WIDEN

Web-based Image and Diagnosis Exchange Network

diagnostic
imaging
X
innovative
trials

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OUTLINE

- the Need
- the Requirements
- the Solution
- the Implementation
- the impact on the Network
- conclusions

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the NEED / 1

- imaging-based clinical trials: a recent approach

- IMAGING REVIEW
  - mandatory when no rules for imaging interpretation exist (ex. interim-PET)
  - should be completed within 48-72 hours for maintaining the dose-intensity of the therapy

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the NEED / 2

- As a consequence, a new clinical demand is generated
  - could the peripheral imaging centers for the image review be replaced by a consensus by a panel of expert reviewers?
  - could the reviewers of the panel be located in different places?

the NEED / 3

three conditions should be met:

1. an expert panel should be promptly available
2. images should be exchanged in a fast way
3. images should be retrievable from anywhere and anytime

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the NEED: an example…

- Creating a new PET center is not just installing a new PET scanner but creating at the same time a PET center network for imaging exchange
- This is especially true for developing countries

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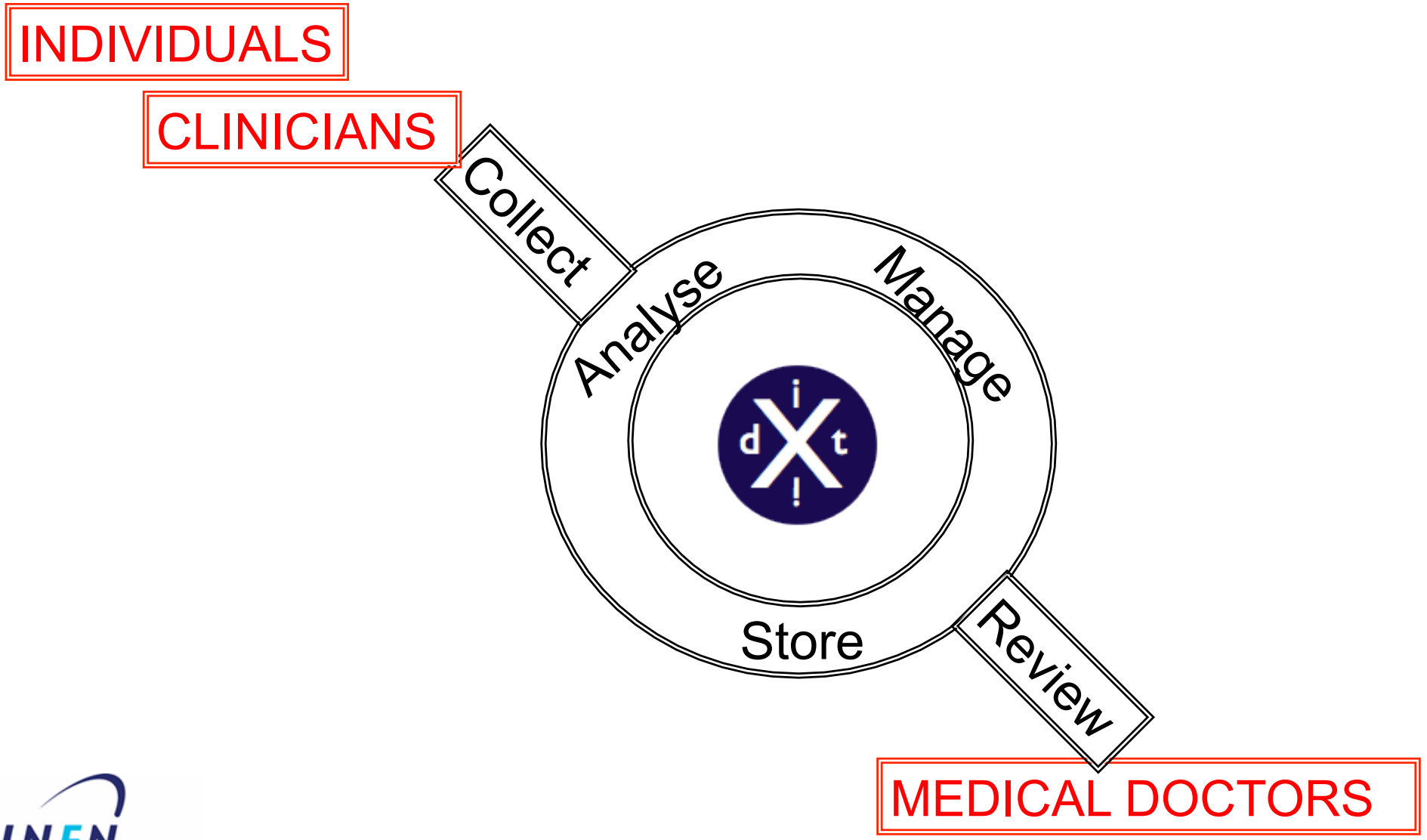
the Requirements
WIDEN Functional Model



