



**SAPIENZA**  
UNIVERSITÀ DI ROMA



**Liguria**  
**Ricerche**  
GRUPPO **Filse**



**REGIONE LIGURIA**



---

Prof. Ing. **CLAUDIO CILLI**

Member of the National Healthcare Cyber-security Committee

[cilli@di.uniroma1.it](mailto:cilli@di.uniroma1.it)

<http://dsi.uniroma1.it/~cilli>

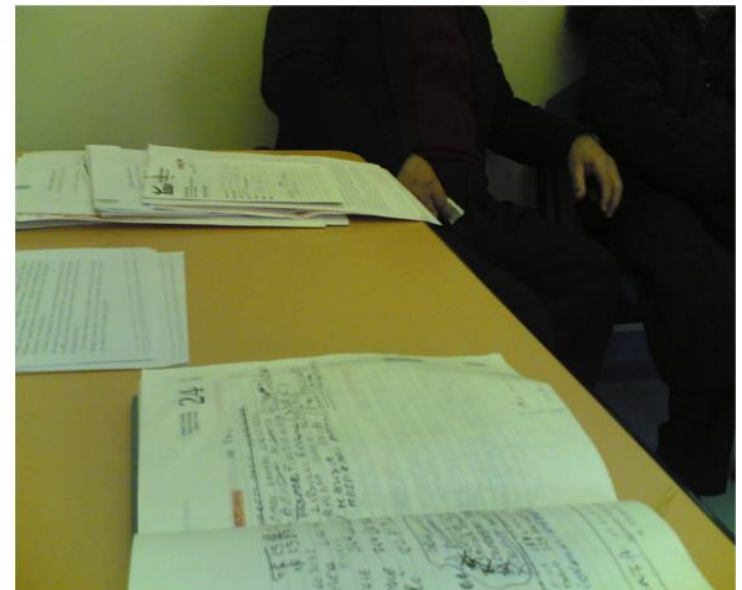
# **E-HEALTH SECURITY: SINGULARITIES AND ISSUES**

# The Library of Alexandria



# Healthcare and paper

- If the Library of Alexandria was not destroyed by a fire and more than five hundred thousand ancient texts were not lost probably our civilization, our life, would have been different
- **Healthcare is the public sector which produces more paper and signatures than any other**



The technological innovation has radically transformed our life



# Has changed also the work of health professionals

- Now all physicians use keyboard, mouse and computer. Who would ever have imagined in the eighties to have the world at your fingertips (ear, mo



# [ Information systems excellence

- Today the level of excellence of health structures must be assessed, inter alia, by the use of ICT tools and the innovative competitiveness, because they involve a greater efficiency both from the organizational point of view that the quality of care
- At the global level, there is certainly a strong acceleration on the theme of **information security** and the common awareness that it is an essential element is now well established
- The cycle of technological innovations no



**Web**



**E-mail**



**Secure Desktop**



**Smart Card e Token**

**Single Sign On**

\*\*\*\*\*

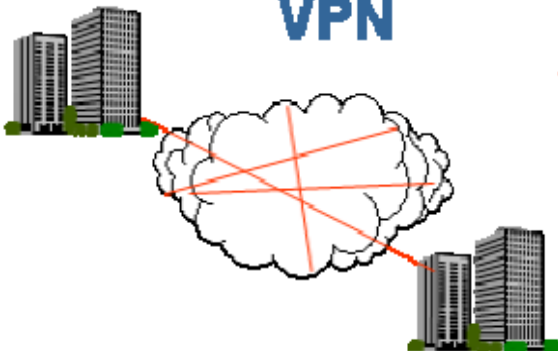
**E-commerce**



**Mobile**



**VPN**



# [The digital dilemma

- The dematerialization of the information, involves risks and opens the digital dilemma: how reliable are the new technologies to deliver the memory of this to future generations?



