



Professional Competence Standards: Guide to concepts and development

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Introduction

ComProCom (Communicating Professional Competence) is a Strategic Partnership project supported by Key Action 2 of the European Union's Erasmus+ programme (project number 2015-1-EL01-KA202-013960), September 2015 – August 2017. It is designed to improve the way that professional competence is described and represented, particularly in relation to complex work in higher-level occupations where outcome-based conceptions of competence have proved most challenging. Using the principles in an earlier version of this guide, the project developed and trialled professional competence standards in a different field in each of five countries. The partners and their fields are:

Die Berater

Vienna, Austria

www.dieberater.eu/

Business administration and entrepreneurship

Hellenic Agency for Local Development and Local Government (EETAA)

Athens, Greece

www.eetaa.gr

Lead partner; social entrepreneurship

Instytut Technologii Eksploatacji-PIB (ITeE-PIB)

Radom, Poland

www.itee.radom.pl

Background research; managers of innovation

Irish Institute of Training and Development (IITD)

Naas, Ireland

www.iitd.ie

Developer training; training and development

Sächsische Bildungsgesellschaft für Umweltschutz und Chemieberufe Dresden mbH (SBG)

Dresden, Germany

www.sbgdd.de

Chemical engineers

Stan Lester Developments (SLD)

Taunton, United Kingdom

devmts.org.uk

Intellectual lead, methodology (not developing/trialling).

The Guide

This guide provides an overview of concepts and methodological approaches for developing descriptions of competence for professions and occupations.

The first working version of the guide was developed to aid project partners in developing their frameworks. This final version is intended for a wider readership, including participants on the developer training course developed through ComProCom.

Following this introductory section, the guide is structured in three parts, plus an annexe containing extracts from actual frameworks.

Part 1 discusses **concepts, principles and approaches**. This includes short explanations of professional, educational and organisational approaches to competence; internal and external models; and different levels of description, from generic to task-based. An **appendix** provides a short description of five conceptual models relevant to describing competence.

Part 2 provides an overview of the **development process**. This is followed by an **appendix** of research and development methods and tools, such as semi-structured interviewing, critical incident analysis, task analysis, functional analysis, role mapping, repertory grid technique, DACUM, and Delphi technique.

Annexe 1 provides more detailed guidance on developing a framework for a profession or occupational field. **Annexe 2** is a short competence framework for standards developers. **Annexe 3** gives further examples that have been drawn or adapted from some of the standards and frameworks produced through ComProCom, as well as some similar standards from other sources.

ComProCom has produced several other resources for developers, including Powerpoint presentations and videos, as well as reports and academic papers. These can be found on the ComProCom web site, www.comprocom.eu, along with the frameworks developed through the project.

Glossary

The term ‘competence’ is discussed more fully in Part 1, as are a number of other concepts such as ‘competency’, ‘capability’ and distinctions between ‘internal’ and ‘external’ versions of competence. The following are related terms that are sometimes used in the text without further explanation.

When considering definitions in different languages or traditions, cognate terms (e.g. competence/competency/Kompetenz/compétence) may not have precisely the same meanings, particularly (but not only) where they have acquired specific technical interpretations or can be interpreted differently in different contexts in the country or countries whose language they are in.

Jobs, roles and occupations

The term ‘job’ and ‘role’ can be used interchangeably, but it is worth distinguishing between a job in a particular organisation and an occupational role. An occupational role is a generic job (e.g. ‘sales manager’), used for instance to inform training programmes (and competence frameworks), while actual jobs (e.g. regional sales manager for shoes in Firm X) will be more specific, may not include everything in the generic occupational role, and may include other things specific to the organisation. Various international classifications of occupations exist, e.g. ESCO (<https://ec.europa.eu/esco/>), ISCO-08 (<http://www.ilo.org/public/english/bureau/stat/isco/>) as well as national ones such as STEP-92 and SOC2010 (<http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/soc2010/index.html>). A caveat is needed when looking at these from the perspective of developing descriptions of competence, as they do not always reflect either the way that work roles are constructed in practice, or the way that professions have become organised in different countries.

Professional and occupational fields

A field of work is normally broader than any particular occupational role, so for instance the field or profession of law can contain many different roles, including defence barrister, clerk to the court, commercial conveyancer, examining magistrate, etc. This is discussed later in the context of whether competence descriptions are developed for a whole field rather than for a single role or set of distinct roles.

Profession

In English, ‘profession’ can either be used in an almost identical way to ‘occupation’, or more specifically to mean a higher-level occupation that is based on expert knowledge and judgement, and usually though not always has a code of practice and some kind of governance arrangement via an association or regulatory body. Most professions defined in this way represent fields rather than roles.

Beruf

The German term *Beruf* can be thought of as fitting somewhere between ‘occupation’ and ‘profession’ in English; *Berufe* are formally defined and legally designated, while not necessarily

implying the level of expertise, ethical commitment and independent governance normally associated with professions. A *Beruf* also has a defined training path that is recognised in law.

Reserved functions and titles

A reserved function is an activity that is legally restricted to qualified members of a particular occupation; this might include for instance auditing limited companies, representing clients in court, shoeing horses, installing and maintaining gas systems and appliances, and applying pesticides.

A reserved title is a professional or occupational title such as 'architect', 'dentist', or 'solicitor' that may only be used by a person who is qualified in the way defined in the relevant legislation. Reserved titles do not in themselves create any reserved functions, e.g. in the UK the areas of work normally carried out by an architect can all be carried out by practitioners other than architects.

Which occupations have reserved functions or titles, and the precise areas to which these apply, differ in different national systems.

Task

A task is an activity or set of activities with a beginning and an end that leads to some form of definable outcome, e.g.

- our task is to return the economy to a state of stability
- the tasks that must be carried out to change the wheel of a car are ...

Function

A function can be thought of as an area of responsibility that has a defined purpose. It does not need to have a beginning or an end, and often has a looser objective than a task, e.g.

- one of the functions of a barrister is to represent clients in court
- your function is to welcome visitors and direct them to the appropriate point.

Outcome

An outcome is the result of an action (whether intended or not). 'Outcome-based' in relation to competence refers to a concern with the results that are achieved, rather than with either the attributes or skills of the person, or the sequence of actions used to achieve the results.

In education, 'outcome' is sometimes used (incorrectly) to mean 'objective', i.e. something that is intended or required to be achieved, as opposed to an actual result.

Skill

The term 'skill' is used imprecisely in the English language to mean anything from a highly specific, often manual ability to a large, complex cluster of abilities. A useful way of thinking of a skill is that it reflects the use of both knowledge (even if tacit knowledge) and technique, requires judgement, and can be defined and taught. A skill is an attribute of the person that can be applied in context to produce competent activity.

Behaviour

A behaviour is an action or set of actions, particularly when these are a person's habitual or normal responses to a situation, encounter or event. Behaviours in this sense are often regarded as attributes of the person (and therefore 'internal' in the sense discussed in section 1.3), as opposed to activities - which are part of what is necessary to achieve an outcome or perform a role.

Proficiency

Proficiency has a similar meaning to competence. More specifically, it can mean the ability to perform a task or employ a skill effectively, or it can suggest a more fluent level of ability than is necessarily implied by competence e.g. the ability to work at commercial speed without mistakes, or as used in the Dreyfus novice-to-expert model (see appendix 1e).

Level

Level is used in several different ways in relation to competence:

- In relation to formal qualifications, e.g. as on the European Qualifications Framework, the 'Bologna' higher education framework, or a national framework. This generally relates to the complexity of the work involved, the depth of understanding needed, and so on.
- The level of an occupational or professional role, which may be related to a job grade or to a formal definition in a profession (e.g. the technician, incorporated and chartered levels used by the UK engineering bodies).

These two level 'scales' can often be related to one another although professional categories may have features of more than one qualification level, and job grades can be based on factors other than the complexity of the work (and therefore jobs of different levels of complexity may be graded the same). Both of these could be termed 'vertical' dimensions of level.

- The level of excellence demonstrated, or progress from beginner to advanced practitioner, often within a single professional or qualification level. This can be related to the novice-to-expert scale (see appendix 1e) or to different grades within a single qualification. It could be termed a 'horizontal' dimension of level. This is discussed further in section 2.7.
- The conceptual or logical level at which a description of competence applies, e.g. professions in general, a field, specific role or group of roles, or a task. This is discussed in section 1.5.

Part 1: Concepts, principles and approaches

This part of the guide introduces the idea of competence (section 1.1), and discusses professional, occupational and educational approaches to competence (1.2); ‘internal’ and ‘external’ models (1.3); and different types and levels of competence description (1.4 - 1.6). It then presents five models that have been used to conceptualise competence in occupational and professional contexts (appendix 1).

1.1 The idea of competence

Competence is **‘the ability to do something successfully or efficiently’**.

A simple and widely-accepted definition of competence is ‘the ability to do something successfully or efficiently’ (Oxford English Dictionary)¹. This emphasises that competence is (a) concerned with ‘ability to do’ rather than with the knowledge, skills or other attributes that underpin the ability, and (b) is about ability rather than ongoing performance.

Other useful definitions come from the International Standards Organisation, ‘the ability to apply knowledge and skills to achieve intended results’², and the definition of *Handlungskompetenz* (‘action competence’) given by the German Kultusministerkonferenz (KMK), ‘integrating knowledge, methods, social and personal skills and abilities in the capacity to act’³. While recognising the external nature of competence as above, these also bring in an ‘internal’ dimension in the sense of the attributes of the person that make competent action possible. These ‘internal’ and ‘external’ facets of competence are discussed in section 1.3. The European Qualifications Framework (EQF) document⁴ defines competence as “the proven ability to use knowledge, skills and personal, social and/or methodological abilities in work and study situations and in professional and personal development”, which is a slightly incomplete description as it doesn’t refer to what the knowledge, skills and abilities are used to do. Rather confusingly the EQF itself includes a column labelled ‘competence’ that is concerned with level of autonomy and responsibility rather than with the ability to act effectively.

In English, the term ‘competency’ is also used. Most dictionaries will define ‘competency’ identically to ‘competence’ and it can be used in this way, but in educational and organisational applications

¹ When making translations, it is worth noting that there are two other uses of the word ‘competence’ in English. One describes the remit or legal powers of an organisation or person, as in ‘the competent authority’ or ‘within the competence of the Board’; this will hopefully be supported by the person’s or organisation’s competence in the sense described above, but it may not be. The other, used in very specific circumstances, refers to a person’s income from a pension or estate.

² International Standards Organisation (ISO) (2012) *International standard ISO/IEC 17024: Conformity assessment – general requirements for bodies operating certification of persons*. Geneva: ISO (page 2).

³ Kultusministerkonferenz (2004) *Bildungsstandards der Kultusministerkonferenz*. Munchen: Luchterhand. A discussion in English is provided in Gehmlich, V. (2009) ‘Kompetenz’ and ‘Beruf’ in the context of the proposed German Qualifications Framework for Lifelong Learning’, *Journal of European Industrial Training* vol 33 no. 8/9, pp. 736-754.

⁴ European Communities (2008) *The European Qualifications Framework for Lifelong Learning*. Brussels: Office for Official Publications of the European Communities.

'competency' is also often used to refer to the attributes of the person, or what here is referred to as 'internal' competence, as opposed to 'ability to do'.

'Competence' or 'competency'?
These terms can be used identically, or to mean slightly different things.

'Competence' as a concept is independent of qualifications or licensing, and while descriptions of competence can be developed to aid assessment and certification, they do not need to be used for this. Certification can attest to or confirm competence in the areas covered by the certificate; it does not 'confer' competence (other than possibly in the legal sense as in footnote 1).

1.2 Educational, organisational and professional perspectives

For the purposes under discussion here, it is worth distinguishing between perspectives on competence that are primarily educational, professional or occupational, and organisational. Briefly:

- An educational perspective will generally be concerned with what a person can do at the end of a defined educational process, to a standard that represents a reasonable expectation at that point. Competence in an educational context is sometimes used as a synonym for 'skills', but more properly it concerns the whole range of abilities relevant to the aims of the programme or curriculum (and it is not limited to work-related competence). The validation of competence from this perspective normally sits with an educational institution or agency, or an examining or awarding organisation (although the framework itself might be produced by a professional body or a partnership of interests, and used to aid course design and validation).
- A professional or occupational perspective will aim to consider what it is that the person needs to be able to do in order to act effectively in the profession or occupation. It may be concerned with the minimum standard for working in the occupation, a level appropriate for independent practice, or sometimes (usually in addition) more advanced practice or ongoing development. From this perspective a number of different approaches are possible, some of which are narrow (relate to tasks and functions) and some broader (relate to a profession, occupational field or a *Beruf*). Validation normally resides in a community of practice by way of a body or consortium representing the industry, profession or occupational sector.
- An organisational perspective will be concerned with what is needed in the context of a particular organisation, and will normally be influenced by the organisation's goals, values and operating context. It may be concerned with one or more of baseline standards and behaviours, with aspirational ones, or with specific factors for improving performance. A major difference between organisational and professional frameworks is that the former are rarely used for formal assessment or certification, and therefore tend to be geared primarily to development; though they may be linked to performance management and internal progression. They are therefore often written in a way that would be questionable if used for certification, and may reflect actions, behaviours or attributes that are considered desirable in the particular organisation, but that could be too context-specific or even discriminatory to apply across a profession or occupation. Validation generally sits with the individual organisation and in particular its human resources department.

Different approaches include:

Germany – embedded in training specifications developed through social partnership

Britain – separate occupational standards based on functional competence

France – educationally-derived standards applied in occupational contexts.

In Europe, there has been a move towards occupationally-oriented conceptions of competence informing vocational education and training (VET). However, national VET systems vary in the approaches to competence that they use. The British model has been occupationally-based, with standards that are independent of curricula, training courses or qualification specifications, although recent changes to apprenticeships are leading to standards that are developed directly for programmes. This approach has influenced

developments in some other countries (including Poland and Greece) via the work of Cedefop and the European Training Foundation. In Germany and Austria, the established use of social partnerships to develop training specifications have led to competence standards being embedded in the details of training programmes; these are however still occupationally-oriented. In Ireland both occupationally- and educationally-oriented models are found in qualification specifications, but there is no separate programme of occupational standards development as in the UK. A more educationally-oriented model is found in the French system^{5,6}.

This guide focuses on occupational and professional perspectives, while recognising that any descriptions of professional competence will almost inevitably be used to inform education and training processes and may be ‘borrowed’ by organisations to inform their more specific frameworks.

1.3 Internal and external conceptualisations of competence

Approaches to competence can be classified as ‘internal’, describing attributes of the person (e.g. knowledge, skills, attitudes and behaviours, sometimes called ‘competencies’), and ‘external’, relating to what it is that the person is expected to be able to achieve in practice (sometimes called ‘competences’ or standards)⁷. A summary of major traditions is given in Table 1.3 overleaf.

External (‘competence’) – the capacity to meet a social (e.g. work) expectation

Internal (‘competency’) – the attributes that underpin competent action.

⁵ For a more detailed discussion see Religa, J. and Lester, S. (2016) *Models and uses of competence in six EU countries’ VET systems*, publication of the project ComProCom (<http://www.comprocom.eu/component/phocadownload/category/2-intellectual-outputs?download=4:models-and-uses-of-competence-in-six-eu-countries-vet-systems-cross-partner-report-on-the-reviews-of-the-current-situation-february-2016>).

⁶ Comparative discussions in the context of different European countries include Winterton, J. (2009) ‘Competence across Europe: highest common factor or lowest common denominator’, *Journal of European Industrial Training* vol 33 no. 8/9, pp. 681-700; Brockmann, M., Clarke, L. and Winch, C. (2009) ‘Competence and competency in the EQF and in European VET systems’, *Journal of European Industrial Training* vol 33 no. 8/9, pp. 787-799; and Lester, S. and Religa, J. (2017) ‘Competence and occupational standards: observations from six European countries’, *Education and Training* vol. 59 no. 2, pp. 201-214.

⁷ See Mansfield, B. (1989) ‘Competence and standards’ in Burke, J. W. (ed.) *Competency based education and training*. Lewes: Falmer Press; and Eraut, M. (1998) ‘Concepts of Competence’, *Journal of Interprofessional Care* vol. 12 no. 2, pp. 127-139.

Table 1.3 Approaches to competence

Approach	Primary source(s) in English	Main development methodologies (see appendix 2)	Common formats
Internal, individual, attribute-based ('competency')			
Technocratic or syllabus-led		Derived from knowledge-base or course syllabus	Tasks expressed as application of knowledge
Instructional design	Draws on Bloom <i>et al</i> taxonomy of educational objectives	Job analysis, learning needs analysis	Table of (tasks with associated) knowledge, skills and (often) attitudes
Behavioural	McBer organisation and associated authors e.g. McClelland, Spencer and Spencer, Boyatzis, Klemp.	Critical incident analysis and variants, repertory grid technique	Behaviours, approaches and attributes associated with effective job performance
External, social, activity-based ('competence')			
Task-based	Work study e.g. Gilbreth, UK youth training literature	Task analysis, work study, DACUM	Descriptions of tasks and their component parts
Role-based	Mansfield and associated authors	Functional analysis	Descriptions of job functions and detailed activities within them
Profession/field-based	Core capability (Lester), occupational capacity (Winch)	Analysis of activities across profession, role mapping	Descriptions of activities that enable effectiveness across a profession

Adapted from Lester (2014)⁸.

