Transforming our Hospitals: Clinician-driven Operations Management

Alain Moutthamm

November 23rd, 2016

Commonwealth Fund National Scorecard

COUNTRY RANKINGS

Top 2*
Middle
Bottom 2*

	AUS	CAN	FRA	GER	NETH	NZ	NOR	SWE	SWIZ	UK	US
OVERALL RANKING (2013)	4	10	9	5	5	7	7	3	2	1	11
Quality Care	2	9	8	7	5	4	11	10	3	1	5
Effective Care	4	7	9	6	5	2	11	10	8	1	3
Safe Care	3	10	2	6	7	9	11	5	4	1	7
Coordinated Care	4	8	9	10	5	2	7	11	3	1	6
Patient-Centered Care	5	8	10	7	3	6	11	9	2	1	4
Access	8	9	11	2	4	7	6	4	2	1	9
Cost-Related Problem	9	5	10	4	8	6	3	1	7	1	11
Timeliness of Care	6	11	10	4	2	7	8	9	1	3	5
Efficiency	4	10	8	9	7	3	4	2	6	1	11
Equity	5	9	7	4	8	10	6	1	2	2	11
Healthy Lives	4	8	1	7	5	9	6	2	3	10	11
Health Expenditures/Capita, 2011**	$3,800	$4,522	$4,118	$4,495	$5,099	$3,182	$5,669	$3,925	$5,643	$3,405	$8,508

Notes: * Includes ties. ** Expenditures shown in $US PPP (purchasing power parity); Australian $ data are from 2010.

Source: Calculated by The Commonwealth Fund based on 2011 International Health Policy Survey of Sicker Adults; 2012 International Health Policy Survey of Primary Care Physicians; 2013 International Health Policy Survey; Commonwealth Fund *National Scorecard 2011;* World Health Organization; and Organization for Economic Cooperation and Development, *OECD Health Data, 2013* (Paris: OECD, Nov. 2013).

The extensive empirical analysis underpinning this book shows that there has been relatively little fundamental change in Canadian health-care policy over the past four decades. This intransigence – the result of the interaction of ideas, interests, and institutions – has resulted in a paradigm freeze.

Without some sort of insurmountable disruptive force, either a major shift in medical science or technology, or a catastrophic economic or political crisis, fundamental health policy reform in Canada is unlikely.
As Pogo once reminded us, "We have met the enemy, and he is us"

Paradigm Freeze: Why it is so hard to reform health-care policy in Canada
Harvey Lazar, John N. Lavis, Pierre-Gerlier Forest, and John Church
McGill-Queen's University Press, 2013

Healthcare Transformation

- ~~Government~~
- Organization
- Individuals

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Problem Statement

Value-Based Hospital:

- Patient-Centric
- End-to-End Management
- Value-Based Funding, focusing on outcomes (↑Quality and ↓Cost)

Value-Based Hospital

Hospital Transformation is a clinical transformation, and not only an administrative or IT project

Hospital Transformation

Volume-Based Hospital:

- Provider-Centric
- Silo Management
- Volume-Based Funding (Fee-for-Service)

Volume-Based Hospital

Clinical Operations Management (COM)

Value-Based Hospital:

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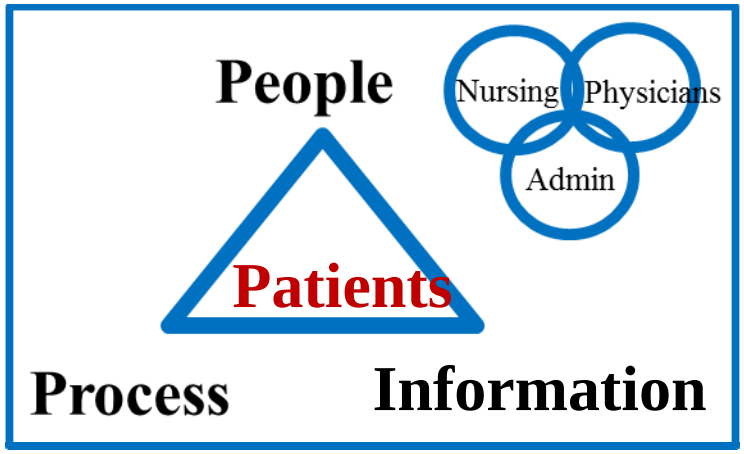
Value-Based Hospital



Hospital Transformation Based on Operations Management

Volume-Based Hospital:

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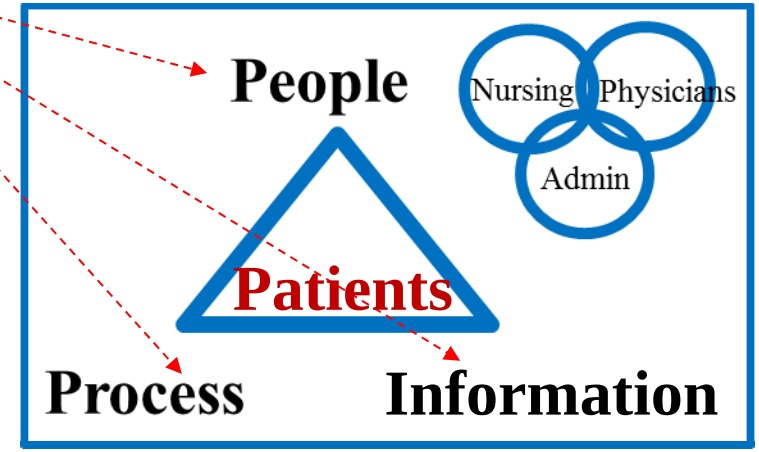
Volume-Based Hospital

