Center for eHealth in Sweden

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Center for eHealth in Sweden

eHealth strategies, plans and results in Sweden

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Three main issues for a future Health Care

- See the patient as an actor in its own care process
- Counteract the effects of an increasing fragmentation of the care process
- Provide a solid base for a knowledge based Health Care

Defining a common agenda for all stakeholders in healthcare

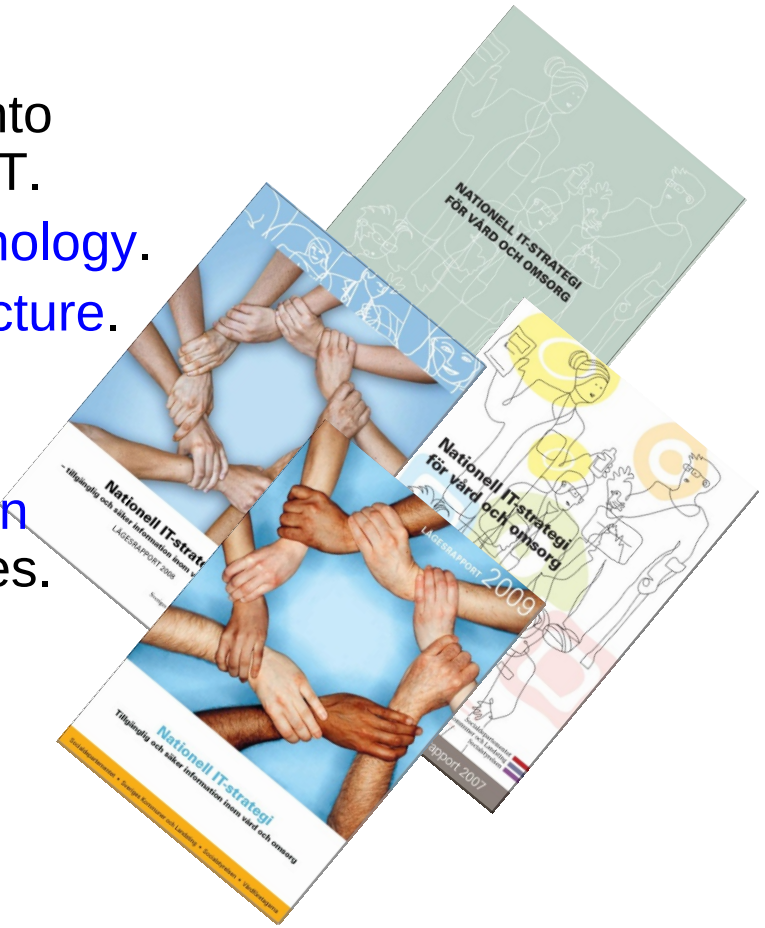
Six Action Areas identified:

Naional government

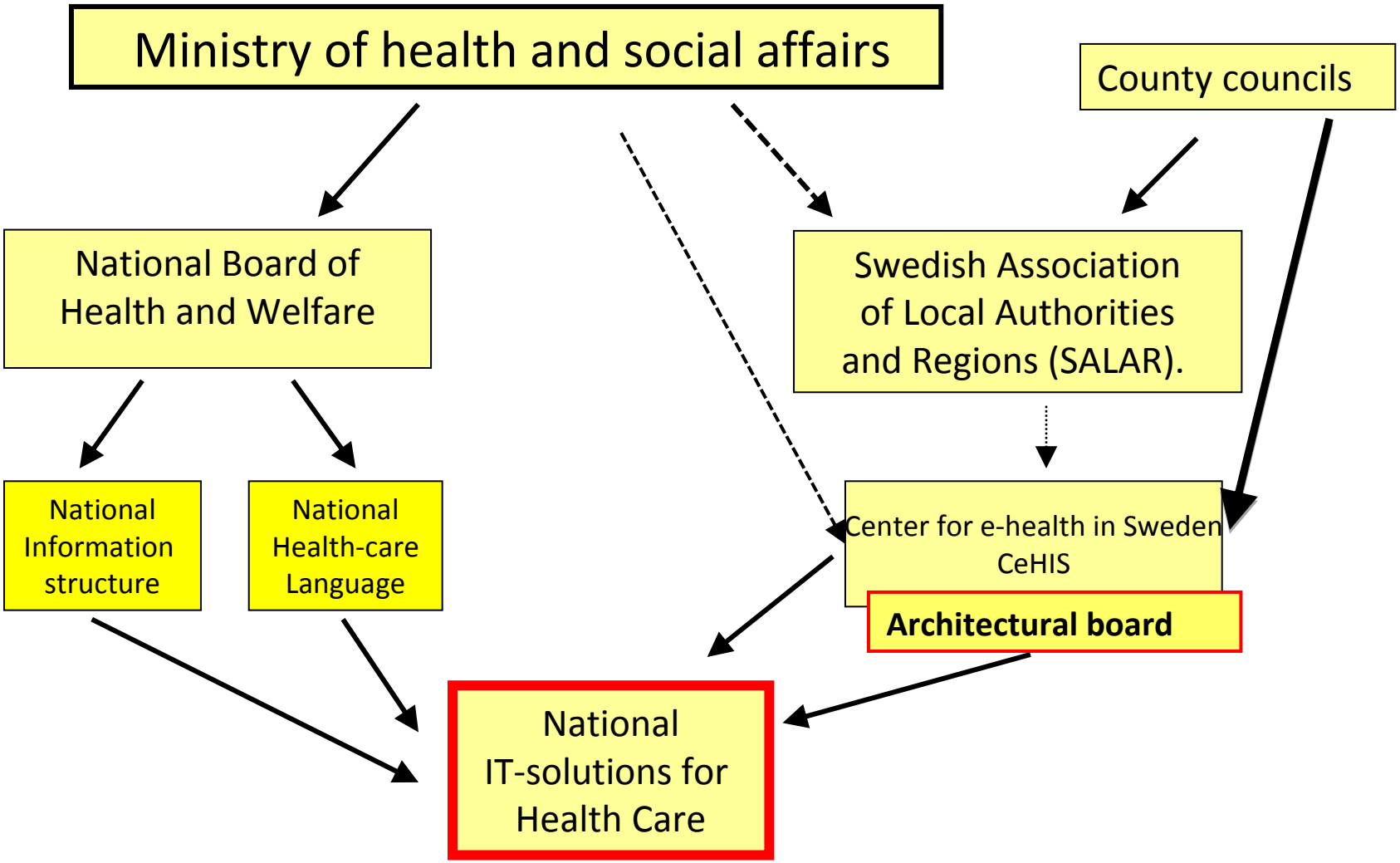
1. Bringing laws and regulations into line with an increased use of ICT.
2. Information structure and terminology.
3. Enhance the technical infrastructure.

