

CGM Investor & Analyst Conference 2014

Network services for healthcare providers
Case examples from CGM markets

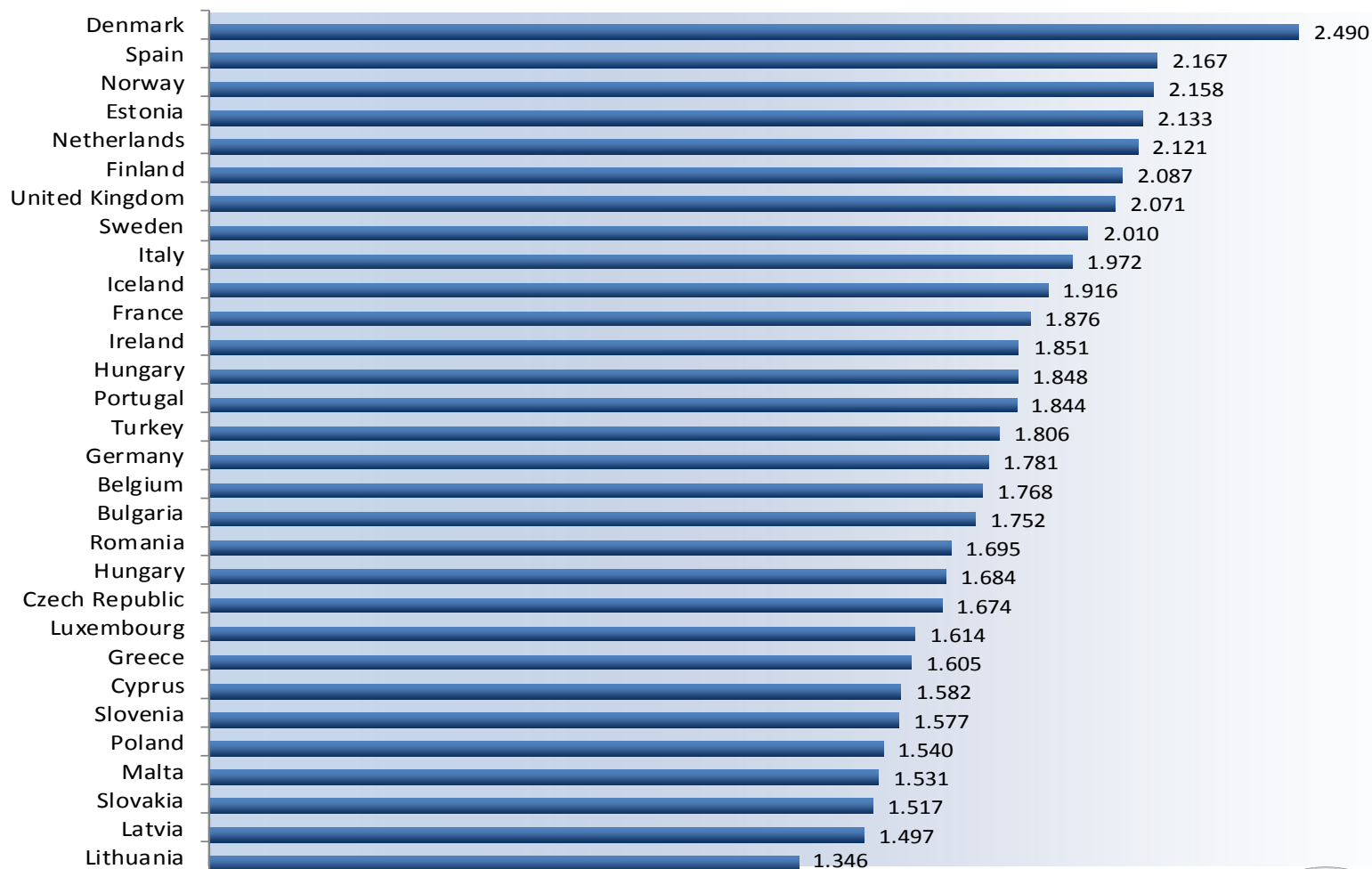
Christian B. Teig
Manfred Glanzer

Koblenz
10 October, 2014



The EU scorecard for eHealth

Composite index of IT adoption by country



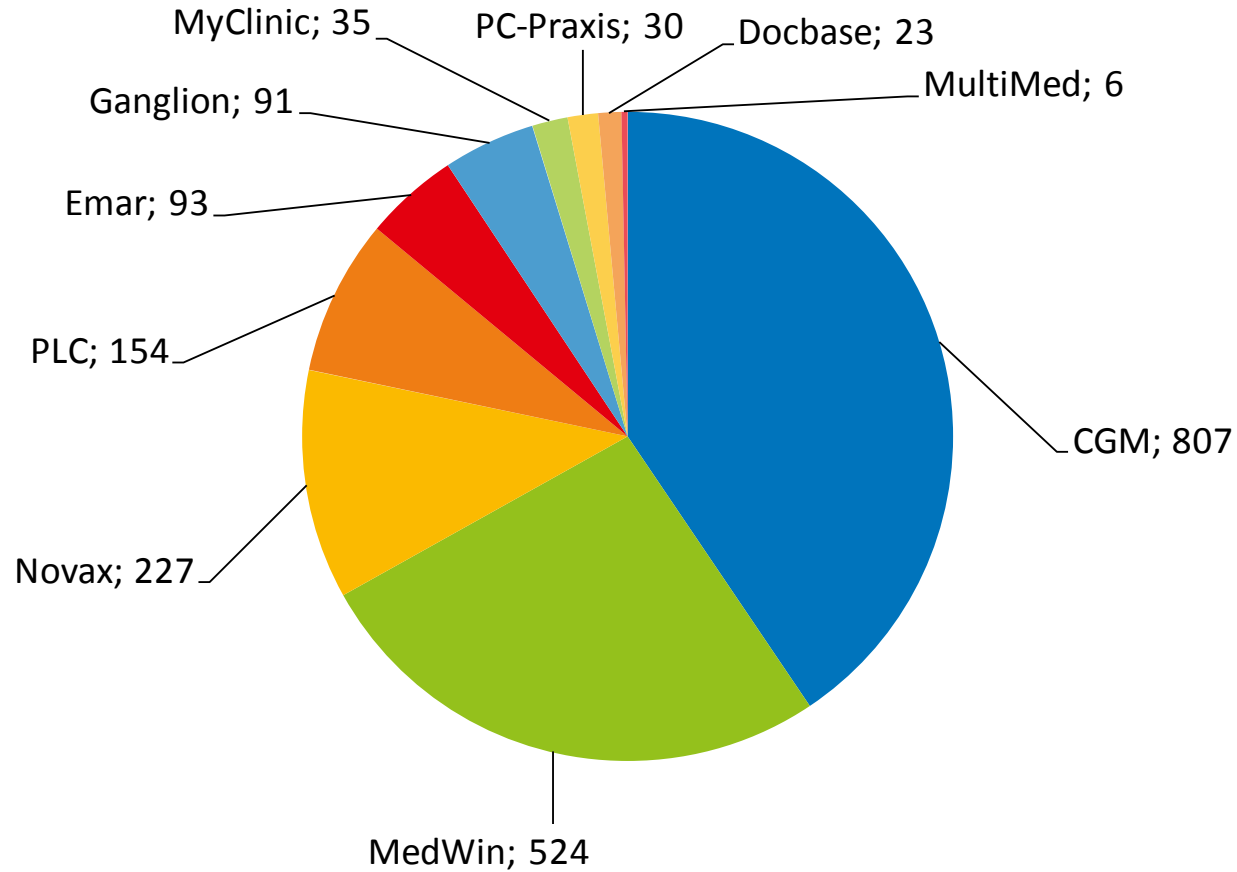
Source: Benchmarking Deployment of eHealth among General Practitioners (2013) – European Commission

The Danish health sector

- Population 5.6 million
- 5 regions, 98 municipalities
- 1 tax funded national health insurance
- 60 public hospitals, 21,000 Beds
- >10 private hospitals, < 150 Beds
- 3,500 self-employed GP's (2,100 clinics)
- 800 self-employed specialists + 200 part time
- 250 pharmacies
- 2,700 dentists (1,650 clinics)
- 1,850 physiotherapist (580 clinics)
- 225 chiropractors



GP systems in Denmark



Source: MedCom

The Danish health insurance card



- Everyone who comes to Denmark and obtains a residence has a right to Danish health insurance and a Danish health insurance card
- The health insurance card serves as an admittance card to the Danish health service
- The health insurance card must be presented when you visit the doctor, hospital, municipal offices etc.
- It can also serve as identification in cases where picture identification is not required
- A second (blue) card gives access to EU health services outside Denmark

NemID – a national system for electronic signature

NEM ID



- NemID = 'EasyID'
- NemID is a single login for public websites, online banking, tax declarations and a great many other websites and services (including healthcare)
- NemID is a nationwide qualified digital signature as defined by the EU eSignatures Directive
- NemID consists of a user ID, a password and a code card containing codes (one-time passwords)
- Was rolled out in Denmark in less than one year!
- PBS who won the NemID assignment on public tender in 2010
- PBS - Payment Business Services, formerly Pengeinstitutternes BetalingsSystemer
- Danish PBS and Norwegian BBS / Teller merged in 2010 under the name Nets
- Services in the Nordic countries:
 - Payment and information services
 - Payment cards and transaction processing
 - eSecurity (NemID, BankID)
 - Merchant solutions (POS, PSP)

