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E-HEALTH DILEMMA IN THE NEXT TEN YEARS

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Today’s healthcare and its environment

The ideas and problems in the paper are based on results obtained in the context of the joint research project DAPSEpro and its successor projects and investigations.

Today's healthcare and its environment

General problems:

- Need for fast medical consultancy
- Shortage of consultants in many medical areas
- Dispersion of the population
- Increased age of the population

Limits:

- Need for more consultancy and more use of the available resources
- Need for more cost effective use of the available resources
- Need for new point of view and understanding.

All these have to be paid by somebody.

Technical questions

Computer-based methods and technologies in many cases are changing rapidly.

High-end medical technologies need personnel with high-end qualification.

Limits: Neither RTD institutions nor technology-implementing companies are the end-users of the medical ITC products: the end users are medical organizations, hospitals and sole doctors.

Discussion target

The new generation of hospital information systems, systems for telemedicine and diagnosis services include as a main part *computer-based diagnosis tools* and *applications*.

The main target of this presentation is to focus on aspects and problems about implementation of computerised diagnosis tools, their philosophy, impact and challenges they generate to medical and ICT researchers and users.

Today's techosphere

- ✓ Today more than 80% of every industry is based and/or supported by computers.
- ✓ The society exists in the ubiquitous computing environment.
- ✓ This environment rapidly changes from general purpose servers and desktop computers to cloud environment and mobile and embedded computers in every device and machine, in every phone, TV set and all other smart or intelligent devices.

The role of the computer in medicine

I. Hospital information systems
II. Specialised computerised devices
III. Computerised sensors

First type diagnosis tools – Computer Based Diagnosis tools

IV. Advising systems

Second type diagnosis tools – Computer Aided Diagnosis tools

The role of the computer in medicine

Main dependencies for computers acceptance:

- Proven safety for all solutions
- Humans' psychology

The main question is what the computer is:

a device or a colleague ?

For now clinicians accept the computer and all smart tools as a useful machine but not as a kind of colleague.

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Advantages:

Computer-supported methods and computer-assisted technologies for medical purposes increase clinicians' sensing systems and enable high precision investigations and procedures.

Clinicians and doctors accept "non-thinking" tools easy but they resist to technologies entering in the "human's" area of operation.

Market trends and near future

- From 1998 up to 2008 Computer Aided Diagnosis (CAD) market grows rapidly.
- From year 2005 is found a stable market decrease of stand-alone tools and apps for CAD
- The market of integrated in HIS CADs grows
- From year 2009-2010 market growth is slow

Market trends and near future

REASONS

- Reimbursement costs increase
- Patients and health insurance companies deny to pay for advanced solutions and machine-led curing. They proclaim the classic solutions are enough.

Technology trends

- There is close connection between the computers' future and their medical applications.
- Coming soon dramatic change in computer environment will affect deeply all medical applications.
- Data mining and AI applications will be extended even the phycology resistance. The change from computer-assisted to computer-aided diagnosis is unstoppable.

Technology trends

- Human-machine interface will change to more native one
- Visualisation devices will become the predominating HMI

This will follow to new human-computer interaction problems:

The sensing system of current humans is not educated to get so many and so different information.

CONCLUSION

In next 10 years applications and devices oriented to computer-assisted diagnosis and computer-aided detection will enable more efficient use of doctors' time.

This will result to more efficient use of consultant's time and will enable earlier and more focused patient consultations and increased health status.

Thank you for your attention !