

ReHAP

Rehabilitation and Healthcare Analytics Platform

Checkpoint Presentation

ReHAP MVP Basic Aims

- ✓ Web-based tool
- ✓ ReHAP “Priority List” on every therapists’ laptop
- ✓ Connect to live EMR (EPIC) data
 - ✓ Auto refresh every 5 min
- ✓ Modes for PT, OT, Manager, Physician
- ✓ Instance of application to be deployable on-site
- ✓ Simple and seamless to use

Team



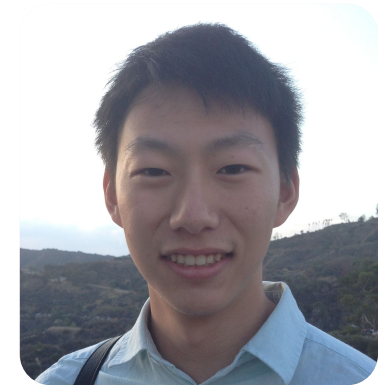
Krishnaj Gourab, MD
Director PMR consults. JHH,
JHBMC



John Adamovich, MHA
Administrator R&I
JHHCG



Michael Cohen, BS
Sr Software Engineer, TIC



Tony Pan, BS Candidate
JHU



David West, BME Candidate
JHU



Gorkem Sevinc, MSE
Managing Director, TIC



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TECHNOLOGY

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Dependencies

- Enterprise Service Bus (ESB) integration
- Cooperation between Web Services
- Secure development environment
 - SSL into Hopkins server
- Knowledge of Rails
- PostgreSQL
- JIRA + Bitbucket (SCRUM)
- Cooperation with JHBMC PT/OT team for shadowing
- HIPAA compliance (intermediate certification)
- D3.js for visualization
- Possibly DataTables.js + DTEditor.js
- Weekly team meetings Tuesdays on Hangout and at FF East
- Cooperation with Tony Pan (dev partner)

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Doubled meetings
With M. Cohen



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Replacing with other
intermediate data
ingestion

MDL = Great solution

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- ~~PostgreSQL~~
- ~~JIRA + Bitbucket (SCRUM)~~
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- ~~HIPAA compliance (intermediate certification)~~
- ~~D3.js for visualization~~
- ~~MATERIAL DESIGN LITE (.io)~~
- ~~Weekly team meetings Tuesdays on Hangout and at FF East~~
- **Cooperation with Tony Pan (dev partner)**



Deliverables

Minimum

- Create and populate database
- Implement Rails app framework
- PT/OT view and permissions
- Shadow-informed front-end mockups for all users
- Prioritization algorithm implemented in Rails app