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the Requirements

the implementation must:

- be Easy to install / configure
- be Easy to use
- preserve reviewers' freedom to choose the DICOM viewer/analyser
- be Secure (data protection)
- be Suitable for data analysis (data & images)
- be Cheap… or at least not too expensive!!!

the Implementation

the implementation must:

- be Easy to install / configure
- be Easy to use

WEB Services!!!

- Custom portal with protocol implementation
- no HW/SW installation / configuration
- just use your preferred Internet browser

the Implementation

the implementation must:

- preserve reviewers' freedom to choose the DICOM viewer/analyser

• download the image/scan and open it with your preferred software…

the Implementation

the implementation must:

- be Secure (data protection)
  - SSL encryption
  - DICOM anonymisation

the Implementation

the implementation must:

- be Suitable for data analysis (data & images)
  - MySQL DB backend
  - possibility to develop custom analysis on the server side

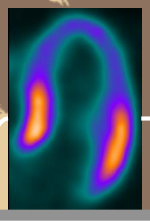
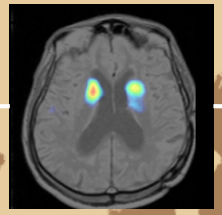
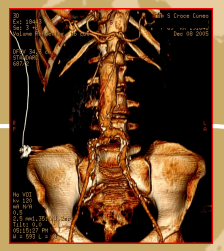
the Implementation

the implementation must:

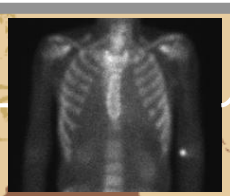
- be Cheap… or at least not too expensive!!!

the SOLUTION

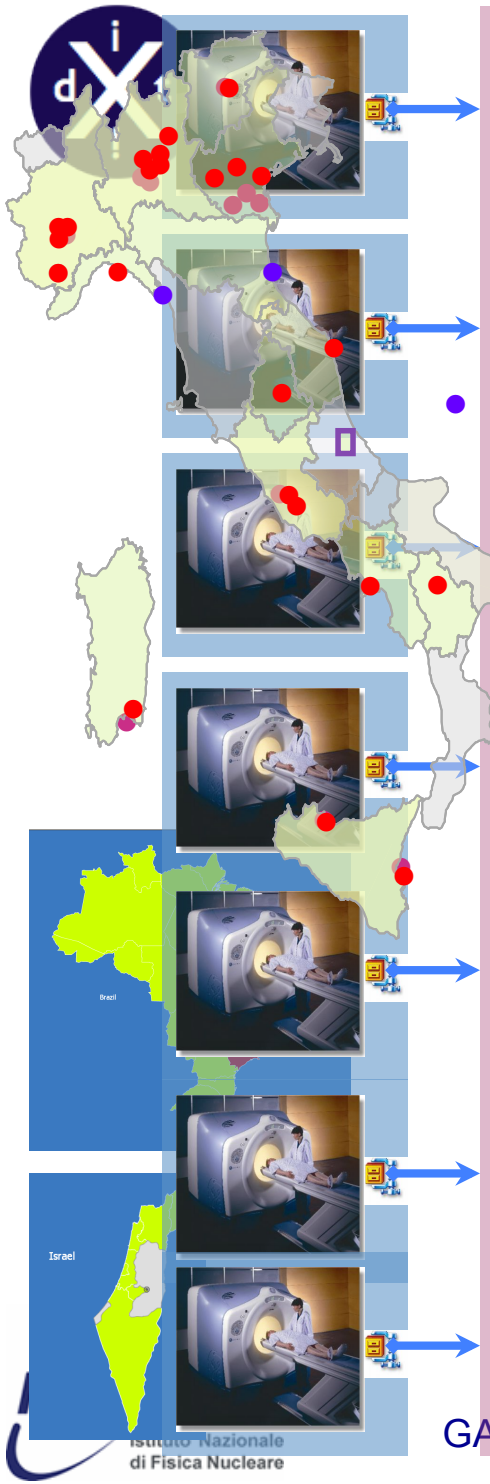
WIDEN Web-based Image and Diagnosis Exchange Network

