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EUCIP General Overview

Michael Sherwood-Smith and Giovanni Franza

This article documents the historical development of EUCIP, how its development was influenced by initial development of the EISS (European Informatics Skills Structures) framework and the EICL (European Informatics Continuous Learning), all the way to work on the EPICS (European Professional Informatics Certificate Service) project and the subsequent evolution into the European Certification of Informatics Professionals (EUCIP). The article explains the development of the three certification offerings, namely, EUCIP Core, EUCIP Professional and EUCIP IT Administrator and gives an insight into future developments for EUCIP.

Keywords: EISS, EICL, EPIC, EPICS, EUCIP, IT Professionalism, EUCIP Core, EUCIP Professional, EUCIP IT Administrator.

1 Developing a Pan-European Certification Scheme

1.1 EUCIP Beginnings

The European Certification of Informatics Professionals (EUCIP) is a pan-European qualification scheme for people entering the IT profession and for IT professionals wishing to continue their professional development. EUCIP has been developed as an independent, European recognised scheme for IT professionals. The qualification enables IT professionals to document and confirm their knowledge and skills for employers and enhance their standing in the market place.

The need for professionalism in IT and the need for the recognition of an "IT Professional" is argued by *Peter Morrogh* in his paper "IT and Professionalism: An Industry View" [UPGRADE Vol. II. No. 4, Aug. 2001]. Although written seven years ago, the need for professional certification and an understanding of the value of Professionalism in the industry is even greater today, and has been highlighted by *Charles Hughes* in his paper "Professionalism in IT" [UPGRADE Vol. VII. No. 4, Aug. 2006]. Organisations are more and more dependent on IT to run their businesses and poor quality systems pose a serious risk to any organisation. The need for a high standard of technical skill, management ability and, a high standard of ethical practice underpinned the commitment of CEPIS to develop a professional certification programme for ICT practitioners to be recognised and validated as Professionals.

The objective of the EUCIP programme (see <<http://www.eucip.com>>) is to offer a recognised certification of IT competence for IT professionals at a standard prescribed by the ECDL Foundation and CEPIS. The qualification is aimed at practitioners working in industry, government and public organisations alike.

The goals of the EUCIP programme are:

- To define an industry-driven standard for Informatics professionals.

Authors

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- To meet the demands of the fast changing market for IT professionals across Europe.

- To contribute to closing the IT skills gap in Europe.
- To offer a vehicle for life-long learning and competency enhancement for the IT profession.

EUCIP was developed by CEPIS (the *Council of European Professional Informatics Societies*) and is operated by the ECDL Foundation who continues to enhance, promote and manage the EUCIP certification programme.

CEPIS have for many years sponsored the idea of creating ICT Professional qualifications and promoting CPD (Continuous Professional Development) programmes for the informatics industry/profession.

It was the actions of CEPIS in the area of certification programmes for IT Professionals which have led to the current EUCIP certification programme.

1.1.1 Initial Work (1996-1999)

During the mid to late nineties the design of the EISS (*European Informatics Skills Structures*), a framework of competencies required by informatics practitioners and professionals covering the full range of IT activities took place. The EISS Project was supported by European Union funding.

The EISS divided the field into nine Streams and each of the Streams was further divided into between one and twelve Sub-streams. Finally, each Sub-stream contains up to ten possible levels. The levels range from Unskilled Entry (0), to Fully Skilled Practitioner (4), to Senior Manager/Director (9).

For each Stream, Sub-stream, and Level covered by the EISS, there are four sections:

- Recommended Academic Background.
- Experience and Level of Skill at Entry.
- Tasks/Attributes.
- Training and Development Required.

The EISS activity was followed by initial development of a continuous learning program to be known as EICL (*European Informatics Continuous Learning*).