External approaches reflect the 'ability to do' dictionary definition of competence, and typically define what is expected of a person working at fully-qualified level in the profession or occupation. Their main advantage is that they are concerned directly with the ability to act effectively, and avoid making assumptions about the attributes of the person or how they have become competent. They are therefore ideally suited to assessments (summative, formative or self-assessment) of ability to practise. Their disadvantage is that they leave what is needed to get to that point as something of a black box. It is also difficult to capture less tangible aspects of competence using task- and role-based approaches, and they can be too focused on individual functions to capture higher-level work adequately⁹. Profession- or field-based

External descriptions of competence should state what a competent person needs to be able to do.

This is not the same as describing skills or behaviours, although the difference can be subtle.

⁸ Lester, S. (2014) 'Professional standards, competence and capability', *Higher Education, Skills and Work-based Learning* vol. 4 no. 1, pp. 31-43. devmts.org.uk/capstds.pdf

⁹ There are discussions relevant to this in Carroll, B., Levy, L. and Richmond, D. (2008) "Leadership as practice: challenging the competency paradigm", *Leadership* 4 (4): 363-379, and Sandberg, J. (2009) "Understanding of work: the basis of competence development" in Velde, C. (ed.) *International perspectives on competence in the workplace*, Dordrecht: Springer.

approaches are generally more holistic and give more attention to what the person needs to be able to do to act as an effective practitioner across a broad range of contexts (see sections 1.5 and 1.6).

Internal approaches are more geared to development. Their drawback in professional contexts is that there is an additional stage between ‘having competencies’ and ‘being competent’ in the sense of having professional capability or occupational capacity, i.e. using the competencies effectively in real-world situations. In assessment situations they lead arguably to a focus on demonstration of attributes and abilities rather than on the overall performance, and nowadays they are therefore more widely used in educational and organisational settings (and sometimes for ongoing professional development) than as tools for professional or occupational certification and licensing.

Internal models that include attitudes, qualities and behaviours can also build in prejudicial assumptions about the type of person needed in occupational roles, which can reinforce existing cultures and ways of working, and inhibit workforce diversity. This is common where a list of attributes is drawn up from studying people who are known to be effective in relevant jobs, particularly where this is done without questioning (a) whether all the attributes and behaviours are essential to competent performance, and (b) whether alternative ones not demonstrated by the sample population can contribute equally to being effective in practice.

There is a compelling argument for professional/occupational (rather than educational or organisational) competence being described via a primarily external model. Internal aspects of competence can then be addressed if needed, once it has been established what the competent person needs to be able to do. This Guide is based principally on an external perspective.

1.4 Descriptions of competence

Descriptions of competence need to be focused; clearly written; precise; realistic; and at an appropriate level of detail for what they are aiming to do.

Descriptions of competence – referred to by various names including occupational or professional standards, competence frameworks or profiles, occupational profiles, or practising standards – can be produced that apply to specific tasks, occupational or organisational roles and functions, whole professions or occupational fields, and even to working generically at a particular level. More about the types of description appropriate for each level of application is given in the next section. Regardless of level, these descriptions need to be:

- clear about what they are designed to apply to and be used for
- clearly and precisely worded, and easy to understand by the people they are designed for
- clear about what the competent person needs to be able to do
- constructed at an appropriate level of detail – what is appropriate will depend on the level of application (see section 1.5)
- realistic, reflecting achievable standards of practice, not vague aspirations
- able to be demonstrated in practice.

They also need to avoid mixing up different logical categories of information, for instance switching between actions, attributes and areas of knowledge in the same section.

An important point to note is that competence descriptions are a rationalised and simplified way of describing practice, when real-life practice is more messy and variable. There is therefore an inherent tension between competence descriptions and the practice that they refer to. Making descriptions too precise or 'measurable' can make them simpler to use as assessment tools, but also less useful and less valid.

1.5 Levels of competence description

Competence can be described at various levels of detail and specificity, according to need and application. As an example, at one end of a spectrum it is possible to describe what is involved in acting effectively as a professional in a general sense, or working at a particular qualification level. A description of this type might refer to things such as:

- acting ethically and managing ethical dilemmas and value-conflicts
- balancing the interests of different parties and those of society more generally
- providing independent opinions, interpretations and decisions informed by evidence, reasoning and informed judgement
- assessing the risks and consequences of different courses of action
- managing and organising work effectively
- keeping clients and colleagues informed of progress and expectations
- maintaining a level of knowledge and competence adequate for the work being undertaken
- ensuring that adequate help is secured when personal expertise or capacity is insufficient and so on.

This kind of description could be applied equally to medical practitioners, engineers, teachers, lawyers, business managers, social workers and town planners, to give only a few examples. It would have to be interpreted into the relevant contexts, but would not need to be rewritten for each profession (although relevant examples of how it would apply could be helpful). Typically, descriptions of this kind are concise and take up no more than 3-5 pages.

Four different levels of description are discussed here:

- Generic
- Field/Profession
- Role
- Task.

Further along the spectrum, a description can be produced for a profession or occupational field that is designed to apply to all members of the profession or occupation regardless of the particular jobs, roles or work contexts they are involved in. This is particularly relevant to professions that need a common standard for certification or licensing, or to provide a general set of standards for practice or as a framework to aid development. This type of description will tend to follow 'centre-outwards' principles, discussed in section 1.6, i.e. it is concerned with acting

effectively as a member of the profession or occupation, not with defining different roles. In some professions, a decision will be needed about how specific this needs to be (e.g. engineering v. civil engineering or electronic engineering, law v. barrister, solicitor or legal executive). Within the

profession or occupation, this kind of description should be capable of being used in a wide range of different contexts and for people in different types of role, without resorting to a ‘core and options’ structure. Typically, it will take up no more than 5-12 pages.

Table 1.5 *Levels of competence description*

<i>Essential approach</i>	Generic	Field (Centre-outwards)	Role (Bounded-occupation)	Task
<i>Describes</i>	What does ‘doing professional work’ involve?	What is involved in working in field ‘X’?	What is involved in role or function ‘Y’?	What processes are necessary to perform task ‘Z’?
<i>Applicability</i>	Professional work	Whole professions, occupational fields	Occupational roles and functions	Specific tasks
<i>Example</i>	Liberal professions	Law	Commercial conveyancer	Registering title
<i>Lifespan limited by</i>	Societal conceptions of professional work and ethics	Macro-organisation of field, conceptions of practice, technological paradigms	Practices, technologies, legislation, how roles are defined	Practices, techniques, procedures, applications, legislation
<i>Typical length</i>	2-5pp	5-12pp	15-100pp for an occupation	Varies depending on breadth of task and level of detail
<i>Room for contextual interpretation</i>	Open	Open within overall field	Within limited range of contexts	Minimal
<i>Possible subsets</i>	Different levels	Different levels within the field	Different roles, contexts and levels	Different contexts

Adapted from Lester (2017)¹⁰.

Coming to the more specific half of the spectrum, more detailed descriptions can also be produced for occupational roles, either generally or in specific organisations. These might distinguish for instance research engineers, production engineers, maintenance engineers, engineering managers and consultants, and so on. These descriptions tend to be more detailed, and often a ‘core and options’ structure is used so that relevant parts of the framework can be selected as relevant to role. This has been referred to as a ‘bounded occupation’ approach (see section 1.6), as it aims to describe what is needed within the boundaries of given roles and functions. As a rule, this approach should not be used for entire professions or occupational fields, because it would produce over-detailed, clumsy descriptions that are poor reflections of some roles and contexts. Typically, this kind of description will take up 50+ pages to describe a single role, although shorter role-based descriptions are possible.

Finally, it is also possible to produce descriptions that relate to performing tasks. These tend to apply in specific circumstances, for instance to provide clear instructions for beginners, where there

¹⁰ Lester, S. (2017) ‘ComProCom: applying descriptions of competence to professional work’, in press (draft at devmts.org.uk/compprofwork.pdf)

are exact procedures that need to be followed, or where the objective is to embed particular ways of doing things. It is arguably possible to describe whole work roles via a set of task descriptions, but only for very basic activities where there is little discretion in how they are carried out. Task descriptions can however be used in higher-level occupations for very specific activities, such as safety-critical or some clinical or diagnostic procedures.

An important point to note is that these levels of description are independent of each other, rather than being successive levels of detail. Certainly some role descriptions will draw on field-wide ones, and field-level descriptions on general ones, but each level of description should be capable of being applied directly to all the fields, roles and contexts that it is intended for.

1.6 Bounded-occupation and centre-outwards approaches

Bounded-occupation – describes a single occupational role or a group of related roles

Centre-outwards – describes a profession or occupational field, at a level that applies to all practitioners

The majority of professional and occupational applications are likely to need approaches that tend towards the middle part of the spectrum discussed above, either to describe activities central to a profession or occupational field, or to focus more specifically on key roles. The bounded-occupation and centre-outwards approaches¹¹ are therefore described below in more detail.

The **bounded-occupation** perspective started to become widely used from the early 1990s onwards, and is the one generally reflected in UK occupational standards and in approaches that refer to ISCO-type occupational descriptions such as the Mansfield-Schmidt model¹². It is sometimes also used for licensing for legally reserved activities, where a reasonably detailed description is needed of a function that can only be performed by an appropriately-qualified person.

Bounded-occupation models are concerned with describing competence for occupational roles, which are typically defined in terms of functions, with standards applying to each function. Commonly this results in a set of core standards for the occupation, plus different standards for different roles and specialisms (sometimes called a 'core and options' or 'core and specialisms' structure).

The standards are designed principally to provide confidence in the ability to work specifically in the role concerned, with limited inference about the ability to do other jobs or to cope with major changes in approach or technology. Traditionally, a change in role within the same broad occupational area means meeting a different set of competence standards; the standards also need to be updated fairly frequently to reflect changes in conditions, approaches and techniques. Assessment will normally look for ability to do the job to an acceptable standard.

¹¹ The main source on this is Lester, S. (2014) 'Professional versus occupational models of work competence', *Research in Post-compulsory Education* vol. 19 no. 3, pp. 276-286. devmts.org.uk/profvocc.pdf

¹² Mansfield, B. and Schmidt, H. (2001) *Linking VET standards and employment requirements* Torino, European Training Foundation.

A limitation of this model is that it is fairly role- and context-specific. If it is applied to a whole profession or broad occupational field, the results are usually quite clumsy and lengthy (one current example runs to over 500 pages); at least parts of the framework will need frequent revision; and it will tend to reflect some roles and contexts quite poorly, as well as being difficult to apply to new and emerging roles.

The **centre-outwards** approach started to appear in the early 2000s, driven mainly by professions that needed a common standard to sign off practitioners as fit to practise regardless of role or specialism. It is concerned with the capacity needed to act effectively as a member of the profession or occupation, recognising that the roles and functions that practitioners undertake can vary and will also evolve with their careers and as society and technology develop.

It typically conceptualises the profession or field in terms of a single set of ethics, principles and key standards, emphasising activities and requirements that apply across its work rather than attempting to map detailed roles and functions (a 'universal' model, i.e. all the standards apply to all practitioners). If it is important to capture differences in level of work – for instance for the technician, associate and full practitioner grades used in engineering – this can be done by using different 'subsets' of the standards, following a common structure but differing at a detailed level.

A centre-outwards model can include 'subset' standards for different levels of work.

In a centre-outwards model, the standards are designed to provide confidence not only in practitioners' ability to act competently in specific situations, but to work effectively – currently and into the future – within the field or profession. Where the standards are used for assessment, this will normally draw partly on the practitioner's ability to work effectively in his or her current role, but it will treat this as an example of working in the wider profession or occupation. Assessment will typically also look for holistic evidence of the ability to understand situations in depth, apply ethical principles to complex situations, and make sound professional judgements that reflect a deep understanding of underlying principles.

A limitation of this model is that It may not provide enough detail to guarantee ability to perform specific, critical functions. Hybrid approaches are also possible, so that a predominantly centre-outwards model can include more detail on critical functions, or a bounded-occupation model incorporate a core that has elements of the centre-outwards model.

Box 1 'Second-generation' competence models in UK professions

Formalised professions have traditionally been concerned with the competence of their members, although this was often assumed from their education, training and experience. From the 1980s onwards there has been a gradual adoption of competence or practising standards; initially there was a tendency either simply to translate the profession's syllabus into areas of application, or to use an 'internal' behavioural or knowledge-skills-attitudes model. When National Occupational Standards (NOS) were introduced in the UK, some professions experimented with (or developed their own versions of) them; this coincided with a trend to have more rigorous processes for sign-off as fit to practise, in some cases associated with more diverse entry-routes. However, while the 'external' nature of NOS tended to find favour with professions, their tendency to focus on closely-

defined roles and their level of detail and prescriptiveness was less popular. Since the mid-2000s there has been a trend towards (a) an external rather than internal approach to competence, and (b) a more concise but sophisticated way of describing what practitioners need to be able to do.

There is no single model or developmental methodology for these 'second-generation' professional frameworks, but they tend to share the following characteristics:

- External or activity-based – concerned with what practitioners need to be able to do
- Centre-outwards – focusing on matters central to the profession, rather than all the possible roles that its members could perform
- Universal – equally applicable to different specialisms, roles and contexts, generally without needing a 'core and specialist' structure (though sometimes with subsets for different levels)
- Capability-oriented – particularly in emphasising the application of professional judgement and ethics
- Concise – most frameworks take up no more than a dozen pages.

Frameworks are organised in different ways, and some include more reference than is usual for 'external' models to theoretical principles or transversal abilities. A centre-outwards 'core capability' approach (appendix 1d) is common, as is to some extent the use of an explicit threshold standard or graded scale (appendix 1e) when the standards are used for assessment.

Examples of second-generation models can be found in the professional standards for law, heritage conservation and landscape architecture, and in a slightly different form in the generic specifications for chartered/ incorporated/technician engineer (the 'UK Spec') and chartered environmentalist.

Appendix 1: models of competence

1A) The Mansfield-Mathews job competence model

David Mathews and Bob Mansfield are researchers and consultants in the UK VET system who were involved in the development of concepts and methodologies underpinning UK occupational standards and competence-based qualifications. Their model was developed from a European Social Fund project in the 1980s as an alternative to task-based and behavioural approaches to competence, and provides a simple description of the components of job or functional competence. Several versions have been published since the original three-part conception¹³: the following is adapted from page 50 of Mitchell and Mansfield's book¹⁴.

The Job Competence Model

- Technical expectations: achieving the expectations of the work role which characterises the occupation.
- Managing contingencies: recognising and resolving potential and actual breakdowns in processes and procedures.
- Managing different work activities: achieving balance and co-ordinating a number of different and potentially conflicting activities to meet work aims and goals.
- Managing the interface with the work environment: working effectively with natural constraints, quality measures, the work organisation, and other people.

The authors comment that the importance of the last three components will vary with different job roles, contexts and levels of responsibility, so that in a low-level role the emphasis could be mainly on working under supervision to get the job done (and simply reporting things that don't go to plan), while at higher levels the last three aspects of the model will feature more strongly.

Comments

The Job Competence Model provides a starting-point for a functionally-based, external, bounded-occupation approach to competence. It was developed in the context of training for basic and semi-skilled occupations, and has been criticised for underplaying the social, ethical and intellectual aspects of high-level roles. Many UK occupational standards – via which some of the criticisms of the model are focussed – have also tended to emphasise technical or task expectations more than the other aspects of the model.

¹³ Mansfield, B. and Mathews, D. (1985). *Job Competence: A Model for Use in Vocational Education and Training*. Blagdon: Further Education Staff College (out of print).

¹⁴ Mitchell, L. and Mansfield, B. (1996). *Towards a competent workforce*. Aldershot: Gower (chapter 4).

1B) Winch's 'epistemic ascent' model

Christopher Winch is an educational philosopher at King's College London, who writes among other things on vocational education and professional knowledge. His model is essentially a cumulative one, i.e. its stages build on one another from basic understanding of concepts to the ability to act with professional judgement and effectiveness in the field. It offers a wider conception of competence than that used in the UK occupational standards model, and draws on German traditions as well as British ones. The following is a summary based on his 2014 chapter in Young and Muller¹⁵.

Christopher Winch's epistemic ascent model

Formal knowledge

Understanding relevant propositions (concepts, facts, theories)

Making connections between key propositions

Knowing how to acquire, test and validate knowledge in the particular field.

Practical abilities

Technique: a procedure or set of procedures for performing a task.

Skill (*Fertigkeiten*): ability to apply technique and carry out tasks in contextually relevant conditions. Involves the use of personal attributes and judgements as well as technique.

