

Internet Services and Technological Development

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IIT - Institute for Informatics and Telematics

CNR - National Research Council

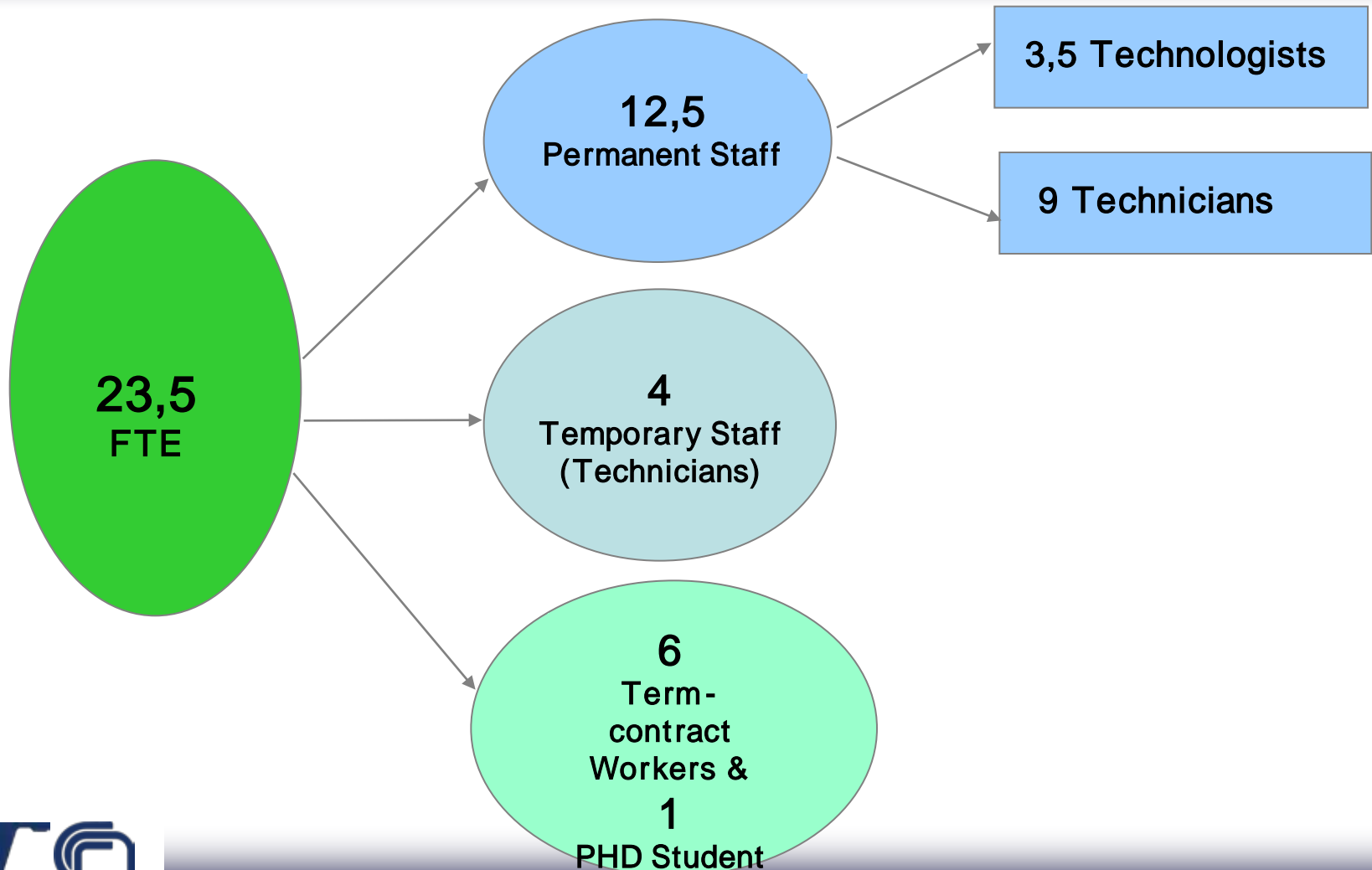
Italy



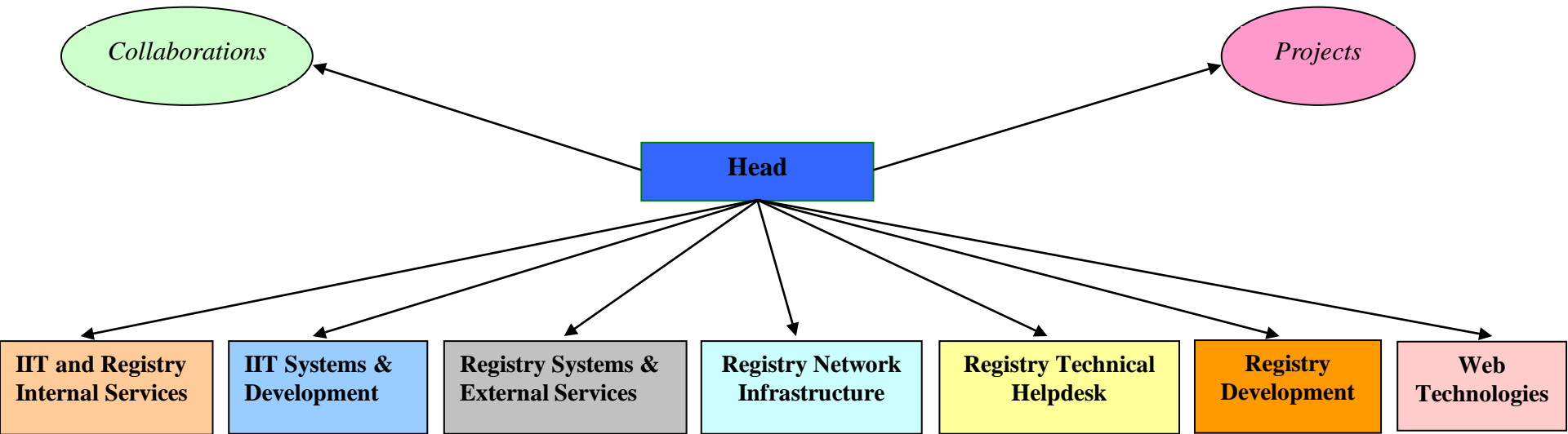
The mission

- n Plans, designs and develops advanced services and applications for:
 - n The Institute
 - n The CNR in general
 - n The Italian Public Administration
 - n The .it Registry
- n Manages most of services of IIT and the technical infrastructure (systems and network) of the .it Registry
- n Some collaborations are also in force with private national and international organisations
- n The group is formed by 24 people

The personnel



The structure



IIT & Registry Internal Services

- n Technical equipment and software purchase (specifications, offers, etc.) and test
- n Installation, configuration and management of the personnel machines (PC, printers, scanners, copiers, etc.)
- n Registry telephone switchboard
- n Registry fax server
- n The group is formed by 3.5 FTE



IIT Systems & Development

- n Manages IIT internal and external services
 - n Email and Email Distribution lists
 - n At present we are managing about 140 mailing lists
 - n Nameserver service
 - n Backup system
 - n IIT databases
 - n Personnel database, attendance database, etc.
 - n Personnel attendance system
 - n More than 10 CNR institutes are using it
 - n Monitoring system for the IIT services
 - n Hosting solutions for data and applications

- n The group is formed by 3.5 FTE



Registry Systems & External Services

- n Manages the Registry server farm and the services provided by the Registry
 - n More than 30 servers HA configured
 - n Master nameserver for .it and for the Italian geographical domains and internal resolvers
 - n Registry database (50 GB with 50 millions of records)
 - n Email, distribution lists and email ticketing system
 - n Whois, DAS and A-Whois
 - n Backup and logging systems
 - n Monitoring systems

- n The group is formed by 3.5 FTE



Registry Network Infrastructure

- n Manages the Registry network infrastructure
 - n In collaboration with the IIT Telematic network group
- n RIPE-NCC LIR (Local Internet Registry)
 - n Registry own networks and AS
- n Two upstream providers
 - n Links with the GARR network and with MIX
- n IPv4 and IPv6 ready
 - n Some services are already dual stack
- n The group is formed by 1.5 FTE



