Introducing Competency Management at ESA

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Competency management is central to every organisation's ability to maintain and enhance its human resources. This approach is directly linked to improving competitiveness – organisations need to stay at the forefront of technology, starting with the development of their human capital.

Introduction

This overview of ESA's research and understanding of competency management introduces the work conducted so far on the ESA Competency Management Project, in particular the Generic Competency Model and the Technical Competency Model. The Human Resources (HR) Department is now consolidating the positive results and experience gained to date to develop its Technical Competency Model further and extend its potential applications. Based on lessons-learned, we present suggestions as how best to extend the project to encompass the whole Agency.

What is Competency-Based Management?

Competency-Based Management (CBM) is a set of theories and processes aimed at identifying, classifying and managing the competencies that people need to perform specific jobs. It sets a conceptual and practical framework that drives the management of human resources to contribute efficiently and effectively to the results of an organisation.

By linking human resources processes to desired competencies, organisations can shape the capabilities of its workforce and achieve better results. In short, CBM is a means of ensuring that there is the right person in the right position at the right time. In the recruitment process, it helps, in a structured manner, to define the selection criteria that identify the competencies required for a given position as the basis for selecting the best person for the job. Competency management can also be used to support career management by ensuring that employees are aware of the competencies needed for a particular career path. It is also very important to ensure that employee competencies are maintained and/or improved, which contributes to staff development.

Before competencies can be managed, they should first be classified and their scope of application defined. Initially, they can be divided into two types: behavioural and technical. The behavioural competencies include all those 'soft' skills that enable a person to perform well in a specific function, such as communicating effectively, achieving tangible results and creative problem-solving. These are generic because they can be applied to a variety of different functions and technical specialties. Accuracy, for example, could be as essential for flight dynamics engineers as for payroll officers, but less important for some scientific and engineering roles. The capacity to lead and motivate others is independent of domain; it could be equally important whether you head a team of scientists or a section of contract officers.

Technical competencies are specific to a given function. Depending on the job, this could range from knowledge of the rules and regulations related to payroll and the software that transfers the money to your bank account, to knowledge of Maxwell's laws and the software for the electromagnetic compatibility analysis of some equipment.

There are many models of behavioural competencies that can be applied widely to different specialties. However, the classification of technical competencies could be
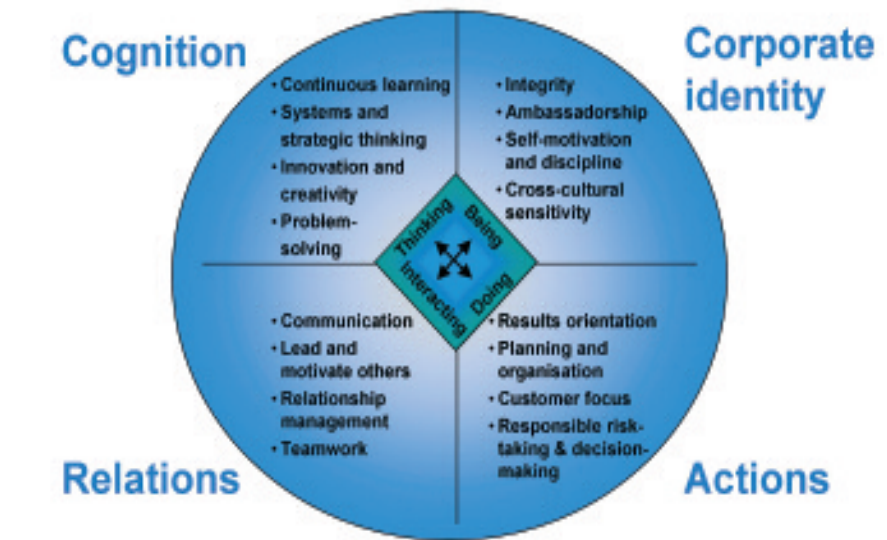
The ESA Behavioural and Cognitive Competency Model

unique to a specific sector or, in some cases, to a specific organisation. Some common general principles apply to most of these classifications.

The most common principle is the top-down approach. This means first identifying the broader categories and then refining them into sub-groups. In the case of scientific and technical organisations like ESA and NASA, three main levels have been identified:

Level 1: the broad job communities, such as Engineering, Scientists, Astronauts and Administrative Services;
Level 2: the job families, such as Electrical Systems Engineering, Space Science, Project Management and Audit;
Level 3: specific jobs, such as Avionics Engineer, Planetologist, Ground Segment Manager and Auditor.

