

Learning journey of a best of suite and openEHR site



Andrew Forrest - CIO

Introduction

- Background
- Challenge
- Path to a solution
- Does it exist
.....and what does it look like
- Lessons

Starting point

OpenSource PAS

- First of type
- Success
- Low cost

Clinical Correspondence

- Highly usable
- Outstanding adoption in clinical body

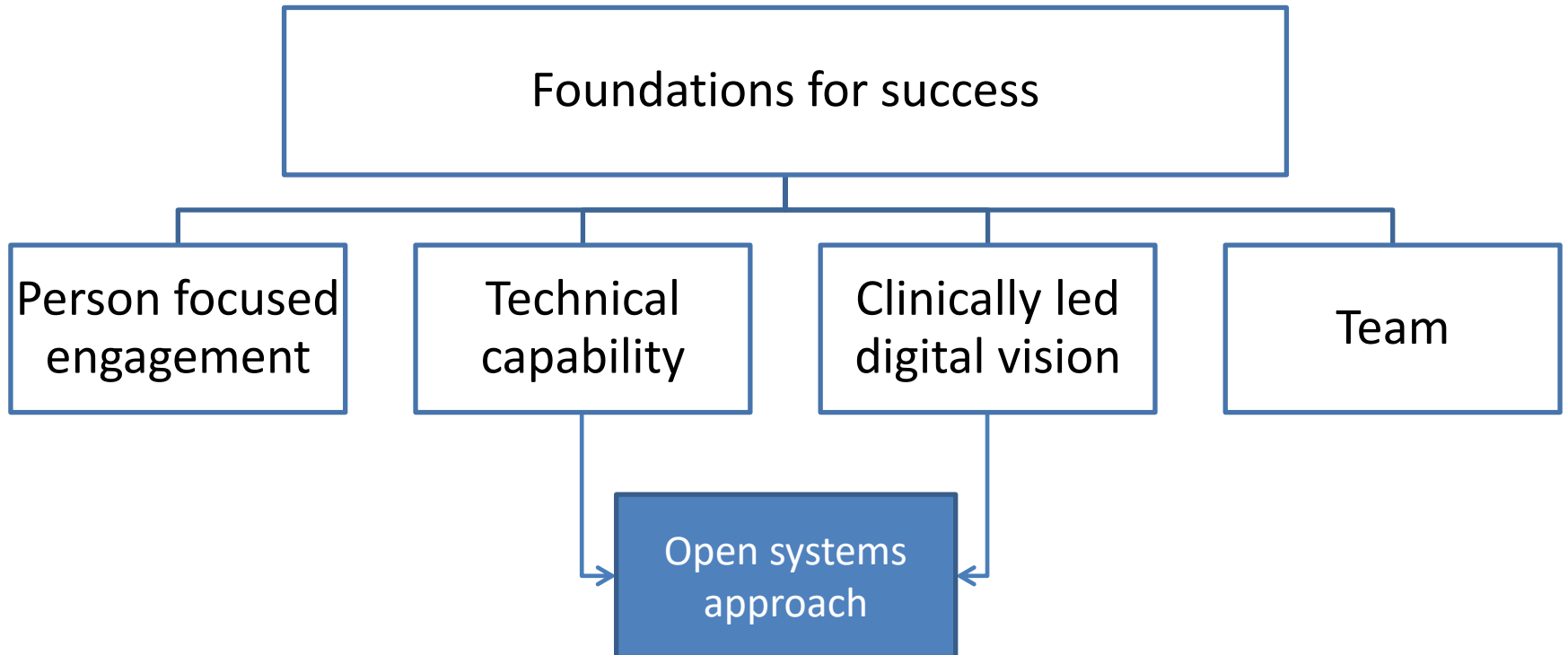
OrderComms + PACS

- County wide saturation