1.1.2 EPIC (2000)

The EISS and EICL projects were then followed by the development of EPIC (*European Professional Informatics Certificate*) aimed at providing a basic level of IT professional certification [see *Informatik/Informatique* journal, 3/2001]. The EPIC model involved a foundation level of IT knowledge with "higher" levels addressing particular topics. The project was seen as a way to offer a new entry route into the IT profession and for this reason, EPIC was seen by CEPIS as a way to have a positive impact on addressing the IT skills shortage. At this time several studies were pointing to the potential for upcoming IT skills shortage issues including EITO/IDC (2001)¹, Microsoft/IDC (2000)², and CareerSpace (2000).

¹ EITO (2001), European Information Technology Observatory 2001, Frankfurt.

² IDC (2000), Europe's Growing IT Skills Crisis, London.

1.1.3 EPICS (2001 - 2003)

EPICS (*European Professional Informatics Certificate Service*) became the next step in the road to developing EUCIP. During the EPICS phase, development of what was soon to become the EUCIP Core syllabus began. This activity involved input from several European Subject Matter Experts. In addition, the EPICS project applied for financial support from the EU, through the TEN-telecom program. As a result of this funding, a market validation project took place to prepare a business plan for a limited market in six European countries.

1.1.4 EUCIP (2002 - Present)

The name was changed to EUCIP in late 2001 and a EUCIP central organization was created as part of CEPIS. An initial meeting of early adopters was held in Athens in January 2002 and the work of creating the EUCIP product (based on the initial activities from the EPICS) began.

During 2002, a central year of development activity for EUCIP, an initial Question Test Base was developed and extensive piloting activities took place in Italy, Finland, Norway, UK, Estonia and Germany. Later in the year, the working groups which had been involved in designing the product were transformed into a more structured form and EUCIP moved into office space in the BCS (*British Computer Society*) headquarters in Swindon.

The first official tests took place in Italy in July '03, soon followed by Norway.

During 2004 CEPIS decided to merge EUCIP with the ECDL Foundation operations. The involvement of the ECDL Foundation led to further revision to the EUCIP Core Syllabus in June 2006, followed by enhancements to the Question Test Base.

1.2 EUCIP IT Administrator Development

1.2.1 The Beginning

At the beginning of 2001 *Associazione Italiana per l'Informatica ed il Calcolo Automatico* (AICA) had some contacts with AIPA (former name for CNIPA, the Italian Authority for Informatics in Public Administration) to develop a competence profile to help ARAN (the Italian agency which negotiates with trade unions in public administration) to define a job role for employees that must support colleagues within local branches or small entities (up to 20 people).

The first meeting took place at AICA premises at May, 18th. 2001. This was the original starting point for IT Administrator and led to the development of what was originally called "*LAN Administrator*" and became, after several changes, EUCIP – IT Administrator "*Module 4 - Expert Network Use*".

The development started with the syllabus and was carried out by a group of more than 10 experts, including people from academies, universities, ICT firms and consultants, companies using ICT to have an all-round sight of the LAN Administrator job role. The syllabus and the Question

Test Base were developed with both theoretical and practical aspects of the LAN administrator job role.

1.2.2 A First Join

During this early phase, ECDL Foundation had set up a committee to understand how to develop a higher certification level to add to ECDL. This new level was intended not only for mere ICT users but also to cover some basic technical knowledge.

The works of this committee lead to what is now known as "ECDL Advanced" and, now, is devoted to a sound user level knowledge of ICT tools, but, at the time, a working group of this committee was working on a certification which expanded modules 1, 2 and 7 of ECDL Core, working with systems, networks and IT security: the scheme included modules about PC hardware, Operating System, LAN and IT Security with some contributions from Ireland, United Kingdom and some North European companies interested in a "low level" certification scheme on IT Security for employees.

Knowing that there were significant overlaps between the two works, the two working groups had a meeting during the November 2001 *ECDL Foundation CEO Meeting* in Dublin.

The agreement between the two working groups lead to a new international structure that included people from Italy, Ireland and United Kingdom. At the same time the two schemes merged. The original work by the ECDL Foundation group on PC hardware became "*Module 1 – PC Hardware*"; the original work of the AICA group became "*Module 4 – Expert LAN Use*". The module on Operating Systems was split in two parts: the first one, approaching client side operations, became "*Module 2 – Operating Systems*" and a second, approaching server side and LAN operations, became "*Module 3 – LAN and Services*". The two working groups also agreed that the level of the proposed IT Security content was too low, so the AICA group was put in charge of a new proposal.

