Improving Healthcare Processes and Quality of Care by leveraging BPM

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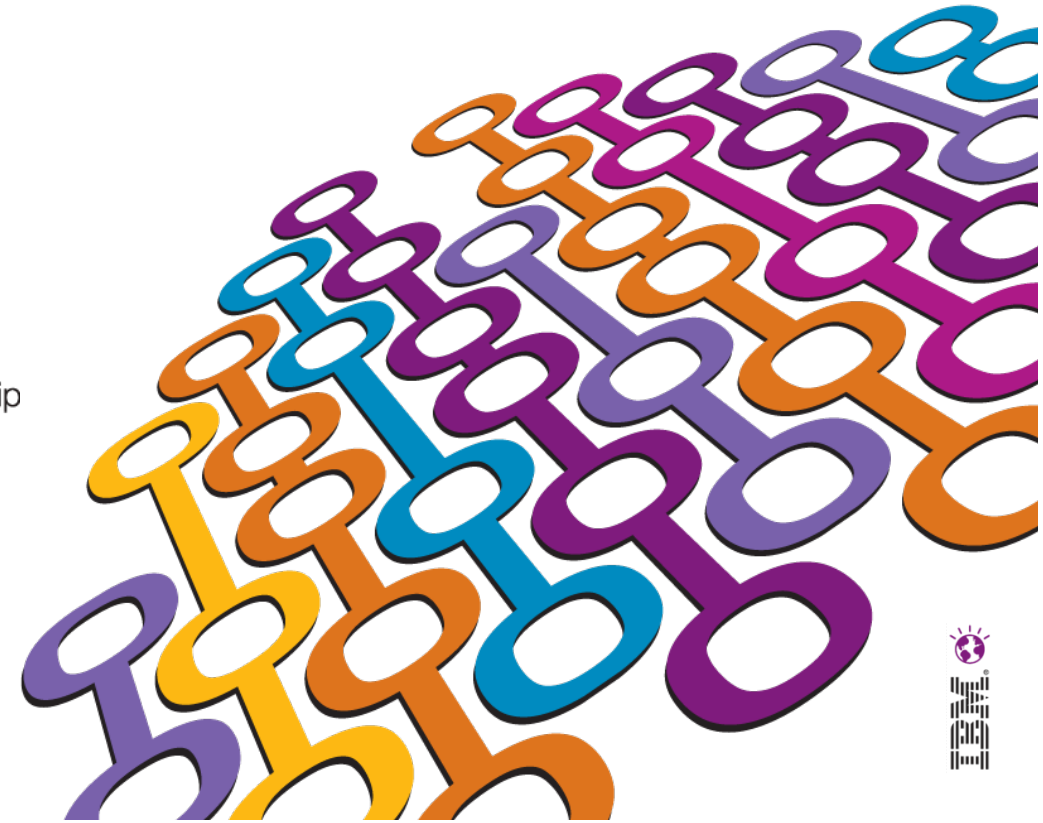

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Building smarter healthcare processes for improved patient care and safety:

The Ottawa Hospital Experience

Compassionate People. World-Class Care. Des gens de compassion. Des soins de calibre mondial.

Agenda

- Healthcare at The Ottawa Hospital
- Managing Chaos?!
- Care Process Management Approach
- Care Process Management Capabilities
- Critical Success Factors

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The Ottawa Hospital

- Three Campuses
- $1.2 B Operating Budget
- 1100 Inpatient Beds
- 12,000 Employees
- 1,250 Physicians
- 47,000 Admissions/Year
- 60,000 Surgical Cases/Year
- 150,000 ED Visits/Year
- Average Occupancy ~ 104%
- Largest Teaching Hospital in Ontario, Canada

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Our Vision

" To provide each patient with the world-class care, exceptional service and compassion that we would want for our loved ones "

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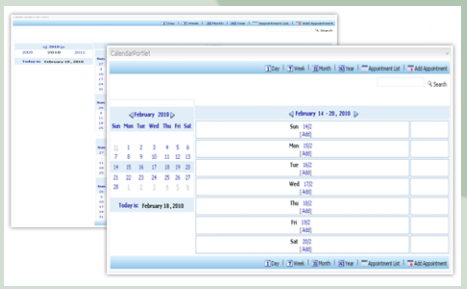
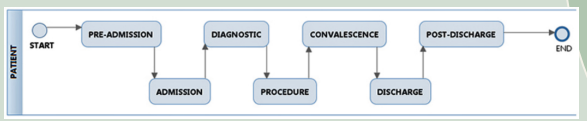
A Hospital Can Be Characterized As The Aggregation of…

Patient Care





Patient Flow &
Resource Management

Hotel Management

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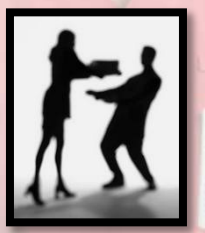
The Challenge

- Advances in medical knowledge, techniques, pharmacology, etc have led to
  - Increasingly complex patients
  - Expanding care teams
  - The need to apply technology to bring order to chaos
- The largest single cost in a hospital is people
  - People are spending upwards of 70-75 of their time searching for
    - People
    - State of Work
    - Information
      - Timing
      - Filtering out the right / pertinent information

    … Rather than activities directly caring for patients
  - Time is lost waiting for:
    - Consults from other physicians and allied health clinicians
    - Patients to return from procedures, tests, therapy sessions
    - Diagnostics results to be returns and interpreted
    - The care team to have an opportunity to collaborate (rounds)
  - Forms and policies have been the typical tool to address complexity and process control

Process and Mobility Challenges in Healthcare

- Limited Visibility to Patient Information
- Open Loop Communication
- Barriers to Collaboration
- Unmanaged Variability of Processes
- Un-measurable Performance. Unknown Results.



