

# Planning, Design and Monitoring of Telematic Networks

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# People working in the group

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Marco Sommani  
Technologist Director  
Permanent staff



Mario Marinai  
Technician  
Permanent staff



Abraham Gebrehiwot  
Technologist  
Temporary staff



Claudio Menchi  
Technician  
Permanent staff



Giuliano Kraft  
Technician  
Permanent staff



Andrea De Vita  
Term contract worker

# Activities in the campus of CNR in Pisa

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- Size of the campus
  - n About 1,100 CNR employees
  - n More than 1,700 names in the telephone directory
- The group takes care of telematic services in the campus
  - n connectivity, cabling, wifi
  - n network protection and troubleshooting
  - n video-conferencing and VoIP support
  - n video documentation of events and research activities

# Other activities

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- Experimentation, deployment and dissemination of new technologies:
  - n working groups of the NREN community
  - n technology transfer towards Public Administrations
  - n education: Cisco Networking Academy

# Activities in the NREN community: context and motivation

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- National context
  - n the community of users of the GARR network
- International context
  - n National Research & Education Networks (NRENs)
  - n TERENA (Trans European Research and Education Networking Association), <http://www.terena.org>
  - n DANTE (Delivery of Advanced Network Technology to Europe), <http://www.dante.net>
- Research organizations must be ready to leverage new technologies and cooperation tools

# Examples of technologies and services in the NREN community

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- IPv6, IP multicast, end-to-end QoS
- ENUM-based IP telephony
- EduRoam: wifi access in participating sites with the same credentials used at home
- AAI federations enable users to be granted access to services of other organizations through their home authentication service
- Every NREN runs a CA that releases personal certificates trusted in the whole NREN community

# How CNR participates in the activities of the NREN community

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- There are active people in a dozen of CNR institutes in different parts of Italy
- They are all members of the multi-institute research unit “Planning, Design and Monitoring of Telematic Networks”
- This multi-institute unit is coordinated by IIT
- Marco Sommani is a member of the Technical-Scientific Committee of GARR
- Marco Sommani is a member of the IPv6 Council Advisory Board of Cisco

# Technology transfer and education

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- Technology transfer is currently being directed towards Public Administrations in Tuscany
  - n main focus on ENUM-based IP telephony
    - IIT verifies the conformity of solutions proposed by PBX vendors with the VoIP infrastructure of Tuscany Region
  - n possible future involvement in IPv6 deployment
- IIT runs a Cisco Networking Academy
  - n courses to prepare students to the CCNA and CCNP certification exams
  - n well-structured lab facilities for students training





# Duties in the campus: keeping track of cabling



# Duties in the campus: traffic analysis

Top Talkers Top SRC IP - Top DST IP Parametric Query Logout

Date: 2009/9/13 From time: 00:00 To time: 19:23:15 *nlpw*

Standard Polacca

Where: AND OR

src\_ip == 146.48.%

Fields:

<input checked="" type="checkbox"/> id	<input type="checkbox"/> eth_len	<input checked="" type="checkbox"/> src_port	<input type="checkbox"/> my_as
<input checked="" type="checkbox"/> time	<input type="checkbox"/> in_vlan	<input checked="" type="checkbox"/> dst_port	<input type="checkbox"/> src_as
<input type="checkbox"/> agent_ip	<input type="checkbox"/> out_vlan	<input checked="" type="checkbox"/> tcp_flags	<input type="checkbox"/> src_peer_as
<input type="checkbox"/> in_int	<input checked="" type="checkbox"/> src_ip	<input checked="" type="checkbox"/> packet_size	<input type="checkbox"/> dst_as_path_len
<input type="checkbox"/> out_int	<input checked="" type="checkbox"/> dst_ip	<input type="checkbox"/> ip_size	<input type="checkbox"/> dst_peer_as
<input checked="" type="checkbox"/> src_mac	<input checked="" type="checkbox"/> ip_protocol	<input type="checkbox"/> sample_rate	<input type="checkbox"/> dst_as
<input checked="" type="checkbox"/> dst_mac	<input type="checkbox"/> ip_tos	<input type="checkbox"/> src_mask	<input type="checkbox"/> raw_header
<input checked="" type="checkbox"/> eth_type	<input type="checkbox"/> ip_ttl	<input type="checkbox"/> dst_mask	<input type="checkbox"/> topdump

