

The PiacenzaLabs repository, a MACE EU project application

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Abstract

MACE is a European research project which aims to develop methodologies of e-learning in architecture, integrating and implementing the report a lot of content already stored in database created and developed in other projects, including European. The system indexing the Learning Object in according to an approach that is based on the characteristics of the media itself and on the content and concepts that are housed in it. MACE will provide end users a service targeted to the research, acquisition, use and discussion on content reserved only a first small community of users. The development environment is that IT and especially that of Metadata. The project is to evolve simple digital containers to a collaborative environment and support the design and teaching. The project uses different types of metadata to classify content: metadata traditional ontological, contextual, related to skills, etc.. Research has focused primarily on developing a system capable of recognizing and cataloging digital content in various repositories and the definition of the characteristics that the metadata related to any content, had to have. The Application Profile is based on thesauri and classification systems and is an extension of the LOM Standard. Another aspect is the application of concepts and technologies to emerging MACE Repository PiacenzaLabs of the Piacenza Campus. The contribution is intended to amend and broaden the disciplinary and cultural references of MACE compared to architecture, to the disciplines of planning, the design of urban space, and wants to be a case study of the project, a scale and in a the papers recently definition.

Key words: Metadata, Learning Object, Conceptual Map.

Introduction

MACE (Metadata for Architectural Contents in Europe) is a project co-financed by the European Commission within the "eContentplus" Programme, with the aim of creating a portals network, websites and archives pertaining to architecture.

The purpose of this network is the sharing and use of content with new digital tools/widgets that allow users to find, acquire, "tagged" and use the architecture materials on-line. MACE is a Consortium of universities, research centers, institutes and private companies in Europe.

The MACE project aims:

- the development of new conceptual and technology tools in the archiving, preservation and use of architectural digital resources spread in websites and archives on-line;
- the creation of an innovative engine search for finding architecture content on the web;
- development of methodologies of E-Learning architecture in Europe;
- to make interoperable communication and management of educational digital content allowing students/teaching the research, evaluation, acquisition and use of learning objects stored in the MACE Portal.

The system integrates a large quantity of Learning Objects already stored in database or repositories created and developed in other European projects such WINDS and other European portals about what DYNAMO, ICONDA, ARIADNE.

MACE will provide different users (students, teachers, professionals, government) a services targeted to the research, acquisition, use and discussion on content of e-learning that were previously reserved only a small community of users.

The project aims to manage and organize, a significant collection of material dedicated to architecture. The development environment of the MACE System is the Information Tecnolgy and especially that of metadata. The metadata can be described as the transposition of the traditional

practices of bibliographic cataloging in an electronic environment with potential additions. The project focuses on these potential to transform the simple digital repositories to a collaborative and support environment at the design and teaching.

The MACE Consortium has developed and uses different types of metadata to classify content: traditional and ontological metadata, contextual metadata, competence metadata, metadata related to design process and related to the use and acquired through social interactions, for example surveys of the system about its use, or suggestions of users through the Social/My Tag.

Research has focused on the development of informatic system that recognizing and cataloging digital content in various repositories and the study and definition of the characteristics that the metadata associated with each content/concept should have.

Research has developed through:

- analysis and list of digital content within the MACE Domain Knowledge Consortium and the definition of the possible Use Cases;
- definition of the logical structure of metadata to the appropriate classification of architectural knowledge;
- metatagging of the Learning Object and content repositories based on the results of previous phases of research;
- experimentation and testing during the institutional Course of Politecnico di Milano and other universities in the MACE Consortium.

Application Profile

The Web contains a quantity of heterogeneous information classified in many different ways, many of which remain unexplored because the search terms used by not coincide with those included in the documents. In a society characterized by an increasingly production of information and the need to find in the Internet according to semantic, through searches by subject, there arises the need for an organized presentation of data. The Semantic Web is an evolving extension of the World Wide Web where documents (the web content) are associated with information and data (metadata) which specify the semantic context in a appropriate format to the interpretation and interrogation and provide a framework that allows data to be shared and reused. In this case thesauri have an important role.

To ensure that Learning Objects are aggregated and reused it is necessary to standardize the description that define a set of metadata.