A worldwide diagnosis with a consensus of experts



for Clinical Trials (CTs)



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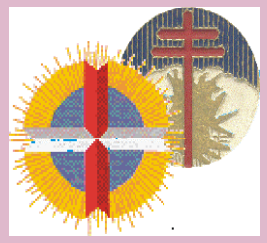
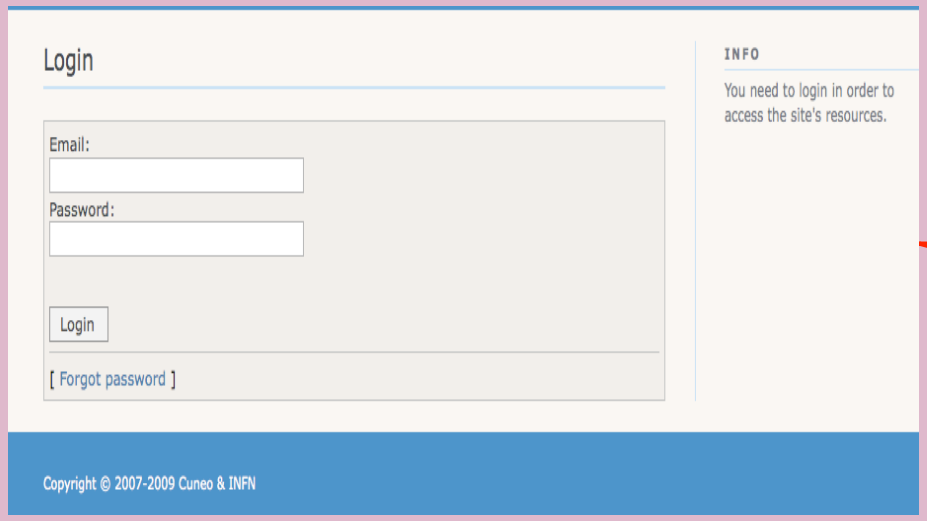
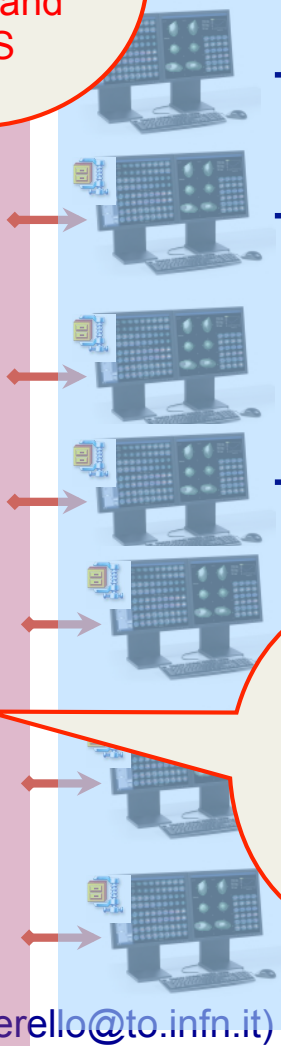


Consortium GARR

PET review panel

reviewers triggered by e-mail and SMS





Haematologist

PET+ or PET- by e-mail and SMS

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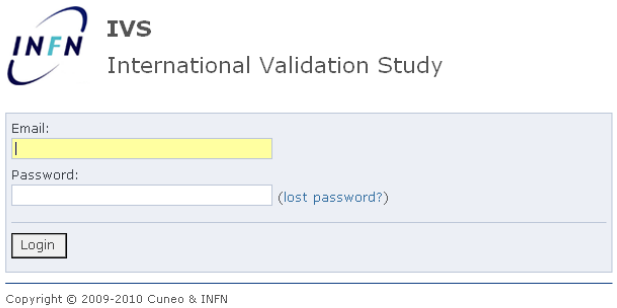
Why WIDEN?