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Care Process Management

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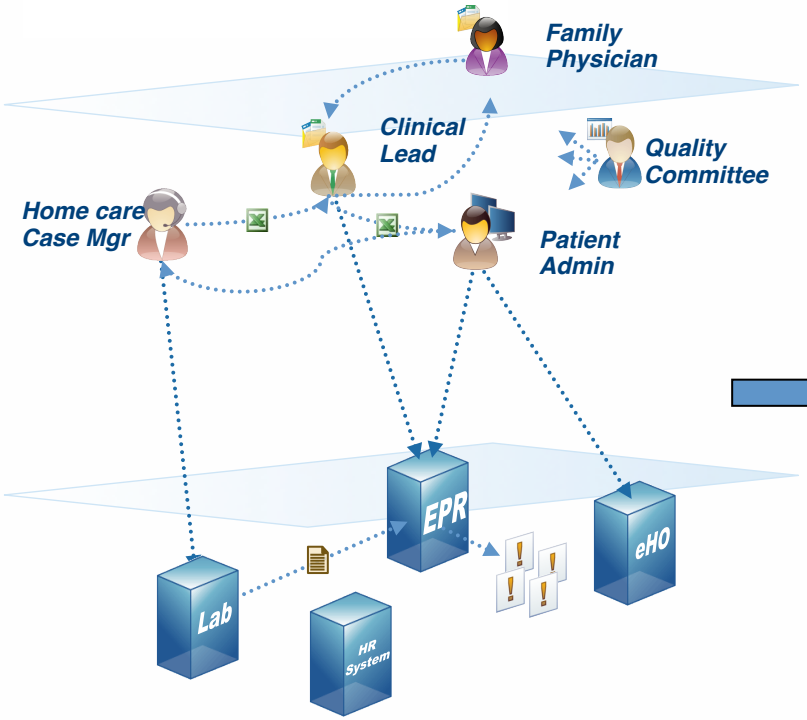
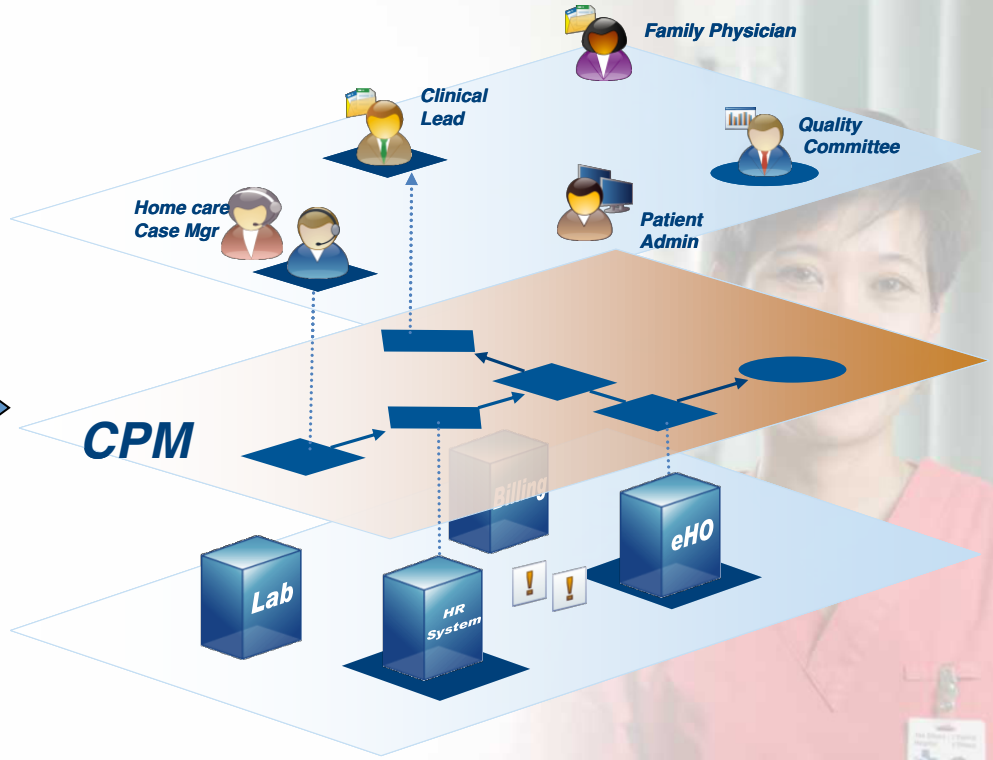
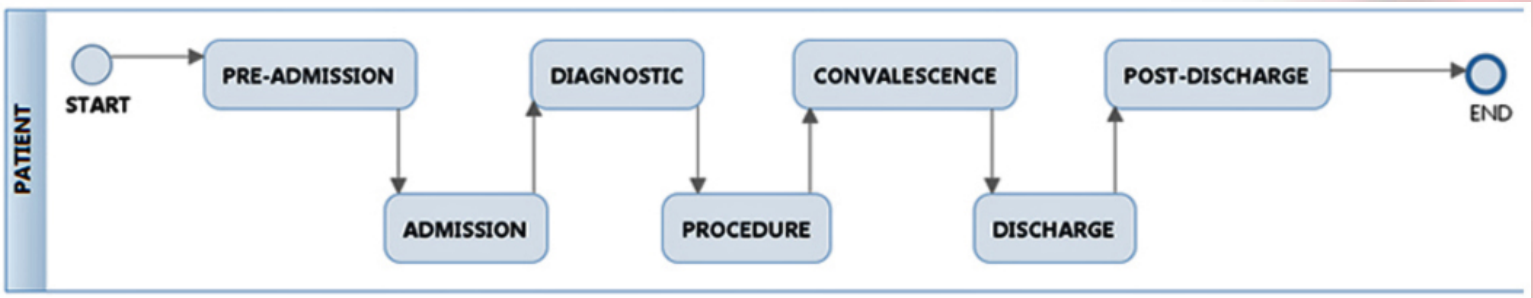
Where does CPM take us?





CURRENT STATE

FUTURE STATE



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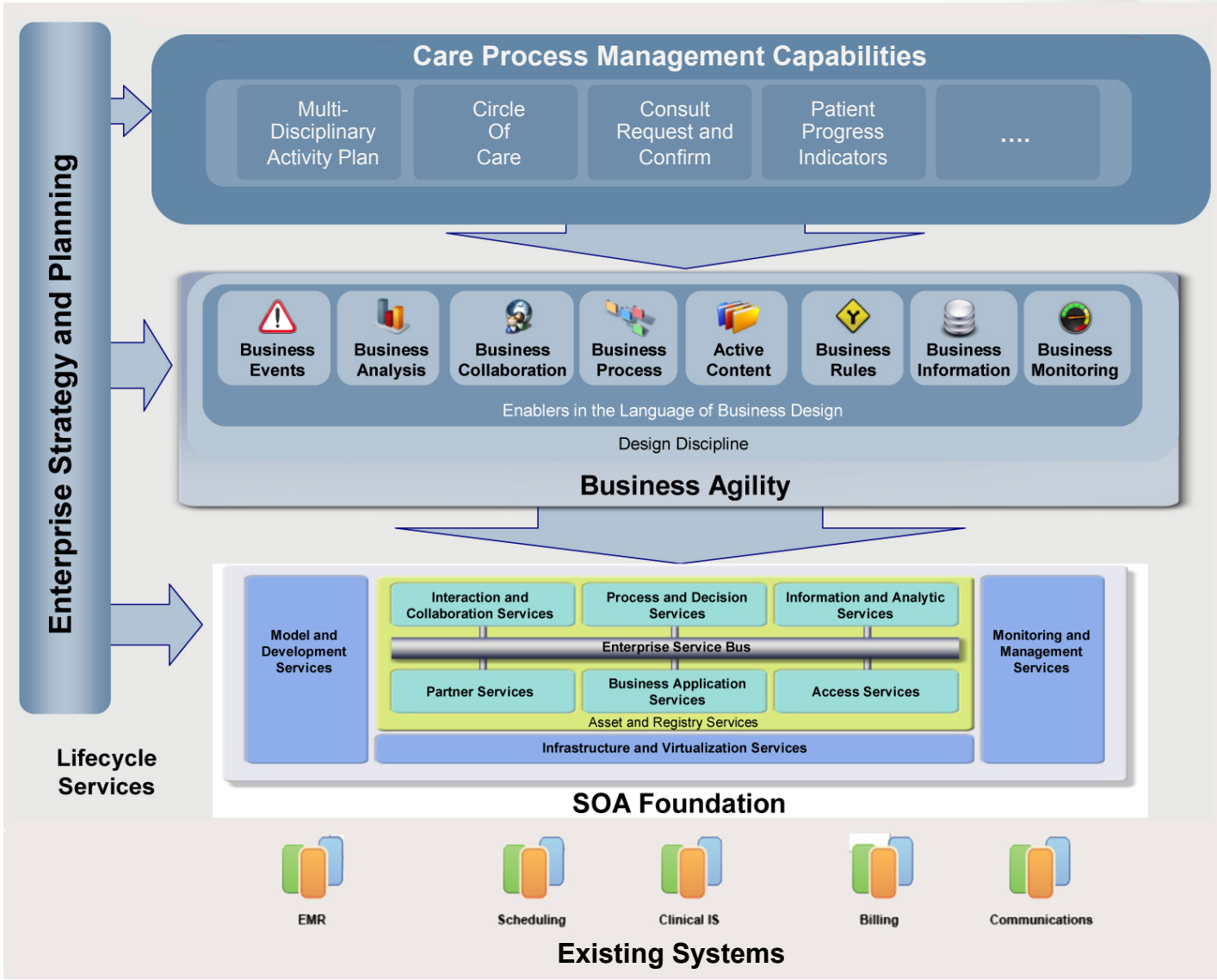
Care Process Management Platform