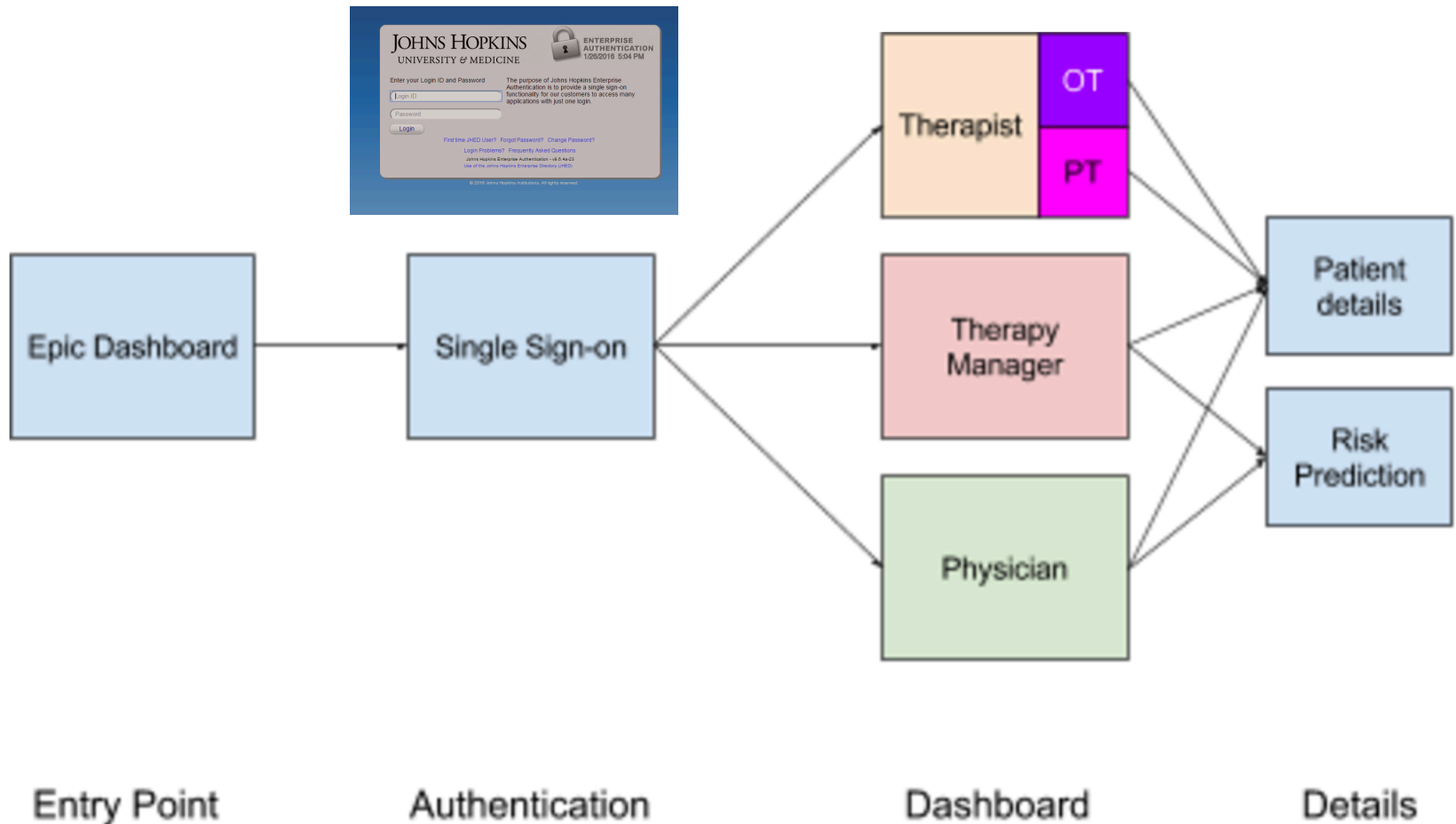
Expected

- Manager view + permissions
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- Physician view + premissions
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Streamlined Workflow



Epic Entry Point

The screenshot displays the Epic Physician Dashboard interface. At the top, the browser address bar shows 'Hyperspace - BVBMC PMR - Proof Of Concept - DANIEL F.' and the Epic logo. The navigation bar includes 'Home', 'Patient Station', 'Schedule', 'In Basket', 'Chart', 'Today's Pts', 'OR Schedule', 'Remind Me', 'Track Board', 'Tools', 'Exit', and 'Log Out'. A search bar on the right contains 'PROOF OF CONCEPT'. The main dashboard is divided into several panels:

- My Credentials:** Shows 'No instance of this report is ready to view' and a 'Run Report' button.
- My Reports - RW:** Lists 'Unorganized (1)' reports, including 'JHM IP List of Kidney Transplant Patients' with a 'Ready to run' status.
- My Reports - Crystal:** Lists 'Unorganized (4)' reports, including 'Code Status Audit', 'Consult Turnaround Time - Dynamic Location', 'JHM EP Eligible Professionals Summary - Provider - 90 Day', and 'JHM MyChart Account Activation per PCP', all with 'Not Available' statuses.
- Provider Reports:** Contains sub-sections for 'Patient Reports', 'Analytics Tool for Functional Trajectory Across Care Continuum', 'Productivity Reports', and 'Physician Reports'. A hand cursor points to the 'Analytics Tool' link, which is marked with a circled 'B'. A circled 'A' is also present near the top of this section.
- In Basket Glance:** Includes a 'Show only new messages' checkbox and a list of items: 'Results (20)', 'Hospital Chart Completion (90)', 'Canceled Ord', 'My Incomplete Notes (66)', 'My Open Charts (1)', 'My Open Encounters', 'Cosign Notes (4)', 'Addendum Notification (2)', 'Letter Queue (2)', 'Height/Weight Change (2)', 'Cosign - Clinic Orders', 'Message Routing (11)', and 'My Unsigned Orders (4)'. A 'Refresh' button is at the bottom.
- Common Links:** Lists 'Hyperspace Links' such as 'Patient Lists', 'Patient Station', and 'My Reports'.
- IP My Patients - Notes Missing Charges:** Shows 'No instance of this report is ready to view' and a 'Run Report' button.
- IP My Patients - Missing Hospital Problem:** Shows 'No instance of this report is ready to view' and a 'Run Report' button.
- IP My Patients - Without Progress Note Today:** Shows 'No instance of this report is ready to view' and a 'Run Report' button.
- IP Notes Requiring My Cosignature:** Shows 'No instance of this report is ready to view' and a 'Run Report' button.
- IP My Pended and Shared Notes:** Shows 'No instance of this report is ready to view' and a 'Run Report' button.