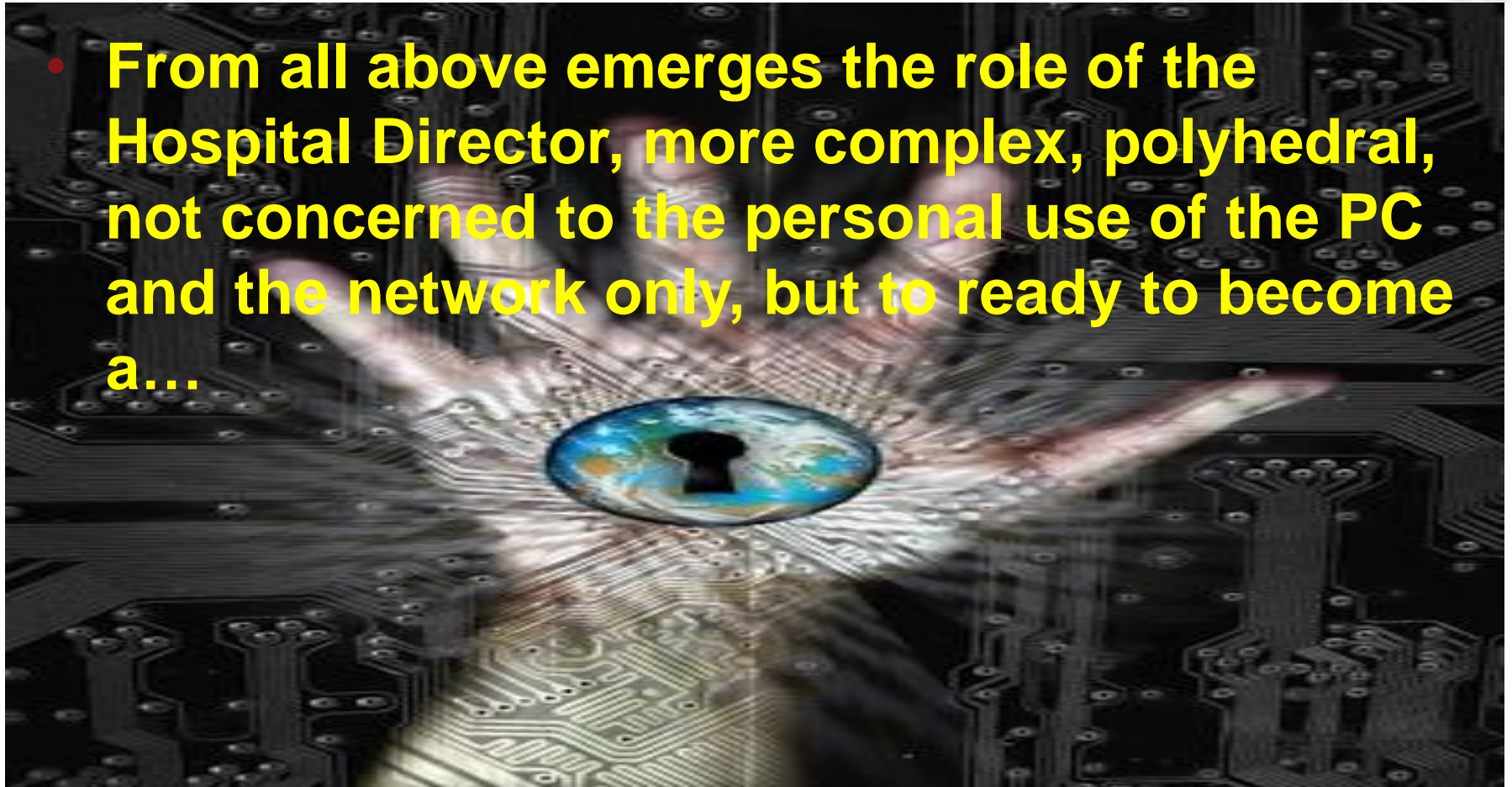


# [The need for protection

- **The activities of prevention and protection against false, frauds, accidents, presupposes within the companies the presence of the information security manager**
- **But today the presence of this type of manager, which must be a little technologist, psychologist, lawyer, policeman, auditor and especially manager with their own structures (C2, i.e. command and control), is still not provided and deemed necessary**

# ["The Net is not the Far West"]

- From all above emerges the role of the Hospital Director, more complex, polyhedral, not concerned to the personal use of the PC and the network only, but to ready to become a...



