Functions and Competences of Clinical IT Departments

(and their CIOs)

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Agenda

1. History
2. Requirements today
3. Technologic view
4. Specific situation in health care
5. New competences ?
6. Conclusion

History

>1960 ***Vertical Approach***

- age of Mainframes (1-tier-Architecture = host computing)
- hospital: management of patients ‘residence time’
- accounting with health insurences
- no inhouse IT → communal / commercial data centers

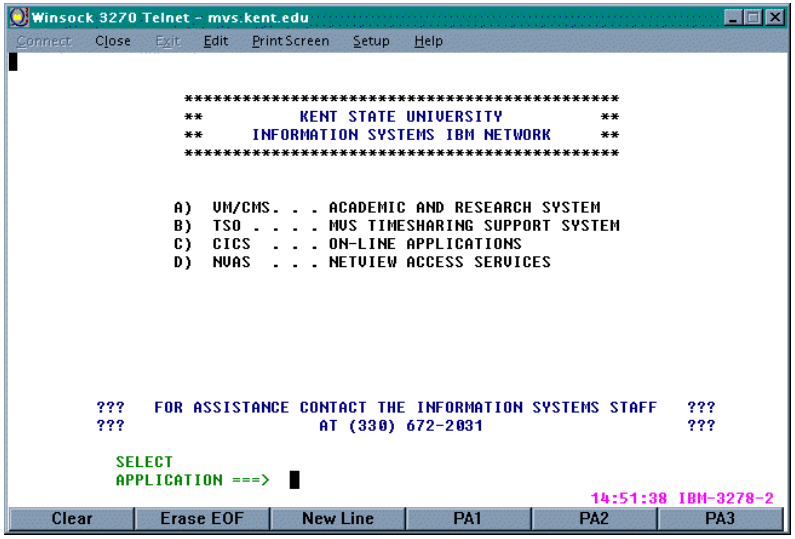
>1980 ***Horizontal Approach***

- age of PCs
- management of medical devices and their patients
- rudimental LAN (RS232/centronics, peer-to-peer)
- later: client server applications (2-tier-Architecture)

>2000 ***Distributed Approach***

- age of Networking
- medical → clinical →patient information systems
- Internet, Web-Services
- future: Parallel-/GRID-computing

Mainframe‘s World



No need for clinical IT-Departements.

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PC World

First need for clinical IT-Departements.

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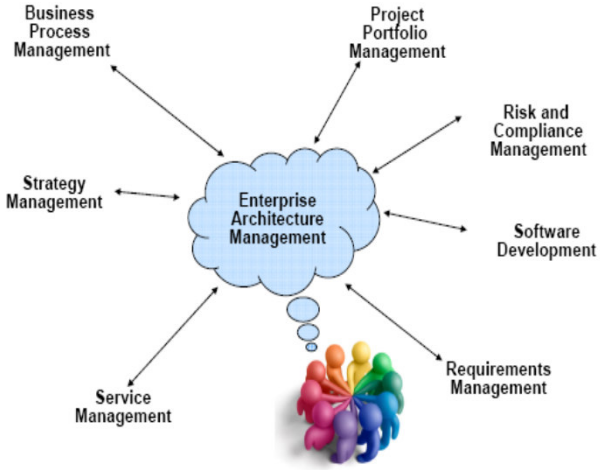
Distributed World

Further need for clinical IT-Departements ?

Requirements I

- **Data security / protection**
  - legals (BDSG, prof. secrecy, KontraG, RÖV etc.)
  - internal carelessness → training
- **Availability**
  - redundances
  - backup / disaster management
- **Performance**
  - No ‚bloody' interruptions of daily business!
- **Customer support**
  - user helpdesk
  - peripheral hardware → technician
  - user (access-)management (new, change, delete)
- **IT Procurement**
  - Licenses / Software
  - Hardware (technology, innovation etc.)
  - case of warranty → guarantee management



