

Making the Invisible Visible

Using a Capacity Management Dashboard to Visualize Hospital Patient Flow

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Agenda

Background and Business Problem

Stakeholder Engagement

Design & Validation

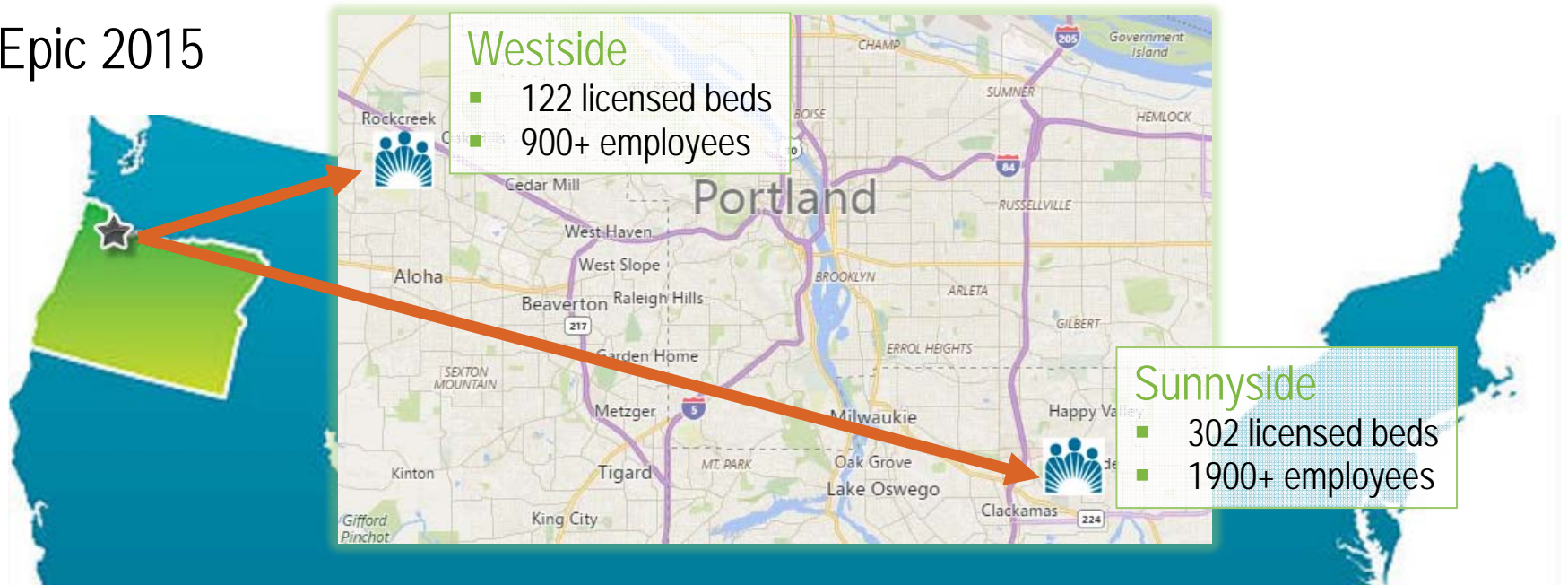
Implementation

Outcomes and Lessons Learned

Background

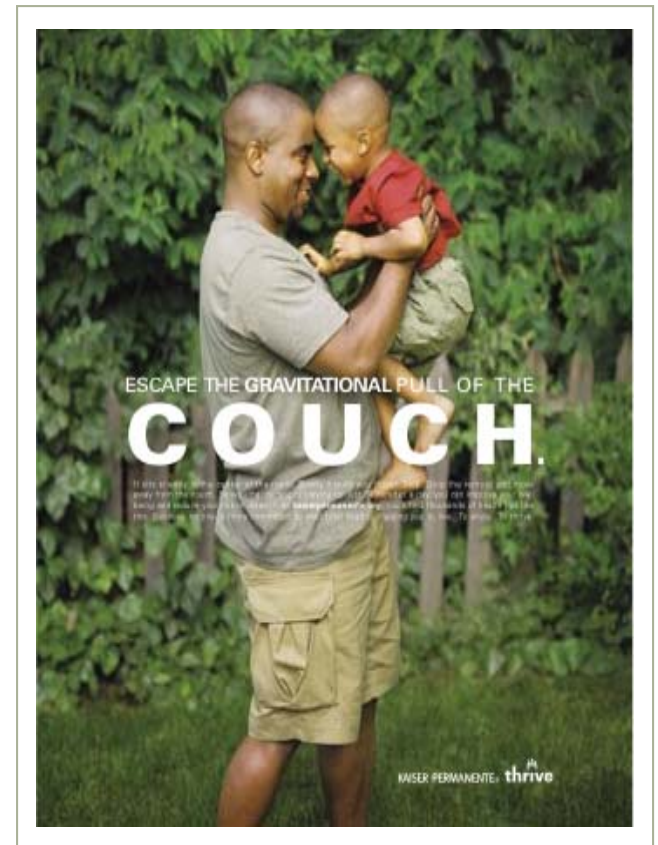
Kaiser Permanente Northwest Region

- 2 Hospitals, in the Portland, Oregon Metro Area
- 34 medical clinics, 19 dental centers
- 11,900+ employees serving 575,000+ members
- Epic 2015



Business Problem

- High Census
 - Total Ambulance Divert (TAD)
 - Critical Care Divert
- Lack of Information
 - Multiple huddles per day
 - Constant questions from leadership and staff
- Lack of Accountability
 - What actions need to be taken and by whom?



Stakeholder Engagement

Consult Early	Create Excitement	Share Outcomes
<ul style="list-style-type: none">■ Engage hospital leadership■ Identify champions■ Determine “wins”	<ul style="list-style-type: none">■ Communication Plan■ Communicate in multiple formats■ Communicate often■ Focus message on audience	<ul style="list-style-type: none">■ Celebrate “wins”■ Show value■ Keep finding new uses

Design

Epic Provided Content

Patients in the ED - Just now

56

Status	Percent of Patients	Total	Average Time
Waiting for Triage	7%	4	16m
In Triage	2%	1	9m
Waiting for Provider	13%	7	36m
In Process	52%	29	1h 41m