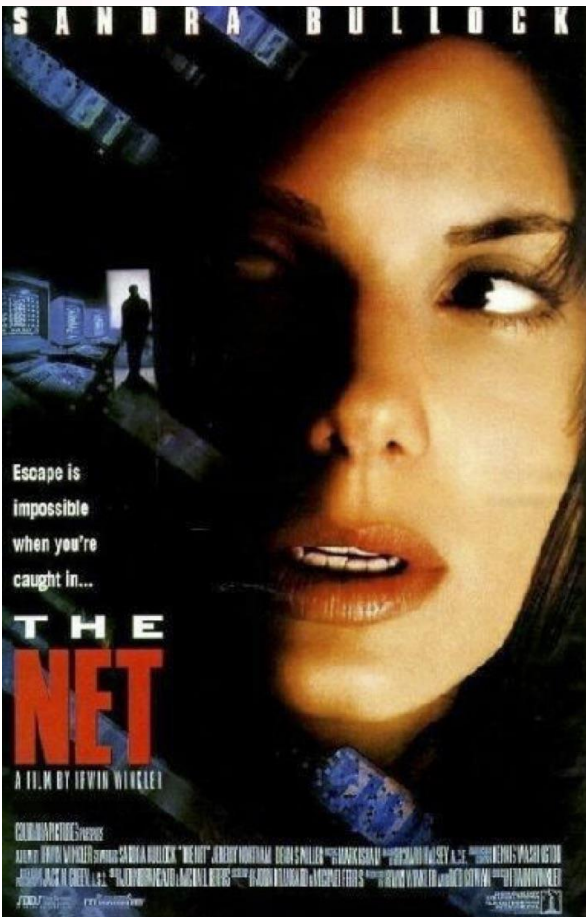
# [...Netizen (cybercitizen)

- “Is a person who actively participates to the life of the Internet, helping and believing firmly in the freedom of expression by through

# netizen



# [Future risks: identity theft



- For opportunities or obligations, the netizen lives and expresses himself ever more only in the Net
- Even without calling into question the science fiction, the network tends to mediate and replace social contacts
- The main problem in the future will be increasingly the identity theft
- The transnational dimension of the network and its services only aggravates risks and problems ...

# [ Propagation speed

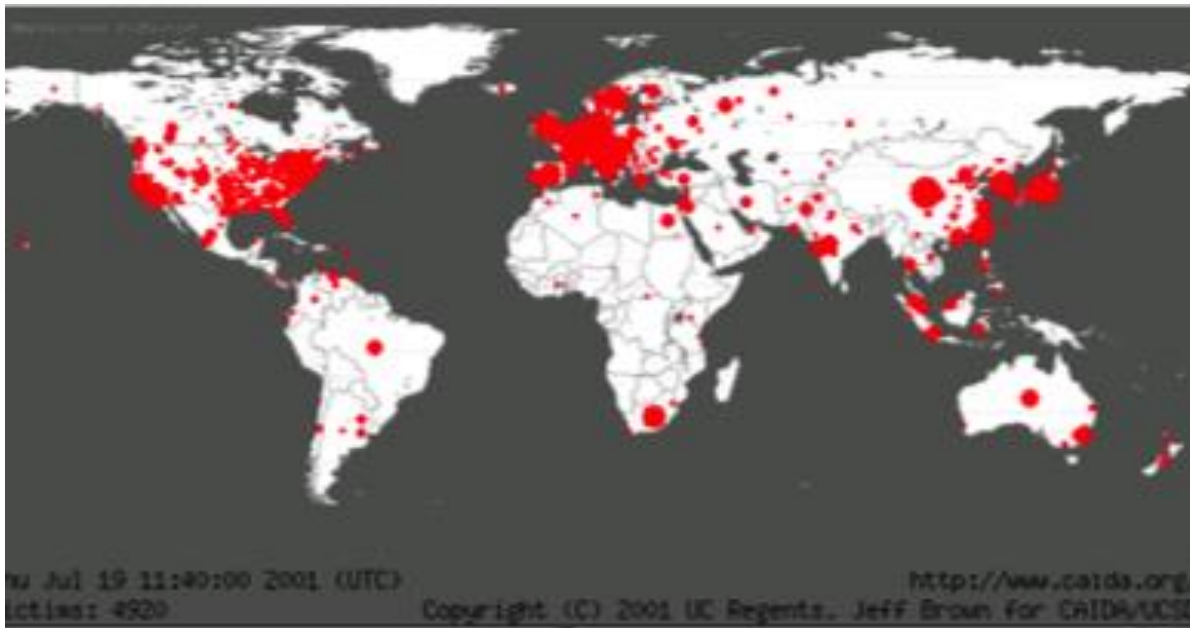
- The propagation speed of news in Internet is frightening
- Internet network has memory, like our brain, and every information added remains permanently stored, by modifying the characteristics of interconnection between the various nodes
- A user of a social network (e.g.: Facebook) with friends scattered around the world publishes a personal information (e.g.: one of his pictures)