Evolution of GP electronic communication

MedCom Messages / Month (in million)



- +6,000 doctors, pharmacies, municipalities and hospitals
- 65 IT vendors
- 6 million messages/month
- 15% growth/year
- 70-90% of all documents

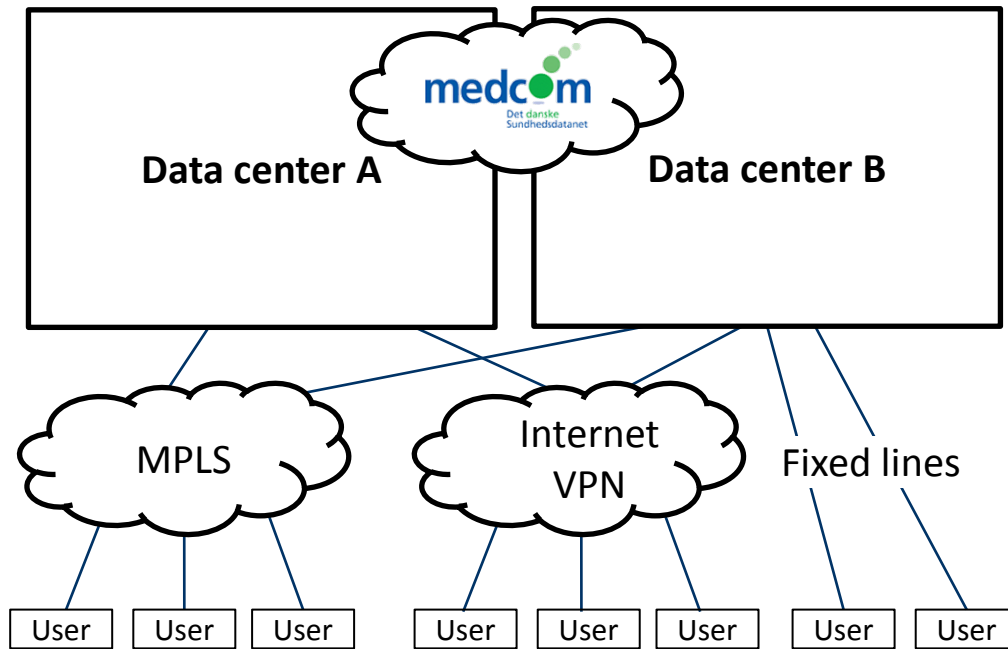
Source: MedCom

The MedCom organization

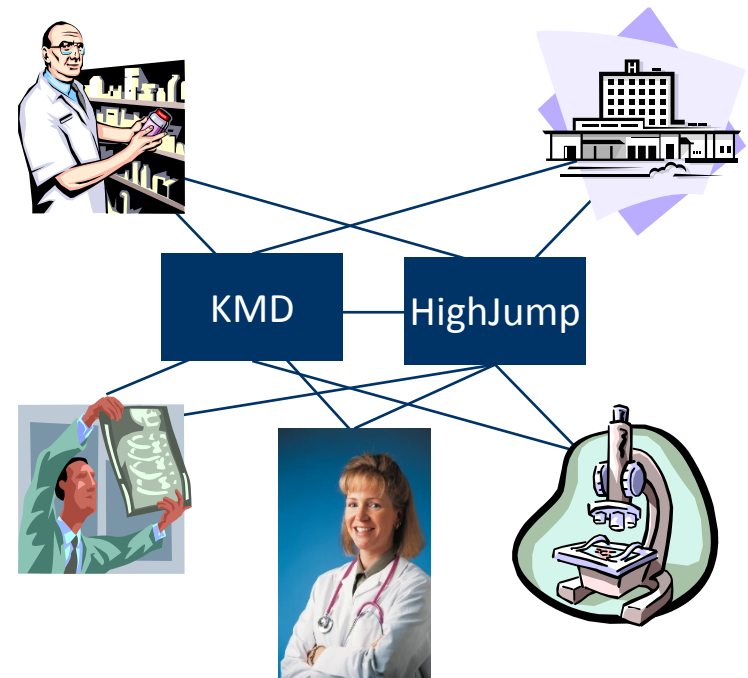
- Established in 1994 as a publicly funded, non profit cooperation
- Financed and owned by:
 - The Ministry of Health
 - Danish Regions
 - Local Government Denmark
- Works with:
 - Standards, testing and certification
 - The Danish Healthcare Data Network and national data sources
- Time-constricted project periods of 2 – 4 years
 - Message-based communication between hospitals, municipalities, general practitioners, psychiatry and social services
 - Shared Medication Record (FMK)
 - Realization of the national telemedicine action plan



The Danish Health Data Network (SDN) and VANS network



- Secured connections between secured local networks
- Datacenters owned by MedCom, operations outsourced by EU tender (currently Netdesign A/S)



- Secure messaging (EDI) via private VANS operators KMD or Highjump

Connections to SDN

Kunde	Forbrug / Gigabytes	Andel %
Region Midtjylland	442,6	14.8 %
Netic A/S	347,4	11.6 %
DBCG	262,7	8.8 %
TSM-backup	255	8.5 %
Forskningsenhed for almen praksis	222,2	7.4 %
VDX	191,9	6.4 %
NetDesign	171,9	5.7 %
CompuGroup	162,2	5.4 %
National Sundheds IT	106,3	3.6 %
Region Hovedstaden - H:S	100,3	3.4 %
Region Nordjylland	95	3.2 %
EGdatainform	87,4	2.9 %
Region Syddanmark	82,7	2.8 %
Novax / NordTeam	67	2.2 %
EM-Data	65,7	2.2 %
Max Manus A/S	64,4	2.2 %
portal.Sundhed.dk	63,3	2.1 %
CMS-TEST-DEMO-PILOT.sundhed.dk	59,8	2.0 %
A-Data	38,60	1.3 %
TMC Barcelona	32,8	1.1 %

- Sundhedsdatanettet (SDN) has existed since 2003 and acts as a national hub
- 3 ways to connect to SDN's hub:
 1. MPLS-SDN connection
 2. Own fixed line (MPLS or own fiber optic line)
 3. IPSEC-encrypted VPN-connection via Internet
- A great number of competing local networks – typically offered as add-on from healthcare IT provides