Transversal abilities (*Fähigkeiten*): planning, co-ordination, control, communication, evaluation etc. – abilities that allow complex outcomes to be achieved. These are not necessarily generic abilities; they need to be related to the field in which they are to be used.

Project management: combining skills and transversal abilities to put into effect long-term sequences of action to achieve complex goals. As above, this can be partly context-specific.

Occupational capacity (*berufliche Handlungsfähigkeit*)

Occupationally-oriented: involves the integration of skill, knowledge, transversal abilities, virtues and attitudes, and project management, in the overall ability to achieve the aims of the occupation.

Externally-oriented: the civic and ethical dimension, including awareness of the 'goods and bads' relating to the occupation, and commitment to practise appropriately.

Professional judgement

The ability to put specialised knowledge into effect in professional judgements in work situations, involving technical, ethical and political considerations.

¹⁵ Winch, C. (2014) 'Know-how and knowledge in the professional curriculum', in M. Young and J. Muller (eds), *Knowledge, expertise and the professions*. Abingdon: Routledge. See also Winch, C. (2015) 'Towards a framework for professional curriculum design', *Journal of Education and Work* 28 (2), pp. 165-186, and Winch, C. (2013) 'Three different conceptions of know-how and their relevance to professional and vocational education', *Journal of Philosophy of Education* 47 (2), 281-298.

Comments

This model provides a conception that allows for progression in level of understanding, as well as the development of techniques, skills, transversal abilities and project management which allow progressively more complex activities to be undertaken. It also bridges between internal and external versions of competence. While knowledge, techniques and skills can be regarded as internal attributes, transversal abilities and project management can be expressed internally or externally, while occupational capacity and professional judgement are essentially external aspects of competence.

1C) Stephenson's 'capable practitioner'

John Stephenson was director of the Higher Education for Capability project in the UK and advocated a wider notion of ability than the approach to competence used in the UK VET system. The idea of 'capability' is less normative than that of competence, and has never been expressed in a single model. Drawing on Stephenson and colleagues' work^{16,17}, the following are key facets of capability that go beyond technical 'ability to do', and have been drawn on in developing professional standards¹⁸:

Attributes of the capable professional

- The ability to make effective decisions in complex situations. This suggests being able to explore ways forward and make judgements where there are value-conflicts and competing interests, looking for solutions that go beyond simple compromise and are systemically sound.
- Ethical literacy. This goes beyond following written codes to being able to 'read' and interpret complex situations in ethical terms, making judgements that demonstrate practical wisdom and ethics.
- Reflective practice. This includes reflecting critically on practice and applying the resulting learning back into practice.
- Evidence-informed practice. This involves seeking out the available evidence before making decisions, interpreting it intelligently and in context, and making effective use of it, while also being able to work with uncertainty and ambiguity.
- Practical, but epistemologically-developed, thinking. Well-developed capability suggests having reached a point of epistemic maturity which, rather than on the one hand looking for 'right answers' or on the other being satisfied with purely personal perspectives, is concerned with making best approximations according to the interpretations that are most complete and compelling ('maps that work').
- Intelligent use of intuition. This includes accepting one's ability to short-circuit logical processes in synthesising and interpreting information, and exploring (rather than either dismissing or simply following) feelings that are not immediately supported by conscious thought processes.
- Self-efficacy. Self-efficacy is essentially belief in one's ability to act effectively, along with the propensity to take action in the expectation of being able to achieve the desired outcome.

¹⁶ Stephenson, J. (1998) 'The concept of capability and its importance in higher education' in J. Stephenson and M. Yorke (eds), *Capability and Quality in Higher Education*. London: Kogan Page.
http://www.hear.ac.uk/assets/Documents/resources/heca/heca_cq_01.pdf

¹⁷ O'Reilly, D., Cunningham, L. and Lester, S. (1999) *Developing the Capable Practitioner*. London: Routledge.

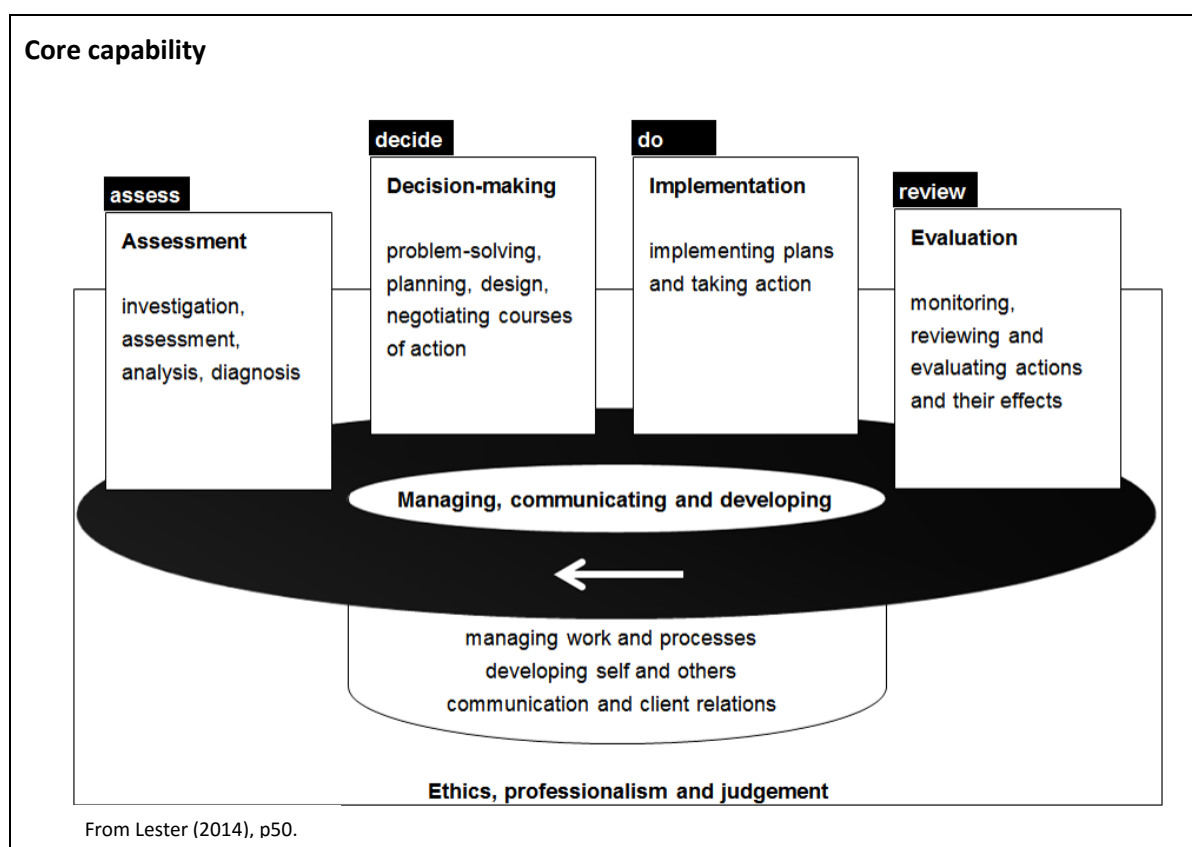
¹⁸ Lester, S. (2014) 'Professional standards, competence and capability', *Higher Education, Skills and Work-based Learning* 4 (1), pp31-43.

Comments

The idea of capability is essentially internal, but concerns broad attributes that are applied in practice rather than detailed inputs and behaviours. It suggests a much less prescriptive way of considering 'occupational capacity' than is usual in most versions of competence, something that can be both a strength and a limitation; one author has suggested that capability can only be seen 'in its reflection'¹⁹, i.e. it cannot be defined or assessed directly.

1D) Lester's core capability model

Stan Lester is a consultant and systems developer working principally with UK professional bodies. His research on professional (competence) standards^{20,21} examined how professions are moving away from both behavioural and purely functional versions of competence towards approaches that are as much informed by capability and ethical literacy. The 'core capability' model takes a centre-outwards perspective and aims to reflect the idea of capability relevant to a profession rather than functional competence for an occupational role, while expressing it in external or output terms. A key attribute of this model is that allows functional aspects of competence to be underpinned by 'softer' and more intellectual ones.



¹⁹ Brown, R B and McCartney, S. (1999) 'Multiple mirrors: reflecting on reflections' in O'Reilly *et al* (17 above).

²⁰ Lester, S. (2014) 'Professional competence standards and frameworks in the UK', *Assessment and Evaluation in Higher Education* vol. 39 no. 1, pp. 38-52. devmts.org.uk/compstds.pdf

²¹ Lester, S. (2014) 'Professional versus occupational models of work competence', *Research in Post-compulsory Education* vol. 19 no. 3, pp. 276-286. devmts.org.uk/profvoccc.pdf

Comments

This model has been developed in the context of standards for professional practice and for granting qualified or licensed status. It is therefore principally geared to expectations of practice rather than to development, and can be related to the occupational capacity and professional judgement stages of Winch's model – although it can also reflect transversal abilities and project management.

As an organising model, it was noted that while some professions and fields of work have used a structure close to the one above, others organise their standards around different fields that cut across the four areas of the cycle – i.e. several fields are described each of which includes relevant aspects of assessing, deciding, doing and reviewing.

1E) The Dreyfus novice-to-expert model

Hubert and Stuart Dreyfus are respectively a philosopher and a computer scientist, both at the University of California, Berkeley. Their model²² was developed from research into the acquisition of skills and abilities in a variety of situations, and it has been used as a tool for tracking progress and defining thresholds for assessment various professions including nursing, medicine, law and heritage conservation. It can be applied to fairly specific activities as well as to whole professional fields. An example of a table based on the Dreyfus model is given in Annexe 3.

A summary of the five stages in the Dreyfus skills acquisition model

Novice Has an incomplete understanding, approaches tasks mechanistically and needs supervision to complete them.

Advanced Beginner Has a working understanding, tends to see actions as a series of steps, can complete simpler tasks without supervision.

Competent Has a good working and background understanding, sees actions at least partly in context, able to complete work independently to a standard that is acceptable though it may lack refinement.

Proficient Has a deep understanding, sees actions holistically, can achieve a high standard routinely.

Expert Has an authoritative or deep holistic understanding, deals with routine matters intuitively, able to go beyond existing interpretations, achieves excellence with ease.

Comments

The Dreyfus model can underplay the importance of theory in expert practice, and can also give the impression that 'expert' is a fixed and final point of development – e.g. that 'experts' do not need to review and further develop their understanding. However, the model has proved particularly useful for tracking progress and for setting thresholds for assessment. It offers a more holistic and

²² See Chapter 1 in Dreyfus, H. and Dreyfus, S. (1986) *Mind over Machine: the power of human intuition and expertise in the age of the computer*. Oxford: Basil Blackwell. There are also two adapted versions of the Dreyfus model at devmts.org.uk/dreyfus.pdf

practice-oriented interpretation than models based on Bloom's taxonomy, which may be preferred for tracking progress or setting levels of achievement in educational contexts.

The five levels of the Dreyfus model don't equate to levels of work or qualification levels – they are progression points within whatever level that they are applied to.

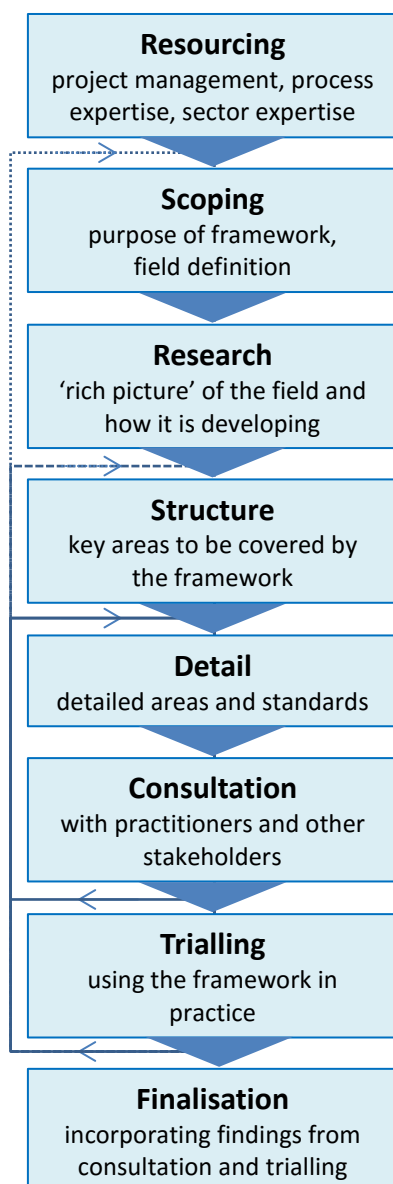
Part 2: Developing competence standards

This part of the guide provides a summary of principles involved in developing a competence framework or set of practising standards. It assumes a professional or occupational orientation and to an extent an external approach to competence, without advocating a particular method. More specific guidance for developing external, centre-outwards standards is given in Annexe 1.

This section assumes basic familiarity with the principles discussed in Part 1. It also refers to various research and/or development methods that are outlined in appendix 2.

2.1 The overall process

Figure 2.1.
The development process.



The overall process for developing a competence framework or set of practising standards normally consists of a scoping and research stage, followed by the development phase, and finally consultation to gather feedback from intended users and other stakeholders and trialling to check that it works in practice. Consultation and trialling will normally lead to some changes in detail, although sometimes they indicate that more fundamental revisiting is required such as returning to the scoping or structure stages. This process is summarised in figure 2.1.

The above stages can be seen as a first cycle of activity, with further review cycles at suitable intervals. The length of time between reviews will depend on the purpose of the framework, how much it is used, and its resilience (see table 1.5). Some detailed types of framework will need to be reviewed annually or every two years, while for a more resilient field-level, centre-outwards framework a review once a decade may be sufficient. Most frameworks will however benefit from an outline review after one or two years to iron out any problems at the detailed level, and a more major review after the first five years or so of operation, with the option to return to the structure and scope of the framework.

Sections 2.2 to 2.8 summarise each of these steps in the process; there is also a section on defining level of performance and mapping to qualification levels that may or may not be relevant, depending on the purpose of the framework.

2.2 Resourcing and project planning

An important first step in the development process is making sure it is adequately resourced and planned. This includes having a sufficient range of expertise available, enough time to complete all the stages of the process in sufficient depth, and access to the occupation, profession or industry to carry out consultation and trialling. A typical minimum for the overall process is nine months. This can sometimes be shortened if the project is tightly managed, experts are easily accessible, the organisation already has thorough intelligence about the field, and processes are already in place that will support consultation and trialling.

Two important components of resourcing are a competent project manager and a facilitator/editor who is experienced in the processes being used. These may be the same person, but need not be: for instance the project manager can be an in-house role while the facilitator can be an external consultant. A further critical component is a working group of experts drawn from the relevant field and possibly from closely related sources such as associated educational institutions or training providers, who will provide the detailed input into the process. The main criteria for experts is that they have thorough, up-to-date knowledge of the field concerned, and in the case of extensive or complex fields are drawn from different parts of it (see the list of points under ‘consultation’ in section 2.8). Sometimes it can be useful to include contributors from outside the field, such as from an adjacent profession or occupation that has gone through the same process. However, avoid having the working group dominated by political interests: if representation from different bodies is needed, this could be in the form of a steering or advisory group. Part of the planning process involves letting the working group know when in the process their inputs will be needed.

Developing a competence framework or set of professional standards normally requires a project manager, facilitator/editor, and a group of occupational experts.

2.3 Scoping

Scoping includes defining:

- the purpose of the framework
- the field it covers
- one or multiple levels?

This stage defines the purpose to be met by developing the framework, as well as at an outline level the field that it will cover. The framework may also be defined or constrained by requirements relating to national VET systems, employment legislation, or the regulations for individual professions, and part of the scoping stage will involve identifying the implications of these requirements.

Competence frameworks can have a range of purposes. These can include defining what is meant by ‘competent practice’ as part of the standards and (self-)regulatory framework of a profession or occupation; providing the assessment criteria for accreditation, licensing or certification; raising the standard of practice or competitiveness within a field; informing the content of education and training programmes; and providing a structure to aid ongoing development. These will start to shape the kind of framework that is needed, for instance whether it is wholly occupationally-oriented and external in nature; external but with some internal elements, such as a section on underlying principles and theory or appropriate behaviours; or only an outline description of activities, with internal elements making up the detail of the framework.

Before starting on the next, research-based, phase, it is important to have a working definition of the field that is being covered. This may become modified as the research is carried out, but it will be difficult to focus the research unless the field has already been defined conceptually. Developing this definition involves making a conscious decision about what is excluded as well as included, as in table 2.3. This is important as, as well as focussing the research (and later the development process), it enables questions about coverage to be addressed as indicated in the last column of the table.