Start time: 00:00:00 (hh:mm:ss)

# [ Propagation speed

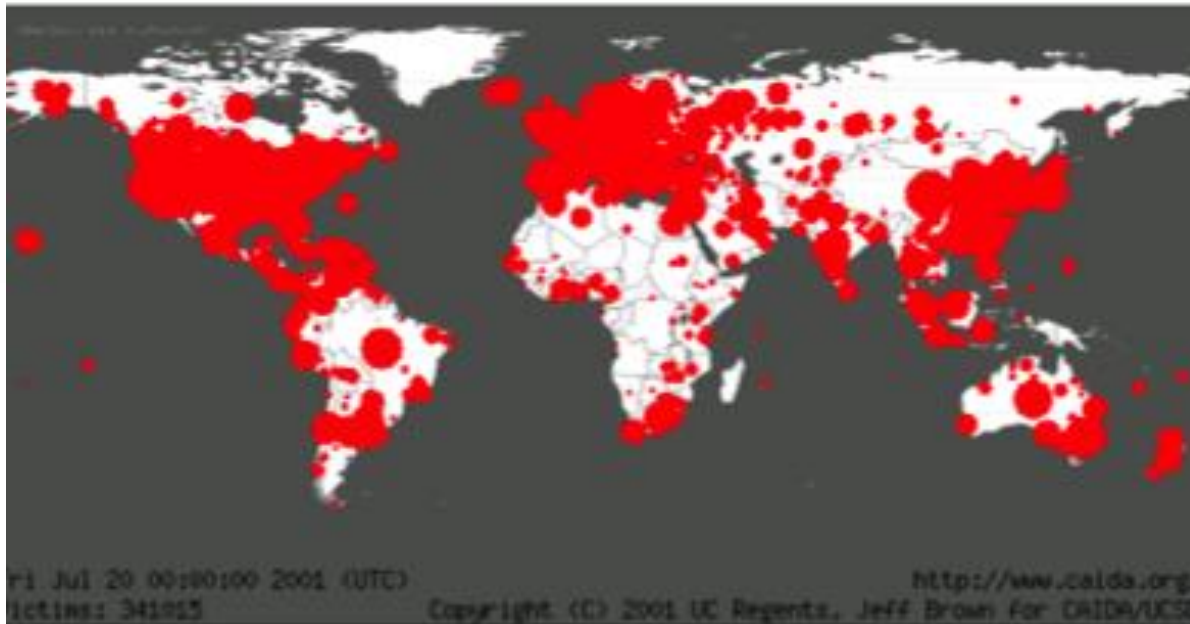
- After 1.2 minutes 4,920 computers (the "friends of friends") have the information which remains stored



Elapsed time: 00:01:20 (hh:mm:ss)

# [ Propagation speed

- **After 2.4 minutes - 341,015 computers have the information which is now impossible to keep under control, and especially to eliminate from the network**



Elapsed time: 00:02:40 (hh:mm:ss)

# The role of the European Union: "Why respect the confidentiality?"





# Who has a right to know your healthcare information?

- **If you are >18**
- **Are fully competent (or are competent to understand your medical information in order to make a decision)**
- **And are alive**
- **Only you and the people you authorise to share your private information with have a right to view your information (relatives of a competent adult do not)**

# [Incapacity

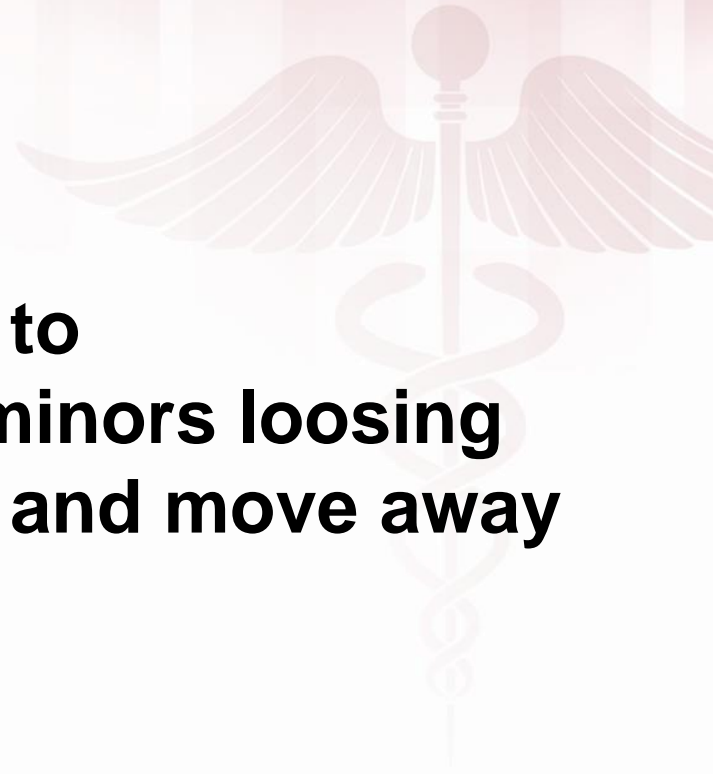
- **Where an individual cannot; comprehend or retain treatment information, believe it and weigh it in the balance to arrive at a choice then they are considered unable to consent to that**
- **If a doctor decides to breach confidentiality on the ‘best interest’ argument, first they must weigh the possible harms against the benefits, second, they must be prepared to justify their decision and third if unsure they should consult experienced colleges**