Registry Technical Helpdesk

- n Technical support for Maintainers and Registrars
 - n Provided by e-mail, telephone and paper
 - n Telephone service active from Monday to Friday (9.30-13.00 and 14.30-17.30)
- n Accreditation technical support for the “aspiring” Registrars
 - n Provided by e-mail and telephone
 - n Telephone service active from Monday to Friday (9.30-13.00)
 - n Started in July 2009
- n Languages: Italian, English and Spanish
- n Statistics (2008):
 - n About 5,700 e-mails and 1,700 phone calls (~145 hours of conversation)
- n The group is formed by 3 FTE



Registry Development

- n Designs and develops tools, applications and new services
 - n Provided by the Registry to the Internet community
 - n For internal uses (operators, Registry units, etc.)
- n Manages and updates the existing applications
- n Both the current asynchronous registration system and the new synchronous registration system have been planned and developed by this group
- n Technologies:
 - n Java, Jboss, Jboss-Seam, SOAP, Perl, XML, HTML, CSS, etc.
- n The group is formed by 4 FTE



Web Technologies

- n Designs, develops and manages Web sites and Web applications for:
 - n The Registry
 - n CMS of the Registry public Website
 - n Maintainers and Registrars portals
 - n Accreditation Registrar portal
 - n Italian Public Administration and private companies
 - n CMS
 - n Conferences Management Systems
 - n E-learning systems
- n The group is formed by 2 FTE



r&D Activities

- n Main r&D activities are:
 - n Management and development of Internet services and related applications
 - n Domain Name System and DNSSEC
 - n E-mail and distributions lists
 - n Websites and Web applications
 - n Electronic Archivation Systems
 - n
- n Management and development of the technical infrastructure of the .it Registry
 - n Systems
 - n Network

r&D Activities (cont)

- n Management and development of Internet services for the .it Registry
- n Design and development of innovative technological services and applications for the management of the .it Registry
 - n New synchronous registration system (launched successfully on September 28th)
 - n EPP server
 - n Billing system
 - n Registrars accreditation procedure
 - n Management interfaces, services (whois, das, etc.),.....
 - n New Registrars accreditation Web portal
 - n
- n All the services are based on “open source software” and, when possible, also the developed applications are distributed under the GPL license