Learning Object Metadata (LOM) is the standard that defines the minimum set of attributes required to describe and manage Learning Object and consists of nine categories: for example "General" category contains the general information that describes the learning object as a whole while "Classification" category describes the learning object in relation to a particular Classification System.

In MACE was built the knowledge base and the ontology, the taxonomy of terms; were defined by different scenarios of use of the most important and most frequently used. The ontology is based on a system of "concept map" in relation to the different domains of knowledge: Architectural Design, Building Technology and Construction Management.

One of Thesauri used in the definition of the MACE Application Profile is the AAT - Art and Architecture/The J. Paul Getty Trust, and to create the "concept map" of the specific terms to each Domain, we have analyzed and used some classification systems and their associated terms: Classification System CI/SFB, Uniclass, Masterformat and ISO 12006-2. The Application Profile is based on the IEEE 1484.12.1 Standard for Learning Object Metadata (LOM). In MACE were extended the fields 1-8 of the LOM Standard modifying or adding new values, for example in "General" (Fig. 1.) category there is a new value: the RWO (Real Word Object).

Field Name	Explanation	Value Space (where not specified, follow LOM v1.0)
1.9 learning object kind	The kind of the learning object: to distinguish between a real world object (i.e. a building) or a media object (digital resource)	real object, media object

Fig. 1. General Category – Learning object kind

More integration have been made in "Life Cycle" (Fig. 2.) category (the Lifecycle category contains the features related to the history and current state of this learning object and those who have affected this learning object during its evolution).

	Field Name	Explanation	Value Space (where not specified, follow LOM v1.0)
2.2	status	The completion status or condition of this learning object, extending the LOM value space with architecture specific values, e.g. conversion, extension	LOM loose to extend the vocabulary with architecture specific statuses: built renewed demolished draft final revised unavailable
2.3.1	role	Specifies the kind of contribution in respect to the learning object and extending the value space with architecture specific roles	LOM loose to extend the vocabulary with architecture specific roles: designer, architect, owner, constructor, customer

Fig. 2. Life Cycle category – Status and Role

The "Classification" category (Table 1.) has been integrated with the different categories, listed below, and is represented in the Application Profile used in MACE for the three different knowledge domains. Identification, Technical design, Conceptual design, etc.. have been structured as follows:

Identification	Technical design	Conceptual design
Name	Construction form	Formal features
Author, Designer	Materials	Formal typology
Role	Maintenance and conservation	Functional typology
Date, time range	Structure profile	Perceptive qualities
Status	Systems and equipments	Project actions
Location	Technical performance	Project cues
Building element	Technological profile	Relation with the context
Intervention type		
Project type		

Context	Constructing	Theories and concepts
Urban context	Construction Management	Styles, periods and trends
Geographic context	Machinery and Equipments	Theoretical concepts
	Construction Activity	
	Construction Phase	

Table 1. Classification category – Application Profile

The knowledge domain expression of building technologies contents have been structured into Categories: Building Elements (classification of building objects compounded into parts of work considering their functional task in a building organism), Construction Form (classification of construction work according to the physical appearance of materials used in them), Materials (classification of building materials according to their nature), Technical performance (sets of requirements/performances, theme and context-appropriated chosen building techniques), Technological Profile, Structural Profile, Systems and Equipments and maintenance and conservation.

In MACE the Technological Profile (Fig. 3.) definition is partly based upon concrete experiences acquired through theoretical and experimental university research programs and using as reference the thesaurus AAT - Art & Architecture. The Application Profile - classification terms - were then translated in additional languages: Italian, Spanish, German, French, Dutch.

