

Hospital Manager 3.0

Interoperabilitate prin standarde HL7

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Agenda

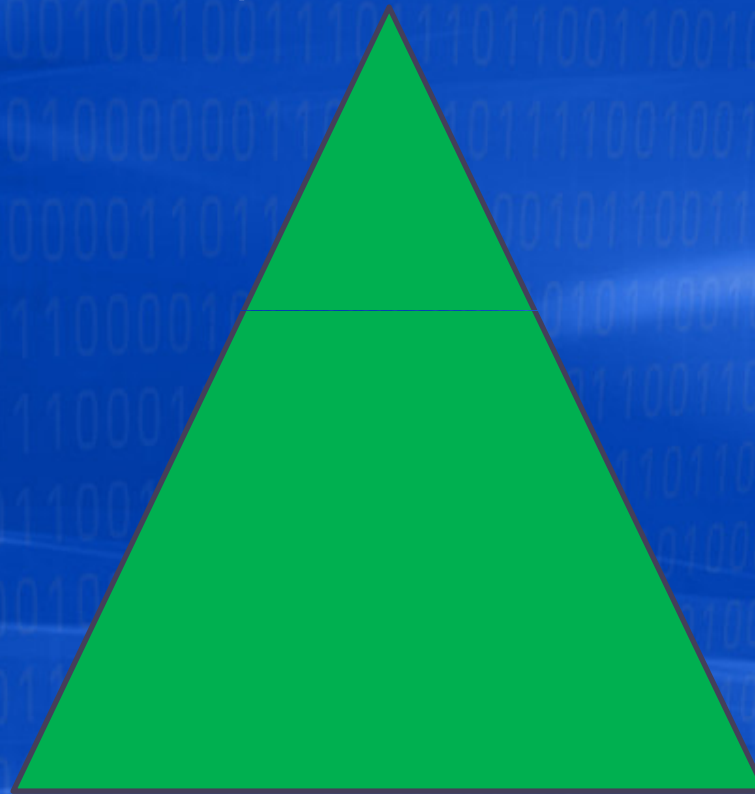
- Arhitectura si componentele de baza ale Hospital Manager 3.0
- Standarde si tehnologii folosite
- Performanta si scalabilitate
- Aplicatii client

Cerinte nonfunctionale valabile pentru un EHR

- Pastrarea investitiilor existente
- Sa suporte aplicatii personalizate si solutii la cheie
- Sa suporte integrarea cu alte solutii
- Sa suporte implementare incrementala
- Sa ofere "loose coupling" intre sisteme
- Sa suporte comunicatie sincrona si asincrona
- Securitate si confidentialitate a datelor
- Multiple limbaje de programare si platforme
- Scalabilitate crescuta
- Sa suporte diverse topologii si SLA 24/7

Cerinte cheie pentru integrare

Cuplare
proceselor



Decuplarea
tehnologiei

Infrastructura

Raspunsul Info World la cerintele de integrare

Cuplare proceselor

Principii de design SOA

Decuplarea tehnologiei

Infrastructura

Web Services

Enterprise Service Bus

Arhitectura Hospital Manager 3.0

- **Scop**

- Crearea unui sistem distribuit capabil sa schimbe date medicale pe baza unor standarde deschise

- **Principii de design**

- Arhitectura orientata spre servicii (SOA)
- Date distribuite
- Securitate distribuita
- De incredere

- **Modele de date**

- HL7 v3 RIM
- HL7 CDA 2.0
- DICOM 3.0

Componente de baza

Servicii de infrastructura

Security Services
Logging Services

Servicii de tip registru

Enterprise
Vocabulary
Services

Entity
Identification
Services

Servicii operationale

Administrative

Schedule Services
Admission Discharge
Transfer Services
Referral Management
service

