Knowledge and Skills Management Practices

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Abstract:

This article consists of building a modeling of BPMN knowledge and skills management scenarios leading to a workflow development capable of introducing the dimensions of responsibilities and management of the deadlines for completing the tasks necessary to comply more with the requirements of the chapter 7 of the ISO 9001: 2015 standard in terms of management and monitoring of training actions aimed at improving skills.
To build a skills monitoring approach consistent with the challenges of the company and the needs of its employees, reflection within organizations is required in order to develop a cyclical and automated skills adjustment plan respecting a schedule of reflective training, adapted to the needs of different sources of knowledge.

Key Words:

"BPMN" Business Process Modeling Notation; workflow; Business Process Reengineering; Skills Adjustment; Knowledge need

1. Introduction

[1] have shown that the classical techniques of information systems engineering are not sufficient to ensure effective skills management: skills management in turn includes several complex and cumbersome processes to manage.
The study conducted by [2] is appropriate for companies in terms of raising awareness among managers of the immediate need to know the critical skills of their staff since it helps them to face competition.
The adoption of an information system 'IS' integrating competence management can resort to business processes sufficiently optimized in order to have the potential to achieve considerable results in terms of managing information complexity.
The current article provides a modeling solution using Business Process Reengineering 'BPR' resulting in a Workflow enabling us to follow-up the different training actions planned as well as the automation of an adjustment plan of competences.

2. Literature Review:

[3] indicated that the determination of the skills required, and the evaluation of the skills acquired can be carried out according to various methods, the choice of which becomes essential.
In order to establishing a training plan, Training engineering relies on a double approach. The first begins with a needs analysis focused on competency analysis.
The second is to implement a training strategy consistent with employee skills. In fact the training needs are not easily identified [4]
According to [5], process time is accelerated just when the software of Workflow management system is used.

3. Research Methodology:

To establish this work, we have adopted the the ASDIM methodology (Analysis, specification, Deployment, Implementation, Monitoring) recommended by in 1991.

3.1 ASDIM Methodology:

- In the step of "Analysis", we will study the requirements of the International Quality Management Standard ISO 9001:2015 [6] 2015 in relation to the improvement of skills.
- The step of "Specification" will be reserved for:
  - ✓ The designation of responsibilities for each of the steps in accordance with the BPMN model, as well as the conceptual model **(Annex 2: Model 2).**
  - ✓ Master the planning of carrying out the tasks of the different responsibilities.
    In this step, we are called upon to identify the reengineering of business processes 'BPR', the modeling of business processes 'BPMN'.
- The step of Deployment processes the design. We exploit all screenshots extracted from computer development by describing its interfaces and their uses.

- The step of "Implementation" is concerned with checking the hypothesis mentioned during the stage of analysis, presenting results and discussing them.

4. Context of the problematic and development of the present research:

Step1: Analysis

4.1 Context of the problematic:

This article consists in building a Workflow mechanism able to introduce the dimensions of time, responsibility and reliability to conform more to the normative requirements of quality management in order to allow the adjustment of staff skills, and the triggering cyclical knowledge needs.
The ISO 9001: 2015 standard requires in this sense that the organization must:
7.1.6) The organization shall determine the knowledge necessary for the operation of its processes and to achieve conformity of products and services. This knowledge shall be maintained and be made available to the extent necessary.
When addressing changing needs and trends, the organization shall consider its current knowledge and determine how to acquire or access any necessary additional knowledge and required updates. **Note 1**: Organizational knowledge is knowledge specific to the organization; it is gained by experience. It is information that is used and shared to achieve the organization's objectives.
7.2) The organization shall: **a)** determine the necessary competence of person(s) doing work under its control that affects the performance and effectiveness of the quality management system; **b)** ensure that these persons are competent on the basis of appropriate education, training, or experience; **c)** where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken; **d)** retain appropriate documented information as evidence of competence.
Other requirements of ISO 9001: 2015 as have been the subject of the development of the process activity diagram **(Model 1)**.

4.2 Hypothesis of the present research:

To cope with changing needs and trends, the organization must consider current knowledge and determine how it can acquire or access any necessary additional knowledge and required updates.
For this, we can afford to announce the following hypothesis:

Modeling a BPMN process based on the requirements of the International ISO 9001:2015 standard allows the construction of a Skills Management Workflow.