An important part of the agreement was the decision to fully include competences about free software environment. It was also decided that for some modules there is no possibility to assess expertise without a certain amount of knowledge on FLOSS (*Free / Libre / Open-Source Systems*) platforms. AICA was in charge of verifying this aspect of the syllabus and integrating the QTB (Question and Test Base).

1.2.3 Improving IT Security

To strengthen the competence about IT Security, at the beginning of 2002 the Italian group was joined by experts from IMQ (*Istituto per il Marchio di Qualità*) one of the most known Italian agencies for standards certification.

A very important contribution to the IT Security module was given by the Hellenic Data Protection Agency (the Greek institutional body for Security in ICT and for privacy warranty): the module contents were deeply discussed in May 20th. 2002 meeting in Athens.

CLUSIT (Italian Information Security Association) an association that works with many experts, ranging from academy to security companies and certification bodies were

also involved in the development of this module. CLUSIT continues to contribute to this module.

1.2.4 The First Pilots

In August 2002 the first courseware to support the certification was completed and sent to the publisher. Part of this courseware was a scheme that listed how the IT Administrator modules reflected the ongoing governmental initiative for teachers and ICT (project FORTIC – ICT technologies for the schools), particularly on the "C - Operate" area (how to maintain ICT infrastructures of the schools). This work was lead by OTE (*Osservatorio Tecnologico*, an agency of the Italian Ministry of Education for technology transfer to the schools).

During the 2002 summer a first workshop took place in Italy with 20 attendees. The aim of the workshop was to explain to a selected number of professionals the scope of the certification and its contents in order to allow them to successfully take the certification exams and become part of the certification infrastructure.

During the month of November the first pilot exams took place in Italy, near Milan and before the end of the year a dozen certifiers were awarded with their diplomas. More than 120 exams were taken, for a gross total of more than half a thousand of practical tasks and more than two thousand of theory tests.

These details were also used to assess the QTB quality; a complete quality assurance screening was performed and all the data available from the ECDL Foundation development processes was used to validate the certification.

1.2.5 A New Cooperation

Beside the fact that IT Administrator was carried out in conjunction with ECDL Foundation into the ECDL Advanced technical committee, during the development it became apparent that the certification scheme was too high for the advanced level of ECDL and that the level was quickly growing, pointing more to the EUCIP family than to ECDL one.

At the beginning, the developing groups were distracted by the fact that the program did not refer to an "*all day long technician*" but to some experts who also spend some time as "*technical experts*", and thought that this led more to a user area than a technical one. With the time it became apparent that the role of the "IT Administrator" could be a link between ECDL and EUCIP.

But, notably during the first pilot experiences, it became apparent that the level of knowledge required was definitely the level of a professional and not the level of a simple or of an advanced user. So, during the CEO meeting in Rome in November, 6th. 2003 the decision was taken to keep IT Administrator separate from ECDL in order to avoid confusion and facilitate the insertion into EUCIP program.

The end of the process was completed at the beginning of 2004, when IT Administrator became a Certification Program distributed by EUCIP Ltd. and officially linked to EUCIP Certification Program.

The important thing to note is that IT Administrator is a certification aimed at people directly involved on practical operations and it covers most of items of EUCIP Core Operate, but on a much deeper and practical level. For this reason the EUCIP – IT Administrator modules can be used as certification for some vocational schemes, starting with EUCIP Professional Network Manager (see later in this paper).

1.2.6 New Developments

As with every technical project in ICT, including EUCIP, IT Administrator is at risk of obsolescence if the content cannot maintain a suitable level of currency, so around mid 2004 the decision was taken to develop a second release of all materials, starting with the Syllabus and continuing with the QTB.