- Full adoption

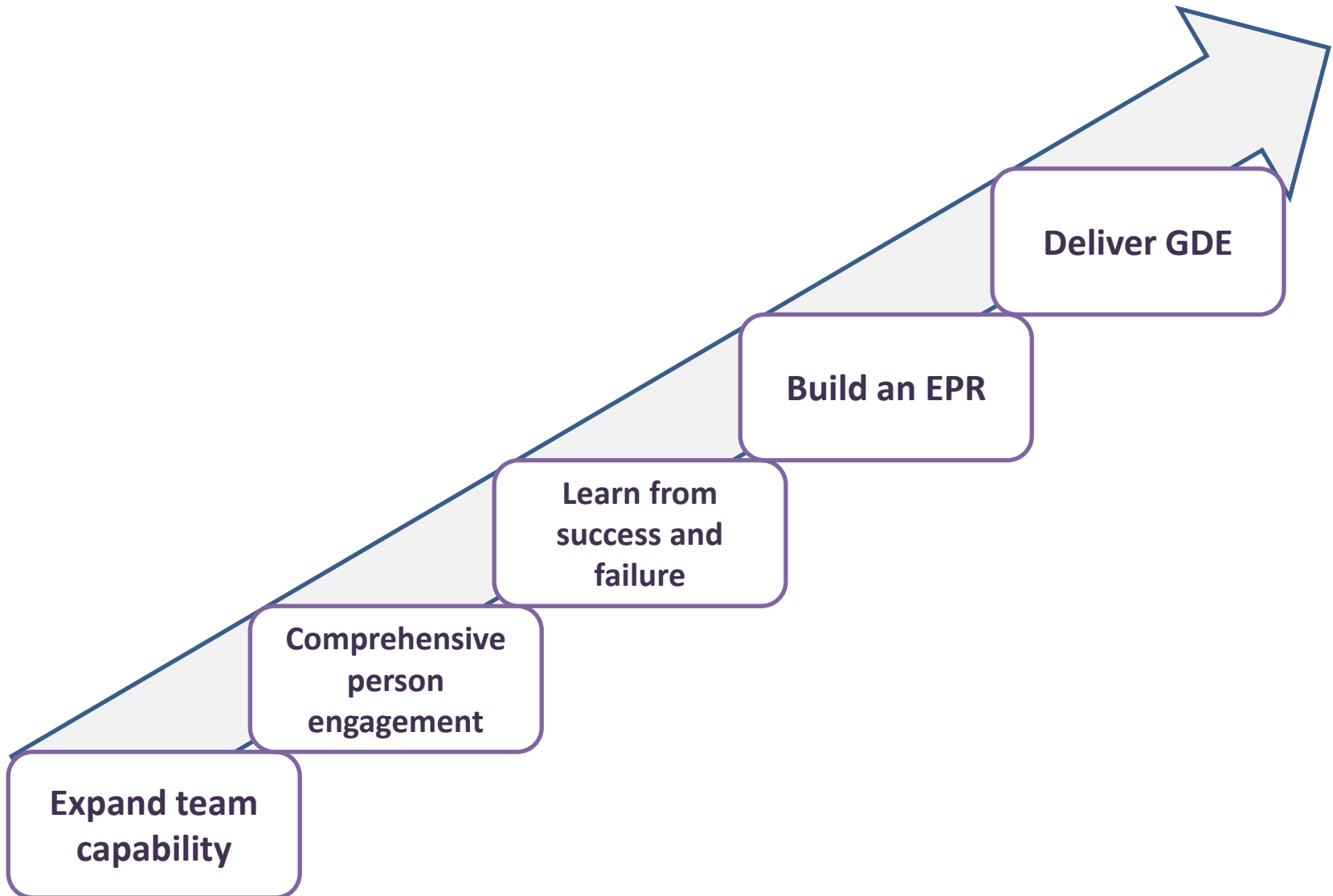
Departmental systems

- Large numbers
- Specialist purpose

Starting point

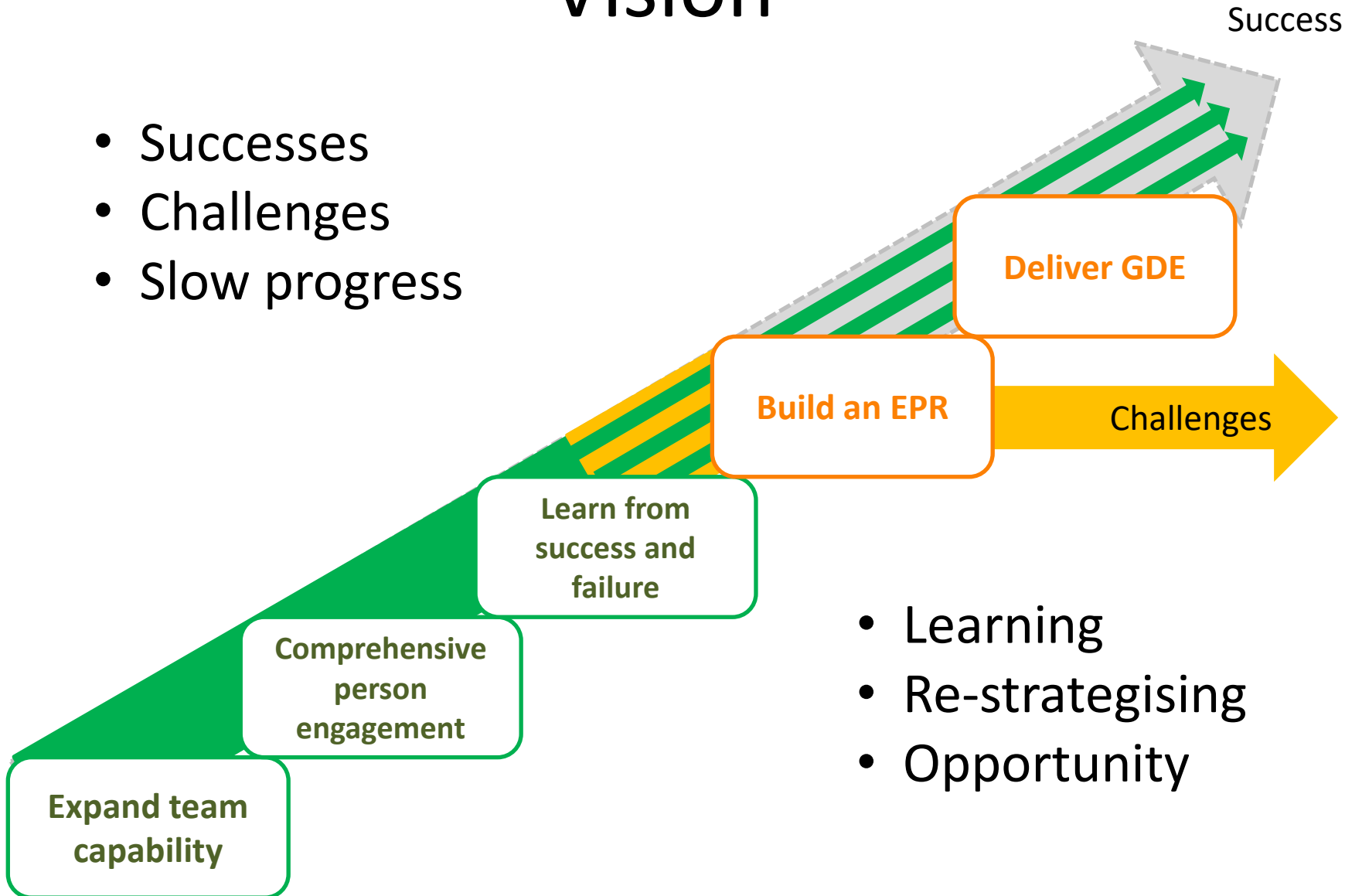


Vision



Vision

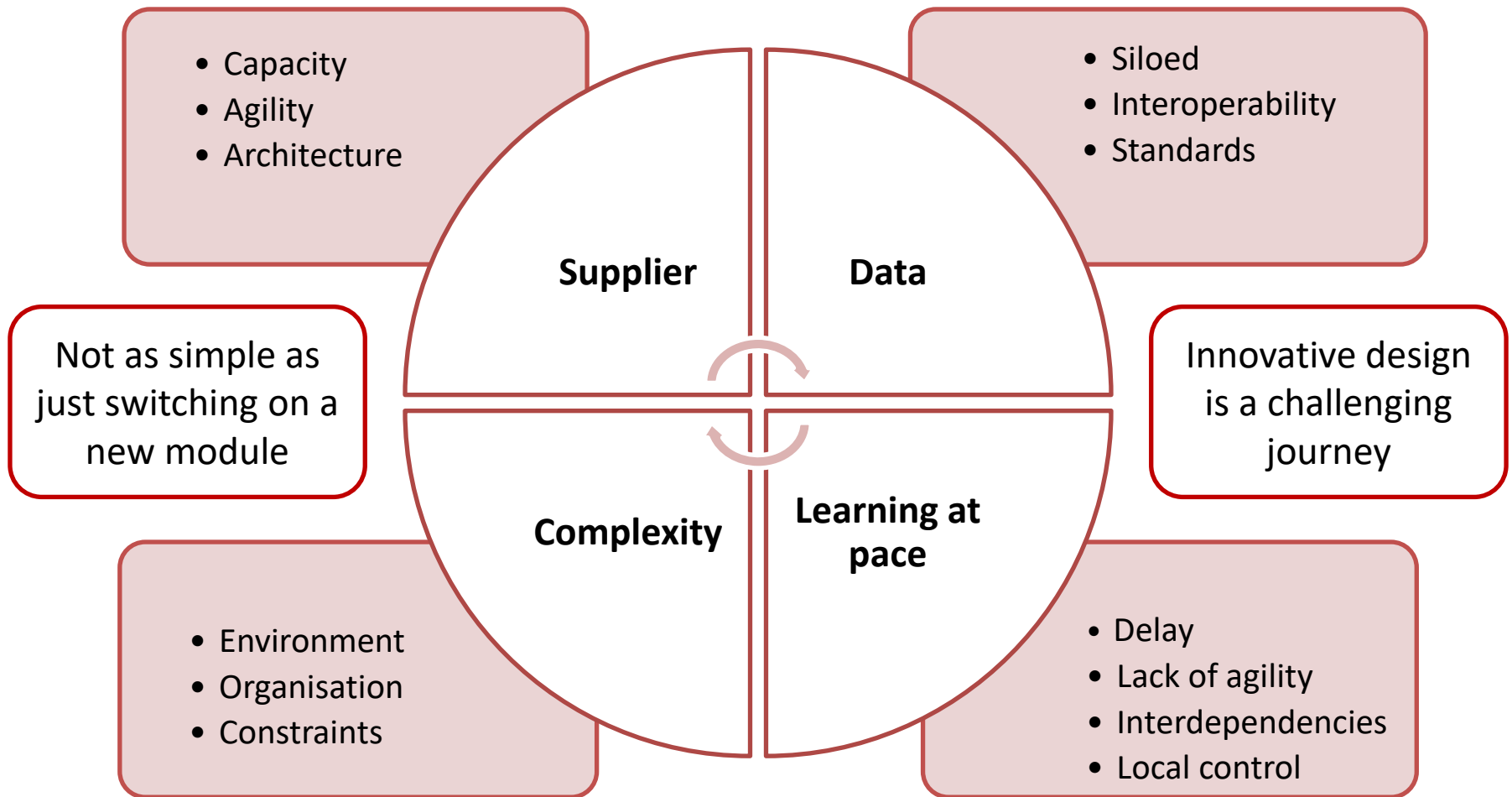
- Successes
- Challenges
- Slow progress



- Learning
- Re-strategising
- Opportunity

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Challenge



Options considered

New Full EPR procurement	
