPMENT LEVELS WITH A MATURITY MODEL

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ABSTRACT

How far developed are organizations concerning *Enterprise 2.0*? As an answer to this question, the University of St. Gallen and T-Systems International GmbH, an operator of information and communication technology systems for multinational corporations and public sector institutions, jointly assessed the maturity levels of 196 survey addressees with the use of a scientifically based and at the same time practicable method. Therefore, the mathematical-psychological model of the probabilistic test theory of the Danish statistician *Rasch* has been applied to the dimensions “corporate strategy”, “business processes”, “information and communications technology” and “people” of the Business Engineering model by *Österle & Winter*. Finally, it turns out that the adoption is in progress – but with certain deficits.

KEYWORDS

Enterprise 2.0, Maturity Assessment, Maturity Model, Social Software.

1. STARTING POINT, CHALLENGES, AND DRIVERS

A study by the consultancy *McKinsey* came to the conclusion that adequate management methods can bring about success in the adoption of *social software* – i.e. software for communication and collaboration – in companies (Bughin et al., 2008, p. 10). In managing change, thus the organizational transformation towards an *Enterprise 2.0* in the present context, these methods must promote engagement among management, convey clear objectives and visions, and ease the handling of uncertainties for employees (Houben et al., 2007, p. 7).

The informative analysis of one’s particular current situation represents the first significant step of a transformation, before concrete changes are made. For these purposes maturity models are enjoying growing popularity, as they enable the clear-cut classification of the capabilities of people, objects, and organizations in sequential phases (“maturity levels”) and capture the progress to that effect (Kohlegger et al., 2009, p. 59). To that end the elements to be assessed are classified on the basis of particular indicators (“design areas” and “design objects”) according to their fulfillment of the indicators, or measures are suggested to efficiently and effectively raise the maturity of the elements (Kohlegger et al., 2009, p. 59). A very well-known example that is recognized in the industry is Capability Maturity Model Integration (CMMI), which provides a set of reference models. These are helpful for process improvement in organizations because, among other things, they define various procedural areas of an organization and evaluate them according to differing criteria.

The designation “maturity model” is used frequently and rather arbitrarily. There are, for example, clearly laid-out models that offer little more than textual descriptions of the maturity model (*maturity grids*) and simple *assessment* models that are based on question sets with more or less established derivations. Even representations that cannot claim to be models based on current field data or sound management methods, as the present case is, are useful. They help to build attention and understanding of the nature of the development process in the direction of *Enterprise 2.0*, convey orientational awareness, and create an easily understandable basis of discussion for consultants in meetings with customers and for project teams.

The common understanding of “*Enterprise 2.0*” was therefore outlined as “(...) the use of emergent social software platforms by organizations in pursuit of their goals” as described by *McAfee* (2009, p. 73). In order to make his definition more vivid, *McAfee* summarized six requirements for the establishment of an Enterprise 2.0 in the acronym “SLATES” (2009, p. 70-73):

- Search functionalities allow users to find all relevant content and information
- Links can be created by the majority of users
- Authoring possibilities allow the users to contribute
- Tags can be created by users in order to categorize content
- Extensions – i.e. algorithms – generate content suggestions according to user profiles
- Signals are sent to users as soon as new and relevant content is available

On the bottom line, Enterprise 2.0 consequently is “(...) the use of Web 2.0 technologies within an organization to enable or streamline business processes while enhancing collaboration (...) [and] connecting people through the use of social media tools.” (EFQM, 2011, p. 5).

2. THE ST. GALLEN ENTERPRISE 2.0 MATURITY MODEL

The authors developed a model corresponding to the CMMI approach in cooperation with *T-Systems International GmbH* in a joint study with the help of a survey.¹ In this task, as described below, the determination of the current progress of organizations in the German-speaking world with respect to *Enterprise 2.0* played an important role.

2.1 Objectives of the Maturity Model Study

In order to construct a maturity model specifically oriented toward *Enterprise 2.0*, we avoided basing it on models that did not fit our goals and were therefore inappropriate (Kohlegger et al., 2009, p. 51) as well as avoided formulating it upon arbitrarily defined maturity models (Lahrman et al., 2011, p. 183). Moreover, the transition to *Enterprise 2.0* ultimately consists not only of the provision of IT functions like, for example, a forum but means above all the pursuit of new business methods (Bughin, 2007, p. 258). Thus the instrument will further meet comprehensive organizational changes with an overarching model for corporate transformation.

