



Team 310 – Digital Twin of Hospital

HospiTwin

Your Hospital Operations'
AI Copilot

Track 3 – Transforming Intelligence

Intersystems



Allison, age 37

Presented with abdominal pain,
asked to be admitted but no
beds were available.

Consequences:

- perforated bowels
- peritonitis
- sepsis

Allison died a preventable death



INVESTIGATIVE UNIT

Fatal delay: Federal probe reveals Vallejo man died at Kaiser ER after 8-hour wait for chest pain treatment



MEDPAGE TODAY®

Patients Are Dying in Emergency Department Waiting Rooms

Manitoba

Death at Winnipeg's Health Sciences Centre ER raises questions about capacity issues, wait room protocols

Lawyer for family of man who died languishing in same ER 16 years ago calls latest incident 'disheartening'

NBC NEWS

As ER overcrowding worsens, a program helping to ease the crisis may lose funding

ER patients waiting for beds that don't exist

Auburn woman rushed to St. Joe's with heart problem. She died after 2-day wait in ER

Updated: Sep. 25, 2024, 6:50 p.m. | Published: Sep. 25, 2024, 6:00 a.m.



abcNEWS

The boarding crisis: Why some kids are waiting days in the ER for psychiatric ward beds

HUMAN INTEREST > REAL PEOPLE > REAL PEOPLE TRAGEDY

Woman Dies After 7-Hour Wait in Emergency Room: 'The System Is Obviously Broken'

"We were neglected," says the husband of 37-year-old Allison Holthoff, who died in the

3



GETTING A ROOM
AT A HOSPITAL



Problem:

Delays in **ED boarding** is a public health **emergency**.



The burden of long ED boarding times



* Extrapolated from

2017 Schreyer, K. E., & Martin, R. (2017). The Economics of an Admissions Holding Unit. *The western journal of emergency medicine*, 18(4), 553–558. <https://doi.org/10.5811/westjem.2017.4.32740>

Singreri AJ, Thode HC Jr, Viccellio P, Pines JM. The association between length of emergency department boarding and mortality. *Acad Emerg Med*. 2011;18(12):1324–1329. doi:10.1111/j.1553-2712.2011.01236.x

Bottlenecks on the journey to a free bed





The problem is
Predictable.

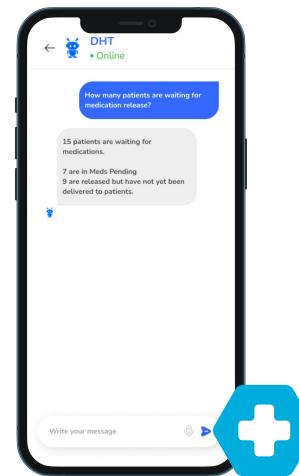
Which means it's
Preventable.



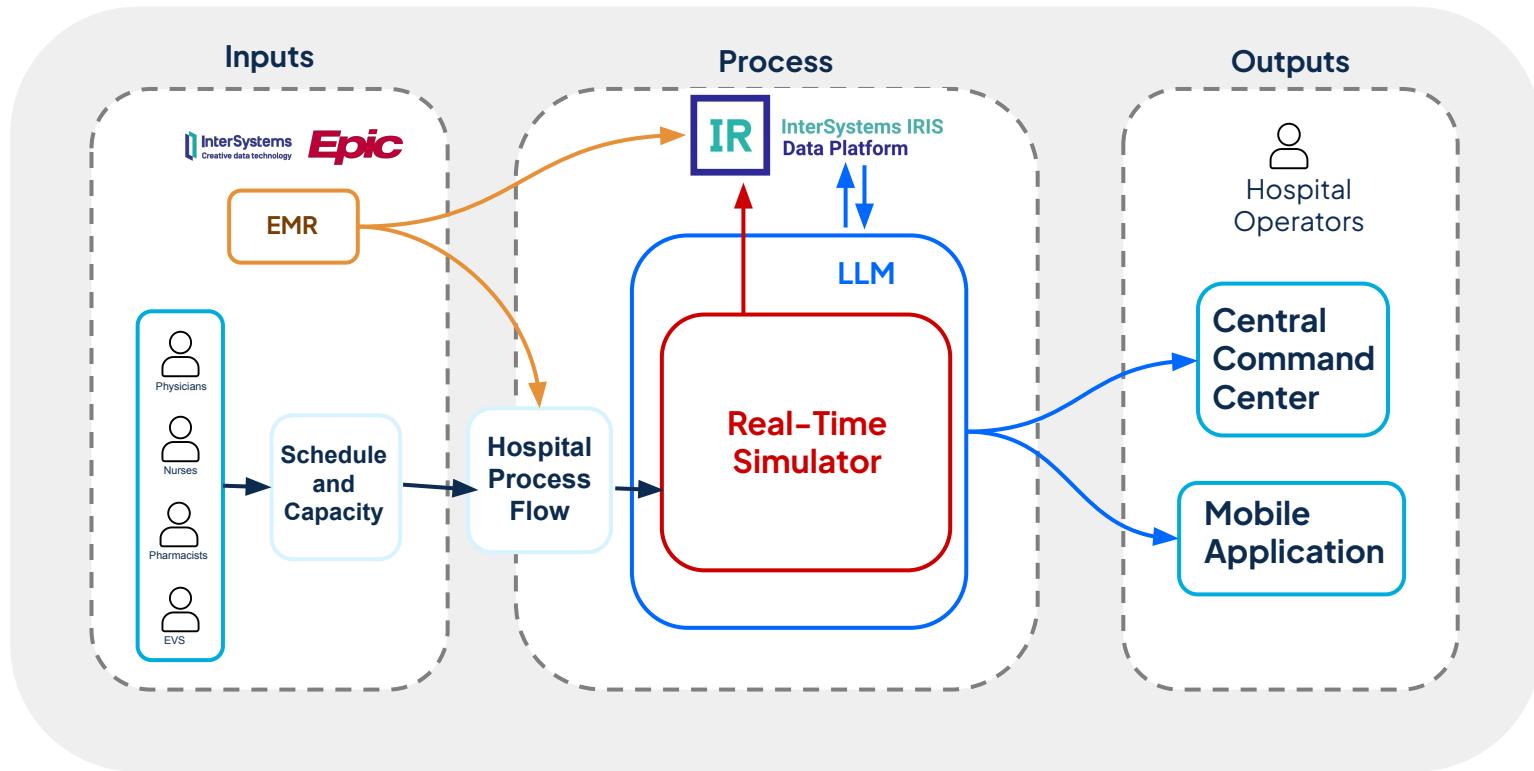
Solution:

HospiTwin

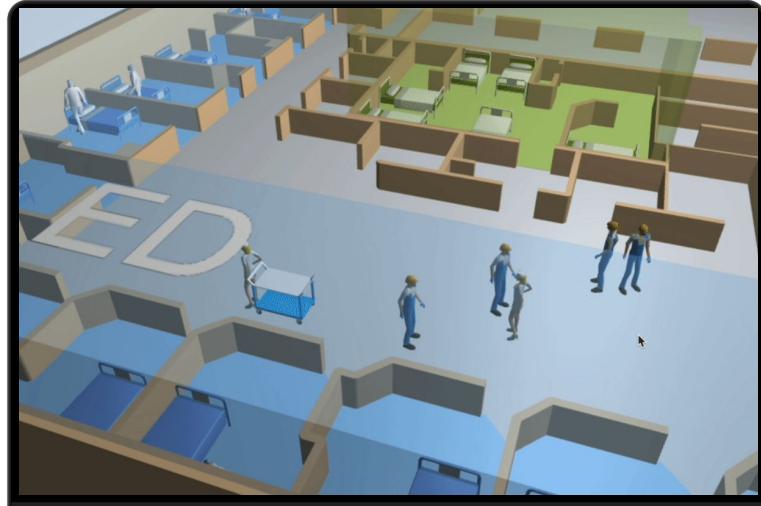
Your Hospital Operations' AI Copilot



Architecture



Command Center

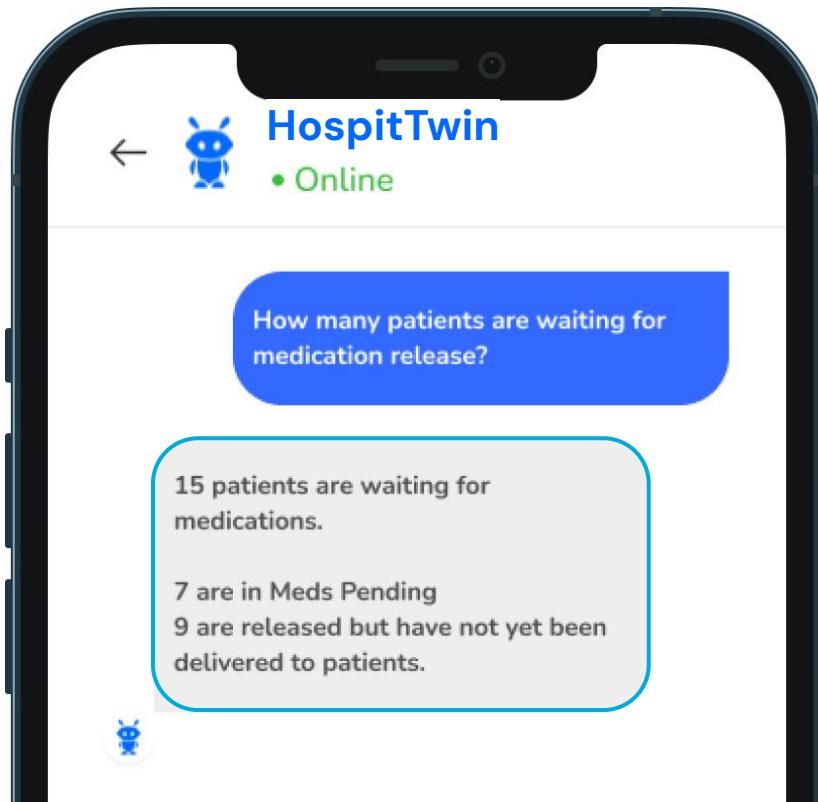


EMR Live tracking



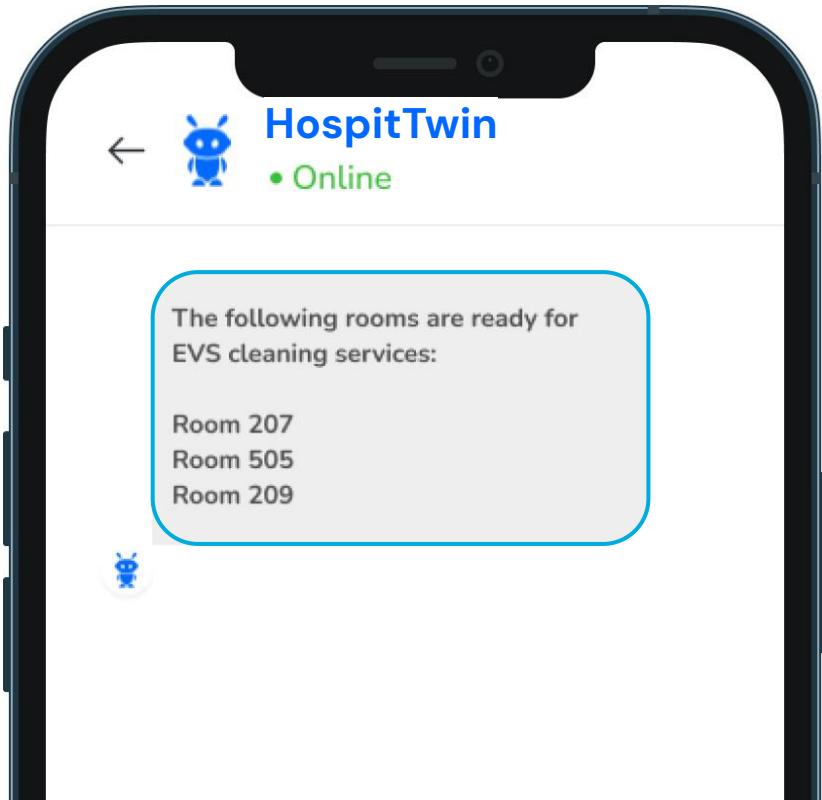
Prescriptive & what-if

Ask the LLM interface about anything.



Zero Hallucination

It also prescribes recommendations.



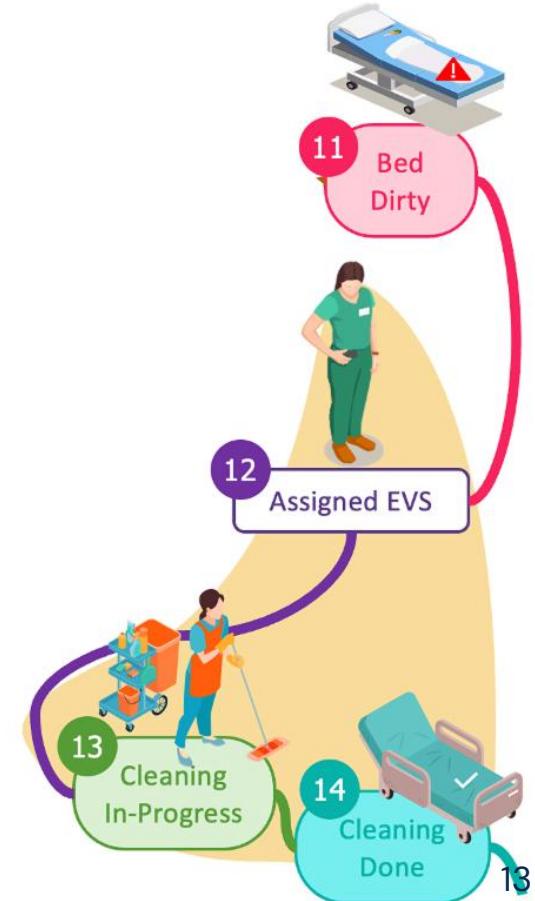
Prescriptive Insights



And can even simulate “what-ifs”.



