

# Knowledge Maturing and the Participatory Enterprise

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## Introduction

The agility of organizations has become the critical success factor for competitiveness in a world characterized by an accelerating rate of change. Agility requires that companies and their employees together and *mutually dependently* learn and develop their competencies efficiently in order to improve productivity of knowledge work. As a reaction to failures of organisation-driven approaches to technology-enhanced learning and the success of community-driven approaches in the spirit of Web 2.0, we have recently seen a paradigm shift in technology support for learning towards more participatory approaches in which learners are seen as active contributors. Within enterprises, this new perspective brings together traditionally separated disciplines like e-learning, knowledge management, and human resources development, but also requires a fundamental change of the culture of the respective enterprise towards an enterprise 2.0, which is characterized by enhanced collaboration and a cultural of employee participation.

To that end, we first need to rethink our understanding of learning and broaden our perspective particularly towards informal learning activities. Here, the knowledge maturing model [Schmidt, 2005; Maier & Schmidt, 2007] provides a promising starting point, aimed at unifying knowledge management and e-learning approaches. Within organizations, we further need to consider the implications of a new understanding of individual and organizational learning for the corporate culture and the role of IT tools in that change process.

## The Knowledge Maturing Model

The focus of supporting learning in companies has traditionally concentrated on more formal trainings as part of human resources development activities. Such forms of learning have a clear objective, a rather high degree of guidance (by the trainer or by the course design in case of e-learning activities), and are separate from work processes. Participants often get “certificates” that can be used to document learning achievements for career development (e.g., when applying for another job, but also for promotion). Recently, the focus of attention has shifted towards informal learning activities, which lack clear objectives (often learning is serendipitous and not intended), are highly self-directed, and embedded into work processes or everyday life activities. What makes it difficult to integrate into the traditional world, is the fact that it is not easily certifiable. But we also have to acknowledge that informal learning makes up around 80% of learning activities and thus is a far more important form of learning.

While knowledge management activities have already covered some informal learning aspects, the separation from e-learning, training, human resources etc. has prevented a more holistic understanding of learning in companies. To address this from a conceptual perspective, the knowledge maturing model ([Schmidt 2005, Schmidt & Maier 2007]) was developed to structure the “learning landscape”. This model assumes that learners are active contributors, and individual learning processes are connected to each other, i.e., the outcome of one learning activity is input to the next. The model concentrates on showing the interconnections between the different forms of learning, and better understanding barriers for a better “knowledge flow”.

The starting point for the model is the fact that knowledge changes in nature along such a knowledge flow: it becomes less contextualized, more explicitly linked, and easier to communicate, in short: it matures. The model structures this process into five phases:

- **Expressing ideas.** New ideas are developed by individuals from personal experiences or in highly informal discussions. The knowledge is subjective and deeply embedded in the context of the originator. The vocabulary used for communication or in private notes is vague and often restricted to the person expressing the idea.
- **Distributing in communities.** This phase accomplishes an important maturing step, i.e. the development of common terminology shared among community members, e.g., in discussion forum entries, blog postings or wikis.
- **Formalizing.** Artifacts created in the preceding two phases are inherently unstructured and still highly subjective and embedded in the context of the community. In this phase, purpose-driven structured documents are created, e.g. project reports or design documents or process models in which knowledge is desubjectified and the context is made explicit.
- **Ad-hoc learning.** Documents produced in the preceding phase are not well suited as learning materials because no didactical considerations were taken into account. Now the topic is refined to improve comprehensibility in order to ease its consumption or re-use. The material is ideally prepared in a pedagogically sound way, enabling broader dissemination, e.g. service instructions or manuals.
- **Formal training.** The ultimate maturity phase puts together individual learning objects to cover a broader subject area. As a consequence, this subject area becomes teachable to novices. Tests and certificates confirm that participants of formal training have achieved a certain degree of proficiency.