Table 2.3 *Scoping the field: example*

Field definition	Within scope	Out of scope	Questions
Training and development	All work-related training and development activity	Ancillary roles such as administrators and clerical staff	VET tutors, return-to-work providers; policy, research and development
Training and development professionals	People who identify as training and development practitioners	As above + people in other roles who do some training	As above; trainers in specific skill areas e.g. operator training
Trainers in work organisations	Trainers working for general employing organisations	As above + VET tutors, return-to-work providers; policy, research and development	Training managers, designers and strategists; trainers in specific skill areas e.g. operator training; self-employed trainers and those in training providers; those involved in supporting learning other than by 'training'

At this stage some tentative decisions can also be made about whether the framework can be set at a single level, or needs to represent different levels of work through different 'subset' frameworks. This might relate for instance to different career stages or distinct qualification levels, as described in section 1.6 for the different grades of engineer. This is different from 'novice to expert' progression (appendix 1C), which represents increasing proficiency in the areas defined at a single level.

2.4 Researching the field

Adequate research is essential to develop a 'rich picture' to underpin the framework and make sure it is relevant and workable.

The next stage involves developing a 'rich picture' of the field that the framework will apply to. This stage is critically important, as a limited or out-of-date understanding of the field means that the framework will be built on shaky foundations: typically, it will make restrictive assumptions about what practitioners need to do or what their roles cover that don't reflect how work is organised, how people make decisions, and how the field and its technology is developing.

The 'rich picture' is typically a detailed and sometimes messy representation that as well as formal definitions and relationships, reflects the dynamics of the occupation or profession and different perspectives on its situation and how it is developing. It should normally draw on a mixture of

formal research techniques and more unstructured and serendipitous information. As well as the kind of occupational information that can be derived from role mapping (appendix 2B) and occupational analysis (appendix 2A), the rich picture can include information on the perspectives of different groups and stakeholders, the organisational and political context, the norms and values that help shape the current situation, how technologies shape the way work is carried out, and the main power relationships and how they might develop.

However the field is conceptualised, evidence will be needed to support the assumptions that are made about things such as the activities that are important and how roles are organised. This information may already be held by the relevant professional, industry or educational body, but it needs to be checked to ensure that it is up-to-date and includes information about expected trends and changes.

Methods of researching occupational information can generally be divided into expert and primary approaches (covered in more detail in appendix 2). Expert methods use experienced practitioners and other relevant informants to describe how they see the occupation or profession; a Delphi, focus group or expert report approach can be used. This can be relatively quick, but it relies on the informants having comprehensive and up-to-date knowledge; it is not uncommon for small expert groups to have significant gaps in their knowledge. Primary research (e.g. practitioner and manager surveys and interviews, workplace visits and observations, analysing job descriptions) is more time-consuming but tends to provide a more accurate picture of the occupation, provided that the sample is representative (for instance does it include small firms and sole practitioners as well as large corporations and public bodies, where they are present public and voluntary as well as commercial organisations, and consider all the contexts that the occupation is found in?). A progressive, theoretical sampling approach²³ is likely to be necessary rather than a one-off planned survey, particularly in complex and changing fields, otherwise emerging practice and more hidden aspects of the field are likely to be missed. Expert input is likely to be necessary to interpret primary research, particularly if the researcher is not deeply involved in the field.

Expert input and primary research complement each other – and both will normally be needed.

2.5 Mapping out the structure of the framework

A project cycle can be a useful way of setting out the structure of the framework.

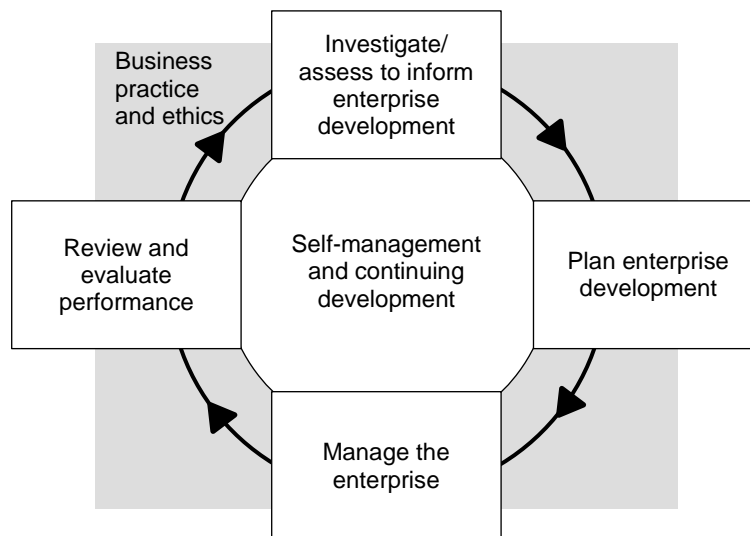
The first stage in defining an external competence framework is normally to identify a relatively small number of key areas or activities that are central to the occupation or profession.

In many fields a project cycle approach can be used as a basic structure, as discussed in appendix 1D. Cyclic frameworks will have a series of sections relating to the cycle (normally three, four or five), plus usually a core of generic activity such as organising and managing, ongoing development, and communicating and working with other people. There will often also be an underlying section relating to the ethical and societal

²³ Theoretical sampling enables areas to be explored progressively as new information arises; this includes for instance expanding practitioner samples to delve more deeply into particular aspects, and taking note of and checking out serendipitous and hearsay information. See Corbin, J., and Strauss, A. (2007) *Basics of qualitative research: techniques and procedures for developing grounded theory* Thousand Oaks, CA: Sage.

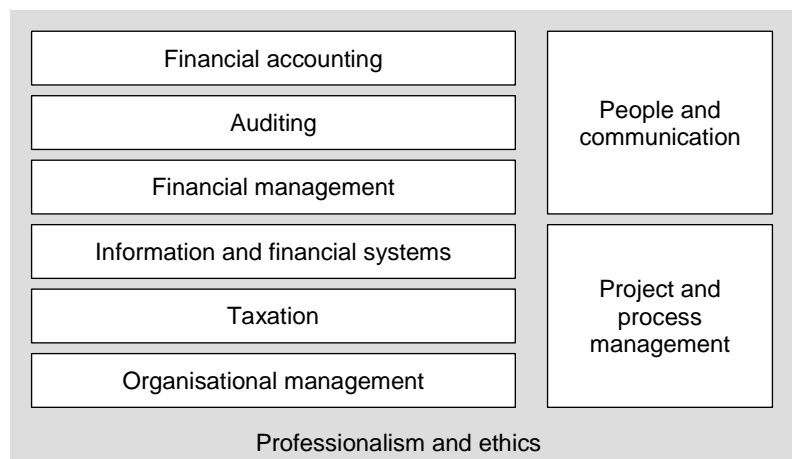
aspects of competence, covering things such as ethics and professionalism or business practice. Figure 2.5a gives an example of this type of structure.

Figure 2.5a. A cyclic framework structure (social entrepreneurship, Greece²⁴)



Sometimes, one or more of the central headings (normally the third one) may be better broken into two, e.g. (a) setting up production processes and (b) managing them; alternatively, two stages of the cycle might be condensed into one, or two of the central activities merged together. In some applications, the first (assessing) and final (reviewing) stages can be merged, or the first stage becomes concerned with setting up a new enterprise or project, while the cycle for an established activity returns from reviewing to planning.

Figure 2.5b. A thematic framework structure (from accountancy, Ireland²⁵)



On the other hand, some professions and occupations can lend themselves better to being organised into different functional or technical areas that cut across the four parts of the project cycle. These areas can be identified by expert processes such as Delphi technique, functional

²⁴ Koniotaki, A. (2017) *Competence Profile: management of a social enterprise*. Athens: EETAA.

²⁵ Summarised from an earlier version of the competency statement published by Chartered Accountants Ireland.

analysis or DACUM, or they may be apparent from role mapping (see appendix 2). The generic and ethical sections will still normally be kept separate, as in figure 2.5b.

If the framework is to have different 'subsets' relating to different levels of work (such as those discussed for engineering in section 1.6), it is common for the overall structure to be the same, but the detail of the framework to differ for each level; each subset can be thought of as a clone or template copy of the overall framework. A test at this stage is to ensure that the headings each apply to all the relevant levels. An alternative in a more role-specific themed framework is that only some of the themes apply to each level or role, in a matrix or 'core and specialisms' structure.

2.6 Developing the detail

The detail of the framework needs very careful crafting, both to ensure the standards represent what is needed and to express them in a clear, usable way.

The headings described in section 2.5 give only an outline structure for the activities within an occupation or profession. One additional level, plus usually a third level or a descriptive explanation, is normally needed to describe professional competence adequately.

The detail can be developed using the same basic method(s) as the outline level, although research methods such as semi-structured interviewing, critical incident analysis, repertory grid technique and (in some very specific circumstances) task analysis can be used to develop points of detail. Using functional analysis at a detailed level can split activities unnecessarily, focusing on functions rather than standards.

The detailed descriptions need to cover the activities critical to achieving the aims represented by the section headings. They should apply to all the contexts that they are intended for, so for instance don't assume that people work within an organisational structure if the field includes sole practitioners and 'micro' businesses. Detailed statements can be in plain text rather than represented as a list of points, and include notes about how they may apply in different contexts. Annex 1 provides more tips on this.

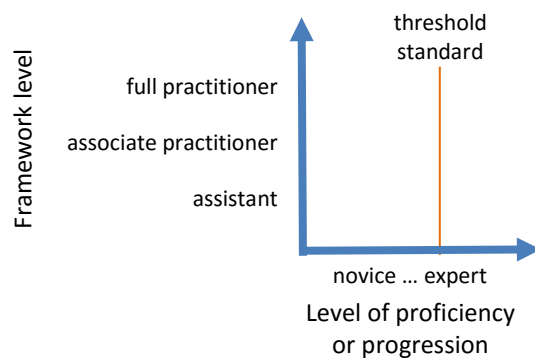
It is essential that the detail is written clearly – at a level that can be understood by intended users rather than only specialists – and is no longer than needed. Including too much detail can actually be counterproductive as not all users will read it thoroughly and some will make up their own working interpretations for use in the field. A rule of thumb is no more than seven statements under each main heading, and (if a bullet-point style is adopted for the most detailed level) a maximum of around five points of detail for each statement. Points of detail should refer to factors that are critical for achieving the aims of the activities described in the next level up.

Careful wording is needed for both second- and third-level statements to make sure that they refer to single, tangible objectives, and (for most kinds of framework) are assessable. Assessable doesn't equate to 'measurable' or to a clear yes/no decision, but competent practitioners making judgements about how well the action has been performed should be able to arrive at comparable decisions. There is a growing consensus in favour of writing key statements as if addressing the reader directly, i.e. as if prefaced by 'You should be able to...'; this makes for a clear, engaging style which avoids confusion about who needs to do what. Explanatory statements can be written in the gerund (the '-ing' form), as in 'This will involve... giving close attention to the way the statements are phrased'.

2.7 Levels and standards

Two further matters that may need to be addressed before the framework is finalised are (a) threshold levels or performance standards, and (b) levels in relation to a national or European qualifications system. These can be viewed as representing two different aspects of level: the first concerns the progression of an individual against the framework standards, while the second is about the level that the framework (or different subsets of it) are set at. This is depicted visually in figure 2.7. In practice the two dimensions of level are sometimes less discrete than the diagram suggests, for instance an ‘assistant’ who has developed to ‘expert’ level may already be reasonably competent as an ‘associate practitioner’.

Figure 2.7. Framework levels and levels of progression.



Threshold levels and performance standards

The Dreyfus novice-to-expert model is useful for identifying progress or setting an assessment threshold.

Two main methods are used to define performance standards. The more common method is to include a general statement of the level required, sometimes linked to a scale such as the Dreyfus novice-to-expert model (see appendix 1E) or less commonly Bloom’s taxonomy of educational objectives. An example is given in Annexe 3. It is worth noting that in the Dreyfus model, ‘competent’ refers to a basic level of competence that may not be sufficient for instance for licensing practitioners to operate independently, particularly in critical situations; the ‘proficient’ level is likely to be more appropriate for this purpose. On the other hand, the ‘expert’ level, when applied to a complex profession or occupation, could take ten to fifteen years or more of practice at the relevant level to reach.

A less common approach is to have (usually) three sets of statements for each area of competence, one describing performance that just falls short of the required standard, one that meets it, and one that exceeds it. This may be justifiable where there is a strong emphasis on standardising assessment, but it requires a large amount of detail and is not widely used.

Qualification levels

Some discussion of framework levels was included in section 2.3 on scoping, specifically whether the framework needs to have more than one level (as with the chartered/incorporated/technician engineer grades used in the UK and Ireland). However, there is a good reason for leaving any precise question of *qualification* level until after the framework has been completed. This is because

attempting to write competence statements to a predefined level can lead to them becoming distorted to reflect the way that the level is defined, rather than describing what is needed in the occupation. Occupational roles (and more so entire professions) typically have features of more than one level, and attempting to standardise them to a single level will lead to some aspects being included in too much detail or at too high a level, while others become left out or described in terms that are too basic.

Professional or occupational standards should not normally be written to match predefined qualification levels, as this can distort the standards away from what is needed in the occupation.

Mapping a competence framework (or a subset of it) to a qualification level is generally a matter of comparing the framework content with the level indicators or descriptor for the relevant level(s) in the qualifications framework. External descriptions of activity on their own may be difficult to allocate a level to, at least without knowing the threshold assessment standard and the complexity of application that is expected. It is also unlikely that a whole framework or set of professional standards will map neatly to a single qualification level; it usually makes better sense to develop a qualification specification based on the framework or on the relevant part of it, rather than attempting to apply a level to the framework itself.

2.8 Consultation and trialling

Consultation and trialling provide an opportunity to test the framework and validate it with the field it has been developed for.

Consultation and trialling are important to validate the framework and ensure that it is reasonably fit for purpose before it is officially launched. By involving a wider group of people than those who were involved in development, they also provide a guard against the 'groupthink' or unquestioned assumptions that can emerge in a small development group. However, consultation and trialling will not iron out every flaw in the framework or compensate for a lack of

background research. Consultation in particular can suffer from a 'response effect'²⁶, where participants don't challenge the overall structure of what they are presented with even if they think it could be improved. There may also be an issue of finding enough consultees who have a good knowledge of the field and are willing to respond, so consultation can sometimes produce disappointingly patchy results.

Consultation and trialling can be carried out alongside each other, or in sequence. It is often more difficult and expensive to repeat trialling, so at least a limited consultation is useful before starting trialling. On the other hand, because trials go into greater depth they can show up major flaws more readily than consultation, so it may be worth postponing a large-scale consultation until after trialling.

²⁶ This is a common problem in questionnaire and structured interview research where participants tend not to challenge basic assumptions even if they disagree, and try to respond according to what they think the researchers expect.

Consultation

Consultation aims for comments from across the field, and should be broadly representative. It needs to be managed carefully to obtain enough good-quality responses.

Consultation should normally be a fairly large-scale activity, and involve people from across the field that the framework relates to as well as other interested parties (who may include employers, informed clients, trainers and educators, and official bodies relevant to the field). The main focus should however be on practitioners, drawn from the different contexts that the framework is designed for. Depending on field, consultation will need to consider:

- different sectors – public, private and voluntary; in some fields, distinguish firms providing services specifically in the field (e.g. law firms) and those that employ members of the field within their operation (e.g. corporations that have in-house lawyers)
- different sizes of organisation, down to self-employed sole practitioners where they are present
- different specialisms, occupational roles and levels of responsibility within the field
- different levels of experience.

The aim is normally to ensure responses come from across the field, not to have a statistically stratified sample. The concept of theoretical sampling used in grounded theory research²⁷ is again relevant here. The absolute number of responses is less important than breadth and quality, but around 15- 25 are likely to be needed as a minimum. Simply sending out emails to a large audience sometimes produces a minimal response rate (as low as 1%), although it can be important politically to give all potential stakeholders an opportunity to comment. More targeted methods, such as priming email respondents, asking for volunteers to comment, personal contact, and running workshops, can provide better results.

Use targeted methods to increase responses, and include specific questions rather than just asking for feedback on the framework.

A common method of consulting is to give respondents an introduction and a list of questions, with a copy of or link to the framework in a form that can be commented on (e.g. a Word file or a pdf with boxes for comment).

- Include some initial questions so that it is possible to analyse responses by context – e.g. size of firm, public/private/voluntary, industry sector if relevant, whether replying as a practitioner or in another capacity e.g. educator, trainer or non-practitioner manager.
- Encourage respondents to challenge the structure of the standards as well as the detail. A common limitation of questionnaire-type research is that respondents tend to work within the framework that they have been given. Questions might cover:
 - How well does the framework communicate an accurate, adequate, up-to-date and resilient representation of the profession or occupational field?
 - How easy is it for practitioners to understand and use, without any specialist knowledge of VET systems or competence theory?

²⁷ See note 23 above.

- Can it accommodate all the relevant contexts in which the profession/occupation works, as well as expected medium-term changes?
- Does it disadvantage any practitioners, for instance through cultural bias, assuming particular contexts/ways of organising, or assuming particular educational backgrounds?
- Ask respondents to say what the most important issues are with the framework.
- Particularly if the consultation is large-scale, it can aid analysis to make sure that detailed comments are made on a structured form (or, better, directly into software that collates them).