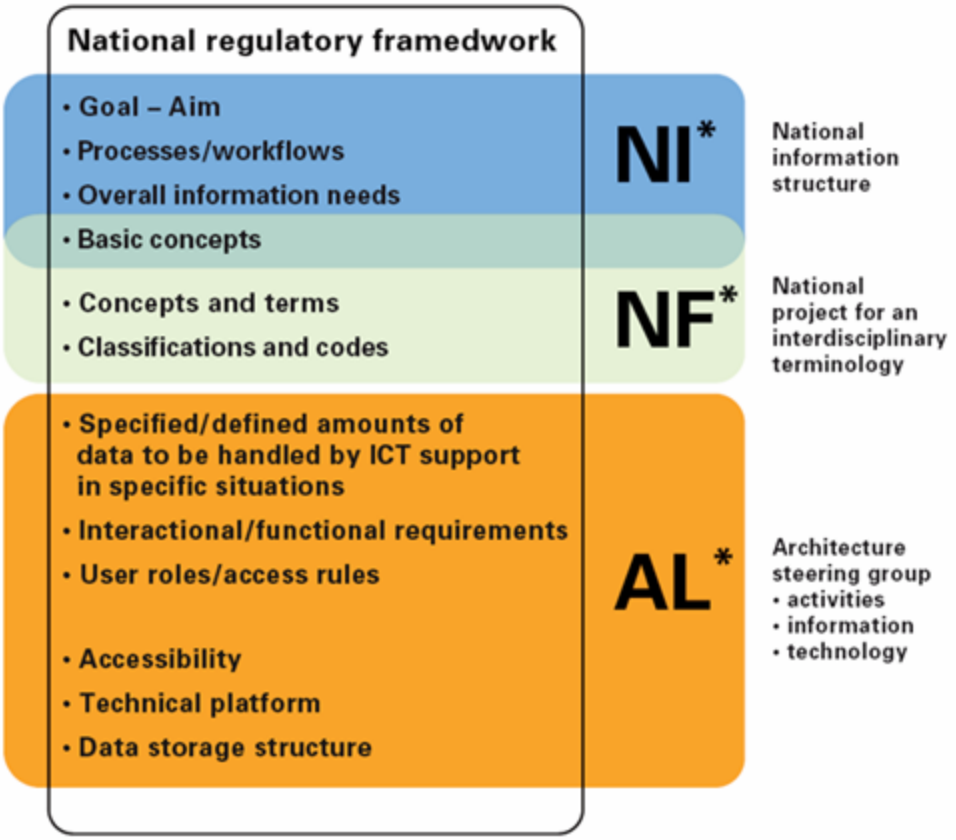
Health care regions

4. Facilitating interoperable, supportive ICT systems.
5. Facilitating access to information across organisational boundaries.
6. Launching new e-services for citizens.



Organisation

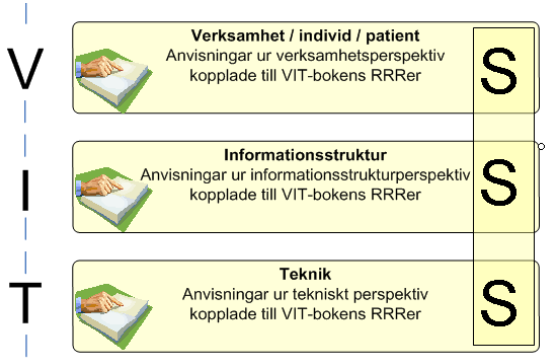


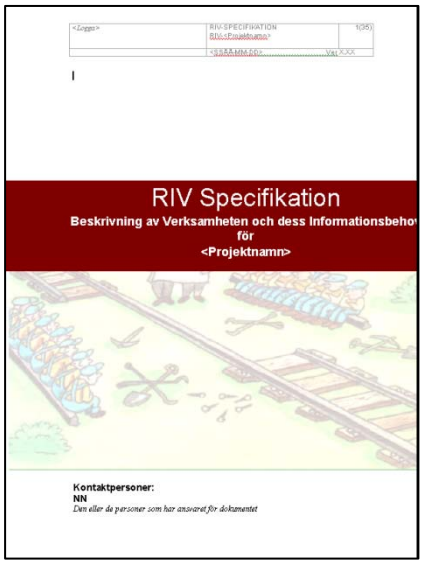


***NI** Nationell Informationsstruktur
NF Nationell fackspråk för vård och omsorg
AL Arkitekturledningen

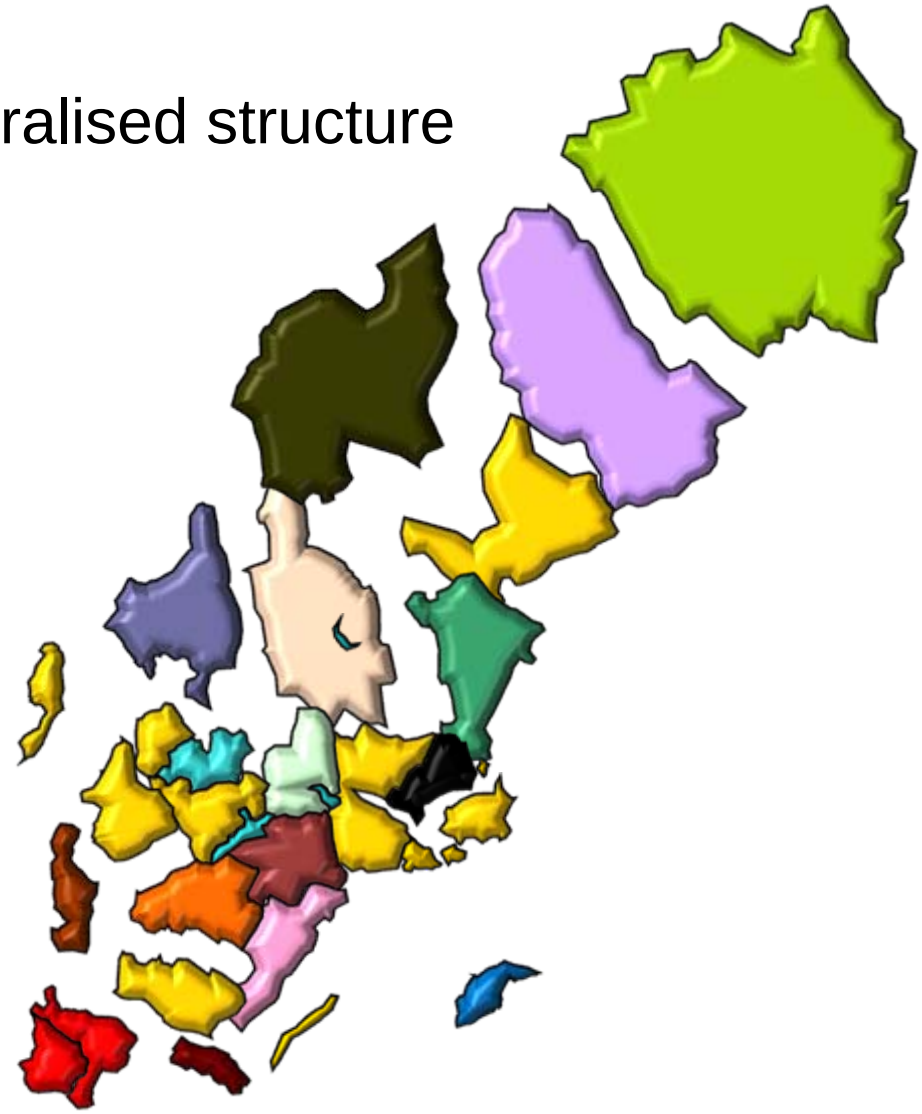
Architecture and rules from an overall perspective