ED Patients with Given Statuses

Occupancy - Just now

31 Current Open 96 Current Census 11 Expected Open 10 Unavailable Beds

Department	# Beds	UnAvail	Occ	Open	Exp Adm	Exp Trx In	Exp Trx Out	Exp Conf DC	Exp Open
BMT	10	3	4	3	0	0	0	1	4
Burn	8	0	7	1	0	0	0	1	2
CICU	14	2	12	0	0	4	0	2	-2
Hem Onc	14	1	8	5	0	0	0	1	6
ICU	16	0	15	1	0	0	3	5	9
Med Surg	34	7	24	3	7	5	1	10	2
Neuro	8	0	7	1	1	0	0	0	0
NICU	10	0	8	2	0	1	1	0	2
Ortho	8	0	4	4	0	0	0	1	5
Peds	14	1	10	3	0	1	0	1	3
Peds Txplant	5	0	0	5	1	0	0	0	4
PICU	10	0	9	1	2	1	0	2	0
SICU	8	0	6	2	1	1	1	0	1
Txplant	5	0	2	3	0	1	0	1	3
Sum	137	10	96	31	39	16	10	25	11

Links

- ED Track Board
- OR Schedule
- Bed Planning

Today's Expected Discharges - 1m ago

5

Exp Dis Date	# of Patients	% w/o DC order
Today	5	30.00%
Hem Onc	2	20.00%
Med Surg	3	50.00%

Expected Discharges

Expected Admits from OR

Data collected: Thu 6/9 11:58 AM

Current EVS Requests - Data collected: Thu 6/9 11:58 AM

34

Unit	Requests	Unassign/Assign	Delay/Hold
Burn	3	1/2	0/0
ICU	5	3/2	1/2
Med Surg	8	4/4	0/1
NICU	2	0/2	0/0
Ortho	5	3/2	1/2
Peds	5	1/4	1/2
PICU	5	2/3	1/2

Requests

Today's Expected Admissions

Data collected: Thu 6/9 11:58 AM

15

Service	Admissions	Unassign/Assign
General Medicine	4	3/1
Gastroenterology	1	0/1
Internal Medicine	3	1/2
Neurology	2	2/0
Oncology	1	0/1
Orthopedics	1	1/0
Pediatrics	3	2/1

Admissions

Unassign/Assign refers to whether the patient has been assigned a bed by bed planning.

