Christian M. Stracke (Ed.)

Competence Modelling for Vocational Education and Training

Innovations for Learning and Development

SHAKER VERLAG

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Content

Competence Modelling, Competence Models and Competence Development - An Overview

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Abstract. This paper will summarize the potential use cases and impacts of competences and skills in the new area, often called "Digital Age": It will highlight the roles and benefits of standards and metadata for HR development and points out the special support that competence models can provide for the quality development in learning, education, and training. In this regard, the main characteristics of this innovative approach called competence modelling and its relevance in vocational education and training (VET) can only be summarized. A general competence model with a standardized competence structure and taxonomy of levels is introduced and discussed for the general application scenarios and for the specific use cases in vocational education and training. It can be shown that competence modelling and the presented competence model lead to an improvement of the working places, of the organizational and individual development, to an increase of the mobility worldwide as well as to a higher transparency and recognition of competences and skills. Finally leading European initiatives on competence modelling are introduced and the current standardization activities are highlighted.

Keywords: Competences, Skills, Knowledge; Human Resources Development; Learning, Education, and Training (LET); Competence Development and Quality Development; Competence Modelling;

Competence Model; Vocational Education and Training (VET); WACOM; eCOTOOL; Competence Standards; ISO/IEC JTC1 SC36; ISO/IEC 20006; Generic Reference Model for Competences; CEN TC 353; Metadata for Competence Modelling.

1 Introduction

This article introduces the tasks and potentials of competence development and competence modelling as an innovative and very promising approach and explains the application scenarios and benefits of competence models as appropriate and comprehensive instruments for their implementation. The leading key question is: "How to support and improve the quality and the outcomes in learning, education, and training?" The answer results in the innovations and changes that can be realized and provided by learning outcome orientation. Competence models will be identified as appropriate means for quality development based on the general definitions of quality development and competence development and of the principles for competence modelling. After the short explanation of their main use cases, current European research consortia are explained working in different sectors for the establishment of competence modelling. To summarize, this article points out the special support that competence models can provide for the quality development in learning, education, and training: In this regard, we can only highlight the main characteristics of this innovative approach called competence modelling and its special relevance in vocational education, and training (VET).

2 Definitions of Competences and Competence Models

Since the beginning of the so called "digital age", the importance and impact of competences and of competence development is increasing constantly: And that is true not only for the (new) media competence (also often called media literacy) but for the whole society itself. The European Commission underlines in the "Digital Agenda 2020" the growing weight and significance of competences for the future of Europe and the whole world community and for the international mobility that is confirmed by experts from human resources (HR) and learning, education, and training (LET), too

(cf. EC 2010). This progress covers all sectors, branches and levels of the society, from the family via kindergarten, school and education, working life until the lifelong learning, and in particular the business and economy including the human resource development and vocational education and training (VET). It is strengthened by the two core factors of the globalisation and the worldwide establishment of the internet (world wide web) with their direct and indirect consequences as the global markets, worldwide networking, communication and competition, digitalisation of services that Friedman summarizes in his simplified phrase "The world is flat" (2006).

The term competence is currently on top of the agenda and there are several reasons: Competences, their building and measurement are becoming more crucial for business success in our times of increasing flexibility, speed and globalisation within the economy. Organisations and in particular enterprises have to face more complex and unpredictable challenges in markets and societies due to the globalisation and stronger competition - together with growing requirements and cost pressures (especially in the economic crisis). The concept of competence (that is traditionally combined with successful acting in unknown situations in central-European region) offers a theorectical basis for the development of strategies, methods and means for solving the current tasks. Enterprises have to take advantage from their employees by efficiently and effectively supporting and managing them to survive in the market by success and innovation. In addition the needs for personal and organizational development have to be identified and vocational training and change management methods have to be introduced and evaluated.

However the term "comptence" is defined in many different ways, in particular in the business practice. Thus, strong initiatives are taking place in the human resource development and in the vocational education and training to harmonize the whole competence area on the basis of the requirements from all stakeholders of the business, political systems and societies. The aim is to develop valuable and adaptable instruments for the building, measurement, and modelling of competences.