Financiare

Account Receivable
Services

Accounts Payable
Services

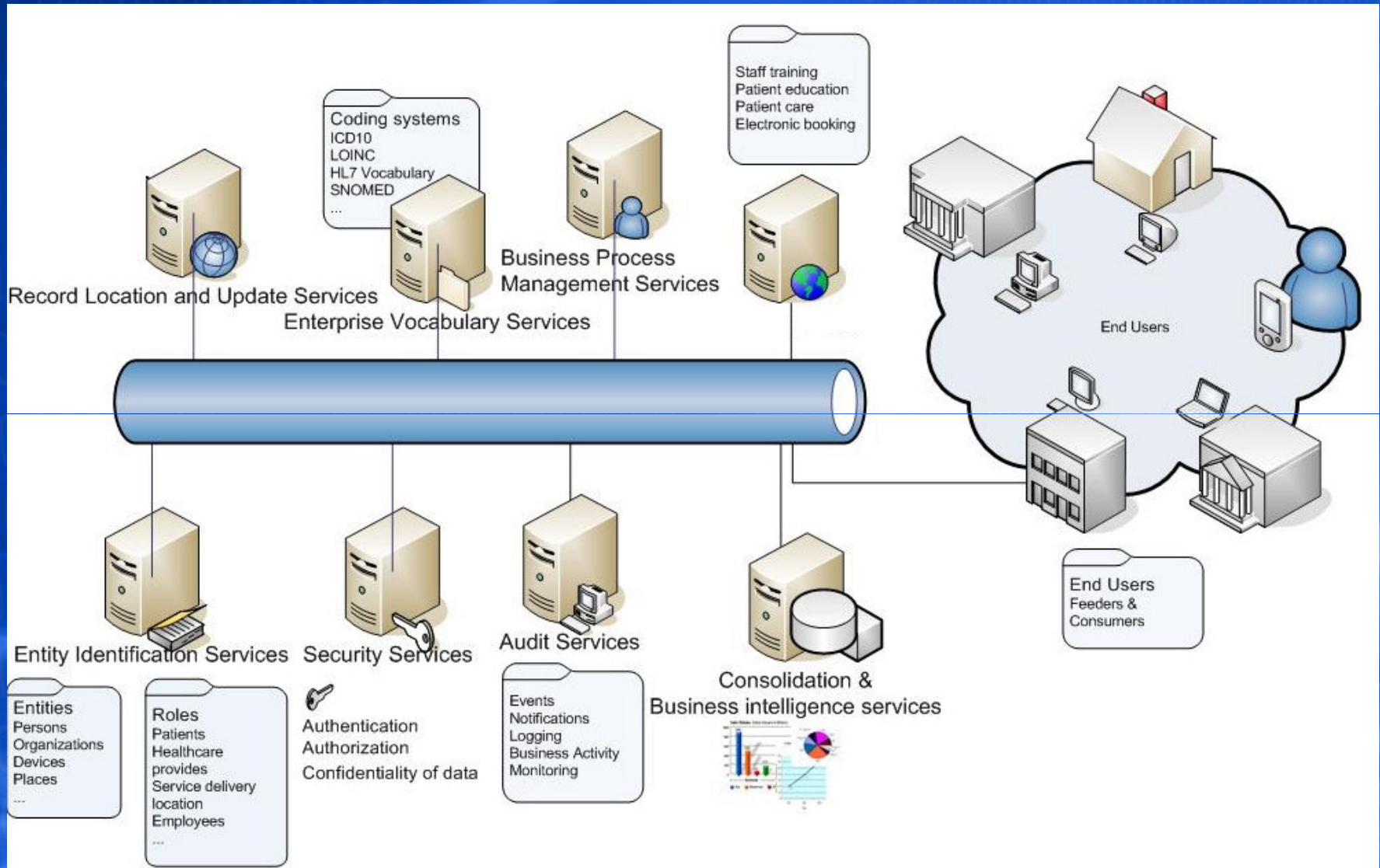
Contract management
Services (charge
management &
purchasing)

Inventory Services

Clinice

Record Location and
Update Services
Order/Result Services
Pharmacy Services
Decision Support
Services

Componente de baza



Standarde utilize in Hospital Manager 3.0

- Security Services

- IHE Profiles
 - Audit Trail and Node Authentication (ATNA)
 - Cross Enterprise User Authentication (XUA)
 - Document Digital Signature (DSG)
- OASIS SAMLv2.0 & XACML
- HL7 RBAC
- WS-Security, WS-Trust

- Enterprise Vocabulary Services

- HL7 Common Terminology Services

- Resource Location and Updating Service

- HL7 Service Functional Model Specification: Resource Location and Updating Service (HSSP)
- IHE XDS Cross Enterprise Document Exchange
- HL7 v3, CDA v2, DICOM 3.0

- Entity Identification Services

- HL7 Service Functional Model Specification: Entity Identification Service (EIS)

- Order/Result

- Based on IHE Laboratory Technical Framework
- HL7 v3, CDA v2

- ADT Services

- HL7 v3 Patient Administration
- HL7 v3 SOA4HL7

- Pharmacy Services

- HL7 v3 Pharmacy
- HL7 v3 SOA4HL7

- eClaim Services

- HL7 v3 Claims and Reimbursement
- HL7 v3 SOA4HL7

Performanta si scalabilitate

- Porneste de la stabilirea cerintelor de calitate ale sistemului
- Provocarile introduse de SOA in software-ul medical
 - XML Serialization
 - Securitate la nivel de mesaj
 - HL7 v3 Data Contracts
 - Aplicatii "Mission critical"
- Solutia IW: Model scalabil si distribuit
 - Servicii de sine statatoare
 - Servicii distribuite pentru securitate (SSO si Autorizare), serviciu distribuit pentru identificare si pentru date clinice
 - Suport pentru o varietate de topologii

Aplicatii client - eTerms

Aplicatie specifica CTS
(Common
Terminology Service
– HL7) ce permite
cautarea si afisarea
textual sau in mod
grafic 3D, in functie
de caz, seturi de
valori, sisteme de
codificare
(vocabulare),
terminologii si
scheme de
clasificare, in special
din domeniul medical