4.3 Conceptual model of the research hypothesis:

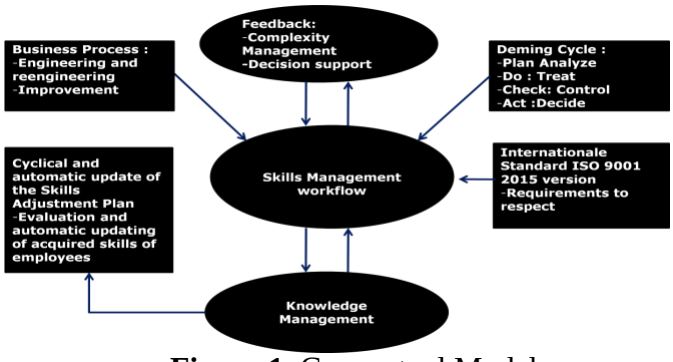

Figure.1. Conceptual Model

5. BPMN' Modeling and Merger by 'BPR'

Step 2 : Specification

5.1 BPM:

Widely known in English under the name of « Business Process Reengineering », 'BPR' is an approach aiming at rethinking, in a creative and innovative way company fundamentals, its way of operation as well as the different technological tools used.

BPMN Modeling Specification:
This research work has the potential to integrate the various sources of knowledge needs **(Annex 1: Model 1)** of the organization under a reliable and efficient information system in direct connection with the training planning, the follow-up of its actions and the update acquired and required skills. **(Annex: Model 2)**
Training engineering will consist of establishing the training plan by consecutive steps in the best possible conditions, taking into account different actors interfering during the framework, before implementing, following-up and evaluating it, as indicated in the standard (See 7.1.6 ISO 9001: 2015).
A diagram of activity sequence was established (Flowchart of skill management sequences **(Model 2)**)

6. Results of BPMN Modeling of Skills Management:

Step 3: Deployment

Assessing the sources of knowledge needs and selecting them according to the decision-maker's priorities allows the capitalization of human resources around its objectives and needs, and leads to the construction of a real training plan that must be executed in accordance with the planning put in place.
It is within this framework that specifications of workflow scenarios have been defined following 'BPMN' for the processes of

implementation of training actions.

A BPMN model for skills management has been deployed in this context **(Annex3:Model 3)**

7. Deployment of computer development results:

Step 4:Implementation

IT development is now based on BPMN modeling to give rise to a Workflow in order to validate the knowledge needs.

For every type of knowledge need, a color is given (The yellow color: the knowledge need is "waiting"; the green color: the Knowledge need is 'realized'; the red color: the training is 'cancelled'; the blue color: the training is 'underway'). **(Figure 2)**

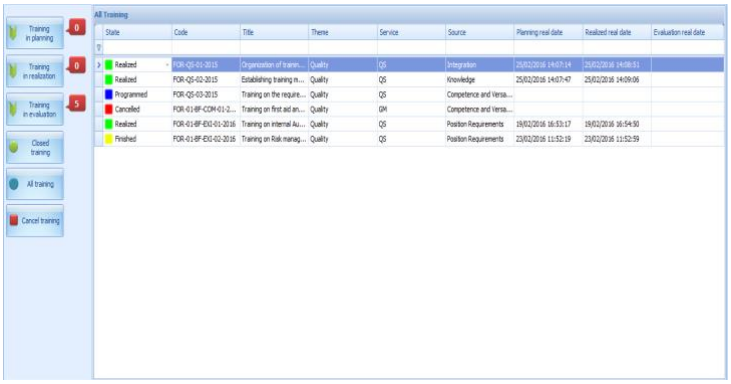

Figure.2. Interface "All Training Actions"

The stage of realization of training returns a feedback to the planning responsible via a signal of changes at the level of the interface named « Trainings in evaluation » precising automatically the state of this step that takes the green color indicating to users that this phase is finished or closed. **(Figure 3)**

Every effective training action realized will be displayed on the adjustment plan of competences. **(Figure 3)**

An automatic update of the adjustment plan of competences permits to register effective trainings in competences already acquired and will be confronted with working position requirements automatically illustrated over that same adjustment plan of competences leading to new training needs identified. **(Figure 3)**