Allow enough but not too much time for responses. Two weeks from when the targeted consultee (not an intermediate such as their organisation or association) receives the request is usually enough; a third and perhaps fourth week can be added after a reminder. Few additional responses tend to come in after this time. If the resources are available, it can be productive to follow up some of the written responses with interviews.

Trialling

Trials tend to subject the standards to greater ‘stress’ than can be achieved through consultation alone. They are a good way of testing the standards, e.g. finding where they are difficult to understand or apply, or don’t fit with particular work roles, types of organisation or approaches to doing the job. They are less likely than consultation to produce positive suggestions for improvement, although this can be built into questions asked during the trial.

Trialling normally involves a smaller group of participants engaging more deeply with the standards, in a controlled run of how they will be used later.

Trialling differs from consultation in using a (normally) smaller group of participants to work with the framework in a way that gives them personal involvement and engagement; a trial is more than simply an opportunity to comment in more detail. In general, trials should mimic what the framework will be used for: if it will be used for assessment, a trial run of the assessment process can be appropriate, if it is about ongoing practice a detailed assessment of work practices in an organisation might be relevant, while if it is mainly intended to aid ongoing development, a guided or computer-mediated self-assessment exercise could be used.

Trial participants should ideally be selected to cover a range of different constituencies, as for consultation. Trials can however be more difficult to organise, and often need to be approached pragmatically. However, avoid over-focusing on a particular context or area: e.g. it is generally better to have three groups of five trial participants from different contexts or areas of the industry than one group of 50 from a single organisation or several very similar organisations. In trials, quality and depth are more important than quantity.

Trials should be long enough to allow realistic testing, give participants time to think about the standards (get deeper than first reactions but ideally not become so familiar that they make allowances for flaws), and should generally allow engagement over a period of time. Assessment and similar trials should avoid involving participants in just a one-off assessment – or if the

assessment needs to be a single event, build up to it by getting participants to think how they will meet the standards and to self-assess in preparation.

Careful planning is needed to make sure that feedback is captured on the standards, not just on the trialling process.

An important point when trialling is to ensure that relevant information is captured: sometimes, feedback on the trial process can drown out feedback on the standards, or comments can become lost because they are not captured at the time and are forgotten later. It can be useful to ask for comments at specific points in the trial, or have a simple log that participants fill in. In some trials it may be possible for informed participants – such as assessors or mentors – to capture some of the feedback from other trial participants. Post-trial feedback, using interviews or minimally-structured questionnaires, can also be useful, but shouldn't be relied on particularly for a lengthy trial.

Finalisation

Trialling and consultation are likely to raise at least minor issues about the framework, sometimes with comments contradicting each other. Following analysis of the results, informed judgement is needed to interpret them and decide how to modify the framework in a way that makes best sense; simply incorporating all consultees' and trial participants' comments may make the framework less workable or robust than it was to begin with. This will normally involve going back to the original working group to discuss and agree interpretations and changes.

If more substantial revision is required, a second round of consultation may be needed to check that the new version addresses the problems that were identified. If possible this should normally involve going back to the original consultees as well as getting feedback from people who weren't consulted in the initial phase.

Appendix 2: Methods and tools

Introduction

This appendix gives brief details of a number of methods that are used fairly widely to research and develop occupational descriptions, competence specifications and professional standards. Some of the advantages and disadvantages of each method are also described. The information given here is designed to be enough to help decide which methods are likely to be suitable for any given application, but users unfamiliar with the methods are recommended to do some further reading (and/or get advice or training) before applying them.

Methods divide into those that are expert-based, i.e. rely on the knowledge of a few key participants to map out the field and describe what is required, and those that use primary research to gather information from the field. Typically, methods are combined to develop an overview and fill in the detail.

Expert methods include:

- functional analysis
- DACUM
- Delphi technique
- repertory grid technique (a research method, but it relies on expert informants).

Research-based methods include:

- occupational analysis
- role mapping
- semi-structured interviewing
- critical incident analysis
- task analysis.

Of the research-based methods, the first three are useful to gather contextual and structural information, and the last three for the detail.

Both expert opinion and information from the field are needed to construct a robust and workable framework. The ideal balance between the two will depend on a number of factors including the diversity of the occupational area being considered, the availability of well-informed expert participants, and the ease of access to practitioners in the field. Relying on expert opinion can lead to frameworks that are out-of-date, reflect unsubstantiated bias, and fail to take account of everything that the occupation or profession does or the different contexts it works in. On the other hand primary research without the guidance of occupational experts can miss relevant and contexts applications, and produce poorly structured information sometimes with too much unimportant detail.

2A) Occupational analysis

Occupational analysis (or occupational mapping) was developed in the UK in the 1980s alongside functional analysis as a means of informing the development of occupational competence standards.

Occupational analysis is a pragmatic assembly of key information relating to an occupational area, normally achieved by a mixture of desk research and consultation with representative organisations such as employers, trade associations, trades unions, professional bodies and educational institutions. In some cases original survey work will be needed to obtain relevant statistics for the sector. In the UK occupational standards programme, occupational analysis has become more important as sectors have been lumped together for standards and skills purposes.

A typical occupational analysis includes:

- The overall size of the sector, and its breakdown in terms of subsectors, different types (e.g. public/private/voluntary) and sizes of organisation, geographical distribution if relevant.
- The type and distribution of work roles within the sector, and the numbers of people involved in doing them. In complex occupational sectors, teasing these out is not necessarily straightforward, as roles may be divided up and titled differently in different organisations.
- How occupations in the sector relate to other sectors and occupations. In particular, this will involve examining generic activities such as management, administration, customer/supplier relations, and training.
- Typical entry and progression routes within the sector, including any statutory or customary qualifications, any licensing or training that is required, as well as international mobility.
- The key organisations within the sector, in addition to employers. These might include for instance trades unions and employee associations, trade associations, professional bodies, government agencies, regional associations, regulatory bodies, research and development organisations, educational institutions and training providers.
- Changes and trends. Occupational analysis needs to consider all of the above from the perspective of how the occupational sector is evolving.

Advantages Occupational analysis provides an overview of how a sector is structured and the key trends within it. It is particularly useful for large and complex occupational sectors.

Disadvantages and limitations Occupational analysis may be too broad-brush to provide much useful information from which to develop a competence framework, and depending on how it is applied it can also promote a role-level approach rather than a field-level one.

Use in conjunction with other methods Occupational analysis provides a preliminary or scoping stage before other methods are used to develop the competence framework.

Further reading

Carroll, G. and Boutall, T. (2011) *Guide to developing National Occupational Standards* Wath-upon-Deerne, UK Commission for Employment and Skills.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304239/nos-guide-for-developers-2011.pdf

2B) Role mapping

Role or job mapping is a research method that gathers information about the roles that people perform in a profession or occupation, and the main activities within them.

A role map should normally draw on multiple sources, e.g. job descriptions, practitioner self-reporting, manager reporting, and more than one round of information-gathering. A typical sequence is:

- Identify the different specialisms, roles and contexts to be investigated, generally using expert informants. This is a critical stage, as it will determine the quality of information that is captured. It is better to be too broad at this stage than too narrow: you can focus in later.
- Use documentary sources such as job descriptions and (typically) a practitioner and manager survey to gather information on what people do in the occupation. Ask for the key activities that the job involves, along with a little more information – what each activity aims to achieve and how it is done. Avoid an overload of detail.
- Analyse this first-round information, building up a map that identifies core and specialist or context-specific activities. Keep track of how individual jobs relate to activities. This stage is likely to be ‘messy’ and involve revisiting the way that activities are defined as more responses are added.
- If needed, check back with the respondents to make sure that the developed analysis makes sense in terms of what they do.
- To gather more detail, a second round is needed normally involving semi-structured interviews with a sample of respondents. Select respondents so that they represent the main specialisms, job types or contexts that emerge from the first-stage analysis. This stage should be designed to produce good quality qualitative information, not statistical validation of the first stage. It should also ask participants whether they see the structure of the role, or the activities within it, changing in the future.

Advantages Role mapping provides evidence about the actual roles and work that people perform. It is useful for developing a rich picture of what an occupation actually involves, and providing information to help structure the competence framework. It will generally show up differences in roles and contexts, identifying where framework content needs writing so that it is applicable across contexts, or alternatively how a ‘core and specialisms’ or matrix structure could be used.

Disadvantages and limitations A role map needs to be based on more than one source of evidence, e.g. job descriptions are not always accurate, and people may stress some aspects of their work more than others. It also needs to reflect all the contexts and roles that members of the profession work in, and these can be difficult to identify. Intelligent analysis is needed to separate out the work of the profession from other things that respondents do. Role mapping tends to identify current practice and may be poor at predicting upcoming changes, although questions can be included to gather views on future developments.

Use in conjunction with other methods Role mapping can be aided by using an outline functional analysis as a secondary tool for helping organise the first-stage information, provided that it is not allowed to override the results of the research. The results can be checked against expert opinion using a Delphi group, and critical factors explored using critical incident analysis.

Further reading None specifically on role mapping.

2C) Semi-structured interviewing

Semi-structured interviewing is a widely-used research technique that allows participants initial freedom to respond without imposing a prearranged framework (as in structured interviewing, which effectively involves presenting a questionnaire verbally), while also allowing the researcher to focus flexibly on more specific questions or matters of detail as the interview progresses. It is well-suited to capturing what practitioners see as important in carrying out their work, and it can also be used with third-party informants such as practitioners' managers or workplace trainers. A typical sequence for practitioner interviews is:

- Decide how to record the interview. This can be by making written notes under each main heading, or tape recording for later analysis. Set out the main headings for the interview (typically the first-level headings of the framework, if you already have them).
- Before starting on the detailed interview, explain the purpose of the interview and spend some time setting the scene, building rapport, and getting a feel for the practitioner's job.
- For each framework heading, ask what the practitioner does in the relevant area. Focus on what each activity contributes, and ask the practitioner which things are critical, and whether they vary depending on circumstances. Are there better ways of doing it? Get the practitioner to refer to actual examples, particularly ones that were more challenging or complex. Go into as much detail as time allows to build up a picture of what is necessary to do the work effectively from that practitioner's perspective.
- Follow the practitioner's line of thought, and be careful to avoid leading questions.
- At the end of the interview, ask if anything has been missed out. Probe why it is important.
- Summarise each interview separately but in a way that makes comparison between them straightforward. One way of doing this is to sketch out an annotated framework as it would appear from that practitioner's perspective.
- Compare between the summaries to arrive at a combined version for each framework area. This is not simply a matter of picking the most common activities and factors, as some practitioners may have deeper insights than others; expert discussion is likely to be needed here.

Advantages Semi-structured interviewing provides a straightforward way of capturing information on how practitioners do their jobs and what aspects they see as important. It can capture less tangible aspects of competence as well as more functional and task-oriented ones.

Disadvantages and limitations The information obtained is subject to practitioners' personal perspectives on their work, and reliability will increase with the number of interviews. Both interviewing and analysis can be relatively time-consuming.

Use in conjunction with other methods Semi-structured interviewing is generally more effective once an initial structure has been developed. If not used as the main method of developing standards, it can provide a useful reality-check on expert methods.

Further reading Many books on qualitative research will have a section on semi-structured interviewing, and there are a few books specifically on this area, though usually in the context of educational, health or social sciences research.

2D) Critical incident analysis

Critical incident analysis (CIA) was developed by J. C. Flanagan in the 1940s as a tool for use in industrial psychology.

CIA involves identifying an episode or occurrence (the 'critical incident') in which something went wrong or alternatively was successful, describing and analysing it, and identifying factors responsible for the success or failure. It can be applied to a single incident or a series of events, or applied to a sample of comparable or linked events and used to identify common success factors or causes of failure. A typical sequence is:

- Identify the incidents or episodes that stand out as contributing to success or failure.
- Describe each incident or episode in detail to include:
 - Its context, particularly any factors that may have been relevant to the actions that were taken.
 - What happened, in as much detail as possible and as a sequence of events.
 - Where relevant and possible, the thoughts and feelings of participants in the event *at the time*.

Do not attempt to judge or evaluate what was going on until the description is complete.

- Now analyse the description to identify what was going on and in particular what made the actions successful or unsuccessful. Some pointers include:
 - Why was this incident chosen? What about it stood out?
 - What, overall, was going on?
 - What specific actions made it successful or unsuccessful?
 - How do the thoughts and feelings of the actors in the event relate to their actions?
 - How do the actions relate to the overall sequence of events and to the context?
 - What could be improved?
- Describe the critical factors (e.g. approaches, actions, skills, constraints, contextual factors) that made the actions successful or unsuccessful. Aggregate the results to build up a set of common factors that lead to successful job performance.

Advantages CIA provides practical evidence of factors that make a direct difference to job performance or contribute to successful or unsuccessful outcomes.

Disadvantages and limitations The reliability of a CIA can be undermined by giving insufficient attention to identifying critical incidents and episodes, and participants' accounts of incidents may miss out (or distort) critical details. CIA is also very time-consuming as a means of analysing occupational activity from scratch; it is more useful as a means of identifying critical factors.

Use in conjunction with other methods CIA can be used to focus on critical activities after carrying out a more general analysis using an approach such as role mapping or repertory grid technique.

Further reading

Carlisle, K. (1986) *Analyzing Jobs and Tasks* Englewood Cliffs NJ, Educational Technology Publications.

Spencer, L. and Spencer, S. (1993) *Competence at Work* New York, John Wiley.

2E) Task analysis

Task analysis evolved from the work study techniques developed by F. W. Taylor and Frank and Lillian Gilbreth in the late nineteenth and early twentieth centuries. The basic principle of task analysis is that it identifies tasks to be performed, then breaks them down into component steps that can be specified, taught and assessed; it may also be possible to make recommendations for improving how tasks are carried out.

There are several different approaches to task analysis, but the basics are:

- Identify the tasks to be analysed. This may need a preliminary step which is to research the tasks that need to be performed, or are critical to, the occupation or job.
- Identify and record the purpose of each task.
- Research and document each task using appropriate methods. This will normally include careful observation of practitioners who are known to be highly effective at performing the task, as well as discussing the steps with them. Depending on the type of task, discussions may include the practitioner's decision-making process, what s/he is attending to, what variations and contingencies come up and how they are dealt with, and any factors that aid effectiveness. Discussion with informants who have an overview of the process (e.g. practitioners' managers or workplace trainers) can sometimes be helpful to identify points where problems commonly occur.
- Break the task down into steps, accompanied by a commentary describing how each step is performed (including key knowledge, decision-making and contingency management where appropriate). Produce from this an overall description of the task.
- Check back with practitioners/informants that the description makes sense, includes the critical aspects of the task, and that when it is put into practice it will result in the task being completed.

Advantages Task analysis can be an effective tool for ensuring that all relevant aspects of a task are identified and described, e.g. for aiding the teaching of people who are having difficulty mastering it. It is particularly useful where manual or mechanical tasks are to be taught to beginners, and for safety-critical tasks. For more complex tasks it can also sometimes draw out intuitive practical expertise that is difficult to identify through observation or interviewing alone.

Disadvantages and limitations Task analysis assumes that task components are observable and need to be performed in a particular way or in sequence. It is poor at capturing whole work roles, and at higher levels its use is generally confined to highly procedural areas of work or analyses of specific activities in order to identify critical factors. Attempts to describe whole job roles in task-based terms generally become excessively detailed and prescriptive.

Use in conjunction with other methods Task analysis may be used to examine specific areas identified by a DACUM occupational analysis or role mapping exercise where effective task performance is critical.

Further reading

Jonassen, D., Tessmer, M. and Hannum, W. (1999) *Task analysis methods for instructional design*. Mahwah NJ/London, Lawrence Erlbaum Associates.

2F) Functional analysis

Functional analysis in the context of occupational competence was developed in the UK in the 1980s as a preferable method to task analysis for producing competence standards. It is a deductive, expert process that produces a description of an occupational role in terms of its functions.

The basic approach to carrying out a functional analysis is:

- Assemble a group of experts with good insights into the relevant occupation or field. It is useful if the group can work together physically in the initial stages, although the detail can be completed remotely either by individuals or through a Delphi-type process. A person familiar with functional analysis normally acts as facilitator and editor. Through this group:
- Identify the key purpose of the occupation or area of activity.
- Identify the major functions (typically no more than 7-8) that enable this purpose to be met.
- Break these functions down further into sub-functions, and so on until activities are described that make sense to individual practitioners and are suitable for assessment. The aim is to describe functions in 'outcome' terms, not describe processes for completing tasks.
- Consult on the results with relevant practitioners, employers, service users etc. to check that the description makes sense, is workable, and is suitably comprehensive.

For the analysis to be successful, the expert group needs to have a good insight into how the occupational area 'works', the different contexts it operates in, and how job roles are normally structured. It is usual to carry out some research beforehand to define the occupational area and the work roles within it (see Occupational Analysis).

