



EUCIP
European Certification of
Informatics Professionals

EUCIP Web & Multimedia Master

Elective Level Profile Specification

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Short Description

A EUCIP Web & Multimedia Master is expected to combine design, development and administration skills for multimedia applications and websites; all aspects benefit from a thorough understanding of web systems and technologies, but creativity required for finding nice graphics and animation must be balanced by assessments on usability and accessibility, and a structured approach to publishing and administration.

This profile requires a minimum work experience of **18** months in a compatible job role; if this requirement is not fulfilled, the candidate might be certified as an **Associate** Web & Multimedia Master.

Tasks Overview

Acknowledges the customer's demands, identifying the needs and defining the aims to be reached.

Designs the application's information architecture, by arranging the contents inside a fruition path. Chooses the methods for information access and supply.

Draws the interface using drawing tools, and possesses composition abilities which allow to correctly harmonize shapes, images and colours.

Defines and creates templates to show the different content types, using editing applications and specific languages.

Creates an application model, to test its usability and the respect of accessibility guidelines, such as WCAG, and to check if the answer to the customer's expectations is correct.

Develops the web or multimedia application, with the tools and software which better answer the identified demands, complying with the rules and standard issued by the W3C (World Wide Web Consortium).

Talks to software developers and is able to take part in preliminary choices of development languages and databases. Takes part in the choice of servers and networks to be used in the project. Also provides advise on how e-commerce tools work and which are the problems of data confidentiality and transactions security.

Recognizes the security needs to be satisfied during application development, installation and use, and checks that they are really enforced.

Formats contents with editors for image, audio, video and multimedia files, and places them correctly within the developed application.

Tests compatibility with the systems where the application will be run, and defines the minimal requirements needed for its use.

Tests and debugs the application to find and fix the bugs.

Follows processes and registration procedures of Internet domains and copyrights. Is also able to identify security and intellectual property concerns and can interact with legal personnel applying for authorization schemes.

Takes part in the release phases of the product, both via Internet, and by duplication of multimedia supports. Is also able to intervene in the authoring and publishing phases preliminary to distribution.

Defines the web marketing tools needed to obtain better indexing in search engines and advertising strategies to be used to promote the product.

Prepares the documentation needed to write the application's User Manual and trains the personnel in charge of the application's updating, maintenance and installation.

Essential Behavioural Skills [2]¹

The Web and Multimedia Designer role requires a good general knowledge, excellent oral and written expression, and a very wide range of more specific behavioural skills.

Attention to the client, interaction, ability to collect information, plus keen organisational and commercial sensitivity are required to understand quickly the client's needs.

Creativity to compose and harmonize multimedia objects for creating interfaces is also needed to meet with client's requirements and tastes.

Analytical and comparative intelligence, imagination and proactivity are required to formulate and validate solutions.

Attention to detail, a logical-minded and goal-driven approach, flexibility, determination, planning and control aptitude, teambuilding and leadership are required to achieve effective results.

¹ numbers in brackets represent EUCIP points

Detailed Skills Required

Deep competence level [13,5]

A4.06 Web marketing [2]

- Understand the main concepts like effective web presence and web audience.
- Define website goals.
- Achieve higher visibility to the search engines.
- Master the techniques for making a website more effective in attracting traffic.
- Write a strategic internet communication plan.
- Define a business model for selling on the web.
- Contribute to plan and run a web advertising campaign.

B4.01 Web site development and usage [1,5]

- Use a framework that covers the full website development process.
- Contribute to policy on the construction of an organisation's website, with particular reference to ease of use and adherence to standards.
- Evaluate the benefits gained and the costs incurred in using multimedia presentation techniques on a website for an organisation.
- Define measurable goals and objectives for websites.
- Apply best practice Web Site Design Principles to projects.
- Appreciate the reasons for bad web site design.
- Use a well-known website development framework.
- Appreciate the different roles in web site development.
- Contribute to defining web site goals and objectives.
- Define the target audience for a web site.
- Define usability requirements via Use Cases and scenarios.
- Perform information analytical design (types, chunks, relevance, labelling, consistency, multimedia, accessible detail, hierarchy of information).
- Contribute to organising content into web pages.
- Define web site structures.
- Create a User Conceptual model and contribute to a site navigation model.
- Appreciate the visual impact (consistency, legibility, model elegance) of a web presence.
- Evaluate graphics usage and animation.
- Specify response times and evaluate technology issues with these needs.
- Contribute to testing the web site and usability inspection.
- Perform Benefits Realisation (implementation, promotion, evaluation, evolution).
- Appreciate Web Technology features (components: browsers, servers, linking to data sources, security, tools).
- Analyse, structure and present information in a way that meets the specific needs of the audience and their business scenarios.