# [Death

- **Declaration of Geneva**  
– ‘respect for the secrets confided... even after the patient has died’
- **General Medical Council** – ‘extends after death’
- **Morally an individual’s confidentiality is still considered to require respect**
- **Legally - confidence is prima facie a personal matter thus the legal duty ends with the death of a patient**
- **Death certificate is a public document**
- **Medical records can be accessed if certain criteria are met**

# [Minors

- **Unwanted parental intrusion to confidentiality can result in minors losing trust in healthcare providers and move away from health care**



# How can healthcare providers insure confidentiality is maintained

- **Discretion in general conversations**
  - ‘New technology’ : Facebook, Twitter
  - Online posting of unprofessional content  
(Katherine C. Chretien, et al. *JAMA*. 2009;302(12):1309-1315 Oct, 2009)
- **Examining how we talk to patients**
  - Out-side work
  - With Non-clinical personnel:(confidentiality agreement)
- **How do we ‘carry’ data?**
  - Unsecured laptops
  - USB keys
  - Is data anonymized where possible
- **When information is shared – every party must be aware of his/her obligation of confidentiality**
- **Seek patient consent as early as is reasonably possible**

# [Definitions

- **eHealth: healthcare practice supported by electronic processes and communications. It covers a wide range of services and systems at the edge of healthcare such as EHR, telemedicine, health information networks, e-prescription, etc.**
- **Telemedicine: is the provision of healthcare services through the use of ICT, in situation where patient and health professional are not in the same location**

# [ Hybrid character of eHealth

- **EHealth is at the crossroad of various topics: health policy, ICT (e-commerce & e-signature), consumer protection, data protection, medical devices, freedom to provide services etc.**
- **No EU legislation specifically on eHealth**

# European Commission (EC) actions in eHealth

- **1-2004 eHealth action plan *to be updated in 2012*:**
  - Addressing common challenges such as interoperability
  - Creating pilot projects to speed deployment of eHealth (e.g. epSOS, renewing Health)
  - Disseminating best practices and benchmarking among Member States
- **2-Studies published by the Commission on the legal aspects of eHealth covering both the EU and the national levels**
- **3-Commission communication on telemedicine COM (2008) 689 emphasizing the need to bring legal clarity**
- **4-2008 Commission recommendation on cross-border interoperability of Electronic Health Records (EHR)**
- **5-2010 Commission communication on a Digital Agenda for Europe**
- **6-2011 Directive on Patients rights in cross-border healthcare which covers telemedicine – Article 14 eHealth voluntary network**
- **7-Preparation of a Staff Working Paper mapping existing EU legislation that could apply to telemedicine and identifying the open issues**



# [ eHealth voluntary network

- **The 2011 Directive on patient rights in cross-border healthcare provides for the creation of voluntary network of Member States health authorities to facilitate cooperation and the exchange of information among Member States in the field of eHealth (Article 14).**
- **The voluntary network should draw guidelines on:**
  - A minimum set of data to constitute patients' summaries that can be shared between health professionals and across borders;
  - effective methods for enabling the use of medical information for public health and research.
- **The network should also support Member States in developing common identification and authentication measures to facilitate transferability of data in cross-border healthcare.**

# Telemedicine: Focus areas

- Starting point – legal qualification: telemicine is an information society service
- Licensing, registration, authorization of health professionals
- Reimbursement
- Liability
- Personal data protection

**Grazie per l'attenzione!**