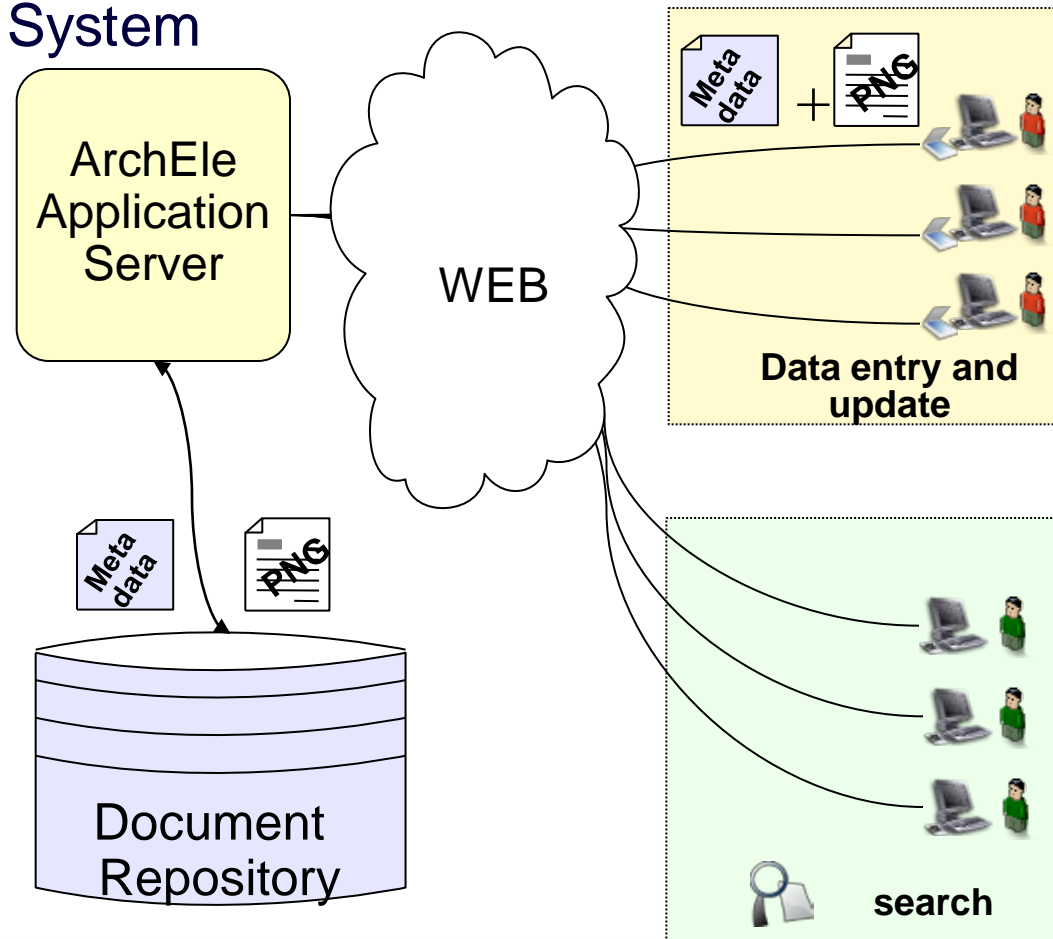
r&D Projects

- n Study and development of an acquisition and retrieval system for the management of the Registry paper documents
 - n Based on Zope/Plone
 - n Scanner management interface in Python
 - n Web interfaces for data management and search
 - n High flexibility to manage different document types
 - n Tested for storing millions of documents
- n More than 1,200,000 documents acquired up-to-day for a total of more than 1,700,000 pages



r&D Projects (cont)

n The ArchEle System



r&D Projects (cont)

- n Study of the Internet diffusion in Italy using .it domain names
 - n Use of domain names as endogenous metric
 - n The hostcount metric underestimates the Internet diffusion
 - n Exogenous metrics (interviews, questionnaires, number of ADSL contracts, PC sold, etc.) are less reliable
 - n Analysis of the Italian Internet diffusion among firms, non-profit organisations, individuals, etc.
 - n At macro-area level (North, Centre and South Italy) and regional, provincial and municipality levels

r&D Projects (cont)

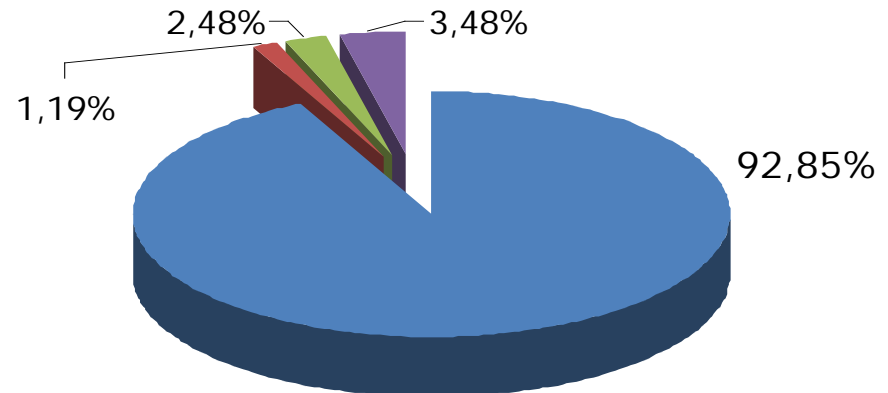
n Study of the Internet diffusion in Italy using .it domain names

- n **No-profit sector:** the greater diffusion of associations on the Net may be due to the fact that in Italy associations are more common than other categories (Istat, 2001)

No-profit	%
Associations	91.3
Committes	1.7
Foundations	2.4
Other corporations	5.7