- Organise information so that it is easy to access and navigate for use on a website.
- Present information in a visually appealing way to ensure consistency and effectiveness.
- Undertake usability inspections and reviews.
- Ensure benefits are realised from the development of websites.
- Contribute to user interface and web design by having an understanding of basic communications theory, the use of story boards, rough drafts etc. and the need for iterative development and testing.
- Contribute to the building of an organisation's website, in particular, assist in identifying target user characteristics and needs.
- Evaluate websites from the business/user perspective, placing emphasis on ease of navigation, clarity and scarcity of information presentation, and on the use of business driven standards for colour, fonts and graphics.

B4.02 Designing and developing web applications [1,5]

- Choose platforms that support each programming language and environment. EITHER:
 - o Master servlets and JSPs, which are the most popular components of the J2EE standard and critical elements used by companies building e-commerce sites,
 - o Build web-based applications using Java servlets and Java Server Pages (JSP). Know the concepts and use of the servlet API, plus the productive development of applications through Java Server Pages"
- OR:
 - o Master COM/COM+/.NET and ASP,
 - o Build web-based applications using ASP or VBA in a .NET environment. Know the concepts and use of web services.

C4.02 World Wide Web [3,5]

- Configure clients and support users in understanding:
 - o the definition of Universal Resource Locator (URL),
 - o the WWW as a client-server application,
 - o the role of the server,
 - o the role of the client and the configuration of its browser,
 - o the operations of HTTP and S-HTTP protocols,
 - o http content-type headers vs MIME standard,
 - o the aim of main markup languages (HTML, SGML, XML, CSS, XSL) and style sheet,
 - o the concept of the Common Gateway Interface (CGI),
 - o the concept of an applet,
 - o cookies, their benefits and dangers.
- Perform main browser setup (proxy, plug-in, etc.).
- Install configure and manage a simple web service.
- Explain how to distinguish a secure connection from an insecure one and when it is necessary to use a secure transaction.
- Enable and disable cookies, ActiveX, Java, and JavaScript server etc.

- Apply and support users in understanding the common rules of Netiquette.
- Verify and explain how to verify correct implementation of standards in web pages.
- Know the accessibility guidelines and the tools used to evaluate them.
- Know standard bodies such as W3C (World Wide Web Consortium).

B4.04 Image editing [2]

- Understand main concepts underlying digital images (colour model, graphic format, pixel and resolution,...).
- Capture an image with a scanner or a digital camera.
- Use an image editing application:
 - o Manipulate an image,
 - o Use layers,
 - o Format text,
 - o Create drawn objects,
 - o Paint on an image,
 - o Use effects and filters.
- Prepare an image for printing or publishing on World Wide Web or on a multimedia application.

B4.05 Multimedia editing [3]

- Understand main concepts underlying video (pixel, frame, interlacing, refresh frequency).
- Understand the differences between television standards (PAL, NTSC, SECAM), analog standards (i.e. VHS, S-VHS, Video8), digital standards for reproduction (i.e. DV, miniDV, DivX, XviD, DVD) and for compression (i.e. MPEG-1, MPEG-2, MPEG-3, MPEG-4).
- Recognize the different signal representations (i.e. frequency, amplitude, spectrum, harmonics, bitrate).
- Apply specific techniques for audio editing (i.e. sampling, binary coding, analog-to-digital and digital-to-analog conversions, compression methods).
- Prepare a storyboard for designing movies and animations.
- Configure the hardware for manipulating audio, video and the peripherals for capturing, acquiring and playing audio tracks and video.
- Use an animation editing application:
 - o Use techniques as layers, keyframes, libraries, texts and fonts,
 - o Create symbols,
 - o Create and modify animations,
 - o Export animation.
- Use a video editing application:
 - o Capture and video acquiring,
 - o Cutting,
 - o Apply effects and transitions,
 - o Make colour correction,
 - o Export video.
- Use an audio editing application:

- Capture and audio acquiring,
- Cutting,
- Mixing,
- Apply effects,
- Export audio.
- Conduct the authoring phase of a video editing project.
- Prepare the output for external supports like tapes, CDs, DVDs, portable digital players.
- Integrate movies and audio into web pages and applications.

