Open@Epic CONFERENCE

Children's Hospital of Philadelphia

From Pilot to Production: Shipping a SMART on FHIR App

Presenters



Jeritt Thayer, PhD

Health Informatics System Engineer

Assistant Professor of Pediatrics

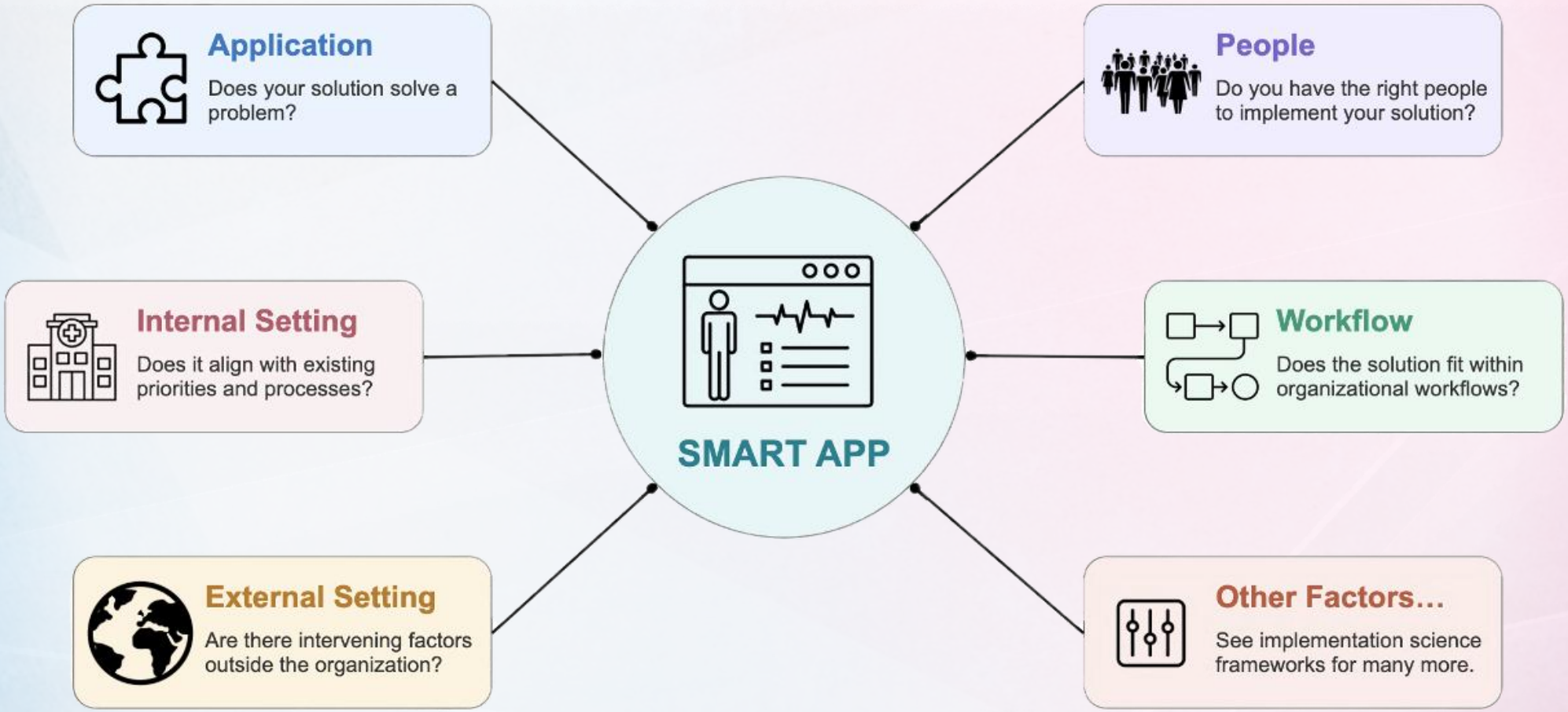


Malar Singaravelu, MS

Application Developer, Emerging Technology & Transformation

Why can a SMART App take months or years to deploy?

