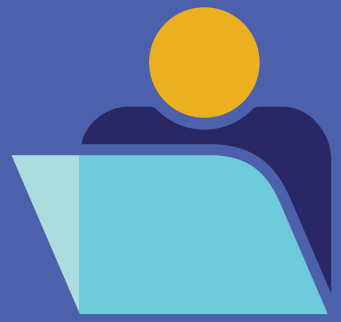


One Person
One Experience

nova scotia health

IWK Health

Let’s Talk Informatics

Evolution of Enterprise Architecture in Nova Scotia's Health Care System

Thomas Armstrong, Merrilyn White, Lindsay Bertrand, Michael Pierce

November 25, 2021

Acknowledgement

We acknowledge we are gathered today
in Mi’kma’ki (*Mig-***_maw_**-gee), the traditional ancestral
unceded territory of the Mi’kmaq (*Mig-**maw**) people.

Informatics

Informatics utilizes health information and health care technology to enable patients to receive best treatment and best outcome possible.

Let’s Talk Informatics Objectives

This series is designed to enable participants to:

- Identify knowledge and skills health care providers need in order to use information now, and in the future.
- Prepare health care providers through an introduction to concepts and experiences in Informatics.
- Acquire knowledge to remain current by becoming familiar with new trends, terminology, studies, data and news.
- Collaborate with a network of colleagues to establishing connections with leaders who can provide advice on business issues, best-practice and knowledge sharing.

Session Specific Objectives

At the conclusion of this activity, you will be able to understand:

- Enterprise Architecture the methodology
- The evolution of Enterprise Architecture within the One Person Team and Nova Scotia Health
- Next steps for Enterprise Architecture within the health system

WHO Are We?

- We are a small multi-disciplinary team of eight who encompass clinical, technical, and business backgrounds that started within the One Person One Experience team.
- We have been reviewing various industry standards pertaining to Enterprise Architecture framework and modeling. Then interpreting how to apply the standards clinically.
- The work to date has been a collaboration between our growing EA team and other departments and units within Nova Scotia Health.
- Engaging with external subject matter such as the Object Management Group (OMG) including the BPM+ Health Institutional Working Group .

WHAT is Enterprise Architecture?

- **Enterprise architecture** (EA) is the methodology to assist in creating a map or blueprint of the structure, operations and governing principles of an organization in support of successful business practices and strategy.
- An enterprise architecture team was identified as a gap within Nova Scotia Health

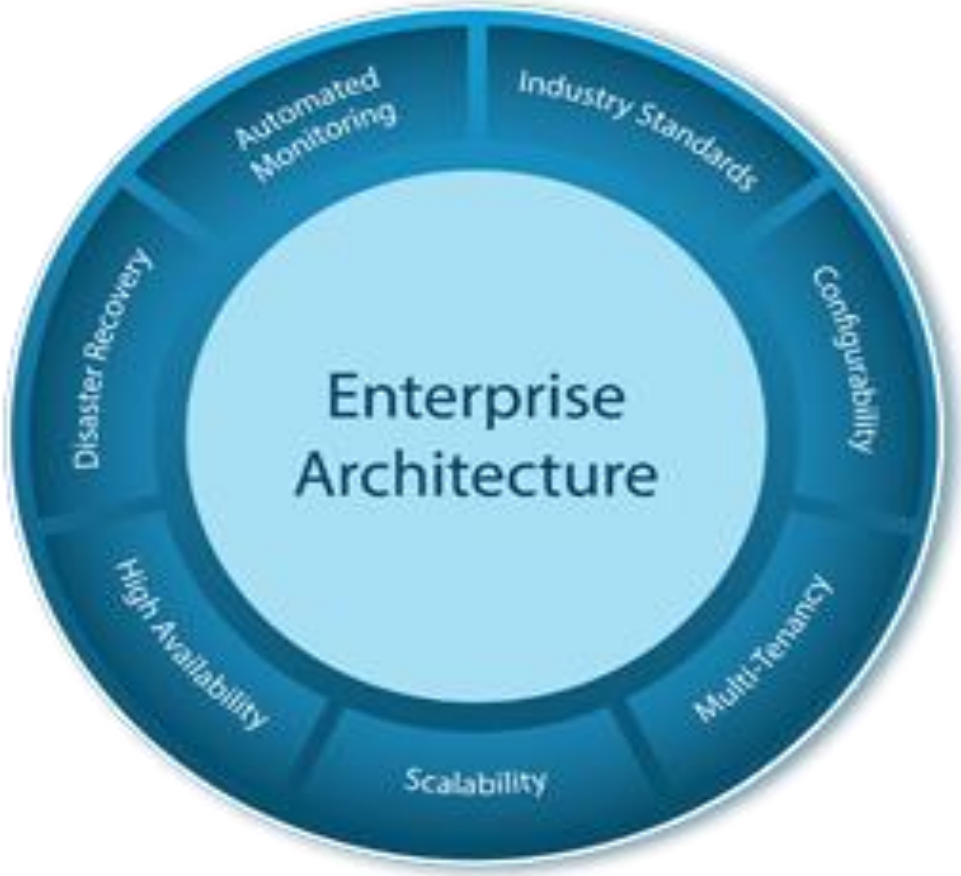
Enterprise Architecture- WHY?