Build Your own Single supplier EPR	
Large best of breed	
Multi-specialist	
Hybrid	

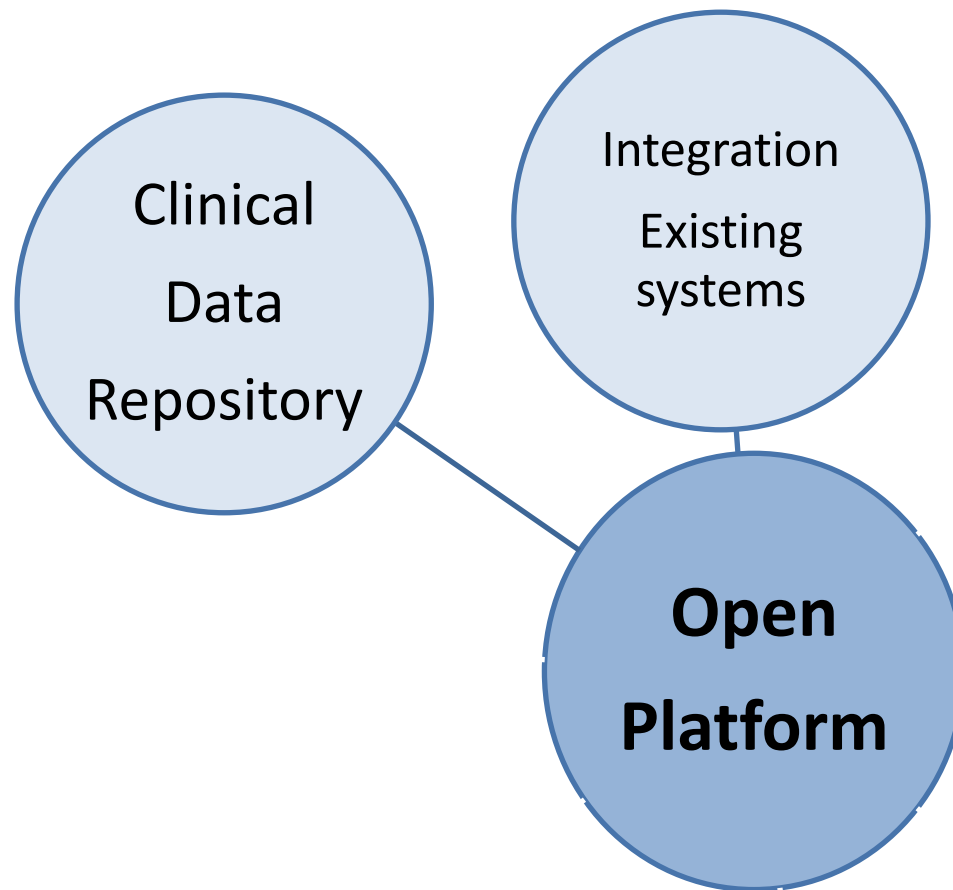
Options considered

New Full EPR procurement	Too costly Too time consuming Not strategically aligned
Build Your own Single supplier EPR	Slow and mixed success Lacks agility
Large best of breed	Considered
Multi-specialist	Considered Already using (some)
Portal (hybrid)	Considered Foundations already onsite