The maturity model is designed to support organizational transformations, namely through:

1. Promoting the engagement of management with regard to *Enterprise 2.0*,
2. Conveying concrete objectives and vision to stakeholders and
3. Easing the handling of uncertainties for affected employees.

An informative analysis of the current situation forms the basis for subsequently achieving specific, intended situations in organizations and prioritizing concrete measures to that end.

2.2 Basic Principles and Results of the Maturity Model Study

The requirements mentioned are taken into account for both the formation of the maturity model as well as in the design of the accompanying survey. The latter delivers the quantitative data that served as an aid in constructing the maturity model.

2.2.1 Design of the Survey

The data were collected over an online survey that was answered by a total of 196 people from different organizations with offices in Germany, Austria, or Switzerland in 13 industries. The basic St. Gallen Business Engineering model by *Österle & Winter* provided an overarching structure for the survey as it is designed for complex change implementation projects and the decomposition of projects into manageable steps, fitting the goal at hand (*Österle & Winter*, 2003, pp. 4-20 and *Österle & Blessing*, 2003, p. 65). It was further extended to include elements of situational method construction from *Baumöl* (2005, pp. 28-48) that take into account important, individual factors of every organization like, for example, corporate culture. This yielded the design areas “corporate strategy” (How is the organizational strategy in relation to *Enterprise 2.0*?), “business processes” (Are the processes supported by *Enterprise 2.0*?), “information and communications technology” (Are *Enterprise 2.0* functions provided and carried out?) and “people” with

¹ Further information and an extensive study are available at <http://www.t-systems.ch/hsg>.

questions about the underlying leadership, authority, and relationship conditions, as well as those that are culture-specific. Each of four design areas is made up of four complementary design objects (see Figure 1), which attempt to depict the design areas as completely and without overlap, i.e., disjunctly, as possible. These objects embody the questions of the collection², which are divided into single question parts (“items”) and were rated by the survey addressees.

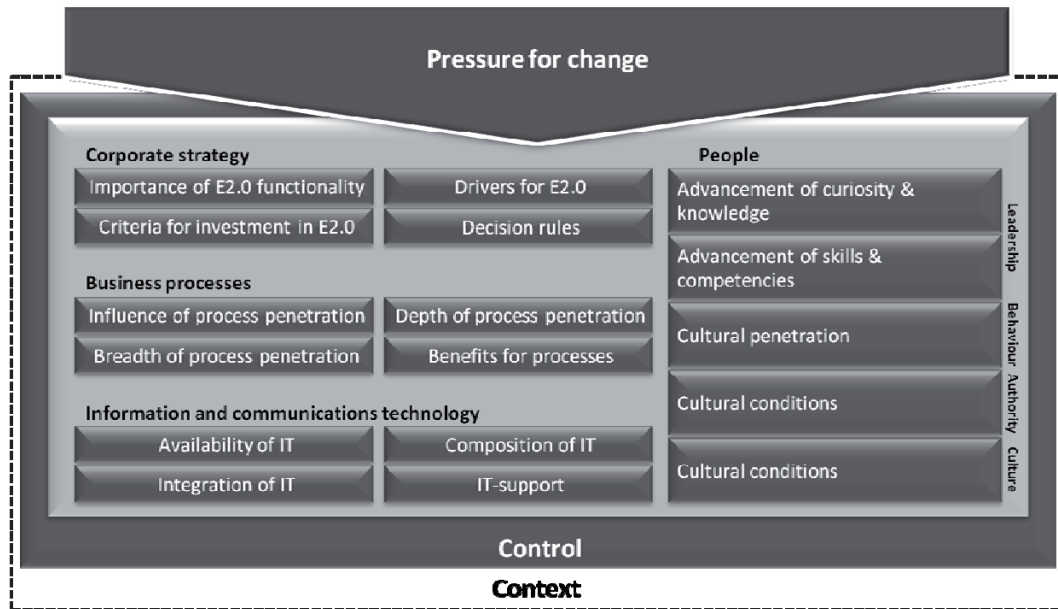


Figure 1. The Design Areas and Objects of the St. Gallen Enterprise 2.0 Maturity Model

2.2.2 Construction of the Maturity Model

Depending on whether certain conditions could be fulfilled often or only rarely on average, every item was assigned a difficulty level (“metric”). These served the construction of the maturity model by way of the mathematical-psychological model of the probabilistic test theory of the Danish statistician *Rasch*, guided by the research of *Lahrman et al.* (2011, p. 181). This resulted in the following two elements of the maturity model, the values of which are used in equal measure to calculate the **overall maturity level** for organizations on a scale between 1.0 (low maturity) and 5.0 (high maturity).