"To inspire stakeholders to understand the healthcare ecosystem and deliver optimum value for Nova Scotia."

Enterprise architecture will assist and help improve on system thinking approach for care, workflow documentation and analysis, business optimization, informed decision making based on cross organizational impact, strategic planning, visual representation of health care relationships.

Enterprise Architecture- HOW?

- Engagement across the organization
- Understanding point to point connections – how business/clinical process, applications, information, technology, products link and flow together
- Creating a standard information repository for a central understanding of our health care environment
- This will be accomplished by designing a metamodel using EA standards and frameworks



The Enterprise Architecture Standards and Tools

The TOGAF® Standard — Version 9.2

An OMG Managed Community

BPM+ Health®

BPMN
Processes

DMN
Decisions

CMMN
Cases

ArchiMate®

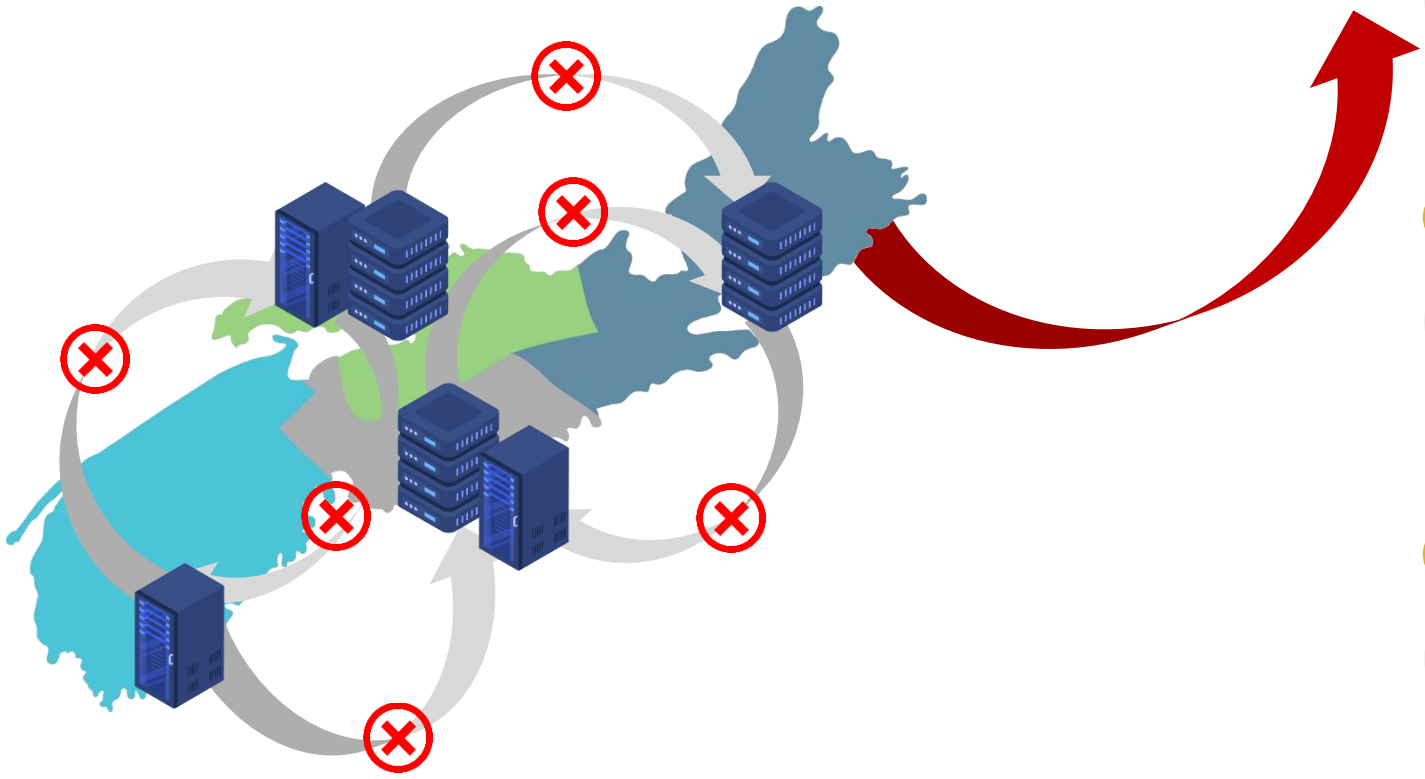
ENTERPRISE ARCHITECT
SPARX SYSTEMS

UNIFIED MODELING LANGUAGE™

UML®

The Journey: Workflow Mapping

Nova Scotia Current State



1

Incomplete patient information poses safety risks and provider frustration

2

Siloed, highly customized health IM/IT systems means information cannot seamlessly flow from one provider to another

3

End-of-Life health IM/IT systems routinely break down and are very expensive to maintain

Building Branches: Methodology

- Building Branches were engagement sessions that brought together interdisciplinary teams made up of physicians, clinicians, and health administrative staff to model workflows.

- Building Branches led to the engagement of over 1500 individuals across 23+ different care disciplines and resulted in over 400 workflows created.