Incisive competence level [16,5]

B4.03 Build internet applications [1]

- Create form modules, including components for database interaction and GUI controls.
- Reuse objects and code.
- Choose appropriate data sources for data blocks.
- Ensure application security.
- Create and manage multiple-form Internet applications.
- Handle the notion of stateless connection and use of sessions

A7.02 Business risk and IT security [1]

- Specify the business need for recovery and back-up of data and for protection against viruses.
- Evaluate the need for encryption of data (at rest/in transit) in the light of network "threats" to data integrity.
- Evaluate the risks to the business caused by security threats to IS/IT.
- Contribute to a Security policy for (part of) a business organisation.

B1.14 System deployment methods [1]

- Organize the deployment of a system, i.e. the delivery of it to the users in the target client organisation.
- Control and understand the business application of artefacts resulting from software development.
- Organise deployment workflow and product roll-out activities; including:
 - - testing the software in its final operational environment (beta test),
 - - packaging the software for delivery,
 - - software distribution,
 - - software installation and configuration,
 - - data population, both through new data entry activities and through migration from legacy system files or databases,
 - - training the users.
- Support the client organisation in planning and acting the operational start-up of the new system.
- Organise and control initial support service provision during system start-up.

B3.01 Programming [2,5]

- Use different programming design methods, such as Object-Oriented (OO) design, "top down" design, structured programming.
- Know how to use abstraction as a technique of problem-solving and design.
- Cope with the specific needs of legacy systems in program design.
- Use different data structures such as records, arrays, and linked lists.
- Decide when to use each one of the data structures above and related algorithms.
- Use some of the main types of programming languages (different generations, functional, procedural, OO-based) to compose new algorithms and functions or to modify existing programs.
- Interpret correctly syntax in programming languages.
- Choose between compiled and interpreted programming languages.

A7.03 Data protection [1]

- Evaluate the importance of preventing unauthorized access to business-critical data.
- Analyse issues related to data protection, personal rights regarding privacy and free access to information held by public authorities.
- Explain the principal concepts of the laws in force in the own country and compare them with European recommendations and different jurisdictions.
- Determine which rights, restrictions and obligations apply in a given real case, and what they mean to the organisation.
- Define a robust organisational approach to cope with such regulations and business priorities.
- Analyse risks by probability and severity and identify adequate countermeasures.
- Design procedures for obtaining, using and storing sensitive personal data in compliance with specific requirements, such as:
 - o information on why, how and by whom the data are used,
 - o right to access personal records and to have them deleted,
 - o anonymity and secrecy.
- Propose effective ways to train employees about processes, and responsibilities (both organisational and personal).
- Analyse storage solutions and business practices in terms of security and appropriate availability.

B3.02 Languages [2,5]

- Write effective source code in a specific procedural programming language.
- Example: Basic, Pascal, C, Cobol, etc.
- Use a specific OO programming language.
- Example: C++, Java, Delphi, etc.
- Use a scripting language.
- Example: PERL, Python, PHP, Ruby, etc.
- Define the principles of Mark-up Languages.
- Use Extensible Mark-up Language (XML), use provided tools to execute XML-friendly database queries, employ XML technology in

programs and applications, know XSLT and how to use it to transform a document.

B2.07 Database creation and maintenance [1]

- Describe the main architectural components of a DBMS
- Start-up the DBMS server process
- Manage a DB instance
- Create a new DB
- Analyse and maintain Data Dictionary content
- Analyse and maintain the Control File
- Analyse and maintain Redo Log /Journaling files
- Analyse and manage Tablespaces and Data files
- Manage storage structure and relationships
- Manage Undo Data
- Manage Tables and Indexes
- Know how to assure Data Integrity
- Load Data into a DB
- Import and export data: methods include the bulk copy

C3.01 Network principles and standards [1,5]

- Evaluate the basic components of a network, such as server, client, NIC, protocols, Network Operating System (NOS), shared resources.
- Evaluate a Server, its requirements, and function. Also evaluate the basic server components.
- Build or order a server, dimensioning it to cover the network needs.
- Evaluate a client, its requirements, and function. Also evaluate the basic client components.
- Build or order a client, dimensioning it to covers both user's and applications' needs.
- Evaluate the function of a Network Interface Card (NIC). Also be able to choose the appropriate card for a network.
- Differentiate between the basic network topologies:
 - o Busnet,
 - o Ringnet,
 - o Starnet,
 - o their function, capabilities and limitations.
- Differentiate between a Local Area Network (LAN) and a Wide Area Network (WAN).
- Recognise "de facto" and "de jure" standards in data transmission:
 - o the TCP/IP suite,
 - o the OSI model,
 - o purpose of the layered reference model (principle of encapsulation and service access points in layer models).
 - o main standard organisations, such as CCITT, ITU-TS, IEEE, ISO and IAB and domains they arte focusing on.
 - o aim of the different layers (physical, data link, network, transport, session, presentation, and application).

