E-Learning in the Age of the Semantic Web

Carlo Bosna, *Università degli Studi Guglielmo Marconi, Italy*

Introduction

The new forms of communicating how they have changed or potentially can change people's education?
The early years of the third millennium were and still are characterized by the progressive development of ICT, Information and Communication Technology, the growing diffusion of related Internet technologies (2.0), which have made available to each user tools such as chat, email, blog, web cam, social network, now becoming everyone's reach.
Today's challenge is that these technologies, which are now able to expand our minds, are to connect not only intelligence, but also to create knowledge through experiences and emotions that can start a virtuous circle in learning.
Henry Jenkins of the Convergence Culture Consortium (MIT), describes the tremendous amount of information we can access and pass through the media through the various channels and often influencing the choices of those who are constantly searching Of entertainment. This interactive and mutually conditioning relationship expresses the concept of "collective intelligence", that particular function that overcomes both group thinking and individual cognition, enabling a community to cooperate while maintaining reliable intellectual performance.
The notion of intelligence is one of the most ambiguous among the ones that are commonly used in pedagogic language and in educational practice. This does not prevent that often end up considering intelligence as a construct so well defined that it can be assumed as a cause, a reason for the behavior of individuals. Speaking of collective intelligence and its relationships with "connective intelligence", the term and concept derived from Derrick De Kerckhove's studies, it is necessary to analyze its foundations, namely the concepts of "learning as a social process" and of "collective intelligence" by Pierre Levy.
Levy interprets collective intelligence as an utopian form that maximizes the value of individual intelligence by means of technologies that allow real-time communication.

Telematics networks represent collective intelligence at work.
Connective intelligence - innovative technology that solves problems utilizing the creative power and multiplication of human networks - sees mixing, in a very collaborative manner, experts and not experts in the same groups that work in a field of topics to be elaborated with creative presentations. Connective and collective are the two aspects we will try to analyze.
E-learning, through this new social interaction, can be termed a "experienceLearning", a term that seeks to capture the possibility of combining forms of learning mediated by virtual modes and shared by emotional and social variables.
High response speed transforms the integrated electronic environment into a collective emotional system - said De Kerckhove - and it is undeniable that new electronic media are becoming intermediate environments that have access to the intimate reality of our private psyche.
The role of computer science and digital communication is not to replace man and to form artificial hypothetical intelligence, but to foster the building of these intelligent collectives where the cognitive and social potential of each one can grow and expand one another.
You will be able to approach the other as a set of knowledge inserted in the space of knowledge and not just as a given masterpiece. The sole purpose of collective intelligence is therefore the recognition and enrichment of people, being distributed everywhere, continuously valued, coordinated in real time and thus leading to effective mobilization of skills.
So we have come to a new humanism that goes beyond the knowledge of oneself leading to a meaningful collective thinking. Cyberspace could become the site of this new form of direct democracy on a large scale. This real-time device would allow each one to contribute permanently to the elaboration and refinement of common problems, to initiate new discussions, to forge arguments and to build training processes.
Parallel to the concepts of "collective intelligence" and "connectivity intelligence" that seemingly place the emphasis on the rational sphere of interactivity, the concept of "emotional intelligence" introduced by Daniel Goleman has been disruptive in recent years. But what are the benefits of such a prospect expansion? According to some authors, the simple purpose of analyzing and experimenting with how emotions can facilitate and accelerate learning processes. According to others like Rotondi, instead, the human being not only learns from the content, but also from perceptions and emotions that he proves, perhaps unknowingly, and uses emotionally engaging situations. This method, therefore, is not only useful to make learning more enjoyable and fast, but above all an indispensable process for generating effective learning.
Today's psychoanalytic technologies, which, according to Gianluca Baccanico, are able to deeply change the psyche of human communities to influence socialization and perception, facilitate communication of emotional content.
Just emotions, however, can expand our consciousness as well as the same technologies that make it easier for expression. In this kind of signal amplification process it becomes necessary then to know how to orientate the affectivity we create with others as a matter of ours and other instances of sense, aware that every understanding is emotionally located comprehension.
These are essential considerations for interactive learning that takes place online since they make it clear that based on emotional thinking models it is possible to attempt a different way of designing and implementing user development.
If, in fact, the group idea has created a plurality of plurality and a pluralistic spiral composed of groups, communities, virtually as progressive expressions of emotions, non-negation of the emotional component's apprehension, acceptance of opportunities offered by a multidimensional education, as is clearly the telematics one when handled appropriately, make it a step from the connectivity of intelligence to that of the connectivity of intellectually-experiential lives, which are much shorter, to the benefit of the training results.
Consideration of group interaction as a dialogic and cultural process capable of generating knowledge, individual and social learning as a result of group processes is the result of the self-organization of this process. Today's technologies, accentuating the interactivity of telematics users and therefore the connectivity aspect, allow to create synchronously and diachronically new codes and new expressive modes in experiential contexts such as those referred to by De Kerckhove with the term "Hypertext" and John Artieri with the word "Mediamondo"; computer screens become "places where thought is written but, at the same time, places where thought is shared and elaborated by different people who can meet wherever they are when they want to contribute to a process of common thought.
This is a form of connectivity. "The human mind needs relationship with each other to develop".
In conclusion, we can say that the concept of "Connective Intelligence" with those of "Collective Intelligence" and "Emotional Learning" are conciliatory and together they can contribute to the definition of both effective and structured training processes.