COMPARISON WITH EXISTING (VPN-based) SYSTEMS Yes No			WIDEN
TECHNOLOGICAL ADVANTAGES	Readily accessible everywhere	N	Y
	No change in firewall configuration	N	Y
	Just login and use it	Y	Y
COST / VERSATILITY	No dedicated HW or SW	N	Y
	No cost for specific equipment	N	Y
	No specific training needed	N	Y
PROMPTNESS	Very short images upload time	Y	Y
	Very quick Image review	Y	Y
DATA SECURITY	SSL data encription*	(N)	Y
ASSISTANCE	Medical expertise	N	Y
INTERNATIONAL SHARE	Usable/used by other groups	N	Y

4 clinical trials as early users

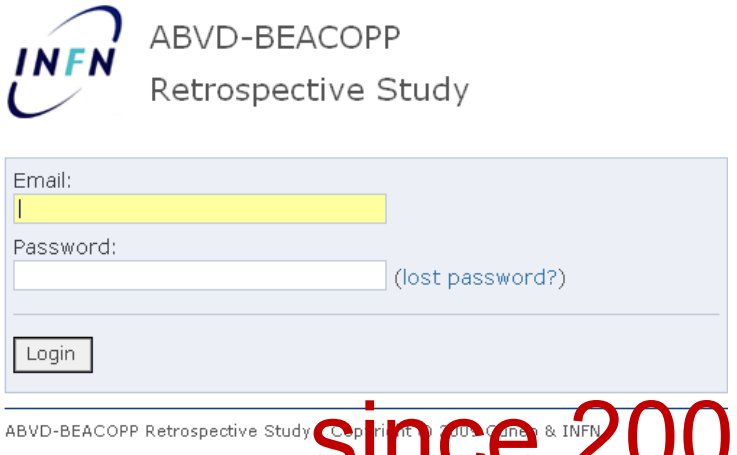


400 users

40 countries

4000 exams

40000 GBytes



since 2008

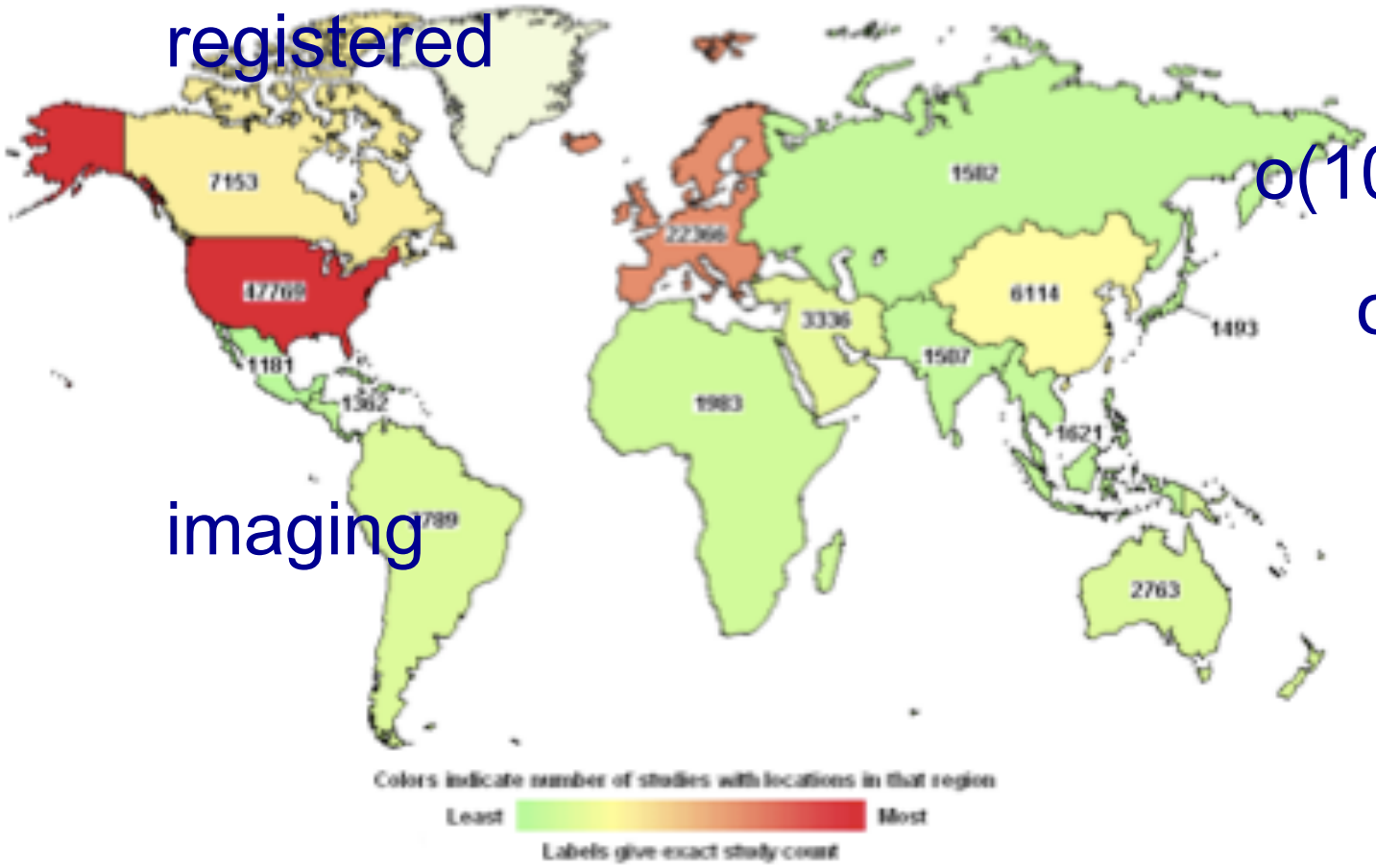
the Impact on the Network

Clinical Trials registered

o(100,000)

o(10,000) active

o(1,000) with imaging



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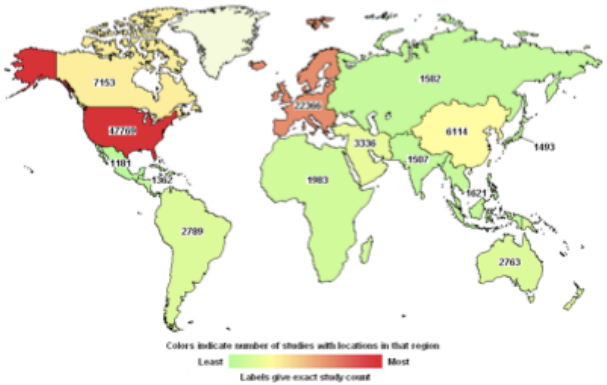