Sign on



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UNIVERSITY & MEDICINE



ENTERPRISE AUTHENTICATION
1/26/2016 5:04 PM

Enter your Login ID and Password

The purpose of Johns Hopkins Enterprise Authentication is to provide a single sign-on functionality for our customers to access many applications with just one login.

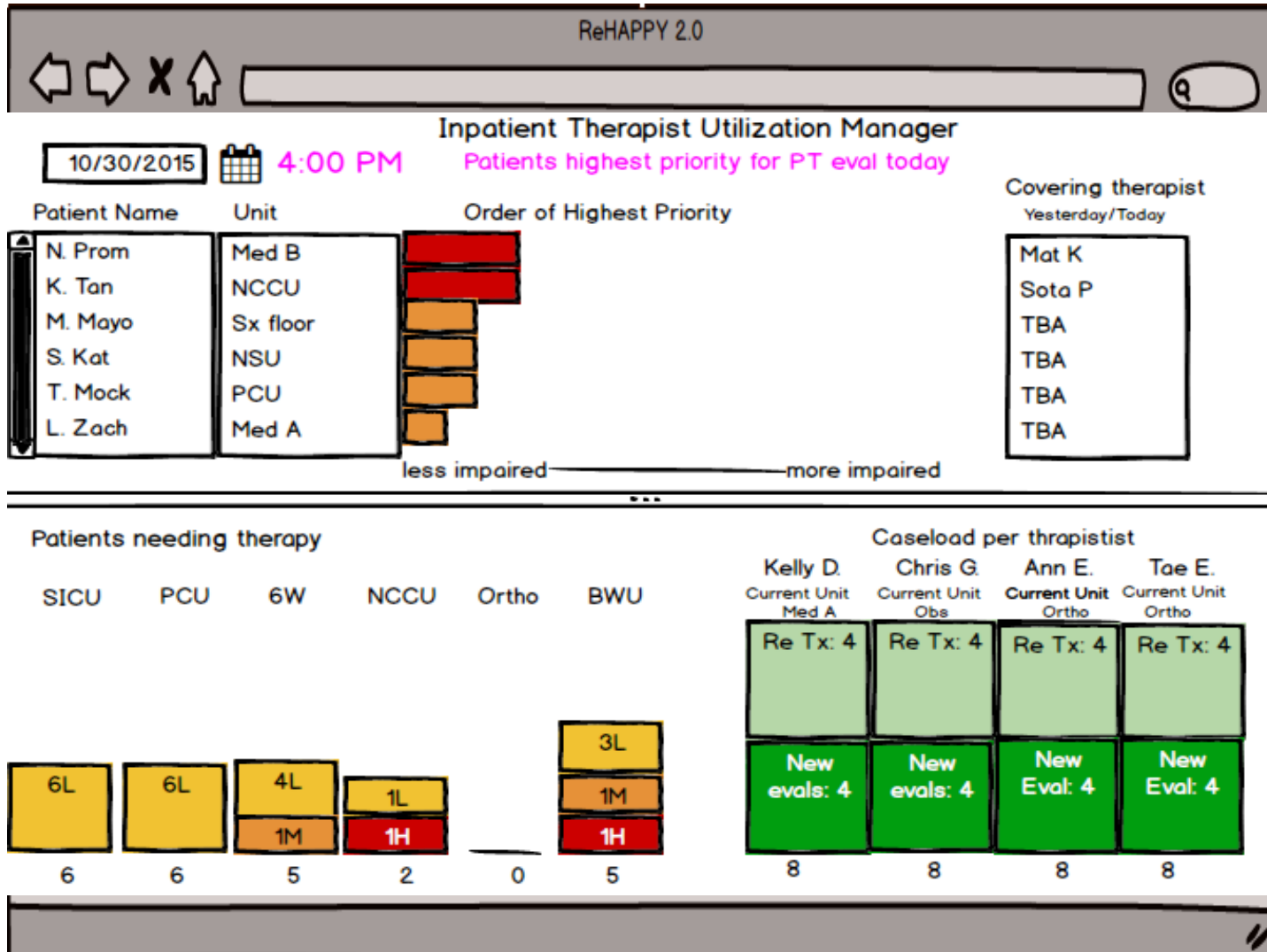
[First time JHED User?](#) [Forgot Password?](#) [Change Password?](#)