Today's Projected PACU Arrivals

Data collected: Thu 6/9 11:58 AM

Current Blocked Beds

Data collected: Thu 6/9 11:58 AM

13

Unit	Beds Blocked	Iso/Non-Iso
Emergency	2	1/1
Labor & Delivery	3	1/2
Med Surg	2	2/0
ICU	1	0/1
Peds	4	1/3
Txplant	1	1/0
Total	13	6/7

Beds Blocked

Displays the beds that are blocked and the blocks by iso and non-iso. Note that a single bed can have multiple blocks.

Observation Metrics - Just now

Data collected: Thu 6/9 11:58 AM

Unit	# of Patients	Avg Hrs in Obs	% > 20 Hrs
Burn	3	16	33%
ICU	1	1	0%
Med Surg	6	17	17%
Observation	12	14	8%

Design Sessions

Functional Considerations

- Design Sessions with Key Departments
 - 12 sessions with 114 participants
 - ED, OR, Nursing, Care Coordination, Physicians, Patient Placement, EVS, Transport, Ancillary Services, MCWH, and Hospital Leadership
- Focus Customizations on Desired Outcomes
 - Reduce wait times
 - Identify bottlenecks
 - Plan ahead

Design Validation

Soft Go-Live

- Agile, Iterative Process
- Met with Stakeholders Identified in Communication Plan

Higher Engagement	Medium Engagement	Lesser Engagement
<ul style="list-style-type: none">■ Patient Placement, EVS, Transport, Care Coordination<ul style="list-style-type: none">— In person demos— Ownership— Actionable— “Feel” right— Appropriate access	<ul style="list-style-type: none">■ ED, OR, MCWH, Charge RNs, Physicians<ul style="list-style-type: none">— In person demos— What’s the win— “Feel” right— Appropriate access	<ul style="list-style-type: none">■ Rehab, Lab, Radiology, Imaging, Staffing, Transfer Center<ul style="list-style-type: none">— Electronic— What’s the win— Appropriate access

Design Validation

Change Management

- Issue Tracker
 - Changes to dashboard
 - Workflow Drift
 - Updates to Epic Build
- Communication Plan
- Weekly Meetings with Core Project Team
- Daily Stand-ups with Build Team

Design Concept

FD Admits - 1m ago

Anticipate Admissions

3N	1	1	100%	1h 43m
Bed Requested	2	2	0%	11m
MEDICAL	1	1	0%	4m
MS Step Down	1	1	0%	11m
Hosp Consult	3	0	0%	-
Total	8	5	60%	2h 22m

Patients in the ED - Just now

OR Admits - Today - 4m ago

	Pt Vol	Max Boarder
CV	1	-
CVICU	1	-
CVL	0	-
PACU	11	18m
1S	1	-
2N	1	17m
2S	1	-
CVPCU	2	18m
Med/Surg	4	-
MPU	0	-
Total	12	-

Expected RTMC Patients - 4m ago

Destination Unit	Pnt Vol
SMC-1N	7
SMC-CVICU	3
SMC-MSPCU	1
SMC-ONC	1

OR Admits - Upcoming - Just now

Dashboard Documentation

Capacity Management Dashboard Overview

Census Alert Status - Just now

Occupancy

34
Open

168
Census

42
Exp Open

	Capacity	Unavail	Staffed Beds	Occ	Open	Exp In	Exp Trx Out	Conf DC	Exp Open
Critical Care	78	0	61	54	7	5	5	3	10
CVICU	20	0	11	9	2	1	2	0	3
CVPCU	19	0	18	14	4	3	1	2	4
MSICU	19	0	12	13	-1	0	1	1	1
MSPCU	20	0	20	18	2	1	1	0	2
Med/Surg	169	7	141	114	27	7	0	12	32
1N	19	2	16	10	6	1	0	2	7
1S	19	0	19	11	8	0	0	0	8
2N	36	3	28	26	2	2	0	2	2
2S	20	0	19	15	4	2	0	1	3
3N	35	2	24	23	1	1	0	6	6
3S	20	0	19	16	3	1	0	1	3
ONC	20	0	16	13	3	0	0	0	3
Sum	247	7	202	168	34	12	5	15	42