For this ambitious and long-term objective, the term competence and its historical development and definition have to be defined. The historical development lines of the term competence in the different science disciplines verify the variety and complexity of meanings and views on the term competence. In the psychology, White has used very early the term competence to designate skills developed by self-organization and required

for the performance (1959). In the semantics and only a few years later, Chomsky (1962) defined competence as the self-organized ability to construct and understand a potentially unlimited amount of sentence using a limited set of vocabulary and thus, to manage speech acts as a competent speaker. And based on these concepts, two different schools of thought were developed in different directions: The first line continued the ideas by Chomsky broadening them at human being's acting in general, the second line used the competence term for society criticism and combined it next to the coping in particular with the generation of social situations.

This short overview demonstrates the increasing relevance and importance of the concept of competence independent from the variety of different traditions and understandings. In the following we are using the term competence with its general meaning that was defined by Stracke (2011) as:

> **Competence** is the ability (that cannot be observed directly but only by activities) to adequately and successfully combine and perform necessary activities in any contexts to achieve specific tasks or objectives.

Using this definition as the basis, the potential (non-observable) competences and the (observable) activities performing the competence can be distinguished. That is most important and can be expressed by using the following simplified representation:

- Competence: = Knowledge + Skills (+ individual ability)
- Activities: = Performance of Knowledge + Skills + Competences (+ individual ability)

Competences can be built and exist without being demonstrated and performed. Most important is the fact that they are non-observable: They are only shown and observable by acting, i.e. by performance and activities. Only activities can be observed and measured.

The Competence Model that is presented in the following chapters is completely in line and compliant with the unique ISO quality standard for IT-supported LET (ISO/IEC 19796-1 2005) as well as with the international quality management principles of ISO 9001 including the TQM philosophy and the PDCA cycle (Plan, Do, Check, Act): Thus, it ensures both,

international interoperability as well as flexibility for organizational and individual adaptations (cf. Stracke 2006a).

For implementation of competence models in human resources and vocational education and training (VET), competence development has to take into account three dimensions as shown in the following figure:

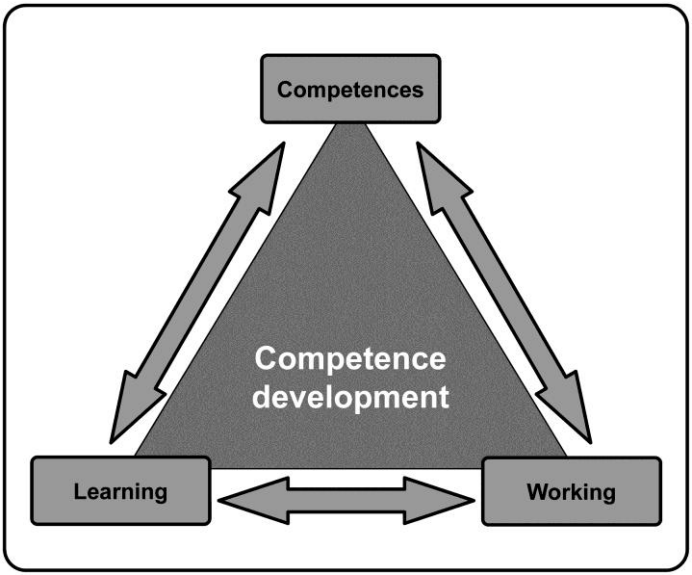

Figure 1. The Triangle of the Competence Development

The following four main target groups using competence models exist in vocational education and training:

1. Managers: Managers who are responsible for hiring new employees or human resource development are interested in enlarging existing and developing needed qualifications. Therefore they are depending on finding out a balance between these two tasks to fix training needs for their employees. Managers have to define requirements for specific working places and job offers to ensure that candidates apply who comply most with the needed requirements.
2. VET providers: On the other side there are the vocational education and training providers. They adapt themselves to the needs of enterprises, national institutions and other organisations for a suitable offer.

3. Learners: They are the third target group: The same adaptation goal applies for individuals (= the learners) planning their personal development at any age.
4. Organisations: Finally there can be organisations like enterprises or public authorities developing their own competence model and competence profiles due to their very specific and extraordinary needs.

A competence model is required for the introduction of competence modelling and harmonization of competence descriptions. Two main components of a competence model are: 1. the competence structure and 2. the competence levels.

With a selection and detailed description of all competences and the definition of the levels it is possible to adapt and implement a Competence Model.