Cluster maturity level: Using a cluster analysis the items were then divided into five groups according to *Lahrman et al.* so that questions with low difficulty levels were separated from those with high difficulty levels. This yields threshold values for five sequential cluster maturity levels. Thus, for example, for cluster maturity level 3, the threshold value for cluster maturity level 2 must be fulfilled with the items from cluster 1 on the one hand, and the threshold value for cluster maturity level 3 must be fulfilled with items and metrics from cluster 2 on the other. In this way, concentrating only on conditions that are difficult to achieve such as process design does not bring an organization farther along in “maturation” if basic requirements like the provision of necessary IT have not been accomplished.

Score maturity level: The second element of the model that was developed is intended to resolve the dilemma that in many maturity models, due to the purely sequential nature of the assessment, the fulfillment of higher clusters is often not considered as long as a lower cluster is not fulfilled. Thus, for example, process design would be completely neglected whenever the necessary IT infrastructure is not available. The calculated difficulty levels and threshold values were used in order to perform an assessment of the design objects across the clusters with respect to a maximum possible score. Here it is irrelevant whether the score is achieved through the fulfillment of easy items (low difficulty level) or difficult items (high difficulty level). Hence, skipping over maturity levels, while prevented with cluster maturity levels, is possible, in compensation, to a limited extent with score maturity levels.

² The survey can be answered at <http://survey.iwi.unisg.ch/53987/lang-en> (time-limited availability).

This maturity model therefore enables a statement about the general maturity (overall maturity level) for every design object in the four design areas, as well as about the sequential fulfillment of easy through difficult items (cluster maturity level) and the general fulfillment of the items altogether with regard to the design objects (score maturity level). Figure 2 once again illustrates the construction method of the maturity level survey. The answers to the survey throughout the whole sample (collective values) and the answers from the survey of a single organization (individual values) are integrated together.

Along with this approach, a maturity model was specially constructed for the topic of *Enterprise 2.0* with maturity levels that are scientifically based rather than subjectively defined.