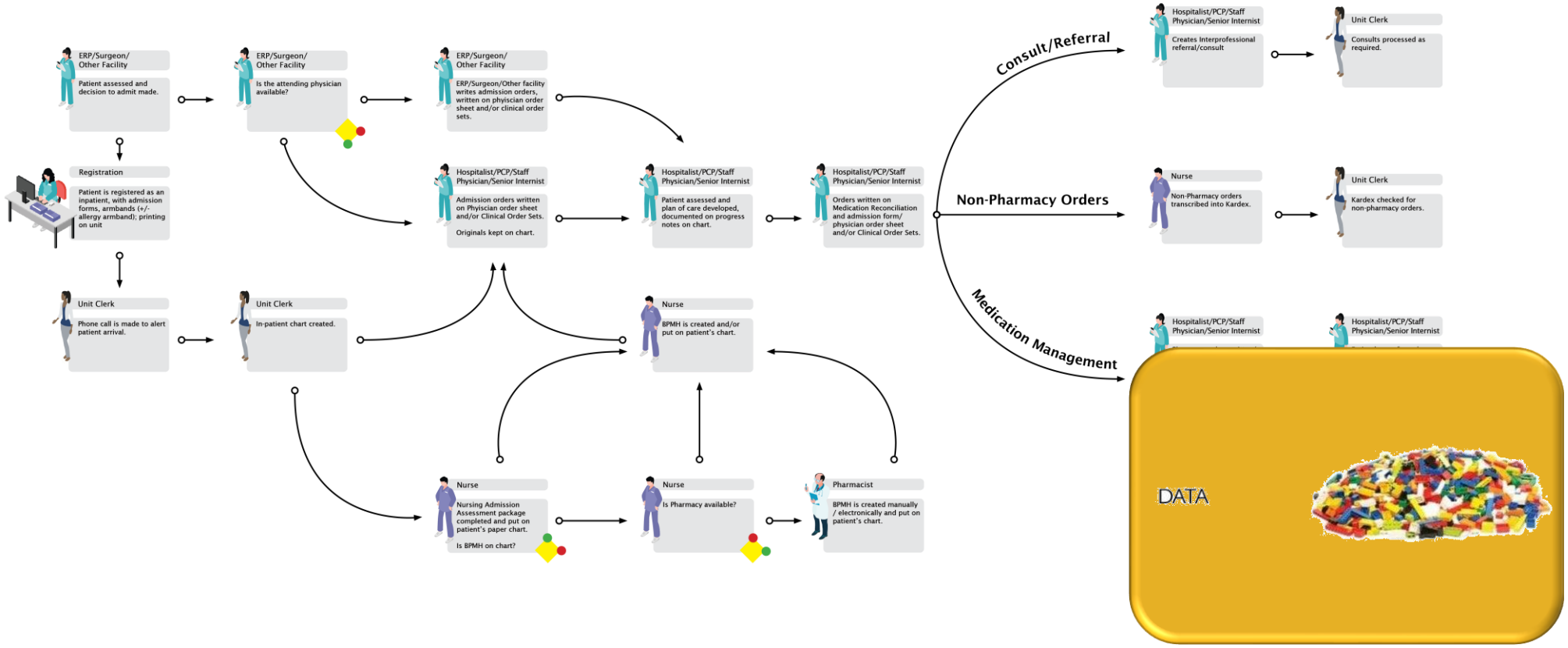
Discipline	Approx #
Admin	166
Nursing	293
Physician / Nurse Practitioner	136
Allied Health	231
Manager / Leads	260
DI / Lab	218
Other roles	264

Program / Service	Workflows
Health Information Services	35
Emergency	17
Critical Care	12
General Medicine	78
Pediatric	18
Pathology / Lab	12
Diagnostic Imaging	27
Pharmacy	12
Obstetrics & Gyne	22
Periop & Endoscopy	55
Mental Health & Addictions	24
Rehab Services	22
Continuing Care	8
Cancer Care	25
Primary Health Care	13
Education & Learning	21