Implementation Context



Learning Objectives

1. Identify factors that influence a SMART App's progression from pilot to production.

2. Assess how each factor can impact implementation decisions and timelines.

3. Describe practical strategies to support production readiness, sustained adoption, and cross-site scalability of SMART Apps.

Adapted 4 Steps to the Epiphany



Step 1: Discover



Step 2: Validate



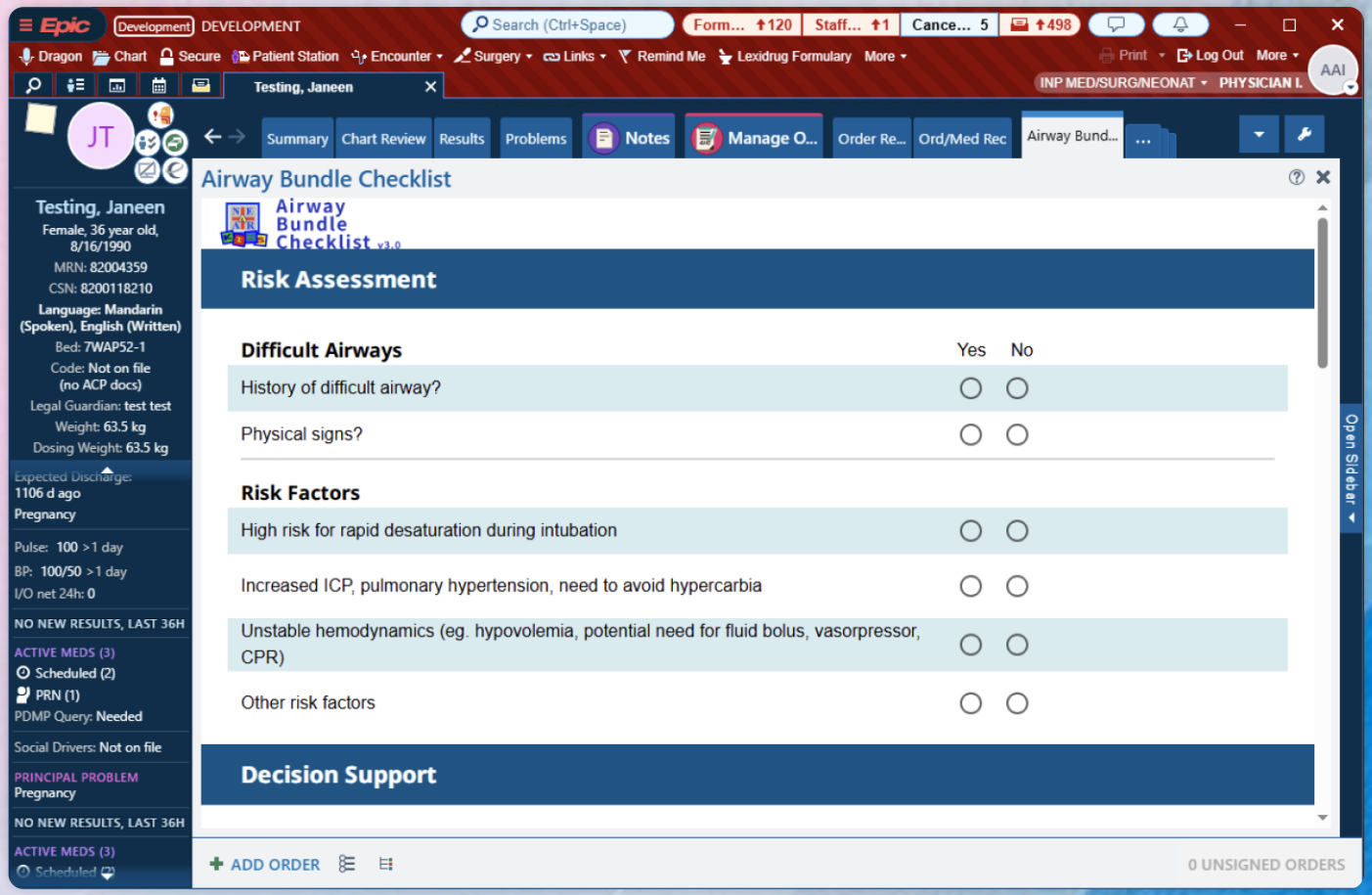
Step 3: Create / Scale



Step 4: Operationalize

Airway Bundle Checklist

- SMART App deployed in the seven PICUs across the country.
- Incorporates rule-based and model-based decision support.
- Utilizes SMART, FHIR, RxNorm and LOINC.