MCWH Occupancy - Just now

18
Open

26
Census

18
Exp Open

	Capacity	Unavail	Staffed Beds	Occ	Open	Exp In	Exp Trx Out	Conf DC	Exp Open
MCWH	59	1	44	26	18	0	0	0	18
LD	19	0	8	9	-1	0	0	0	-1
NICU	20	0	6	6	0	0	0	0	0
WNC	20	1	30	11	19	0	0	0	19
Sum	59	1	44	26	18	0	0	0	18

MCWH Today's Expected Discharges - Just now

SMC Today's Expected Discharges - Just now

Anticipate Discharges

Unit	CVICU	CVPCU	MSICU	MSPCU	1N	1S	2N	2S	3N	3S	ONC	Total
EDD Today	2	3	1	2	5	2	11	12	14	4	6	46
EDD Tom	2	3	1	2	5	2	7	2	14	4	6	46

Inpatient LOS - 4m ago

Observation LOS - Just now

EVS Turn - Just now

91m

Current EVS Vol

CVPCU	14
MSPCU	7
Total	9

TRN Turn - Just now

27m

Current TRN Vol

1N	1
3N	1
3S	1
ECHO	1
MSICU	1

10 June 28, 2017

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KAISER PERMANENTE **thrive**

Design – Anticipate Admissions

ED Admits · 1m ago

5

	Pt Vol	Adm Ord	% OrdAge >1hr	Max Boarder
Bed Assigned	3	3	100%	2h 22m
Adm Ord				
2N	1	1	100%	1h 08m
2S	1	1	100%	2h 22m
3N	1	1	100%	1h 43m
Bed Requested	2	2	0%	11m
MEDICAL	1	1	0%	4m
MS Step Down	1	1	0%	11m
Hosp Consult	3	0	0%	-
Total	8	5	60%	2h 22m

Patients in the ED · Just now ☑

OR Admits - Today · 4m ago

12

	Pt Vol	Max Boarder
CV	1	-
CVICU	1	-
CVL	0	-
PACU	11	18m
1S	1	-
2N	1	17m
2S	1	-
CVPCU	2	18m
Med/Surg	4	-
MPU	0	-
Total	12	-