the Impact on the Network

Clinical Trials with imaging, increasing trend:

- Hematology
- Oncology
- Anatomopathology



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the Impact on the Network

A ‘typical’ clinical trial (HD0607)

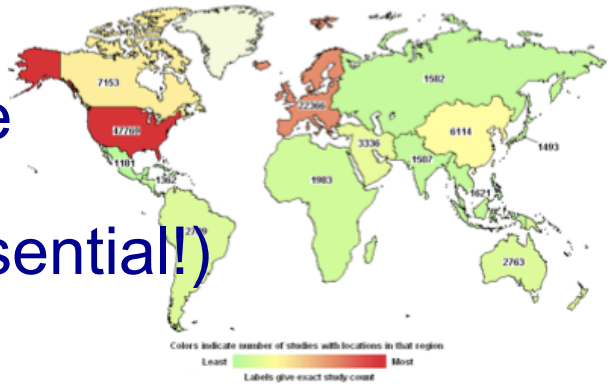
~ 100 patients/year * 320 MB/patient

~ 32 GB/year (upload)

~ 320 GB/year (download – if 10 reviewers)

* 1000 CTs = ~ 32 TB/y (upload), ~ 320 TB/y (download)

- the network bandwidth is not a key issue
- the network functionality is precious (essential!)



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CONCLUSIONS

- thanks to the network functionality/ubiquity WIDEN IS:
  - SIMPLE
  - EFFICIENT
  - ECONOMICALLY SUSTAINABLE
  - it can improve the way imaging is handled in Clinical Trials
  - it opens a door for more functional Trial Protocols
    - real time response
    - image analysis