The screenshot displays the eTerms application interface. The top bar shows the 'Value set: SNOMED Clinical Terms' and a search bar with the term 'poison'. The main window is divided into several sections:

- Content Search Graphic:** A 3D model of a human skull is shown, with the nasal bone structure highlighted in green.
- Concept Details:** A table listing concepts related to the search term. The table has columns for 'Relation', 'Code', and 'Display Name'.
- Is Defining:** A table listing concepts that define the search term. The table has columns for 'Relation', 'Code', and 'Display Name'.
- Is Defined by:** A table listing concepts that are defined by the search term. The table has columns for 'Relation', 'Code', and 'Display Name'.
- Details:** A section on the right side of the interface, partially visible, showing additional details for the selected concept.

The 'Is Defining' table contains the following data:

Relation	Code	Display Name
Is a	10927008	Structure of vault of skull
Is a	113194005	Structure of wormian bone
Is a	120229002	Entire bone of neurocranium
Is a	24924006	Parietal bone structure
Is a	31640002	Occipital bone structure
Is a	361731002	Entire neurocranium
Is a	52374004	Ethmoid bone structure
Is a	60911003	Temporal bone structure
Is a	73117003	Sphenoid bone structure
Is a	74872008	Frontal bone structure

The 'Is Defined by' table contains the following data:

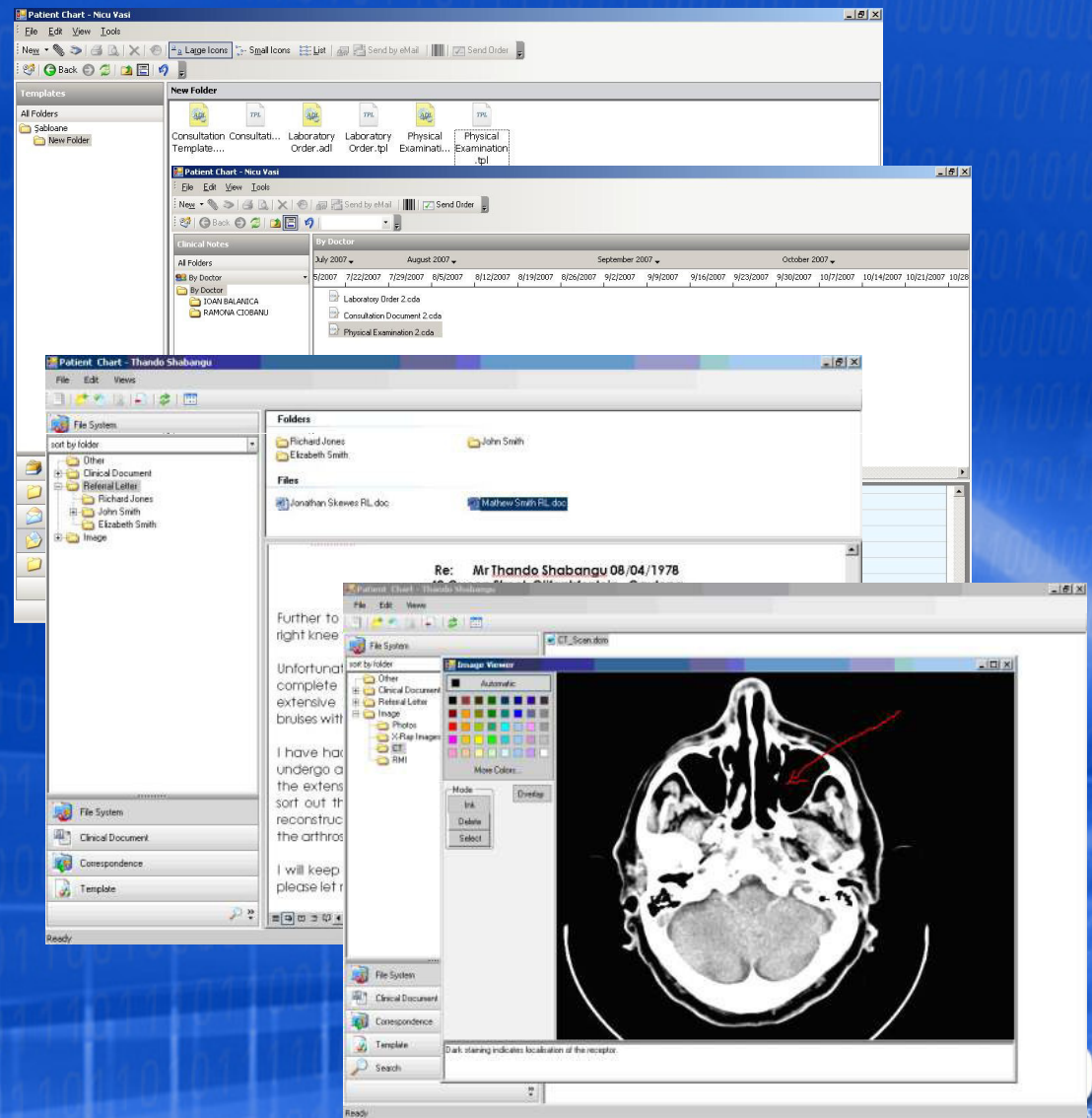
Relation	Code	Display Name
Is a	89546000	Bone structure of cranium