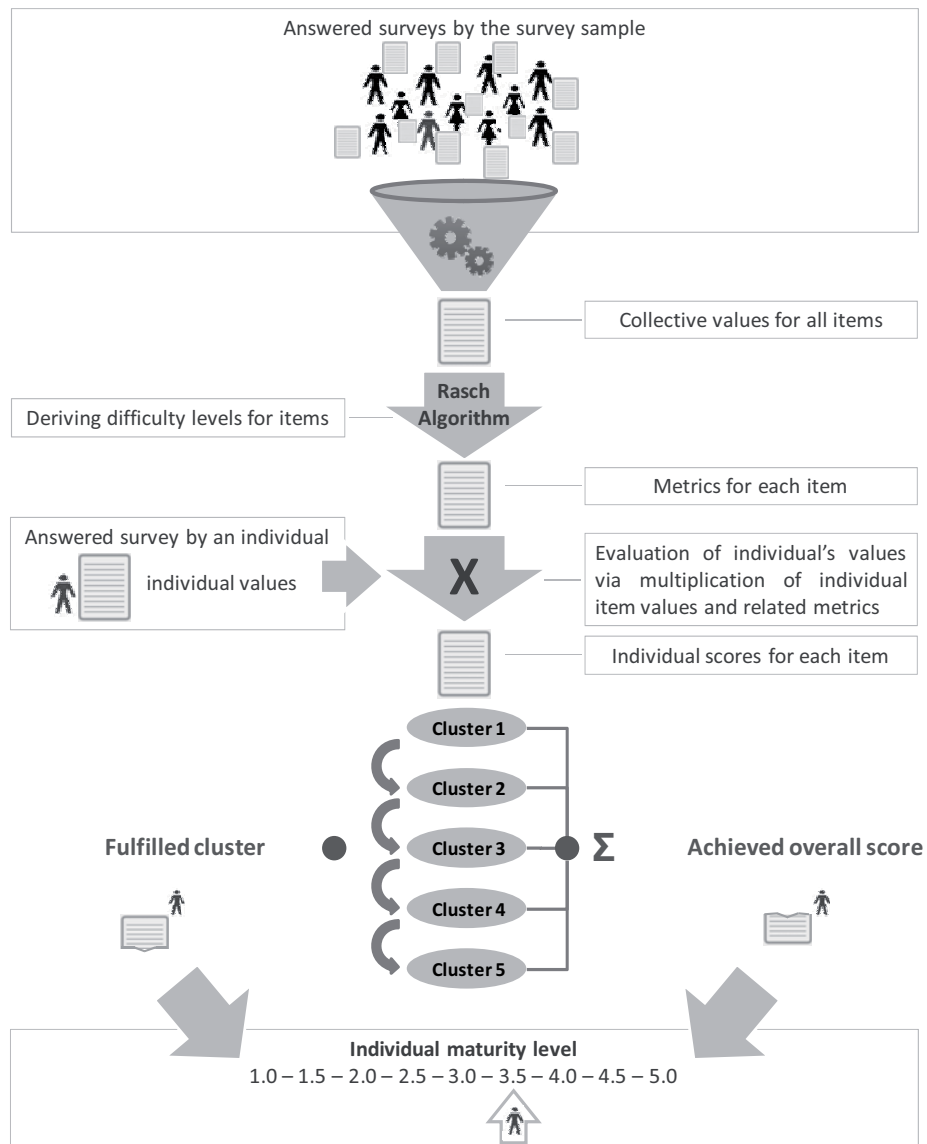


Figure 2. Calculation of the Individual Maturity Level

3. DASHBOARD FOR INDIVIDUAL MATURITY LEVEL MEASUREMENT

The insights gained from the online survey are ultimately only as valuable as the visualization and conclusions that can be drawn from them. For this an Excel tool was created as a practical solution that aids in the interpretation of the individual results, which in turn are summarized in the overall assessment of the survey.

3.1 Individual Assessment of Enterprise 2.0 Development Levels

In the Excel tool any organization can now answer by itself the survey we created and then see the results regarding its own *Enterprise 2.0* development level. This is calculated with the use of the previously derived difficulty levels so that organizations can measure themselves against the sample and then follow up by getting to work on a transformation. Figure 3, which contains an extract from the graphical interface of the Excel tool, shows the result of an example organization. There one can see the overall score for the score maturity level (upper-left) and the fulfillment of the individual clusters for the cluster maturity level (upper-right), from the two of which the overall maturity level (bottom) is derived. Additionally, users can see the scores of the four design areas as well as the maturity levels of the design objects (middle) and consult them for a detailed interpretation of their particular situations. This aids in the identification of significant potentials and the most important means for improving current situations, the first step of a transition toward *Enterprise 2.0*.

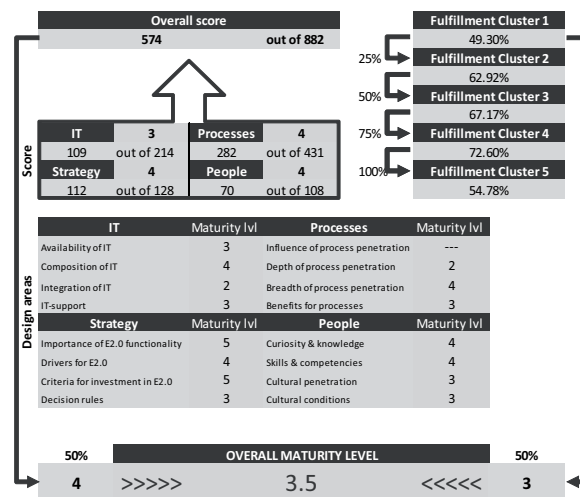


Figure 3. Representation of the Results of an Example Organization
(Excel tool available at http://dl.dropbox.com/u/5310551/Maturity%20Model_MAKRO_public_trial_en.xlsm)

3.2 Overall Survey Assessment

With the aid of the Excel tool the overall result of the sample was also assessed, pointing to various advanced approaches with respect to *Enterprise 2.0*. Instead of exclusively numerical values from 1.0 to 5.0 in the model as constructed, a more memorable designation for the maturity levels is desirable - above all in the sense of a success factor for clear objectives and vision. For that purpose the Technology Diffusion Curve of Rogers (2003, p. 281) offers one possibility, as has already been suggested by, for example, Corcoran & Spivey Overby (2011) as well as Back & Haager (2011). The latter justify this with the idea that the adoption of *social software* in the corporation can itself be seen as a process of innovation (Back & Haager, 2011, p. 327). Classifying the distribution of the calculated sample maturity levels along the technology diffusion curve yields the result represented in Figure 4; the percentages correspond to the proportions in Rogers' ideal model [diffusion curve from Canada et al. (2007, p. 35)]. This method of visualization serves to complement the quantitatively based classification according to the concept of Lahrman et al. (2011, p. 183). A look at

the distribution reveals that the “early majority,” if one assigns both the “early” and the “late majority” to maturity level 3.0, represents a majority of the sample.