Unknown Internet. The right to be informated

Article 19 of the Universal Declaration of Human Rights of 10 December 1948 states that every individual has: "the right to seek, receive and disseminate information and ideas through all means and without frontiers". In terms of access, therefore, it will be necessary to distinguish between "access" and "accessibility". The first term refers to inequalities in the access and use of the technologies of the so-called "information society" (the so-called *digital divide*); the second term refers to the possibility of universal access to the Internet (usability). The big and daunting Internet problem is the "conflict of interests" between the need for leadership and attempts to "dictate" by political states and economic forces. The Internet as a structure with a high degree of organizational complexity can only work if there are strict rules to be respected and bodies that oversee their respect.
The central Internet facility is located in the United States: it is made up of a number of organizations responsible for various functions necessary for the development and maintenance of the Network. There is then a territorial apparatus with a hierarchical pyramid organization (similar to a feudal model), and at the base of the pyramid there are intermediaries cooperating to allow cyberspace access by the single user.
The main organizations that are at the top of the hierarchy and currently govern the Internet are:

- ISOC (Internet Society): it is based in the United States and has the purpose of promoting the development of the Internet at international level, guaranteeing the establishment and functioning of the necessary bodies
- IAB (Internet Architecture Board): is an ISOC body that is accountable for the general organization of the Internet. It is composed of 13 members with the right to vote. For many years he has been president of Vint Cerf, one of the founding fathers of the Internet
- IANA (Internet Assigned Numbers Authority): is the central coordinating body for parameter assignment for Internet protocols, for determining the rules for assigning IP addresses and for

determining the rules for assigning domain names. He is based at the University of Southern California

- ICANN (Internet Corporation for Assigned Number and Names): founded in 1998, is a nonprofit private company subject to California state laws. It has the task of registering DNS and developing new standards for Internet protocols. ICANN is administered by a Board consisting of 18 directors and a president; of these nine are nominated directly by the body, the other nine should be elected by the world's Internet community. In reality, only five of the nine members are actually in office, following the first elections held in many controversies in 2000

Among the controversy against the repression of freedom of expression in Tunisia, the World Summit of the Information Society organized by the UN was concluded. A Tunisian Agenda has also been adopted, which provides for a strategy to bridge the digital gap between rich and developing countries to enable them to get on the information train and ICT (Information Communication Technology). But no commitment has been made to take "rich" countries to contribute to the Digital Solidarity Fund launched in Geneva in 2003 at the first phase of the summit by Senegal President Abdoulaye Wade. Access to the Internet and information technologies, as well as to the social, economic and cultural development that it follows, is still a dream for over 80% of the world's population. Wade said he had plenty of hope in the $ 100 laptop for developing country children invented by Nicholas Negroponte, who presented it to Smsi together with the UN Secretary-General.
However, the road to do is still long to get rid of the costs of ICT - which, according to Kofi Annan, former UN Secretary General, depends only on the political will of industrialized countries - because the 800,000 villages still lacking in ' appeal may become part of the "planetary information village" by 2015, as the UN Secretary-General wishes. Up to now, the Internet has been managed and governed exclusively by the American company ICANN. Over the last few months, many proposals have been made to give the Network international control, reducing the American influence in controlling the new technology. In this regard, a long negotiation was conducted to find a satisfactory solution to the evolution of the government of the Network.
There are, in fact, various currents of thought to outline the future of Internet users. On the one hand, ICANN wants to continue its role of control and supervision. On the other hand, users themselves, private individuals, associations and companies are in any way distrustful of any kind of external, political or administrative intervention in the world of the Internet and outline a world of self-regulation on the Internet. One of the most credited hypotheses is the establishment of a fully international government, presided over by a UN body. The effort was to collect and analyze all the proposals, to consider the needs of the users and to harmonize the opposite positions. Finally, it opted for the establishment of a 5-year forum, of course online, managed directly by the staff of the UN Secretary-General. The forum will be open and will discuss all the issues of the Network, from spam to pornography, user rights, etc. Once you've shared the solutions, an increasingly international supervisor, Icann, will look to control the applications of the defined rules.