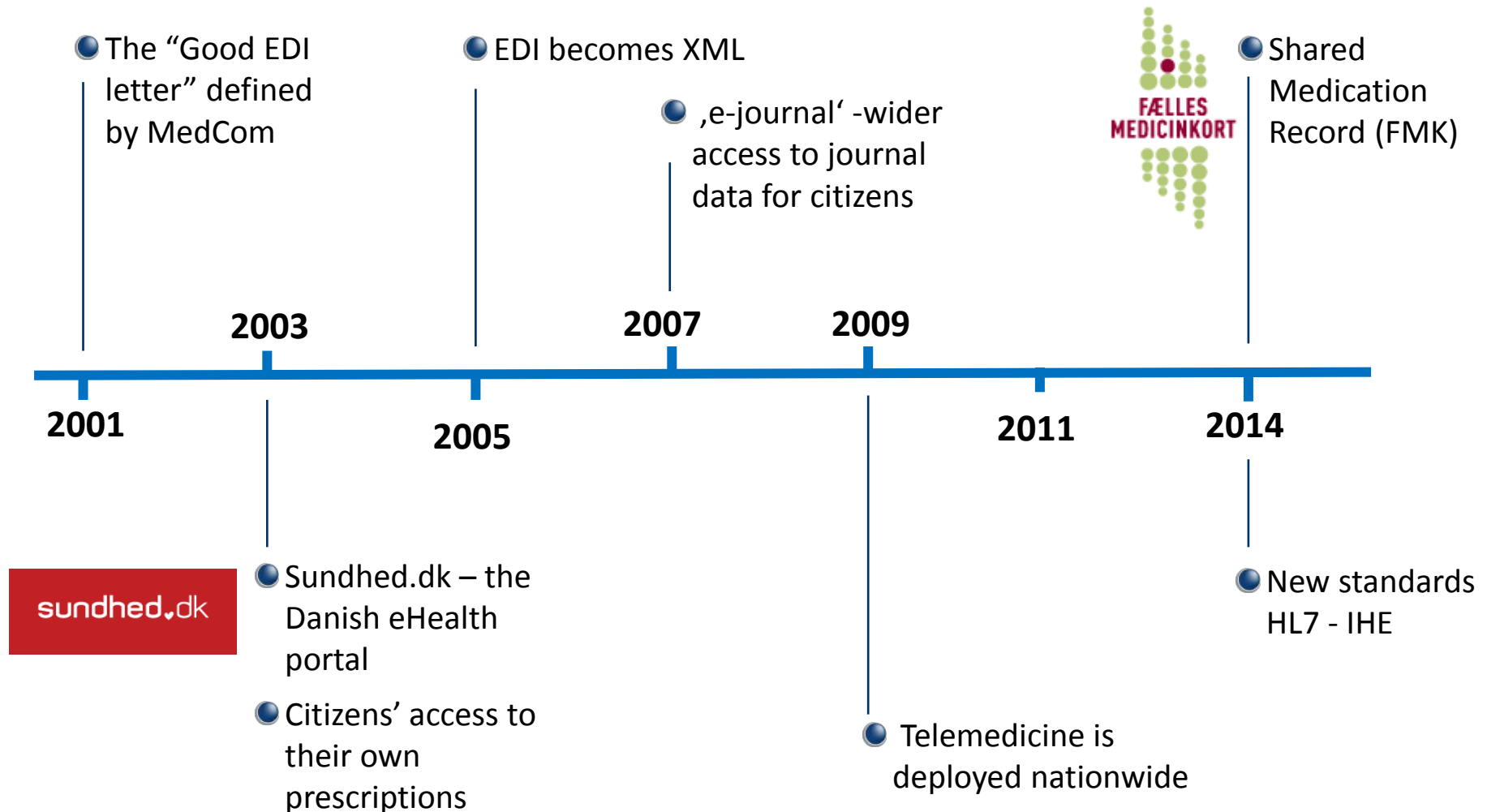
Source: MedCom

VANS operators

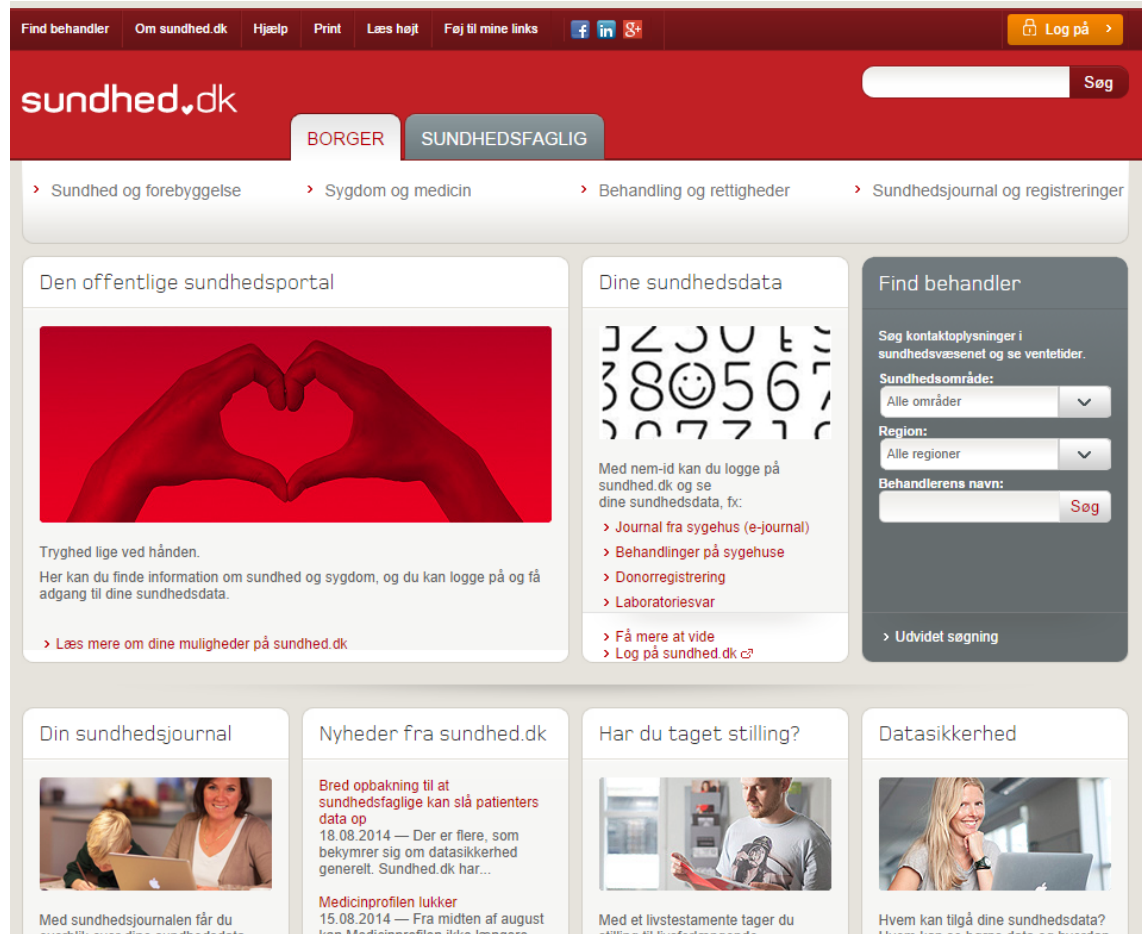
- VANS – Value Added Network Services
- Based on standard business-to-business integration technology (Electronic Data Interchange - EDI)
- European Article Numbering (EAN) location identifiers is used as the electronic address infrastructure – an already existing infrastructure used by departments, directorates, agencies, and other organizations in the Danish public sector for bill-to address
- Original role healthcare was given to two established players in electronic procurement and invoice workflow solutions Kommunedata (now KMD) and Tele Danmark (now Highjump)
- The duopoly between KMD and Highjump remains until today



Evolution of services in the network

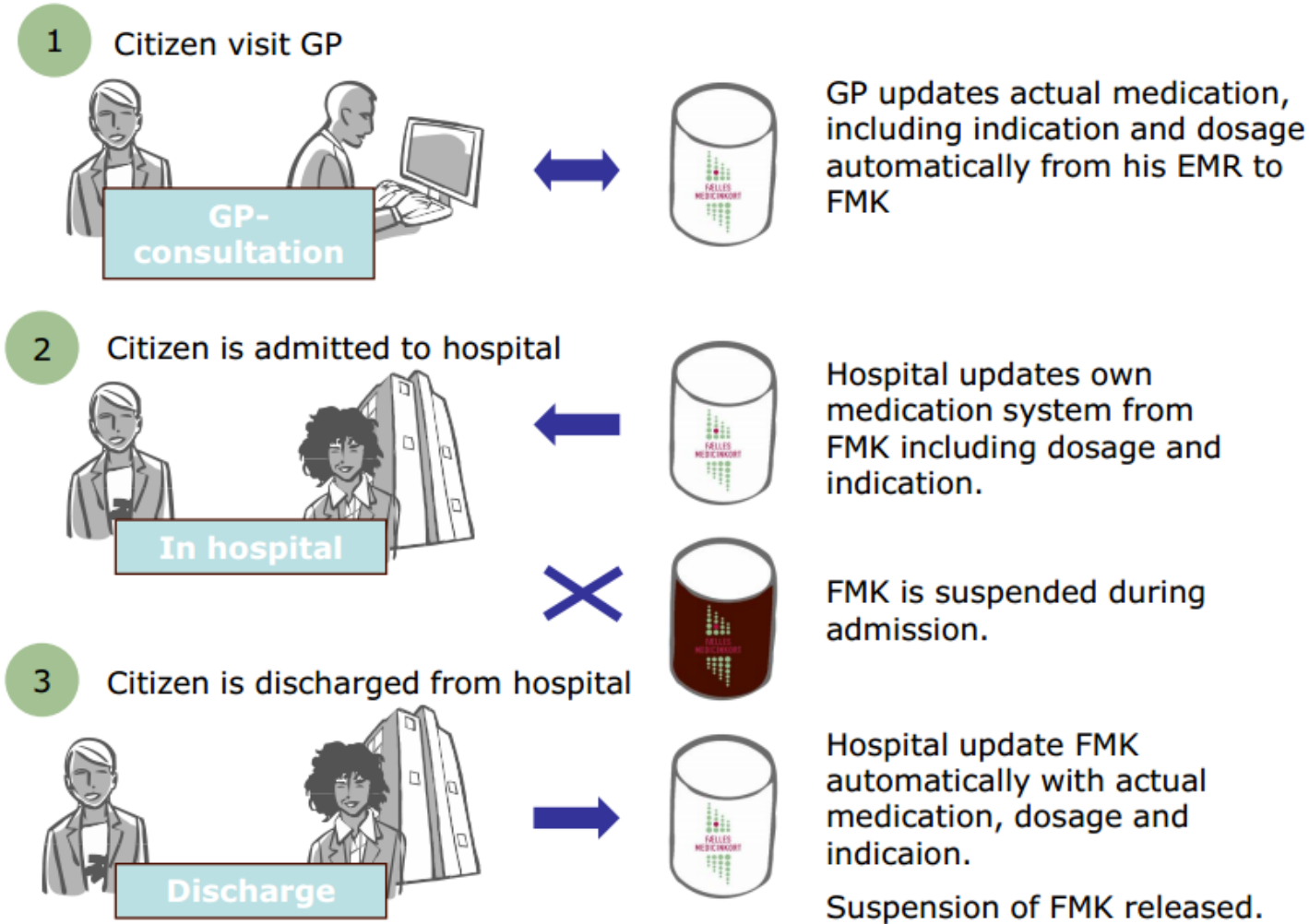


Denmark's e-Health portal introduced in 2003



- Online Electronic Health Record from hospitals
- Cross-sectorial personal electronic medicine profile
- Overview of personal medical history since 1977 (list of contacts with hospitals)
- Overview of contact with primary sector clinics since 2003
- Online organ donor registration
- 'My log' (lets the patient see which health professionals have accessed their personal data)