The 'Details' section on the right shows a list of concepts related to the search term, including 'Uncomplicated sedative, hypnotic AND/OR anxiolytic agent', 'Poisoning by succinylcholine AND/OR hydroxybutyrate', 'Tetrachloroethylene poisoning', 'Drug-induced dyskinesia', 'Tardive dyskinesia', 'Drug-induced coagulation inhibitor disorder', 'Poisoning by magnesium trisilicate', 'Sedative, hypnotic AND/OR anxiolytic-induced i', 'Poisoning by amphetamine', 'Parietal dysfunction due to aspirin', 'Poisoning by nitrofurantoin derivatives', 'Poisoning by anticholinesterase', 'Poisoning by butyrophenone-based tranquilizer', 'Poisoning by azathioprine', 'Toxic effect of carbon tetrachloride', 'Poisoning by primaquine', 'Drug-induced osteoporosis', 'Opioid-induced organic mental disorder', 'Alcohol abuse', 'Poisoning by cannabis derivative', 'Drug-induced enzyme deficiency anemia', 'Hallucinogen-induced anxiety disorder', 'Poisoning by naloxone', 'Poisoning by metformin', 'Hallucinogen mood disorder', and 'Thalidomide poisoning'.

Aplicatii client – Patient Chart

Obiective:

- Prezentarea dosarului electronic de sanatate prin intermediul unei interfete grafice
- Permite integrarea si afisarea mai multor tipuri de fisiere specifice dosarului medical al unui pacient
- Functioneaza ca o interfata peste serviciul RLUS
- Permite organizarea documentelor folosind diferite moduri de afisare dupa: medic, consultatie/internare, tip de sectiune medicala, mod grafic axat temporal
- Managementul sabloanelor de documente