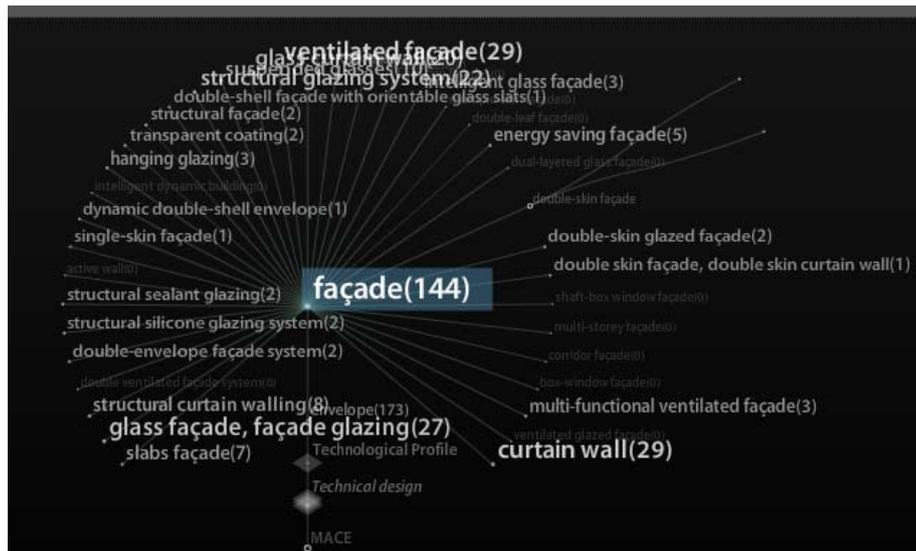


Fig. 3. Technological Profile Category: concept and classification terms

MACE application: the PiacenzaLabs Case Study

The contribution of the Piacenza Campus of the Politecnico di Milano, Faculty of Architecture and Society, to the MACE European project is meant as theoretical and applicatory at the same time. Theoretical because it is aimed at changing and expanding MACE's disciplinary and cultural references as regards to architecture and the architect's activities, toward the disciplinary scopes of territory planning and urban space design. Applicatory because it will represent a case study on a real scale application of the European project and in a recently defined archival scope.

The idea is applying search indexing taxonomic modalities developed by MACE for metadata to a reality such as Piacenza, which is culturally multidisciplinary, but quite rich and differentiated. The Piacenza university reality is well represented by the whole of its research laboratories, called PiacenzaLabs.

PiacenzaLabs scopes strongly tend towards urban design and territory planning, but with wide interdisciplinary spaces supporting the onset of scopes - due to a disciplinary intersection - which are very interesting but engaging to theoretically categorize. Domains such as chronotopic analysis, architectural and territory interoperable 3D modelling, strategic environmental design, urban landscape design and representation, safety and assessment of the quality of urban space, etc. are only partially categorized within the metadata map currently developed in the latest release of MACE's application profile.

Add new domain contents (categories)

These are areas that hardly suit to a taxonomy ordinary, and who are right now beginning to force the logic of the Application Profile in favour of a language with a higher degree of flexibility, in order to have a higher level of detail and specific definition.

The fact that researches and materials currently or recently produced by the Piacenza Labs cannot be easily "placed" from an institutional and dogmatic viewpoint, represents an interesting and innovative challenge, as opposed to the content of the more traditional architectural project-making. A sort of enrichment of subjects which are actually typical of architecture-making, not as a consolidated technological discipline, but as interaction between articulated and multiform skills.

The interdisciplinary areas of Piacenza Labs only partially adapt to taxonomy and are already trying to widen the application profile's net. Such taxonomy is, by definition and from a terminology viewpoint, accurate and precise, but when we act on terms that may have different meanings in the different disciplines, the issue gets complicated. The lexicon factor, when different idioms intervene, complicates even further. We will therefore have to widen some concepts or definitions, in order to make them compatible with a higher number of disciplinary fields and to obtain a higher

degree of specific flexibility. Territory architecture and planning have a lot in common, but also important differences in terms of terminology and contents, both interpretative and basic.

Steps in Piacenza database implementation

The Piacenza Campus and PiacenzaLabs are also being supplied with a new information equipment, an intranet-shared repository representing the summa of ongoing researches, of objectives and of the already obtained results for the material implemented. We actually must consider that some of the above-mentioned research and didactic labs have been operational for many years and were created well before the Piacenza Campus itself.

Enriching user profile

Its stemming from many trends of thought, having to relate to many different realities and diversified user profiles. In Piacenza project such repository, made of pre-existing and developing archives, will have shared areas on different user profiles inside and outside the University. There will be access levels for researchers, sector operators, research collaborators (belonging to formalized and active researches) and guests, both at domestic and international level. Another user profile will be devoted to students who, as privileged users, will access information and documentation and will also be able to interact with the laboratory and/or with the lecturer (or the assistant lecturer) in order to create archives of the material produced during the courses. The repository, as the knowledge warehouse of Laboratories, researches and education, represents the focus of the spreading and dissemination project as opposed to the academic framework and the rest of the world.