Advantages Functional analysis provides a desk- or group-based method of conceptualising and structuring areas of competence. By starting from the purpose of occupations rather than descriptions of current practices, it can avoid becoming too influenced by current ways of doing things.

Disadvantages and limitations Functional analysis depends on the expert knowledge of the development group. The structured nature of the process can produce rigid definitions and fail to distinguish critical activities from trivia. It also tends to emphasise task-oriented aspects of competence over 'softer' or more intellectual ones. While an outline functional analysis can support a centre-outwards approach, it is more attuned to producing bounded-occupation descriptions.

Use in conjunction with other methods In the UK occupational standards programme, functional analysis is commonly preceded by occupational analysis. It can be used as an organising tool in conjunction with a research-based technique such as role mapping or repertory grid technique.

Further reading

Mitchell, L. and Mansfield, B. (1996) *Towards a competent workforce* Aldershot, Gower (ch. 6-8).

Mansfield, B. and Schmidt, H. (2001) *Linking VET standards and employment requirements* Torino, European Training Foundation.

[http://www.etf.europa.eu/pubmgmt.nsf/%28getAttachment%29/1B0D23E77876D6F7C12571FE00473D6B/\\$File/NOTE6UAEET.pdf](http://www.etf.europa.eu/pubmgmt.nsf/%28getAttachment%29/1B0D23E77876D6F7C12571FE00473D6B/$File/NOTE6UAEET.pdf)

Carroll, G. and Boutall, T. (2011) *Guide to developing National Occupational Standards* Wath-upon-Deerne, UK Commission for Employment and Skills.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304239/nos-guide-for-developers-2011.pdf

2G) DACUM

DACUM (Developing a Curriculum) was developed in the 1960s in the USA and Canada to provide a method of involving workers in the design of curricula for their training. It is a straightforward process for occupational analysis that is normally carried out through a focus group consisting of experienced workers in the relevant occupation.

DACUM can be used to refer to the full training design process that includes task analysis, or (more commonly) to the initial occupational analysis part that is usually carried out through a one- or two-day workshop facilitated by someone familiar with the DACUM process. The main stages are:

- Select 5-10 participants who can be regarded as expert practitioners in the occupation being studied. Where relevant these people should be selected so that between them they are familiar with all the different aspects and contexts relevant to the occupation.
- Carry out an initial brainstorming session to identify the key duties or functions associated with the occupation (c. 6-12), then check that these have broad agreement across the participants and do not miss anything important out.
- Break these functions down into job tasks – typically no more than ten per function – that can be performed independently, have a meaningful outcome (e.g. product, service or decision), and have a beginning and end point. Check that participants agree that the tasks enable the functions to be performed effectively.
- The results of a DACUM analysis are usually checked with a wider group than the workshop participants; this can include managers, clients and service users as well as practitioners.
- If required, later stages can go into more detail on individual tasks using task analysis, or alternatively focus on the knowledge and skills required for each task and function.

Advantages DACUM provides a relatively quick and straightforward way to capture the expertise of practitioners about what they need to do within a job role or occupation.

Disadvantages and limitations DACUM suffers from similar drawbacks to functional analysis in that it is only as effective as far as the knowledge of participants allows, and it tends to focus on technical and procedural aspects of competence rather than less tangible dimensions. The instructions for DACUM if anything lead to a more task-oriented description of competence than functional analysis. It has been notably more successful in aiding the design of training programmes in specific circumstances rather than producing descriptions of competence across occupations or professions.

Use in conjunction with other methods The basic principles of DACUM can be used as a means of carrying out a functional analysis, or to provide an 'expert map' of a field to be further explored through an approach such as role mapping.

Further reading

Norton, R. (1997) *DACUM Handbook*. Columbus OH, Ohio State University.
<http://files.eric.ed.gov/fulltext/ED401483.pdf> (4.5Mb file)

2H) Delphi technique

Delphi technique was developed by Olaf Helmer and Nicholas Rescher in the 1950s, originally to forecast likely scenarios for enemy attack during the Cold War. It is a structured method of building consensus from a panel of people who have expertise or insight in the situation being studied, while avoiding group dynamics and 'groupthink'. The standard Delphi approach is as follows:

- Assemble a group of panellists, i.e. people with insights into the issue in question and who are willing to provide the required input to the project. Panellists' identities do not need to be disclosed to each other; it is now common to run Delphi groups by email.
- Develop an initial question or set of questions for the panellists to respond to. This can start off fairly openly, e.g. 'what does an effective [nurse] need to be able to do?', and become more focused in later rounds.
- Make a summary of the responses and circulate it back to the panellists, asking for further comments. Panellists may be asked to comment on the summary, or respond to specific questions raised by the responses.
- Repeat the above step as many times as reasonable until a consensus emerges or there are clear findings to report.
- Variations can also be used, for instance having a final or penultimate round where panellists are asked to score or rank items for their relevance, or bringing in additional participants for later stages. This can be useful if long lists emerge and there is no consensus about what is most important.

Advantages Delphi technique is a useful method of gathering a potentially wide range of expert inputs, while avoiding issues of group dynamics and dominance that can emerge in face-to-face exchanges.

Disadvantages and limitations As with functional analysis and DACUM, Delphi technique is an expert method that relies on the knowledge of a (typically) small group of informants. The quality of questions used in the initial stages can also be critical to the quality of outputs. The editor has a larger degree of control than would be the case in a focus group or similar situation, and may be able to influence the group (even if unconsciously) towards a particular outcome.

Use in conjunction with other methods Delphi technique can be used in conjunction with functional analysis, or to refine information gathered or produced using other methods.

Further reading

Linstone, H. and Turoff, M. (1975) *The Delphi Method: Techniques and Applications* New York, Addison-Wesley. <http://www.is.njit.edu/pubs/delphibook/>

2I) Repertory grid technique

Repertory grid technique was developed by the psychologist George Kelly in the 1950s as a practical application of his personal construct theory. In the context of competence, a repertory grid can be used to build a picture of the characteristics that informed observers associate with effective job performance. A common method of doing this is described below.

- Identify participants who are good informants on the occupation being studied – those who are familiar with the work of several people in roles relevant to the study, whom they will use as their ‘cases’. Studies can be large or small scale.
- Ask the participants to each identify around ten relevant ‘cases’, some of whom they regard as notably effective and others as less effective/novices (avoiding ‘middling’ examples). The cases form the columns of the grid. Their names should remain private to the participants, but it should be clear which category (effective or less effective) that they fall into.
- In a small-scale study, participants can be asked to identify relevant constructs themselves and share them to come up with an agreed set. Constructs are characteristics that are considered relevant to whether practitioners are effective or not, and they are normally expressed as bipolar pairs (e.g. imaginative – concrete, risk-taking – cautious). Alternatively, constructs can be provided from previous research; this can be essential in larger-scale studies. Constructs form the grid rows. Participants score their cases on each construct using a simple scale (e.g. 1-5).
- A basic analysis aggregates participants’ scores for each construct for effective and less effective practitioners. With large samples, the results can be analysed statistically, while with small groups of participants, discussions can be used to check how each participant is interpreting each of the characteristics.

Advantages Repertory grid technique is a fairly easily-managed method to identify characteristics that are widely seen as enabling the population being studied to act competently. It has been used quite widely to inform behavioural competency frameworks.

Disadvantages and limitations Repertory grid technique tends to produce unstructured lists of internal characteristics, which may need other sources of evidence to make sense of them. It can also pick up characteristics that are present in the population being studied but are not critical to acting competently, and may to some extent reflect the prejudices of informants. A further problem is that the results can be invalidated by participants misunderstanding the instructions – e.g. scoring 1 as low v. 5 as low.

Use in conjunction with other methods Repertory grid technique can be used in conjunction with a more structured method such as role mapping to identify factors critical to effective performance, or as an initial technique before going into more detail through critical incident analysis.

Further reading

Fransella, F. and Bannister, D. (1977) *A manual for repertory grid technique* London, Academic Press.

Annexe 1: Development guidance

This part of the manual provides some step-by-step, practical guidance for developing a competence framework or set of practising standards that describes practice in a profession or occupational field (rather than skills, knowledge or attributes), is in principle at field level rather than focusing on individual roles, and applies across contexts and specialisms (see Part 1). This is essentially the guidance that was provided in ComProCom.

The sequence that follows focuses on the development process, and assumes that the scoping and background research has already been done. Effectively it expands on sections 2.5 and 2.6 of the manual, which should be read first. It assumes that the framework has three levels of detail, as in Annexe 2 and some of the examples in Annexe 3.

There is also a set of Powerpoint slides that illustrates the sequence graphically, available from www.comprocom.eu.

Annexe 1 covers:

Moving from research to the structure of the framework

Developing the first-level headings

Dealing with different levels of work

The second-level statements

The final level of detail

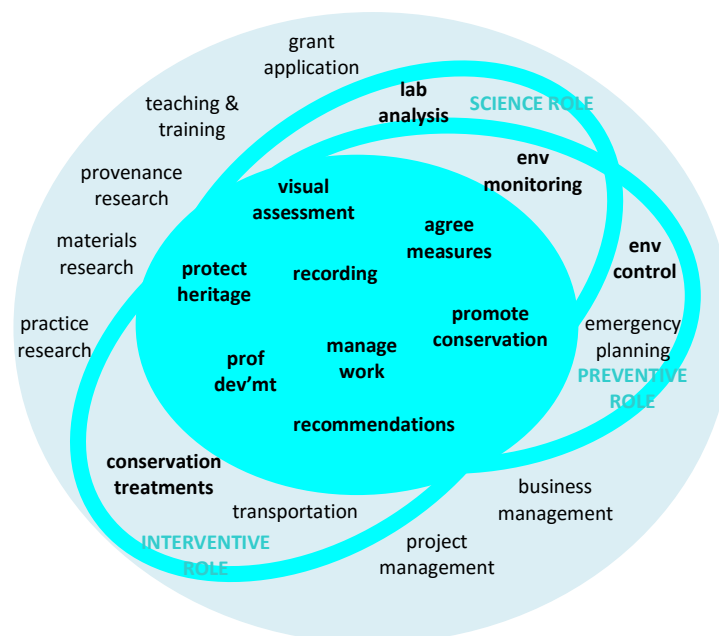
Professional ethics and business practice.

Moving from the research to the structure of the framework

From the research and scoping phases, you should have a good picture of the profession or occupational field that includes what people do in terms of key work activities, and if relevant how these are organised into different roles and specialisms – and how these differ across different sectors, types and sizes of organisation, and other variables such as local/international or urban/rural.

This information can start to be assembled graphically, for instance into a role map such as the one in figure A1.1. From this you can start to identify activities that are central to the field (everyone in the profession needs to be able to do them), those that are important but are limited to some roles or specialisms, and those that are more peripheral and not part of the core capability of the profession or field.

Figure A1.1. Simplified role map (heritage conservation).



The next step is to start organising these activities and grouping them together in a way that makes sense for the field. As an example based on Figure A1.1:

Making sense of the role map

- Visual assessment is a central activity. This sometimes extends to more detailed analysis, but for most conservators not scientific analysis in a laboratory.
- Making recommendations and agreeing measures are central, and can be grouped together. This also involves a certain amount of promoting conservation and the protection of heritage.
- Protection of heritage is central, but what precise measures are involved will differ between roles and specialisms; it can include environmental monitoring and control, and everyone needs to know the basics of this.
- Not all conservators carry out conservation treatments, but for some this is the main part of their work. All need to know the underlying principles in order to recommend or commission treatments.
- The above two areas can be combined as conservation *measures*, which may be preventive or treatment-based, including reviewing the effect of the measures.

- Recording and documenting is an important activity, but it can fit under each of the other key areas rather than as an area of its own.
- All conservators need to be able to manage their work; for some this will extend to managing large projects or managing a business. These more developed aspects of management are beyond the scope of the framework but can be included as examples or applications of management activity in different contexts.
- All conservators need to be able to keep up-to-date, communicate and promote conservation, instruct others, and carry out basic practice-related investigation. More specific teaching/training and research is not a core activity but something that practitioners can take on as they develop.

There are three important points here:

- (1) Where activities appear to be confined to particular roles or specialisms, at least at this first level it is often possible to go to a higher level of description that groups them together. This sometimes also allows more peripheral activities to be included. In the example above, this has been done by combining protective measures and conservation treatments under 'conservation measures'.
- (2) Peripheral activities should be excluded from the framework, at least at the first level of detail. For instance, members of the profession may take on more advanced management, teaching/training, or research activities, but these are not major, central parts of what being an effective practitioner is about.
- (3) Most professions or fields will be underpinned by various broadly generic activities such as managing work and work processes; continuing development, which might also extend to include aiding the development of others and the profession as a whole; and working with people, including communication and client relations.

Developing the first-level headings

The first level or set of headings of the framework can now be sketched out. A useful way of doing this is to organise the main activities of the field or profession as a cycle, along the lines of investigating/assessing, planning/negotiating, implementing, and reviewing/evaluating, as described in section 2.5 and appendix 1D. This doesn't necessarily mean that there will be four main headings, but there should not be too many more. In some fields two adjacent phases could usefully be combined, while in others the implementing phase might be divided into, typically, one area concerned with setting things up or establishing new initiatives, and one with ongoing implementation and management. Continuing with the conservation example, the basic structure, represented as a cycle, is:

Cyclic structure for conservation

- Assessment of material heritage (*investigating/assessing*).
- Conservation options and strategies (*planning/negotiating*).
- Conservation measures (*implementing and reviewing/evaluating*).

Two important points at this stage are:

- (1) Make sure each heading can be applied to all roles and specialisms in the field (although it is acceptable that some specialisms might focus on less than the whole cycle, for instance conservation scientists would work mainly on assessment). In conservation, the third area was initially split into conservation treatments and preventive measures; bringing these areas together meant that the (now three) headings would apply equally to all conservators.
- (2) The headings should normally be capable of being applied to different levels or types of activity. In the above example, the cycle could be applied to someone working in a studio who is assessing and working on an individual item, or someone who is responsible for managing the conservation of all the items in a major museum or looking after a group of historic monuments. If there is a need to differentiate by level, this can be done in the detail of the framework either by giving relevant examples or by splitting the framework into more than one subset.

In some fields a cyclic structure is difficult to use and looks quite artificial. An example given in section 2.5 is accountancy. While it would be possible to organise the activities of accountants around a project cycle, this would split up commonly-used activity headings across typically two or three parts of the cycle, making for a complex structure that would need to be unpicked to see how it applied to individual accountants. In these cases a themed structure will often work better. If there isn't already a widely-used set of themes, use an expert process such as Delphi technique or functional analysis to identify what is needed. The main points here are (a) to avoid too many themes (so that they don't start to become narrow specialisms or role-specific activities), and (b) to remember that the framework will be a set of standards, not a description of tasks or skills required for specific applications. If more than six or seven themes are identified, see if any can be amalgamated.

For both types of structure, as mentioned above there will be other, more generic activities that underpin working in the field. These include being able to manage work, to maintain an adequate level of competence, work effectively with others, and so on. In formal professions there is also usually an underpinning ethos and ethical basis to the profession that needs to be reflected in the framework, while in business fields the equivalent might be described as good business practice. Two complete structures – one from conservation, continuing the above example, and one for start-up businesses, as developed in ComProCom, are shown below.

Examples of basic framework structures	
<p><i>Conservation</i></p> <ul style="list-style-type: none"> • Assessment of material heritage • Conservation options and strategies • Conservation measures • Organisation and management • Professional development • Professional judgement and ethics. 	<p><i>Enterprise management</i></p> <ul style="list-style-type: none"> • Investigate and evaluate business opportunities • Plan to develop the business • Set up the business • Manage the business • Review and improve the business • Communication • Business ethics and compliance • Personal management and development.

As a final check, make sure that each of these headings is written in a way that applies to everyone whom it is intended that the framework will cover.

Dealing with different levels of work

There are two main approaches within a single framework to representing different levels of work.

Where a formal difference in level needs to be recognised, such as with the technician, incorporated and chartered engineer categories discussed previously, the usual solution is to have different subsets or versions of the framework. These use a common structure as developed above, but differ at the second or third level of detail. Typically, most of the second-level statements will be shared between the subsets, but the third or descriptive level is likely to be different. An example of differences between levels, within the same overall framework, is shown in table A1.1.

Table A1.1. An example of differences between levels within the same basic framework.