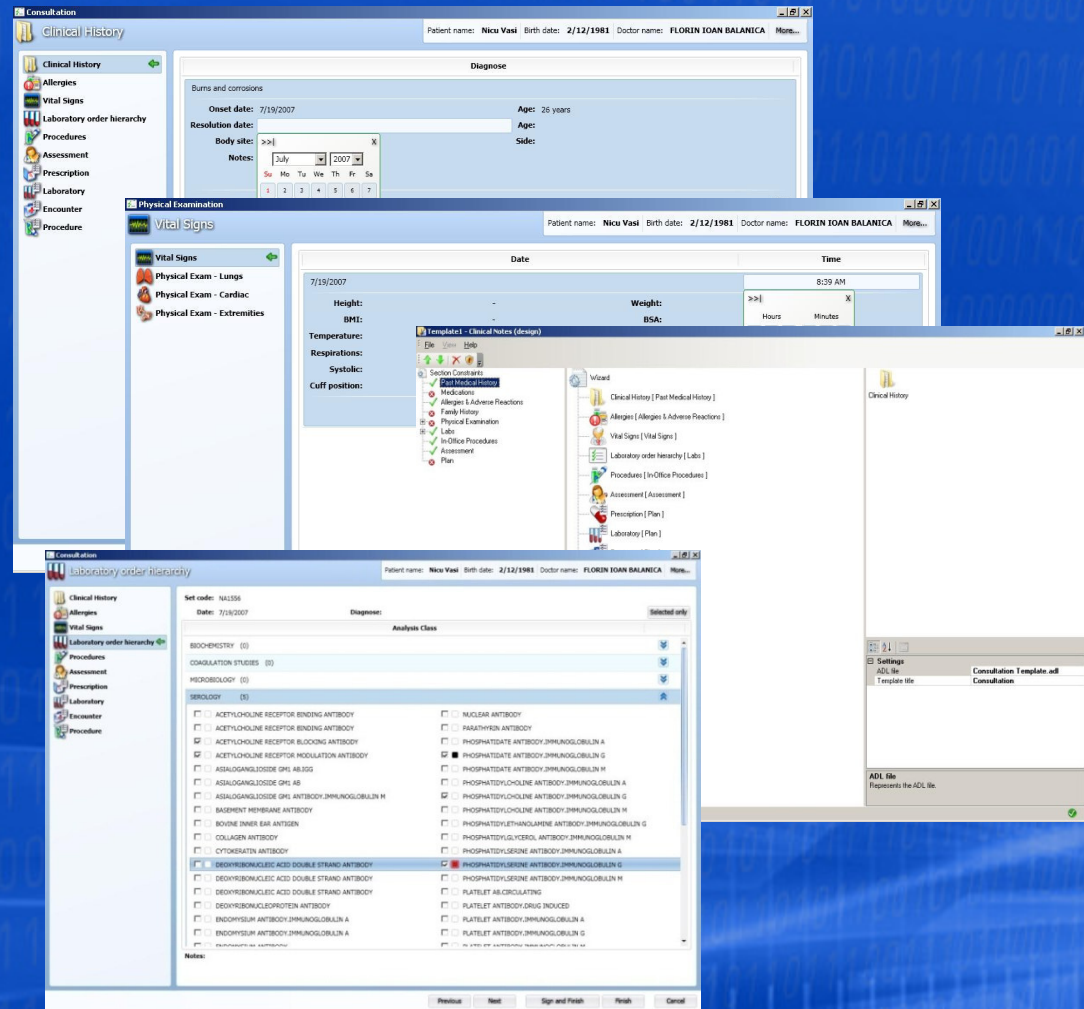


Aplicatii client – Clinical Notes

Clinical Notes aplicatie client pentru vizualizarea si editarea documentelor clinice standardizate CDA si limbajului de definire a arhetipurilor (ADL) pe baza sabloanelor de documente.

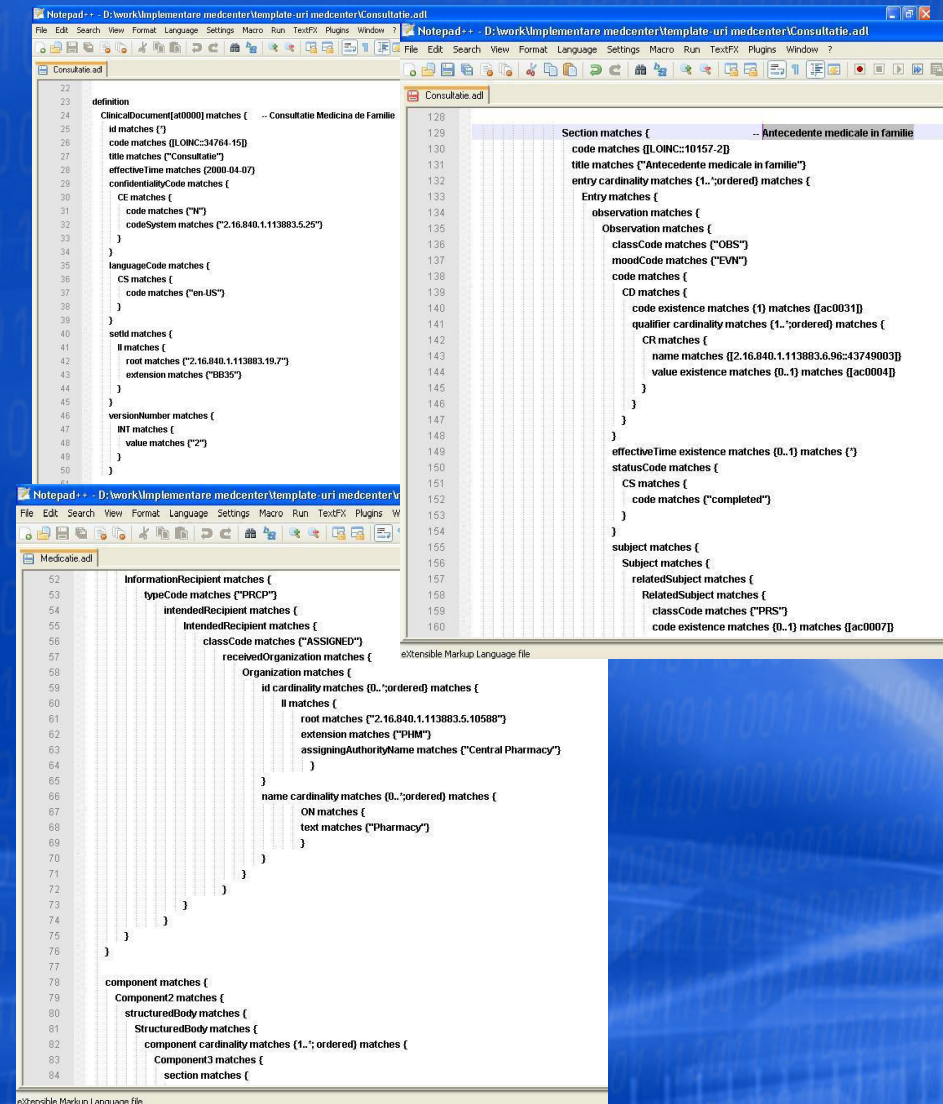
Clinical Notes are trei functionalitati de baza:

- Vizualizarea documentelor de tip CDA
- Editor de documente clinice (CDA)
- Editor de sabloane pe baza constrangerilor definite in ADL