An additional Level 4 further details the specific technical and behavioural skills required for the given job. Once defined, Level 4 competencies may also be ranked according to proficiency levels (such as expert, master, junior) and can be used to define both the requirements of a job as well as the degree to which the person has mastered the various competencies.

The ESA Generic Competency Model
The development of a competency model

within the Agency started in 2001 with the definition of the ESA Generic Competency Model and its associated recruitment and assessment tools.

This model describes the cognitive and behavioural skills identified as important and relevant to the Agency. It identifies four broad categories of skills: cognition (thinking), relations (interacting), actions (doing) and corporate identity (being). Each category contains four specific skills. These 16 skills do not necessarily apply to all posts and a selection is made depending on the nature and characteristics of the post.

The model was based on the feedback from interviews and focus groups of over 120 staff members. The intention of this model was to use it as a foundation for HR practices such as self-assessment, training, recruitment, career management development and mobility. It has been used as the basis for two concrete tools: the

Competency-Based Interview Recruitment Tool, and the Competency-Based Tool for Setting and Assessing Behavioural Competencies. While the first model is widely used in the recruitment process, the second is being promoted for staff assessment and development.

Towards the ESA Technical Competency Model

Competency-Based Management cannot rely alone on cognitive/behavioural skills but must accompany and be integrated with technical competencies. The competency aims to support ESA's goals by identifying staff with the required competencies for a given project or post, as well as identifying potential opportunities best suited to individual competencies. Knowing the capabilities of ESA's internal resources is all the more critical now given the expected departures of a large number of experienced staff and experts in the near future.

Feasibility study
A study on the technical competencies of the Agency was launched in September 2004 with the objectives to:

– define a methodology to describe the technical competencies associated with the various posts and/or required by future needs;
– assess the reusability of the ESA Competency Dictionary developed in recent years and used by some Directorates for manpower planning. It contains definitions for most important

An example of how the Technical Competency Model is implemented in SAP's HRMS. It shows the breakdown of the classification derived from the model in the top-down approach from Level 1 down to Level 3, where the competencies associated with the post of Propulsion Engineer are further detailed into Level 4 skills

technical functions at ESA, such as Propulsion Engineer, Micro-electronics Engineer and Thermal Engineer;
– verify the suitability of the HR Management System (HRMS) software already in use by HR to support properly the CBM data model and functions;
– validate the selected approach through the development of a prototype.

The study started with a comprehensive review of the best practices used in similar organisations, such as the European Organization for Nuclear Research (CERN), Compagnie Général De Géophisique (CGG), the Organisation for Economic Cooperation and Development (OECD), and the United Nations Industrial Development Organisation (UNIDO), to name a few. The technical model used by CERN was considered to be the most promising. This model, like ESA's Competency Dictionary, is based on NASA's Workforce Competency Dictionary. We can gain from the lessons learned and discussions with CERN and NASA about their approach.

Once the model was defined as far as Level 3, it was decided to verify the possibility of including Level 4

competencies. At that point, it was necessary to verify the suitability of the HRMS software to manage the task. A small prototype was developed for 12 positions where the technical and behavioural competencies were identified. The technical, managerial and behavioural selection criteria were obtained from the interview report forms and the qualification requirements and task descriptions were taken from the Vacancy Notices.

HRMS for competency management
In 2000, the Directorate of Resources Management decided to implement a new HRMS to provide HR staff with an integrated tool to support most of their administrative and management processes, including recruitment, organisational management, career management, training, payroll and leave management. ESA selected the SAP/R3 (HR module), after evaluating other options.