Source: BOC group

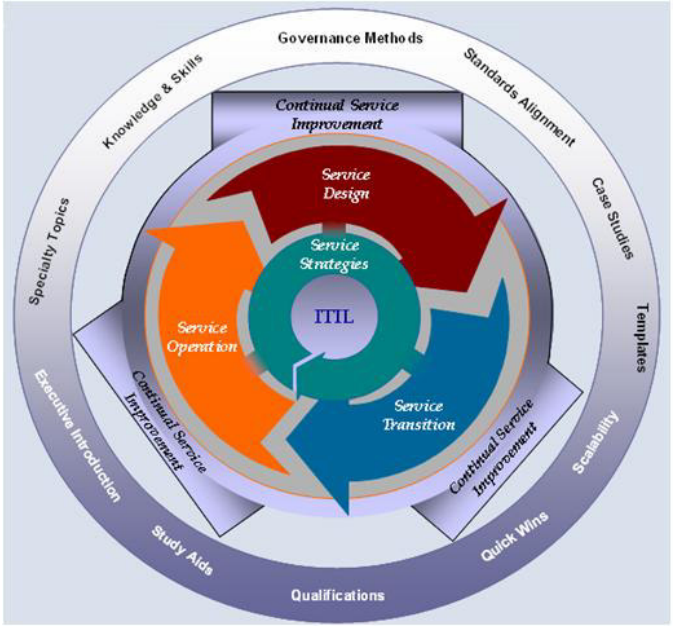
Requirements II

- **Maintenance / service contracts**
  - administration
  - controlling

- **Financeability**
  - Investments (= federal subventions)
  - running costs (→ accounting)

- **BP support / management**
  - IT as a service – Who is the ‚customer' ?
  - What needs the customer for his BP ?
  - Does the ‚computer personnel' understand medical BP ?

- **Flexibility (to survive)**
  - management must react to health care policy
  - improvisation talent is needed
  - cooperations, networking
  - company fusions
  - new services, p. e. telemedicine



The ITIL V3 framework.

Technology I

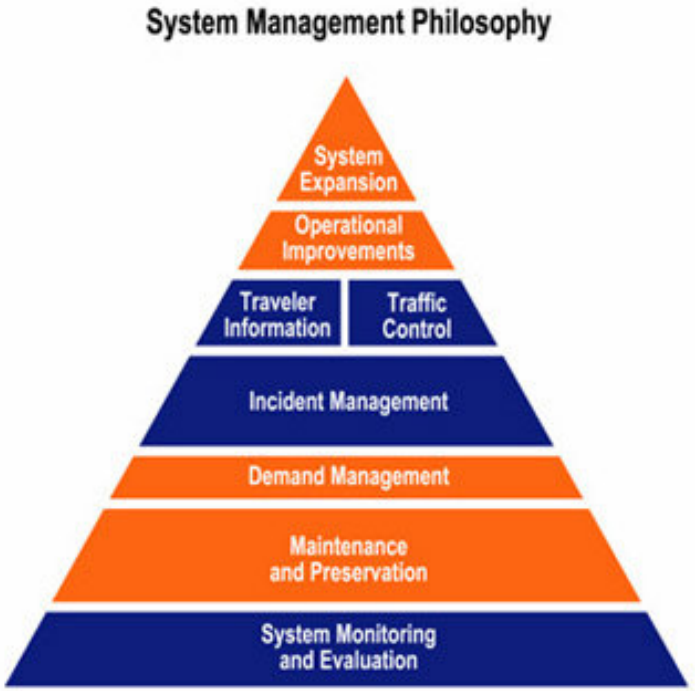
Technologies to be controlled by (clinical) IT departements today:

System-Management
- client / thin client
- server (classical, terminal, virtual)
- software distribution

Databases
- N-tier DB-systems (Oracle, SQL, DB2 etc.)
- Data warehouse (cubes)

Storage
- long time → archive solutions
- disaster → backup
- short time → performance / cashing