[Login Problems?](#) [Frequently Asked Questions](#)

Johns Hopkins Enterprise Authentication - v9.6.4a-23
Use of the Johns Hopkins Enterprise Directory (JHED)

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Therapy Manager Mockup



Patient Level View

Analytics Tool for Functional Trajectory Across Care Continuum. Patient Level View

Activity/mobility trends over time

Smyth A.
DOB: 01/26/5545. MRN:
HC Nurse Manager: (234) 567-8910

Date Range for activity & mobility tracking

01/01/2016



01/07/2016

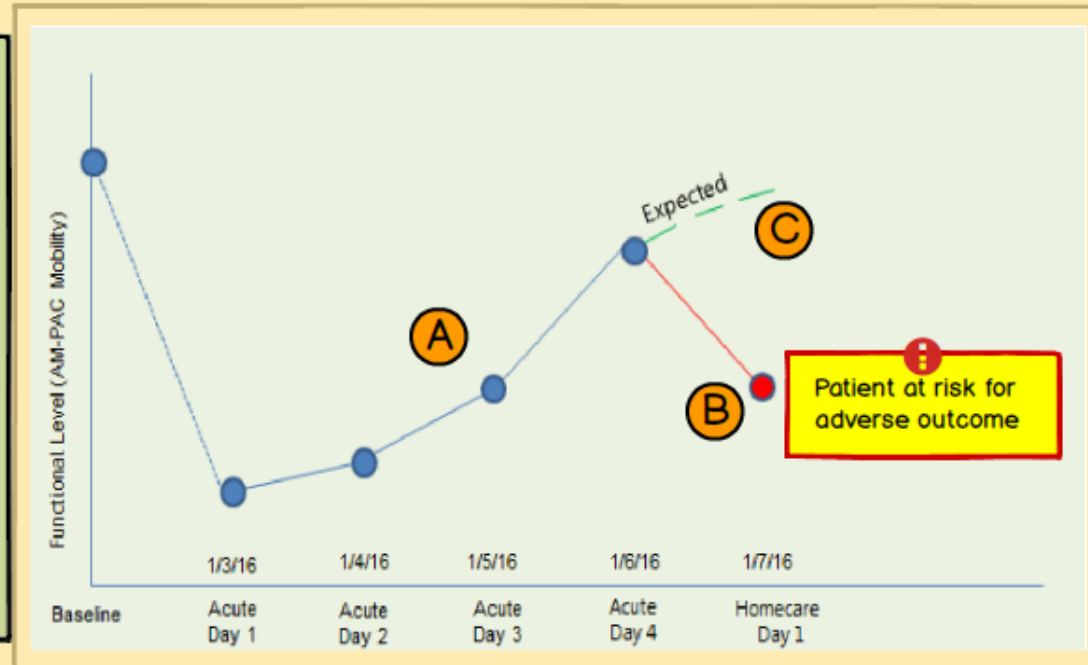


All Patients

All JHH Patients

By Service

Patient Level



Risk Prediction Population Mgmt

A SERVICE: Neurology Analytics Tool for Functional Trajectory Across Care Continuum. Inpatient user view.