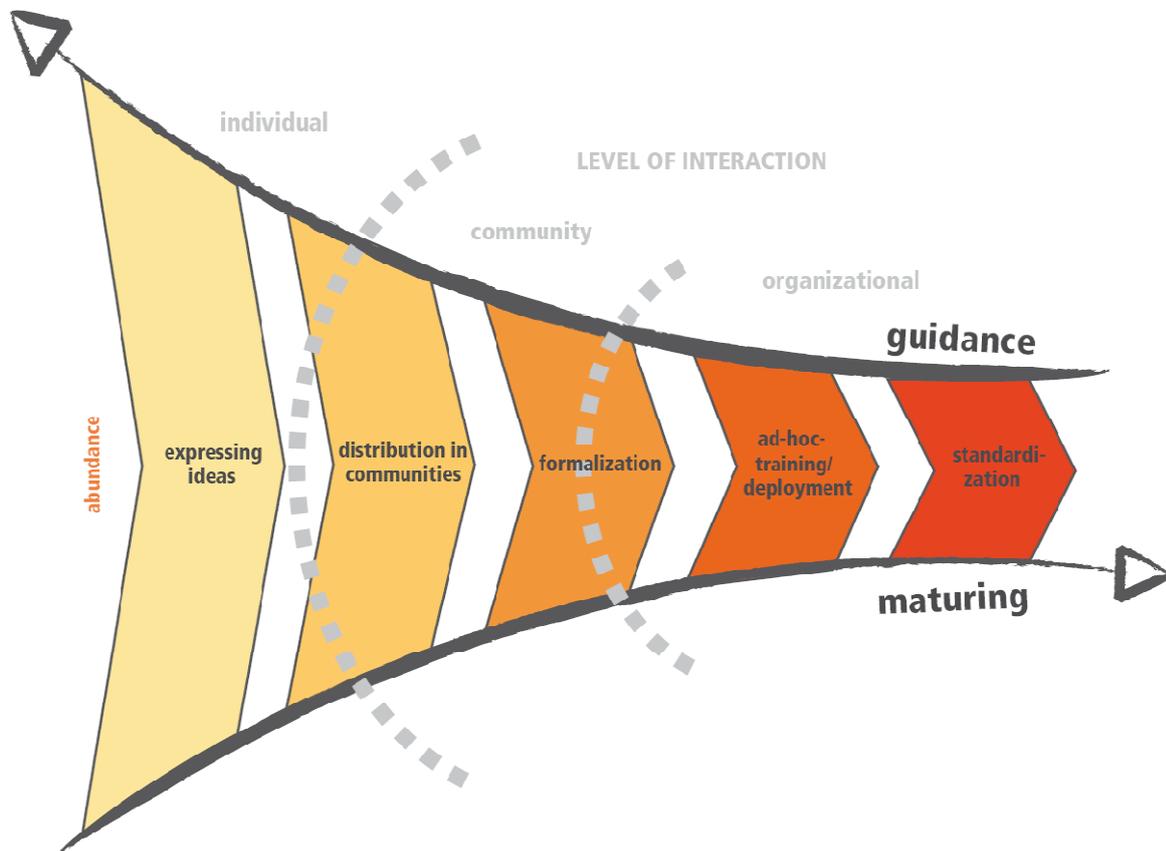


Figure 1: The Knowledge Maturing process model

This model shows that

- (1) different forms of learning are suitable for different types of knowledge
- (2) knowledge management (more focussed on the middle part of the model), and e-learning (more focussed on the right side) complement each other, but also have characteristic ruptures between them
- (3) learning of the individual takes place between bottom-up driven maturing, and top-down guidance processes

## The Participatory Enterprise and Supportive Technologies

When we come to think about how to support such learning activities which form part of knowledge maturing processes, we discover that traditional tools and systems are woefully inadequate. Virtual learning environments (or, learning management systems) are far too focused on the administrative and formal aspects of guiding learning. Knowledge management systems are far too concentrated on the organizational scope, but do not adequately take into account the individual and community aspects of learning. What we rather need, are forms of learning support leverage the intrinsic motivation of employees to engage in collaborative learning activities, and combine it with a new form of organisational guidance. That requires a change in corporate attitude, or culture towards more participation: the organization needs to encourage the individual employee to bring in her ideas, to develop them with their peers, and the organization needs to take up those activities and guide their further development towards a shared goal. This more participatory perspective is now bringing to mind the fundamental change that knowledge workers have brought to the way people work. Instead of strict orders or work organizations, they need loose forms of coordination of a complex network of individuals towards strategic objectives.

But how can we support such a “participatory enterprise” in terms of technology enhancement? This is the focus of the European Integrating Project MATURE (<http://mature-ip.eu>), which tries to put the active and contributing learner into the center. Promising elements are:

- **Open wiki technology** replacing regulated document management systems, and even semantic wiki systems (such as the Semantic MediaWiki) replacing traditional databases
- **Tagging-based systems** (that allow the end users to define the vocabulary) and community based consolidation of vocabularies into lightweight ontologies like in [Braun et al., 2007] instead of taxonomies defined in a top-down manner
- **People tagging approaches** (where employees describe each others' interests and capabilities, [Braun & Schmidt, 2008]) instead of over-engineered competence or skills management systems (or employee yellow pages) with limited and outdated information
- **Mashups** as a design paradigm (where the end user can easily set up the combination of data and services from different systems) instead of heavy-weight and centralized integration paradigms
- **Personal learning environments** [Attwell, 2007], consisting of loosely coupled tools and services (and mashups) that can be arranged and used in a truly personal way, providing the connection to other individuals, internal & external communities, and organizational knowledge spaces, among others.
- **Flexible knowledge services** [Schmidt et al., 2008] that feed the mashups and PLEs with analyses of implicit (e.g., context) and explicit (e.g., ranking) usage data, similarities and connections between different activities etc.

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