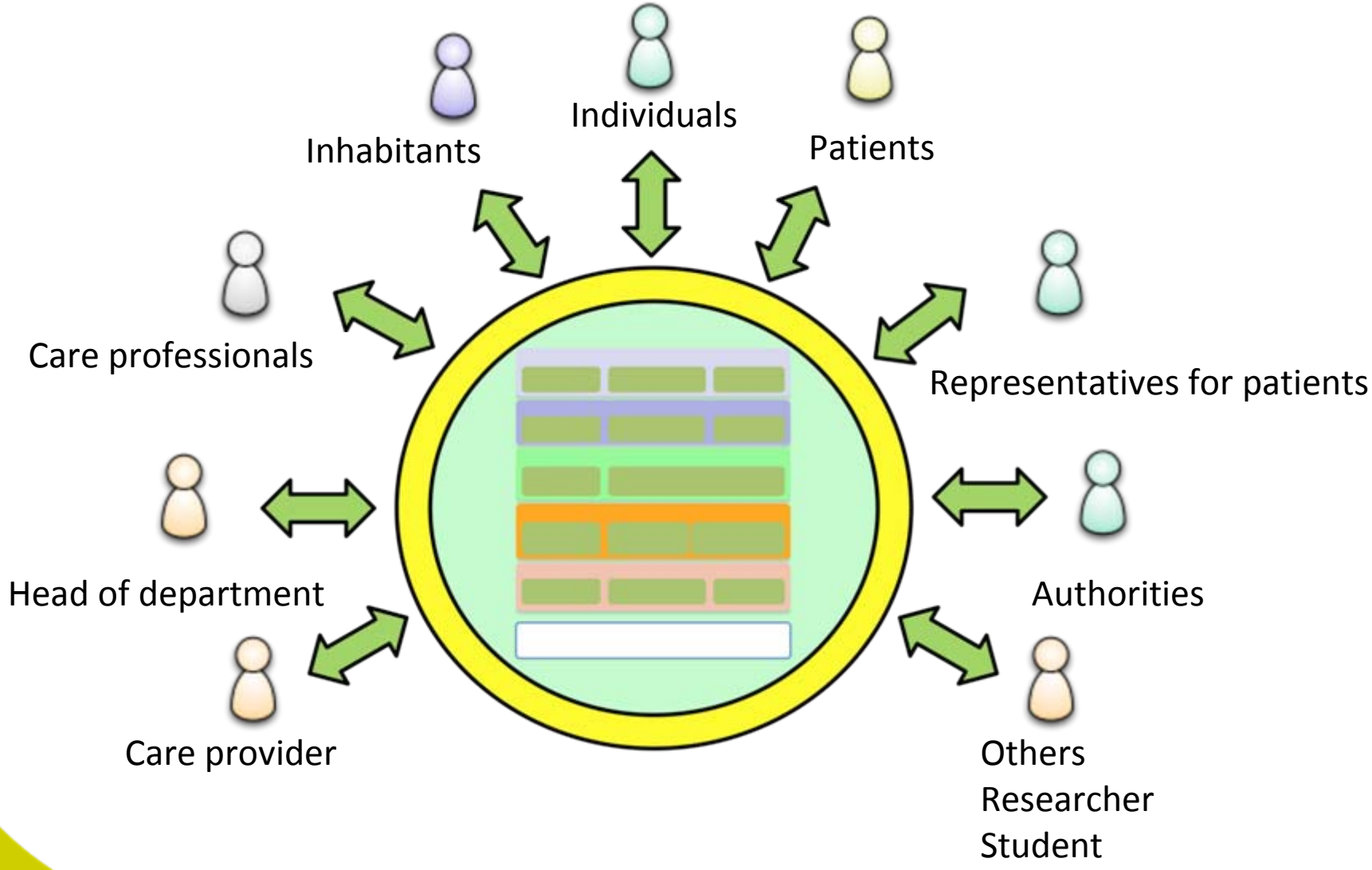
- **Goals and road-map**
- **Set of rules for the national architecture**
- **Method for individual projects to meet the rules and to follow to the road-map**