B Current Patients on Neurology floor at JHH as of 1/7/16

C PREDICTING RISK OF:

D Unplanned ED/unplanned Readmission, if patient is DC'd today

E Using risk prediction algorithm (Last AMPAC < 10 & deterioration > 2)

F

Patient Info	A) Mobility (AMPAC)	B) Loss in Mobility	Risk Level
Jones, A Room 20 MRN: 3458799 PCP: Rock, Wm Ph: (234) 567-8910	6	-4	Unplanned ED/readmission Risk High: ████████
Mary, C Room 13 MRN: 3459816 PCP: Tuskee, Ed Ph: (234) 567-8910	18	-2	Unplanned ED/readmission Risk Mod. ████████

L Patients discharged from the Neurology floor in the last 30 day

M

N PREDICTING RISK OF:

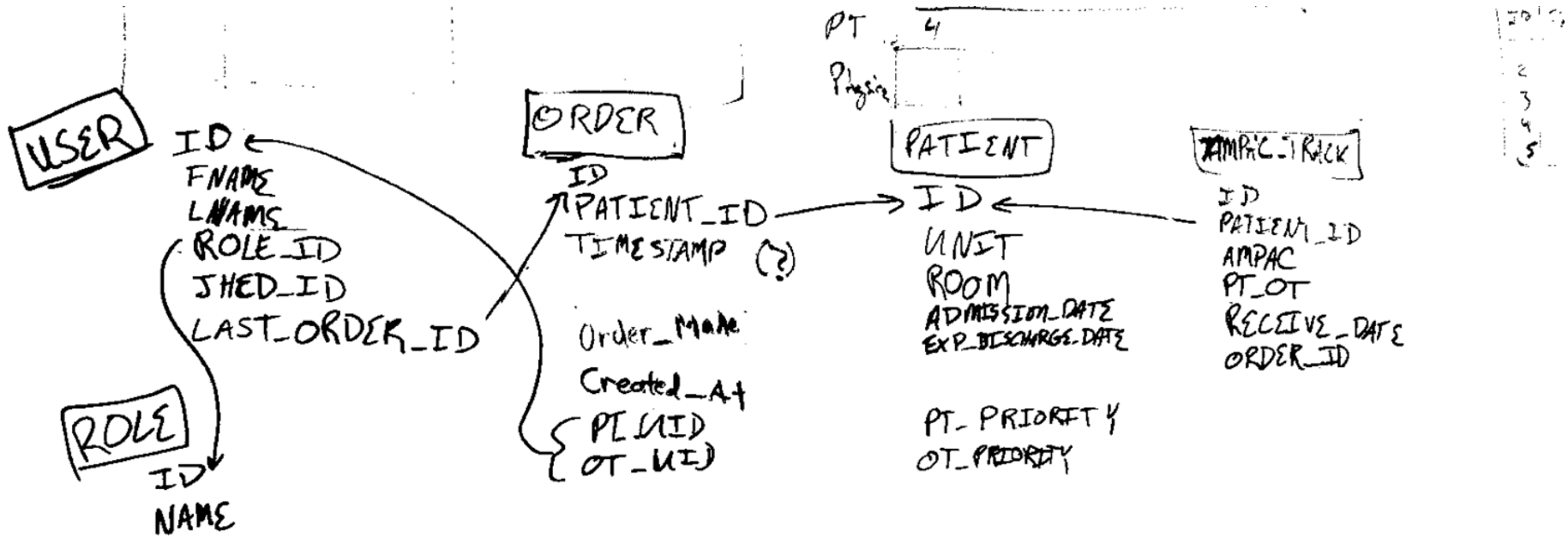
O Highest Risk of Unplanned ER visit/Readmission

P Using risk prediction algorithm (Loss in Mobility -AMPAC between hospital and home)