Step 1: Discover

Who needs this, and why?

Does this solve a problem that matters here?

Identify Users



Identify Users



OEC13

How to Meet Customer Needs: Advice for Startups

Today, October 21

1:30-2:10 PM

Slides will be made available from Epic.

Identify Approach

BOTTOM UP

Start with **individual users** and **build support up**.

Can be time consuming and risks rejection at each “stage”.

TOP DOWN

Start with **executives**.

Harder to obtain, but smoother implementation.

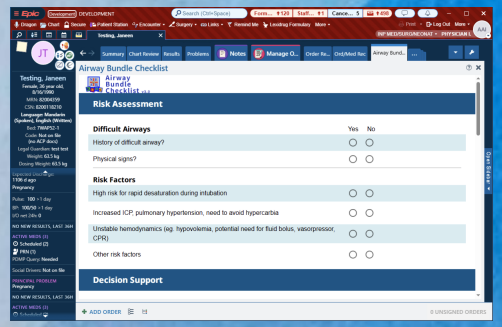
What Does This Look Like?

Users

- **Clinician** – MD, RN, RT
- **Champion** – Principal Investigator
- **Buyer** – PICU and CICU
- **Approver** – Department leadership, CMIO, HIM, IT.
- **Tech Support** - IT

Approach

- ↑ Bottom up.
- Originated from **clinical research** efforts.
- Built support within **department** and **executive leadership**.



Step 2: Validate

Can the application actually work *here*?