Education/research relationship

It has indeed been highlighted that the stratification of these materials - going from semi-finished exercises to finalized reports and projects - represents a wide and articulated working base, which could be reused both in education itself and in the different stages of the sector operational research. The ongoing relationship between research and education, which is strong and biunique, strongly requested by the degree course, is necessary both to obtain a dynamic education - always updated by recent and applicatory case studies - and to obtain a widened shared research to which students can participate by different titles and levels (master of science degree, bachelor degree, PhD, etc.).

The first step was therefore to compare the different trends and the different archives of all Labs. By going back to different ages and based on different needs, they turned out to be quite heterogeneous.

The databases of such archives are also quite differentiated. We therefore started by rationalizing the digital filing modalities through the use of standard fields, with in-depth studies on specific application fields linked to the territory and urban design. We also lingered over a fundamental aspect: the dichotomy between real object (in MACE known as RWO – Real Word Object) and digital object.

Enriching content

We actually have a whole set of still undigitalized archives of very important and interesting historical materials, which need to be organized and made available in a "virtual" form in order to preserve the originals, which are all too often fragile and perishable. Other archives are made of heterogeneous materials, with very different origins, sizes and types. We therefore created an "indexing" system based on a so-called general classification card and on a set of specific cards for the different sectors, which can be filled in based on the various cases and needs, e.g. real object and digital object case history. The latter are not opposing, but can coexist.

The general card identifies in generic way the "*object*", defining if it is real, digital or both, giving an essential description of it. Then it asks for a typological classification and it defines if it deals

with a single or related/aggregated object and, if available, the degree of aggregation (number of relation). At last there are some fields of notes and bibliography.

The *real object* card at the beginning takes back the fields already defined in general, then it deepens the physical description of the object. Author, historical period/year and buyer and other fields are designed to complete the information scheme. The second part of the card (optional) concerns the archives that are still cataloguing the material and it represent a help to retrieve the data/material in their physical position.

The digital card object at the beginning takes back the fields already defined in general, then it deepens the description of the file through a series of fields that are automatically auto-compiled (it's necessary only a routine of file analysis). The following part regards some specific fields and the fields related to the georeference.

Another comparison with a recent experimental database solely devoted to educational material filing further widened the range of possibilities. The additional inputs have been covered especially by other two specific files, named copyright and didactics. The aspect concerning rights, exploitation and reproduction modalities is now a historically well known issue. Moreover we own the rights on materials coming from didactics (tutorials, examination papers, theses, short dissertations, papers, etc.), which can be used in particular conditions only. The didactics files therefore contains all information concerning the origin of the object in these specific cases. This peculiarity is necessary because we believe in a correlation between didactics and research and we have always thought that, by basing future examinations on the pros and cons of the previous works, we can certainly attain a specific cognitive growth.

To complete the archiving system there is the field for the approval of the contents from the archive responsible and, if congruent, the authorization to put on line of the card related to the object.

The next work step will be to related to the differentiation of the possibilities of mass on line of the documents, so that the archive responsible could choose the documents "visibility". In this way will be possible to define if it can be seen by everybody (generic user), from the teachers only, from the students, etc. For this work step is necessary to have a full working database and web server, so to pre-define the accepted user characters.

The teaching institutional set

The bachelor degree is also based on a project template that is processed in subsequent and incremental stages for its whole life (two academic years) through workshops, seminars, mono-disciplinary and supplementary classes. This requires the students to frequently access the examination papers and the previously treated materials in order to continue the activity. The educational path itself, once reread through filing, represents a quite interesting disciplinary case study. The new archive was subject to a latter review through the comparison with MACE's needs. The needs for integrating the two logics were actually quite limited, because the archive core roughly matches LOMs 1-8 of MACE's Application Profile. The differences often concern the terminology and the usage needs, and can be considered more as "shades". The issue becomes much more serious as far as LOM 9 is concerned.

The status of the art in project set-up

The integration and the interaction between Piacenza Campus and MACE project is clearly defined as a priority, so we tried to find similar equipment, if not common, even from a technical point of view. The collaboration began in late spring 2008, led to an interest by the Consortium of MACE as far as to make available to PiacenzaLabs a large package of resources.