Clinical Notes – bazat pe ADL

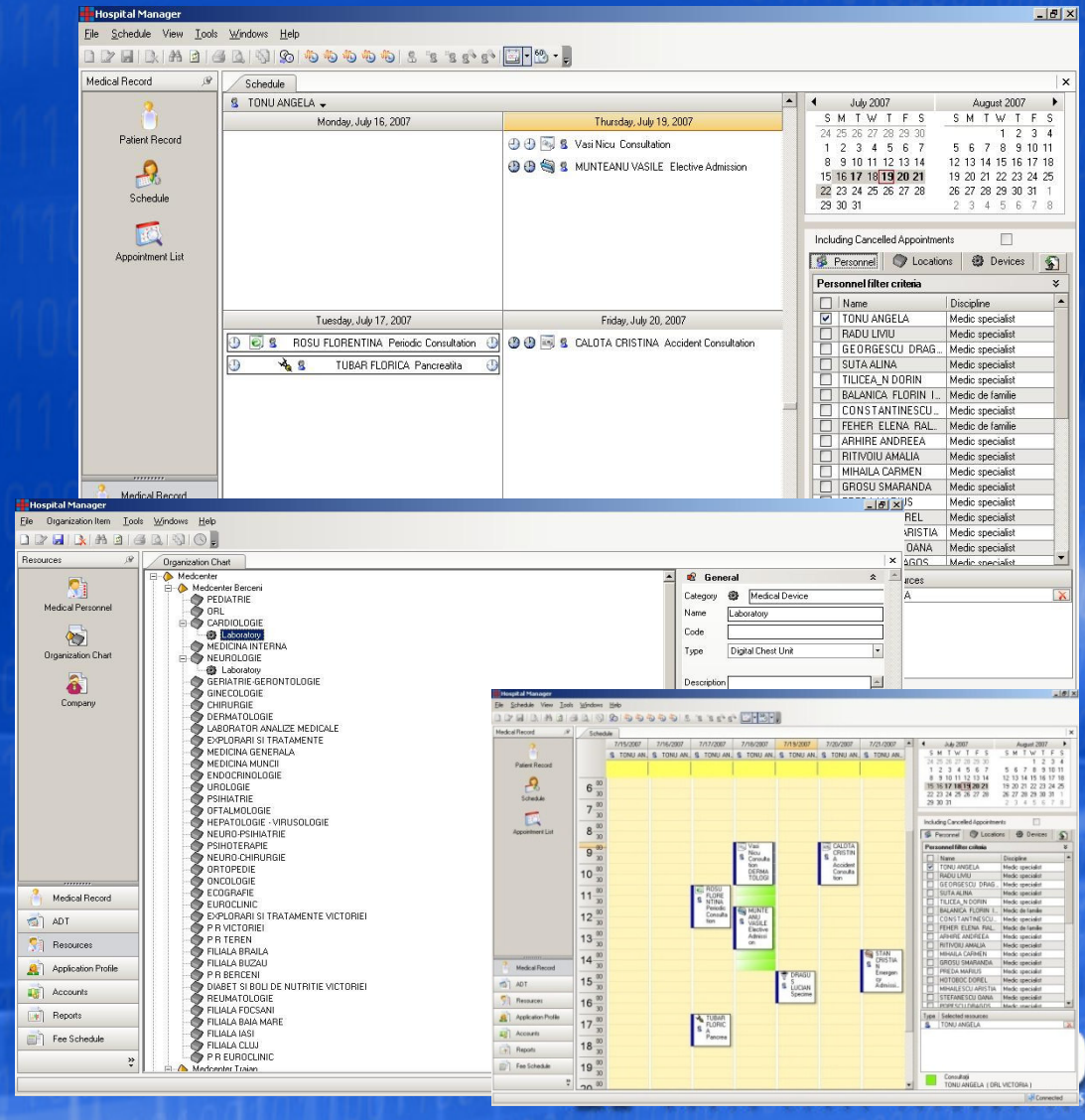
- Definirea constrangerilor in forma structurata (cADL, dADL)
- Modele de constrangere bazate pe entitati
- Constrangerile sunt de structura sau design
- Defineste referinte catre vocabulare standardizate ce se vor reflecta in CDA



