

## Need for the qualification of IT competences - the computer and internet Certificates (C2i)

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### Summary

To answer the need for qualifying the acquired ICTs, the French Ministry for Education developed public qualifications from primary to higher education. In Higher education, computer and internet Certificates (C2i) have been created at Bachelor's level.

The "C2i level 1" certifies operational competences, especially the ICT abilities in communication and collaborative working. At Master's level, the "C2i level 2" certificates assess the competence identified by sectoral branches for the domain aimed by the programme. The methods used for development and implementation of these certificates are explained in this article, with a complete presentation of competence identified for the C2i level 1 and the C2i level 2 in the sector of "law".

The introduction of qualification of ICT competence in higher education joins in the will that all the students do have this transverse certified competence, both for their successful study and for their future vocational integration. The cultural revolution that represents the qualification at university level and its generalization in "traditional" curricula will be a main theme of this presentation.

**Keywords :** Competence, qualification, educational policy, training, assessment, computer, internet

## 1 Introduction

The acquired competence and its validation, as learning outcome is the key of the legibility of European degrees and qualifications for the students, the employees as more globally training institutions and companies. The improvement of the integration and the professional mobility is conditioned by the implementation at the universities of a competence-based technology, condition of the curricula harmonization and their positioning in the new European qualifications framework. The digital competence, the use of the ICT tools are essential for the student, the employee and more generally the European citizen in their study, work and life in this 21st century. The place of e-learning becoming dominant frame of the lifelong learning represents a relevant example of this need.

## 2 The European context of the qualification

In the context of subsidiarity of the states in their educational policy and in front of the structural impossibility to build identical academic programmes in different countries, the European Commission decided that the assessment of the learner's level will relate to the competence acquired at the end of study, and more generally the results of formal, informal and nonformal learning. The first European initiative, that is the need of harmonization, allowed the creation of the levels L (Bachelor's), M ( Master's) and D (Doctorate) at the end of university programme with ECTS (European Credits Transfer System), in order to make possible the validation. This first step is only a theoretical, countable framework taking into account the mobility and the

study level, it was completed by a phase of instrumentalisation of the process (European CV, portfolio...). The new stage is the implementation of the European Qualifications Framework (EQF) for a real legibility of knowledge, know how and abilities.

### 3 The specific competence regarding ICTs

In the European Union recommendations (European Parliament and Council in December 18th, 2006) [1] the digital competence is clarified as follows:

*" The digital competence implies the **sure and critical** use of Information Society Technologies in working, leisure activities and communication.*

***Mastering OCTs is the precondition: using the computer to obtain, estimate, store, produce, present and exchange information, and to communicate and participate via Internet in collaboration networks "***

We underlined in this quotation the words which seem to us important. Particularly, the last passage " *to communicate and participate via Internet in collaboration networks*" shows that the digital tools can provide other usages in comparison with considering the computer as only a typewriter and a calculator.

Furthermore, this transverse competence is identified, as the linguistic competence, on specific lines of the European curriculum vitae.

It is to answer this recommendation that the French government proposes computer and internet Certificates ( C2i).

### 4 The French policy for qualification of digital competence

In French education system, referentials of competence and qualification methods have been defined by the Ministry for Education and the Ministry for higher education: respectively computer and internet Certificates at primary and secondary school and computer and internet Certificates in higher education.

Level 1 of these certificates is related to general and instrumental basic competence needed for the student as well as for the employee.

#### Example 1: the referential of "C2i level 1" certificate

- **A general and transverse referential:** recovers the evolutivity and the ethical and ethical aspects
- **B specific and instrumental referential:** defines seven domains of competence

Fields of competence	General abilities
A1 - To take into account the evolutionary character of the ICTs	<ol style="list-style-type: none"> <li>1. To be aware of the constant evolution of the ICTs and the deontology which must be associated to them, and able to bear it in mind within the trainings.</li> <li>2. To become aware of necessary actualizations of the C2i® level 1 referential.</li> <li>3. To work in bearing an open mind and an adaptability (adaptability to the various working environments, the exchanges)</li> <li>4. To take into account the compatibility issues, format of file, standard and procedure of compression and exchange.</li> </ol>