<i>Part of framework</i>	<i>Assistant</i>	<i>Mainstream practitioner</i>	<i>Advanced practitioner</i>
Investigate/assess	Technical matters relating to work execution	Problems, needs and priorities	Strategic context, long-term impacts
Plan/negotiate	Techniques, priorities and timescales	Solutions, implementation plans	Policies, strategies, work programmes
Implement	Own work programme	Projects	Longer-term programmes and strategies
Review/evaluate	Quality and timeliness of work	Effectiveness of project in meeting needs	Long-term impact and value of plan/programme
Work with others	With colleagues	With colleagues, clients, others in the supply chain	Also with external organisations and representing the profession
Manage	Manage own work	Manage clearly-defined projects	Manage work programmes
Develop	Develop self	Develop self and support development of others	Plus contribute to the profession/field
Ethics/practice	Understand and follow good practice guidelines	Judge how to apply ethical guidelines in context	Challenge interpretations of guidelines, resolve ethical conflicts

The second approach is where the framework needs to *accommodate* different levels or types of work, but not *differentiate* between them. An example as given above is conservators who work on individual objects and those who are responsible for overall collections, perhaps without necessarily handling the objects themselves. This is normally dealt with through guidance that can be attached to each first-level heading as appropriate, or through examples normally at the third level of description. An example of guidance attached to a main heading is given below:

Conservation options and strategies

- This area should be applied according to your work context: for instance it could apply to decisions discussed with a client about objects brought to a studio for treatment or advice, a strategy for the management of a collection or building, or a response to a specific threat or conservation issue.

(Professional standards for conservation, Institute of Conservation, London, 2007).

The second-level statements

Each of the first-level statements becomes the heading for a major section of the framework, typically taking up a page or so of text. The next step is to fill in the second-level statements or headings – the key standards of competence – in each section. The same approach normally applies to all sections, except possibly the ethics/business practice section if one is included; there is separate guidance on this later.

The aim here is to set out the core activities that are needed to achieve the purpose of the main activity. Focus on critical activities, not trivia or things that are nice to have, and as with the main headings write them in a way that applies to all contexts that the framework (or the relevant subset, if it is being divided at this level) covers. The framework can set a high standard, but the statements should be achievable in normal work situations.

A rule of thumb is to have no more than five to seven second-level statements for each area of the framework. Often, fewer will be sufficient; very occasionally, more are needed, although lengthy lists generally suggest that too much detail is being included. The second-level statements are the essential standards for the area of work described in the main heading, not a list of steps needed to carry it out. Too much detail can actually make the framework less robust, as some users will substitute their own more concise interpretations.

Sometimes these statements can be developed using expert methods alone, although research techniques such as semi-structured interviewing and critical incident analysis (see appendix 2) can provide empirical information about what practitioners actually do and what is central or critical to each area. Unless a lot of time and resources are available to develop the framework, interviews will normally go into more depth than just the second-level headings, to gain information on which to base the detailed statements as well. Expert input is normally needed to interpret the research findings; for instance, combining the data from semi-structured interviews is not just a matter of selecting the most common points, but deciding how to draw on the data in a way that produces a logical and widely-applicable set of standards.

Language and style are important for second-level statements, as this is the level that sets the essential standards of competence. The statements also need to be clear and easy to read, otherwise the document can become like a technical manual that assumes a certain level of competence (in competence frameworks!) to interpret it.

- Use normal, easy-to-understand language, appropriate to the level of work being described. Technical terms should only be included where they are widely understood in the occupation concerned. In particular, avoid educational or psychological jargon, or business buzzwords, that could make statements difficult to understand or offputting for practitioners.
- Use active verbs that make clear what the practitioner needs to (be able to) do.
- Use a style that addresses the reader directly: either the infinitive (as if prefaced by ‘the practitioner should be able to...’) or second-person active (as if prefaced by ‘you should [be able to]...’). The ‘you’ form is slightly preferable, as it allows the text to distinguish easily between the person being addressed by the standards (‘you’) and anyone else who needs to be referred to (‘s/he’, ‘they’).

- Avoid third-person verb forms in relation to the practitioner (as if prefaced by 's/he'), as they make the statements read as if they always apply to someone other than the reader. One possible exception to this is where a version of the framework – usually a summary – is used to describe to people outside the profession what practitioners should be able to do.
- Avoid putting too many objectives in a single statement – for instance 'set objectives for the project, communicate them to participants and stakeholders so that they understand them, monitor any variations and evaluate the results using robust methodologies'. Either use more than one statement, or describe the activity at a more general level and use the next level of detail to describe what is intended.
- Avoid using adjectives and adverbs such as 'excellent', 'relevant', 'appropriately' or 'strategically', unless it is clear from the context what they mean – they can make the standards look more precise or demanding while not adding anything of value. Be particularly careful about adverbs, as they can place the emphasis on the way of doing things rather than the results. If necessary, use a qualifier e.g. 'as relevant to meet the client's needs'.
- Avoid vague or aspirational statements that are difficult to make judgements about in practice, or that are not practicable in most situations.

Examples of second-level statements	
<p><i>Conservation options and strategies</i></p> <ul style="list-style-type: none"> • Identify and evaluate conservation options • Develop advice, recommendations or policy relating to the different options available • Develop or negotiate a considered course of action for implementation. 	<p><i>Plan to develop the business</i></p> <ul style="list-style-type: none"> • Identify the preferred legal form for the business • Identify the business's product or service lines • Identify the resource implications for developing and running the business • Develop the business plan, including any need for finance.

The final level of detail

The third and normally final level of the framework elaborates on and explains the key standards represented by the second-level statements.

This level is often written as a series of sub-points, but it need not be and a sentence or short paragraph is sometimes a better format. The main purpose is to describe what is critical for meeting the requirements of the second-level statement, not to list skills or tasks. The detail can also describe how the statement applies, or might apply, in different contexts, for instance by giving examples.

How the detail is written will depend to some extent on the purpose of the framework, but if separate points are used a rule of thumb is to aim for a *maximum* of around five for each of the second-level statements. Some second-level statements may be clear enough without further explanation. The comments about avoiding excessive detail are relevant here as well.

A useful format for the final level is to preface essential activities with 'This involves...' or 'This normally involves...', and for examples that apply to different contexts, 'This may involve...'. This leads to the detail being written in the gerund ('...ing') form. Examples (from separate frameworks) are given below.

Communicate with others at all levels

This could include:

- Leading, chairing, contributing to and recording meetings and discussions
- Preparing communications, documents and reports on complex matters
- Exchanging information and providing advice to technical and non-technical colleagues.

Identify and evaluate conservation options

- *options could include managing the use, display etc. of the heritage differently; physical conservation treatments and measures; preventive or protective measures; and maintaining the status quo*
- *options should be based on adequate assessment and research*
- *you should be able to identify options that require novel or adapted measures, and know how you would develop and implement or commission these*
- *evaluation will include identifying the risks, resources and benefits associated with the different options, as well as their implications for future use, display etc.*

Assess the innovativeness of a new solution

This includes the ability to:

- use relevant methods to assess level of the innovativeness of the solution (this could include its added value for their potential users)
- use relevant methods to assess the level of implementation maturity (implementation readiness) of the new process, product, service or organisational solution.

Occasionally, it can be useful to include more detail on highly critical activities, for instance where there is a specific and essential procedure for carrying them out, or an activity requires a critical skill-set that would not be obvious from the standards. If these descriptions are more than a few lines long, it can be preferable to include them as appendices to the main framework and reference them in the main text. It is important however to recognise that the framework is neither a curriculum nor a set of instructions for doing a job – these can be developed from the standards, but they are separate documents.

Professional ethics or business practice

Many frameworks will have a section dealing with ethics, practice and sometimes professional judgement. This normally applies across all the activities represented by the framework, and is often presented in a different format from the other sections.

This section is not simply a code of ethics or practice; it is about the ability to act with ‘ethical competence’ or ‘ethical literacy’, so as with the rest of the framework it should be written as a set of actions. Sometimes it can be acceptable to include statements that begin ‘understand...’, although it should be clear what the understanding is used for.

Similar guidance about presentation and language applies as for the second-level statements, although it may not be necessary to include explanatory detail: a single list of statements may be sufficient.

Some examples of statements in this area (from different frameworks) are given overleaf.

- i. understand and observe your professional body's code of ethics and practice
- ii. observe legal requirements and obligations, including those relating to health and safety, employment and contract law, and international agreements
- iii. act responsibly and ethically in dealings with the public, employers, clients and colleagues
- iv. be able to handle value-conflicts and ethical dilemmas in a manner which maintains professional probity.

Maintain up-to-date knowledge of, and act in accordance with, relevant legislation, regulations and codes of practice.

This includes:

- Applying the relevant legislation, regulations and codes of practice to your area of work
- Ensuring that the enterprise operates within the law, drawing on an adequate knowledge of the law relating to both business operations and the specific field of operation of the enterprise.

Ensure that the business practices are balanced with the social and person-oriented aspects of the enterprise.

This includes:

- Maintaining a balance between the business and social or community objectives of the enterprise, in line with its values and vision
- Ensuring equality of opportunity and fair treatment for the enterprise's staff, volunteers, customers/supporters, and stakeholders
- Making fair and ethical use of any voluntary support that the enterprise uses.

Annexe 2: competence standards for standards developers

This is an example framework for persons undertaking the activities described in this Guide. It was developed as part of the project ComProCom, but has not undergone trialling or more than limited consultation.

Summary

1. Scoping and research

- a. define the scope of the area for which the standards are being developed
- b. assess the requirements for the standards
- c. develop a rich picture of the occupational or professional field

2. Development

- a. scope out an approach to the standards framework that is appropriate to context and needs
- b. define the basic structure of the standards
- c. develop the detailed standards

3. Testing and review

- a. set out the questions to be answered from testing
- b. identify and gain support from consultees and trial participants
- c. carry out consultation and testing
- d. interpret and respond to the results of consultation and testing
- e. set up a process for ongoing review

4. Managing the process

- a. manage work flow, tasks and project
- b. maintain effective working relationships
- c. keep up-to-date with relevant developments

Principles and ethics

- i. key concepts, models and approaches
- ii. wider contexts in which competence frameworks sit
- iii. qualitative and survey research
- iv. development methods and techniques
- v. openness to alternative methods and approaches
- vi. dangers of imposing values, cultural norms and ways of working and organising
- vii. challenging discriminatory content and unnecessary barriers
- viii. respect for the perspectives and opinions of others
- ix. acting responsibly and ethically
- x. working within the limits of own understanding and abilities.

1. Scoping and research

You must be able to:

- a. define the scope of the area for which the standards are being developed
 - *this includes identifying the profession, occupation or sector, how it is defined, and by whom*
 - *it also includes identifying any body or bodies and any regulations that govern the area or activities within it, along with other key stakeholders.*

- b. assess the requirements for the standards
 - *this includes the uses to which the standards are to be put (both 'official' and others that can reasonably be expected) and any parameters that they will need to conform with*
 - *requirements are likely to stem from more than one stakeholder or field of interest.*

- c. develop a rich picture of the occupational or professional field
 - *this includes the main activities within the field; the various work roles that are involved; how it is evolving; how it is organised, including relationships between different types of organisations and actors in the field; the different contexts that practitioners work in; typical entry and progression routes; any legal or qualification requirements; expectations of major employers and key client groups; and the size of the field, and how it is distributed both geographically and between different specialisms or applications and organisation types*
 - *it is likely to involve using relevant research methods as well as the input of experts in the field to provide overview and summary information and make sense of research findings.*

2. Development

You must be able to:

- a. scope out an approach to the standards framework that is appropriate to context and needs
 - *this includes the conceptual approach to competence and practice that is being used, including whether it will describe practice alone, or include knowledge, skills and attributes; and whether it will focus on competence across a profession or field, or for specific occupational roles*
 - *the approach needs to be appropriate to the purpose and expected uses of the standards.*

- b. define the basic structure of the standards
 - *the structure should make sense in terms of the area of practice covered and what practitioners actually do*
 - *it should be equally applicable to all contexts that practitioners work in, and avoid assumptions about techniques, working practices or methods of organising that cannot be justified by research into the field concerned*
 - *the structure may need to be amended following consideration of the detail of the standards.*

- c. develop the detailed standards
 - *the detail should reflect research into the field, express essential requirements, and avoid trivia or factors that apply only to particular contexts*
 - *it should avoid requirements that are discriminatory, unjustifiable, or based on the most common situations*
 - *where possible it should be resilient to change – for instance avoiding specific reference to current techniques, regulations, jargon, and preferred practices where these may be subject to change*
 - *it may need to include explanations of how the standards apply in different contexts*
 - *the language used should be clear, precise and at a level appropriate for intended users.*

3. Testing and review

You must be able to:

- a. set out the questions to be answered from testing
 - *these include questions relating to the coverage and appropriateness of the standards; their ability to apply to all the relevant contexts and be resilient to change; their accuracy in representing good practice at the relevant level; their fitness for their intended purpose(s); and their wording and usability in relation to intended users*
 - *the way that questions are asked should avoid leading respondents towards particular answers, and should allow them to critique the structure as well as the detail of the standards.*
- b. identify and gain support from consultees and trial participants
 - *support should be gained from a sufficient number and range of participants to ensure that consultation and trialling are reasonably representative of the community to whom the standards apply*
 - *this includes selecting consultees and participants to represent a range of different contexts and user types (including as relevant different specialisms, organisation types and sizes, work contexts, career stages and levels of responsibility)*
 - *where necessary, this includes gaining active support from other organisations in order to access consultees or run trials.*
- c. carry out consultation and testing
 - *this includes designing a suitable combination of methods to test the standards and ensure that the identified questions are answered in depth*
 - *testing methods should be chosen to ensure that participants use the standards in a live situation, e.g. through assessment, self and peer audit, practice review, or training*
 - *the time allowed for each process should be sufficient to enable thorough testing and capture of information.*
- d. interpret and respond to the results of consultation and testing
 - *this includes collating, analysing and interpreting data so that all relevant information is considered*
 - *care should be taken to ensure that individual and minority views are not lost where they are insightful or represent the views of a particular constituency*
 - *it includes summarising the results to aid in deciding what changes to make to the standards*
 - *it may include producing a published summary of the consultation and the decisions made as a result.*
- e. set up a process for ongoing review
 - *this includes identifying intervals at which to review the standards, which need to balance the potential need for updating (which will depend on the specificity and resilience of the standards) with any disruption caused by changes*
 - *it includes establishing a means of logging ongoing feedback, to enable it to be taken into account at the next review point.*

4. Managing the process

You must be able to:

- a. manage work flow, tasks and project
 - *this includes being able to plan, resource, schedule and monitor a sequence of events to develop and test a standards framework*
 - *it includes identifying and securing the commitment of key people whose input is needed to complete the project.*

- b. maintain effective working relationships
 - *this includes being able to work effectively with external stakeholders, sector practitioners and experts, and research participants, and maintain their co-operation*
 - *it includes respecting the views of others and valuing their contributions, as well as resolving differences of opinion.*

- c. keep up-to-date with relevant developments
 - *this includes developments relating to relevant methodologies, as well as developments in practice, policy and the wider context relevant to the field being considered.*

Principles and ethics

You must:

- i. understand and be able to apply key concepts, models and approaches relating to the construction and design of competence frameworks, and their relevance in different contexts
- ii. understand and take account of the wider contexts in which competence frameworks sit, including as relevant professional and vocational education and training systems, professional (self-) regulation and licensing, international mobility, public protection and organisational performance
- iii. understand and use basic principles of qualitative and survey research along with techniques for conducting qualitative field research, trialling and consultations as relevant to the development of competence frameworks
- iv. understand and assess the suitability of different methods and techniques for developing professional standards and competence frameworks
- v. appreciate and be prepared to consider alternative, valid methods and approaches that are relevant to the application that you are working with
- vi. understand the ability of standards frameworks to favour particular values, cultural norms and ways of working and organising
- vii. challenge content that is potentially discriminatory or creates unnecessary barriers for those using it
- viii. respect the perspectives and opinions of those involved in developing, trialling and commenting on standards frameworks
- ix. act responsibly and ethically in dealings with stakeholders and participants
- x. understand the limits of your own understanding and abilities, seeking input and advice from others in areas where you are uncertain.

Annexe 3: examples of standards and frameworks

Sections I-IV give examples of existing structures and statements, organised into:

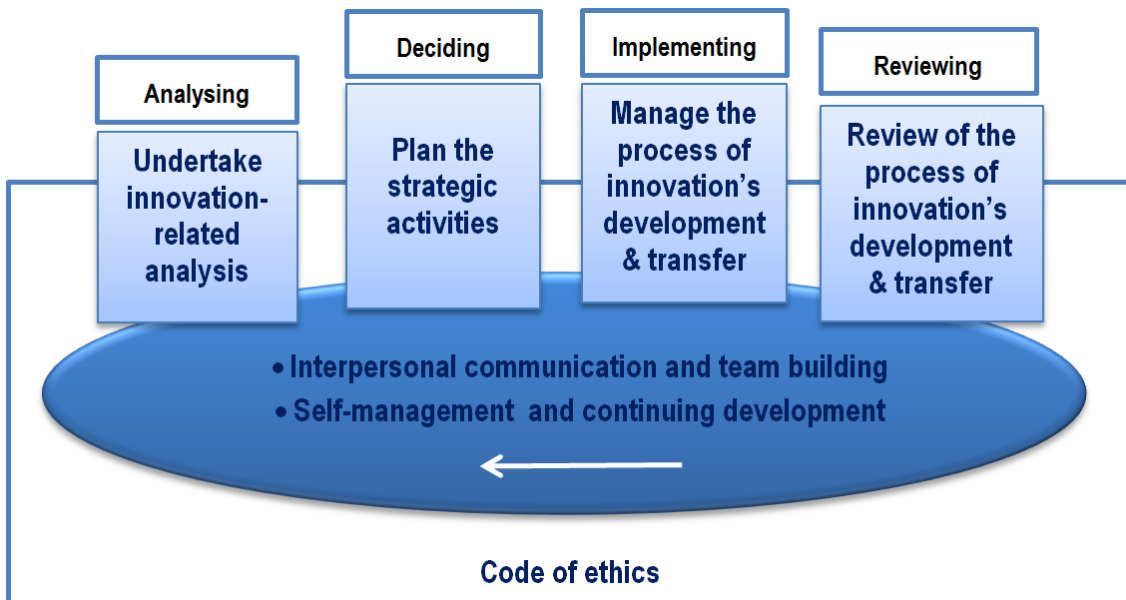
- I. Structure
- II. Professionalism and ethics
- III. Detailed activities
- IV. Level

Most of these have been taken from frameworks developed in ComProCom, with some examples from UK frameworks that were used in the original guidance developed at the start of the project.