Tracing the History of One Person's Diagrams

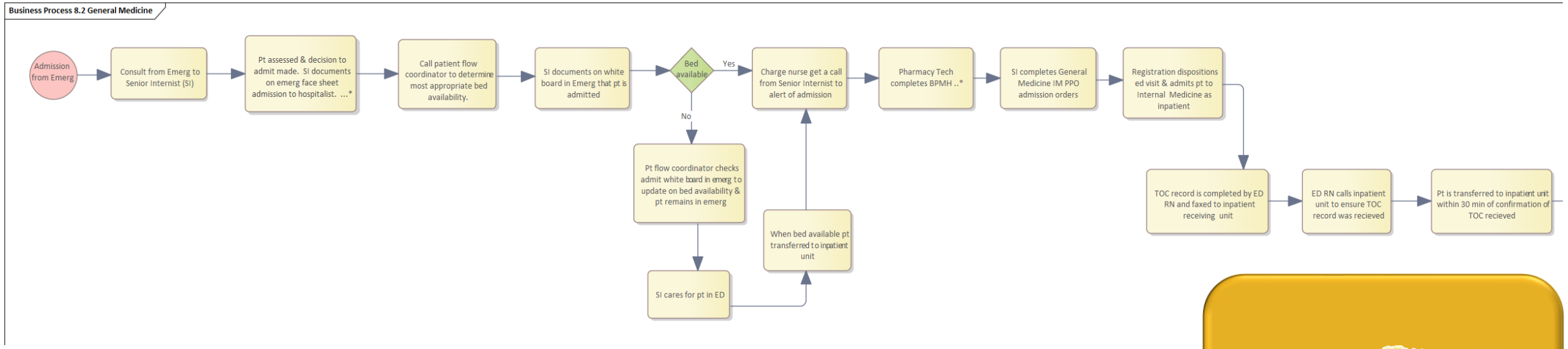
Draft #1 - Paper

General Medicine