FMK – Shared medication data base



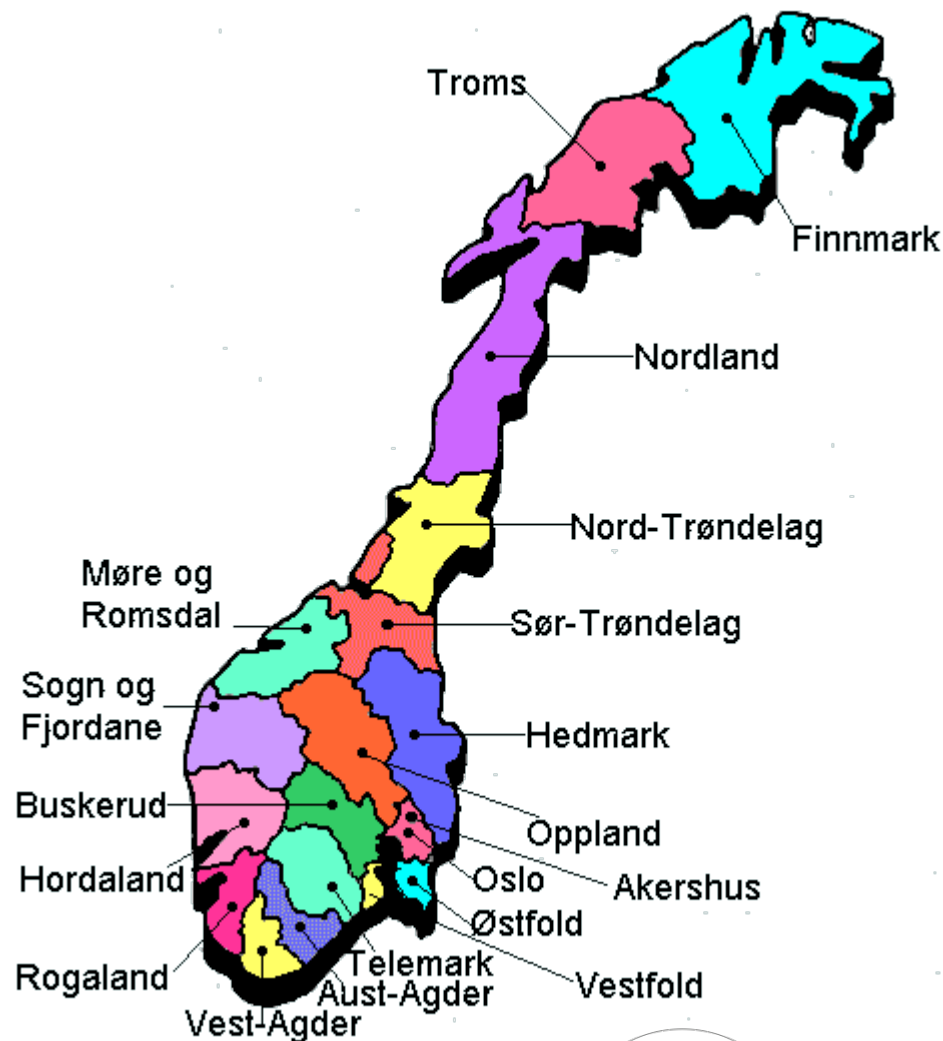
Source: MedCom

Network services offered by CGM Denmark

PRODUCTS	Unit	Annual fee (EUR)
SDN connect (w/o ISP)	Per doctor	75
EDI service	Per clinic	450
eServices	Per doctor	475
FMK module	Per doctor	160
Sentinel module	Per doctor	120
Payment Dankort	Per clinic	165
VPN (remote office)	Per token / key	200
Remote backup	Per clinic	500
Antivirus	Per pc	50
E-mail account	Per user	40
Hosting (SaaS)	Per user	800

The Norwegian health sector

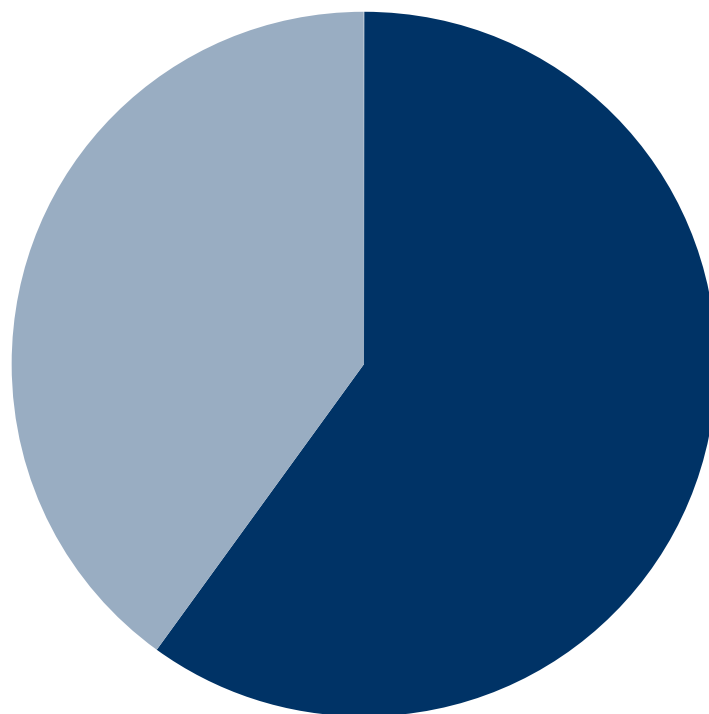
- Population 5.1 million
- 19 counties, 428 municipalities
- 1 tax funded national health insurance
- 80 public hospitals, 14,000 Beds
- 4,387 self-employed GP's
- 1,500 self-employed specialists
- 805 pharmacies
- 2,400 dentists
- 2,600 physiotherapist
- 500 chiropractors



GP systems in Norway

ESTIMATE

100% = 4,400 GPs



■ CGM ■ Infodoc / Hove Medical

The non-card nation

- No separate health insurance card in Norway
 - Normal picture ID is used if needed (e.g. drivers license)
 - GPs act as gatekeepers – every citizen is assigned to a dedicated family doctor „fastlege“
 - Specialist care cannot be accessed without a referral from your assigned family doctor
- 4 competing national solutions exist for secure identification and electronic signature



Norsk Helsenett (Norwegian Health Network)

norsk**helsenett**

- Rolled out nationwide in 2006-2007 to all doctors and hospitals
- Transformed to a state-owned enterprise in 2009, owned by the Ministry of health and care services
- Runs as a government monopoly with approximately 150 employees
- Backbone network, operations, support and consultancy services are mostly subcontracted through EU tenders
- In addition to all healthcare providers, the network is also open to about 100 connected, third-party service providers (hereunder CGM)
- All activity is governed by the «Code of Conduct for information security in the healthcare, care, and social services sector»

National services under Norsk Helsenett

*Valg av tjenester			Prisene er oppgitt i kroner ekskl./inkl. mva.		
Kryss av	Betegnelse	Båndbredde samband	Antall e-postadresser	Engangsavgift	Bruksavgift pr. md.
<input type="checkbox"/>	Helsenettilknytning 2	2 Mbps	*ubegrenset	15 312,-/19 140,-	1530,-/1 1905,-
<input type="checkbox"/>	Helsenettilknytning 4	4 Mbps	*ubegrenset	15 312,-/19 140,-	2030,-/2 530,-
<input type="checkbox"/>	Helsenettilknytning 8	8 Mbps	*ubegrenset	15 312,-/19 140,-	2530,-/3 155,-
<input type="checkbox"/>	Helsenettilknytning x	x Mbps	*ubegrenset	På forespørsel	På forespørsel
		*Gjelder inntil 100 e-postadresser. Ta kontakt ved behov for ytterligere e-postadresser.			
		Beskrivelse	Engangsavgift	Bruksavgift pr. md.	
<input type="checkbox"/>	DOMENE	En tjeneste Norsk Helsenett kan tilby som registrar for no-domener.	400,-/500,-	0,-	
<input type="checkbox"/>	FJERNDRIFT	Gi din tjenesteleverandør mulighet til å nå ditt nettverk via helsenettet.			
<input type="checkbox"/>	HJEMMEKONTOR	Få tilgang til arbeidsplassen hjemmefra. (Velg brukere for Hjemmekontor på neste side.)			
<input type="checkbox"/>	BANKTERMINAL	Betalingstransaksjoner via helsenettet mot BBS, PayEX eller Point.			

Priser gjeldende fra 01.01.2014. Av månedlig bruksavgift utgjør medlemsavgiften kr 930,- ekskl. mva.