Web usability and information on the web

On the subject of usability of websites, one must also dwell on the recent guidelines provided by the usability guru, J. Nielsen.
There are aspects that would be useful in an SEO perspective, because search engines now tend to align the indexing criteria with the user's behavior, so it's usability.

It would also be very useful to consider, in the light of some advertising campaigns, the considerations made by Nielsen on the welcome pages (homepage).
These are some of the words used by the authors (J. Nielsen, H. Loranger) of the volume "Web Usability 2.0, The usability that counts, Apogee, Milan 2006 (page 111) on the subject:

1. "Welcome pages were among the first sins of a web design that despised its users to prevent it from having what they came for [...] but there are still sites that insist on slowing down users with this technique idiot"
2. "The new small and medium-sized sites seem particularly sensitive to the charm of welcome pages, perhaps because owners insist on doing a scene instead of dealing with customers and their needs"
3. "Welcome pages must disappear. The user immediately gets the impression that a site cures more than its own image than solving its problems. It is true that a homepage must immediately communicate the purpose of the site and what the user offers, but it must also communicate respect for the visitor's time, or the visitor will leave"
4. "A visual design is useful for a site, but it is also one that assigns the right priority to the information and guides the user's eye to the main features"

In SEO optics, search engine algorithms aim to assimilate searches to the main features of user behavior; so if 10 only 1 link only actually falls on the page of the product being searched, it means that the latter will have a weight in the index of 1/10 compared to the complex of all the links.
The other limit you can see is the weight of texts in the Index. The trend of motors goes to a highlight of the index function; GG (Google), in particular, is favoring indexed "indexed" indexes, which can lead the latter to inherit internal indexing scores, unless the indexes reflect the key elements (keywords and links) of the indexes internal pages. Depending on the text in the index, it is, in addition to being contradicted by usability logic, to strongly limit textual indexing.
The earlier guidelines on the homepage, from my point of view, are even more true if we consider the different attitude of the user depending on whether his origin is direct (he already knows the url of the site) or indirectly, that is, coming from the search engines or other reference sites, by banner or hyperlink. The user who comes from the search engines has an exclusive content orientation: so seek immediate responses only in the text descriptions and, to the maximum, detail of the images (especially if you are looking for products). This makes it more demanding from the point of view of seeking an answer to his or her questions. The structure of a site will increasingly influence long-term indexing. Structural interventions, therefore, are also those for which there are more expenditure needs, economic (for those who support it) and time (for those who realize them). As for the speech of acceleration of the phases of intervention, it is obvious that the more the indexing purposes are, the more attention should be paid to the technical interventions and since only the first page will ensure visibility (93% of users on the first page, between Ad words and SERP) this reasoning will become even more relevant, in light of the exponential proliferation of sites.
Information on the Internet is everywhere, since it is present in large quantities and is constantly created and modified. This information embraces a wide variety of genres (facts, opinions, stories, interpretations, statistics) and is created for various purposes (to inform, persuade, sell, present a point of view, create or change an attitude or dresser, etc.). For each of these genres and purposes, the information has varying degrees of credibility, ranges between good and bad, and includes every

nuance in the middle. It is imperative to ask yourself some initial questions like: "Which source or source would be the most reliable source of information on this particular case? Or: Which sources are most likely to be correct, objective, lacking in seconds and qualitatively verified? "
It is important to keep these considerations in mind, not to simply accept the opinion of the first source you encounter. Keeping these things in mind while researching, you will be in a position to expose suspicious or questionable sources faster. Since commonly in a search there are many sources to choose from, there is no reason to dwell on unreliable material.
You should choose sources that provide as many of the following information as possible:

- Author's name
- The author's title and position
- Affiliation of the author to some organization
- Date of page creation or modification

Information, practically synonymous with culture, serves as a basis for: beliefs, decisions, choices, and understanding of our world. If you make decisions based on wrong or unreliable information, you do not receive a power but a defeat. If we eat something dangerous we believe to be safe for us, we can get sick; but if we avoid something good because we believe it is harmful, we would only have to limit the enjoyment of our lives for no reason. The same can be applied to every choice: traveling, buying and doing an action, and every attempt to understand. Lack of trust in a source puts the individual in a stalled situation, from which he can only go out when he finds a "guide" or someone, or something that has reliable information. The circle closes on itself. The CARS checklist (Credibility, Accuracy, Reasonability, Support) has been designed to be easily learned and used. Few sources will fall into the list quality indices, and even those that will succeed will not reach the highest possible levels of quality.

E-learning in Italy and its developments Collective and Connective Intelligence

The development of nations, businesses, and individuals depends on their ability to navigate in space and knowledge. The power now derives from the optimal management of knowledge, whether technical, scientific or belonging to the field of communication.
If knowledge becomes the first engine, an unfamiliar social landscape emerges in front of us, where social gambling rules and player identities have to be redefined. We are in front of a new "anthropological space": the "space of knowledge". Communication computing is a technical structure of the collective brain (hyper cortex). The role of computer science and digital communication is not to replace man and to form artificial hypothetical intelligence, but to foster the building of intelligent collectives where the cognitive and social potential of each one can grow and expand one another. But in this context who is the other one? It is someone who knows, and knows things I do not know, in most cases their areas of inexperience will not coincide, so my neighbor is a possible source of enrichment for my knowledge, not a threat. You can approach the other as a set of knowledge of the space of knowledge and not as a name, address, profession or social status (or at least "even").
What is collective intelligence? "It's intelligence distributed everywhere, continuously valued, coordinated in real time, leading to effective mobilization of skills". The sole purpose of collective intelligence is the recognition and enrichment of people, and not the cult of fetishized communities.
Let's consider the Levy phrase specifically. This is a "distributed everywhere" intelligence: no one knows everything, everyone knows something (the awareness of these simple words could enchant the card castle of all the racisms of the world), the whole of knowledge lies humanity. Even among the most "ignorant" individuals, there may be contexts in which their knowledge can be precious. Today, there is often a real organization of ignorance at the expense of people's intelligence, a tremendous waste of experience, skill and human wealth.
"Real-time intelligence coordination" implies the forced use of digital communication technologies, through which members of a community can manage their interactions in the same virtual knowledge universe. It is considered necessary "to achieve effective mobilization of skills", in the sense that if they are to mobilize skills, it is necessary to identify them at least, in order to do so it is necessary to recognize them in all their diversity. In short, we have come to a new humanism that expands the "know yourself" in the direction of "learn to know ourselves to think together" and generalize the "think so I am" in a "we form collective intelligence, therefore we exist as a community meaningful", it goes from Cartesian "cogito *to* cogitamus". How can one understand that the other is the sole depositor of competence and creativity? It's not easy to say, it's one of the tasks of social engineering politics still all to invent. One must move from a "molar" philosophy of thinking to a "molecular". As a brain can even think in the absence of a center or super-brain that directs it (the famous "homunculus"), so a molecular group does not need to join a transcendent mediation. Technical evolution has made obsolete transcendence, human-like regulation is through immanence: a large community is self-organized using all the finest technologies, enhancing its "quality for quality" human heritage. We are developing at this point the "utopian" hypothesis of a form of direct, computerized democracy - a virtual agora - more appropriate than the present representative systems that make us cross the agitated waters of the anthropological mutation.
How to handle huge masses of data related to interconnected issues in a changing situation? Organizational structures that favor a "socialization of problems" should be adopted. This would result in the creation of "virtual squares" that would improve the processing of issues, negotiation and decision-making in a heterogeneous and dispersed collective circuit. "The most profitable use of computerized communication is undoubtedly to provide the human groups with the means to pool their mental forces in order to create intelligent collectives and to create a democracy in real time". Cyberspace could become the site of a new, large scale direct democracy form. This real-time device would allow each one to contribute permanently to elaborating and refining common problems, to initiate new discussions, to forge arguments. The technical-political bet of cyberspace: to give a collective the opportunity to express a plural word, without going through the representatives (representative democracy). The purpose of virtual agora is not to decide on people's place, but to help produce a "collective enunciation device" animated by living people. The technical mediator has the task of calculating and calculating in real time the "landscape-discourse" of the group, so as to deform the singularity of individual statements as little as possible. The winners of the future are those who manage to mobilize and coordinate knowledge, intelligence, imagination and will. Those who criticize the virtual agorà argument of totalitarianism do not know a symmetrical criticism that sees in the dissolution of power a serious risk of weakening for human groups that let go of democracy in real time. Is there anyone who can control virtual worlds? It's like asking who is talking about the collective in virtual worlds, when these worlds are precisely self-definition, self-definition and self-construction devices in the space of knowledge by the communities themselves. Connective Intelligence is an innovative technology that identifies new possibilities and solves central problems by utilizing the creative and multiplicative power of human networks (both online and face to face).