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Use Case Solutions Built / Customized from Core CPM Platform Capabilities

Nurse

Physician

Allied Health

Care Process Management (CPM) Platform

Multi-Disciplinary Activity Plan (MDAP)		Circle of Care	Closed Loop Communication	Collaboration	Evidence Based Medicine
MDAP Creation	Alerts / Notifications for Changes / Updates	Identification of Members of Circle of Care	Page Confirmation / Escalation / Cancellation	View Patient Care Progress	Historical Log of MDAP and Activity Updates
Patient Care Activity Tracking	Patient Details	View Profiles & Preferences of Circle of Care Members	View Activity Assignment & Initiation	Contact Members of the Circle of Care	View Patient Care Performance Measures
Consult Request & Response	Care Plan Administration	View Schedule & Availability of Circle of Care Members	Alerts / Indicators	Status Comments	Reporting
DDD Calculation	User Work Lists	Contact Members of the Circle of Care	Customized Push Notification	Discharge Checklist	Simulation

EMR System | Scheduling | Order Tracking | Billing | …

Multi-Disciplinary Activity Plan (MDAP)

- High Level Activity Tracking
  - Basic Activity content includes:
    - Activity Description (Service / Goal oriented)
    - Owner (Service and Individual)
    - Progress and Target/Actual Completion Status
    - Sticky-Notes for Collaboration / Communication
  - Examples of Activities include:
    - Medical Treatment
    - Consults with Physicians, Clinicians and
    - Allied Health
    - Discharge Logistics
  - Identification of Circle of Care through activity association

- Practitioner Work Lists
  - Patient lists help team prioritize work and balance workload
  - Team lists support backup coverage
- Vehicle for dynamic collaboration
- Alerts for proactive notification of key status changes / updates
  - Helps eliminate delays is plan alterations
  - Reduces time spent chasing people / searching for information
- Separation of Medically Ready for Discharge vs. Ready for Discharge

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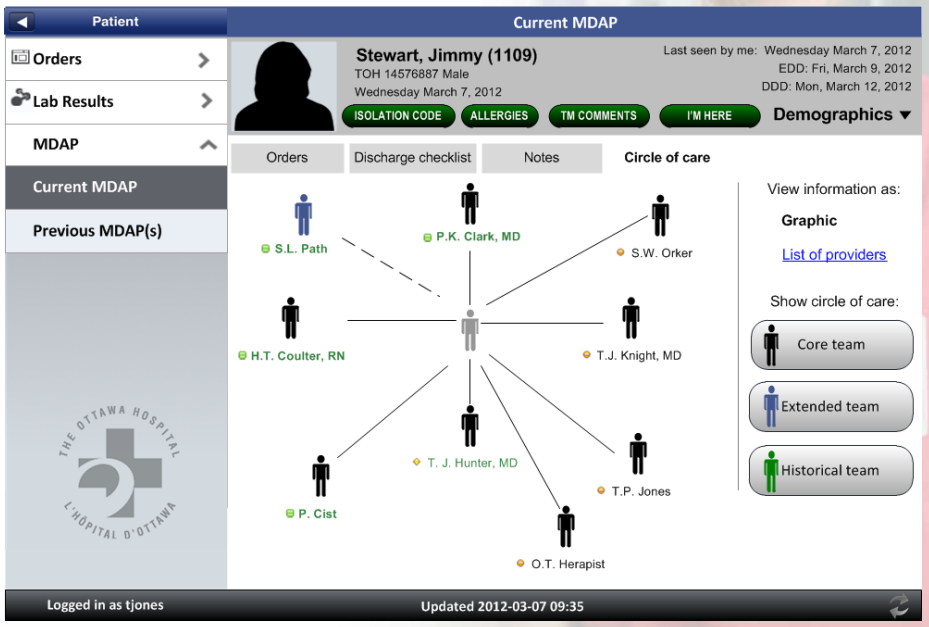
Circle of Care

- Identification of Doctors, Nurses and Clinicians involved in a patient's care
  - Reduces time spent "looking for the right person"
  - Initially populated via involvement in CPM MDAP
- Ability to "contact" circle members based on available / preferred technology
  - Contact profiles, schedules and preferences select the proper communication channel
    - System recognizes individual / channel availability and automatically selects alternatives as needed
    - Integration with scheduling system and backup rules (when available) allows system to automatically identify the best-available contact when immediate communication is required
  - Channels of communication, delegation / coverage rules can expand through time



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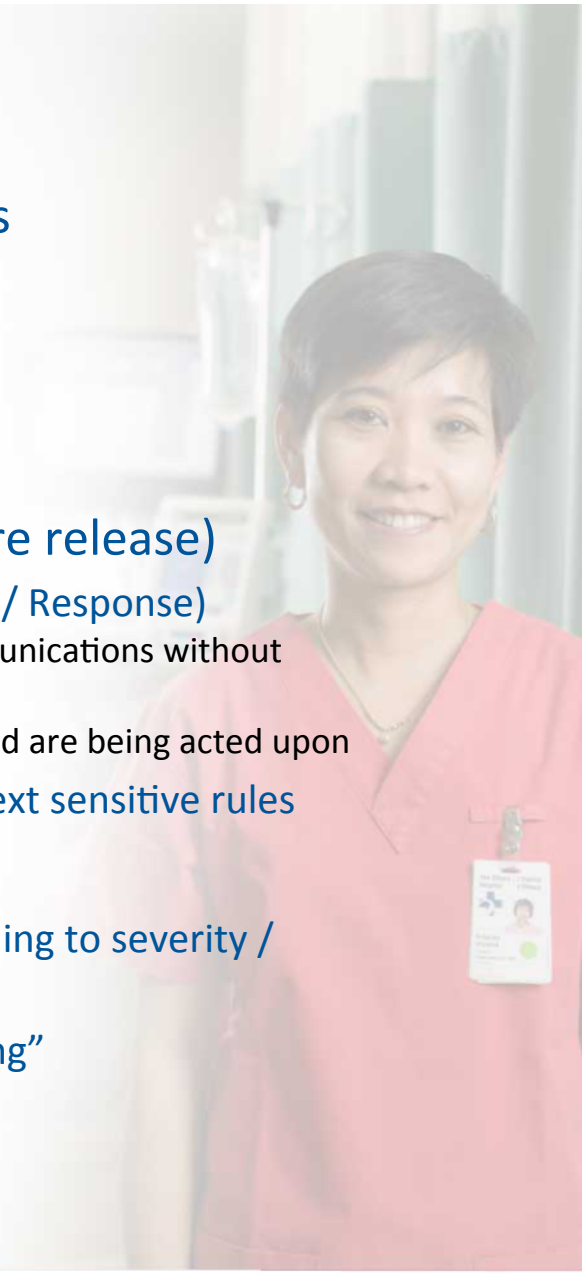
Closed Loop Communications