B3.03 Software Development process [1]

- Write documentation: proper formats, tools, internal documentation.

- Develop formal methods, use tools and environments for software engineering, recognise the role of programming paradigm and process maturity.
- Perform Rapid Prototyping.
- Perform testing/acceptance/deployment procedures:
 - o development of major UI components,
 - o development of prototypes to explore any other system uncertainties like response time, scalability etc.
- Apply methods and techniques for planning and monitoring progress of projects. Examples: work breakdown structures, critical path analysis, conflict resolution.
- Correct course and control changes, according to the Change Control Process.
- Apply a proper coding process in a development environment aimed at a massively parallel execution, as well as for embedded systems, real time response systems and very high availability systems.
- Conduct acceptance testing.
- Be able to identify milestones.
- Test functionality, system stress and load.
- Use commercial tools packages for various types of testing and bug tracking.
- Build an acceptance test.
- Support deployment and hand-over.
- Provide application and technical support.

B1.12 Defining a solution architecture [1]

- Gather and analyse:
 - o user requirements,
 - o operational requirements,
 - o system requirements for hardware, software, and network infrastructure.
- Transform requirements into functional specifications: considerations include performance, maintainability, extensibility, scalability, availability, deployability, security, and accessibility.
- Transform functional specifications into technical specifications: considerations include performance, maintainability, extensibility, scalability, availability, deployability, security, and accessibility.
- Select the appropriate technologies for the physical design of the solution.
- Create the physical design for:
 - o the solution,
 - o deployment,
 - o maintenance,
 - o the data model.
- Create specifications for auditing and logging.
- Validate the physical design.

A4.01 New technology opportunities and the matching of these to business needs [2]

- Analyse business processes and compare them against alternative solutions proposed by standard software packages ("best practice" approach).
- Evaluate various options for the "virtual organisation" within a business scenario.
- Establish a business case for moving from a "segregated" sales and marketing strategy to the "unique customer" approach in a given organisation.
- Produce a report on the effects of globalisation for an organisation.
- Evaluate the Internet as a tool for creating new opportunities for an organisation.
- Evaluate extranets as a tool for achieving efficiencies in customer/supplier interaction.
- Produce an impact analysis for an organisation related to the increased use of e-business mechanisms.
- Evaluate a project which used IT as the enabler for significant business change.
- Produce a report documenting the major features of Customer Relationship Management tools.
- Compare the features offered by two major Supply Chain Management packages.
- Evaluate the case for using Enterprise Resource Planning tools for a given business scenario.
- Compare the strengths and weaknesses (from a business viewpoint) of developments in IT technical architectures (e.g. web based vs. "2 tier" client server).
- Evaluate the case for using Document Management systems.

C7.02 Service Management essentials [1]

- Establish a proper Service Level Management process and explain its benefits for the organisation.
- Evaluate the main elements of a Service Level Agreement.
- Compare the uses and purposes of Service Level Agreements, underpinning contracts and Operational Level Agreements.
- Negotiate SLA (Service Level Agreement) with internal /external customers and suppliers.
- Identify roles/responsibilities in order to control the actual service level against SLA.
- Promote initiatives for customers satisfaction and benchmarking.
- Set up a proper policy for availability and capacity planning and for IT Service contingency planning.
- Design and assure automatic capture of information for SLA.

External references to SFIA[®] version 3 by the SFIA Foundation

Skill 7: Strategic Application of Information Systems

“The development or review of an information systems strategy to support an organisation’s business goals and the development of plans to drive forward and manage that strategy. Working with others to embed the strategic management of information systems as part of the management of the organisation.”

Level 5

Skill 11: Systems Architecture

“The specification of systems architectures, identifying the components needed to meet the present and future requirements, both functional and non-functional (such as security) of the business as a whole, and the interrelationships between these components. The provision of direction and guidance on all technical aspects of the development of, and modifications to, information systems to ensure that they take account of relevant architectures, strategies, policies, standards and practices and that existing and planned systems and IT infrastructure remain compatible.”