The change was based on two main reasons: the first was the growing demand for IT Security and the broadening of this crucial sector; the second was the increasing number of different and updated technologies used for hardware. A third reason was the need for some knowledge about geographical networks to assess people working for multinational companies, ISP, broad Universities, or Public Administration.

The new syllabi and QTB were finalised in August 2005. This release will remain valid at least until end 2009.

During work to map and verify the overlap of IT Administrator with EUCIP and during the development of EUCIP Professional Network Manager profile (see later in this paper) the working group opened contact with CISCO mainly to map their well known certifications to the mentioned vocational profile.

This led to an interesting possible synergy: CISCO holds IT Essential courses (and courseware), offering this teaching by means of "CISCO Academies", but without certifying its students on it. Discussions with the IT Administrator working group suggested that IT Essentials I and II could be assessed using modules 1, 2 and 3 of EUCIP – IT Administrator.

A pilot experience took place in Rome during December 2005: the results were largely positive so CISCO signed an agreement to continue this experience and many CISCO Academies have started to use the EUCIP – IT Administrator certification to meet student demand for certification.

1.2.7 Today

EUCIP IT Administrator is a certification operated by ECDL Foundation. The scientific maintenance and development is carried out by AICA, who also assist ECDL Foundation and other countries to launch and operate the certification.

Italy is fully operational with more than 200 certified certifiers and experiences ranging from State University of Milan, State Police, Secretariat of Prime Minister, Ministry of Justice and others. Romania, Norway and Spain are in the process of launching the certification, working on translation of syllabus, QTB and training materials.

1.3 EUCIP Professional Development

1.3.1 First Steps

Since its inception, the EUCIP programme was designed

to reach a professional level of certification; the initial idea was to develop EUCIP elective modules above the 3 Core level modules, so that a candidate could choose how to compose his/her progression to full professionalism by combining external certification modules (e.g. Cisco, Microsoft, ISEB,...) and some EUCIP elective modules.

In late 2001 this initial concept was partially revised, based on the fact that the external certification offering was already so broad that it could probably cover all requirements. In a workshop held in London in May 2002, the general structure of this higher level (at that time named "elective" or "vocational" or "practitioner" level) was first presented in a way which is fully compatible with the current definition of the EUCIP Professional level.

However, the main focus at that time was still on improving and piloting the Core level; therefore, during 2002 and 2003 only some initial work could be done, leading to the definition of the first profiles: the Business Analyst, the Software Developer and the Network Administrator (later renamed Network Manager). Apart from defining a method for specifying competences required from a single profile, the problem of defining a full range of profiles was not addressed for several months.

At the end of 2003, EUCIP was ready for a new step forward: EUCIP Core had started successfully and it was time to think about the vocational profiles.

Many certification schemes were examined to verify their strengths and weaknesses and to learn lessons from previous works: many schemes exist, but some are exclusively tied to ICT companies (as Career Space), while others are limited to existing job positions (as German AITTS), but the existing complexity in the market reflected the state of the existing job variety.

The job began defining a bouquet of 22 different vocational profiles: this quantity was not considered to be too high or too low, so each profile has an audience not too strict or too broad and the content was not too specialised nor too generic and weak.

In March 2004 the first four profiles were ready for pilot. During the development, the corresponding job role descriptions and a library of knowledge and competence items for each profile (similar to a syllabus but wider in scope and less defined in depth) were prepared.

To help the understanding of these vocational profiles, each of them was also mapped in terms of other existing specifications (SFIA, CIGREF, AITTS).

Another decision taken at this stage was not to develop proprietary certification exams but to use other available certifications to bridge the gap between Core and the vocational profile itself.

This was done using the library (see above) and working together with well known organisations that develop certifications like Cisco, Sun, HP, Oracle and Microsoft. In this work the library played a central role to define the impact of the various certifications.