Connected intelligence workshops work in a very collaborative way by mixing experienced and non-experts in the same groups who work in a field of topics to be elaborated with creative presentations. Connective intelligence is not hegemonic: there are roles but are assigned by the participants themselves: the shaker takes charge of the group but does not control it, the mover stimulates to discover new ideas with suggestions, the producer translates the ideas and the project. Anyone else is an observer or an expert. It's a way to propose a set of values without imposing it or to facilitate changes in an organization. Collective intelligence, for Levy, is not a historically determined space, but an aspiration, an utopian form that does not require secession from other ages. Levy wants to detect the value of individual intelligence that is brought to the highest degree by the fact that technologies allow real-time communications. It is the new space of experience: the whole world. Telematics networks represent collective intelligence at work: intelligence is distributed wherever humanity exists, and new media make it possible to integrate individual knowledge wherever and wherever.
Connective and collective are only two aspects: intelligence is infinity. Of resources. Of men. Of situations and moments, of projects and realizations. But perhaps, especially today, means living naturally and confronting ideas that are measured on the metropolis of the world.

Machines capable of talking to each other

The first step in building the Semantic Web is to insert data into the Web in a comprehensible format for the machines, thus creating a Semantic Web, a "web" of data that can be processed directly or indirectly by the machines. So far, we have received a very limited amount of help from machines on the Web. Most of the analyzes that may come to our minds are not automatable because few information on the Web is in a form that can be used by a computer.
It requires a common language that allows computers to represent and share data, as the HTML language allowed, and allows computers to represent and share hypertext. The W3C Consortium is preparing such a language, RDF (which will be deeper into the next paragraph) based on XML.
The first form of semantic data on the Web was the metadata, that is information about the information. Semantic network computers will first acquire the ability to describe, then deduce and finally reason. Common people acquire "common sense" by setting aside a set of coherent associations between words (synonyms, etc.). When you "understand" something new it means that you can relate it to others that you already understand well. To build understanding in machines we will have to be able to link terms, this will be possible through "inference" languages that work at a higher level than schema languages. The semantic network will learn a concept through repeated contributions from different independent forms, "decentralization is the basic design principle that will give the semantic network the chance to become something more than the sum of its additions".
The possible disadvantage of the semantic web might be to overload it with ease; asking open questions could lead to infinite research. This is because of the ability to combine data from across the Web. This is where the "trust" factor comes into play, that is, what are the documents that we have to discard because garbage and what to consider why they are trusted.
Obviously our faith in a document will be based, for example, on mechanisms such as digital signatures with public key cryptography. A "trust machine" will be a clever machine that can validate a signature, it will be the most powerful agent of the Semantic Network. The other part of the trust, the one that lacks the Trust Network, is given by the interlacing of statements about those who trust the attestations of some form, signed with a specific cryptographic key. Consequently, even in the most complex cases, computers will try to provide meaningful answers to open questions using heuristic techniques, i.e. ways to reach a decision when all the alternatives cannot be explored.
"The new Web design has a social base, a technology plan, and a basic philosophy".