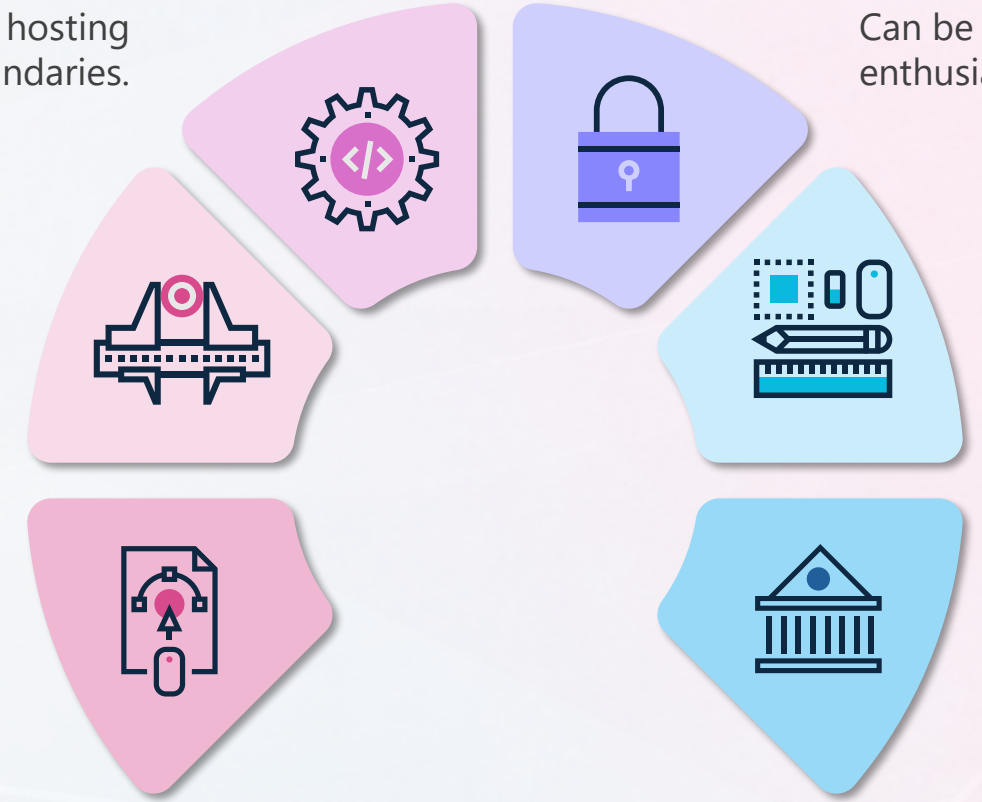
Solution Fit

Technical

Local infrastructure, hosting requirements, network boundaries.

Security

Can be a hard stop, even when enthusiasm is high.



Data and Terminology

Is data available through supported interfaces? Semantic alignment?

Testing and Validation

Perform rapid usability assessments and validate backend data.

Workflow

Does the local workflow match application assumptions?

Governance

Who / what committees have to say yes?

Solution Fit

Technical

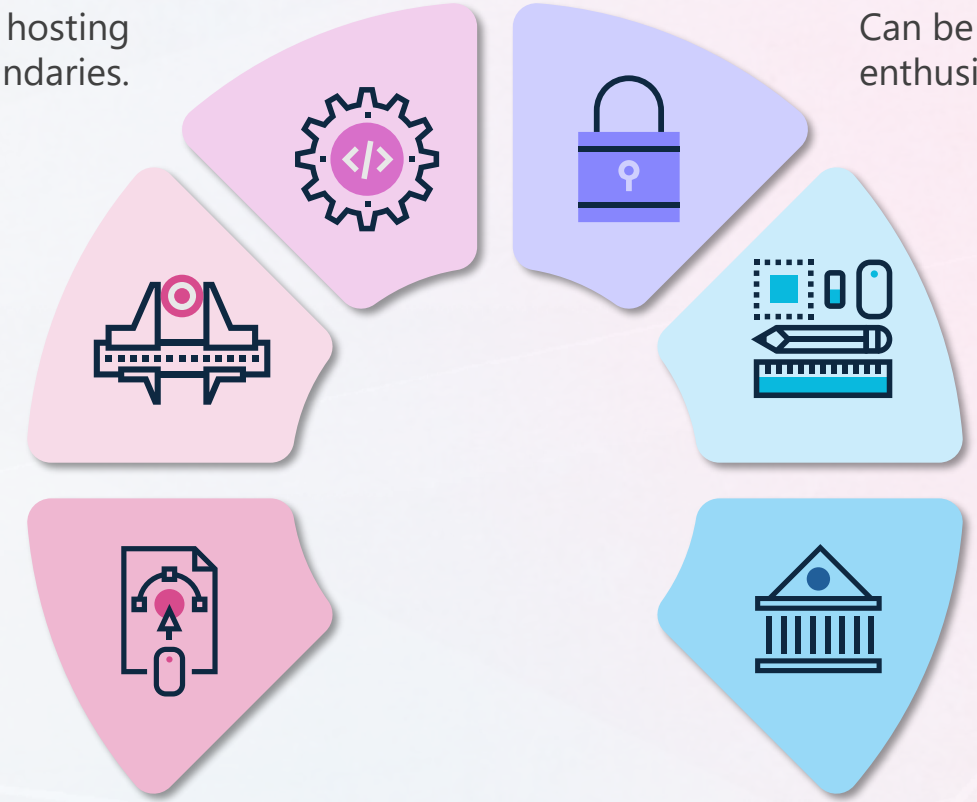
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OEC30

Cybersecurity and Risk Intelligence

Tomorrow, October 22

10:30-11:10 AM

Explores strategies you can use to meet rigorous security requirements.