Model-Based Clinical Operations Management

Value-Based Hospital

COM Models



Hospital Transformation Based on Operations Management

Volume-Based Hospital

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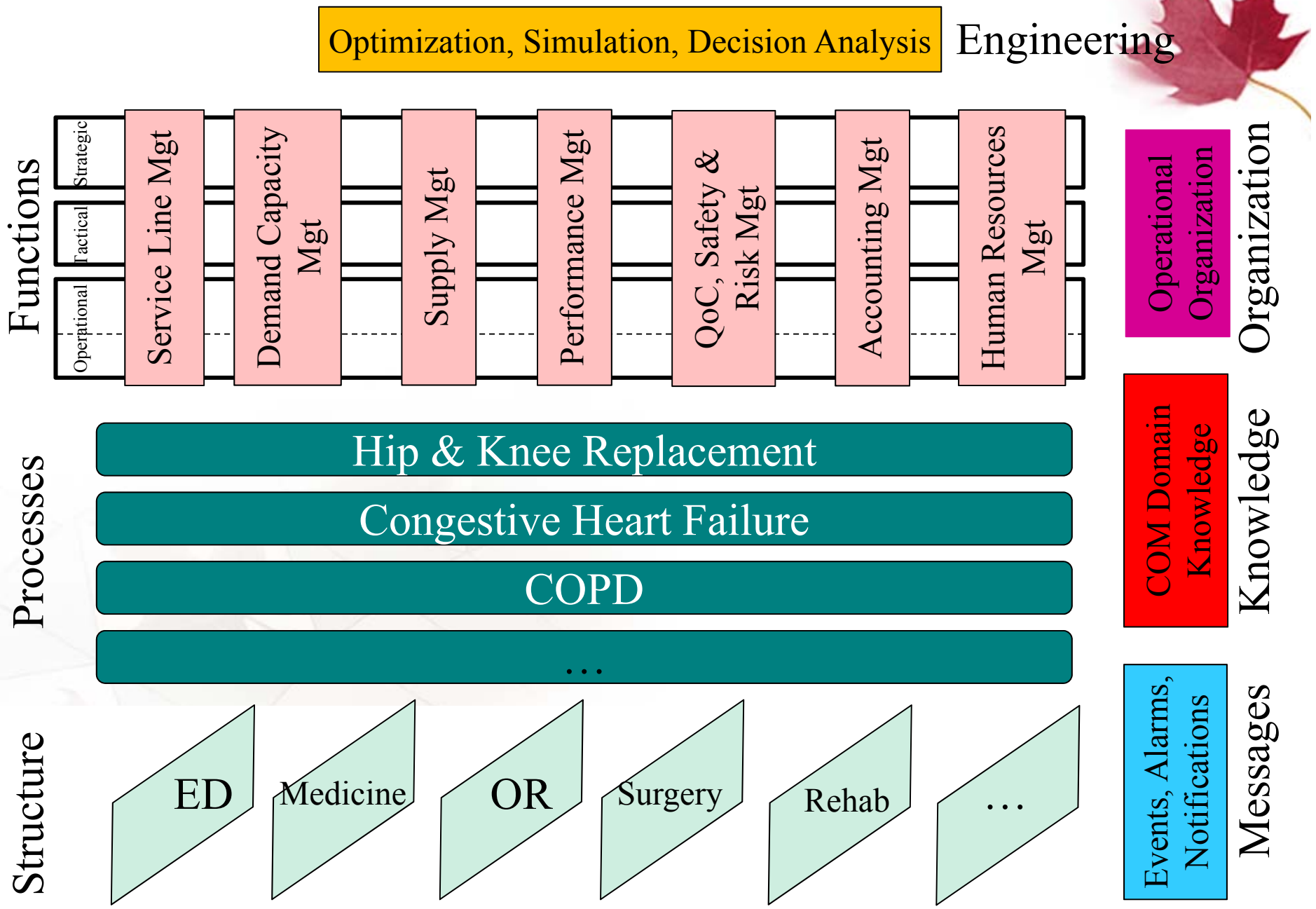
COM Models – Enterprise Architecture Diagram



COM Functions

COMF	Service Line Management	Demand Capacity Management	Performance Management	Quality of Care, Safety, and Risk Management	Supply Management	Accounting Management	Human Resources Management
Strategic (1-3 years)	Organization						
Tactical (3-6 months)	Groups						
Operational - offline (1-4 weeks)	Individuals						
Operational - online (real-time; daily)	Individuals						

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COM Functions

COMF	Service Line Management	Demand Capacity Management	Performance Management	Quality of Care, Safety, and Risk Management	Supply Management	Accounting Management	Human Resources Management
Strategic (1-3 years)	Selection of Care Pathways and QBPs based on service mix and case mix Models of Care	Service mix planning; Case mix planning; Capacity dimensioning; Workforce planning	Performance Management policies	QoC Policies; Culture of Safety; Accreditation	Supply Chain design; Materials Planning	Investment plan; Annual Budget	Organization structure; Workforce planning; Roles & responsibilities

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Tactical (3-6 months)	Planning of care processes implementing customized Care Pathways and QBP for patient groups	Master Surgery Scheduling; Shift Scheduling; Scoping Ancillary Services	Performance Management planning; Historical Performance Analysis	QoC Reviews; Risk Management; Falls prevention; Infection Control policies	Supplier selection; Tenders; Procedure Card mgt	Budget tracking; Activity Based Costing; analysis	Hiring; Training; Change mgt; LEAN deployment

Models of Care

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Operational offline (1-4 weeks)	Care Plan for individual patient; Activity plan update	Appointment scheduling; Booking; Staffing; Admission Control	Operational Performance Forecasting (operational BI)	Infection Control; High-risk medication management	Stock purchasing; Non-Stock ordering	Billing; Cash-Flow analysis; Financial Control	Staffing; Workforce Mgt; Continuous improvements

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Operational online (real-time; daily)	Care Plan update in real-time; Activity management; Process Monitoring & Control	Capacity monitoring & control; Full-Capacity protocol; Staffing-to-Census; Real-Time Patient Flow Mgt; Housekeeping & Portering	Performance Monitoring & Control; Escalation management	Adverse Event monitoring & control; Escalation management	Inventory Control; Rush ordering; Unit inventory replenishing	Overtime tracking; Support for staffing-to-census	Sick time tracking; Support for staffing-to-census; Real-time staffing

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Some COM Functions for Emergency Department

- Strategic
  - Regional coverage
  - Ambulance districting
  - Capacity dimensioning: wait rooms, treatment rooms, emergency wards, staffing
- Tactical
  - ED layout
  - Patient routing: Triage, Fast-Track, CDU, High-Acuity wards
  - Admission control/smoothing
  - Physician scheduling
  - Nursing scheduling
- Off-line Operational
  - Nursing staffing
- On-line Operational
  - Ambulance dispatching & routing
  - Treatment planning & prioritization; medical directives
  - Patient tracking
  - Staff re-scheduling
  - Real-Time Demand Capacity
  - Surge protocol

Some COM Functions for Peri-Op / Surgery

- Strategic
  - Service mix: e.g General Surgery, Orthopaedic, Urology, Ob/Gyn, Plastics, ENT
  - Case mix
  - Capacity dimensioning: e.g open 1 more OR in the Fall/Winter; create 4 additional beds in Surgery
- Tactical
  - Master Surgery Schedule for the Fall; Assignment of surgeons to OR blocks
  - OR and Surgery Nursing schedules for the Fall
  - Elective Surgery booking rules (admission control) for the Fall; Wait list management rules
- Off-line Operational
  - Elective Surgery case booking
  - Nursing staffing
- On-line Operational
  - Emergency surgery case booking
  - Elective surgery case re-booking
  - Staffing changes
  - Nurse-to-Patient assignment in Surgery
  - Bed allocation to Patient in Surgery
  - Transfer scheduling
  - Discharge Planning; Discharge roll-out
  - Real-Time Demand Capacity
  - Surge protocol