A2 - To integrate the ethical dimension and the respect of the deontology	<ol style="list-style-type: none"> <li>1. To respect the fundamental rights of the man, the international standards and the laws which result from this.</li> <li>2. To master / control one's digital identity.</li> <li>3. To secure the sensitive - personal and professional - data against the deceitful interventions, disappearances, voluntary or involuntary destructions</li> <li>4. To assure the protection of the confidentiality</li> <li>5. To show critical spirit and to be able to argue the validity of the information sources.</li> <li>6. To implement rules of good behavior, politeness and civility.</li> <li>7. To understand and adapt behavior charters.</li> </ol>
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Fields of competence	Specific and instrumental knowledge
B1 - To appropriate one's working environment	<ol style="list-style-type: none"> <li>1. To organize and personalize one's work station.</li> <li>2. To be constantly able to find one's data.</li> <li>3. To structure and manage a tree of files</li> <li>4. To use the adapted tools (to know to choose the software which is appropriate for the aims in view).</li> <li>5. To maintain (update, cleaning, defragmentation...).</li> <li>6. To organize the links (favourites - bookmarks) in files.</li> <li>7. To connect to the various types of networks (wired and wireless).</li> </ol>
B2 - To search the information	<ol style="list-style-type: none"> <li>1. To distinguish the various types of research tools.</li> <li>2. To formalize the requests of research.</li> <li>3. To recover and know to use the information (text, image, sound, files, pilot, applications, Website...)</li> </ol>

Fields of competence	Specific and instrumental knowledge
B3 - To back up, secure, archive one's data in local and network	<ol style="list-style-type: none"> <li>1. To search a file (by name, by date, by text,...).</li> <li>2. To assure the protection against the viruses.</li> <li>3. To protect one's files and one's folders (in reading / writing).</li> <li>4. To assure a back-up (on the network, the external support,...).</li> <li>5. To compress, to decompress a file or a set of files/folders.</li> <li>6. To recover and transfer the data on and from mobile terminals.</li> </ol>

B4 - To prepare documents to be printed	<ol style="list-style-type: none"> <li>1. To create short documents (CV, letter).</li> <li>2. To prepare a complex and structured document (report, minutes, memory, bibliography...).</li> <li>3. To manage the functionalities necessary to structuring the complex documents (footnotes, contents, index, styles,...).</li> <li>4. To integrate the information (picture, files, graphs).</li> <li>5. To process statistical data in a spreadsheet (arithmetic formulas and simple functions as the sum and the average, notion and use of the absolute reference), to present them in form of table (shaping including format of number and borders) and in graphic form (simple graph integrating one or more series).</li> <li>6. To create diagrams (geometrical forms with text, lines, arrows and connectors, in-depth provision, object clusters, export of picture).</li> </ol>
B5 - To make the face-to-face and online presentation of one's work	<ol style="list-style-type: none"> <li>1. To communicate the result of one's work by using a tool of computer-based presentation</li> <li>2. To adapt documents initially dedicated to be printed for a presentation on screen.</li> <li>3. To prepare hypermedia documents integrating texts, sounds, freeze and animated pictures and internal / external links.</li> </ol>
B6 - To exchange and communicate remotely	<p>To use advisedly and according to the rules of use:</p> <ol style="list-style-type: none"> <li>1. The E-mail (in heads, size and format of files, organization of files, filtering);</li> <li>2. Mailing lists (to subscribe, to cancel a subscription);</li> <li>3. Discussion forums (moderate, non moderate);</li> <li>4. The real time dialogue;</li> <li>5. The mobile terminals.</li> </ol>
B7 - To lead projects in remote collaborative working	<p>To work in a collaborative working environment:</p> <ol style="list-style-type: none"> <li>1. To use the tools of a collaborative workplace (platform, chat room or E-campus,...)</li> <li>2. To prepare a common working document (to assure the control of corrections, additions and deletions).</li> <li>3. To manage different versions of the same document.</li> </ol>

The certificates of level 2 concerns the specific digital competence related to vocational domains («health », "teaching", « law » « engineering » « jobs in the environment and the sustainable development »). The referential of competence related has been elaborated by the representatives of the training institutions and the professional sectors.

## Example 2: the referential of «C2i level 2 " Certificate for the professionals in Law

- General and transverse referential

Fields	Competence
<b>A</b> ICT-bound issues and stakes in legal and juridical activities	<ol style="list-style-type: none"> <li>1. Stakes in the regulation of information and communication technologies</li> <li>2. Identification of the rights and the general and professional obligations and the deontologic and ethical rules</li> <li>3. Consequences bound to legal activities and to occupations at the professional structures; adaptation to the evolution of professional context</li> <li>4. Modification of the legal practices (cyberlaw...) and of the concepts of law</li> <li>5. Knowledge of the services, the available tools, the market actors</li> <li>6. Elements of exploration: follow-up of the evolutions (information and realization)</li> </ol>