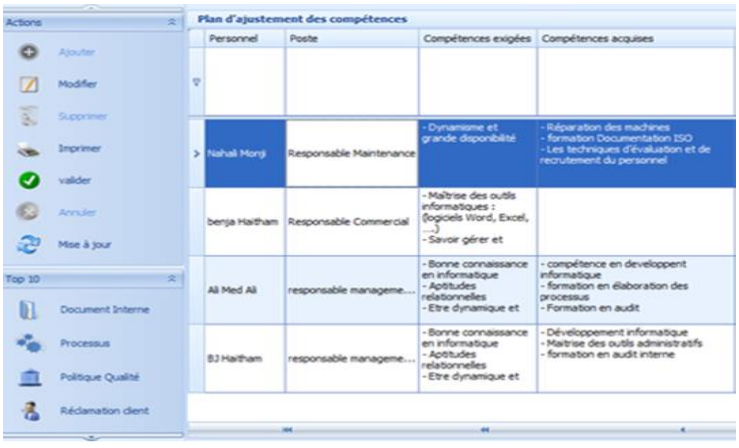

Figure.3. Interface « Plan of adjustment competences » after update

Step 5: Piloting the "Monitoring" skills management process:

The Workflow has enabled us to perform an effective link in terms of feedback. It has helped us to automate the adjustment plan of competences which lead to the cyclical development of knowledge needs. (Chapter Requirement Competence Management 7.2.C ISO 9001: 2015).

Any training action can be canceled; a feedback will be given automatically to the knowledge requirement state 'BC' which will take the red color indicating that the planned action is completely canceled. **(Figure 2)**

Consequently, the training actions carried out, evaluated and judged to be effective will be displayed on the skills adjustment plan following an update as indicated in the ISO 9001: 2015 standard through the requirement 7.1.6 of organizational knowledge .

8. Conclusion

We hope through this article to confirm the results obtained through relevant studies and also through our attempt to perfect an organization by BPR and meeting the requirements of ISO 9001: 2015 Version having the potential to manage skills and knowledge organizational.

Future research could focus on concrete examples of management systems business processes and how they can be leveraged through information systems equipped with Workflow technology with respect to the audit planning process and other relevant processes such as communication in management systems.

References

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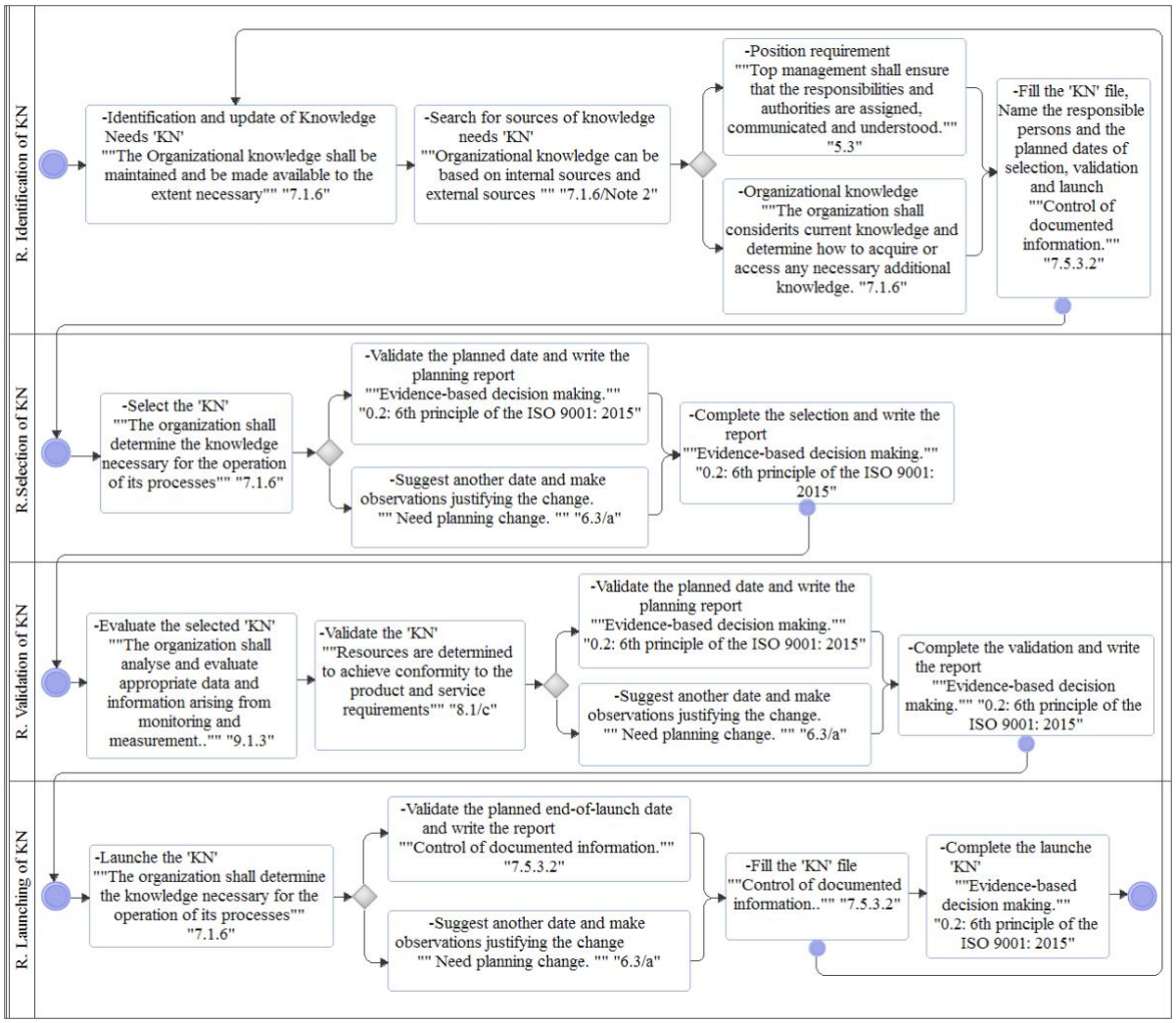
Annexes