Patient Info	Loss in Mobility	Adverse Outcome Risk	Home Care
Smyth, A DOB: 01/26/5545. MRN: HC Nurse Mgr: (234) 567-8910 Referring Physician: (567) 891-0112	-6	Adverse Outcome Risk High: ████████	Pt is receiving: Home PT <input checked="" type="checkbox"/> Home OT <input checked="" type="checkbox"/>
Redcliff, K DOB: 01/26/5545. MRN: HC Nurse Mgr: (234) 567-8910 Referring Physician: (567) 891-1101	-2	Adverse Outcome Risk Mod: ████████	Pt is receiving: Home PT <input checked="" type="checkbox"/> Home OT <input checked="" type="checkbox"/>
Cat, J DOB: 01/26/5545. MRN: HC Nurse Mgr: (410) 567-7770 Referring Physician: (567) 891-0112	0		Home PT <input type="checkbox"/> Home OT <input type="checkbox"/>

AMPAC: Activity Measure for Post Acute-Care

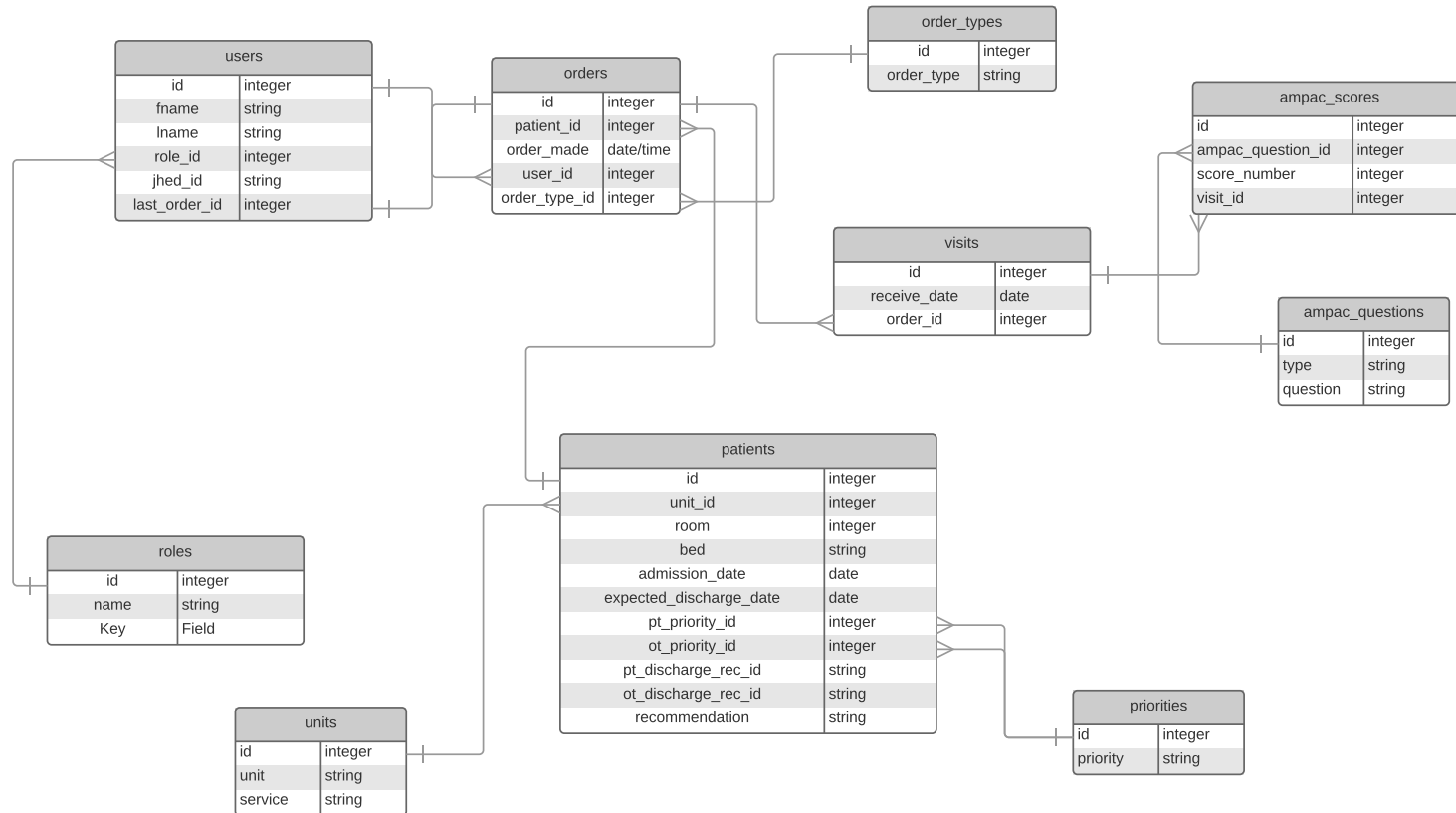
Rough DB Whiteboarding



Full DB Design

REHAP SCHEMA

Development Team | March 24, 2016



DB Implementation

```
ActiveRecord::Schema.define(version: 20160330171204) do

  create_table "ampac_questions", force: :cascade do |t|
    t.string "type"
    t.string "question"
    t.datetime "created_at", null: false
    t.datetime "updated_at", null: false
  end

  create_table "ampac_scores", force: :cascade do |t|
    t.integer "ampac_question_id"
    t.integer "score_number"
    t.integer "visit_id"
    t.datetime "created_at", null: false
    t.datetime "updated_at", null: false
  end

  add_index "ampac_scores", ["ampac_question_id"], name: "index_ampac_scores_on_ampac_question_id"
  add_index "ampac_scores", ["visit_id"], name: "index_ampac_scores_on_visit_id"

  create_table "order_types", force: :cascade do |t|
    t.string "order_type"
    t.datetime "created_at", null: false
    t.datetime "updated_at", null: false
  end