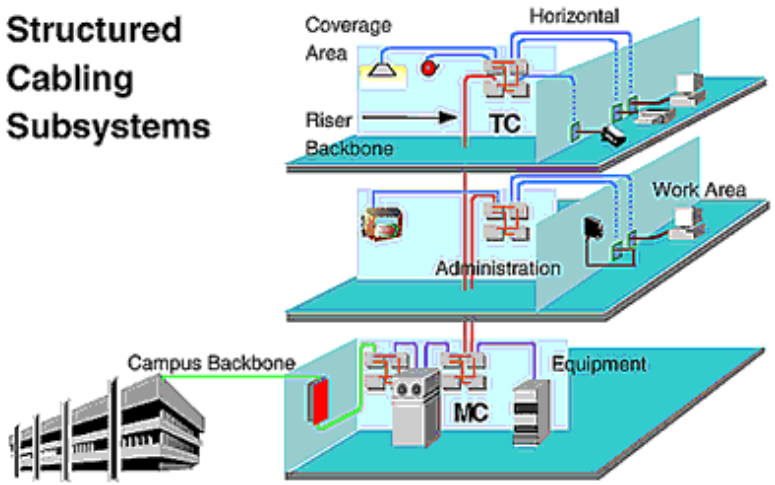
Security
- crimeware, viruses, spam etc.
- intrusion protection / detection
- authentication → access authorisation
- cryptography / signatures (> 2009: eGK/HBA)



Technology II

Communication

- (planning) structured cabling
- IP, Voice-over-IP, SNTP
- wireless services
- LAN: routing and switching
- WAN: monitoring

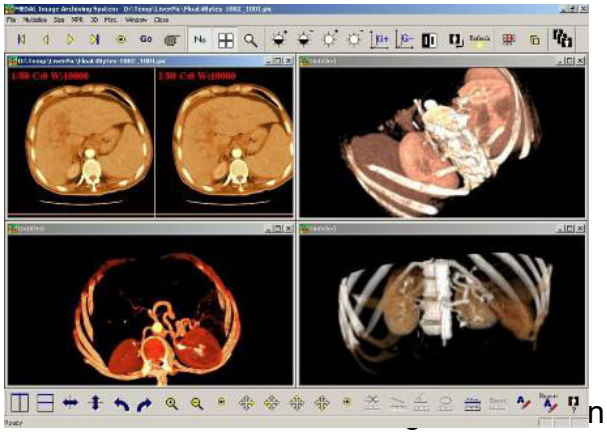


Groupware / Web technologies

- eMail (archive, security etc.)
- Intranet / Homepage
- CMS / knowledge management (p.e. onthologies, wikis etc.)

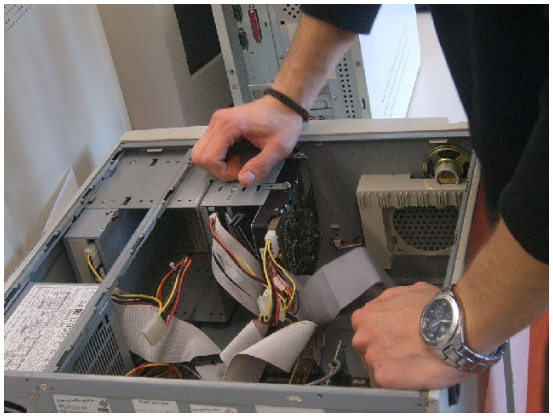
Specific: medical data

- focus: PACS, mammography, new: pathology
- problem: management of non-DICOM files (endoscopy, US files, fotos etc.)
- trend: audio files, video streams, podcasts
- Interfaces



Sectoral specifics

Health care is a ‚specific' business sector for IT:



Personel problems

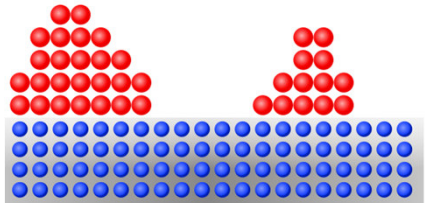
- staff members are mostly public servants
- low salary (rel. to industrial employees)

Financial problems

- low budget (rel. to other service providers)
- ‚investment competition' with medical sections

Structural problems

- ‚no home' for IT in hospital buildings (data center ?)
- grown structures (islands / principalities)
- health care is a ‚governed market'



Example: SAP hosting

Clinic data center to host SAP R/3 system (core modules, I-SH *med, BW etc.) in 2007:

- climate control unit overloaded
- no access control/security
- only 2-system landscape
- only partial redundances

- large sums invested/bonded for hardware (partial, not consisitent)
- additionally: regular and high costs by external consulting

CIO / management‘s dilemma:

No chance for more investment in adequate infrastructure / availability.