From the world wide web to the semantic web

Content on the Network is generally designed and built to be understood by a human user audience and not to be processed by software agents. This is because the preferred Web publishing tool is HTML (Hypertext Markup Language), a markup language that is deliberately designed so that even less experienced users can make use of it. The basic limit of HTML is to be tied to graphic display, without separating, therefore, the content from its presentation; the result is static documents because of the predefined tag set that prevents any adaptation to users' particular requests and processing and transmission of data over the Web and, above all, between different applications. A first step towards change was to add dynamic content through specific technologies. However, there is a need to go beyond a representation designed only for human users, towards the creation of a Semantic Web where content is understandable also to artificial users, intelligent agents who can interpret documents through ad hoc formalities the representation of knowledge. The challenge launched by the Semantic Web is to move from the syntax of resources and documents published on the Web to the formal representation of their content. Web evolution towards greater functionality is based on an ideal structure at the lowest level where the document, resource, raw data represented in any format (audiovisual, textual, multimedia) and incomprehensible to software agents that are they limit it to reading it, to present it to the user. At a level just above the structure, it is necessary to define a sufficiently flexible syntax to describe resources and make them understandable to non-human users as well.
The term "Semantic Web" explicitly intends to build a system capable of working with documentary content that is understandable to both humans and software. Today, the web is essentially a set of standards such as the Hyper Text Transfer Protocol (HTTP) and Hyper Text Markup Language (HTTP) used to transmit and receive hyper textual and multimedia documents that are suitable for use through the intervention of a being human. According to the vision of Tim Berners-Lee, the inventor of the Web, this aspect greatly limits its potential. With Semantic Web instead, it will favor the development of highly specialized software agents. Agents should therefore be able to interpret all those documents that are written or indexed through representation formalisms expressed in specific language of representation of knowledge. One of the foundations on which the Semantic Web is based is, in fact, the XML (eXtensible Markup Language), marking metalwork and keystone on which the technology underlying the Semantic Web is based, to achieve this goal. It is a language for writing custom markup languages and encoding the structure of documents without worrying about how they will be displayed. XML, therefore, is extensible, since you can always add new tags according to the type of information you intend to communicate; offers a valuable tool for interchange of data between different applications and different operating systems; is independent of the platform used; is a simple but powerful language that addresses different problems with one single syntax, such as graphical presentation of documents (using XSL) or search within them (XQuery). Again, XML provides effective tools for verifying the syntactic accuracy of documents (such as DTD or the most powerful XMLSchema to describe the syntax and constraints imposed on it). Despite the flexibility and extensibility, XML is still in the syntax domain, without adding any

semantic connotation to the documents. At a further level, once the syntax has been established to represent the resources, it is necessary to describe them in a way that is understandable to the machines by identifying the relevant information that those resources are associated with.
RDF (Resource Description Framework) is a language based on XML syntax, which provides a basis for the processing and representation of information about resources on the Net, that is, the metadata, and the disclosure of the relationship between the resources described by the metadata and metadata themselves. Compared to XML, RDF adds a simple semantics to tags and RDFSchema lets you reason on this structure and validate it by providing tools for describing RDF resource properties and classes. Although it is a powerful language of knowledge representation, RDF is not designed to work on inferences or deductions on relationships established between resources. More simply, RDF builds assertions about the contents of a Web resource, consisting of subject (resource), predicate (property), and object (value).
These assertions identify the relationships between the data they are dealing with, without further expressing the meaning. In order to give meaning to these relationships, it is necessary to go to the higher level, that of ontologies, documents, or rather vocabularies, within which the relations between two or more terms are formally defined, and the meanings of terms are expressed: the various concepts are associated with, therefore, logical rules of use that make it possible to determine how resources are linked to each other. An ontology, therefore, can be considered as a basis for knowledge of a certain field of the science, to be shared and reused. The language chosen to represent ontologies is OWL (Web Ontology Language). The Web is therefore evolving from a simple "intelligent" document retrieval and communication system, where information is understandable to specific software that will help you locate the resources you seek and re-elaborate them quickly and individually , cut to specific needs. The ambitious goal that the Semantic Web seeks to achieve is, therefore, to ensure that the Network can understand our requests and lead us to information that can actually meet our specific needs.