In parallel with the profile specification activity, the accreditation process was initiated: a EUCIP elective profile,

in fact, would remain just a theoretical description of an ideal set of competences if no certification modules were available. As explained further in the article by Paolo Schgör, Frank Mockler and Neil Farren in this monograph, a candidate willing to achieve EUCIP Professional certification needs to collect some "elective modules" in his/her portfolio before gaining admittance to the final examination. Therefore, the accreditation of elective modules was started during the profile definition phase. The previously mentioned international ICT vendors were involved, and provided very useful input.

This accreditation process needs a continuous revision activity; for instance, in 2007 a new version of ITIL was released, and the related certifications are under revision: as a consequence, a EUCIP-ITSMF joint workgroup was activated to recalculate EUCIP points deriving from ITIL certifications.

1.3.2 More Profiles

In a EUCIP *Product Development and Quality Management Board* (PDQ) meeting on August, 31st. 2005 in Brussels, it was decided to develop other four elective profile specifications: the task force (12 people, 8 from EUCIP, 4 from companies involved in software products related to the profile, i.e. Oracle for DBA) started its work in September 2005 and the draft proposal of these modules was presented and briefly discussed in PDQ meeting on November, 24th. 2005 in London. After some work the final version was approved by the PDQ in its Brussels meeting of February, 6th. 2006.

In April 2006, a dozen candidates applied to earn the first vocational certificates, in Rome, Italy. Nine of them were successful and the diplomas were awarded in a public ceremony on May, 5th.

As agreed at the PDQ meeting of June, 9th. 2006 in Barcelona, AICA asked some more experts to join the task force and develop the last elective profiles offering this work to EUCIP as a draft to explore the possibility to quickly complete the EUCIP professional level. The first three profiles were presented and agreed a PDQ meeting on October, 6th. 2006 in Brussels. The last eleven profiles were completed and accepted by the PDQ during the Rome meeting on March, 22nd. 2007. In the same PDQ meeting the revised final procedures for the vocational level certification were approved.

2 Expanding and Promoting EUCIP

EUCIP is promoted and its development managed by the ECDL Foundation. The certification programme is deployed through **Licensees** (Local Market Representatives) who run and administer EUCIP certification in their countries and strive to promote IT Professional development in their markets. In Europe most of the Licensees are directly associated with CEPIS Member Societies (National Computer Societies in Europe). The Licensees are responsible for establishing a network of **Test Centres** in their country and working with government, academia and industry to

ensure the continual growth of the programme and widespread adoption of EUCIP as a national standard in their respective markets.

The EUCIP programme is also supported at Core level by approved Courseware and Learning Providers who make courseware and/or training available for students to prepare for the EUCIP qualification. Courseware, which must be approved by EUCIP, is available to support the teaching of the EUCIP Syllabus. Learning Providers may propose, either in taught courses or distance learning schemes. These training materials and teaching schemes must have EUCIP accreditation. Learning Providers can also operate as Test Centres. Test Centre accreditation by EUCIP ensures that the Learning Provider has the on-site capability and all the necessary equipment to conduct testing for the EUCIP programme.

Currently EUCIP has certification programmes running in Croatia, Estonia, Ireland, Italy, Norway, Poland, Romania and Spain. Approximately 6,000 candidates have engaged with the EUCIP programme since its inception.

3 Future EUCIP Developments

Due to the ever changing demands of technology and the IT Profession, EUCIP is constantly evolving and adapting to meet the needs of the market. As part of this evolution, plans are in place to carry out a revision of the EUCIP Core Syllabus during 2008, with a view to the new syllabus being available to candidates in the following year. Development work will also continue with EUCIP Professional, particularly relating to the accreditation of EUCIP elective modules.

Plans are also in place for a version of the eCCO diagnostic tool (See article "*EUCIP Services for Organisation*" in this monograph) to be hosted by CEPIS. This tool is used to map individuals' IT Competencies to a comprehensive list of basic IT Professional Profiles. In doing so, the tool is able to define the competence gaps and training requirements for an individual and map them to the most relevant EUCIP Professional profile.

In addition, EUCIP will continue to collaborate with relevant certification vendors in the IT Professional certification market and explore further options to diffuse the EUCIP certification offering throughout Europe.