At present the project of the data structure of the database, which will be the backbone of the repository PiacenzaLabs, can be considered almost complete. In fact for some months it is taking steps a phase of virtual testing; each laboratory, had to simulate the storage using the data structure designed to verify inconsistencies or shortcomings. The next step will be the implementation, a database web-server is in fact available.

The choice of application platform is currently under way, but among the competitors seem to emerge the system designed Ariadne, for reasons of economy, efficiency, expandability and active

interconnections (ARIADNE is a partner in technology MACE, and the platform was developed by Katholieke Universiteit Leuven, another Partner of MACE). ARIADNE (Alliance for Remote Instructional Authoring and Distribution Networks for Europe)¹ is a research and technological development project related to the "Telematics for Education and Training" of the Fourth Framework Program for Research and Development of the European Union, led by a foundation, the ARIADNE Foundation, formed by 31 partners. Principal purpose of the project is the development of standards for the sharing and reuse of learning materials on line. For his achievement ARIADNE has developed an international "Knowledge Pool System" (KPS), directories of educational documents with a system of indexing and search. The storage platform based on standard XML (eXtended Markup Language), a simplified subset of SGML (Standard Generalized Markup Language), one of the best language for describing metadata and the structure of documents.

The environment is based upon some ARIADNE system requirements:

- a dedicated Server
- Apache HTTP Server: the most popular modular Web server platform capable of working in several OS like UNIX, Linux and Microsoft.
- Apache Tomcat: a web container, open source. Implements JSP specifications and the Servlet from Sun Microsystems, providing a platform for running Web applications in Java.
- ORACLE Server or Postgre SQL Server for database management.

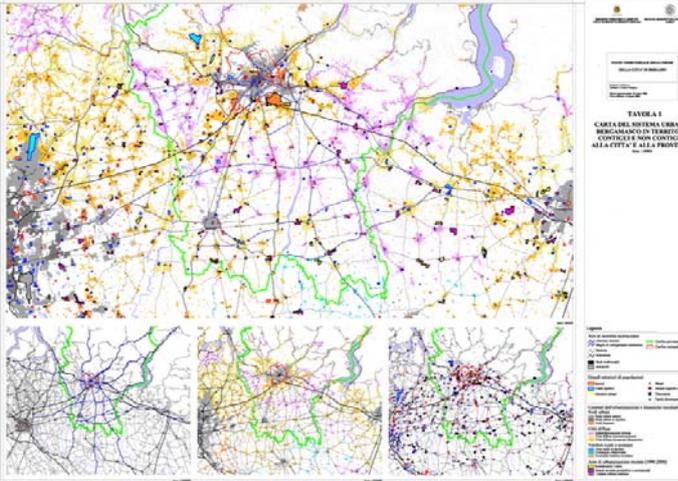
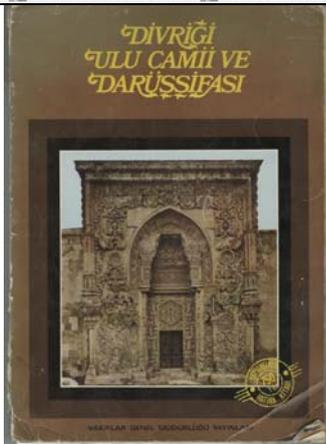
We will quickly activate a series of technical meetings to allow a choice, if not definitive, at least strongly indicative of the possibilities offered and we hope to begin the operational phase.

Storage samples

The workgroup is currently focusing on the simulation of storage of certain types of material. The stage of "virtual testing" is therefore based on the following types:



¹ <http://www.ariadne-eu.org/>

<p>Cartographic content (digital and real)</p>	
<p>Bibliographic content (digital and real)</p>	
<p>Digital models</p>	