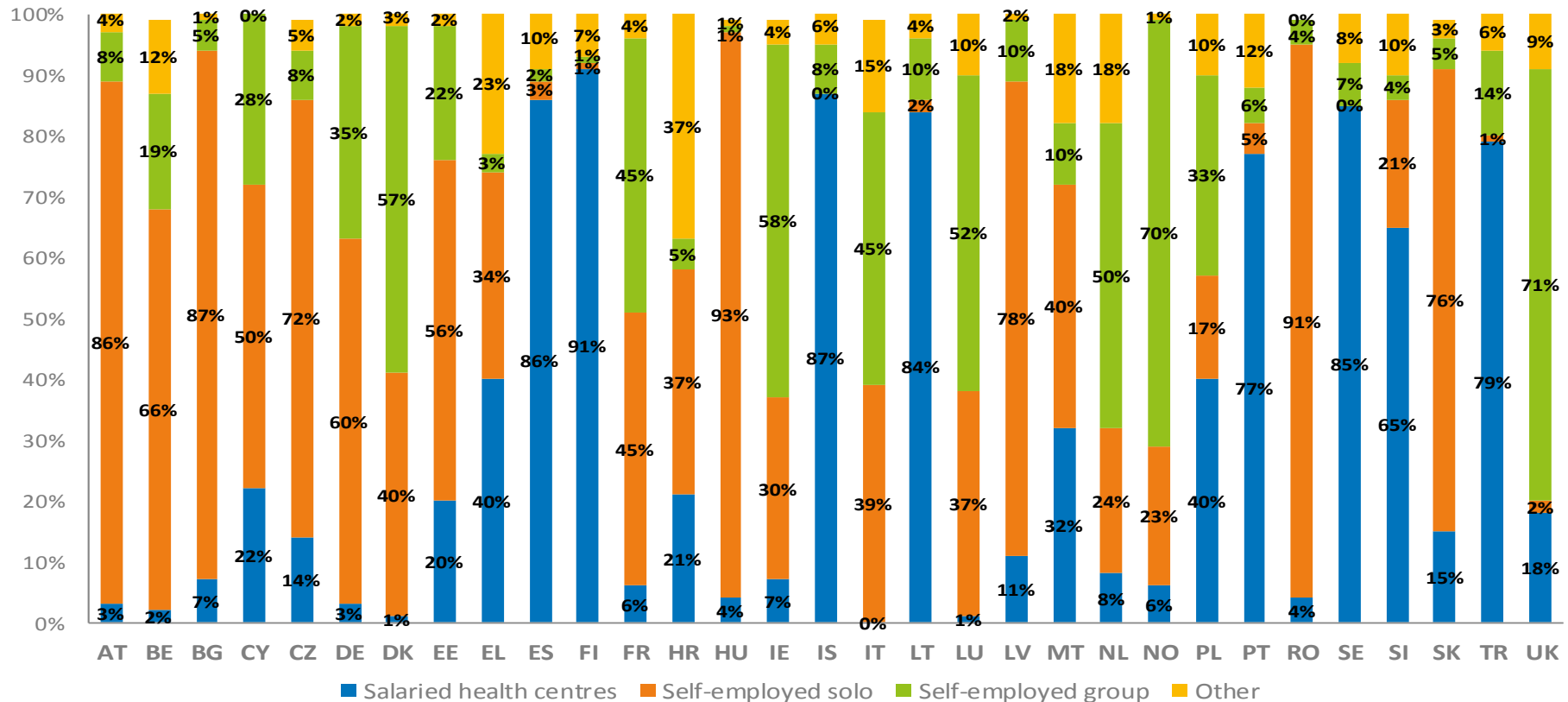
- ePrescription
- Patient transport
- National register of health professionals
- National citizen register (on behalf of tax authorities)
- Shared Medical Record (coming)

Network services offered by CGM Norway

PRODUCTS	Unit	Annual fee (EUR)
EDI module	Per doctor	875
eServices	Per clinic	780
Payment terminals	Per clinic	650
Remote backup	Per clinic	430
Hosting (SaaS)	Per user	1200

Different European GP structures

Type of practice by country



Source: Benchmarking Deployment of eHealth among General Practitioners (2013) – EU Commission

The Swedish health sector



- 21 county councils control 99.5% of the GP and office-based specialist market
- All Hospitals (except one) owned and operated by county councils
- Private operators may run healthcare operations within the county council's area, but are heavily influenced by the county council's IT policies
- County councils are governed by popularly elected politicians
- All county councils comply with the law of public purchasing (LOU)

County councils – system overview



Blekinge
 Dalarna
 Gotland
 Gävleborg
 Halland
 Jämtland
 Jönköping
 Kalmar
 Kronoberg
 Norrbotten
 Skåne
 Stockholm
 Sörmland
 Uppsala
 Värmland
 Västerbotten
 Västernorrland
 Västmanland
 Västra Götalandsregionen
 Örebro
 Östergötland

Evry (Cross)
CGM (TakeCare)
CGM (TakeCare)
 Siemens (Meliar), **CGM (J3/PMO)**
 VAS, Evry (Cross), Swedestar
 Cambio (Cosmic)
 Cambio (Cosmic)
 Cambio (Cosmic), Swedestar
 Cambio (Cosmic)
 VAS
 Siemens (Meliar), **CGM (PMO)**
CGM (TakeCare)
 Evry (Cross)
 Cambio (Cosmic), **CGM (J3/PMO)**
 Cambio (Cosmic), **CGM (J3/PMO)**
 Evry (Cross)
 Evry (Cross)
 Cambio (Cosmic), **CGM (J3/PMO)**
 Siemens (Meliar), **CGM (Asynja VISPH)**
 IMX / Evry (Cross)
 Cambio (Cosmic)

Regional system for Stockholm



Söder Hospital



Norrtälje Hospital



**Visby Lasarett
(Gotland)**



Danderyds Hospital

45,000	Registered users
25,000	Simultaneous users
3,400,000	Medical records
850	Server calls per second
99.9%	Response time less than 1 second

- Ersta Hospital
- St. Eriks Eye Hospital
- Stockholm nursing home (Stokholm Sjukhem)
- Southern primary care area (9,000 users)
- Maternity care centers (5 units)
- Nynäs Care
- Sophiahemmet
- ASIH
-and many more



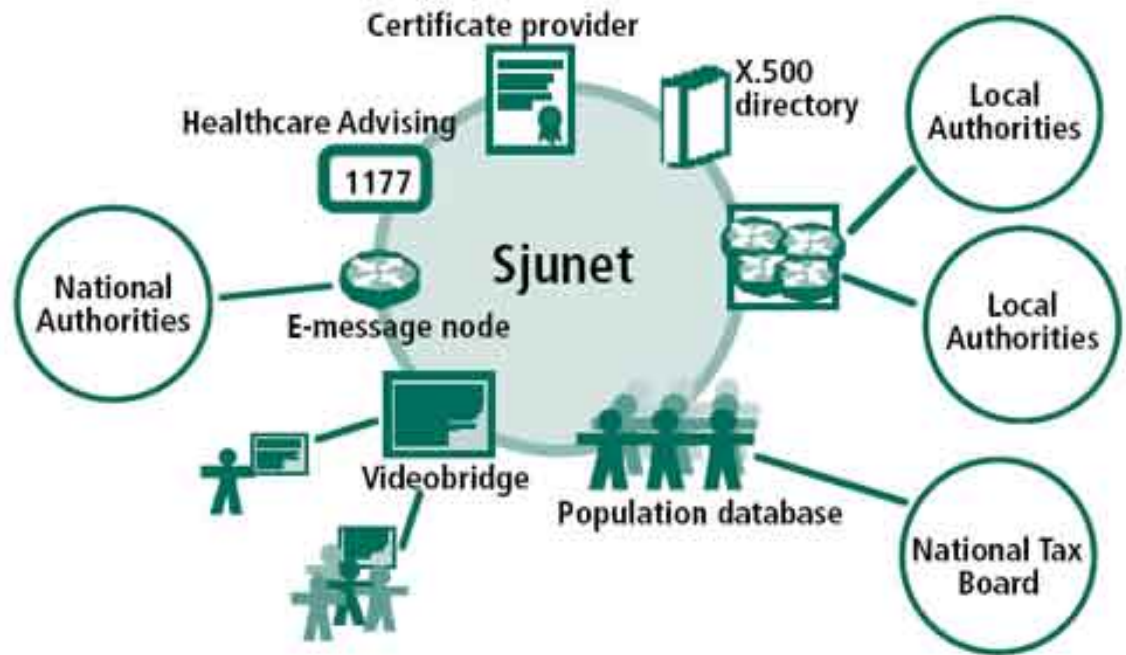
**Karolinska University
Hospital
(Huddinge and Solna)**



Södertälje Hospital

Sjunet (Swedish Health Network)

- Sjunet is offered by Inera AB
- Inera is a common service provider for county councils in Sweden
- 3 ways to connect to Sjunet:
 - Dedicated fixed line from Inera
 - 3rd party local network connected to Sjunet
 - IPSEC-encrypted VPN-connection via Internet



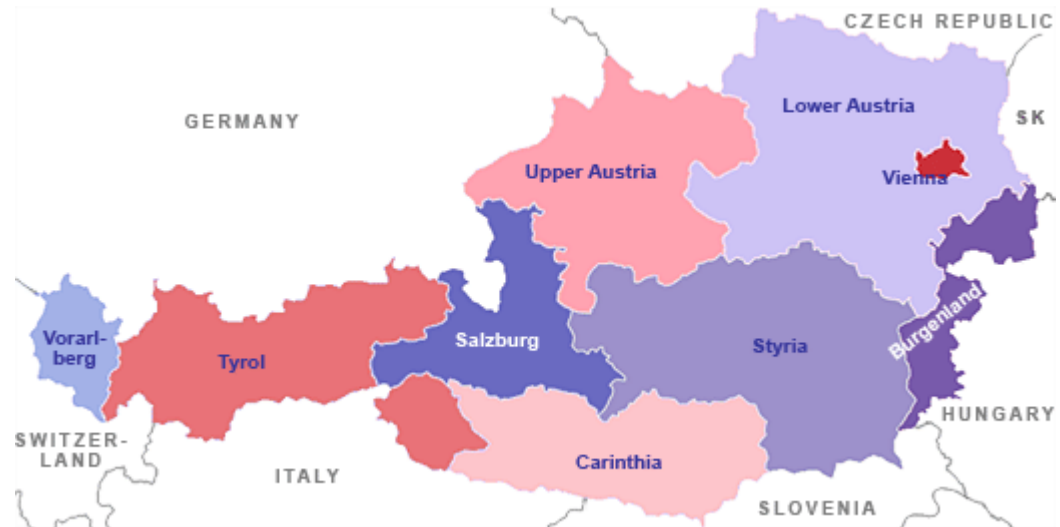
Network services offered by CGM Sweden

PRODUCTS	Unit	Annual fee (EUR)
EDI basis service	Per user	45
ePrescription	Per user	170
eReferral/eResult Laboratory	Per user	170
eReferral/eResult Radiology	Per user	170
eServices	Per user	700
eServices smartphone App ext.	Per user	400
eStatistics	Per user	7
Patient Summary	Per user	7
Record transfer	Per user	7
eSick leave Certificat	Per user	65
SIL	Per user	30