Aplicatii client – HM Administrativ

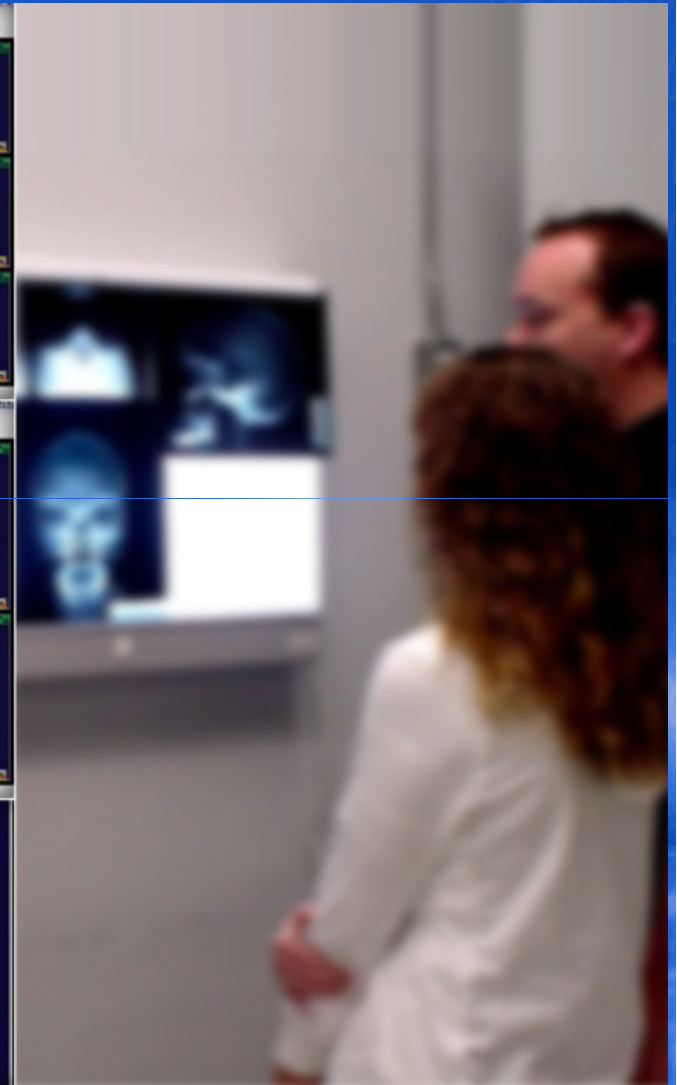
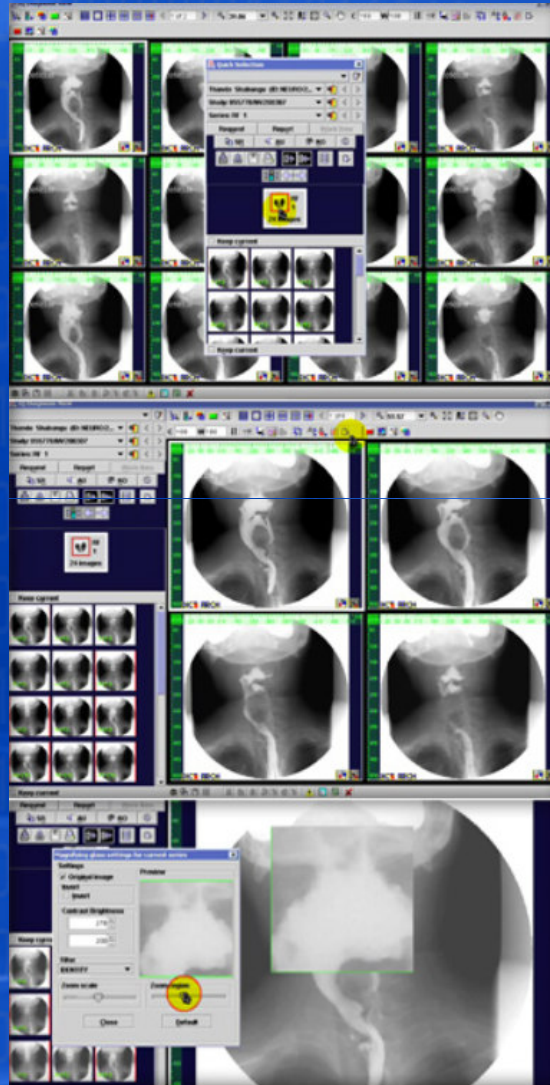
Aplicatia administrativa

- Inregistrarea pacientilor
- Programari si liste de asteptare
- Internari
- Externari
- Transferuri



Aplicatii client - IQPacs

- Usor de configurat, toate modificarile se fac din interfata pe baza drepturilor de administrator;
- Imaginile DICOM sunt salvate in formatul standard DICOM 3 (unaltered), in aceiasi maniera in care au fost generate de modalitatile implementate.
- IQPACS poate genera CD, DVD's cu imaginile in format DICOM / DICOMDIR , .jpeg imagini .jpg, slideshow-uri filme in format .mpg si informatii despre pacient in format DICOM si HTML
- Permite interogari multiple in orice moment