Example of archived document input



GENERAL	
ID_GIVEN CODE:	aaa000001
TITLE:	Tavola 8 della Carta del corso del Po dal Ticino al Mare da rilievi diretti eseguiti nel 1821 e aggiornati nel 1853, originale nella scala 1:15000.
PLACE:	Italia, pianura padana, Lombardia, Emilia Romagna, Piacenza
LANGUAGE:	Italiano
SYNTHETIC DESCRIPTION /ABSTRACT:	<p>Presso il Magistrato per il Po con sede a Parma è stata ritrovata una collezione di mappe denominata <i>Tavole Brioschi</i>, di cui col tempo si era perso sia il ricordo che l'unicità dell'insieme. Le <i>Tavole Brioschi</i> sono una raccolta di 47 mappe componibili, in scala 1:15000, più un quadro d'unione, raffiguranti il bacino idrografico del fiume Po dalla città di Pavia al mare Adriatico in scala 1:330000. Il tutto è raccolto in un contenitore la cui copertina, di epoca incerta, riporta la seguente titolazione: <i>Carta del corso del Po dal Ticino al Mare da rilievi diretti eseguiti nel 1821 e aggiornati nel 1853, originale nella scala 1:15000</i>.</p> <p>Tutte le tavole hanno misure quasi uguali di circa 889mm di lunghezza per 529mm di altezza; nel bordo superiore a sinistra esse riportano una numerazione con cifre romane, che permette di identificarle e comporle per formare una unica sequenza. Quasi tutte presentano il disegno del corso del fiume all'interno di una cornice di 20mm posta sul lato sinistro e in basso; nelle Tavole 1, 2, 5, 8, 11, 20, 23, 25, 31 e 32, questo riquadro è stato tagliato per far posto a una cornice in legno. Nell'Inventario delle Tavole questi ultimi fogli sono numerati con cifre arabe, mentre tutti gli altri, ancora integri, sono indicati con l'originale numero romano. ...Prosegue in Descrizione Estesa...</p>
EXTEND DESCRIPTION:	pianta_grande.doc
TPOLOGY:	disegno a mano libera a colori, planimetria
SUPPORT:	carta spessa del 1800
TECHNIQUE:	a penna, acquarello e pastello a colori
RELATED DOCUMENT:	si
LEVEL OF AGGREGATION:	fa parte di

NUMBER OF RELATIONS:	47
LINK:	c:/archvio/Brioschi_Tav8.Tif
SOURCE:	CEDAT, Biblioteca Braidense
NOTE:	<p>Rettifiche in Rosso: variazioni d'alveo; aggiunta argini sinistra e destra; aggiornamento tipi mappali sinistra.</p> <p>Rettifiche in Verde: ulteriore variazione d'alveo</p> <p>Toponimi: Riva di Sopra, Cotrebbia, Reganella, Prato bruciato, La Pila, Tronco, S. Antonio, Isola S. Sisto, Lampugnana, Piacenza, S. Benedetto, S. Rocco, Crocione, Mezzano</p> <p>Affluenti: Torrente Trebbia</p> <p>Isole: S. Sisto, Piacentina, Lombarda, Isolone Ferrari</p> <p>Porti: Cotrebbia</p> <p>Annotazioni originali: Stato d'acqua nei giorni dei rilievi sino di fronte a Piacenza di M.ri 0,60 ai M.ri 0,90 sopra zero</p> <p>Idrometro di Carassa</p> <p>Idem pel Thalwegh</p> <p>M.ri 0,40 sopra zero</p> <p>Visto = l'Ingegnere aggiunto Direttore Gio. Savio</p> <p>Piacenza 29 maggio 1852</p> <p>Per la verifica della Provincia di Lodi Ing.e di riparto Antonio Muzio</p> <p>....Provincia di Piacenza ... Tagliasacchi</p>
BIBLIOGRAPHICAL REFERENCE:	
PUBLISHED:	<p>Mostra presso la Triennale di Milano dal titolo Itinerari lungo un Fiume – Il Po e la sua immagine dal 1811 al 13 marzo 2005 promossa e realizzata da Ministero dell'Industria, Regioni Emilia-Romagna, Lombardia, Piemonte e Veneto, Politecnico di Milano, Triennale, Touring Club Italiano, Consulta del Po.</p> <p>Nel Catalogo dell'evento citato.</p> <p>Nel volume a cura di Ufficio studi del Magistrato del Po di Parma Ministero dei Lavori Pubblici, Politecnico di Milano, AAVV, Carta del corso del Po dal Ticino al Mare da rilievi diretti eseguiti nel 1821 e aggiornati nel 1853.</p>

REAL OBJECT	
REAL ENTITY:	si
CATALOGUER:	Graziella Sibra
REAL_ID:	Brioschi_Tav8
ARCHIVE:	<p>Archivio CoDE Lab – Cooperative Design Environment</p> <p>TeDOC - Servizio Tesi e Documentazione della cartografia e pianificazione</p> <p>Biblioteca Nazionale Braidense</p> <p>Agenzia Interregionale per il fiume Po (A.I.PO)</p>
DIMENSION:	889mm di lunghezza per 529mm di altezza
YEAR/HISTORICAL PERIOD:	1821-1853
AUTHOR:	Francesco Brioschi, Vari
CUSTOMER:	
SCALE:	1:15000, 1:330000
AVAILABILITY:	Biblioteca Braidense di Milano, originali.