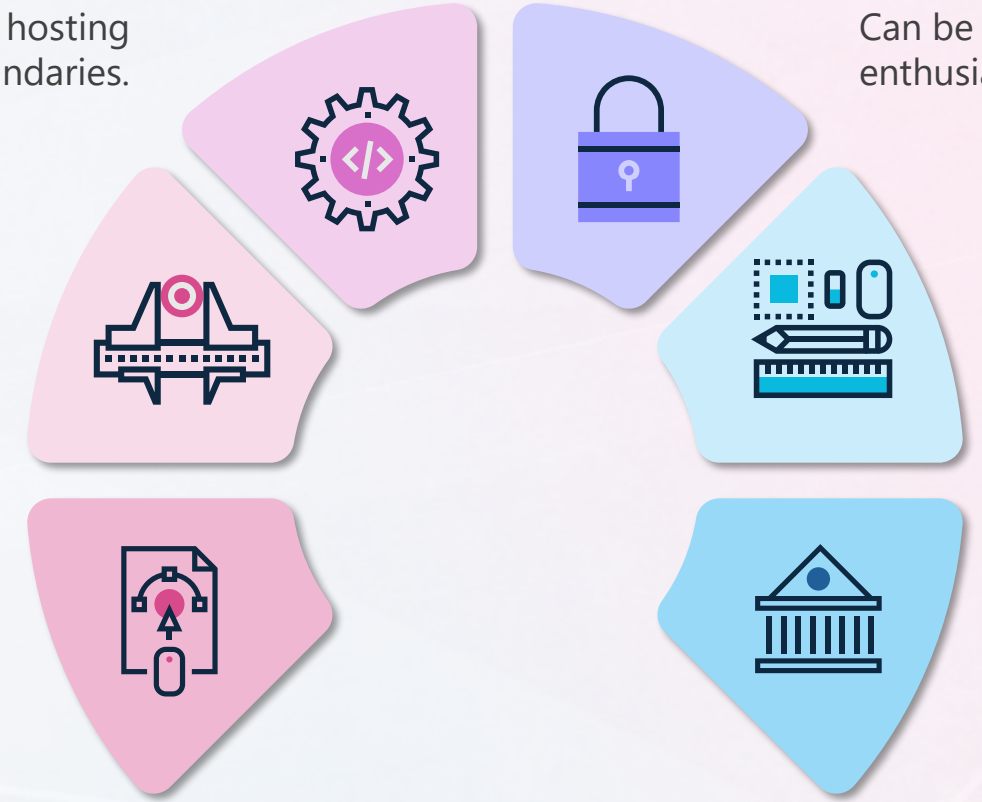
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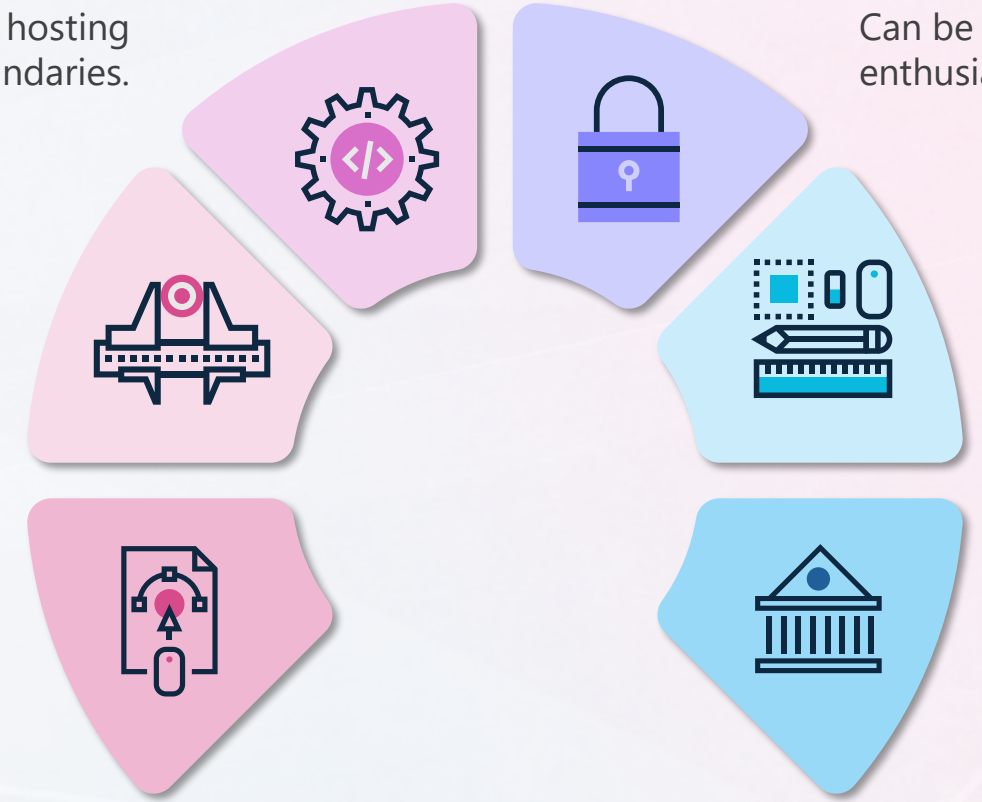