Order By: id DESC ASC

Rows: 1000

Submit Reset

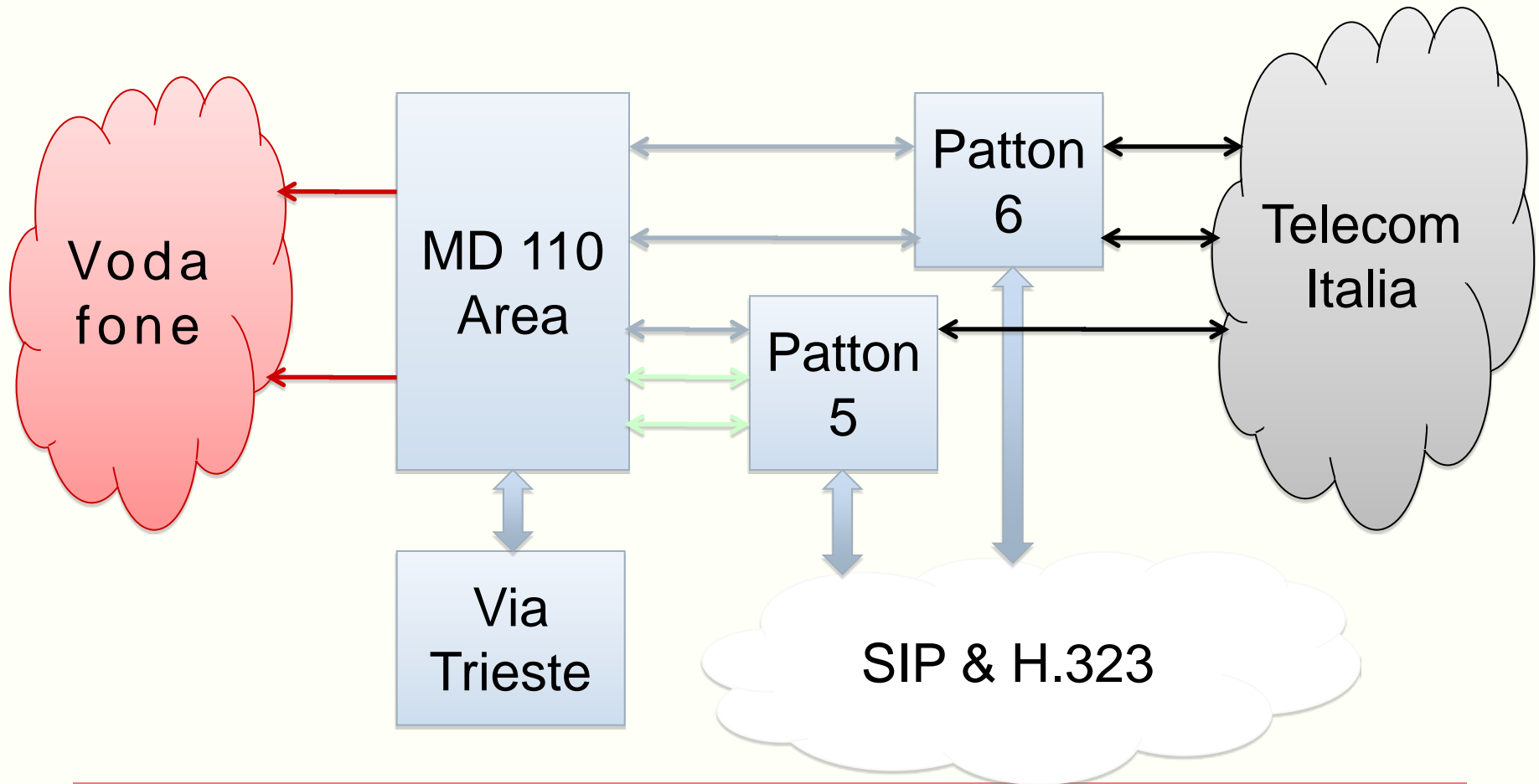
L'applicazione consente di eseguire una query personalizzata al database. I *Fields* corrispondono all'output della select. I campi *Where* sono le condizioni da applicare alla ricerca. Il tempo di risposta dipende dal carico del server e dalle condizioni imposte nella query (normalmente < 1 minuto). Attenzione.. attualmente non ci sono controlli sui dati inseriti

With *LIKE* you can use the following two wildcard characters in the pattern:  
%: Matches any number of characters, even zero characters  
\_: Matches exactly one character

Utilizzo notazione polacca inversa:  
<campo> ::= (un qualsiasi campo della tabella sflow)  
<operatore> ::= = || != || > || < || LK || NLK || && || //  
<espr> ::= <espr> <espr> <operatore> || <campo>

# Duties in the campus: IP telephony

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# Duties in the campus: video archive of events and research activities



## Centr, l'Europa di Internet

L'Istituto di Informatica e Telematica del CNR di Pisa ha organizzato, nei giorni 2-3 ottobre 2008 presso l'Hotel Royal di Viareggio, la trentasettesima edizione dell'assemblea generale di Centr, l'associazione no-profit che raccoglie i principali registri Internet europei.

Per informazioni: [Segreteria di Direzione IIT](#)

Scarica il video (formato .mp4) [Click qui](#)  
oppure se hai il "plug-in" flash [Click qui](#)



## In barca a vela con il wi-fi

I ricercatori dell'IIT di Pisa hanno collaudato le potenzialità del wireless mesh in un contesto finora considerato off-limits per le difficoltà che presenta: il campo di regata delle barche a vela. Teatro della sperimentazione sono state le acque antistanti Porto Cervo, in Sardegna, dove, nel settembre scorso, si sono svolte le gare MaxiYacht e Swan.

Per informazioni: [Ing. Enrico Gregori](#)

Scarica il video (formato .mp4) [Click qui](#)  
oppure se hai il "plug-in" flash [Click qui](#)



## Ironscience: atleti in gara per vincere la malattia

Il secondo servizio autoprodotta dall'Area della Ricerca di Pisa: il gruppo Extreme (Ist. Fisiologia Clinica, Scuola S. Anna e Università di Pisa) studia sull'Isola Asinara un gruppo di super-atleti impegnati in una gara di triathlon estremo.

Scarica il video (formato .mp4) [Click qui](#)  
oppure se hai il "plug-in" flash [Click qui](#)



# Duties in the campus: videoconferencing

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# Summary

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- We claim that not all service-related activities can be outsourced to commercial societies
- This is particularly true when innovation is a key factor
- Evolution plans of commercial operators are mainly finalized to increase revenues in short term
- Consequence: lack of innovative features in the commercial Internet (no IPv6, no multicast...)