	<p>Archivio CoDE Lab – Cooperative Design Environment stampa a colori formato A3</p> <p>TEDOC in microfiches, diapositive, stampe fotostatiche a colori in formato A3 e superiori e in formato digitale.</p> <p>Agenzia Interregionale per il fiume Po (A.I.PO), ex Magistrato del Fiume Po a Parma, copie fotostatiche a colori.</p>
LIBRARY:	
BOOKSHELF:	
COUNTER TOP:	
AVAILABILITY METHOD:	<p>TeDOC - Servizio Tesi e Documentazione della cartografia e pianificazione, Via Bonardi 3, 20133 Milano. Info: 02-2399.2667 / 02-2399.2655 Fax: 02-2399.2663 sito web: http://www.tedoc.polimi.it/</p> <p>Biblioteca Nazionale Braidense, via Brera, 28 – 20121 Milano. tel. +39 02 86460907 - fax +39 02 72023910. email: b-brai@beniculturali.it sito web: http://www.braidense.it</p> <p>Agenzia Interregionale per il fiume Po (A.I.PO), ex Magistrato del Fiume Po a Parma, Via Garibaldi, 75, 43100 PARMA. Tel. 0521/7971 Fax. 0521/797296 http://www.agenziainterregionalepo.it/</p>
AVAILABILITY CONTACT:	
DIGITAL OBJECT	
DIGITAL ENTITY:	yes/no (yes)
CATALOGUER:	Andrea Cammarata
DIGITAL_ID:	Brioschi_Tav8.Tif
ARCHIVE :	Archivio CoDE Lab – Cooperative Design Environment TeDOC - Servizio Tesi e Documentazione della cartografia e pianificazione
AUTHOR	
FORMAT:	Tif compresso
DIMENSION:	1024Kbyte
AGGREGATION DIMENSION:	47Mbyte
RESOLUTION:	3000x1000px
TIME:	
REQUIREMENT:	Visualizzatore immagini
SUPPORTO:	DVD Backup
YEAR:	2007
DIGITALIZER:	Scanner
SCALE:	
GEOREFERENCE:	
COORDINATE SYSTEM:	

COPYRIGHTS

SOURCE:	TeDOC - Servizio Tesi e Documentazione della cartografia e pianificazione
LICENSE AND COPYRIGHT:	a stampa solo per didattica libera in tutti i formati, per pubblicazioni fare riferimento alla Biblioteca Nazionale Braidense

COPYRIGHTS:	legati all'originale: Biblioteca Nazionale Braidense e Agenzia Interregionale per il fiume Po (A.I.PO)
REPRODUCIBILITY :	nel formato originale solo a stampa, in formato thumbnail libera
VISIBILITY:	in formato thumbnail libera, ad alta risoluzione personale interno e gruppi di ricerca

DIDACTICS

COURSE/LABORATORY:	Corso Integrato Rappresentazione 3 - proff. G. Belotti, A. Cammarata, M. Ricci – Materiali di analisi storica dell'area di Piacenza, al valle del Trebbia e congiunzione Trebbia/Po
ACCADEMIC YEAR:	2007-2008
YEAR OF COURSE:	Terzo
COMMENT:	Materiale di base per le esercitazioni legate al riconoscimento del territorio e allo studio dell'assetto dell'area di Piacenza, al valle del Trebbia e congiunzione Trebbia/Po. Materiale valido sia per lo studio dello stato storico che dello stato attuale in quanto testimonia le recenti evoluzioni territoriali.
TYPE:	Esercitazione

APPROVAL:	Si
ON LINE:	Yes/No (Yes)

Should also remember that the PiacenzaLabs database has a close similarity with the structure of the Mace' Application Profile. In fact it has been designed from the beginning to have a high degree of compatibility.