The following table shows the criteria and elements that have to be fulfilled for the standardized description of competences and skills to achieve a consistent and comparable competence structure within Competence Models:

The Competence Structure	
Action Verb	[e.g., "to develop"]
Object	[e.g., "project management plan"]
Optional elements	[e.g., "for E-Learning projects"]

Figure 2. The Competence Structure

The competence structure can be used to (1) introduce competence modelling and a competence model for the first time or to (2) integrate it into existing competence models and their pool of competences.

For the levels, the European Commission has issued and supported the European Qualification Framework (EQF): Its eight levels are defined by a set of descriptors indicating the learning outcomes relevant to qualifications at that level in any system. The reduction and adaptation of these eight levels to five levels is proposed for easier application and implementation into practice (cf. Stracke 2011).

It is possible in general to describe all required competences according the following template for competence descriptions:

Competence "XXX" [e.g., E-Learning PM Planning]		
Structure of the competence "XXX"	[according the competence structure: e.g., "to develop project management plan for E-Learning projects]	
Definition of the competence "XXX"	[any written plain text, i.e. free text field]	
Target group of the competence "XXX"	[e.g., group of employees, single working place]	
Knowledge contained in and required for competence "XXX"		
Name of Knowledge	**Definition of Knowledge**	**Minimum required level**
[e.g., PM Basic Knowledge]	enter your definition here	enter the minimum required level (1 to x) here
	enter your definition here	enter the minimum required level (1 to x) here
Skills contained in and required for competence "XXX"		
Name of Skills	**Definition of Skills**	**Minimum required level**
[e.g., Drawing of Plans]	enter your definition here	enter the minimum required level (1 to x) here
	enter your definition here	enter the minimum required level (1 to x) here
Competences contained in and required for competence "XXX" (optional)		
Name of competence	**Definition of competence**	**Minimum required level**
[e.g., E-Learning Design]	enter your definition here	enter the minimum required level (1 to x) here
	enter your definition here	enter the minimum required level (1 to x) here

Figure 3. Template for Competence Descriptions

By describing all required competences according this competence structure, a "pool of competences" can be set up: In a specific use case these competences have only to be selected that are most important in the case of a specific job description and that have to be defined.

A competence model includes all competence descriptions of all selected and defined competences that are relevant for a specific organisation. Thus, the competence model can easily be derived from those existing competence descriptions. In addition a job profile can be developed as the

application of the table for competence descriptions for a specific job at a working place within a specific organisation. In this way, job profiles can easily derived from those existing competence descriptions.

3 Competence Development and Quality Development

Competence development and quality development are becoming more and more important for success of the organisations and their business: Currently their adaptation and integration into a common approach has been started due to their similar objectives and requirements (cf. Stracke 2011). Competence development can benefit from the long-term experiences that have been made in the fields of quality development and that only be summarized here in brief.

Quality development is a crucial task for vocational education and training as well as for human resources, learning, education, and training in general: A long-term debate has focussed the quality development regarding the different quality issues, aspects and approaches (cf. Deming 1982; Juran 1951; Juran 1992; and for an overview Stracke 2006a). Quality development in its broad sense can be defined as follows (cf. Stracke 2006b):

> Quality development covers every kind of strategy, analysis, design, realisation, evaluation, and continuous improvement of the quality within given systems.

A long process is needed to establish and integrate quality development throughout a whole organisation. Once started, it has to be a continuous ongoing circle to be successful (cf. Crosby 1980; Deming 1986). Quality cannot be described and fixed by a simple definition, because in itself quality is too abstract to have any impact. Thus, quality has to be specified according to the given context and situation considering the perspectives of the involved stakeholders (Donabedian 1980). It is important to identify the relevant aspects and to define the suitable and relevant criteria. To find a consensus amongst the different views and perspectives is necessary to gain a common understanding of quality for the given context and situation due

to different and sometimes contradictory needs and definitions of quality by all stakeholders (for detailed explanations on context determinations cf. Donabedian 1980; Crosby 1980; Deming 1986).

Consequently, quality awareness is the basic requirement for the adoption of quality development by all stakeholders from any organisation. On the other side quality awareness will also be raised by the implementation of quality development. For a sustainable integration of quality development within the whole organisation and to ensure the involvement of all stakeholders, it is crucial to build a quality strategy and to integrate the quality objectives into the educational and business processes (cf. Stracke 2010b). In addition the stakeholders' needs and responsibilities have to be integrated into the overall quality development. The process of the adoption, implementation and adaptation of quality development can roughly be divided into three steps based on three different levels that need to be covered and addressed for a sustainable and long-term quality development (for the three level concept of the introduction of quality development cf. Stracke 2006b):1

- Level of the individual person: to address and convince the employees;
- Level of the organisation: to define and meet the business requirements;
- Integration of quality development involving all stakeholders: to involve all relevant persons including the internal and external suppliers and customers.