- Activity assignment and initiation visible to all parties
  - Activity record confirms scheduling
  - Owner confirms assignment
  - Progress confirms Activity has been started
  - End date confirms Activity completion
- Page confirmations / escalations / cancellation (future release)
  - Structured bi-directional will expand through time (e.g. Page / Response)
    - Requires that client technology support templated 2-way communications without significant customization
    - CPM MDAP can provide indicators that requests are received and are being acted upon
  - Escalations build on bi-directional communications and context sensitive rules
- Rule-based alerts for push notifications
  - Helps ensure practitioners get the proper information according to severity / urgency factors
  - Rule-based management of alerts eliminates “Death by Paging”
  - Alert capabilities will expand through time

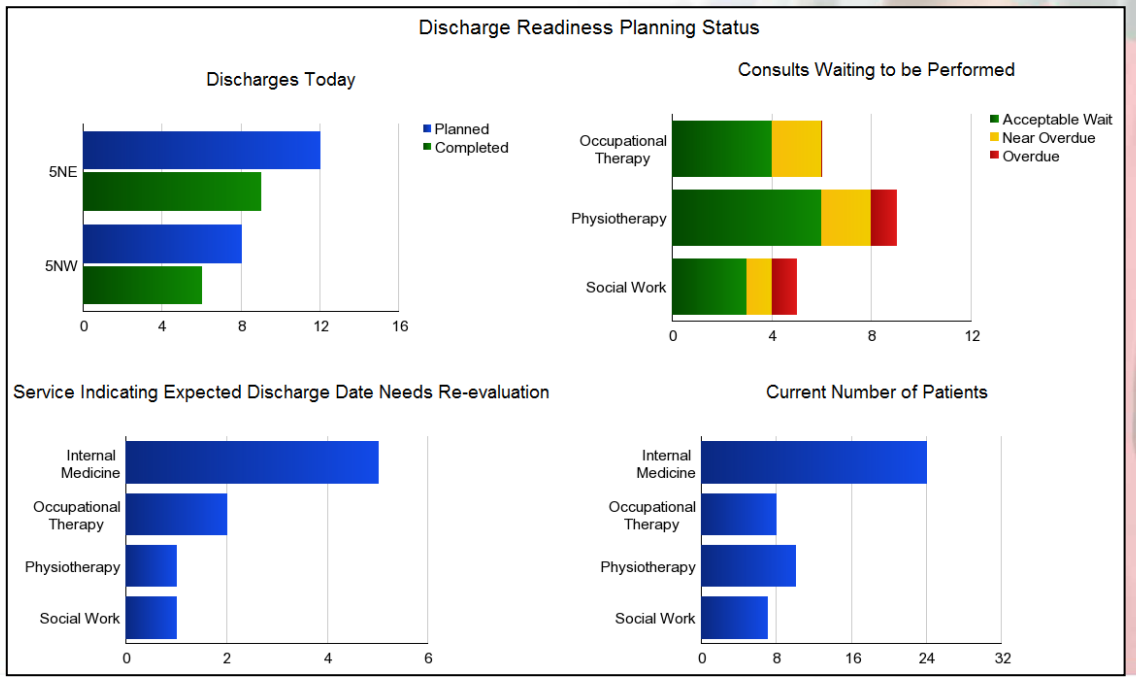


Collaboration

- Activity based “sticky notes” to enhance team communication
  - Inhibitors to Activity Completion
  - Team – discipline based sharing
  - Private “Shirt Pocket” notes – for owner only
  - All – visible to entire Circle of Care
- Team Visibility to Patient Progress
  - Team members are responsible for status of their activities
  - All team members see progress of individual activities
  - Status indicators draw attention to critical items
    - May be linked to push-notification facilities
    - May be able to provide individual users “read/unread” status for whole record
  - Activity status drives collective Forecast Date of Discharge
    - “Medically Ready for Discharge” estimated date maintained by the Attending Physician (Most Responsible Physician)
    - “Actual Discharge” estimated date maintained by designated member of the clinical staff
  - Ability to manage activity dependencies
  - Ability to view history of CPM MDAP interactions / updates

Evidence Based Management

- Real-time view of current performance, patient loads, service queues, etc.
- Historical log of CPM MDAP and Activity updates maintained for reference and analytics
- Process data collected will provide the ability to:
  - Look back at activities, timelines, personnel involvement from patient cases after discharge
  - Support analytics to develop insights into process bottlenecks, points of variability and other factors that represent opportunities to improve patient flow and patient safety.



Q: How do you boil the ocean?

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Insert Medical Records Pilot Slides Here

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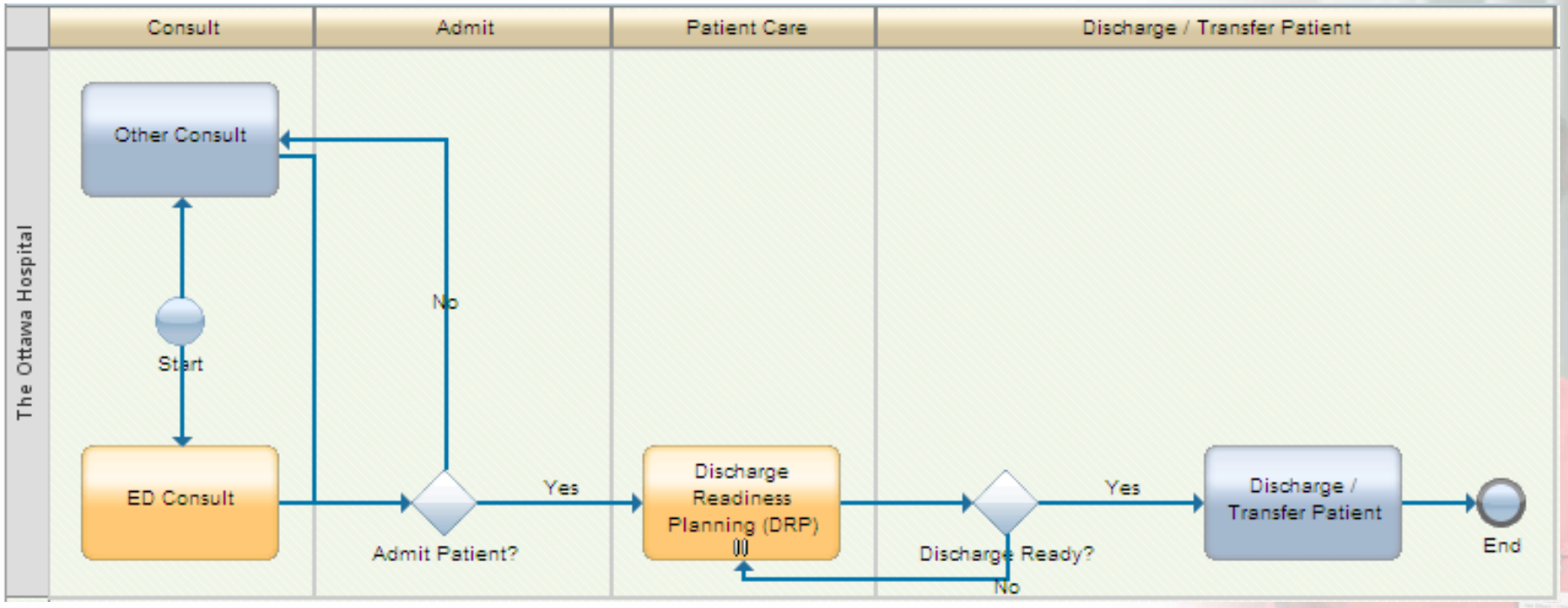
Phase 1 Workflow Model