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Some COM Functions for Medicine

- Strategic
  - Service mix
  - Case mix
  - Ward partitioning: med/surg
  - Capacity dimensioning: beds, Physicians, Nurses, equipment
  - Ward layout, isolation rooms
- Tactical
  - Temporary bed capacity change for seasonality
  - Admission control: static bed reservation, dynamic bed reservation, off-servicing rules from one ward to another
  - Hospitalist scheduling
  - Nursing scheduling
- Off-line Operational
  - Elective admission booking
  - Nursing staffing
- On-line Operational
  - Emergency admission handling
  - Elective admission re-booking
  - Staffing changes
  - Nurse-to-Patient assignment
  - Bed allocation to Patient
  - Transfer scheduling
  - Discharge Planning; Discharge roll-out
  - Real-Time Demand Capacity
  - Surge protocol

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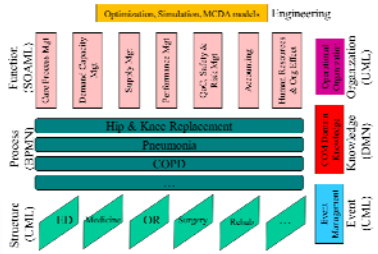
COM Models driven by Clinicians

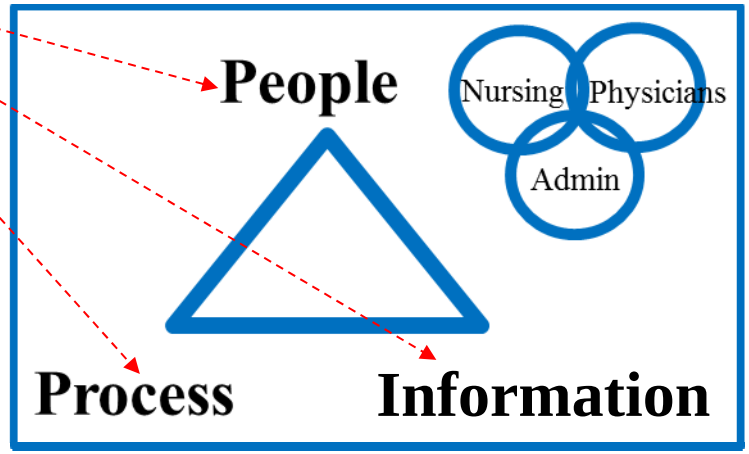
Value-Based Hospital

COM Models

Clinicians



COMP Tools



Hospital Transformation Based on Operations Management

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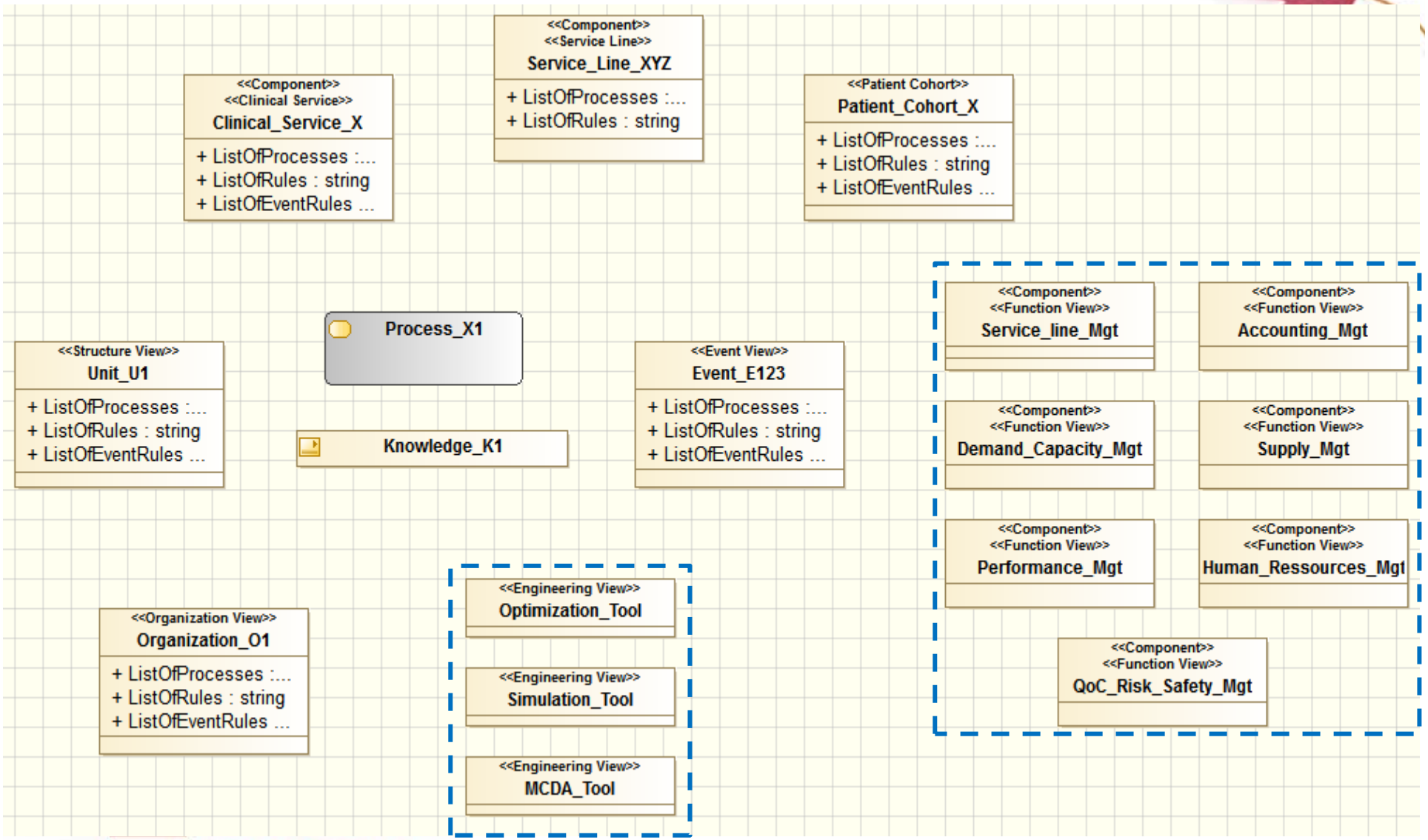
Volume-Based Hospital