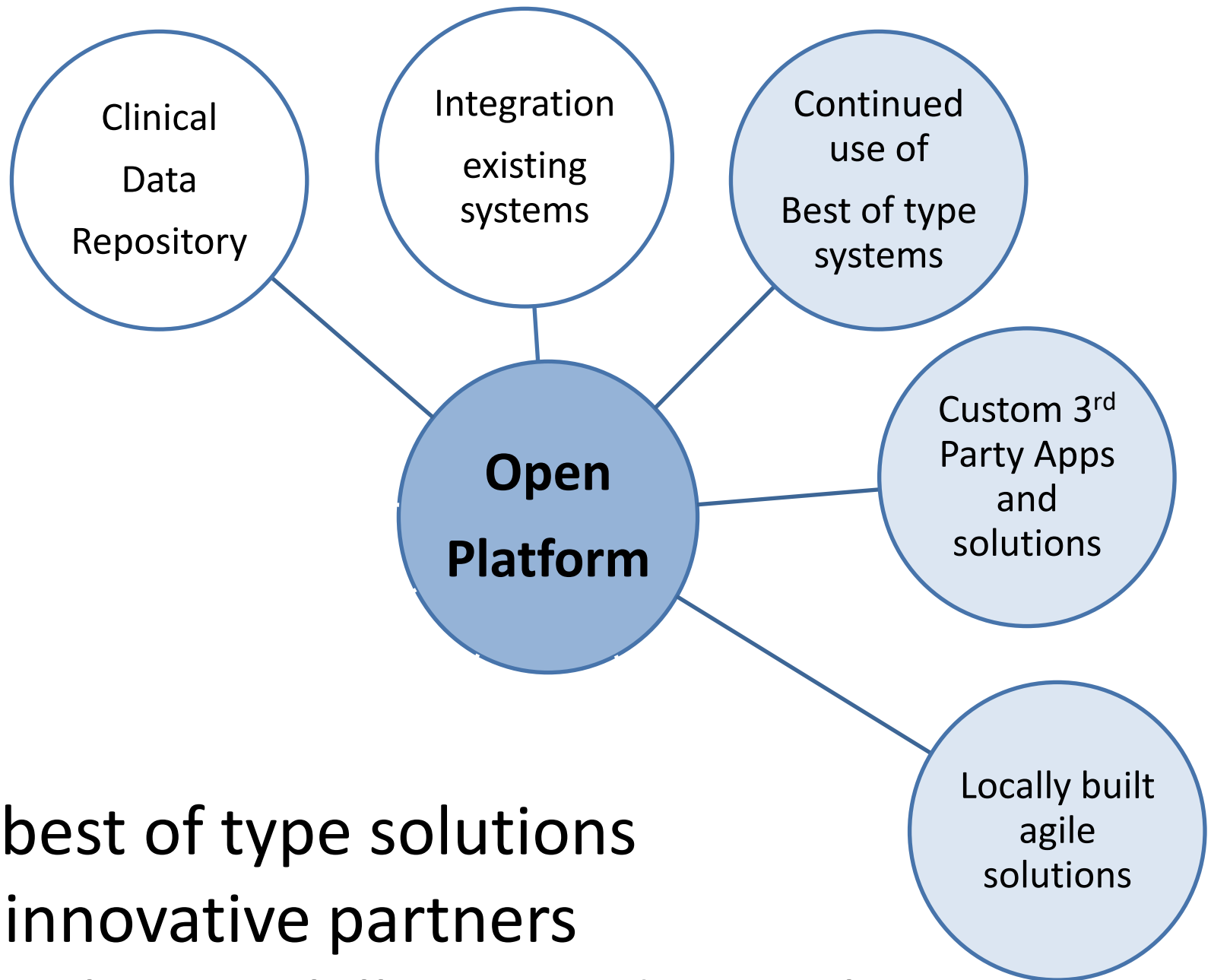
Options considered

Large best of breed	<ul style="list-style-type: none">• Too inflexible• Procurement too time consuming
Multi-specialist	<ul style="list-style-type: none">• Complex to integrate
Portal (hybrid)	<p>Pro's</p> <ul style="list-style-type: none">• Doesn't rule out key suppliers• Creates agility and local control• Forms central record and clinical data repository• Strategic alignment,• Flexible growth model <p>Con's</p> <ul style="list-style-type: none">• Will need re-model of resource, skills investment• Not all strands will succeed• Relatively unproven in UK