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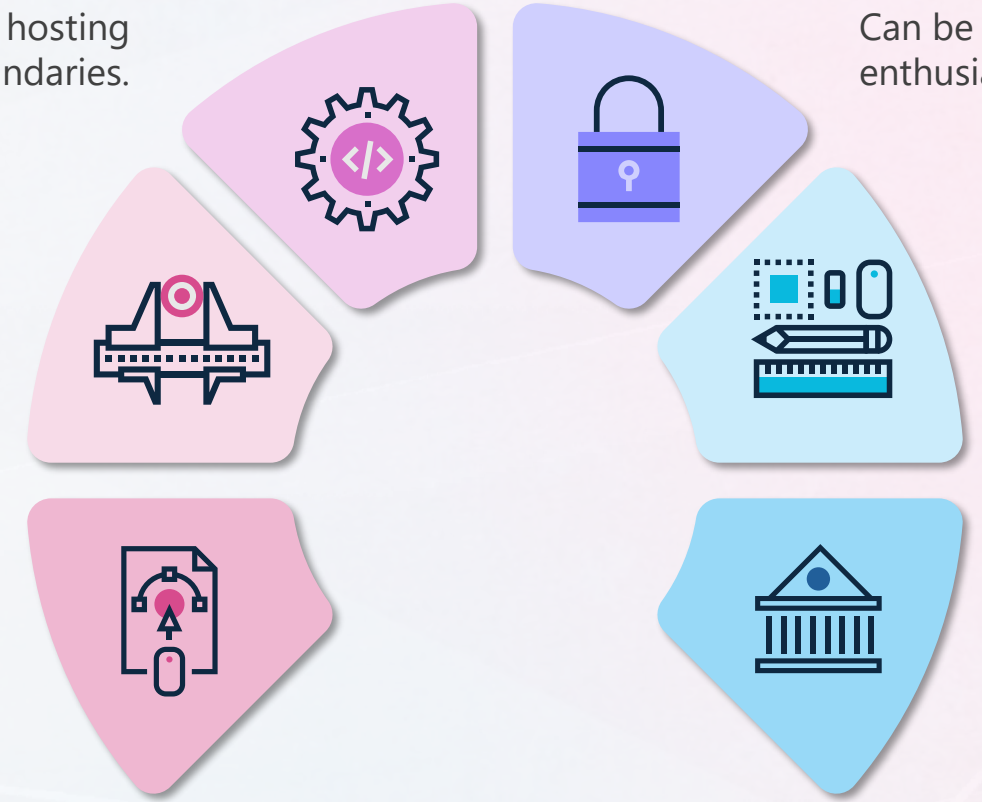
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Airway Bundle Checklist