COM Models – Example of Service Line Template



At this stage, COM Models can be used for…

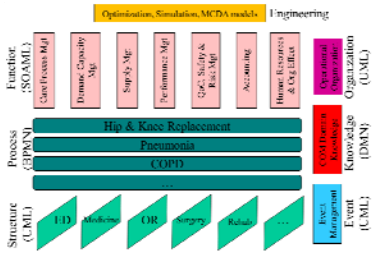
- Documenting the processes, the organization, and the information model, at the business level
- Ensuring that all business functions have been covered systematically, thoroughly, and are integrated
- Communicating the "Future" map, across the hospital

But, the COM Models can also be refined and transformed further by Health Informatics Analysts …

COM Models refined and transformed by Analysts

Value-Based Hospital

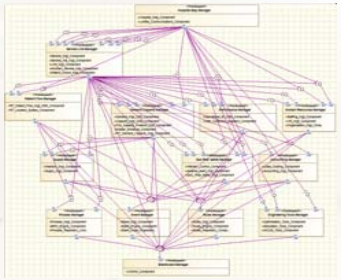
COM Models

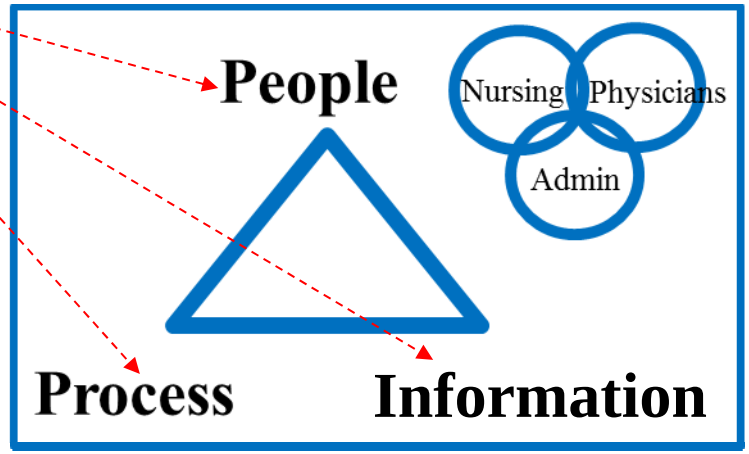


Clinicians

COMP Tools

Analysts





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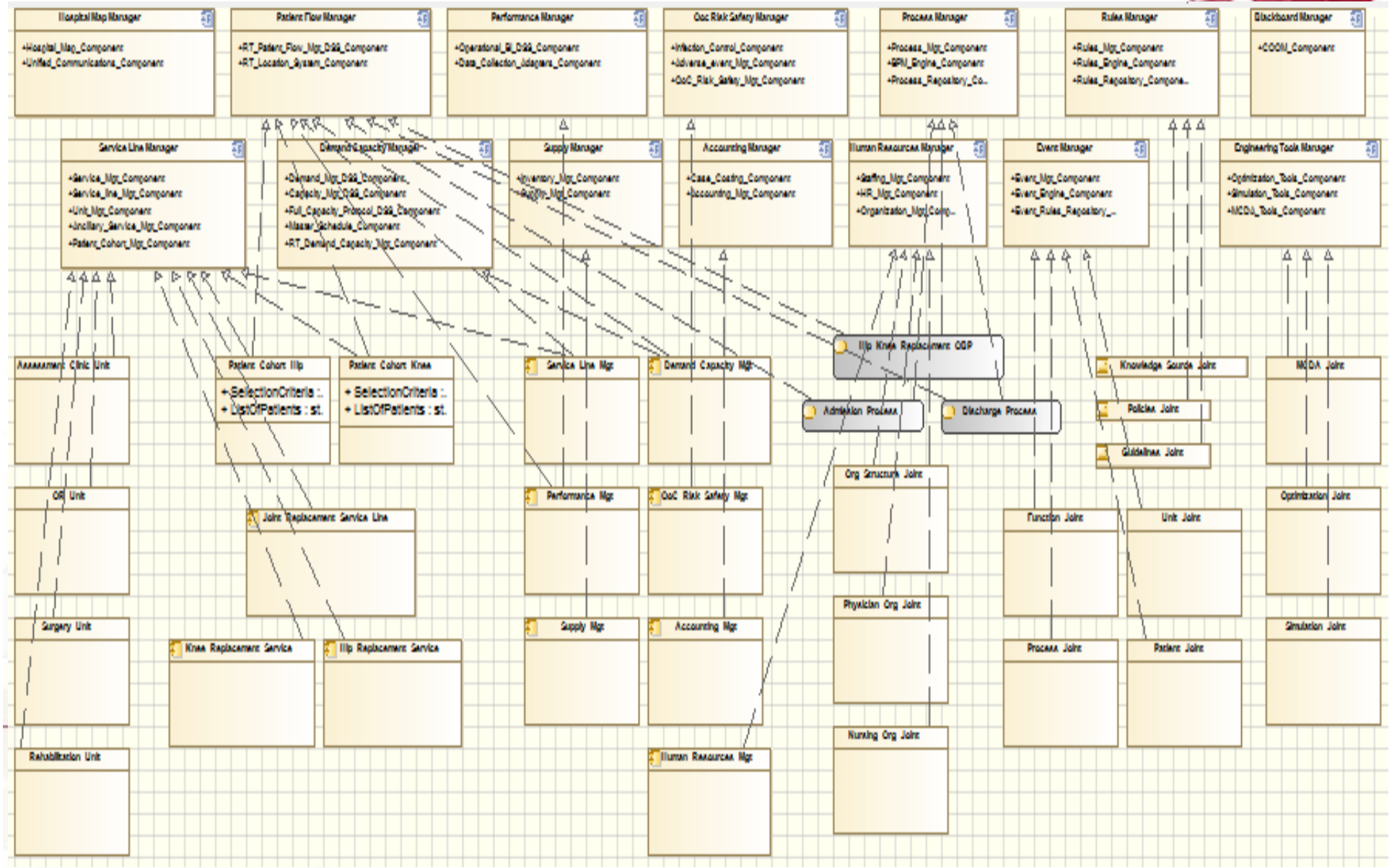
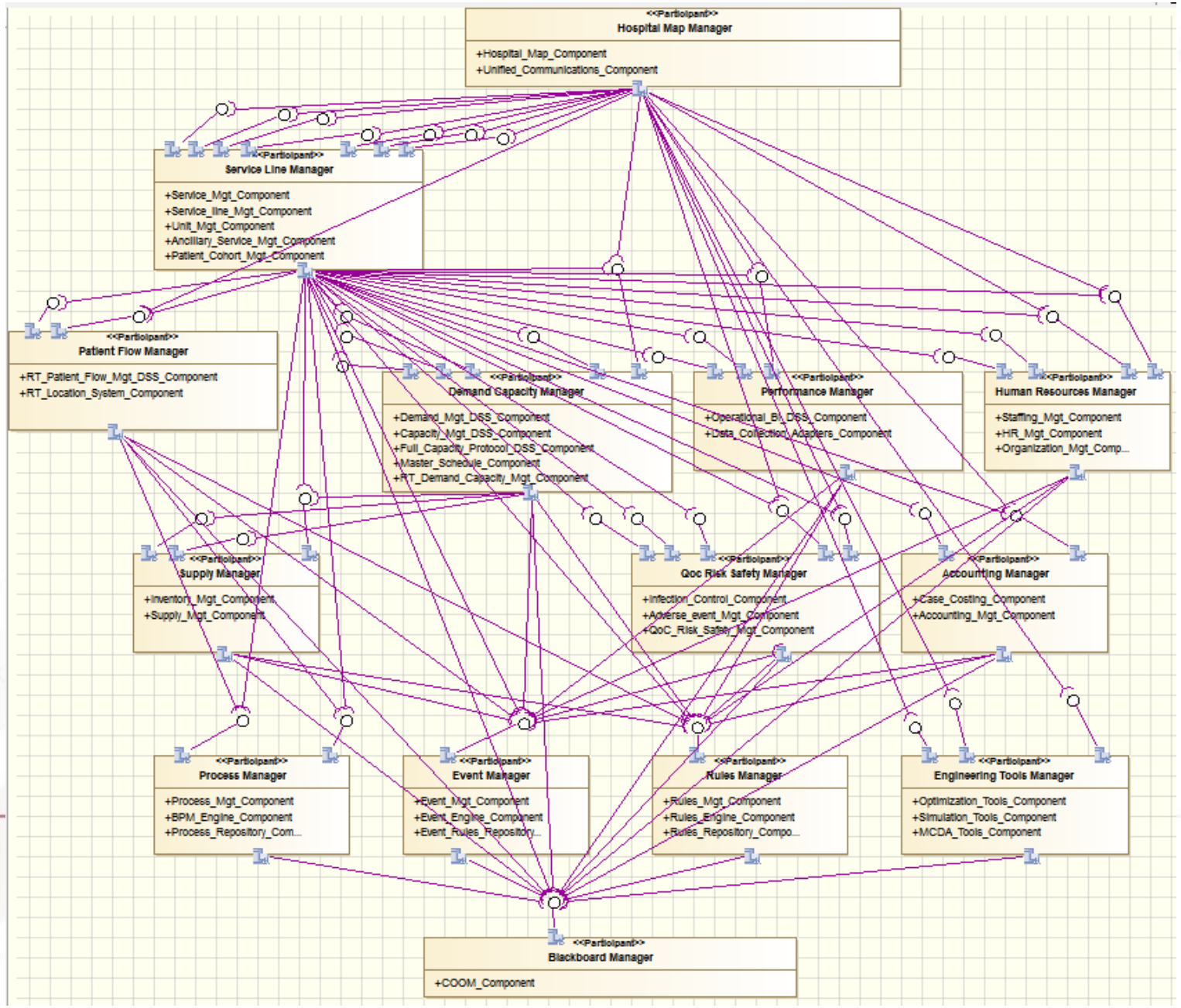
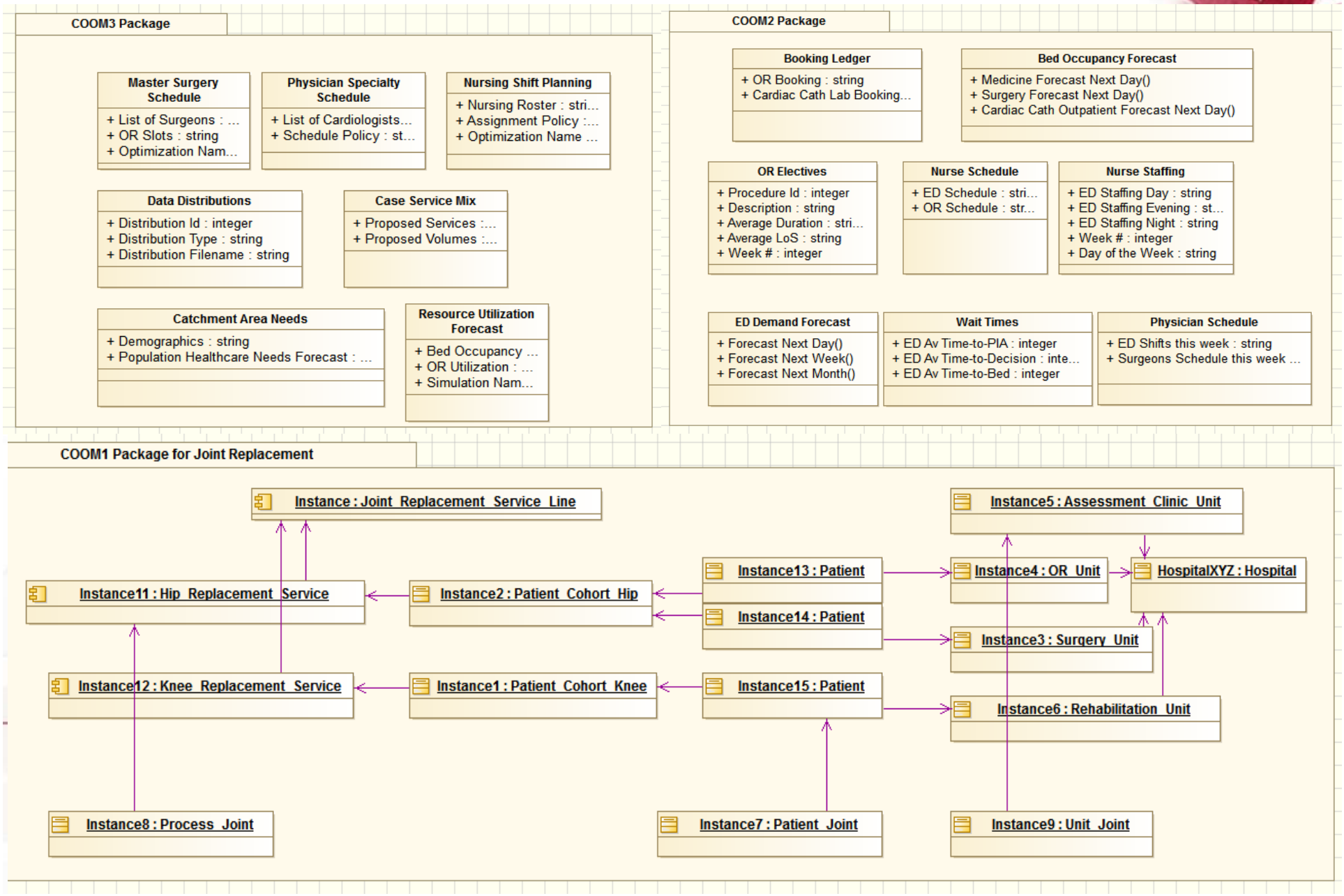
Mapping from COM Models to SOAML Participants