A decentralised structure



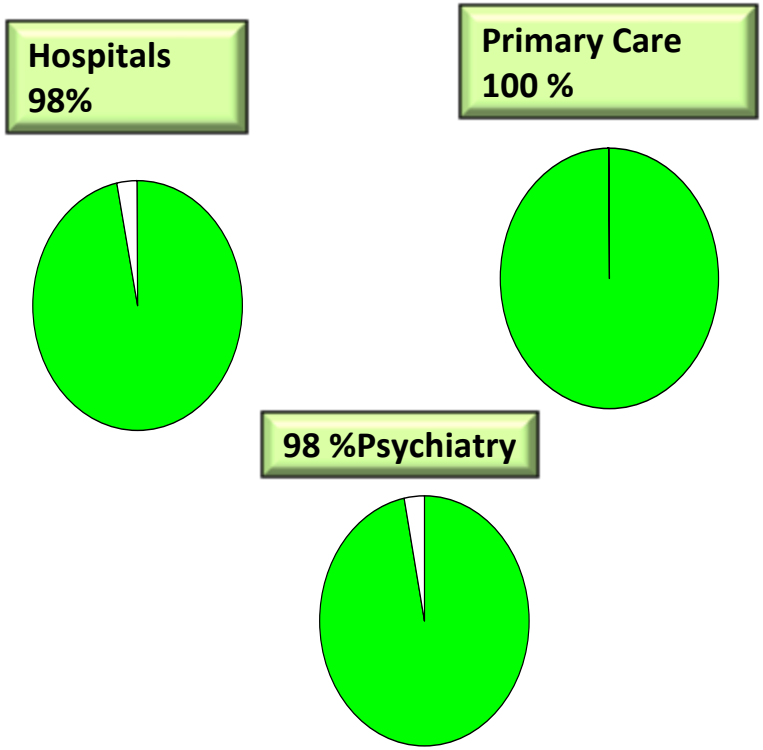

Inhabitants
Individuals
Patients
Care professionals
Representatives for patients
Head of department
Authorities
Care provider
Others
Researcher
Student

eHealth – EHR/EMR/HIS

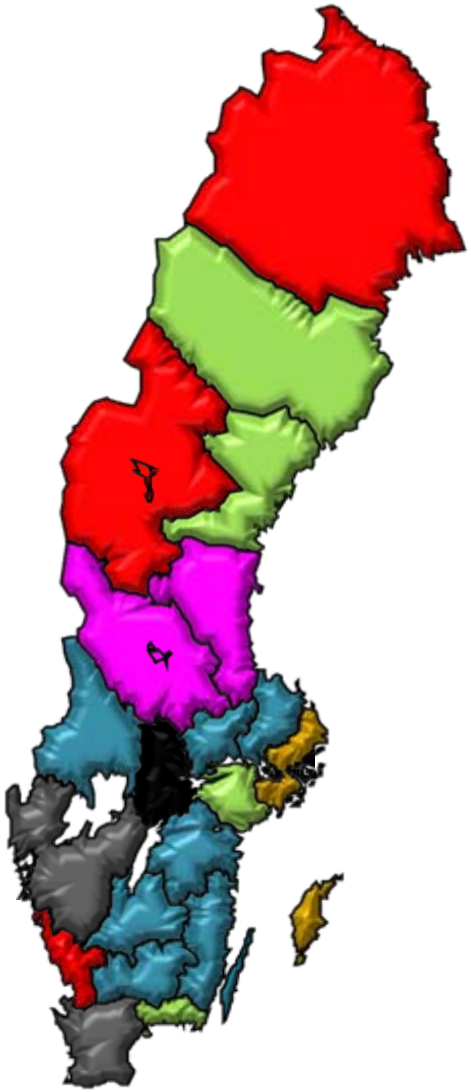
Genera-tion	Period	Organizational	Functions	Integration
Experi-mental	1960-80	Research projects	Documentation Scheduling	-
1st gen	1980-00	GP's office or Clinic based	+ Medication + Lab reports	+
2nd gen	1990-10	Hospital based or Primary care area	+ CPOE + ePrescription	++
3rd gen	2000-	County council or Regional based	+ PACS viewer + CDSS	+++
4th gen	2008-	National based (EU and epSoS)	+ patient services	by it self an integration

EHR completely implemented in county councils 2009

= EHR implemented at all Hospitals, all psychiatry and primary care

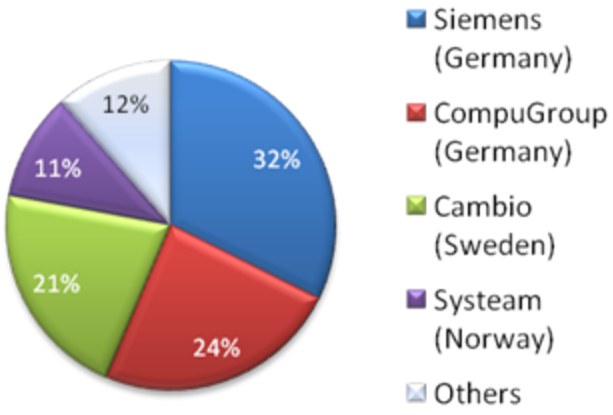


over **80 percent** of all pharmaceutical prescriptions are issued and transferred electronically.



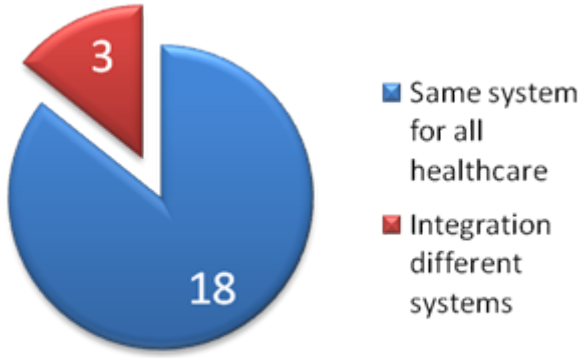
- **21 independent County Councils**
- **VAS ~30 years old system owned by Norrbotten county council (modernized on a very limited budget)**
- **Cross ~25 years old system owned by EDB-Ergogroup Systeam (nearly no new development, buying new modules from outside)**
- **Melior ~20 years old system for hospitals from Siemens and J3 ~25 years old system for primary care from Compugroup (J3 to PMO in Skane and J3 to Asynja/Take Care in West of Sweden all from Compugroup)**
- **Cosmic ~8 years old system from Cambio**
- **Mainly Take Care ~13 years old system from Compugroup (Melior, Cosmic, J3 and others coexist)**
- **Recent tender for exchange of Melior and J3 to Take Care (Option in Gävleborg)**
- **Mix of Melior, Cross and IMX from Tieto.**

EMR-Vendors



Four leading vendors 89% (2006 = 82%)