- National initiatives and services for the regions, don't follow the fixed price list
- These customers usually have customized services to match their internal structures based on the main products

The Austrian health sector

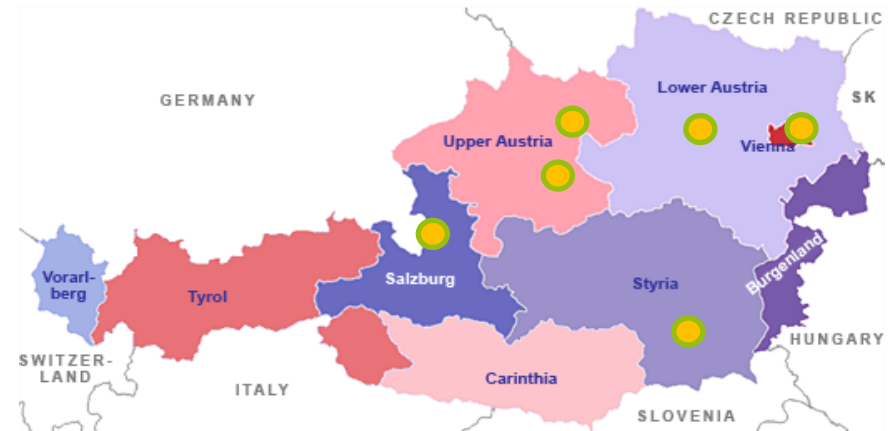
- Population 8.5 million
- 9 regions, 2,354 municipalities
- 22 statutory health insurances
- 267 hospitals – 64,300 beds
- 12,200 self-employed GP's
- 5,700 private specialists
- 2,261 pharmacies
- 4,853 dentists
- 7,867 physiotherapist, chiropractors



Austrian HIS market leader

AUSTRIA	
CUSTOMER:	
	Wiener Krankenanstaltenverbund (KAV)
	NUMBER OF CLINICS: 25
	NUMBER OF EMPLOYEES: 32.000
CUSTOMER:	
	NÖ Landeskliniken-Holding (NÖLKH)
	NUMBER OF CLINICS: 27
	NUMBER OF EMPLOYEES: 19.500
CUSTOMER:	
	OÖ Gesundheits- und Spitals AG (GESPAG)
	NUMBER OF CLINICS: 10
	NUMBER OF EMPLOYEES: 9.700
	NUMBER OF BEDS: 8.220

- **Customers:** 184 hospitals & rehab clinics
- **Products:**
 - mpa (clinical workflow management)
 - G3 (hospital information system)
 - hca (controlling assistant)
 - HR-solutions, IT-hosting services,
 - SAP (PCOE, gold, channel, var-partner)



Market leader in software for doctors



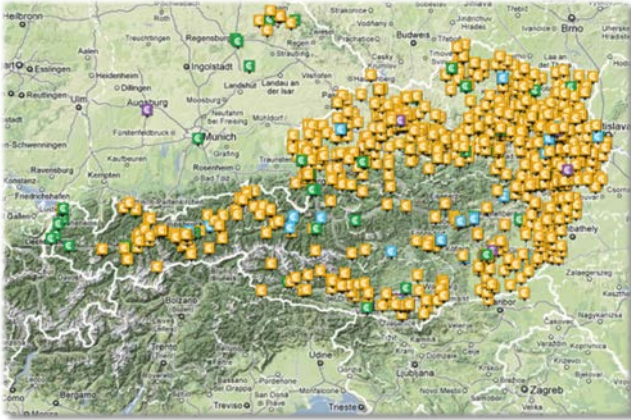
CGM acquisitions in Austria

- CSPmed, Gruber ÄDV, medXpert, ITN and Medico Systems (2009)
- Innomed (2010)

Facts

- **Companies:** CompuGroup Österreich, innomed (70.3%)
- **Product lines:** PCpo, medXpert, innomed
- **Customers:** 4,984
- **Market share:** 50% (GPs – statutory health insurance funds)

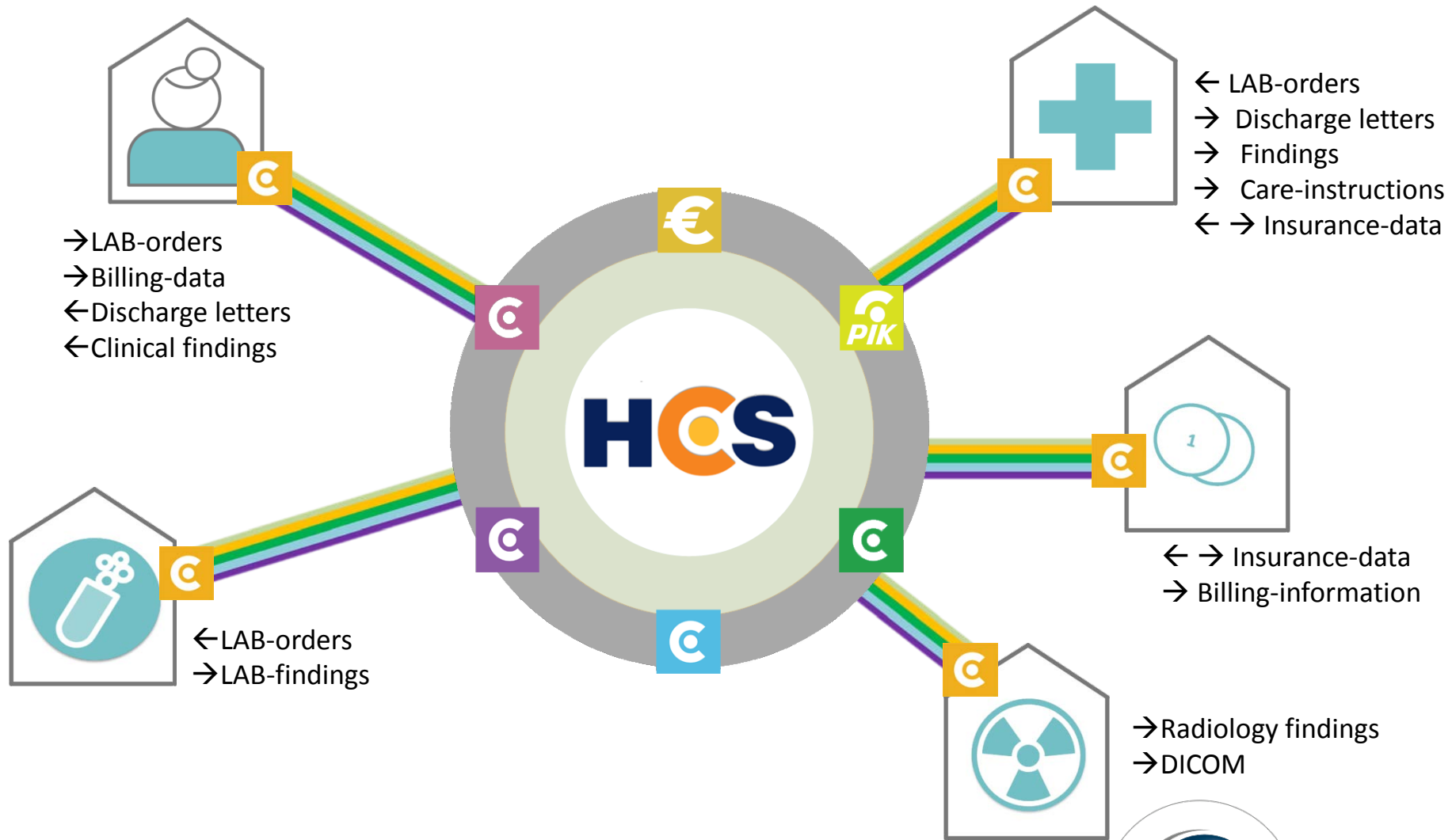
...and in secure electronic communication



- **Customers:** 2,800
- **Revenue:** € 2.7 m
- **FTE:** 12

- Health Communication Service GmbH (HCS) is one of the leading providers of secure electronic communication in Austrian healthcare
- 22+ million transactions / year

HCS is a key hub in Austrian healthcare





Basic module for secure electronic data-exchange



Ad-hoc entry and **transfer** of structured medical **documents**



Lab order entry module for **doctors**



Transmission and receipt of **radiology images** with diagnostic quality



Secure long-term **archiving** of transferred data and logs.