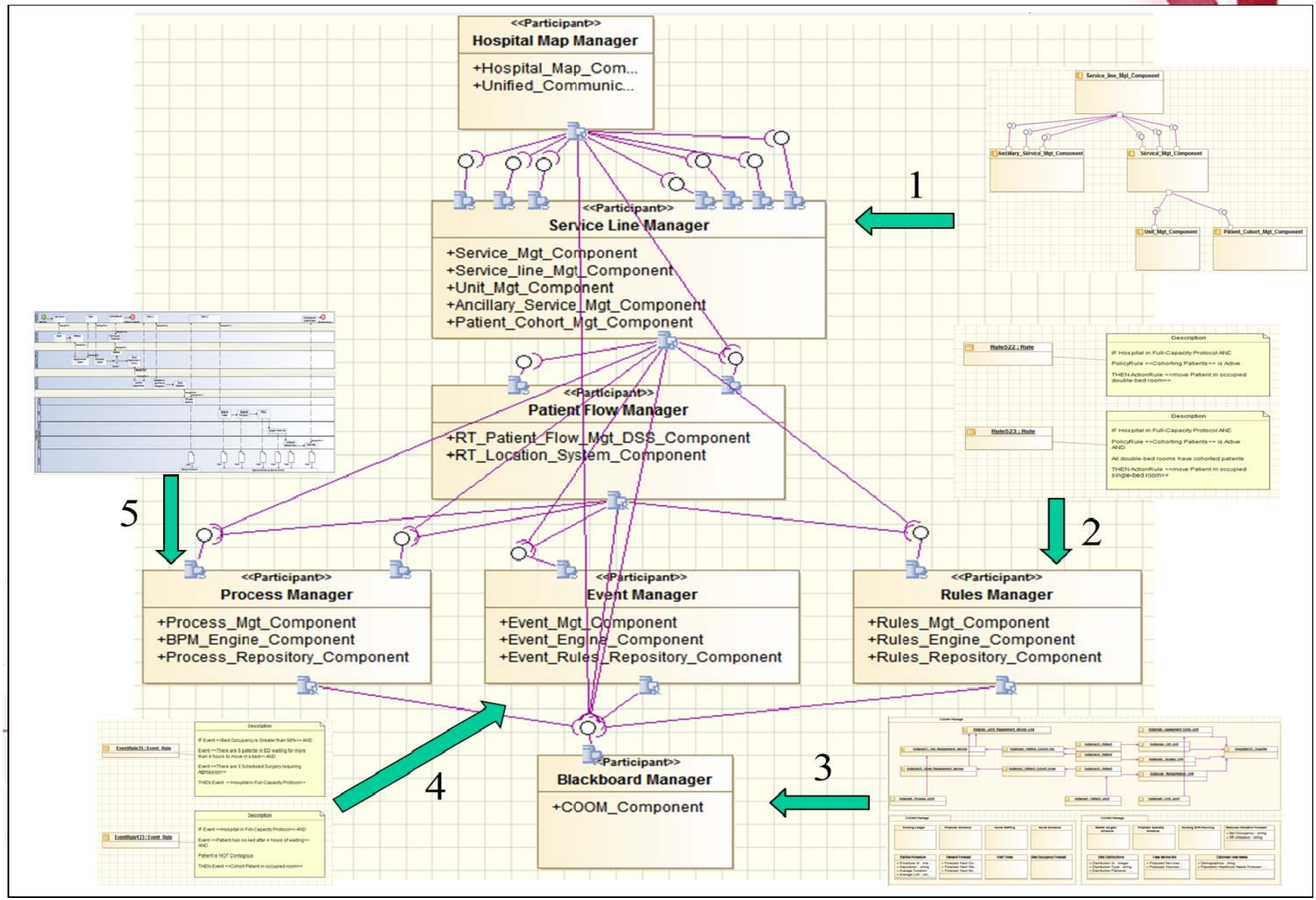
SOA Services between SOAML Participants



COOM Modeling



Model Weaving



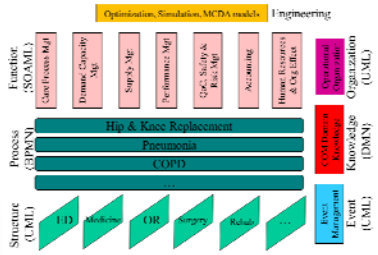
Generation of a Clinical Operations Support System (COSS)