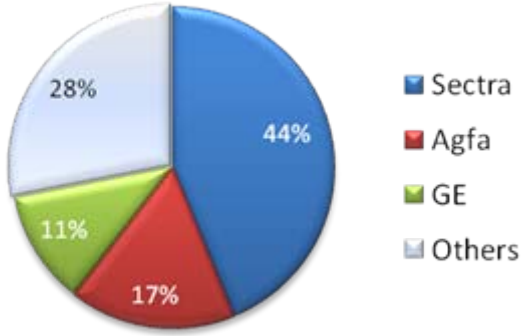
EMR Strategy



Patient Administration

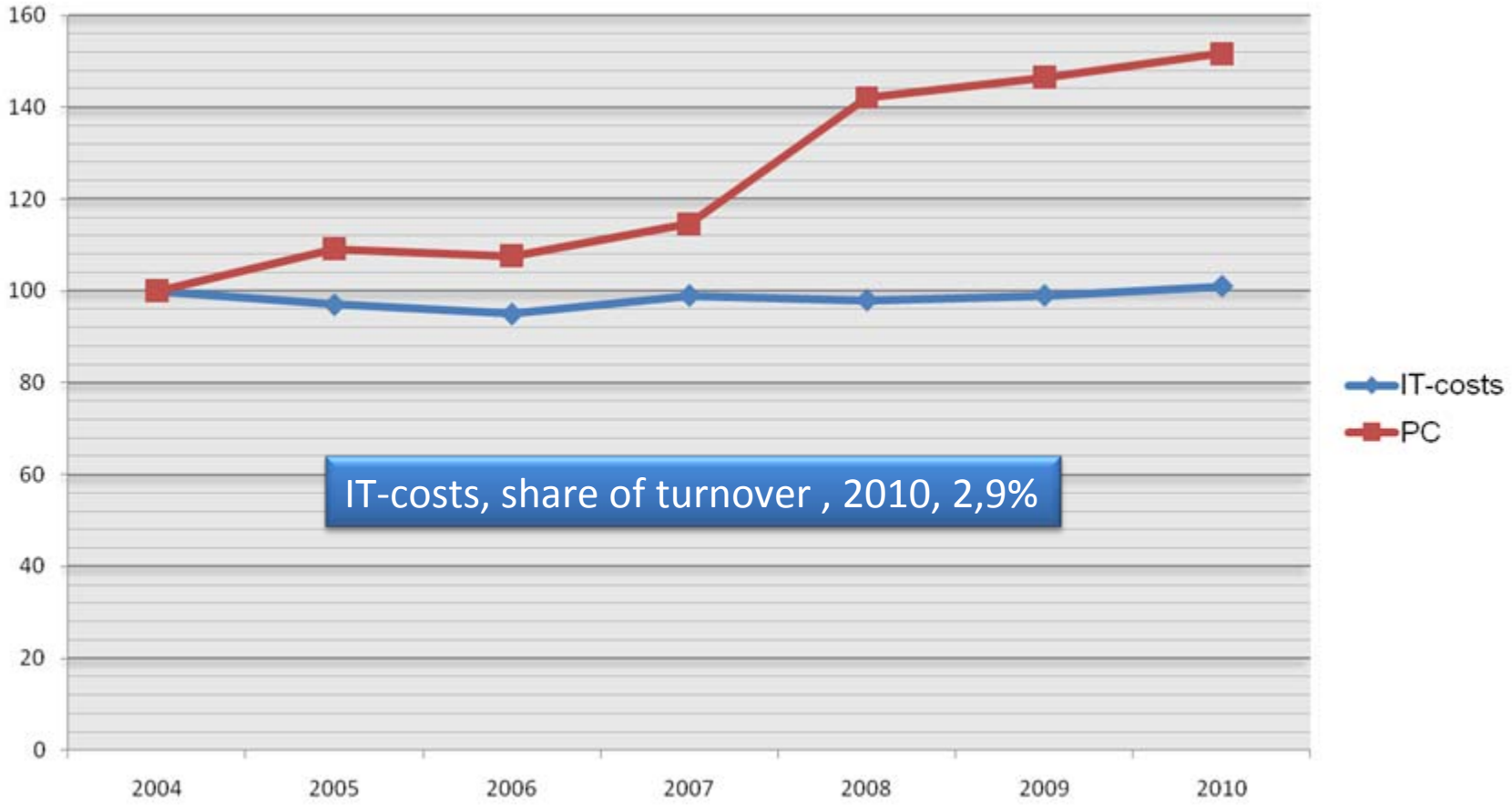
Trends
- Function in EMR
- One system for all healthcare