Phase 1 Primary Use Cases:

1. ED Consult: Patient entry to ED through decision to admit to the Medicine Service
2. Discharge Readiness Planning: Admission to Medicine Service until discharge from the hospital

Both Use Cases demonstrate these Business Requirements/Capabilities:

1. Multi-Disciplinary Activity Plan (MDAP)
2. Circle of Care
3. Closed Loop Communication
4. Collaboration
5. Evidence Based Management

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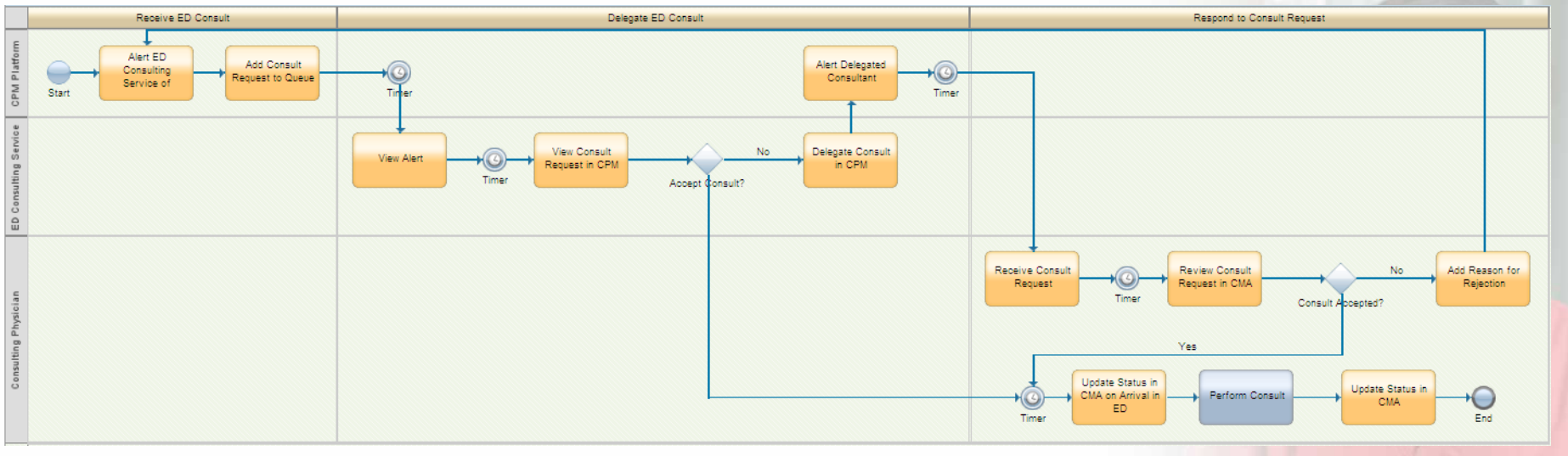
(Emergency Department) Consult Request Process Flow



Process Steps:

1. ED Consulting Service alerted of request for consult
2. Consult request is added to the team consult queue
3. On Call Consulting Physician views alert then details of the request for consult
4. On Call Consulting Physician can accept or delegate the request
5. If delegated, an alert is sent to the Delegated Physician
6. If Delegated Physician rejects the consult then it is returned for re-delegation
7. If accepted, the name of the Consulting Physician and ETA of consult are entered then the status is updated on arrival in the ED and completion of the consult

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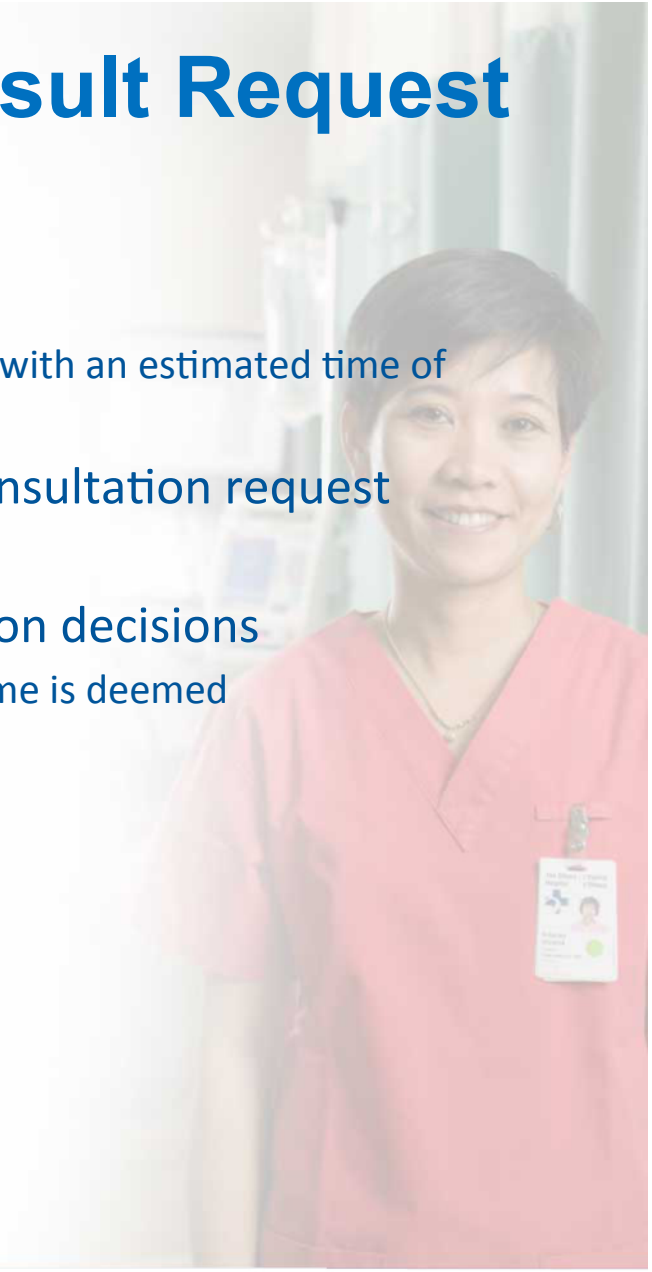
(Emergency Department) Consult Request Results

- Predictable response to consultation requests
  - Physician acknowledges receipt of request and responds with an estimated time of arrival
- Request includes background on the patient & consultation request
  - Physicians can prioritize response based on patient need
- Physician (requestor) can make informed escalation decisions
  - Requests can be rerouted or escalated when response time is deemed unacceptable
- Process controls can automate:
  - Escalation responses
  - Triggering of follow-on / related activities
- Improves management of patient expectations
- Supports a range of communication channels
  - Individual control of channel preferences
  - System recognizes and adapts to availability