COSS is technology enabler for COM

Value-Based Hospital

COM Models

COSS

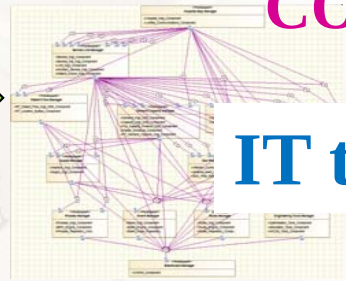


Clinicians

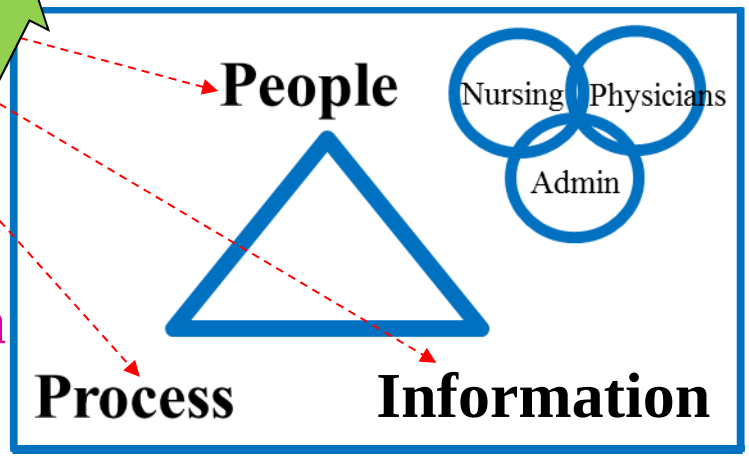
COMP Tools

Analysts

COSBench



IT team



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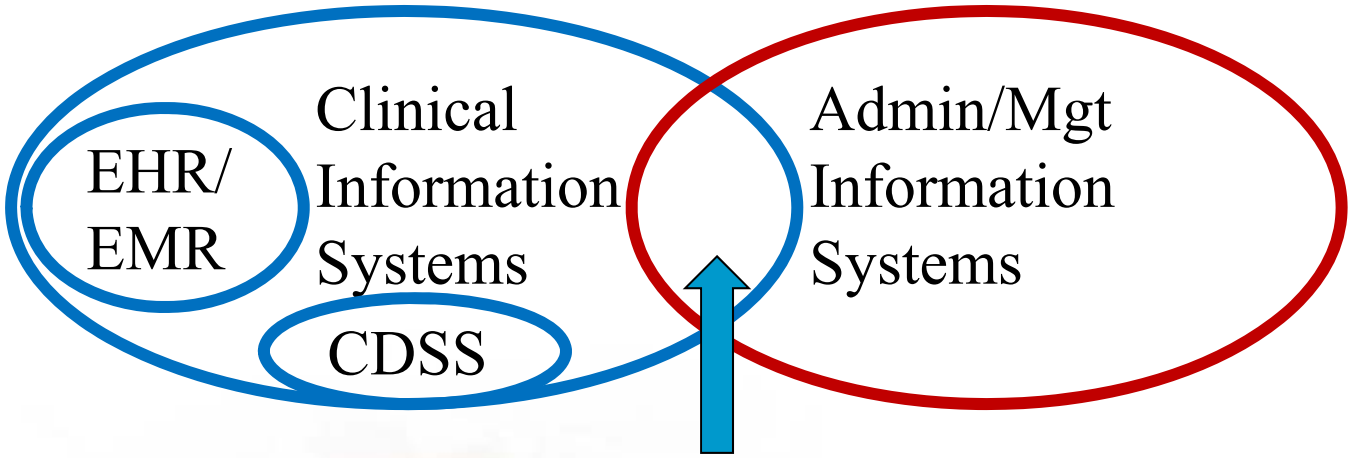
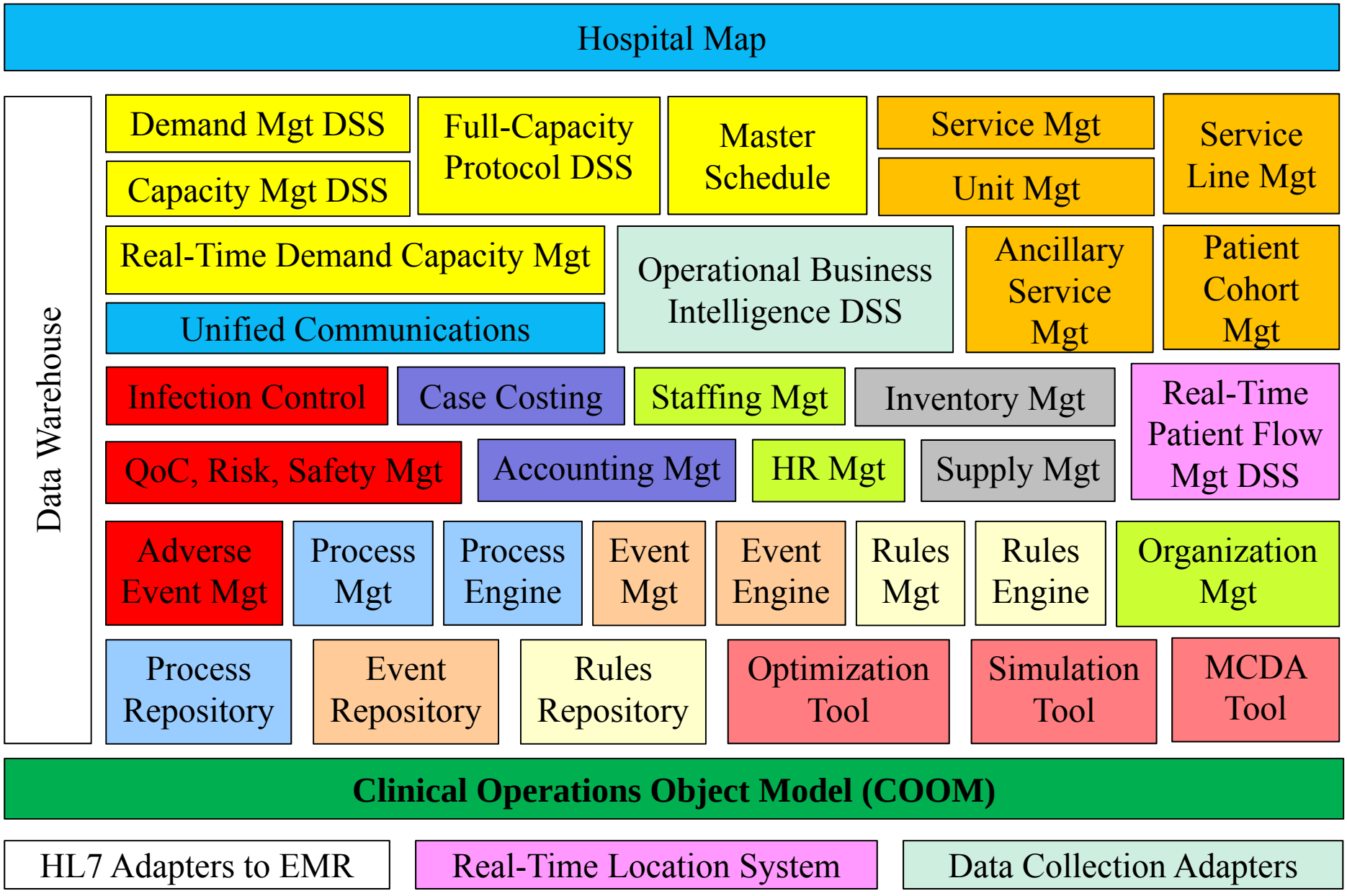
COSS Positioning