PACS- Vendors



Three leading vendors 72%

IT-costs, share of turnover + number of PC´s, index, years 2004-2010

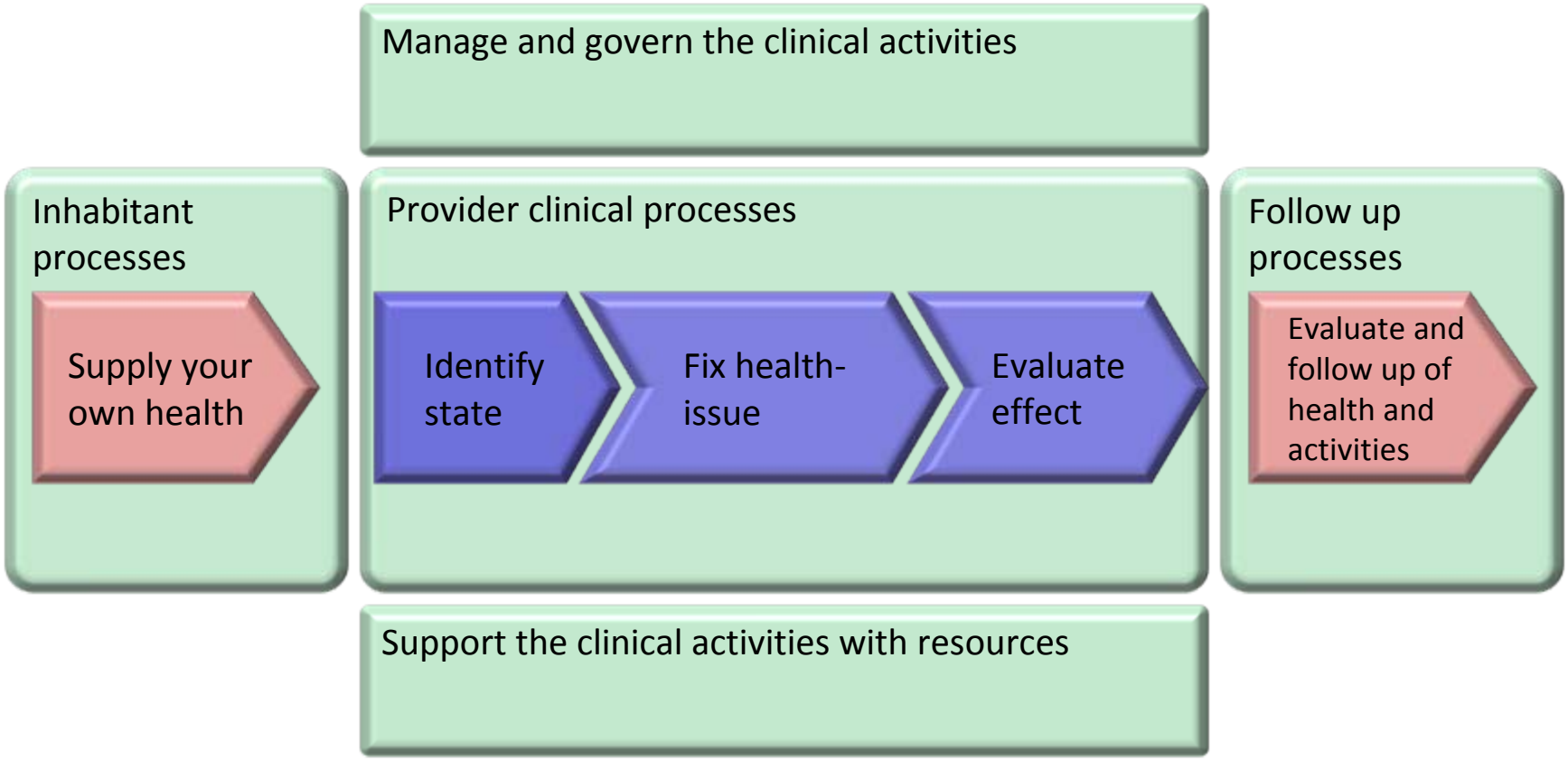


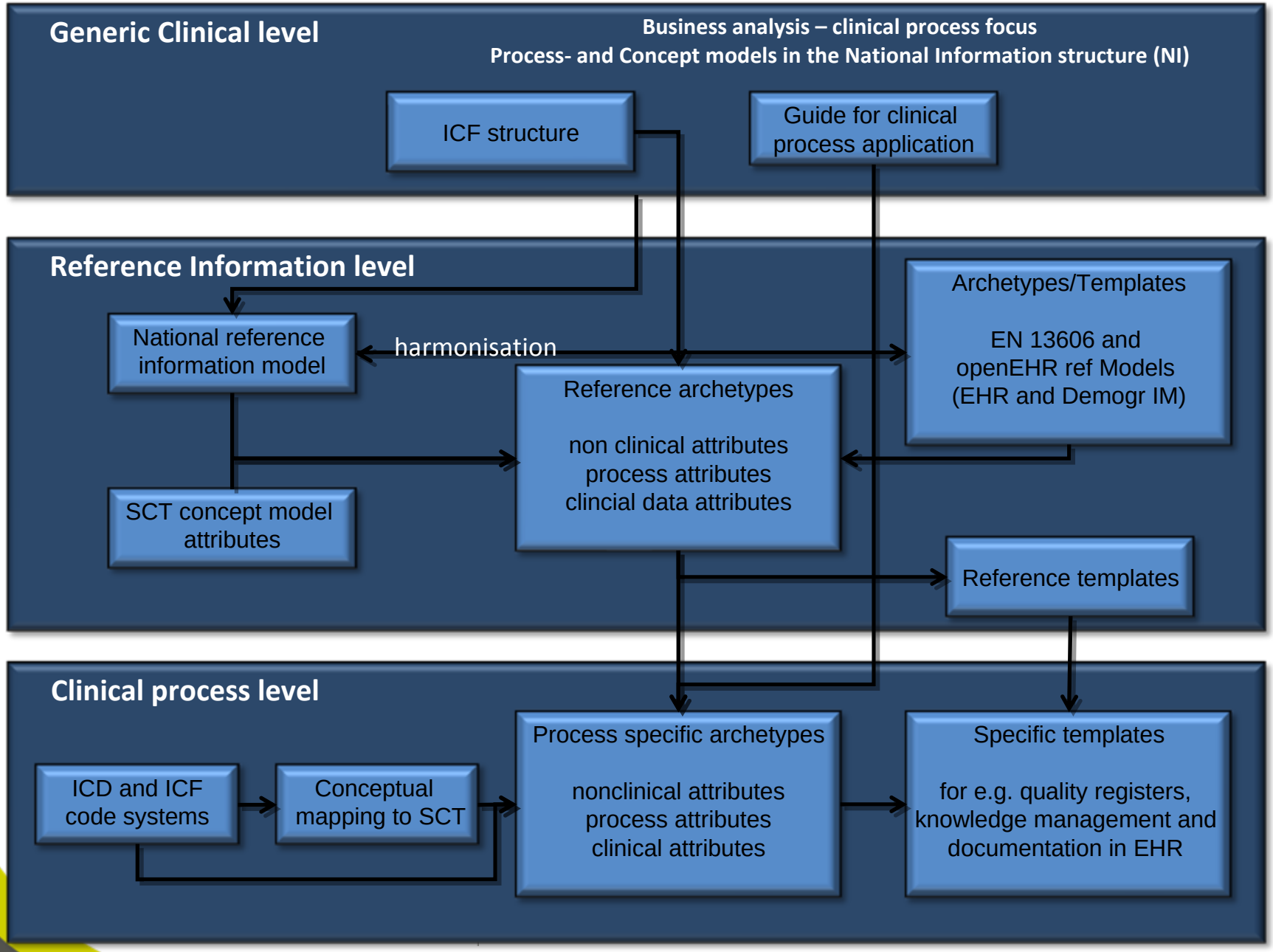
Arkitekturella principer

- Verksamhetens IT-lösningar ska utformas med invånarnas behov och integritet i fokus och invånaren ska ses som samverkande part.
- Arkitekturen ska skapa förutsättningar för att stödja patientens hälsoärenden i sammanhängande vårdkedjor där flera vårdgivare kan vara involverade och där patienten har rätt att byta vårdgivare.
- Arkitekturen ska medge en robust och feltolerant realisering som kan hantera händelser som potentiellt kan orsaka skada eller avbrott i vård och omsorg.
- Arkitekturen ska medge olika organisationsformer och att organisation och processer förändras.
- Arkitekturen ska medge att vårdgivare med olika förutsättningar utvecklas i olika takt. Arkitekturen ska baseras på utgångspunkten att samverkan sker i en heterogen miljö