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- **Path to a solution**
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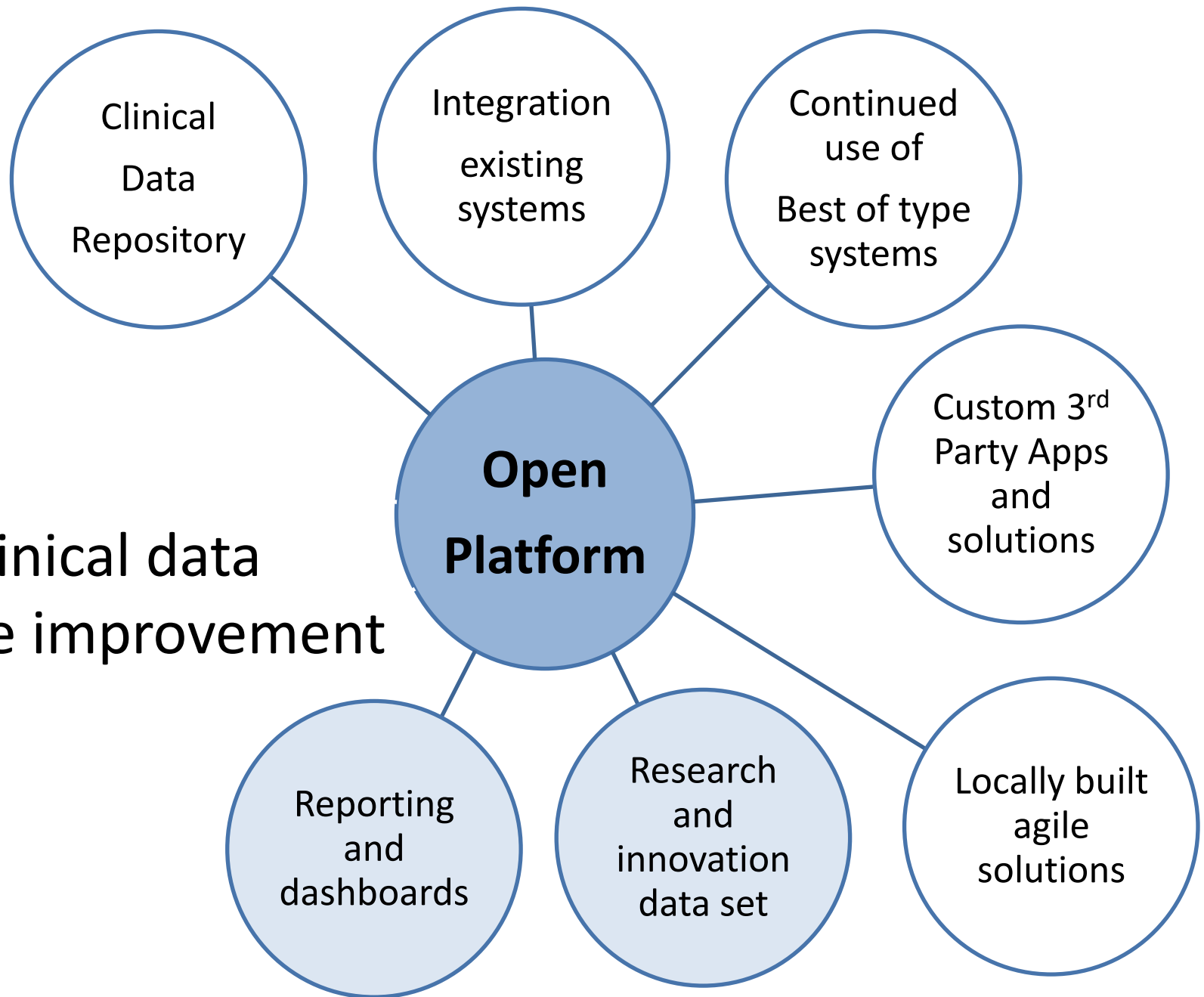