  create_table "orders", force: :cascade do |t|
    t.integer "patient_id"
    t.datetime "order_made"
    t.integer "user_id"
    t.integer "order_type_id"
    t.datetime "created_at", null: false
    t.datetime "updated_at", null: false
  end

  add_index "orders", ["order_type_id"], name: "index_orders_on_order_type_id"
  add_index "orders", ["patient_id"], name: "index_orders_on_patient_id"
  add_index "orders", ["user_id"], name: "index_orders_on_user_id"
```

DB Record Population

```
11171,,9/26/16,9/25/16,22,677/B,16,Acuna,BMC NEUROSCIENCE CC  
(5-7xs per wk),Daily,,,,,  
11328,,,,,557/A,,Adair,BMC MEDICINE A,,,,,9/24/16,"Michael W  
11866,,9/26/16,,,642/A,8,Adam,BMC SURGICAL FLOOR,,,,Emily Ja  
11239,,9/26/16,,,M002/A,21,Adame,BMC MEDICAL ICU,1-2 session  
11723,,9/26/16,9/26/16,,659/A,11,Adams,BMC NEUROSCIENCES UNI  
11071,,,,,C006/A,,Adamson,BMC CARDIAC ICU,,,Anne Marie Murp  
11428,,,,,M003/A,,Adcock,BMC MEDICAL ICU,,,,,9/25/16,Nancy R  
11123,,9/26/16,,,325/B,24,Addison,BMC BRIDGEVIEW UNIT,,,,Sar  
11105,,9/24/16,9/10/16,23,M001/A,18,Adkins,BMC MEDICAL ICU,,  
11065,,9/24/16,9/24/16,14,555/B,11,Adler,BMC MEDICINE A,,,Pa  
11662,,,,,298/A,,Agee,BMC OB A2W,,,Emily Jaggi-Kight,9/17/1  
11834,,9/25/16,9/25/16,9,470/A,6,Agnew,BMC WENZ ORTHO CENTER
```



~150 Patient + Order
records

Ingest, parse, populate

✓ Automated for future migrate

Views implementation


The screenshot shows a web browser window displaying the 'ReHap | Therapist Manager' dashboard. The browser's address bar shows the URL 'harb.rad.jhmi.edu:3555/dashboards/therapist'. The page header includes the title 'ReHap | Therapist Manager' and the date 'Today is 2016-03-30'. The main content area is divided into two sections: a table of patients and a sidebar menu.