Expected RTMC Patients · 4m ago

Destination Unit	Ptnt Vol
	7
SMC-1N	3
SMC-CVICU	2
SMC-MSPCU	1
SMC-ONC	1

OR Admits - Upcoming · Just now

Sched Date

CV ICU
 MS PCU
 Surgical

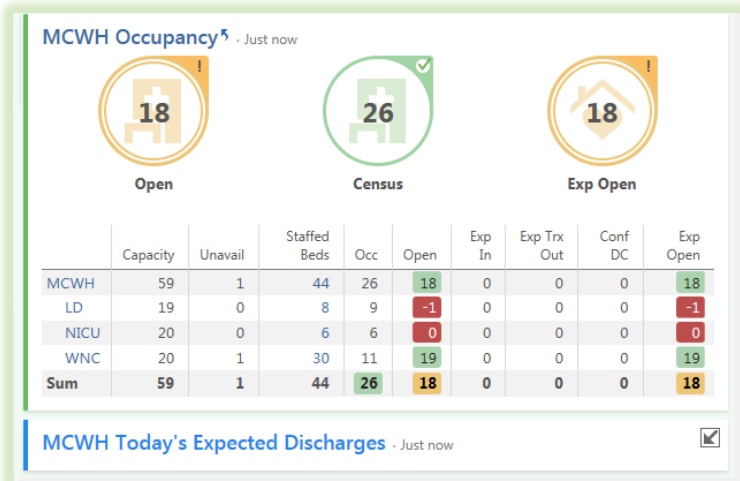
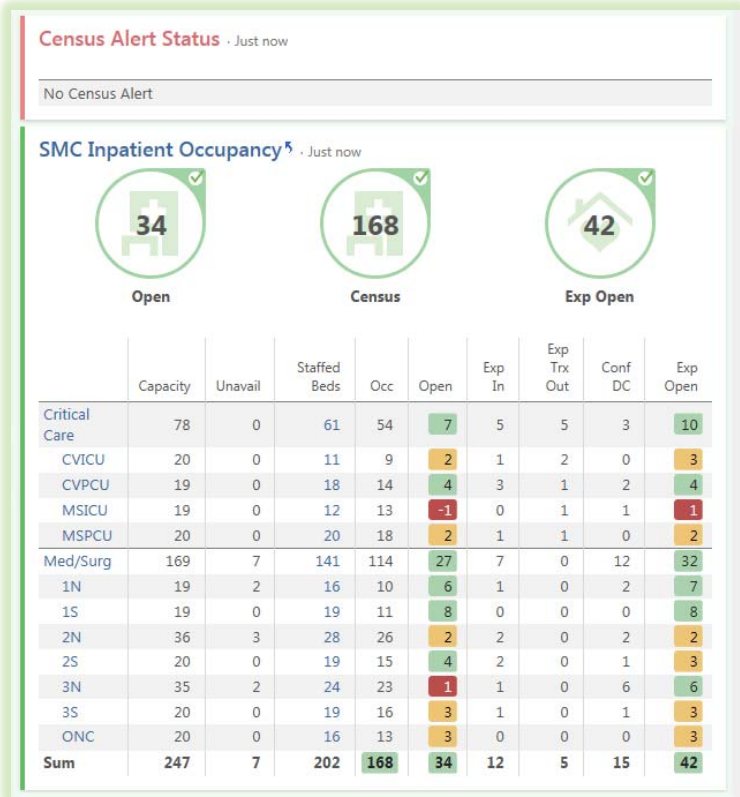
MS ICU
 Medical
 [No Value]