Annex.1

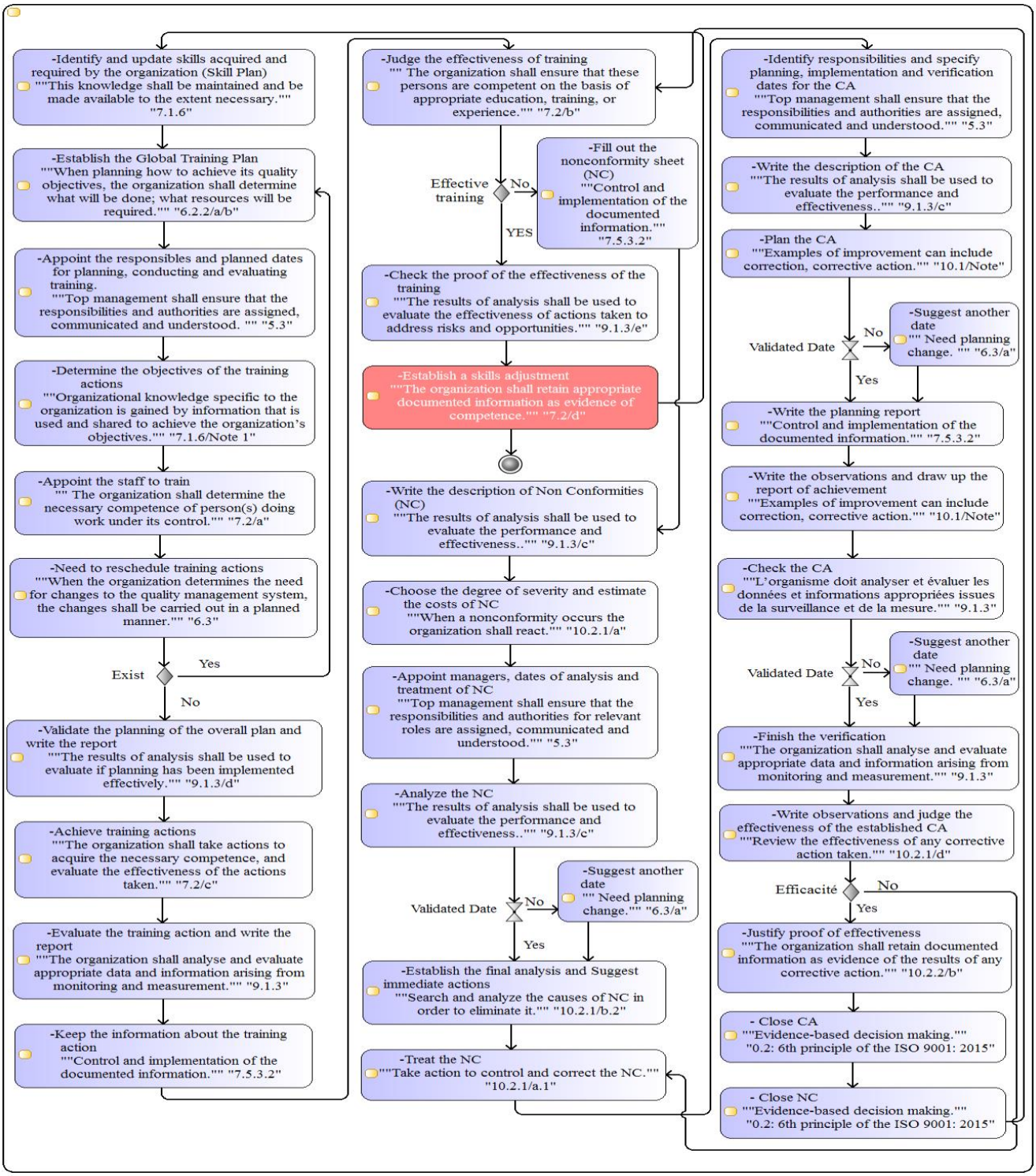
Model 1. BPMN Knowledge Requirements Launch