Patients in Need of Therapy

<input type="checkbox"/>	Patient Name	Covering OT/PT	OT/PT Rec
<input type="checkbox"/>	Marco Polo	Mike C.	Acute
<input type="checkbox"/>	J. Hopkins	John A (OT)	Home with Home
<input type="checkbox"/>	T. Swift	Ray S. (OT)	Subacute Rehab
<input type="checkbox"/>	K. Bryant	Ray S. (OT)	Subacute Rehab
<input type="checkbox"/>	B. Knowles	Amita S. (PT)	Outpatient PT
<input type="checkbox"/>	Z. Deschanel	Christine M.	TBD
<input type="checkbox"/>	Marco Polo	Mike C.	Acute
<input type="checkbox"/>	J. Hopkins	John A (OT)	Home with Home
<input type="checkbox"/>	T. Swift	Ray S. (OT)	Subacute Rehab
<input type="checkbox"/>	K. Bryant	Ray S. (OT)	Subacute Rehab
<input type="checkbox"/>	B. Knowles	Amita S. (PT)	Outpatient PT
<input type="checkbox"/>	Z. Deschanel	Christine M.	TBD

mc

- SICU
- PCU
- 6W
- 6E
- Unit under construction

SICU Floor 

Referrals per unit: 5
Assigned PT/OT: Mike C.

[MORE INFO](#)

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Eliminated.png [Show All](#)

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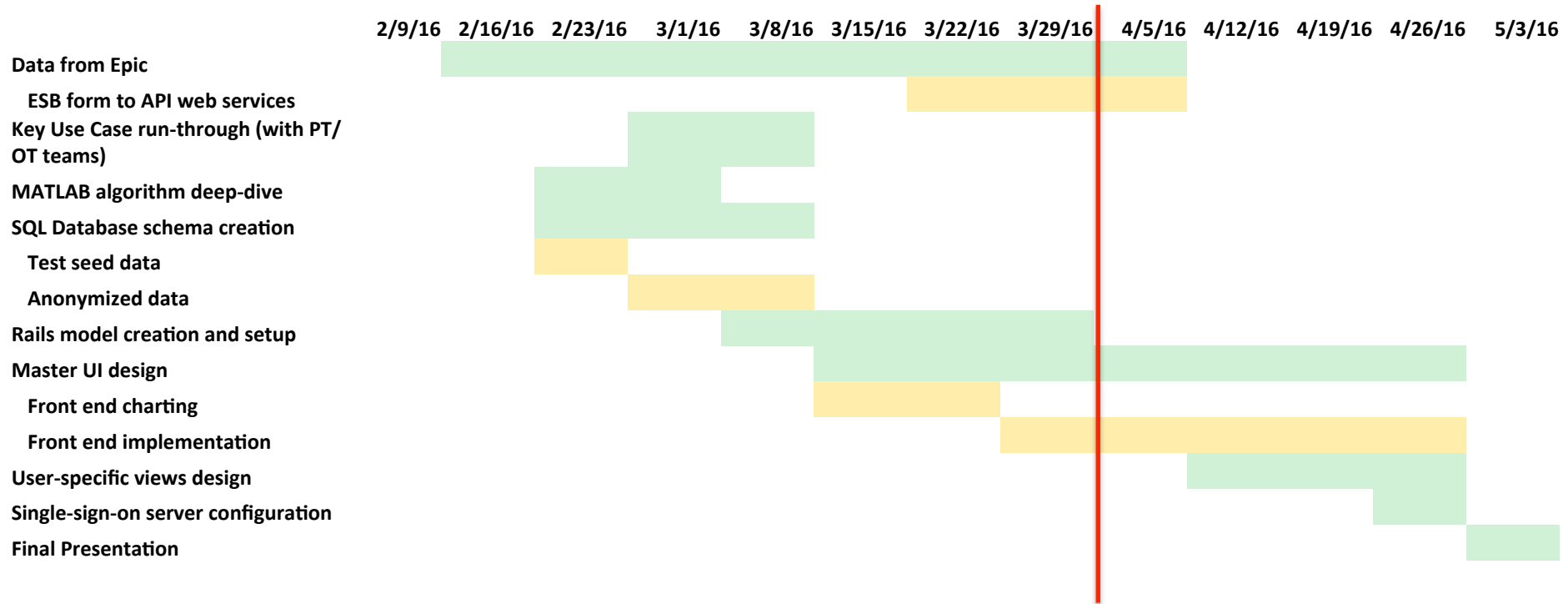
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Milestones



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