Meets HIMSS requirement
Single place for the patient record

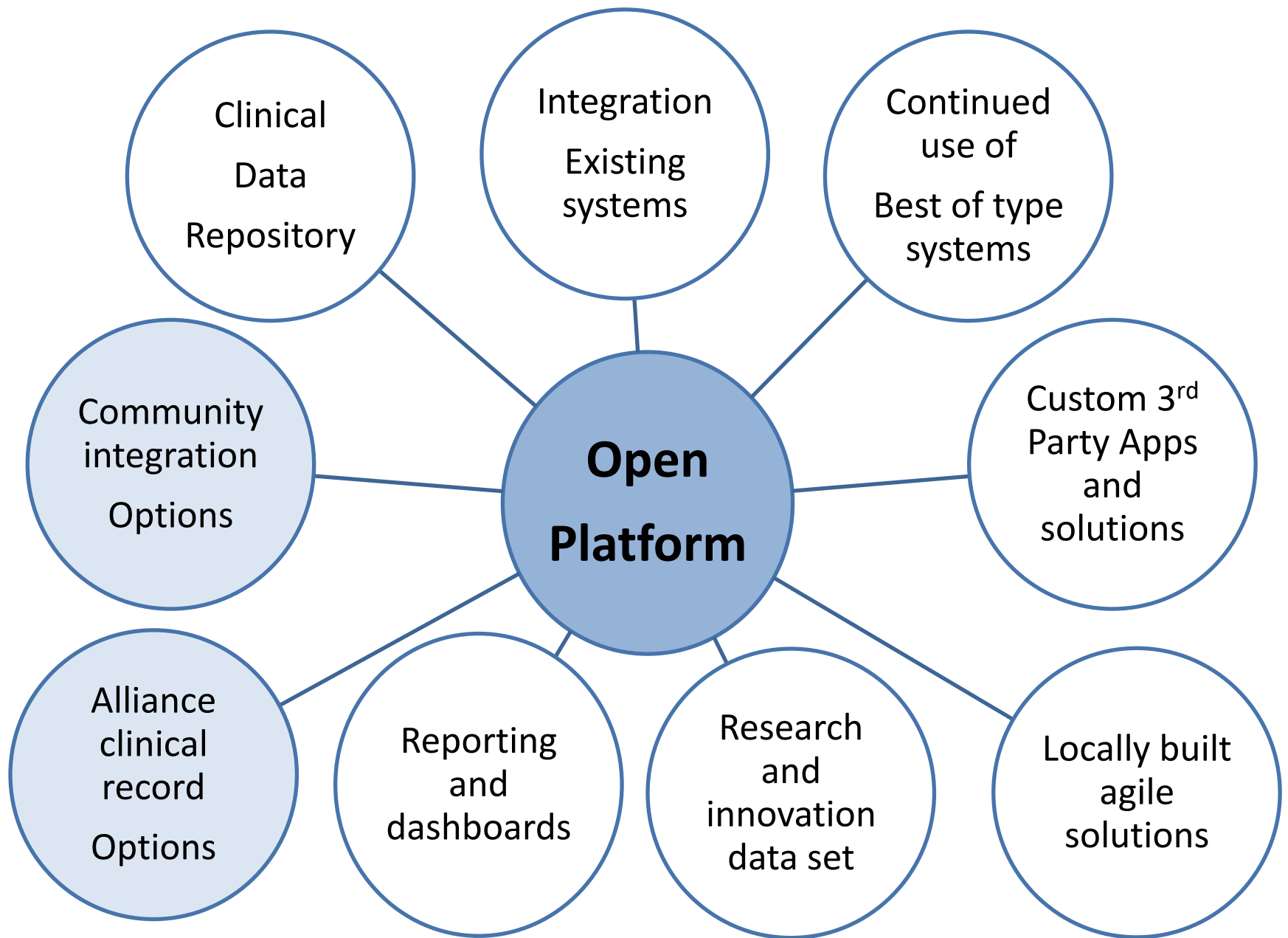


Use - best of type solutions

- innovative partners
- in-house skills to produce solutions

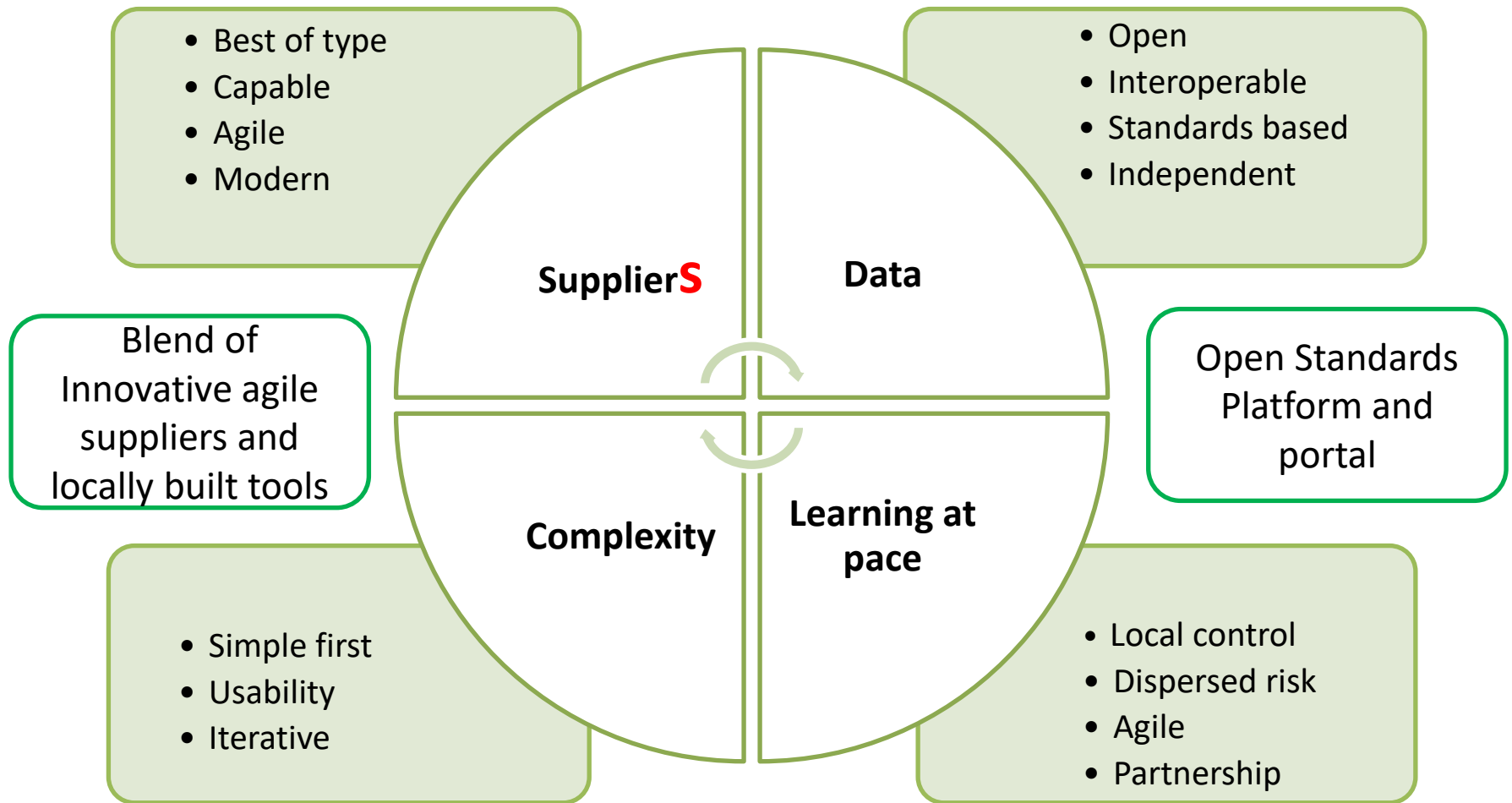


Use clinical data
Enable improvement



Connect the health system

Solution



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Best of type clinical suite

- Noting
- Forms
- Handover
- Tasks
- Escalation
- Messaging
- Drawing

Existing systems

Document Mgt

Imaging

Patient Mgt

Labs

Prescribing
Admin

Community

OpenEHR platform

Clinical Data Repository

Research

Reporting, dashboards & data
extraction

P.

Q

Home

Menu

PATIENT

ALBIN, Jordan

09-Feb-1935 • 84y 2m

MRN 1234562

Acorn / 2

Known allergies

VIEWS

Patient record

Patient medications

Patient allergies

FORMS

VTE assessment

VTE ASSESSMENT

ALBIN, Jordan

09-Feb-1935 • 84y 2m

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Acorn / 2

Known allergies

Mobility of patient

☐ Surgical patient

☐ Medical patient expected to have ongoing reduced mobility relative to normal state

☐ Medical patient NOT expected to have ongoing reduced mobility relative to normal state