What-if Insights



Business Model

- \$2500/yr per bed subscription
- The target is hospital administrators
(COO, Nurse Managers, APIC)

Go to Market Strategy:

Mar to Jul 2025

MVP

(market validation, product development)

Aug 2025

Pilot Hospital

(2 hospitals Identified)

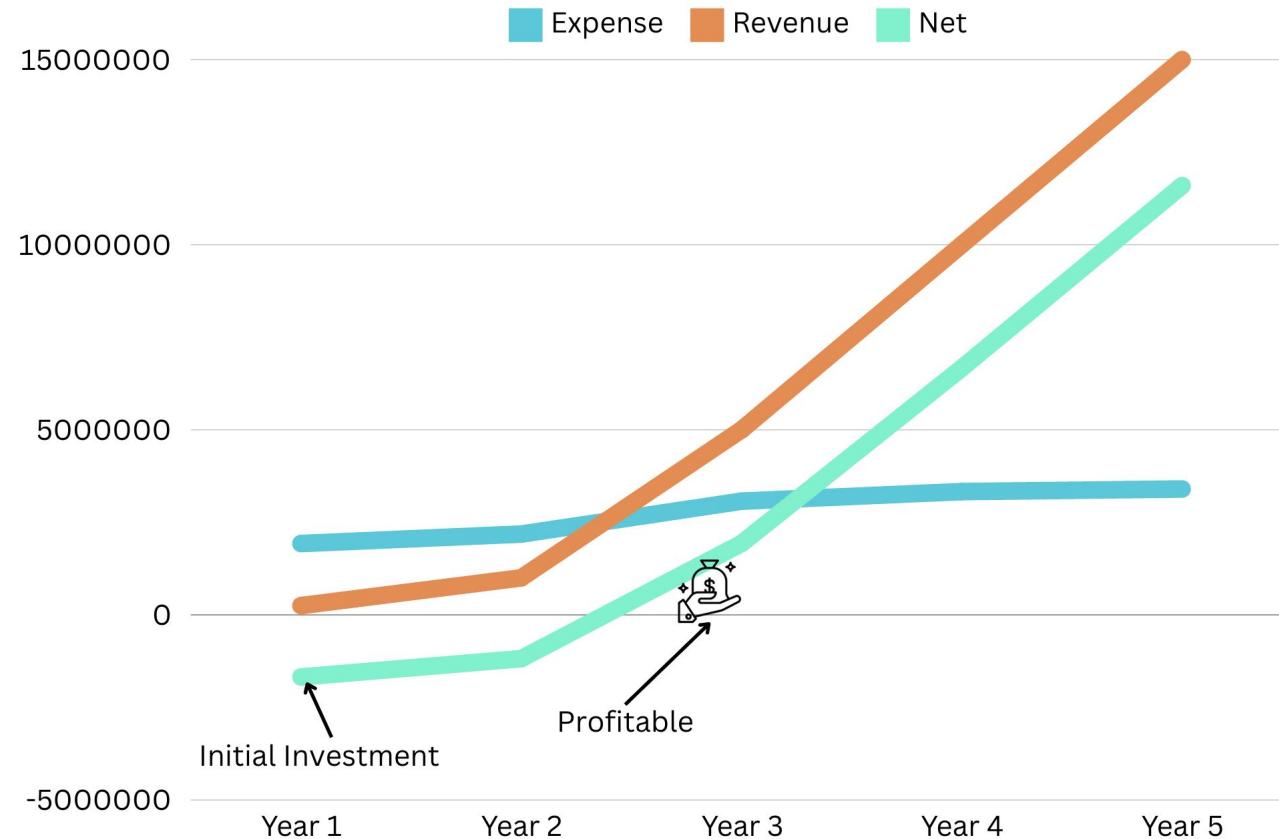
Oct 2025

Launch GA

READY FOR WINTER



Capital structure



Our advantage vs competitors

	HT	LeanTaaS BETTER HEALTHCARE THROUGH MATH	Qventus	Securitas Healthcare ●●●	NAVVIS A SURROUND CARE COMPANY	PHILIPS Healthcare
AI based Predictive	✓	✓	✓	✓	✓	✓
Prescriptive	✓	X	X	X	X	X
What-if analysis	✓	X	X	X	X	X
Realtime	✓	✓	✓	✓	✓	✓

Because no one should die waiting for a bed.



Help us save
more people like
Allison.

Our team:



Taposh Duttaroy, CEO
Director Innovation & AI
MSEE IIT Chicago, MBA UC Davis,
MBE Harvard Medical School



Sophia Borges, Chief Economist
MD-PhD, University of São Paulo, Brazil
Visiting Graduate at Harvard School of
Public Health



Ali Rehmatullah, CMO
Founder Kiae Digital,
Media Consultant for Healthcare
Innovators. Prev. Athenahealth.