Multiple Roles

Physician, Fellow, Nurse Practitioner, Nurse, Respiratory Therapist



Multiple Devices

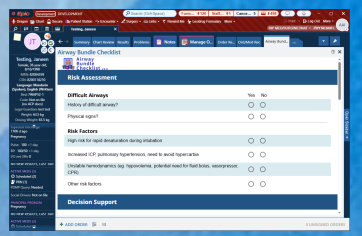
Computer, mobile, tablet



Workflow

Linear vs dynamic?

Fast-paced environment?



Step 3: Create and Scale

A successful pilot is not adoption

Rollout Progression

Rollout Progression

Pilot

Can we make this work under controlled circumstances?



Rollout Progression

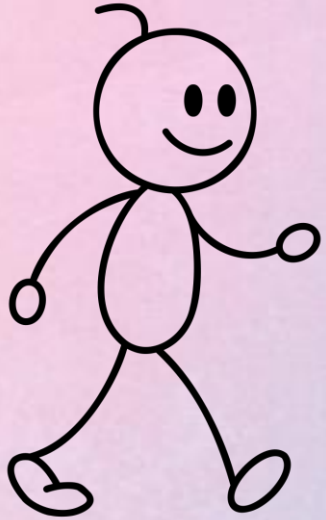
Pilot

Can we make this work under controlled circumstances?



Limited Rollout

Can real users use it safely in routine care?



Rollout Progression

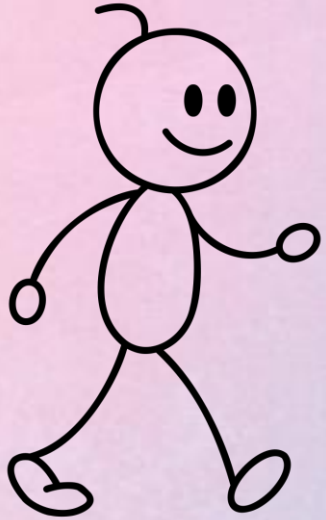
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Phased Expansion

Can we reproduce the implementation across sites?



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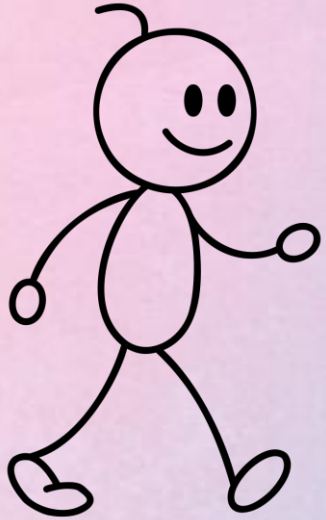
Pilot

Can we make this work under controlled circumstances?



Limited Rollout

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Phased Expansion

Can we reproduce the implementation across sites?



Enterprise Rollout

Can the organization operate it as normal clinical infrastructure?



Timeline

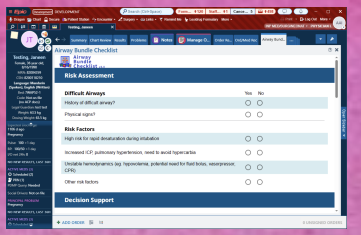
Concept
October 2022

Pilot
March 2023

Limited Rollout
January 2024

Phased Expansion
March 2024

Enterprise Rollout
May 2024



Step 4: Operationalize

Who owns this when the innovation team leaves?

“Production” is an Operating Model



Ownership

Who owns the application across the clinical, product, and technical domains?



Monitoring

Process and patient outcomes, application performance, failures, and usage patterns.



Funding

Who pays after pilot, grant, or innovation funding ends?



Maintenance

Who responds to EHR upgrades, workflow changes, and infrastructure changes?

Production Model



Ownership

Split across PICU leadership and clinical IT.



Monitoring

Split between PICU leadership, quality assurance, and clinical IT.



Funding

Supported through a combination of research and operational budgets.



Maintenance

Split across the different areas of expertise.

Closing

The actual epiphany

Why can a SMART App take months or years to deploy?

Deployment Extends Beyond Tech

Deploying an app is hard, but **deploying an app that conforms to standards** is **easier.**



Pilot to Production

Discover



Do I have a solution worth building?

Who are my users?

How will I attract interest?

Validate



Can the application work in this context?

Consider workflow, technical, data, governance, and security.

Create / Scale



Validating question changes at each phase.

"Can we make it work?" to "Can the organization reliably own it?"

Operationalize



How is the app maintained?

Production is operating model.

Need a sustainable model for all users.

Q&A

Wrap Up

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