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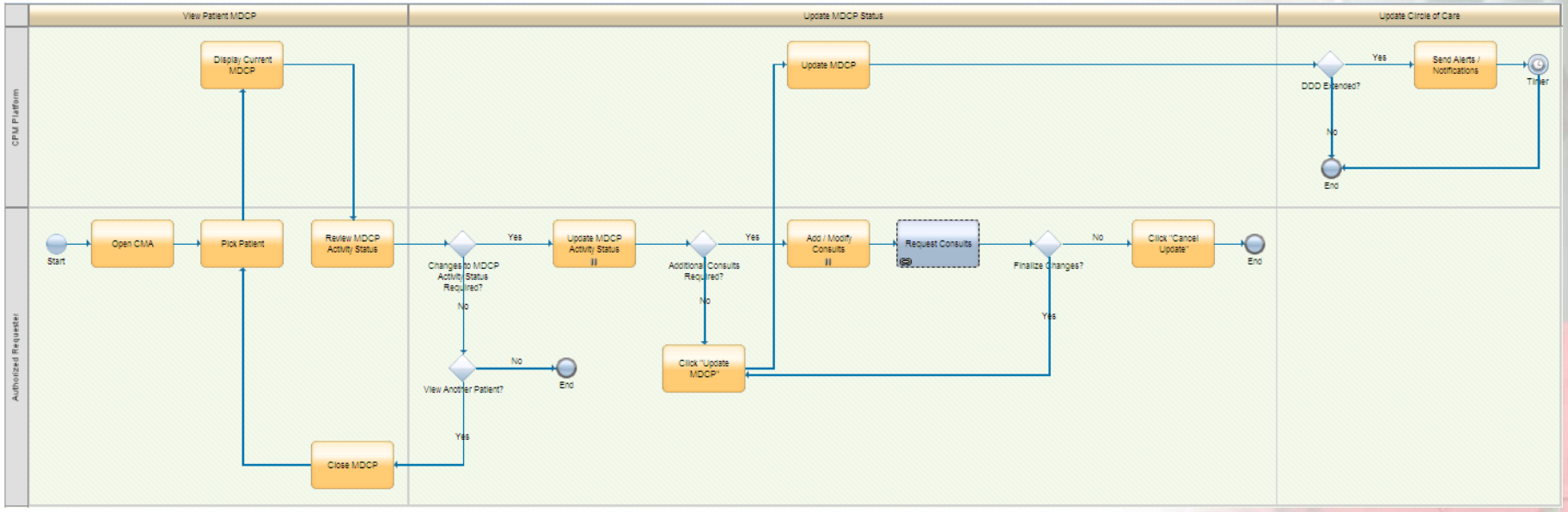
Discharge Readiness Planning (DRP) View/Update MDAP Process Flow



Process Steps:

1. Open CMA
2. Pick Patient
3. Display Current MDAP
4. Review MDAP Activity Status
5. If changes needed to MDAP status, Update MDAP Activity Status
6. Otherwise, Close MDAP and Pick Patient
7. If needed, Request Consults
8. If MDAP is ready, click “Update MDAP”
9. Update MDAP
10. Send Alerts / Notifications to Activity Owners and Circle of Care
11. If not ready, click “Cancel Update”

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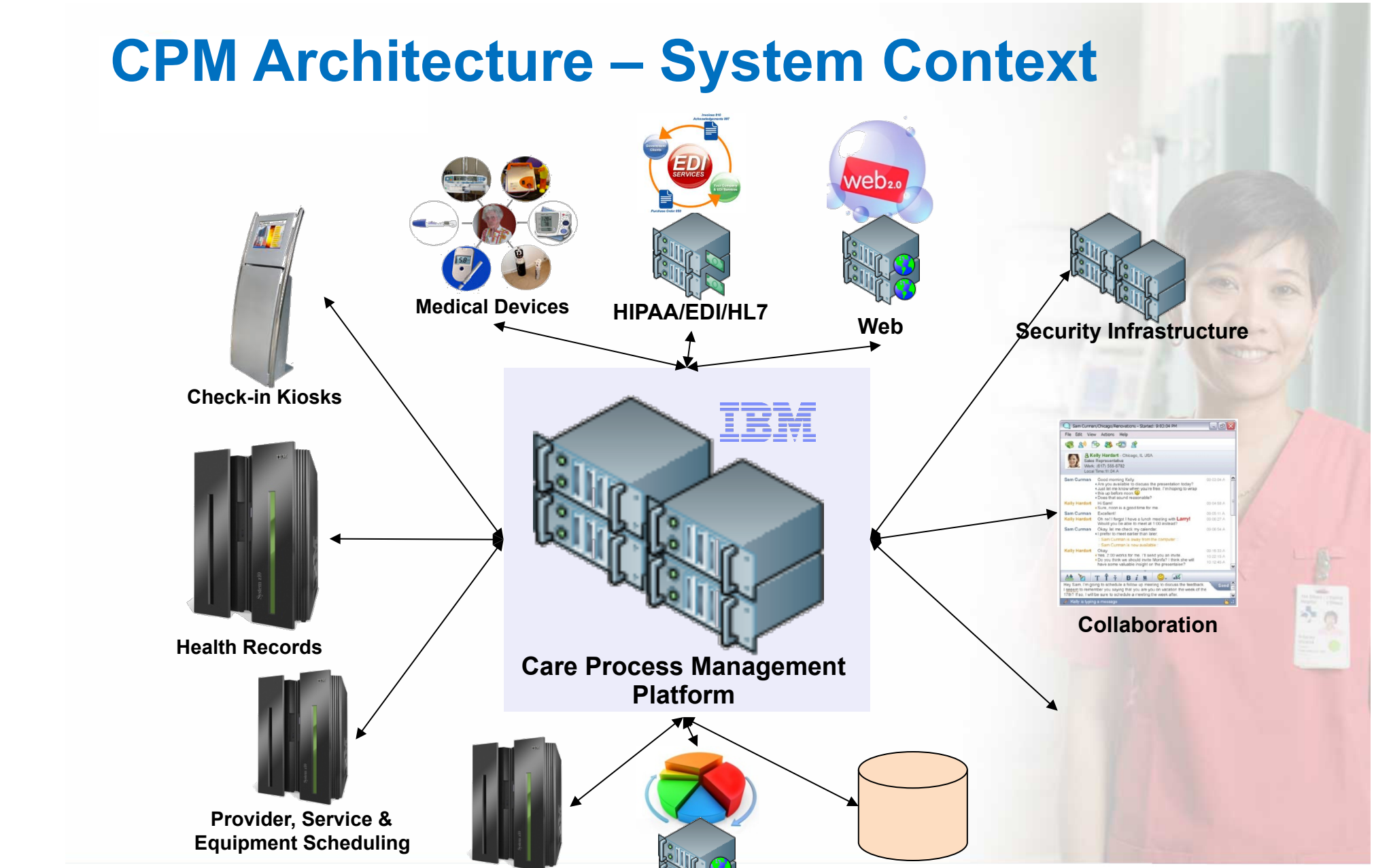
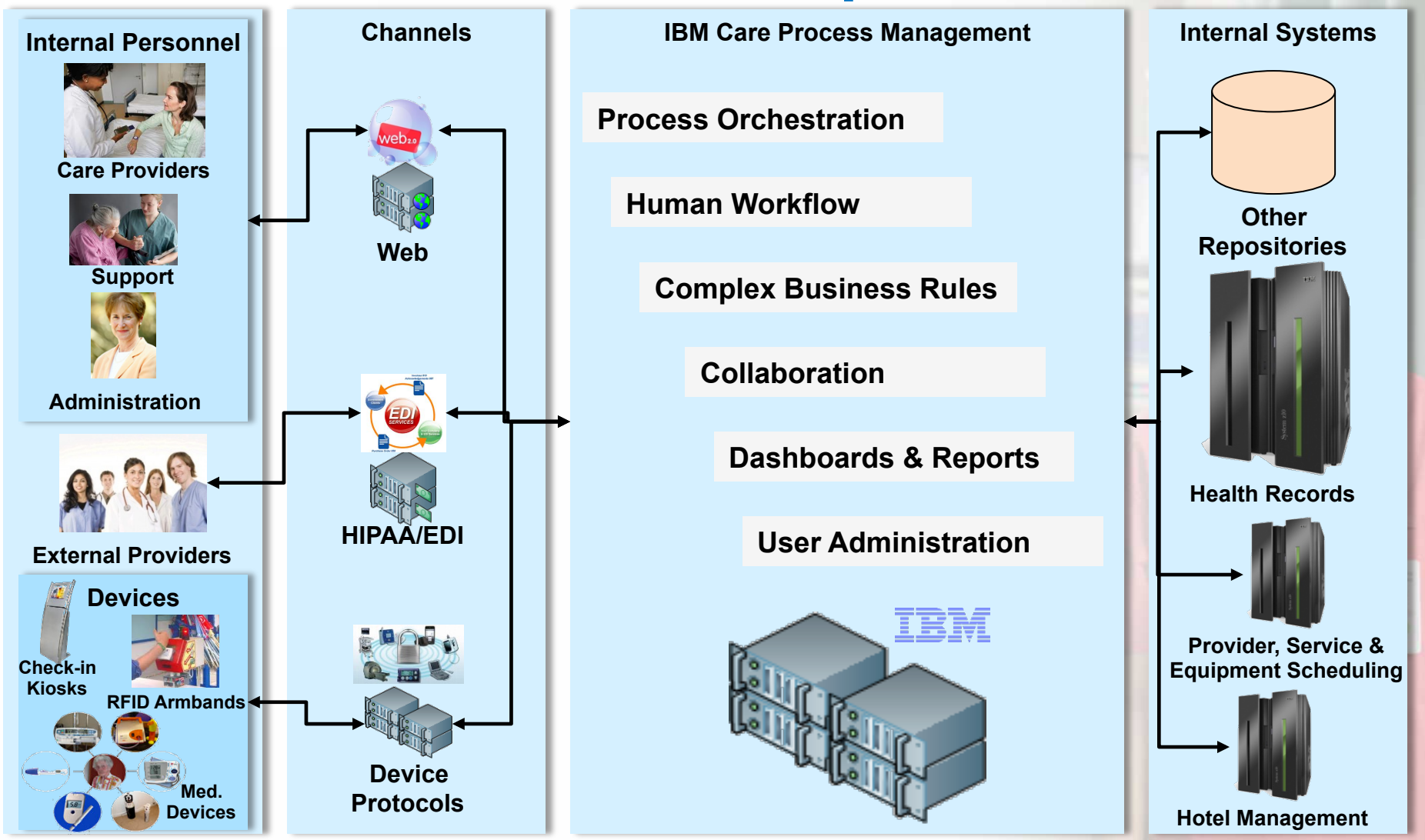
Discharge Readiness Planning (DRP) Results