The following figure demonstrates the dependence of the three levels of competence development that are building up on the other one:

[1] The presented research findings are partially results of Q.E.D., the flagship initiative for quality in learning, education, and training worldwide, see: <http://www.qed-info.de>.

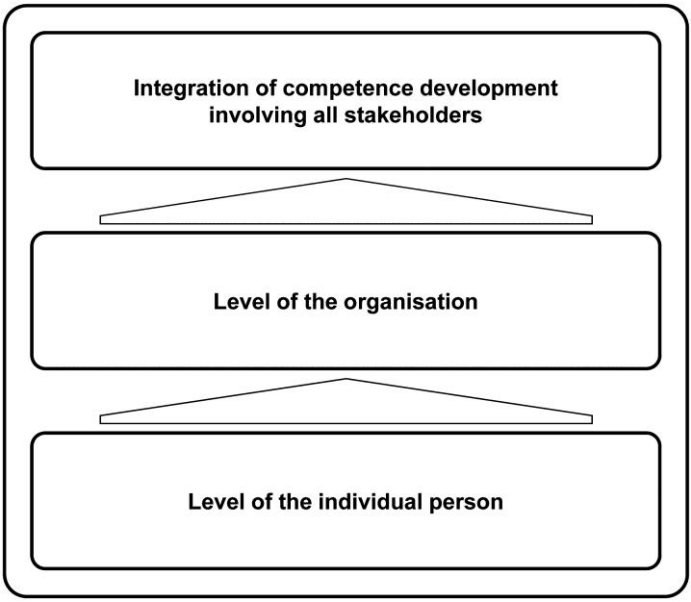

Figure 4. Three levels of Competence Development

4 Competence Development and Competence Modelling

The term "Competence development" is used in a broad sense here and covers all processes that are relevant and dealing with the planning, modelling, strengthening, evaluation, and the continuous improvement of the competence of learners and learning organisations. By this definition, the competence development includes as the general term the competence modelling, the competence building and the competence management.

Competence development is based on the important and influential theory on cognitive development by Jean Piaget. He called his theory "genetic epistemology" to explain the cognitive development of children (Piaget 1953). The competence development in HR and LET is not yet discussed for a long time and basic theories and approaches are still lacking at the moment. In particular a harmonized and integrated reference model for the adaptation and implementation of quality and competence development is missing that is currently under development (cf. Stracke

2011): This article provides general insights and proposals for this ambitious task.

Competence development consists of four processes that are building a continuous improvement cycle following the philosophy of the Total Quality Management plus the analysis and definition of the context conditions and competence strategy (cf. PAS 1093 2009):

0. Competence context and analysis;
1. Competence description;
2. Competence measurement;
3. Competence building;
4. Competence evaluation.

The competence modelling combines the two processes competence description and competence measurement - but not completely: the first definitions of the competence description are related to the general structure and thus they are specified at the beginning and not during the processes of competence modelling.

The relations between the four processes and the context analysis are shown in the following diagram:

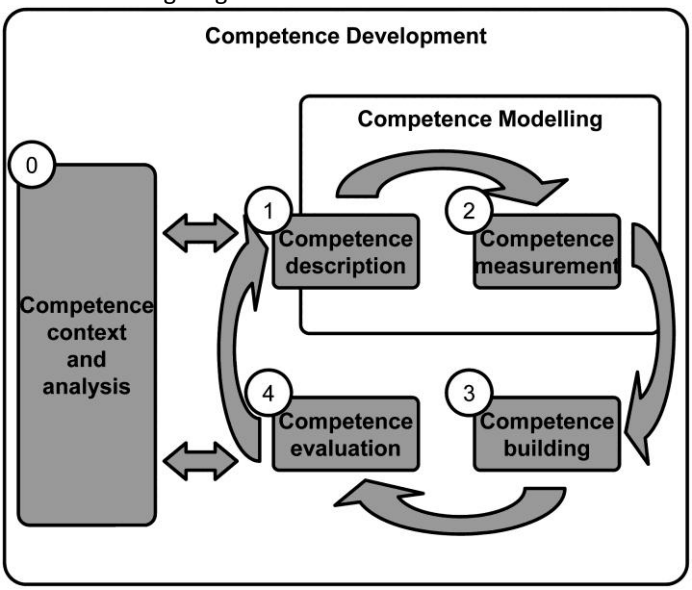

Figure 5. The Phases of Competence Development

In the Phase "Competence Context and Analysis" the general conditions will be identified and a needs analysis with all responsible stakeholders including the decision makers (the top management, the department leaders, etc.) is realized. Thereby the strategic goals and the requirements for the Competence Modelling are investigated and the result is defined and documented in the Competence Strategy.

In the Phase "Competence Description" the (organisation-specific) Competence Model is developed that contains the definitions of the three dimensions of the Reference Framework and the Competence Catalogue next to the Competence Strategy (from the Phase Competence Context and Analysis before). The Competence Catalogue consists of the (organisation-specific) definition of competences and activities that can be developed through top-down processes (e.g. strategy workshops with the management, rating by experts, core competence investigation, prospective orientation, or a combination thereof, etc.) as well as bottom-up processes (e.g. Critical-Incident Technique, rating by experts, structure work-analysis consultation (objective or subjective), employee suggestion scheme or a combination thereof, etc.).

In the Phase "Competence Measurement" the Competence Profile (target and current status) is created. To this end an organizational level (individual, group, or organisation) is chosen and its relevant goals, tasks and situations are determined and described. Thereafter the methods for the observation and measurement of activities are chosen and described. Subsequently, the relevant competences and the activities that constitute them as well as the necessary Competence Levels from the Competence Catalogue are determined for the chosen organizational level. These selections and determinations are documented in the so-called Competence Profile (target status) for the selected organizational level. Afterwards the measurement of the competences (indirectly achieved through the observation and measurement of activities) is carried out, with which their current status are investigated. The analysis of the Competence Measurement is then documented in the so-called Competence Profile (current status) for the chosen organizational level.

In the Phase "Competence Building" the activities for building the competences are created for the chosen organizational level from the basis of the Competence Profile. For this purpose the Competence Development goals are determined first and prioritized on the basis of a target-performance comparison. Finally appropriate activities for Competence

Building in the form of opportunities for human resource development and for learning, education, and training are developed and carried out. The desired result is a Competence Change in the chosen organizational level.

In the Phase "Competence Evaluation" the activities for competence measurement and building for the chosen organizational level as well as the Competence Model and Competence Management as a whole are evaluated. The evaluation of activities for Competence Building is based on a second Competence Measurement (indirectly achieved through the observation and measurement of activities). This is particularly aimed at the analysis, assessment and optimization of the opportunities for human resource development and for learning, education, and training for the chosen organizational level. The analysis and evaluation of the competence development and measurements in total, along with the continuous improvement of activities for competence building, particularly serves to create a Competence Balance Sheet on the basis of a target-performance comparison along with the assessment of the development itself. Furthermore, the organisation-wide Competence Management is evaluated on this basis of these results; this serves particularly to analyze, assess and optimize the organisation-wide Competence Model (including the organisation-wide Competence Strategy). The central goal of the Phase Competence Evaluation is therefore the optimization of the entire Competence Development and the Competence Model (cf. Stracke 2011).

To summarize, competence models are required and used for describing and measuring competences: Thus, competence models are the core instruments for competence modelling and its implementation. The following chapter summarizes the main application scenarios followed by their core use cases.

5 Main Application Scenarios for Competence Models

The presented concept of competence modelling has demonstrated the importance to focus competences and activities and introduced the competence model. It describes the competences for individuals such as employees, trainees, pupils, students, lifelong learning and adult learners and groups of them and can be applied to all sectors and branches. Currently competence models are not used by many organizations and there is a lack of and need for a standardized and harmonized competence model

and structure. The presented competence model is closing this demanding gap: In particular all vocational education and training stakeholders can benefit in many use cases from the introduction and adaptation of the competence model. In VET, the objectives and application scenarios for competence models are to achieve:

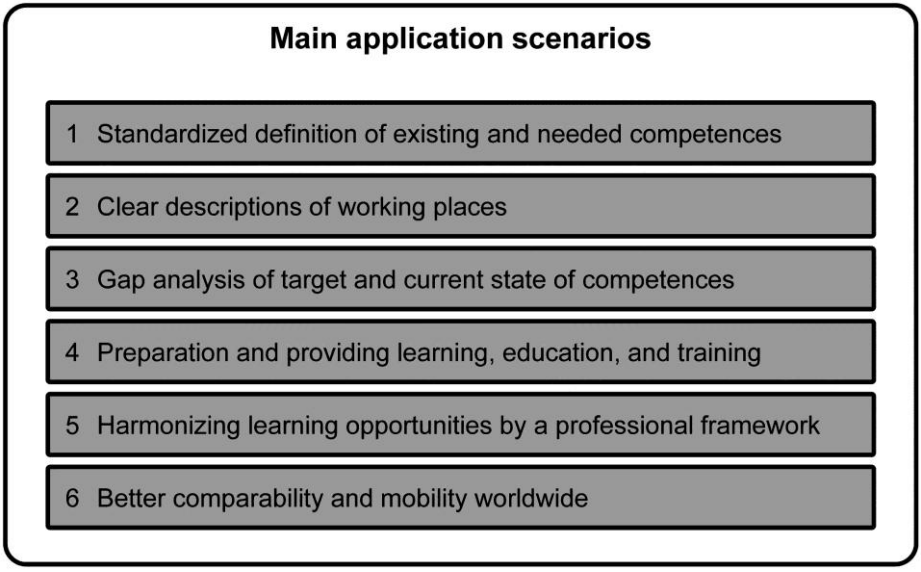

Figure 6. The Main Application Scenarios for Competence Development

In this way the new and innovative concept of competence modelling leads to an improvement of the working places, of the vocational education and training, of the organizational and individual development, to an increase of the mobility worldwide as well as to a higher transparency and recognition of competences and skills.

6 Main Use Cases for Competence Models

A Competence Model describes the competences required to successfully perform in a particular job and organization. This set of competences is then used as basis and standard for the description of the specific jobs, the

selection of new staff, the evaluation of the on-going performance of the whole staff, the analysis of training needs, and the classification and provision of tailor-made vocational education and training for competence development. The main use cases of the Competence Model for the fields of in VET and human resources development are shown in the following figure:

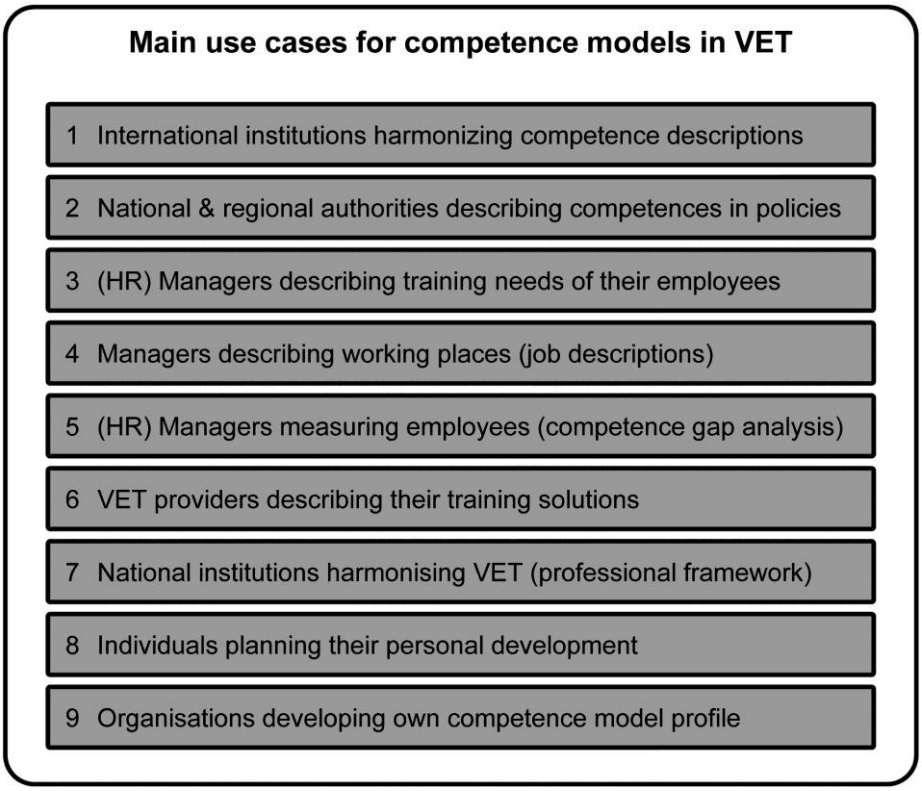

Figure 7. The Main Application Scenarios for Competence Development

The presented Competence Model is completely in line and compliant with the unique ISO quality standard for Learning, Education, and Training, ISO/IEC 19796-1 (2005), as well as with the international quality management principles of ISO 9001 including the TQM philosophy and the PDCA cycle: Thus it ensures both, international interoperability as well as flexibility for organizational and individual adaptations (cf. Stracke 2006a).

Currently, two major European research consortia are addressing and dealing with competence modelling for different sectors and application scenarios: WACOM for the water sector and eCOTOOL for application of competence models in European policies and international standards. These two European initiatives will be described, a third European research project called COMPAT has been started recently and will transfer their results into the public sector and services, namely into eGovernment. 2 In the following two chapters, the two leading European consortia on competence modelling WACOM and eCOTOOL will be introduced in brief with their different focus and sector approaches.

7 WACOM - The European initiative for water competences

WACOM is the European research project for harmonizing water competences throughout whole Europe and for integrating competence modelling into the European water sector coordinated by the University of Duisburg-Essen, Germany. The project WACOM (WAter COmpetences Model Transfer) transfers the European Qualification Framework (EQF) and the German Reference Model for the Competence Modelling PAS 1093 into the water sector and its Vocational Education and Training (VET) throughout whole Europe. That enables the identification of the VET needs by employees and learner, of required competences and qualifications at specific working places as well as of the improvement of transparency and comparability of VET opportunities and products.

The development of the WACOM instrument is supported by the transfer of the competence and qualification model into the water sector and by the adaptation for the selected topic management of sewage treatment plants.

WACOM has an impact on vocational training in the whole water management and in additional sectors.

The main WACOM products and impacts are:

- **Competence model for the water sector:** Development of WACOM (the WAter COmpetences Model) as the establishment of a competence model for the water sector based on EQR and PAS 1093: The aim is the foundation of the vocational training on the

[2] For more information see the COMPAT website: http://www.compategov.eu.

principle of competence modelling based on the identification of the specific demands and needs of the water management and existing practice concerning competence models in the water sector.

- **WACOM instrument:** Optimization and adaptation of WACOM (the WAter COmpetences Model) to the vocational education and training systems and cultures in Europe. Finally the WACOM instrument is used for the description of the competences and qualifications and for the improvement of their transparency and comparability.

The WACOM Competence Model (WCM) describes the core competences for the employees working in the water sector and can be applied to the Wastewater Treatment Plants (WWTP) and transferred to other branches. In this way WACOM leads to an increase of the mobility throughout Europe as well as to a higher transparency and recognition of qualifications and competences. The competence model is composed of water competences which were developed out of personal interviews with water experts and from an analysing process of the water sector reviewed and refined by the outcome of the WACOM national workshops and the WACOM Online Survey. A detailed description of all collected competences allows a standardised usage of the WACOM competence model.

The Water Competences are the complete list of core competences for the water sector directly related to the requirements and needs from the water sector, the working places and job profiles. The WACOM Competence Model (WCM) includes templates for the application and adaptation by the European water sector.3

8 eCOTOOL - The European initiative for competence modelling

eCOTOOL is the European research project for harmonizing competence descriptions throughout whole Europe and for integrating competence modelling into European policies, namely the Europass Certificate

[3] For more information see the WACOM website: http://www.wacom-project.eu.

Supplement (CS) coordinated by the University of Duisburg-Essen, Germany. The two main objectives of eCOTOOL as stated in the work plan are:

1. improving the creation, exchange and maintenance of vocational education and training (VET) certificates and their accessibility and transparency, and
2. increasing the European mobility and transparency of VET systems.