Kamila Muyasarah, MD
Chief Medical Officer
MSc-CI Harvard Medical School
Grad Researcher at Dana-Farber



Muhammed Simsek, CTO
MSc, Software Development, Boston
University. BSc, Computer Science,
Sabanci University



Nada Salem, CPO
MSc Harvard Medical School
Policy and Comms Consultant

Team 310 - Digital Twin Hospitals

Team Members:

- Name 1 : Taposh Duttaroy / CEO
- Name 2 : Ali Rehmatullah / CMO
- Name 3 : Muhammed Enes Simsek / CTO
- Name 4 : Nada Salem / CPO
- Name 5 : Sophia Borges / CMO
- Name 6 : Kamila Muyasarah / COO

Theme: The long onboarding time in Emergency Rooms (ER) causes delays in patient care and inefficiencies in hospital operations.

Our team includes:

Physicians
AI Innovators
Software Engineers
Healthcare Marketers
Policy Experts
Healthcare economists



Taposh Duttaroy



Sophia Borges



Ali Rehmatullah



Kamila Muyasarah



Muhammed Simsek



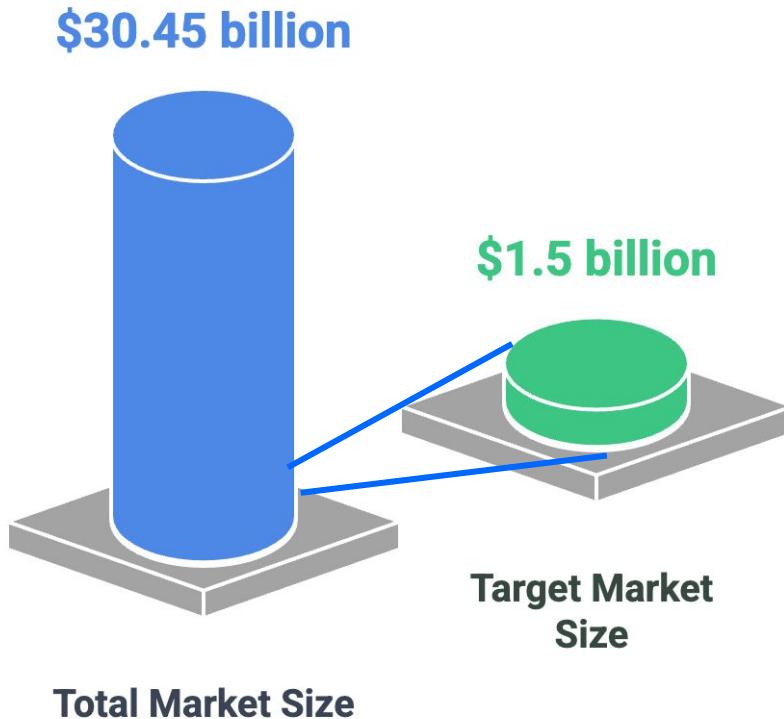
Nada Salem

Who've worked at:

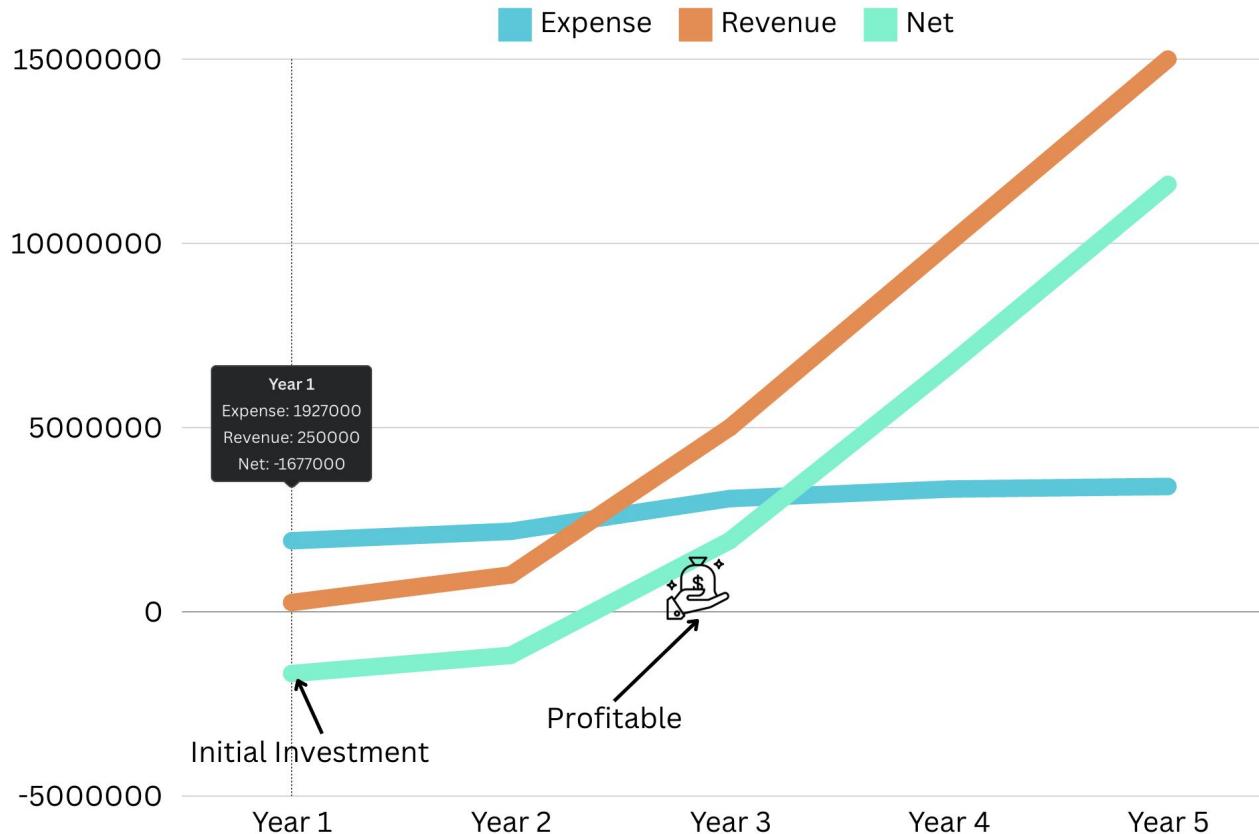
Kaiser Permanente
Athenahealth
And hospital systems
around the world