- Identification and coordination of all of the activities required to progress a patient from admission to discharge
- Provides the Care Team with visibility into:
  - Overall objectives established by the Primary Care Physician (Most Responsible Physician)
  - Interdependencies across activities
  - Activity Progress / Status
- Reduces time spent searching for people and information, increasing time available for patient care
  - Members of the Care Team are identified / contacted through the Circle of Care
  - Accelerates communication of key changes to the Care Team
- Improves resource budgeting, allocation and scheduling
- Discharge Readiness Planning begins the moment a patient is admitted

CPM Architecture – System Context



CPM Architecture – Conceptual Overview



- Solution Architecture based on best principles
- Integrated flexible solution architecture
- Designed for highly availability and scalability
- Secure

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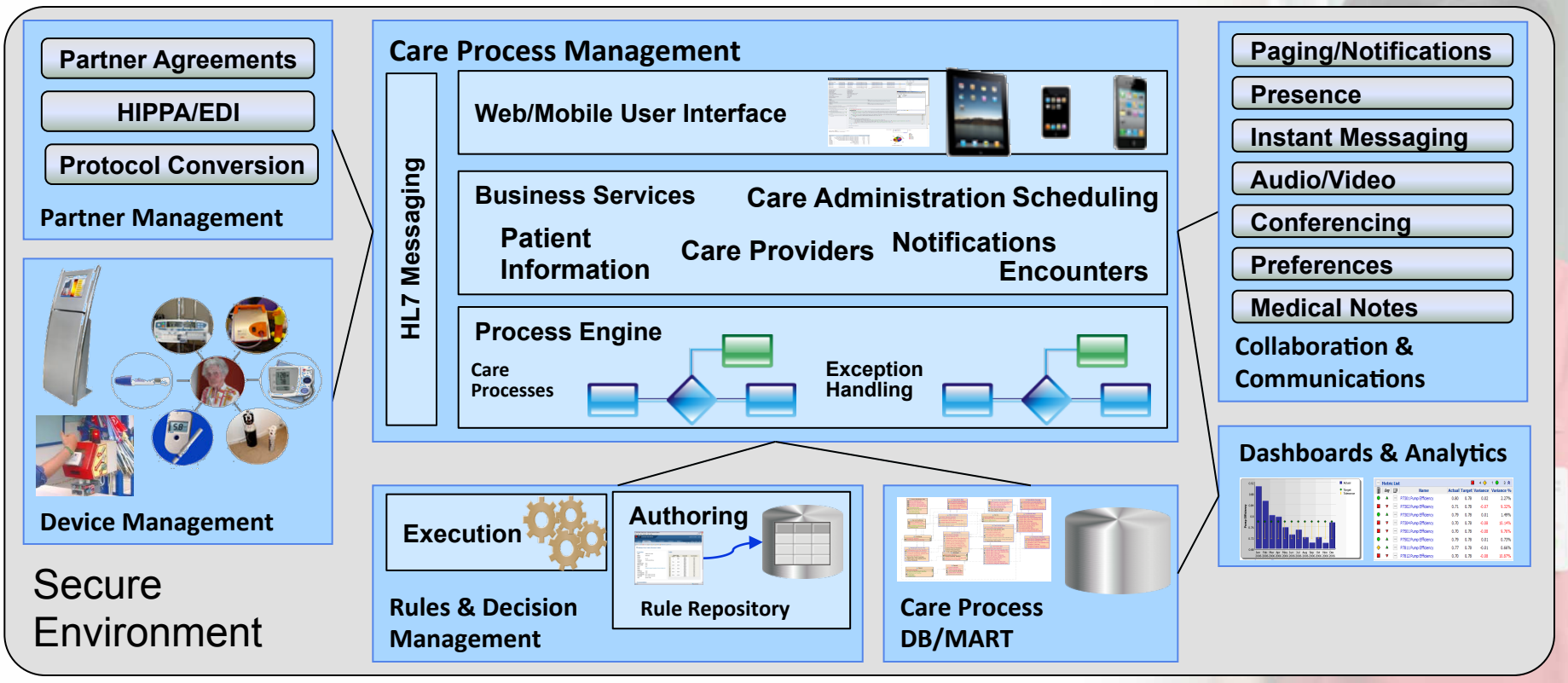
CPM Architecture – Integrated Component View