Aplicatii client - MediChart

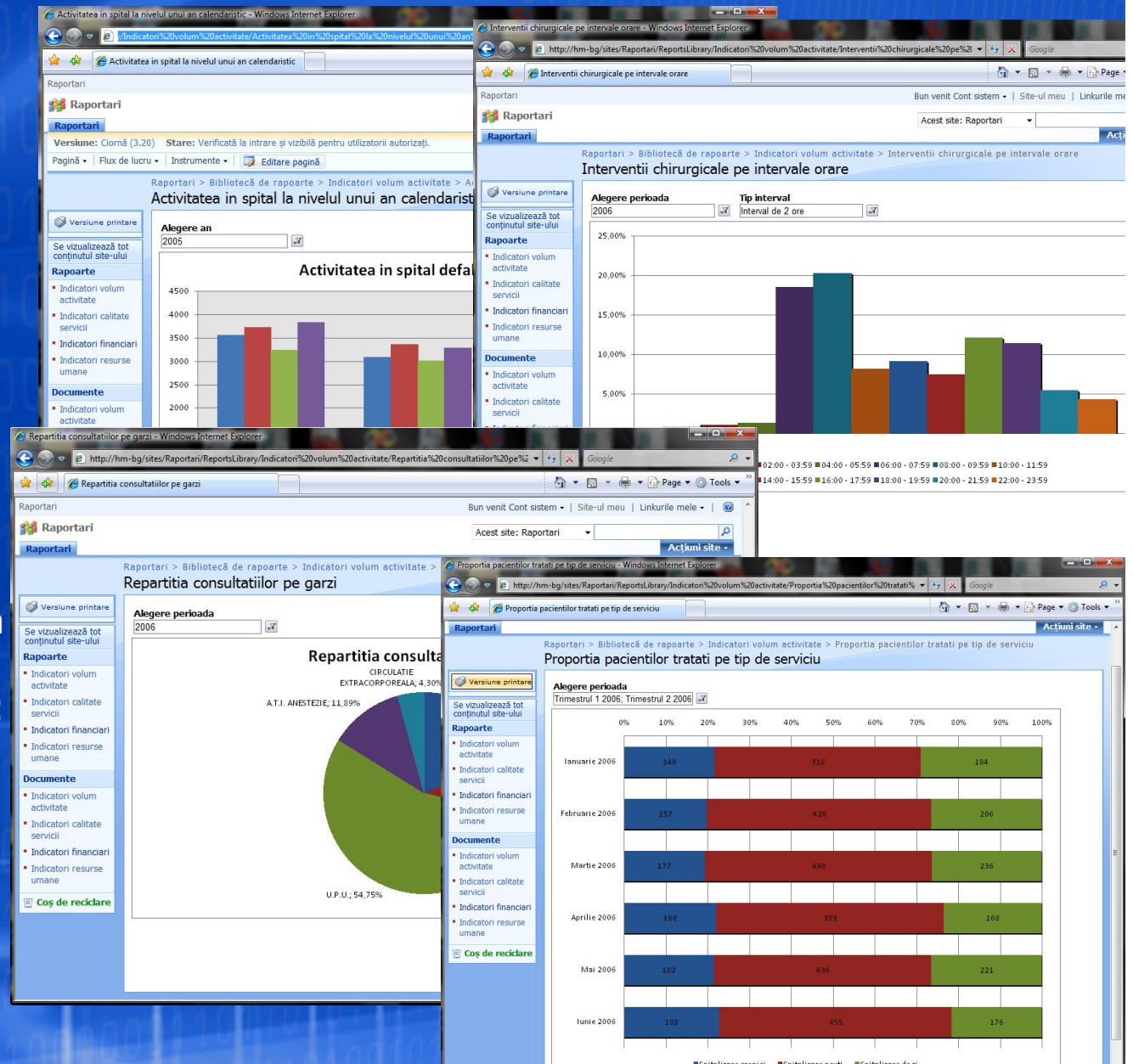
MediChart

- Aplicatie de Business intelligence
- Oferă institutiilor medicale posibilitatea de a analiza date și de a lua decizii strategice bazate pe informații exacte și în timp real

- Clinical data warehouse

Datele oferite de aplicatia de BI se impart in urmatoarele categorii:

- Date statistice
- Date sintetice și comparații între domenii diferite
- Indicatori de performanță



Verticale construite pe baza lui Hospital Manager 3.0

Competente

Solutii
verticale

Aplicatii
Software

Infrastructura

.NET Platform
J2EE Platform
...

- ✓ Medicina de familie
- ✓ Medicina de urgenta
- ✓ Obstetrica
- ✓ Patologie
- ✓ Chirurgie
- ✓ Psihiatrie
- ✓ Radiologie
- ✓ ...

✓ HM3.x

Bazata pe SOA si
Web services

- ✓ CAB
- ✓ Imhotep

WINFO WORLD
WORLD CLASS INFORMATICS

EHR Eurorec, Prorec, Q-Rec, OpenEHR,

Ocean Informatics, Certificare, Specificatii pentru

achizitii EHR, Arhetipuri, Templateuri, Terminologii,

ADL, Interoperabilitate, Import/Export, Securitate,

Confidentialitate, Inginerie biomedicala, Programe, Proiecte,

Aplicatii, SIUI, PNESS, PHR, SWAT, SCJUT

“Specializarea excesiva poate duce
pana la specializarea in nimic”

“Stratul politic este lichid”

“Hospital Manager 3.0 – Interoperabilitate
pe standarde HL7”

Intrebari

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