Appendix

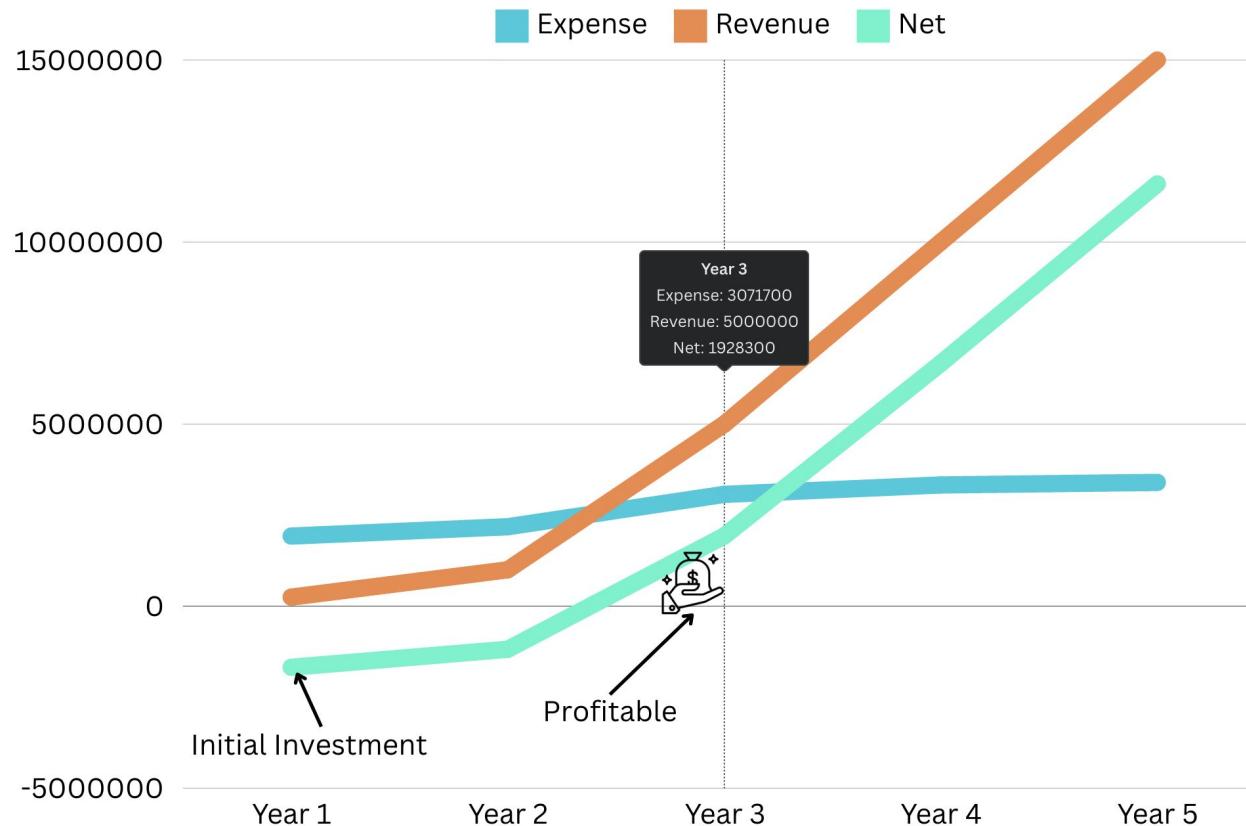
We are targeting 5% of the market



Capital structure



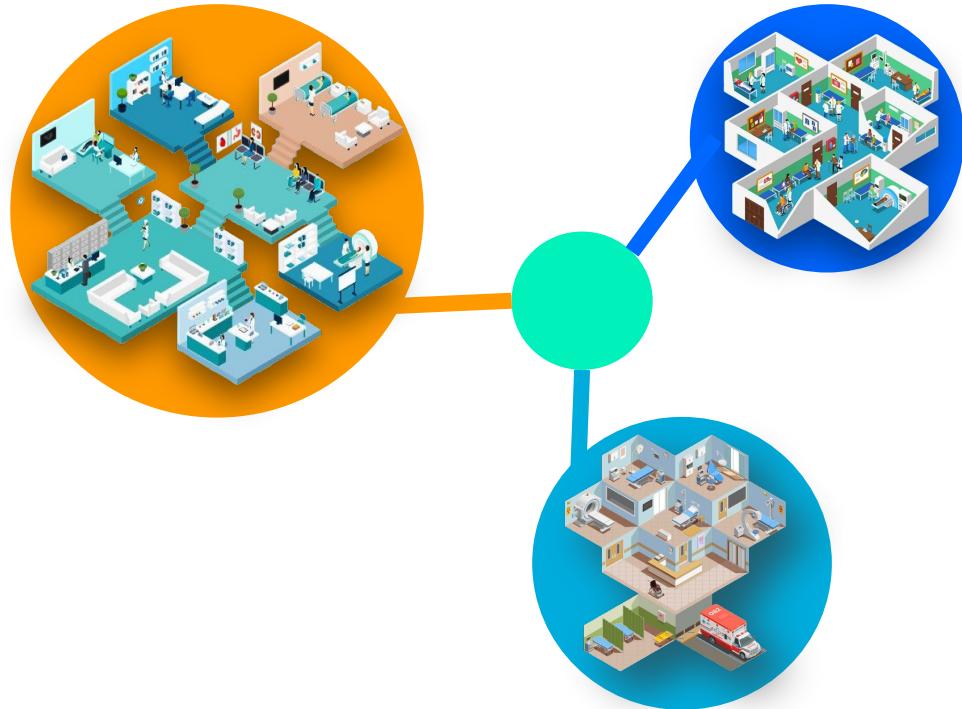
Capital structure





Future projection

Hospital Digital Network





Future projection

Real-time Monitoring

ED



PICU





The President
The White House
1600 Pennsylvania Avenue NW
Washington, D.C. 20500

Mr. President:

There is no question that Americans have suffered great loss of life and endured financial hardships, across all sectors, over the past 32 months due to the COVID-19 pandemic. Frontline healthcare workers risked their lives, provided care during physically and emotionally demanding situations, and bore witness to their patients' goodbyes to loved ones from afar.

Yet, in recent months, hospital emergency departments (EDs) have been brought to a breaking point. Not from a novel problem – rather, from a decades-long,¹ unresolved problem known as patient “boarding,” where admitted patients are held in the ED when the and rising staffing spiraling the stress professionals.

Boarding has become its own public health emergency.

Boarding has become its own public health emergency. Our nation’s safety net is on the verge of breaking beyond repair; EDs are gridlocked and overwhelmed with patients waiting – waiting to be seen; waiting for admission to an inpatient bed in the hospital; waiting to be transferred to psychiatric, skilled nursing, or other specialized facilities; or, waiting simply to return to their nursing home. And this breaking point is entirely outside the control of the highly skilled emergency physicians, nurses, and other ED staff doing their best to keep everyone attended to and alive.

Any emergency patient can find themselves boarded, regardless of their condition, age, insurance coverage, income, or geographic area. Patients in need of intensive care may board for hours in ED beds not set up for the extra monitoring they need. Those in mental health crises, often children or adolescents, board for *months* in chaotic EDs while waiting for a psychiatric inpatient bed to open anywhere. Boarding doesn’t just impact those waiting to receive care elsewhere. When ED beds are already filled with boarded patients, other patients are decompensating and, in some cases, dying while in ED waiting rooms during their tenth, eleventh, or even twelfth hour of waiting to be seen by a physician. The story recently reported² about a nurse in Washington who called 911 as her ED became completely overwhelmed with waiting patients and boarders is not unique – it is happening right now in EDs across the country, every day.