Level 5

Skill 12: Emerging Technology Monitoring

“The identification of new and emerging hardware, software and communication technologies, products, methods and techniques and the assessment of their relevance and potential value to the organisation. The promotion of emerging technology awareness among staff and business management.”

Level 5

Skill 22: Programming/Software Development

“The design, creation, testing and documenting of new and amended programs from supplied specifications in accordance with agreed standards.”

Levels 4 and 5

Skill 24: Web Site Specialism

“The design, creation, testing, implementation and support of new and amended collections of pages of information on the world wide web or an intranet or extranet.”

Levels 4 and 5

Skill 26: Systems Ergonomics

“The iterative development of the allocation of function (between the human, machine and organisational elements of systems), user interaction and job design. Optimisation of accessibility and usability, based on user requirements, the context of use, relevant ergonomics knowledge and feedback from evaluations of prototypes.”

Levels 4 and 5

Skill 27: Content Creation

“The planning, design and creation of information content, to be delivered electronically or otherwise. This includes managing the quality assurance and publication process.”

Levels 4 and 5

Skill 28: Non-Functional Needs Analysis

“The establishment, clarification and communication of non-functional requirements for usability and utility, for example screen design/layout, response times, capacity, resilience. The analysis of the characteristics of users and their tasks and the technical, organisational and physical environment in which products or systems will operate.”

Levels 4 and 5

Skill 29: Usability Evaluation

“Assessment of the usability (including health and safety and accessibility) of new or existing products or services (including prototypes). Methods include user trials, expert review, survey and analysis.”

Levels 4 and 5

Skill 30: Human Factors Integration

“Achievement of optimum levels of product or service usability, by ensuring that project and enterprise activities take account of the user experience.”

Level 5

Skill 41: Stakeholder Relationship Management

“The coordination of relationships with and between key stakeholders, during the design, management and implementation of business change”

Level 5

Skill 50: Data Protection

“The development and implementation of policies, procedures, working practices and training to comply with the requirements of legislation regulating the holding, use and disclosure of personal information such as, in the UK, the Data Protection Act, Computer Misuse Act, Freedom of Information Act.”

Level 5

Skill 55: Service Level Management

“The planning, implementation and control of service provision. This includes negotiation, implementation and monitoring of service level agreements, and the ongoing management of operational facilities to provide the agreed levels of service, seeking continuously and proactively to improve service delivery.”

Levels 4 and 5

Skill 76: Marketing

“The research, analysis and stimulation of potential or existing markets for IT products and services, both to provide a sound basis for their development and to generate a satisfactory flow of sales enquiries.”

Levels 4 and 5

External references to AITTS by the German Government – *Arbeitsprozessorientierten Weiterbildung in der IT-Branche*

Profil 1.5: User Interface Developer

(Nutzerschnittstellenentwickler/in)

“User Interface Developer konzipieren und implementieren Schnittstellen für die Interaktion zwischen ITSystemen und deren Benutzern.”

Profil 1.6: Multimedia Developer

(Multimediaentwickler/in)

“Multimedia Developer konzipieren und implementieren interaktive Multimedia-Anwendungen für die Online- und Offline-Nutzung.”

Profil 5.4: Web Administrator

(Webadministrator/in)

“Web Administrator konfigurieren, überwachen, betreiben und pflegen die für den Betrieb von Websites und Webservern notwendige Infrastruktur. Sie koordinieren und strukturieren die Entwicklung von Websites.”

(?) Profil 3.2: E-Marketing Developer

(E-Marketingentwickler/in)

“E-Marketing Developer wirken bei der Konzeption eines die externe Unternehmenskommunikation betreffenden Aktionsplans für den Online-Bereich mit, setzen diesen um und passen ihn an die jeweiligen aktuellen Gegebenheiten an.”

External references to *Nomenclature 2005* by CIGREF (club informatique des grandes entreprises françaises)

Métier 5.4a: Expert en technologie Internet/intranet et multimédia

“Il conçoit l’architecture d’un système multimedia de communication sur différents types de supports. Il conçoit et pilote le déploiement.”

Métier 4.3: Intégrateur d’applications

“Sous la responsabilité du chef de projet maîtrise d’œuvre, il participe au choix des différents composants logiciels (progiciels, bases de données, développements spécifiques...) et en assure l’assemblage dans le respect du plan d’urbanisme des systèmes d’information de l’entreprise et de l’architecture retenue pour le projet. En ce qui concerne les développements spécifiques, les travaux sont effectués soit en interne par le développeur, soit en externe avec l’aide d’une société de services.”