"Developed by the author via Modelio 3.6"

Annex.2

Model 2. Flowchart of skill management sequences



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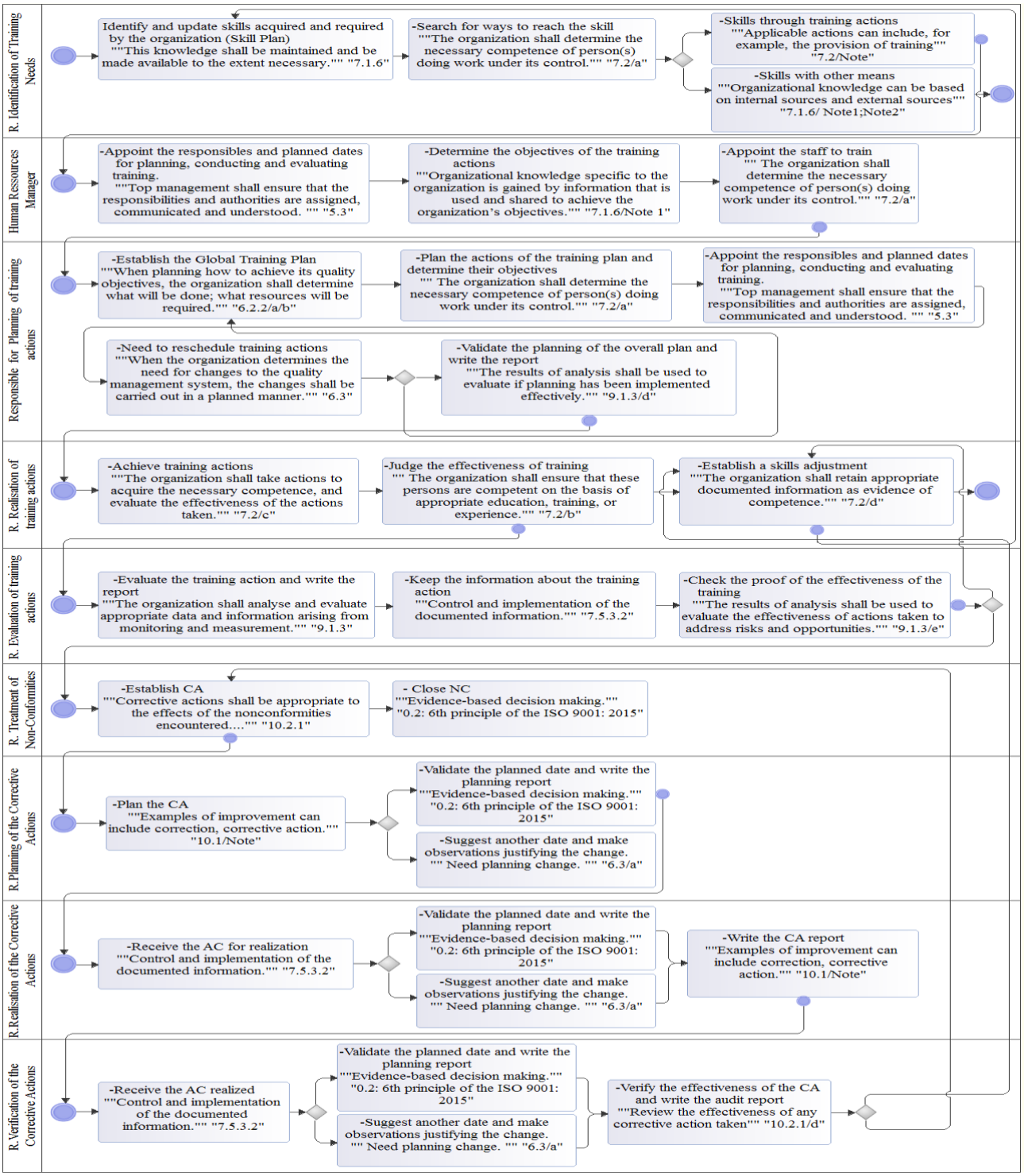
Annex.3

Model 3. BPMN of the skills management workflow



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