Electronic Data Interchange between private insurers and hospitals (Austrian insurers-association)



Patient-oriented, integrated disease management
(KAV-Hospital Group Vienna)



Transfer of billing information
(Austrian health funds)

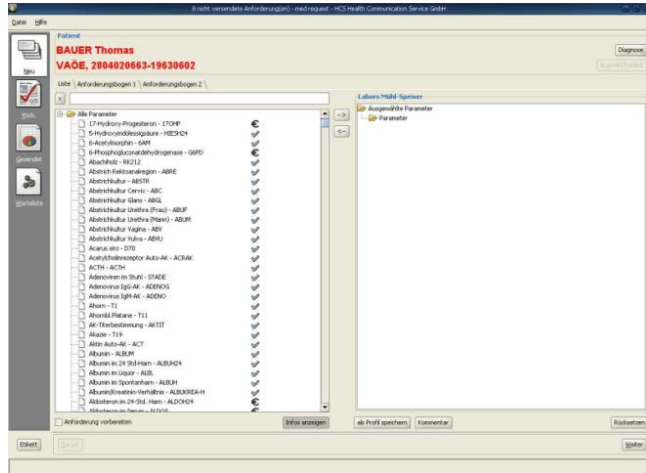
Secure electronic transfer of medical documents



- Bi-directional interfaces to primary systems (HIS, LIS, DIS, ...)
- Secure communication with other members of the network using asymmetric encryption and digital signature
- User-interface for administration and management (viewing, printing,...) of documents and transfer-logs
- Small footprint, uses minimal system-resources



Lab order entry and order management



- Single-/multi workstation support
- Supports multiple LABs
- Automatic synchronization of basic-data with external labs (updates to available tests,...)
- User-defined order-profiles and order-forms
- Automatic generation of all required documents (Barcode-Labels, Worksheets, Sample supply-notes, etc.)
- Flexible support of different workflows (Ad-hoc orders, Order-preparation,...)
- Bi-directional interface to primary systems (Receive patient-demographics from DIS, transfer generated order back to DIS)

Benefits across complete value chain



Benefits for doctors

- **Efficient entry** of lab-orders
- Automatic generation and **printing of all labels and documents** – as required by the selected laboratory
- **Avoidance of errors** by IT-supported order entry (correctness, completeness, ...)
- Automatic **transfer** of the generated LAB-order to the patient-record of the **DIS**
- Automatic **replication of basic data** with configured laboratories

Benefits for laboratories

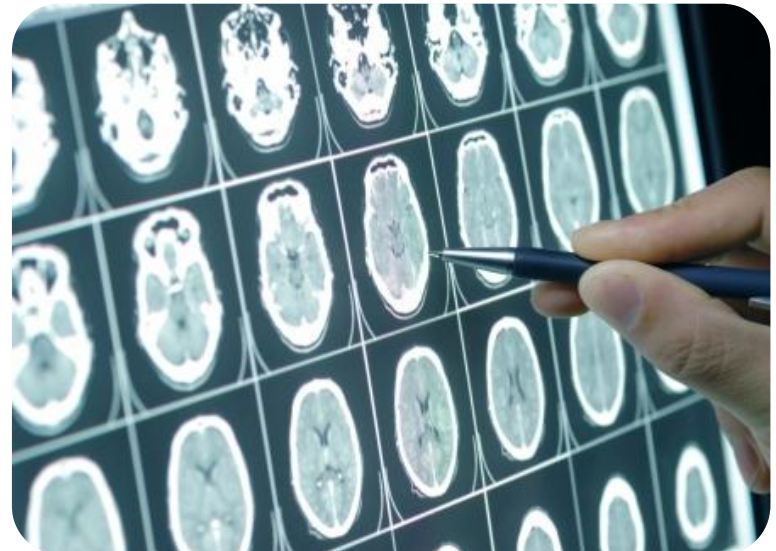
- Improved quality of **LAB-orders**
- Electronic processing of orders
 - **Increased efficiency of order processing** – order-sample assignment by just scanning the sample container's barcode
 - **Elimination of** data-entry and label attaching **errors**
 - **Reduction of time for manual order entry**—orders are imported automatically
 - **Cost advantages**
- Automatic **electronic transfer of lab result** to ordering doctor (reduction of printing-costs,...)

Reliable transfer of large data volumes



Exchange of radiology images and studies in diagnosing quality

- Module for exchange of image and multimedia data
- Reliable transfer of large amounts of data (spanning different organizations and networks)
- Fastest possible transfer of information from sender to receiver



Reliable

- Notice of message-receipt
- Transfer logs

Fast

- Real-time transfer
- Parallel message processing
- Fragmented transfer (DICOM)

Secure

- Client-side cryptography
- Asymmetric end-to-end encryption, transport-encryption
- Digital signatures