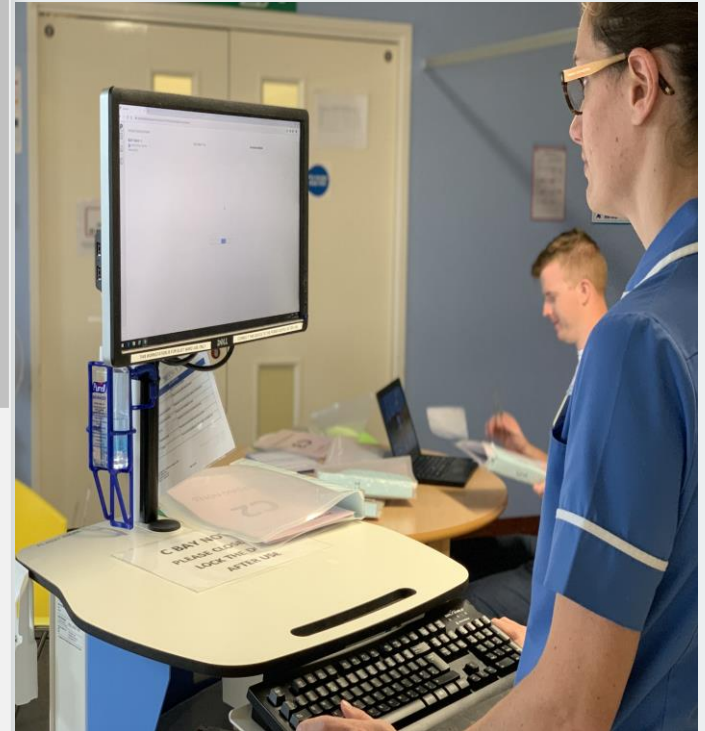
Thrombosis risk

Patient related

☐ Active cancer or cancer treatment
 ☐ Age > 60
 ☐ Dehydration
 ☐ Known thrombophilias
 ☐ Obesity (BMI >30 kg/m²)
 ☐ Personal history or first-degree relative with a history of VTE
 ☐ One or more significant medical comorbidities (e.g. heart disease; metabolic, endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)
 ☐ Use of hormone replacement therapy
 ☐ Use of oestrogen-containing contraceptive therapy

Admission related

☐ Significantly reduced mobility for 3 days or more
 ☐ Hip or knee replacement
 ☐ Hip fracture
 ☐ Total anaesthetic + surgical time > 90 minutes
 ☐ Surgery involving pelvis or lower limb with a total anaesthetic + surgical time > 60 minutes
 ☐ Acute surgical admission with inflammatory or intra-abdominal condition
 ☐ Critical care admission
 ☐ Surgery with significant reduction in mobility



ANTHONY, Mark (Mr)
24-Feb-2007 (11Y 10 M) • Male • 858275

No Known allergies

Chronic patient
Secondary diagnoses (1)
Comorbidities (1)
Medications (14)

DIAGNOSIS: G4020: Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures, not intractable. [More](#)

KEYWORDS: focal partial symptomatic epilepsy, seizures, symptomatic epilepsy, epileptic syndromes, migraine

Conditions

17-Mar-2019		
Seizures (CPS)	4.5 min	overnight
16-Mar-2019		
Seizures (CPS)	3.5 min	evening
Seizures (CPS)	6.5 min	afternoon
Severe headache	4 min	morning
Seizures (CPS)	8 min	overnight

[Show all](#)

Notes

17-Mar-2019
13:02 John Malkowich Mati spor. ob 12.50, da bo Djurica pripeljala nazaj z ZO. 12:41 Bradley Cooper Pogovoin se z materjo. Glede na nespremenjo stanje glede števila/oblike napadov, lahko Inovelon v odmerku 100 mg ukinejo. Danes gre lahko na ZO do ponedeljka do okoli 12 h. Nato v ponedeljek pogovor z očetom in morda v torek z materjo o nadajnjih ukrepih in terapiji. Malkowich

Vitals [Show more](#)

Weight kg	48.3
AVPU	A alert
Pupils (light) left/right	2/2
BP mmHg	116/66 H ↗
Pulse beats/min	78 ↘
SpO ₂ %	92 L old data!
RR breaths/min	32 H ↘
Temp °C	37.2

Single labs [Show more](#)

Glucose mmol/L	5.7	afternoon
Ca ²⁺ mmol/L	1.9	morning
Na mmol/L	1.23 H	old data!
K mmol/L	1.5 L	this morning

Lab panels (3 of 36)

CBC	3 values out of normal range	>
AB GAS		>
H/H		>
CBC		>
AB GAS		>
H/H		>

[Show all](#)

Medications (11)

EPILEPSY ATC (6)
pyridoxine—40 mg—evenings—PO
vitamins complex B—20 mg—twice daily—PO
coenzyme Q—60 mg—mornings—PO
biotin—5 mg—mornings—PO
levokarnitine—500 mg—twice daily—PO
rufinamid—200 mg—evenings—PO

EPILEPSY PRN (1)
melatonin—10 mg—evenings—PO
indication if restless before bedtime

EPILEPSY—SEIZURES PROTOCOL
per doctors order
midazolam—10 mg—per 6 hours—buccal
midazolam—5 mg—once daily—buccal
fosphenytoin sodium—600 mg—once daily—IVK
indication: series of seizures
diazepam—30 mg—1X—IVK
dexamethasone sodium phosphate
7 mg—4 times daily—IVK
indication: if seizures continue or repeat after fosphenytoin sodium application

OTHER DRUGS ATC (3)
colecalciferol 6000 i.e.
noon—every wednesday—PO
mometasone furoate—100 milligram
evenings—each nostril
pantoprazol—40 mg
mornings—PO

Documents (3 of 7)

EEG result	>
Ultrasound result	>
MRI result	>
Consiliary report	>

[Show all](#)

Instructions

- Observations according to ward protocol
- Diet LO
- Immunologist (lower value of serum IgM)
- Cancel rufinamid gradually-lower the dose for 100 mg each 5 days; after 15 days the control EEG has to be recorded. If the seizures continue I suggest ketogenic diet and acute medicine as prescribed

Orders

Electrolytes	every morning
Glucose	morning / afternoon
CT scan	next week
Immunologist	today
EKG	after 15 days