The semantic web

Web creator Tim Berners-Lee's definition is: "Semantic Web is an extension of the current Web where information is provided with a well-defined meaning to allow computers and people to work best in collaboration ".
An essential peculiarity of the Web is its universality; the power of a "hyperlink" derives from the fact that "whatever can be related to anything else from anyone". The texts are created for the use and consumption of human-only users, the only ones presently able to understand, through personal interpretation, the content of the pages they are visiting.
You can distinguish between pages in two classes:

- syntax connections: are related to the operation of some programming code. They are quite solid (a link locates a resource through a unique URL, even if an update problem arises)
- links describe the meaning of a link, that is, in addition to bringing to a certain place a link should describe the place to which the gate (semantic capacity). The latter are rather weak, because they are varied and generic

"Human" users are pointing to the Web because of their navigational experience and the ability to summon up with words or key phrases. Experience is a very important aspect we all use, that is, we learn that certain content can be found in certain portals, that the appearance of a site can tell us something about the genre (formal or informal) of the information. Or, we can try roads for "heard" or for free-intuitive associations, etc., experience builds in time but is not very related to technical aspects, code, and applications that make up a site. These features do not belong to any application, which ultimately is unable (except for a few exceptions) to interpret the content of the pages.
The term Semantic Web was first proposed in 2001 by Tim Berners-Lee, from that moment on, the term was associated with the idea of a Web in which intelligent agents (created without resorting to artificial intelligence to high levels), applications that can understand the meaning of the texts on the network and therefore can guide you directly to the information you seek, or to substitute for it in the course of some operations. An agent should be able to:

- Understand the meaning of texts on the network
- Create paths based on the information requested by the user, guiding them to them (in some cases you can also replace the user)
- move site to site by linking logically different elements of the requested information. As a further feature, the agent, or robot, should verify the reliability of information (through cross-searches or context-dependent) using a mechanism that we could assimilate to the notorious, but hopefully, chains of St. Anthony

Using this technology, you can automate pagination, as when creating page content, information is defined and inserted according to precise semantic rules (for this reason, the term Semantic Web was coined). The Semantic Web is therefore a new way of conceiving documents for the World Wide Web. "Semantic Web is an extension of the current Web where information has a clear meaning and where computers and users work in co-operation".
The possibilities offered by the Semantic Web are so many and so that they have not yet deepened their potential, therefore, rather than technology, we talk about "vision" of the Semantic Web. However, in general, it can be said that the Semantic Web will surely allow:

- effective research: we will finally be able to work on "concepts" rather than terms
- Simple data sharing: aggregation will make it possible to correlate documents and content so you can create new documents and new content in a totally automatic way

Writing code that can perform semantic operations depends on the schema used to store the information. The schema (such as an XML schema) is a set of rules on data organization. It can define relationships between the data and may also express constraints between data classes.
The idea of the Semantic Web is born by extending the idea of using schemes to describe information domains, metadata (are information that a machine can understand about a Web resource or something else that can be extracted from a resource or can be transferred with the document) must map the data with respect to classes, or concepts, of this domain schema. This way you have structures that can describe and automate existing links between data. The Semantic Web is, like XML, a declarative environment, which specifies the meaning of data, and not the way in which it is intended to use them. The semantics of the data is to give the machine useful information so that it can use the data properly, converting them if necessary. You can deepen the underlying structure of the Semantic Web view, referring to a pyramid diagram (see Figure 1).

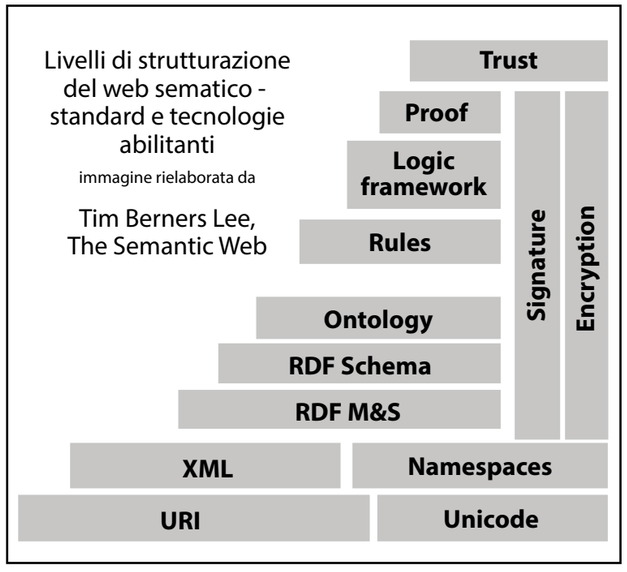

Figure 1. Levels of structuring the standard semantic web and enabling technologies
Image reshaped by Tim Berners Lee, *The Semantic web*

The Semantic Web has a layered architecture, but it has not yet been fully developed. This will probably happen in the next 5-10 years.
Let's see the diagram in more detail:

1. The Semantic Web is based on Uniform Resource Identifiers (URIs), for the unique definition of Internet addresses
2. At the top level there is XML (eXtensible Markup Language), which plays a basic role with namespaces and XML Schema. With XML, it is possible to model the reality that you consider to be, according to your own needs, and without too many constraints: this is a language that brings with it some information on semantics of objects. This freedom makes it unsuitable, however, to completely define the structure and the interchange of information between different realities, so the creation of a new language was favored
3. RDF (Resource Description Framework) and RDF Schema, which constitute the language for describing resources and their types. They derive from XML
4. At the top level the ontological level is set. An ontology allows to describe the relationships between the types of elements ("this is a transitory property") without providing information on how to use these relations from the computational point of view
5. Digital signature is of significant importance in several layers in the abstract Semantic Web model. Public key cryptography is a technique known for some years, but not yet widely distributed, perhaps because it imposes a binary choice between trust or non-confidence, while an infrastructure in which parties can be recognized and accepted in specific domains. With this understanding, digital signature could be used to determine the origin of ontologies and deductions as well as data
6. The logical level is the level immediately higher. At this level, existing assertions on the Web can be used to derive new knowledge. However, deductive systems are not normally interoperable, so instead of designing a single all-encompassing system to support reasoning, one could think of defining a universal language to represent demonstrations. Systems could then digitally authenticate these demonstrations and export them to other systems that could incorporate them into the Semantic Web

E-Learning in the age of the semantic web

Integration of the Internet in every social context will inevitably push the education systems of all countries around the world towards the development of new approaches based on tools that represent, build and share knowledge.
The next evolving challenge of the Internet has a name: Semantic Web.
From the communication and storage environment, the Network becomes a smart system to locate, rework, customize information with the appropriate software.
The integration of Internet technologies with different social contexts drives the educational sector towards the development of new approaches based on tools capable of representing, building and sharing knowledge. This, in fact, represents the evolution of the Internet from simple a system of communication and document retrieval, to a "smart" system where the information will be comprised of specific software that can assist the user to locate and reprocess it in a personalized and customized way.
E-learning and even traditional didactics will need to be taken into account, just for the benefits that this flexibility can provide to the learning process. Teaching and learning through the most up-to-date IT technologies offered by the information and communication society: this is the topic that has for years been the subject of debates between teachers, trainers, companies who wonder what the best way to enhance their potential offered by the Internet as an educational and training medium and to optimize the processes of knowledge creation and dissemination.
My work intends to provide a presentation of the phenomenon between the various research initiatives related to eLearning, placing it in the broader context of a progressive evolution of the World Wide Web in Semantic Web.
The Web was originally conceived primarily for the dissemination of information intended for human beings, within which to orient itself, in search of what is of real interest. Those who surf the net need rapid access to information and services; however, ease of access rarely matches the accuracy of the search in returning the actual useful results.
Today, the Web has become too large, in some ways uncontrollable, and users, on the other hand, have to deal with an exuberant wealth of hyper textual references that slows down the search for information. Precisely this information overload has made the limitations of the original Web setting, which appear when questioning the many search engines, becoming increasingly evident. In fact, results are often inconsistent with respect to the subject of research or, on the other hand, you do not have the opportunity to reach the documents of real interest.
Therefore, the question we are going to analyze is whether and how it is possible to meet the needs of users, enabling the Network to understand the motivations that drive research. Then, the most

interesting initiatives at international level will be considered to outline a scenario that makes a significant comparison with the project in which this article intends to introduce the salient aspects.
The typical factors of self-learning as such (the context, the means used, and the methodological choice) have in fact seen progress over the decades, which can be traced back to four main phases: distance learning, distance learning, eLearning and complex learning.
The first developed in the first half of the nineteenth century and was done by correspondence, with obvious limits of didactic effectiveness. The second (also called FAD) first exploited the twentieth-century technological opportunities (television, radio, disks, audio cassettes and digital media), but went on to increasingly standardize form and content.
E-learning has been a turning point for both the use of the most advanced technology of the last twenty years (Internet, with or without CD-ROM) and for greater attention to the psychological aspect. However, besides the more opportunities offered than the previous stages and the lower costs for teaching, it still needs basic contact with a tutor or lecturer.
In this regard, it is moving towards complex learning, integrating online lessons with others in the classroom, making the most of the multimedia of the latest technologies and ensuring greater personalization of teaching.
The application of the Semantic Web in the (vast) field of E-learning finds its fulfillment with a new modular method called "learning objects".

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