Medical Net business model

SW – license /
maintenance

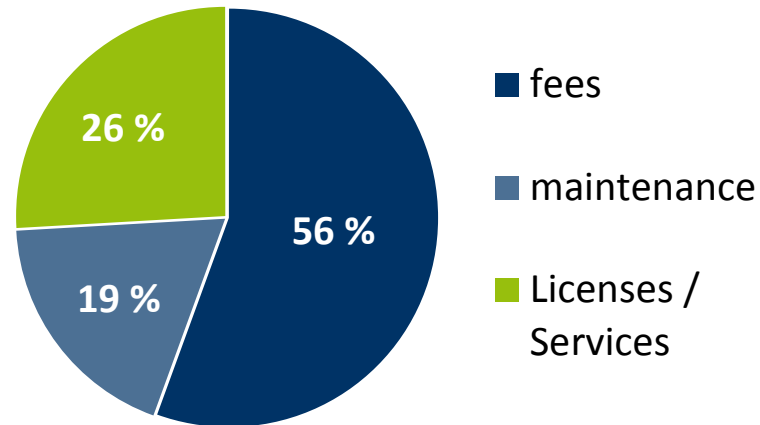
Services / support

Annual
operation fee

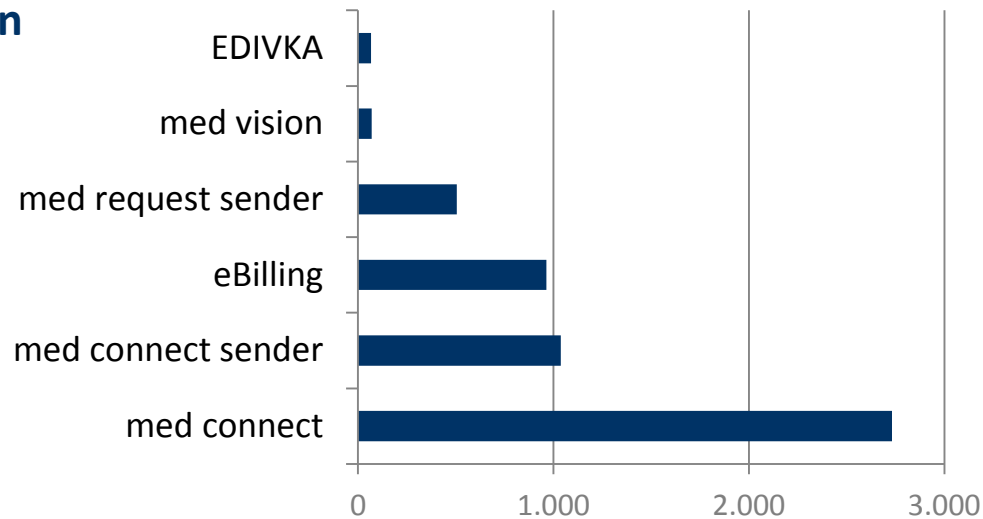
Transaction fee

Business volume

Revenue assignment



Product penetration



ELGA – a new era for Austria

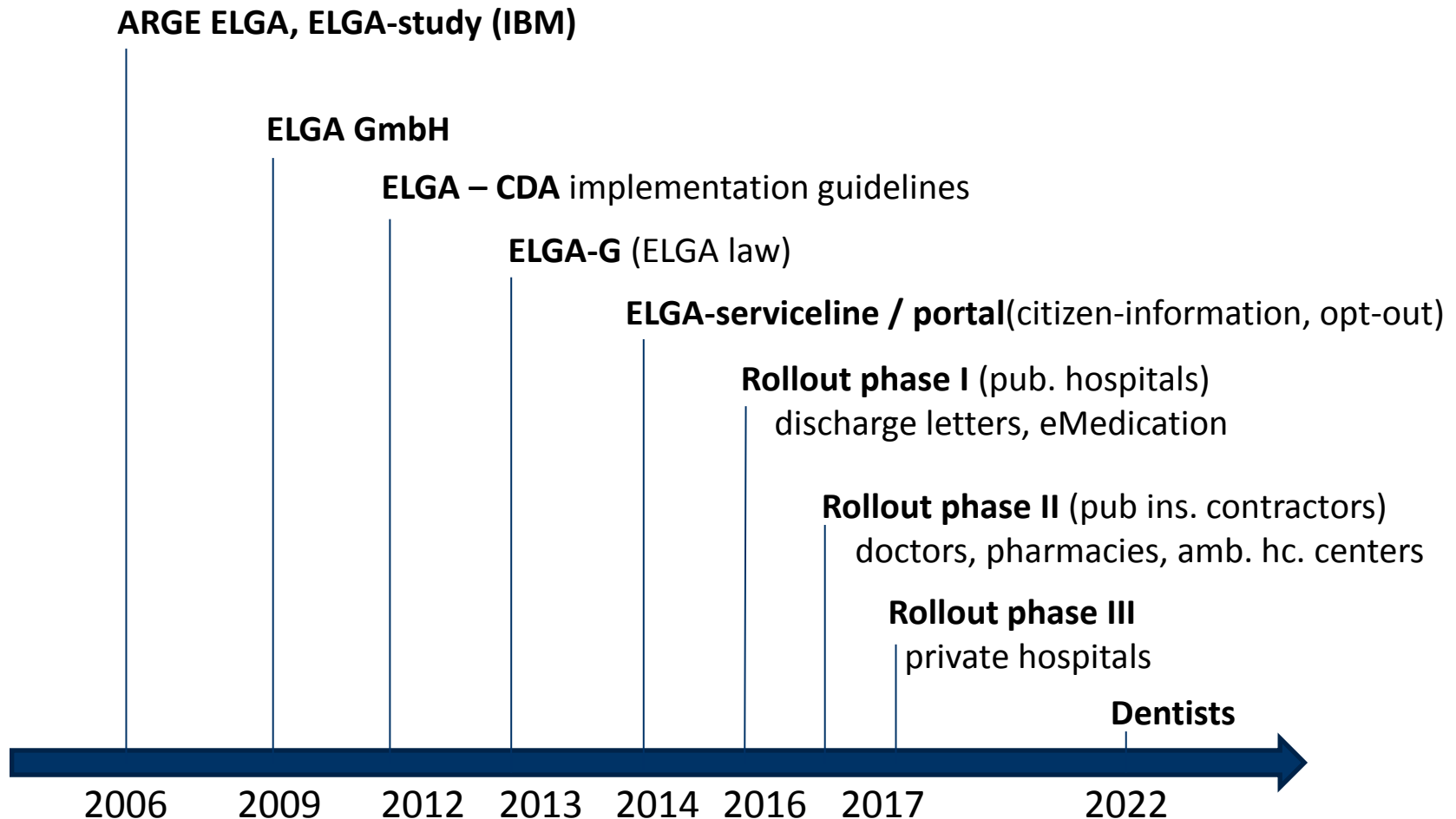


ELGA = ‚Elektronische Lebensbegleitende GesundheitsAkte‘

- Infrastructure is **based on IHE** (Integrating the Healthcare Enterprise)
- **Multiple** document **repositories** (decentralized ‘ELGA-Domains’)
- **Central components** (registries, security components, ...)
- **Secure network** infrastructure (GIN, Healix)
- **Closed community** (ELGA law defines participating healthcare providers)
- **Structured** and standardized **content** only (CDA-documents)
- **Patient portal** for citizens
- **Austrian e-Card** for patient identification

Focus: hospital discharge letters, radiology findings, lab results, eMedication

ELGA – History / Roadmap



ELGA is based on the e-card



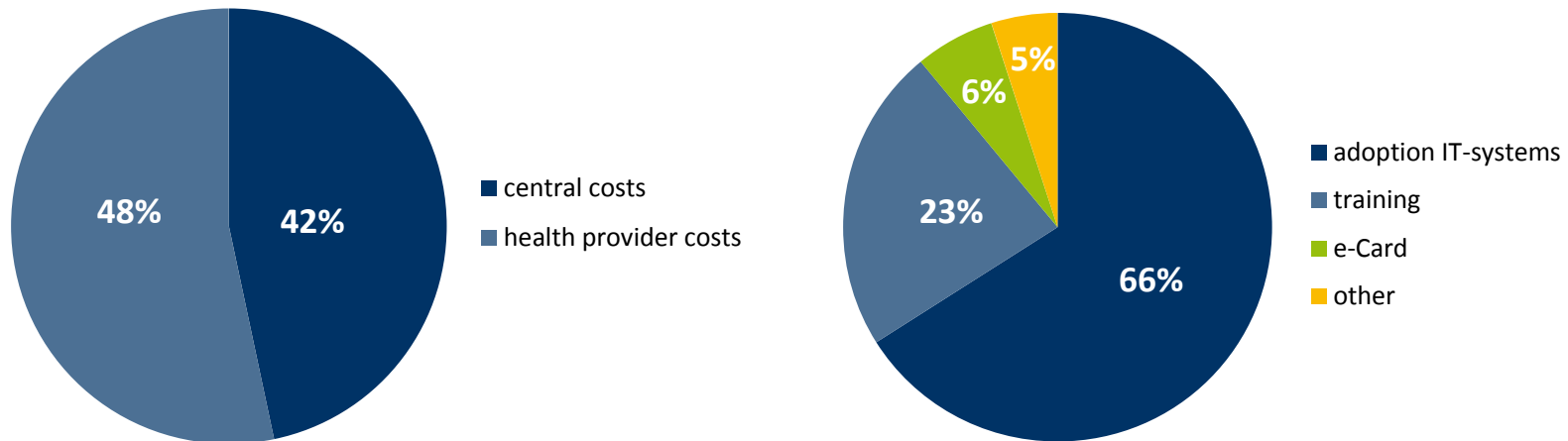
- The E-Card is the Austrian health insurance card and was introduced in 2005
- Access and control of patient information in ELGA is based on the E-Card ('Key Card')

Roll-out budget

Total estimated costs (2010 – 2017)

- € 59.7m for infrastructure
- € 75.7m for health providers
(Expected healthcare cost dampening effects/yr from 2017: €129m)

Costs per type



Costs per provider

- **Doctors:** € 2,200 – 4,000 (initial), € 400 – 700 (annual)
- **Hospitals:** €100k – 300k (initial), €15k – 45k (annual)

45

Analyst Conference 2014 | Network services for Healthcare Providers



ELGA business models

● ELGA will not replace current HCS services

- **Direct exchange of data** between health-providers and insurers is still necessary and **not covered by ELGA**

→ CompuGroup Medical provides the SW-solution to connect HCP to ELGA

SW – License /
Maintenance

CGM ELGA connector
CGM AIS – add-on modules

Annual
Operation fee

CGM ELGA connector

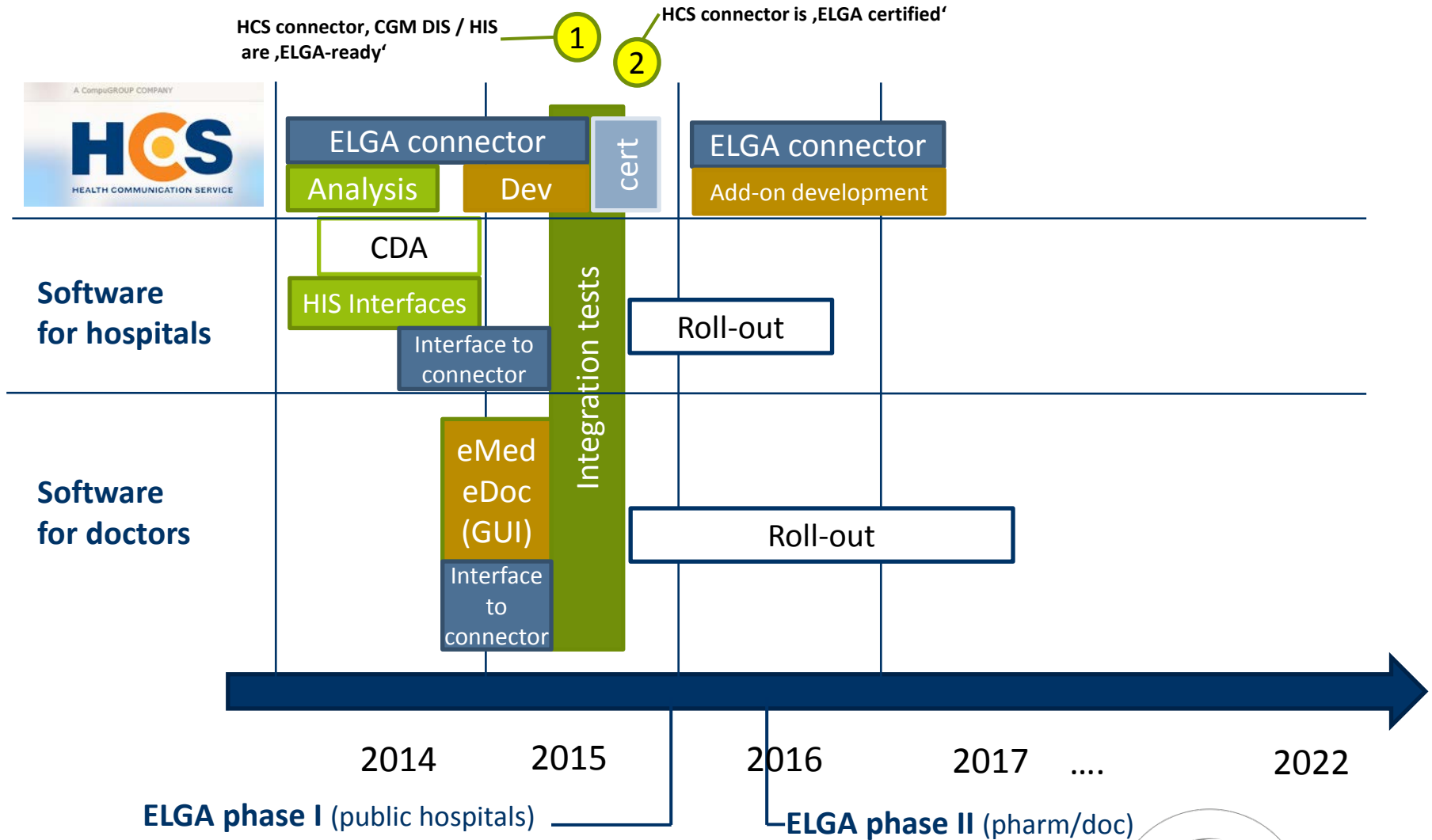
Transaction fee

CGM ELGA connector

● Potentials

- HCS-customers, CGM AIS customers, doctors using 3rd party SW
- New targets: pharmacies, other non CGM customers obligated to use ELGA

ELGA roadmap for CGM to 2022



Thank you for your attention!

CompuGroup Medical AG

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