I. Examples of framework structures.

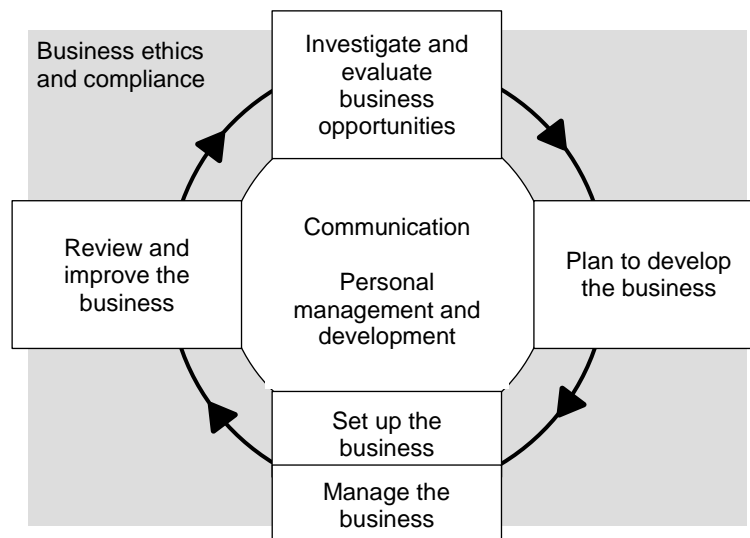
A. Innovation management

This framework was developed by ITeE-PIB in ComProCom. It uses a cyclic structure, supported by two areas of generic professional activity and underpinned by professional ethics.



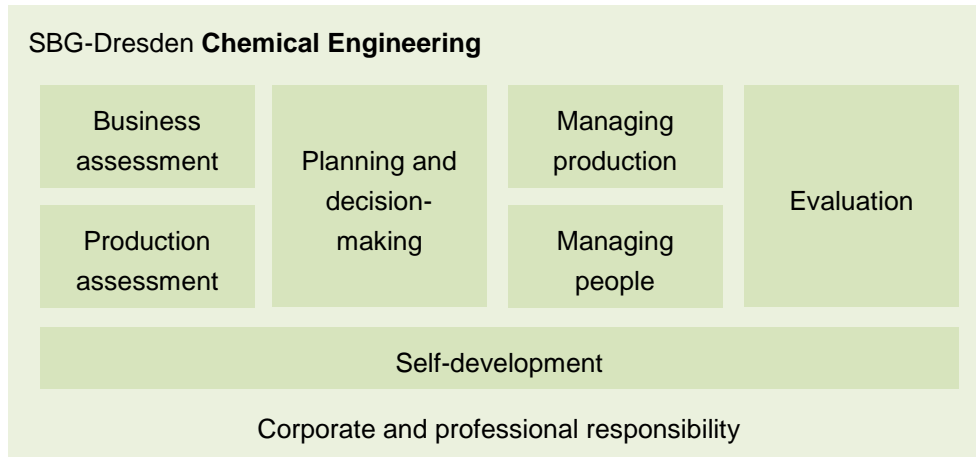
B. Small business management

This framework, developed by die Berater in ComProCom, also uses a cyclic structure for the main activities relating to managing the enterprise, but splits the implementation stage into start-up and ongoing management. The cycle is underpinned by generic areas of capability and by ethics and compliance.



C. Chemical engineering

SBG-Dresden's framework for chemical engineering is structured similarly to the two above, but has split both the assessment and implementation stages into two.



D. Engineering (the UK-Spec)

This non-cyclic framework, developed by the UK Engineering Council, provides a simple, generic model for a large and complex profession. The top-level structure applies to all engineering specialisms and to three levels (chartered, incorporated and technician, roughly equivalent to EQF levels 7, 6 and 4/5). The three levels have different statements at the more detailed level. The associations for each specialism may also develop their own versions of the standards, normally within the framework shown here.

Engineering Council **Engineering standards**

- A. Application of knowledge and technology
- B. Analysis and solution of problems
- C. Technical and commercial leadership
- D. Communication, presentation and working relationships
- E. Commitment to professional standards.

II. Examples of treatment of professionalism and ethics.

A. Social enterprise

Section 6 in the EETAA framework refers to business practice and ethics. It is written in the same way as the other main sections of the framework.

6.1. Maintain up-to-date knowledge of, and act in accordance with, relevant legislation

This includes:

- Having, and being able to apply to day-to-day operations, a comprehensive knowledge of the legislation specific to social enterprises
- Ensuring that the enterprise operates within the law, drawing on an adequate knowledge of the law relating to both business operations and the specific field of operation of the enterprise
- Pay particular attention on the issue of personal data protection (in the case of Limited Liability Social Cooperatives)
- Knowing when legal advice is necessary or beneficial
- Working effectively with legal specialists from within or outside the enterprise.

6.2. Act in accordance with the statutes and the internal regulations of the enterprise

This includes:

- Working in accordance with the spirit and the values of the enterprise's statutes and internal regulations, and ensuring that others do the same
- Acting in a way that takes into account the social impact of the enterprise (and the need to assess it).

6.3. Operate according to the principles of transparency

This includes applying the principles of transparency and accountability.

6.4. Ensure that the business practices are balanced with the social and person-centered aspects of the enterprise

This includes:

- Maintaining a balance between the business and social or community objectives of the enterprise, in line with its values and vision
- Ensuring equality of opportunity and fair treatment for the enterprise's staff, volunteers, customers/supporters, and stakeholders
- Promoting the person-centered approach with means and tools that render the members, employees, volunteers and target-groups agents of change
- Making fair and ethical use of any voluntary support that the enterprise uses.

B. Conservation

This UK example from the Institute of Conservation is written in a different style to the activity-based area of the framework. It includes reference to the need to understand relevant principles without going into detail about specific areas of knowledge or theory.

Professional Judgement and Ethics

- i. understand the principles of conservation and demonstrate an in-depth understanding of the specific area(s) of your practice
- ii. be conversant with national and international principles, philosophies and guidelines relevant to your practice
- iii. understand the wider contexts in which conservation is carried out, the implications of context for practice, and the implications of conservation measures for the context
- iv. use an adequate level of critical thinking, analysis and synthesis in approaching conservation problems and developing appropriate solutions
- v. appreciate and be prepared to consider alternative, valid methods and approaches that are relevant to your practice
- vi. understand the ethical basis of the profession and the responsibilities of the conservation professional to cultural heritage and to wider society
- vii. understand and observe your professional body's code of ethics and practice
- viii. observe legal requirements and obligations, including those relating to health and safety, employment and contract law, and international agreements
- ix. take responsibility for the care of the material heritage within your influence
- x. act responsibly and ethically in dealings with the public, employers, clients and colleagues
- xi. act with awareness of and respect for the cultural, historic and spiritual context of objects and structures
- xii. be able to handle value-conflicts and ethical dilemmas in a manner which maintains the interests of cultural heritage
- xiii. understand the limits of your own understanding and abilities, and practise within them.

III. Examples of detailed standards.

A. Chemical engineering

Production assessment

2.1 Assess production quality and resourcing

This includes assessing compliance with quality objectives and quality management standards, as well as the use of production resources; and identifying any improvements that are needed.

2.2 Monitor chemical processes

This includes:

- classifying chemical reactions and taking into account reaction types
- monitoring and analyzing relevant technical data including as relevant pressure, temperature, pH- value, solvent, fuel distribution and residence time, and identifying the influence of rate of reaction, chemical equilibrium, solubility, catalysis, ions and concentration
- using process controls such as sampling, classical methods of analysis, instrumental analysis and online procedures.

2.3 Assess the production processes

This includes:

- assessing the production conditions for chemical processes in accordance with the types of reaction
- distinguishing between mass and energy interconnection and transport group, and detecting and calculating of material and energy balances
- evaluating the hazard potential and the effect of human factors, facilities, operating equipment and environment.

B. Social enterprise

1. Investigate and assess factors for the development of the enterprise

1.1. Identify new opportunities and/or risks for the enterprise

This includes:

- Implementation of proper methodologies to identify opportunities and risks for the enterprise (as for example SWOT analysis)
- Research to identify market needs for products and services that can be offered by the enterprise
- Identifying the extent of competition in the enterprise's potential markets
- Identifying and assessing financing opportunities and other forms of support provided by sponsors, supporters, and external (including EU) sources of funding
- Making use of (formal and informal) networks to gain intelligence and to exchange information and views.

1.2. Evaluate the social impact of the enterprise and its relation to current and foreseen social needs

This includes:

- Identifying and assessing existing and emerging social and environmental needs relevant to the enterprise's area of operation
- Choice of proper methodology and tools to assess/ measure social impact
- Reviewing the social impact of the enterprise and assessing the extent to which it can be oriented towards identified needs
- Assessing the effectiveness of the enterprise in relation to identified social needs, where necessary designing and recommending changes to its focus or operations.

1.3. Assess the viability of the enterprise

This includes:

- Assessing the overall financial performance of the enterprise, and identifying the reasons for any shortfalls
- Assessing the effect of the fiscal environment and other external factors on the performance of the enterprise
- Identifying opportunities to improve profits without compromising the values and principles of the enterprise
- Identifying any issues relevant to the quality and market relevance of products and services,
- Identifying opportunities to improve/update products and services
- Identifying needs and opportunities as regards products and services offered by other social and solidarity economy organisations.

1.4. Evaluate the capabilities and capacities of the members of the enterprise

This includes:

- Collecting and collating data on the knowledge, skills and qualifications of the enterprise's members, their availability and their wishes, and any obstacles or difficulties they are experiencing.
- Identifying how the enterprise is best placed to take forward its objectives by making effective use of its members' abilities through job creation.

C. Example showing basic and 'advanced practitioner' expectations

This is an adapted statement that includes additional indicators for advanced practice.

Professional development

- a. keep yourself informed on changes in the profession as well as broader developments relevant to your work context
- b. ensure that your practice, knowledge, skills and techniques are up-to-date, both at a general level and in relation to individual projects and tasks that you undertake
 - *this includes maintaining familiarity and where appropriate contact with relevant bodies in the profession and beyond as relevant to your area of practice*
 - *updating needs to be appropriate to role, e.g. if you are principally involved in implementation you would be expected to understand and be able to use new techniques in your field, while if you are a manager or adviser you would be expected to understand what techniques are available and where they are appropriate, but not to be able to carry them out*
 - *at advanced practice level, you would be expected to be contributing to practical knowledge and to developing or evaluating new techniques or applications.*
- c. demonstrate the ability to reflect on and learn from your practice
 - *at advanced practice level, this will include drawing out themes from multiple projects over several years and developing insights that you can pass on to others.*
- d. continue to acquire knowledge in your area of specialism or expertise, and disseminate it through informal or formal means
 - *'specialism' could be a technical specialism, or a particular area of practice, knowledge or research in or related to the profession*
 - *at advanced practice level, this will include carrying out practical or more fundamental research and publishing practice notes or academic papers as relevant to your area of work.*
- e. promote the profession and your specific area of work to lay and expert audiences, including other professionals involved in adjacent fields
 - *this includes being able to provide training or instruction to others where necessary*
 - *at advanced practice level, this will include promoting and demonstrating new techniques, disseminating research or drawing on evidence to challenge existing ideas.*

IV. Examples of guidance on the level of performance required.

Within ComProCom none of the applications included guidance on level of performance. The following three examples are taken from UK professional standards as used in the draft version of this manual.

A. Conservation *Institute of Conservation*

This general description of level for sign-off is complemented by a novice-to-expert table like the one for law on the next page.

The standard required is that of a proficient practitioner with a broad range of conservation experience, able to produce effective and ethical solutions to complex conservation problems and exercise independent professional judgement.

- ◆ You must be able to take responsibility for your standard of work, decisions and conduct, regardless of whether you are an employee without responsibility for others, a manager or head of studio, or a self-employed sole practitioner.
- ◆ You should be 'proficient' across the functions described in the standards. [For assessment] it is permissible to demonstrate 'competent' level in one only of areas 1, 2, 4 or 5, provided that this does not form a major part of your work. 'Beginner' level is not acceptable in any area.
- ◆ The level of knowledge and depth of understanding required are broadly of master's degree standard. This does not mean that you must have academic qualification at this level, but you should have a broad theoretical base to draw on as well as a deep level of practical knowledge about your area of work. You will also need to show that you apply considered analysis and synthesis to conservation problems.
- ◆ You must be able to deal effectively with complex situations. Complex situations are typically those which:
 - require choices between options which lead to significantly different outcomes
 - present dilemmas and value-conflicts or require significant value-judgements
 - present substantial technical problems, for instance in relation to unstable or degraded materials or the level of risk associated with treatments or strategies
 - require a deep level of practical understanding to be applied to the situation
 - require the marshalling and management of a wide range of resources.

To be 'complex' a situation need not contain all these factors, but it is likely to include more than one or have one present to a high degree.

B. Law Solicitors' Regulation Authority

This is a novice-to-expert matrix, based on the Dreyfus model, with some of the statements adapted specifically to the legal profession. The minimum standard for sign-off, generally after two years in training, is 'competent', but solicitors who are partners or practising independently would be expected to have reached the 'proficient' level.

	Functioning knowledge	Standard of work	Autonomy	Complexity	Perception of context	Innovation and originality
Novice	Recognises some of the standard legal issues relevant to the particular case or transaction	Unlikely to be satisfactory unless closely supervised on a task by task basis	Needs close supervision or instruction	Unable to do more than routine and familiar tasks	Tends to see actions in isolation	Works within given procedures or instructions
Beginner	Identifies relevant legal principles and applies them to a simple factual matrix	Straightforward tasks likely to be completed to an acceptable standard	Achieves some steps using own judgement, but supervision needed for overall case or transaction	Able to deal effectively with standard cases and transactions	Sees actions as a series of steps	Uses experience to check information provided
Competent	Identifies legal principles and applies them to a more complex factual matrix; identifies options and evaluates and selects best one(s)	Fit for purpose, although may lack refinement	Achieves most tasks and able to progress legal matters using own judgement, recognising when support is needed	Able to deal with standard transactions, including occasional, unfamiliar tasks which present a range of problems and choices	Sees actions at least partially in context of longer-term objectives of case or transaction	Uses experience to check information provided and to form judgements about possible courses of action and ways forward
Proficient	Applies legal knowledge to develop and critically evaluate a range of options to find solutions	Full acceptable standard achieved routinely	Takes full responsibility for progressing the case or transaction	Deals with complex transactions through deliberate analysis and planning	Sees overall strategy for case or transaction and how individual step fits within it	Produces innovative solutions to problems
Expert	Uses mastery of legal knowledge to develop and critically evaluate a range of options to overcome dilemmas and problematic situations	Excellence achieved with ease	Takes full responsibility for outcomes of case or transaction	Deals with complex transactions intuitively and with ease; confident decision-maker	Sees overall strategy for case or transaction, and how individual step fits within it, as well as alternative approaches	Develops innovative ways forward in complex and unpredictable situations

C. **Medicine** *Royal College of General Practitioners*

This is another adaptation of the novice-to-expert model, effectively using three points on the scale of which the middle one (competent) is the acceptable level.

Insufficient evidence

From the available evidence, the doctor's performance cannot be placed on a higher point of this developmental scale.

Needs further development

Rigid adherence to taught rules or plans. Superficial grasp of unconnected facts. Unable to apply knowledge. Little situational perception or discretionary judgement.

Competent

Accesses and applies coherent and appropriate chunks of knowledge. Able to see actions in terms of longer-term goals. Demonstrates conscious and deliberate planning with increased level of efficiency. Copes with crowdedness and is able to prioritise.

Excellent

Intuitive and holistic grasp of situations. No longer relies on rules or maxims. Identifies underlying principles and patterns to define and solve problems. Relates recalled information to the goals of the present situation and is aware of the conditions for application of that knowledge.