Unlocking the Power of Data

Structured, standardised data

- Captured at point of care

Local Clinical Data Repository

- Supplier (vendor) neutral
- All clinical data

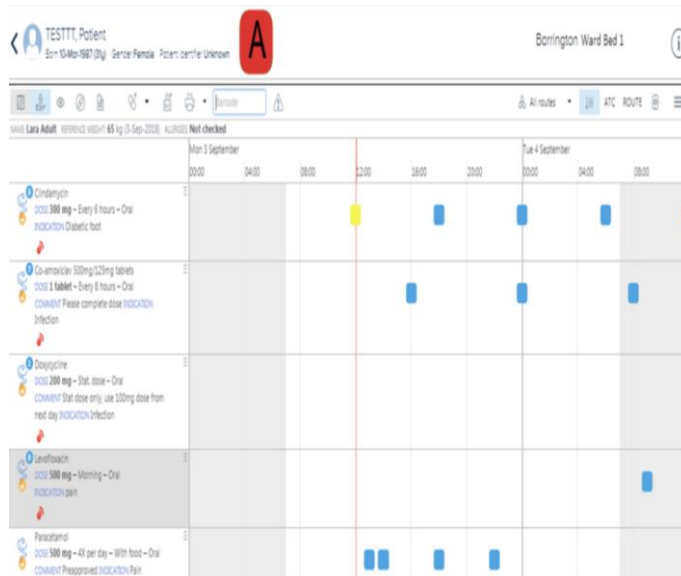
Integration of data

- Systems
- Site
- Alliance
- Regional

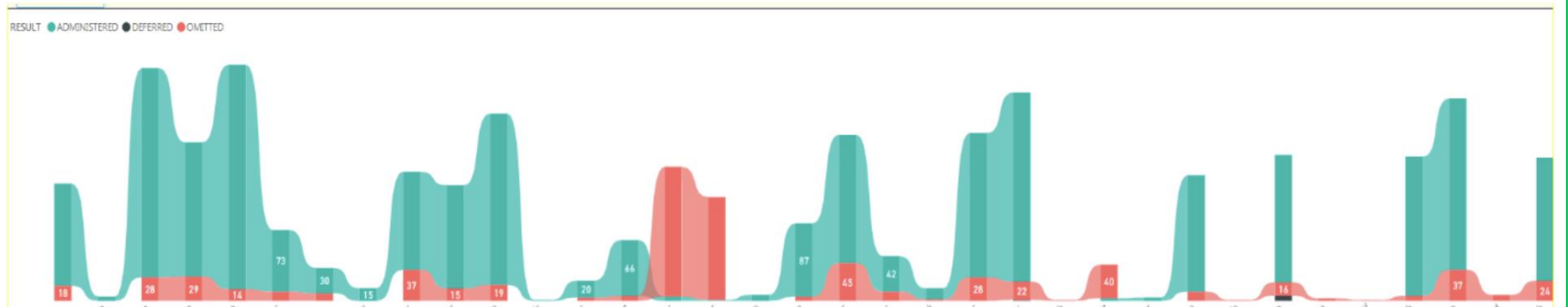
Future proofed

- Local or Cloud
- Decision support
- Research
- BI, Machine learning & AI

Evolving to a platform for system integration and insight



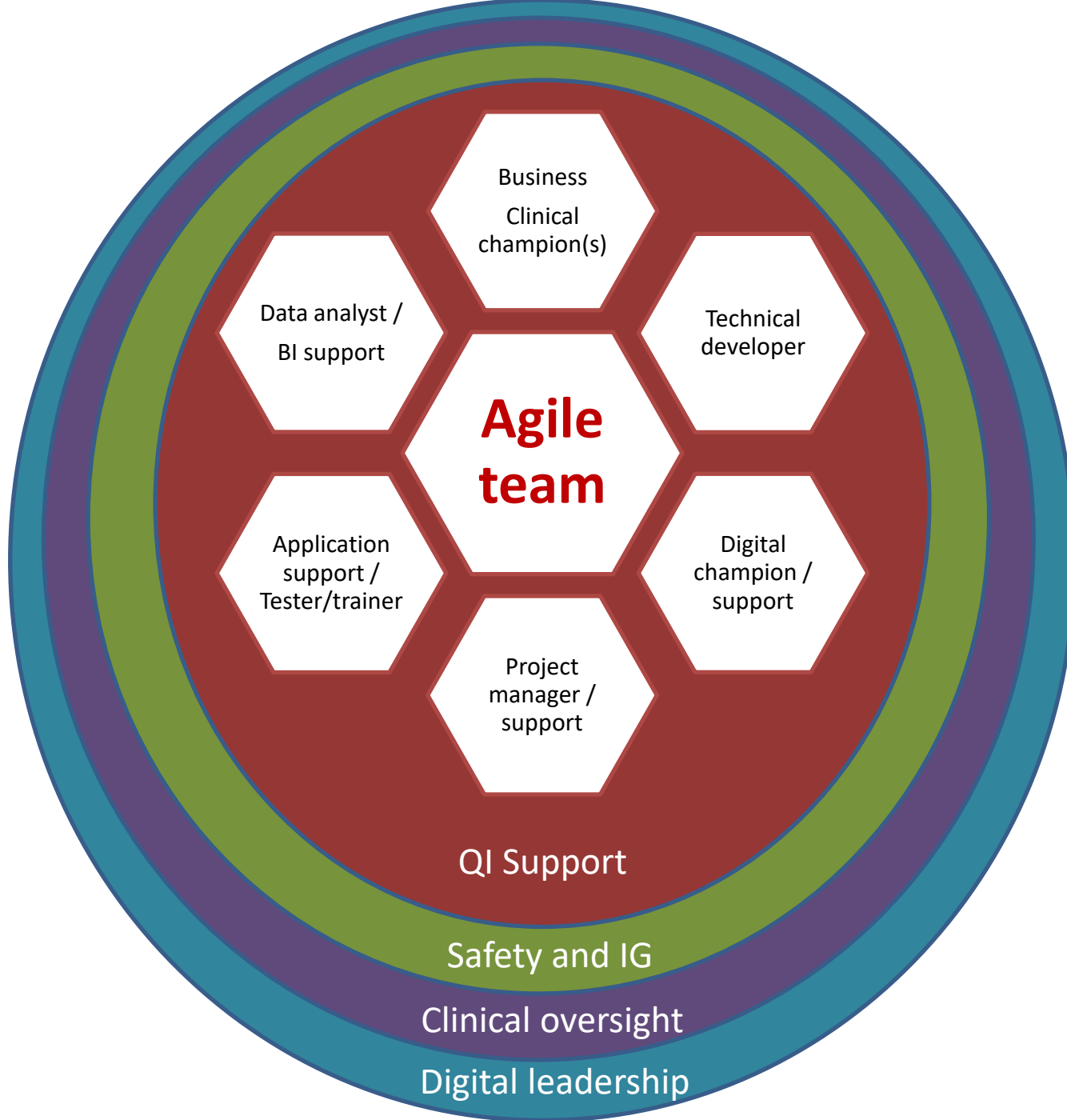
Medication Administration



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Lessons

- Build on successful solutions
- Meeting clinical and organisational expectations
- Being able to deliver safe, effective digital solutions quickly
- Integrate more Quality Improvement methodology
- Engagement and change management



Built on solid foundations



Engagement



Team
capability



Innovative
best of type
solutions



Discussion



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