"At peak times which occur up to 5 days per week we have more patients boarding than we have staffed beds. High numbers have included last week when our 22 bed emergency department had 35 boarders and an additional 20 patients in the waiting room...In addition, we have patients who unfortunately have died in our waiting room while awaiting treatment. These deaths were entirely due to boarding. Our boarding numbers have unfortunately skyrocketed in the wake of covid as a consequence of increasing surgical volumes and decreasing inpatient nurse staffing."

-anonymous emergency physician

To illustrate the stark reality of this crisis, the American College of Emergency Physicians (ACEP) recently asked its members to share examples of the life-threatening impact the recent uptick in boarding has brought to their emergency departments. Excerpts of the responses received, as well as key findings from a qualitative analysis of the submissions, are included in this letter to summarize aspects of the problem. The full compilation of anonymized stories, attached as an appendix, paint a picture of an emergency care system already near collapse. As we face this winter's "triple threat" of flu, COVID-19 surges, and pediatric respiratory illnesses that are on a sudden rise, **ACEP and the undersigned organizations hereby urge the Administration to convene a summit of stakeholders from across the health care system to identify immediate and long-term solutions to this urgent problem.** If the system is already this strained during our "new normal," how will emergency departments be able to cope with a sudden surge of patients from a natural disaster, school shooting, mass casualty traffic event, or disease outbreak?

American College of Emergency Physicians

Academy of General Dentistry

Allergy & Asthma Network

American Academy of Child and Adolescent Psychiatry

American Academy of Emergency Medicine (AAEM)

American Academy of Family Physicians

American Academy of Physical Medicine and Rehabilitation

American Academy of Physician Associates

American Association of Oral and Maxillofacial Surgeons

American College of Allergy, Asthma & Immunology (ACAAI)

American College of Osteopathic Emergency Physicians (ACOEP)

American College of Radiology

American Foundation for Suicide Prevention

American Medical Association

American Nurses Association

American Osteopathic Association

American Psychiatric Association

American Society of Anesthesiologists

Association of Academic Chairs of Emergency Medicine

Association of State and Territorial Health Officials (ASTHO)

Brain Injury Association of America

Council of Medical Specialty Societies

Council of Residency Directors in Emergency Medicine (CORD)

Emergency Medicine Residents' Association

Emergency Nurses Association

Family Voices

Infectious Diseases Society of America

International Association of Fire Chiefs

National Alliance on Mental Illness

National Association of EMS Physicians

National Health Care for the Homeless Council

National Partnership for Women & Families

Society for Academic Emergency Medicine

Society of Emergency Medicine Physician Assistants (SEMPA)

The National Alliance to Advance Adolescent Health





Capital structure

	Year 1	Year 2	Year 3	Year 4	Year 5
Sr. Simulation Specialist	250,000	250,000	250,000	250,000	250,001
Simulation Specialist		180,000	360,000	540,000	540,000
Sr. Optimization Specialist	250,000	250,000	250,000	250,000	250,001
Optimization Specialist			360,000	360,000	360,000
Sr. AI Engineer	250,000	250,000	250,000	250,000	250,001
Sr. AI Engineer (remote)		76,000	152,000	228,000	228,000
Sr. Backend engineer (Intersystems)	200,000	200,000	400,000	400,000	400,000
Sr. Backend engineer (remote)			70,000	70,000	140,000
App Developer	200,000	200,000	200,000	200,000	200,000
Marketing Manager (%)	100,000	100,000	100,000	100,000	100,000
Sales (%)	100,000	100,000	100,000	100,000	100,000
CFO	250,000	250,000	250,000	250,000	250,000
CEO/COO/ Sales	250,000	250,000	250,000	250,000	250,000
MISC (Space- Wework)	27000	27000	29700	32400	32400
Sales and Marketing	50000	50000	50000	50000	50001

	Expense	Revenue	Net
Year 1	1927000	250,000	-1,677,000
Year 2	2183000	1,000,000	-1,183,000
Year 3	3071700	5,000,000	1,928,300
Year 4	3330400	10,000,000	6,669,600
Year 5	3400404	15,000,000	11,599,596



Bottlenecks on the journey to a free bed



Bottlenecks on the journey to a free bed



Bottlenecks on the journey to a free bed



Bottlenecks on the journey to a free bed



Bottlenecks on the journey to a free bed



Bottlenecks on the journey to a free bed



Bottlenecks on the journey to a free bed



Bottlenecks on the journey to a free bed



Bottlenecks on the journey to a free bed



Bottlenecks on the journey to a free bed