- Specific and instrumental referential

Fields	Competence
<b>B1</b> To search and use sources of information and of legal documentation	<ol style="list-style-type: none"> <li>1. To apprehend the functioning of data management system</li> <li>2. To use the queries</li> <li>3. To assess and validate the information</li> <li>4. To create a personal base of documentation</li> <li>5. To process results (interpretation, analysis and synthesis)</li> </ol>
<b>B2</b> Safety	<ol style="list-style-type: none"> <li>1. To save one's data (levels and methods, tools)</li> <li>2. To exchange data safely</li> <li>3. To back-up one's data in perennial way</li> </ol>
<b>B3</b> Professional responsibility related to the digital activities	<ol style="list-style-type: none"> <li>1. To adopt a responsible behavior corresponding to the legal requirements regarding particularly : <ul style="list-style-type: none"> <li>- the protection of personal data</li> <li>- the right to access to the correspondence</li> <li>- The intellectual property of the digital contents</li> <li>- The protection of the personal freedoms (employees, clients, third party...)</li> <li>- the writing and the electronic signature (form and probatory value)</li> <li>- The responsibility related to the on-line edition (compulsory mentions and violations of the press laws)</li> </ul> </li> <li>2. To respect the deontologic obligations related to ICT</li> </ol>

Fields	Competence
<b>B4</b> The network for collaborative working	<ol style="list-style-type: none"> <li>1. To draft common documents and acts</li> <li>2. To create and manage a group via internet</li> <li>3. To manage projects and files available in network</li> </ol>

<b>B5</b> <b>The digital exchanges between judicial or legal actors and services available for public</b>	<ol style="list-style-type: none"> <li>1. To use the remote administrative procedures (tax and social declarations, registers, civil/family status, police records...)</li> <li>2. To use the legal systems of exchanges (electronic Clerc's Office of civil, penal and trade courts, exchange of conclusions,...)</li> <li>3. To elaborate electronic acts</li> <li>4. To elaborate electronic notarial acts</li> </ol>
<b>B6</b> <b>Legal data processing</b>	<ol style="list-style-type: none"> <li>1. To use and enrich an electronic recording</li> <li>2. To utilize the decision-making tools</li> <li>3. To utilize the tools of statistical analysis and semantics of the dispute</li> </ol>

Compared to qualifications proposed by private bodies rather directed "tools", they are independent from builders or editors and insisting on the abilities to communicate and work in collaboration by using ICT.

## 5 The qualification

The word qualification which is related to the validation of competence represents a not neutral terminological modification in the university process. The implementation of the qualification requires the elaboration of a referential of competence, but especially to associate to it a validation, a qualification method. To be C2i certificate granted, it is necessary to validate the complete list (national referential) of required competence. The "C2i " are real certificates of competence and not "diplomas" which are generally obtained by examination of the average of notes obtained by the students. The methods concern mainly practical tests comprising the activities allowing to assess the competence. These tests have to cover all the domains. If the results are appreciated by a specific and unique jury of the institution, the homogenization is assured by a group of experts, which follows up a national data base of the tests of qualification.

## 6 Evolution and perspectives

Let us notice first of all that the "management" of C2i certificates is based on a wide dialogue of the network of C2i correspondents and that the successive improvements made on the conditions of implementation of C2i arise from reflections of this network. The new tendencies of 2008 allow to clarify the qualification method in a triple purpose:

- to strengthen the national character of the certificate
- to homogenize the practices between certifying institutions
- to reaffirm the validation of competence

To date, the C2i certificates, with the Certificate of Competence in Languages (CLES), maybe represent in French higher education models to develop the diplomas which should also become certificates of competence.

The C2i has vocation to facilitate the integration in the information society and actually concern a public more wider than only students. A number of actions were made for the recognition within the top management of the professional world and also the regional authorities.

C2i are also developing in the French-speaking world, notably in African French-speaking countries concerned with the passage to the "LMD" system at universities. Some of them have already foreseen the integration of C2i in certificate-granting programmes. We can quote Tunisia where the initiative comes from the government and Morocco where the initiative comes from the universities. For these two cases, C2i is identical to French C2i and corresponds, by agreement with a French university, to a co-qualification. We can also quote the case of Burkina Faso, Djibouti, Senegal, Democratic Republic of Congo where the integration of C2i in higher education institutions is in progress or projected. These operations are generally made

within the international cooperation. A reflection on European C2i certificate is at present begun.

## 7 Conclusion: C2i as a lever for life long learning

After the implementation in France of the accreditation for work experience (VAE in French: Validation des Acquis de l'Expérience) since 2002 which allows every employee to obtain all or a part of a university degree by making validate the skills acquired in the professional context, C2i is becoming a new lever for the implementation of the Life Long Learning.

The accreditation for work experience requires the deciphering of the skills acquired towards modules which are rarely described in skills. The decisions of the jury of accreditation cannot thus lean on a non-existent repository of skills. C2i brings a methodology for the drafting of this repository and the validation of the skills. All these headways are going to allow the construction of diploma-awarding programmes in adequacy with the needs of the labor market of the European space.

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