CV PCU
 Oncology
 Other

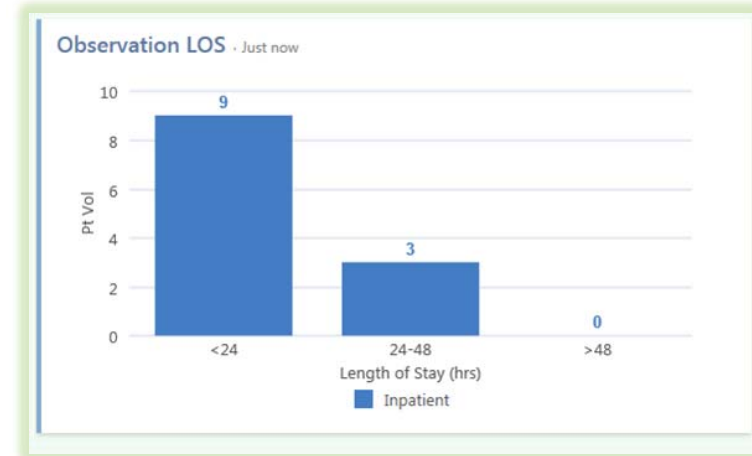
Dashboard Documentation

Capacity Management Dashboard Overview

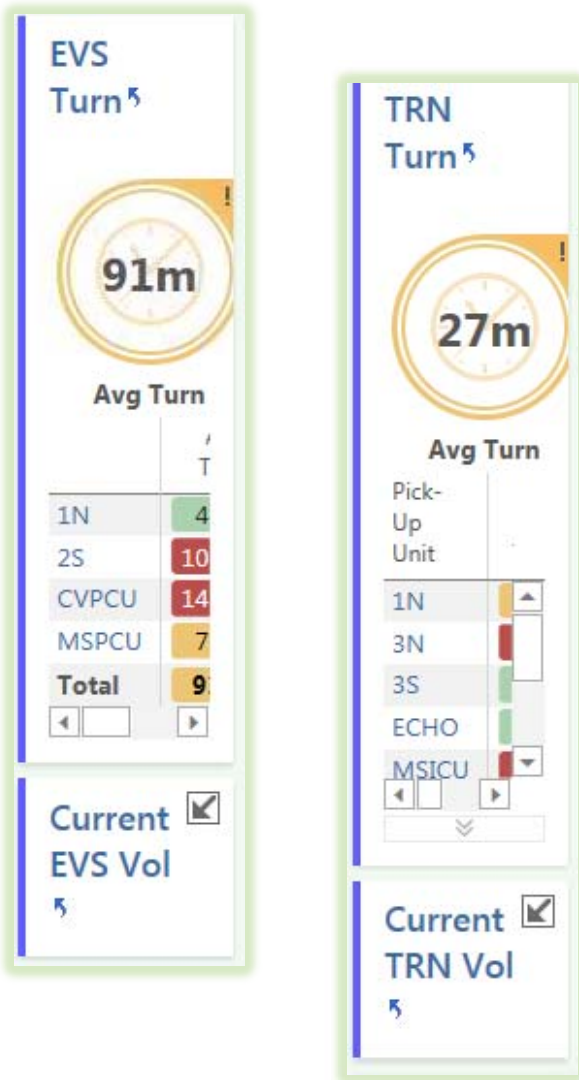
Design - Occupancy



Design – Anticipate Discharges



Design – Turnaround Times

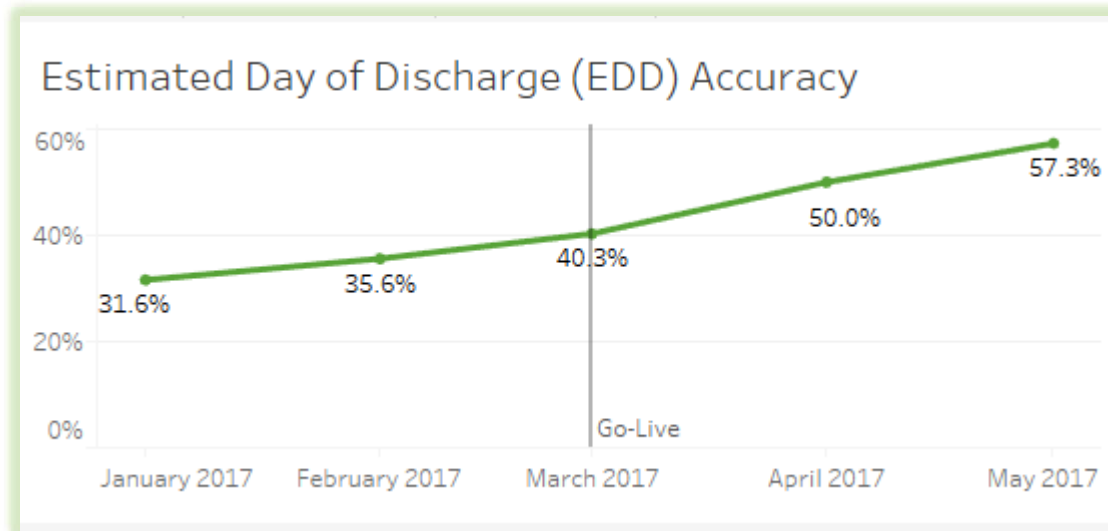


Implementation

Go Live	Workflow Optimization	Meeting Optimization
<ul style="list-style-type: none">■ 30 minute training sessions■ Unit rounding for nursing■ Large monitors in key areas	<ul style="list-style-type: none">■ Expected Discharge Date documentation■ Discharge within 2 hours of order■ Census management plan	<ul style="list-style-type: none">■ Daily safety/bed huddle■ Admin huddle with Executive leadership

Outcomes

- Increased Accuracy of Estimated Day of Discharge (EDD)



- Decrease of Missing EDD data
- More Transparency
 - Focus on actions rather than finding information
 - Huddle as needed

Lessons Learned

- Capitalize on Strengths of Core Team
- Subject Matter Expertise is Necessary
- Filter and Prioritize Change Requests through an “Owner”
- Soft Go-Live Validation Strategy
 - High quality product by go-live
 - Highly engaged stakeholders
 - Many opportunities for communication
 - Time commitment





Project Team

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