Table. Percentage of non profit Corporations in Italy
Source: ISTAT

Figure. Percentage of Domains Registered by Non profit Corporations

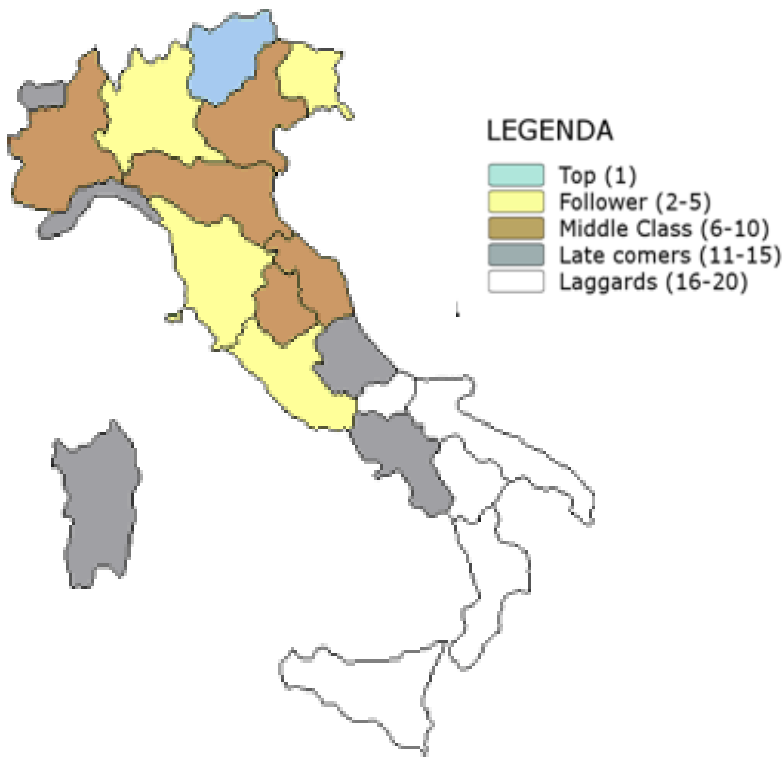


- Domains registered by Associations
- Domains registered by Committes
- Domains registered by other Corporations
- Domains registered by Foundations

r&D Projects (cont)

n Study of the Internet diffusion in Italy using .it domain names

n **Firms:** Top 10 regions domain names concentration

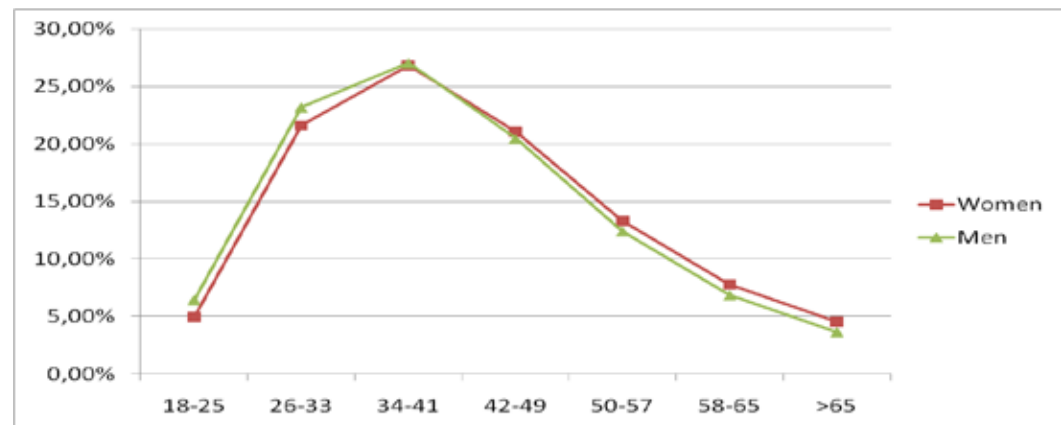
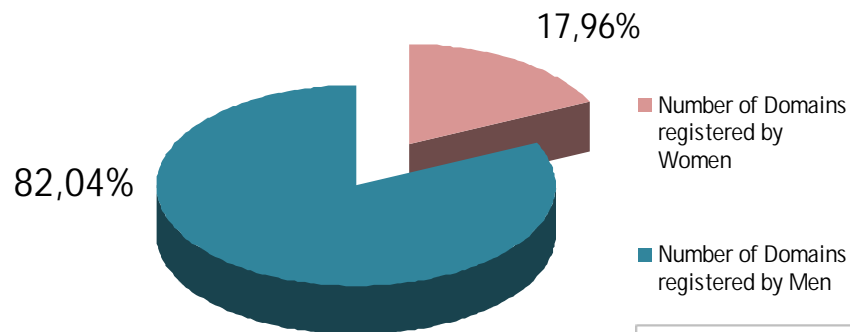