The Personnel Development module enables the planning and implementation of specific personnel and training measures to promote the professional development of staff. It also allows the possibility to assign qualifications and competency requirements to a post to ensure they are met. It also allows tracking
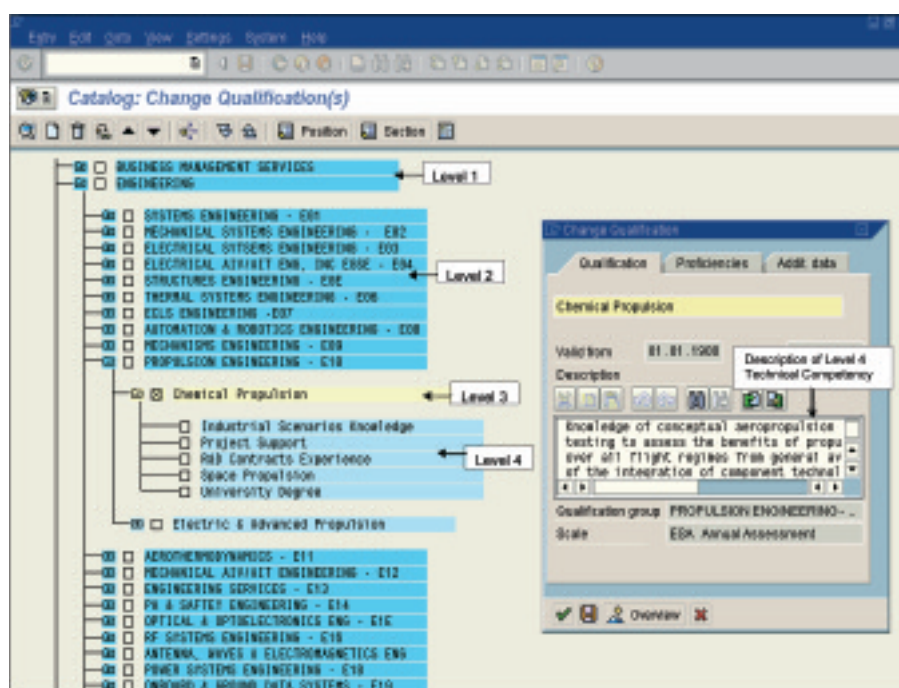
of the qualifications, skills and competencies of staff as they evolve through training, certifications and work assignments.

The module is based on a 'qualifications catalogue' that is first populated with a variety of Level 4 skills and then assigned to either jobs or persons.

The prototype has confirmed that SAP's HRMS is compatible with and can fully implement both the ESA Generic and Technical Competency Models. It has also shown the potential to support career development, succession planning and job matching in the future.

Concept verification with end-users

Once the software prototype was completed, it was time to test the results with potential end-users. The natural choice was to involve the Directorate of Technical & Quality Management (D/TEC), where the management of skills and competencies required to support projects is part of its day-to-day mandate. D/TEC was also heavily involved in using the Competency Dictionary, with 56 competencies. Identified at division and section level, these competencies can be mapped to the Level 2 and Level 3 competencies of the Technical Competency Model.

Three D/TEC divisions participated in the verification: the Data Systems Division, the Propulsion and Aerothermo-dynamics Division, and the Test Centre Division. Each identified a maximum of 10 posts that could be mapped on to the Technical Competency List, and identified a maximum of 14 technical and non-technical competencies per post. At the end of the exercise, 14 new posts were finally populated into SAP's HRMS.

The divisions also provided feedback on the accuracy of the competency list and recommended improvements. They also provided feedback and suggested improvements for the methodology used.

Lessons Learned and Conclusions

The pilot project provided the HR divisions with important feedback and a number of lessons-learned in the four areas outlined below.

Incremental development

One of the most important factors was deciding on the most effective way to identify Level 4 competencies. Two solutions were identified. The first was to ask managers to identify the Level 4 competencies required for each of the posts in their team in one exercise. In this way, the model is populated quickly, although it can be rather time-consuming. The second option was to identify the competencies incrementally, by identifying competencies for a post as Vacancy Notices are published or when terms of reference are updated. This second option was chosen. A new layout for Vacancy Notices is under development, to encourage managers to think more about competencies and qualifications rather than simply on tasks and duties.

Consistency of the top-down approach

In order to collect the data for the whole Agency efficiently, it is essential to have a pre-defined Level 3 competence list. The process of developing this list for the other Directorates is necessary prior to

collecting any data. It is important to consolidate, review and update the list regularly to ensure its accuracy. The relevant manager should be responsible for identifying the competencies in their domains of expertise. Level 4 competencies should be held to a manageable number to keep the model simple. As a guideline, 7-10 technical and 4-6 behavioural competencies should be associated with each (Level 3) post.

Processes

Another important issue was the manner in which the competency model should be used. Competencies can be linked to posts and/or persons and are often independent of each other. Competencies linked to a post are those required to perform the job and do not change dramatically until the post requirements change. A person's competencies, on the other hand, are those skills and abilities obtained over time; they can either improve with experience and training or diminish if not maintained. Post competencies are of a different nature to those of people and therefore have to be identified and maintained by different processes.

Currently, Level 3 and Level 4 competencies are being identified only for posts. As a result, the primary use of the competency model will be for recruitment, and specifically for the creation of Vacancy Notices. Eventually, when competencies are identified for a person, Level 4 competencies could also be used to support other processes, such as gap analysis, workforce planning and career development. Post competencies, however, must first be defined so that they can be presented to staff as a pre-defined model to be used to create individual competency profiles.

Communication

The benefits that Competency-Based Management can bring to our organisation are numerous. The challenge ahead is to develop the model further and to communicate and promote the benefits within the Agency to staff and managers alike. Gesa