These objectives will be achieved through the creation of a competence model and structure for European policies and in particular for Europass CS. The main goal is the introduction of a pan-European standardized structure to describe competences, skills and knowledge for the harmonization of Europass with other European instruments such as EQF and ECVET and with e-competences. The development of compatible instruments and tools which supports the creation, maintenance and exchange of competence descriptions within VET certificates will ensure its realization. The eCOTOOL project concentrates on the Europass Certificate Supplements (CS) which is the one of the five Europass instruments providing documents and guidelines for the description of qualifications throughout Europe. The Europass CS is a framework for VET providers to describe required qualifications of vocational occupations. The facilitated creation of certificate supplements helps to formulate the requirements for a specific job as well as to discover easily which qualifications job-seekers need for specific employment opportunities. The project restructures the content field three of the Europass CS where the required qualifications for each job have to be listed. In this way, eCOTOOL contributes to the European Lifelong Learning Programme (LLP) by enhancing significantly the transparency throughout the labour market. In current Europass certificate supplements only a couple of phrases describing the required qualifications are listed in the relevant field three. Within eCOTOOL the consortium partners shared their expertise concerning competence modelling, the Europass Certificate Supplement and the VET-sector and created a structure for describing qualifications consisting of competences, skills and knowledge. This structure was created out of comparing several existing European policies like the EQF, the Key Competences, ECVET and is based on the German PAS 1093 for Competence Modelling (PAS 1093 2009).4

[4] For more information see the eCOTOOL website: http://www.ecompetence.eu.

9 Vision

Finally we would like to broaden the view on competence and quality development in LET and on competence standardization in the future. What are the main activities today for future development of competence standards?

ISO/IEC JTC1 SC36 is the unique official formal standardization body for IT-supported LET at the international level[5]. The scope of SC36 is defined as: "Standardization in the field of information technologies for learning, education, and training to support individuals, groups, or organisations, and to enable interoperability and reusability of resources and tools" (SC36 2006).

The first substantial standard that was developed, approved and published by SC36 in 2005 is the quality standard RFDQ (Reference Framework for the Description of Quality Approaches), ISO/IEC 19796-1 ("Information Technology — Learning, Education, and Training — Quality Management, Assurance and Metrics — Part 1: General Approach") (ISO/IEC 19796-1 2005). It is providing a generic Reference Process Model and the first quality standard of the multi-part ISO/IEC 19796 series. The quality standard has been implemented worldwide[6] and adopted as European Norm EN ISO/IEC 19796-1 by the European standardization Committee CEN TC 3537. Currently its adaptation and integration into a common approach

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[5] The abbreviation stands for: "International Organization for Standardization (ISO)/ International Electrotechnical Commission (IEC) Joint Technical Committee 1 (JTC1) - Information Technology - Subcommittee 36 (SC36) - Information Technology for Learning, Education, and Training (ITLET)". Members of SC36 are National Bodies (NB), i. e. national delegations of appointed experts, and Liaisons Organizations (LO) without voting rights (cf. http://www.iso.org/jtc1/sc36 and http://www.sc36.org).

[6] For a detailed description of the quality standard RFDQ and of the Adaptation Model IDEA for the Introduction of Quality Development cf. Stracke 2010a.

[7] The abbreviation stands for: "European Committee for Standardization (CEN) Technical Committee (TC) 353: Information and Communication Technologies for learning education and training". Members of CEN TC 353 are National Bodies (NB), i. e. national delegations of appointed experts, and Liaisons Organizations (LO) without voting rights (cf. http://www.cen.eu/isss/TC_353).

combining quality and competence development has been started (cf. Stracke 2011).

In 2008, SC36 has started its initiative for the development of a Conceptual Framework for Standards that will be accompanied by several Technical Frameworks for different use cases and target groups. The presented Generic Reference Model for Standards in the field of IT-supported LET (ITLET) is a helpful and supporting contribution on the long way towards such a generic ITLET framework.

In 2009, SC36 has started another standardization initiative for the development of a Generic Framework for Competence Standards acknowledging the increasing importance of competence modelling and competence models. It will be developed in three parts by starting with the first part on the general framework: The presented first General Reference Model for Competence Standards is a helpful and supporting contribution on the long way towards such a generic competence framework (cf. ISO/IEC 20006 2011). Finally the multi-part ISO/IEC 20006 series on competency will provide a competency model as a General Framework based on Asian, American and European specifications (cf. ISO/IEC 20006 2011).

Competence and quality development are crucial and indispensable for the long-term success of learning opportunities and in particular of vocational education and training: To reach an economical benefit through competence modelling and building, standards are offering a sustainable support. Their adaptation, implementation and integration can be regarded as one of the main tasks for the future.

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