Solution: Outsourcing of the SAP hosting to an external service provider.

Example: Archiving

Long term archiving of digital data

- radiology: amount of data > 10 MByte / bed / day
- special cases: archiving up to 30 years
- digital archiving is the single chance (i.cp. papers → microfilms)
- further (archive) standards ?

wormholes are magic

IT department:

- technical specifications
- legal specifications
- signatures (donor)
- service level agreements
- investment → operating costs

Archive service:

- content database
- media exchange / copying
- signatures (handler)
- enough storage capacity
- good cost-performance ratio

IT out of the box ?

Thesis:

Long-term survival of clinical IT-departements is not evident.

If there is no way to help manage clinical BP, clients order their IT-support from external service providers.

Evidence:

Ben Pring, Gartner Group:

„ […] more and more heads of internal departments places an ‚Software-as-a-Service' contract without a participation of the CIO."

(Computer Zeitung, No. 21/2008)

Conclusions:

- Concentration to the ‚core' business.
- Sectoral IT needs all your energy.
- Outsourcing is your subject.
- Otherwise you are the outsourcing subject.

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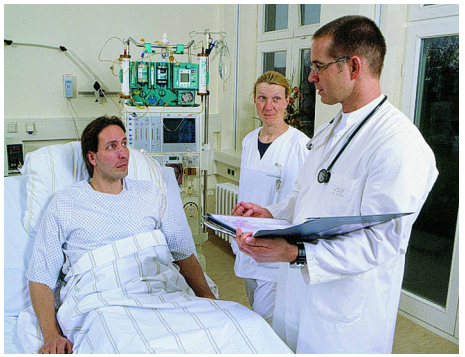
Competences I

Needed competences in the IT department:

Medical processes

You must understand the main BP of your clients.

- basic medical knowledge:
  → to speak the language of your doctor
- clinical (medical) pathways = the ‚roads of patients'
- the whole purpose of medical data
- function of medical devices (data sources)
- Medical science go's on !



Health care business

Read the thoughts of your CEO.

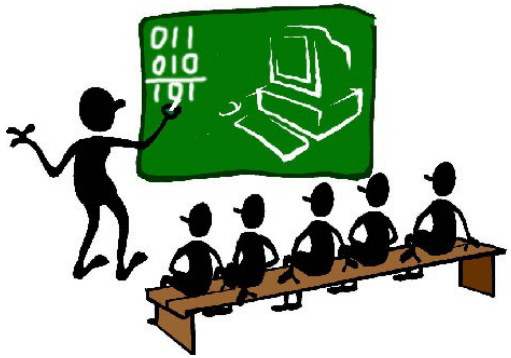
- understanding the structure of health care market
- What are the trends ?
- financial problems / economical strategies
- legal conditions (data protection, contract law etc.)

Competences II

State of the art in IT

IT changes rapidly. Update your knowledge regulary.

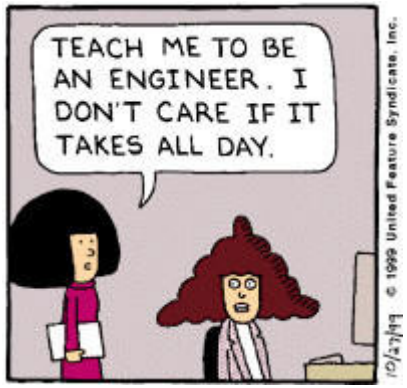
- solid basics in math and natural sciences.
- standard methods and technologies.
- fundamental trends in technological evolution.



(Information) Engineering

Manage your team, your projects and your IT.

- Engineering is ‚applied science'.
- How to plan and act in company projects ?
- How to find a good IT system on market ?
- IT services must be measured and controlled.



Conclusion

Future CIOs in health care sector …

… are not a doctor,

they understand them.

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