Regions	Number of registered domains by Firms	PR every 100 firms
Trentino Alto Adige	11069	14.35
Lombardia	97201	12.93
Toscana	35633	11.38
Lazio	40510	11.29
Friuli Venezia Giulia	9581	11.06
Veneto	38679	10.28
Emilia Romagna	36828	10.22
Piemonte	32701	9.91
Umbria	6054	9.41
Marche	11602	9.39
	319858	

r&D Projects (cont)

n Study of the Internet diffusion in Italy using .it domain names

n **Individuals:** Generational and Gender Digital Divide



r&D Projects (cont)

n **URPINSIEME**

- n Pilot project for integrated communication between Italian Public Administration institutions
- n A Web portal has been designed and developed, with the purpose of bringing citizens closer to the information provided by the Public Relations Offices
- n A CMS is also provided to manage the data flow and to provide access control to the information
- n In 2008 it has been awarded as one of the 100 best initiatives of the Italian Public Administration

r&D Projects (cont)

n **Electronic Health Record**

- n Financed by the Italian Ministry of Public Administration and Innovation
- n A federated structure built on the top of the eGovernment network
- n The architecture must respect the federal structure of the “Italian national health system” and allow access from any point of the national territory as a unique service
- n Reliability, accessibility, security and privacy are to be guaranteed to the highest degree
- n The system must be integrated, with low invading impact, with the existing regional and local systems (each clinical document is stored where produced)

Collaborations

- n **MIX Srl** (Milan Internet eXchange), Regione Toscana (Tuscany Internet eXchange) and Consortium GARR to run a .it secondary nameserver service in unicast mode
- n **Autonomica** (part of the Swedish Internet eXchange point Netnod) and CommunityDNS located in London to run a .it secondary nameserver service in anycast mode
- n **European Society for Photobiology** (ESP) for the design and development of the company Website and of a conference management system
- n **Regione Toscana** for the study of the Internet diffusion in Tuscany at regional, provincial and municipal levels
- n **ISTI-CNR** for the management and development of the .it Registry fax-server system
- n **CNR Public Relations Office** for the design and development of a search engine to get information on the Italian research and academic institutions, of a Web system for thesis and PHDs CNR proposals, etc.
- n **CNR Information Systems Office** for the development of the new Registry billing system



Publications (2006-2008)

	2006	2007	2008	Total
Books chapters		2		2
JCR	1			1
Other national/international publications	2		2	4
Conference proceedings	4	1		5

Training activities

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Domain names & technical registration procedures	4	6	3	2	3	2	3	3	
The Domain Name System	4	3	3	3	2	1	1	1	
The Linux OS		1	5	3	1	1			
Office Automation (CNR)					2	4			
Electronic Mail						2		1	1
Web Technologies & CMS				1	2	1	1	1	1

For a total of 72 training courses



Future activities

- n Use of Internationalised Domain Names (IDN) under .it
 - n Domain names with 8 bit chars will be registered
 - n Italian language as the first step
 - n French and German will follow
- n Set up a DNSSEC testbed platform for .it
 - n Experiments will be done on a dedicated .it DNS branch
- n Design a disaster recovery and data escrow plan for the systems and data of the .it Registry
 - n An agreement with the Milan eXchange Point is going to be carried out
- n Set up an Italian DNS Anycast cloud for the .it Registry
 - n Anycast nodes located at the main Italian Internet eXchange Points
- n Set up a technical infrastructure for the Italian ENUM Registry
 - n in collaboration with the Italian Ministry of Economic Development – Communication Dpt (ISCOM)