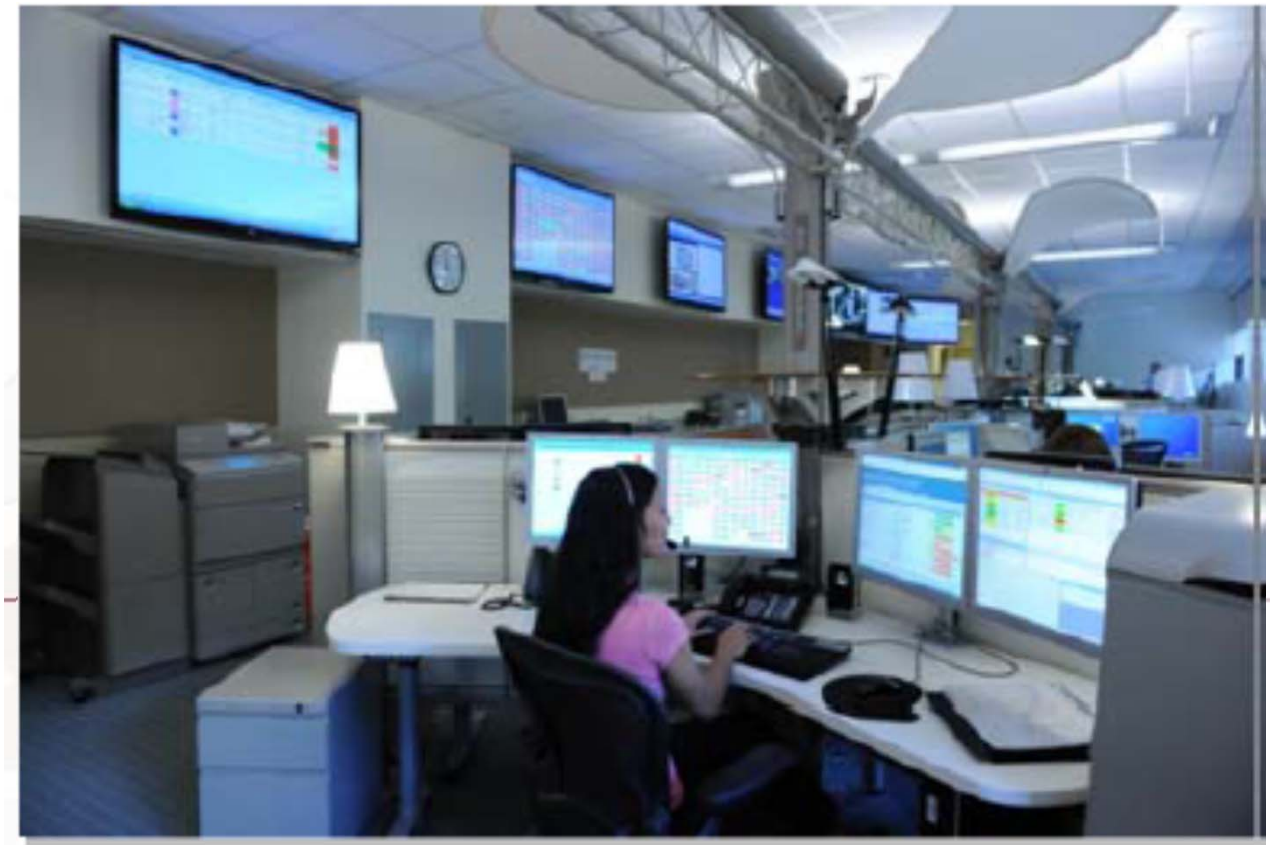
Clinical Operations
Support Systems

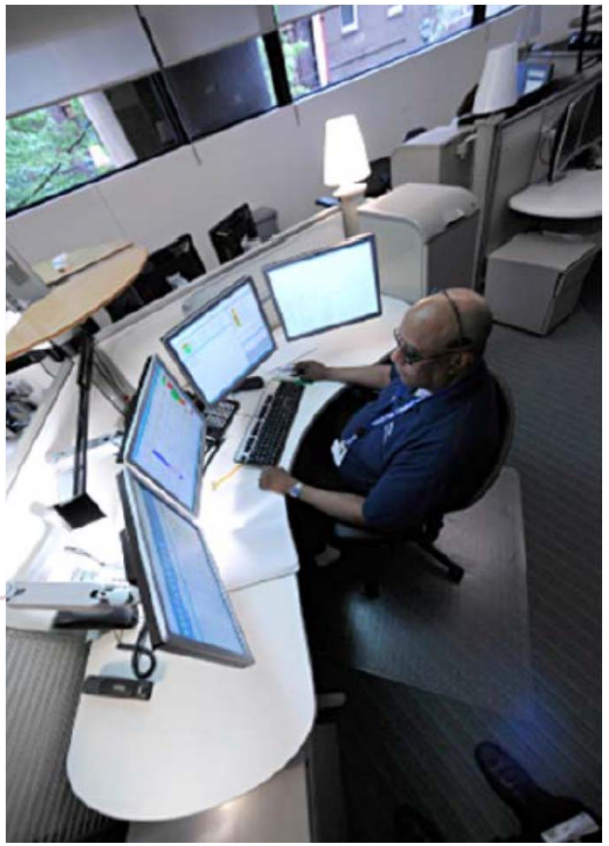
COSS Architecture



Vision of Clinical Operations Management Center

- Example of Thomas Jefferson Hospital in Philadelphia
- Patient Flow Management Center equipped with Patient Flow Management System (supporting redesigned care processes and re-organization of Patient Flow Transformation)
- Real-time Clinical Operations Management





Idea for a THTex
Hospital Transformation EcoSystem

- Hospitals, willing to participate in pilot projects
  - Creation or Reorganization of hospital units into Service Lines or Centers of Clinical Excellence
- Universities, willing to do research and teaching in COM
  - Teaching of COM to Business, Medicine, Health Sciences students
  - Research in Advanced COM
- Non-Profit StartUps, willing to develop Open Source software
  - New business model for StartUps, for which there is a critical need in universal, public healthcare systems
- Provincial, Federal agencies, willing to fund Ecosystem
  - Crowd-funding
  - Ontario Chief Health Innovation Office, OCE, Champlain LHIN
  - CIHR, DND
  - US AHRQ, NIH

Key Success Factors for Ecosystem

- Physician Engagement
  - “Unless Physicians see ourselves as part of the system, we will always wait for someone else to fix it”. UofT Faculty of Medicine magazine: http://uoftmedmagazine.utoronto.ca/2017/winter/
- Agile approach to bring innovations to patient bedside
  - Pragmatic Clinical Trial
  - Intrapreneuring
- …

Recap…

- Hospital Transformation is primarily a Clinical Transformation
- One way to achieve it is with Clinical Operations Management (People, Information, Process)
- Clinical Operations Management can be based on COM Models
- COM Models could be driven by Clinicians (with support from Health Informatics Analysts)
- COM Models lead to the generation of a Clinical Operations Support System, customized for the specific needs of the hospital in terms of processes, organization, and information
- COSS supports a real-time integrated management of the hospital operations. COSS complements and communicates with the hospital Electronic Health Record system; it does not replace it.
- An Ecosystem could be the incubator for such Hospital Transformation

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Thank you!

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Now Q&A and Panel