Samverkan statliga myndigheter
Forskning
Universitet
Göteborgs universitet
Karolinska Institutet
KTH
Linköpings universitet
Lunds universitet
Uppsala universitet
Umeå universitet
Örebro universitet
Etikprövningsnämnder
Centrala etikprövningsnämnden
Regionala etikprövningsnämnden i Göteborg
Regionala etikprövningsnämnden i Linköping
Regionala etikprövningsnämnden i Lund
Regionala etikprövningsnämnden i Stockholm
Regionala etikprövningsnämnden i Uppsala
Regionala etikprövningsnämnden i Umeå
Vetenskapsrådet
Statens arkiv och landsarkiven
Tillväxt och företagande
Verket för innovationssystem (Vinnova)
Tillväxtanalys (fd ITPS)
Tillväxtverket (NUTEK)
Kommerskollegium
Kammarkollegiet
Institutioner mm
Rättsmedicinalverket
Rättskemi
Rättsmedicin
Rättsgenetik
Rättspsykiatri
Kriminalvården
Statens institutionsstyrelse
Försvarsmakten
Migrationsverket
Intygsmyndigheter?
Luftfartsverket
Sjöfartsverket
Transportstyrelsen
Läkemedelsmyndigheter
Tandvårds- och läkemedelsförmånsverket
Tillsyn
Läkemedelsverket
Apotekens Service AB
Smittskydd
Smittskyddsinstitutet
Statens veterinärmedicinska anstalt
Tillsyn
Datainspektionen
Försäkringskassan
Skatteverket
e-legitimationsnämnden
Tillsyn
Socialstyrelsen
Hälso- och sjukvårdens ansvarsnämnd (HSAN)
Statistiska centralbyrån
Styrelsen för ackreditering för teknisk kontroll (SWEDAC)
Utvärdering och rekommendationer
Statens beredning för medicinsk utvärdering (SBU)
Statens folkhälsoinstitut
Arbetsmiljöverket
Myndigheten för Vårdanalys
Livsmedelsverket
Myndigheten för Samhällsskydd och Beredskap (MSB)
Strålsäkerhetsmyndigheten
Genteknikmnämnden
Länsstyrelser

Process perspective




Generic Clinical level
Business analysis – clinical process focus
Process- and Concept models in the National Information structure (NI)
ICF structure
Guide for clinical process application
Reference Information level
National reference information model
harmonisation
Archetypes/Templates
EN 13606 and openEHR ref Models (EHR and Demogr IM)
Reference archetypes
non clinical attributes
process attributes
clincial data attributes
SCT concept model attributes
Reference templates
Clinical process level
ICD and ICF code systems
Conceptual mapping to SCT
Process specific archetypes
nonclinical attributes
process attributes
clinical attributes
Specific templates
for e.g. quality registers, knowledge management and documentation in EHR

Generic Clinical level

- EN 12967 (HISA part 1 enterprise viewpoint)
- prEN 13940-2 (Contsys part 2 health care process and workflow)
- ISO/FDIS 21667 (Health indicators conceptual framework)
- ISO 9001 and CEN/TS 15224 (Quality management systems)

Reference Information level

- EN 12967-2 (HISA part 2 information viewpoint)
- EN 13606-2 (Electronic health record communication part 2: Archetype interchange specification)
- Open EHR RIM and specifications
- SNOMED CT concept model attributes
- prEN 13940-2 (Contsys part 2: health care process and workflow)
- ICF (WHO classification for disabilities and functions)

Applied Clinical level

- EN 13606-1 (Reference model for communication)
- EN 13606-4 (Electronic health record communication Part 4: Security)
- EN 13606-5 (Electronic health record communication Part 5: Interface specification)
- prEN 13940-2 (Contsys part 2: health care process and workflow)
- SNOMED CT, ICD,ICF ….

Ongoing projects

- New governance structure of health informatics – cooperation and maybe reorganisation of responsibilities
- Large project on quality registries, including process analysis and development of archetypes and templates
- E-medication and new e-prescription project, including a lot of standardization
- Health issue project
- ”Refurbishing” patient services and new PHR-project, including setting the commercial framework
- National e-referal project
- Clinical desicion support and clinical pathways

Results

- Creating a national federated technical service plattform
- Creating framework for architecture
- Creating framework and methodology for projects (RIV and VITS)
- 1177, UMO, NPÖ, Integrity services, etc etc
- PoC of archetypes and templates in EHR and quality/patient registries
- Cooperation with several other governmental agencies