Summary of Phase 1 Benefits

- Improve communication, collaboration and management of patient care activities across Care Network, resulting in:
  - Efficient coordination of Care Network
  - Focus on patient activities rather than administrative tasks
  - Support for collaboration / electronic communications within the Care Network
  - Transformation of current service rounds and discharge readiness processes
  - Reduction in wait times for hospital beds
- Creation of a dynamic estimated date of discharge
  - Improved visibility into total patient progress towards discharge
  - Reflects actual progress of patient
  - Includes confidence factors to help deliver predictable variability
- Design and development of an integrated Care Process Management platform
  - Additional use cases are easily implemented to address client priorities
  - CPM Platform integrates with existing healthcare information and delivery systems
- Improve worker, patient and family satisfaction

Where do we go from here

Analytic Information to Use

- Expand User Base Across the Organization
- Create Additional CPM Capabilities
- Expand Portfolio of CPM Enabled Processes
- Enable CPM Strategy and Methodology Across the IT Organization

Lessons Learned

- Delicate approach required
  - Stakeholder Engagement
  - Isis methodology – Playbacks; Iterative Design and implementation
  - Change management
- Nerve to change the culture
  - End to End Viewpoint
  - Not just creating new policies / forms
  - Technology must be used to manage processes
- CPM is a capability not a system
  - Not another system for users – positioning of solution key
  - UI embedded in current "systems"
  - Identification of reusable capabilities and processes similarities is key
- Add IT Specific Lessons Learned

Conclusion

Ultimately, managing the performance of the Ottawa Hospital will require that we, not only, measure Clinical Outcomes, but that we also monitor, measure, and manage day-to-day clinical care delivery processes

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QUESTIONS

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Backup Materials

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The Goals of Care Process Management

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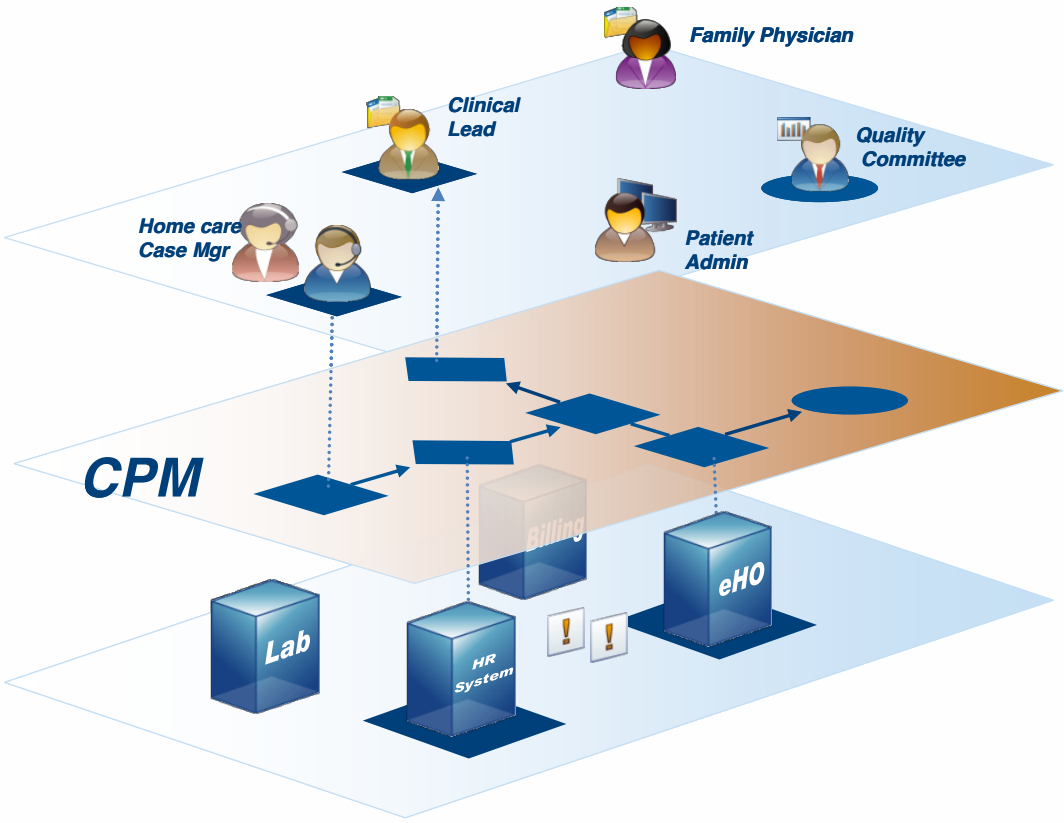
COLLABORATIVE GOVERNANCE



Unique Aspects about CPM

- Care Process Models
- Playbacks
- Leverage existing systems (SOA)
- Monitors for business events and initiates action (decision manager)
- Real time Instrumentation
- Collaborative governance
- Evidence Based Management

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Measuring Success

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Early Implementation Benefits: Improved Patient Flow & Safety

Capability	Benefits
Care Process Management Platform	• Foundation established for implementation of portfolio of care processes • Delivers value to a broad multi-discipline care team • Extensible to include additional Services • Ability to integrate care and business processes (e.g., admission and bed management processes)
Multi Disciplinary Care Plan (MDCP)	• Task Assignment / Lists – establishes clear responsibility • Real-Time Activity Tracking and Status – independent of clinical documentation • Separation of Medically Ready vs. Ready for Discharge – improves coordination • Proactive Notification of Status Changes – accelerates awareness and action • Proactive Notification of New Consult Requests – facilitates timely activity initiation

Circle of Care	• Identification of Services and Individuals Involved in a Patient's Care:
	  • Team awareness – shortens time used searching for information
	  • Launch point for direct communications – facilitates collaboration

Closed Loop Communications	• Activity Assignment and Initiation Visible to All Parties – Reduces risk of dropped requests • Page / Request Delegations, Confirmations and Manual Escalations – Sets response expectations

Collaboration	• Visibility to Patient Progress – accelerates awareness and action
	  • Estimated activity completion – improved coordination across activities
	  • Critical status notes – improved knowledge drives improved prioritization and response
	• Visibility to Team Objectives
	  • Consult requests provide background and objectives – improved prioritization and response
	  • Multi Disciplinary Care Plan communicates discharge goals – improved coordination

Evidenced Base Management	• Improved Work Assignments
	  • Improved response to ED-Consult requests – current status drives optimal assignments
	  • Balance of patient responsibilities across teams – help maximize utilization and effectiveness
	• Ability to forecast and prevent "system overload" – help avoid crisis situations
	• Ability to identify points of high variability – identify and prioritize opportunities for future improvement