A study by the organization *AIIM* that included 789 managers, IT workers, project employees, and consultants on the use of social software in companies says that general technology adoption with respect to *Enterprise 2.0* is now to be found in exactly this phase (Miles, 2009, p. 19). This is reinforced by the *Gartner Inc.* estimate of current market penetration at 5-20% of target users (Gartner, 2010).

The drafting between the maturity level and the diffusion curve moreover allows drawing a satisfying conclusion: Even though the major survey population (i.e. organizations that are not stuck on low maturity levels) manages to overcome initial obstacles to adopt the principles of *Enterprise 2.0*, there is more than little action necessary in the future in order to achieve extraordinary high maturity levels.

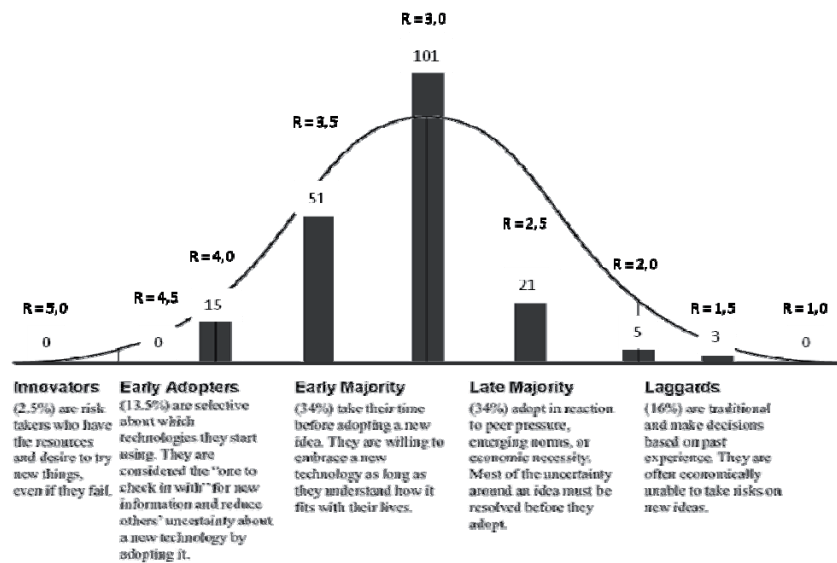


Figure 4. Overall Maturity Level (R) Of the Organizations (Absolute Number: N = 196) In Rogers' Categories

4. CONCLUSION

The construction of a maturity model presented here offers leaders, project managers, experts and all others with interest a scientifically based and at the same time practicable method to carry out a targeted and objective analysis of their own organizations. It joins a line in a set of methods, which has been developed by the Competence Network Business 2.0 at the University of St. Gallen. Thus the maturity model plays an important role to raise awareness about the need for optimization in organizations, to support employees in the development of clear objectives and visions and therefore also to dispel in advance uncertainties regarding projects implementing change. The classification of the results along the technology diffusion curve of *Rogers* shows moreover that development of *Enterprise 2.0* will soon be taking place in the average target group. This recognition holds great potential for interested organizations, and also for technology providers and consultancies. Above all, the hurdle to adoption described by *Moore* at an early stage (2002) must be overcome with corresponding efforts.

In the further development of *Enterprise 2.0* in the future, the determination of the development level in organizations must also undergo necessary adjustments (Lahrman et al., 2011, p. 187). The maturity model presented here can correspondingly meet further developments by undergoing continually renewed validations about every one to two years. Similarly users may perhaps want to add or remove design areas or objects in the model; in addition, one can place the focus of the examination in another subject area. With the prerequisite of a new survey of a representative sample to determine difficulty levels, this is always possible so that a promising model for organizational transformation is provided to users. An instrument to support

companies in the subsequent implementation of changes would then have to go into the specific situation of each organization so that the unique advantages referred to by McAfee (2009, p. 130-141) can be realized.

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