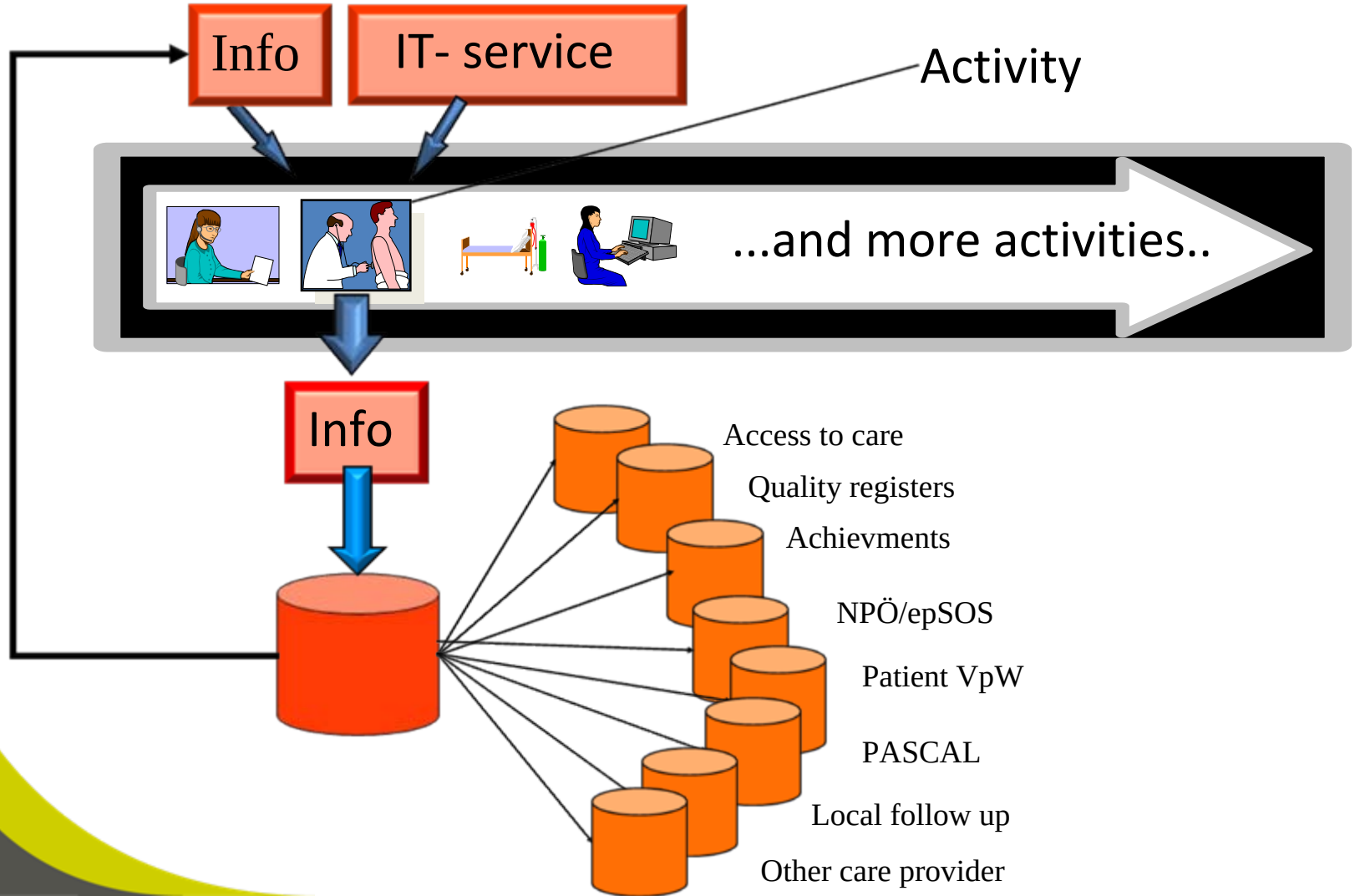
Retrieve

Decide

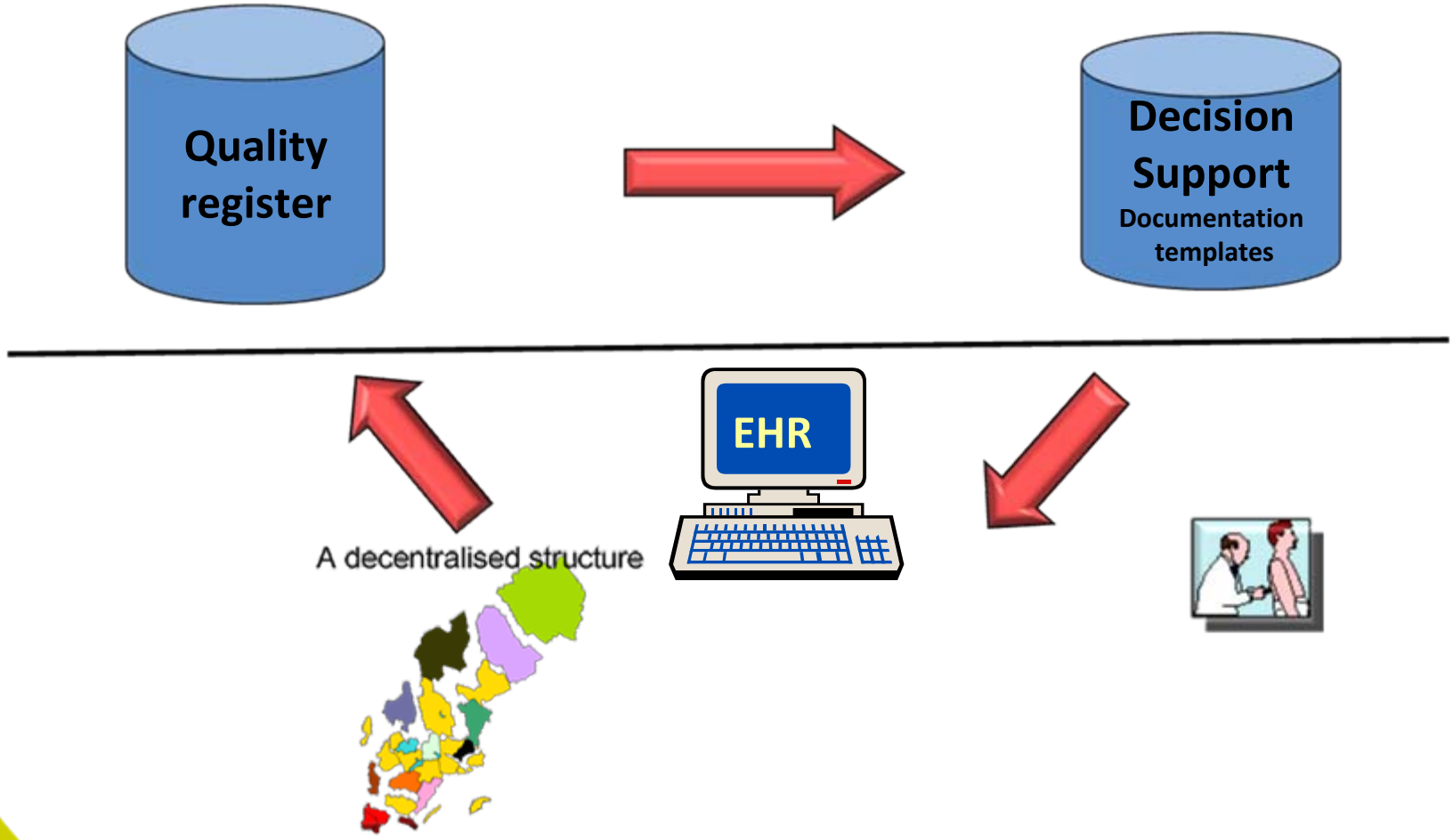
POE

Document

A comprehensive view of IT-support for health care



Quality register and decision support in the clinical everyday work



Success factors for realisation of eHealth strategies:

- Strong political support needed!
- Recognize eHealth investments as a long term undertaking to improve healthcare!
- Clear definition of roles and responsibilities between national and regional level!
- Work must be carried out co-ordinated and in parallel towards the same goal at all levels!
- Inclusion of stakeholders vital!
- Governance is an critical issue (not the least medical informatics)
- The real work is done in healthcare