Halifax Infirmary 8.2
Admission



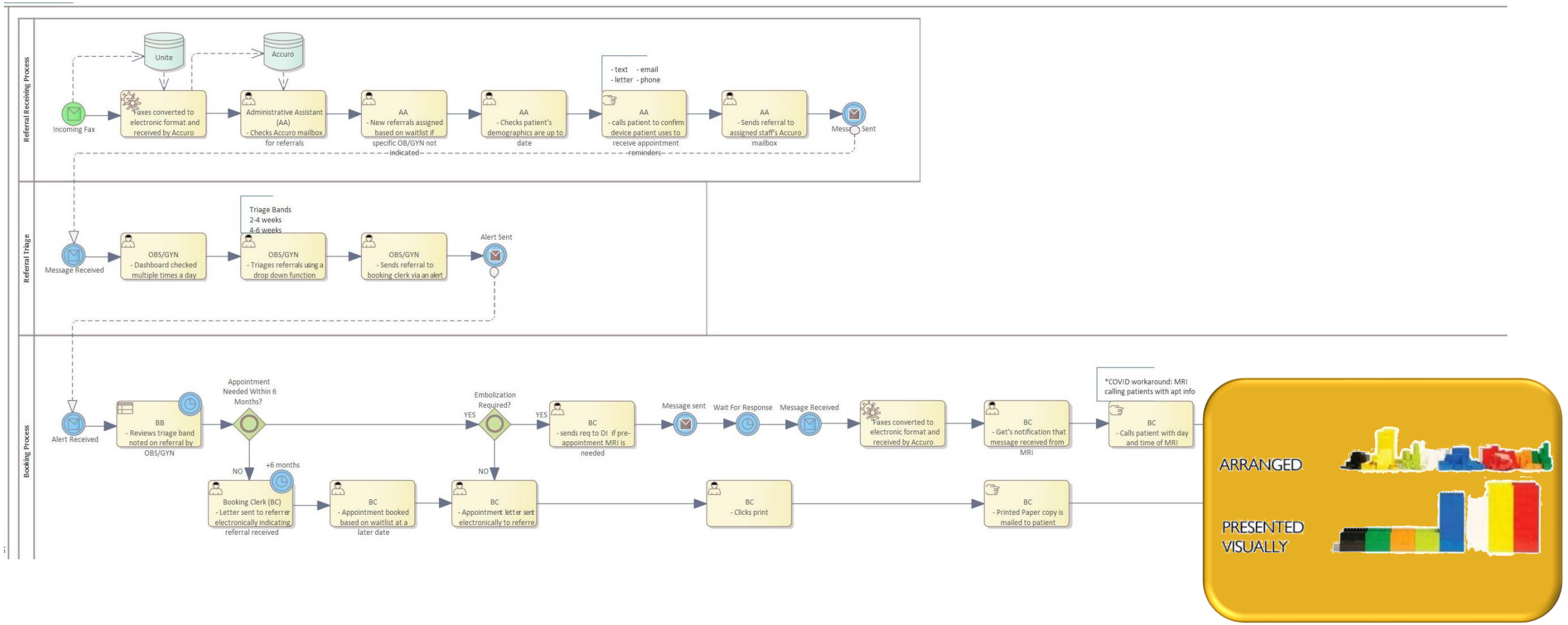
Tracing the History of One Person's Diagrams

Draft #2 – Sparx EA

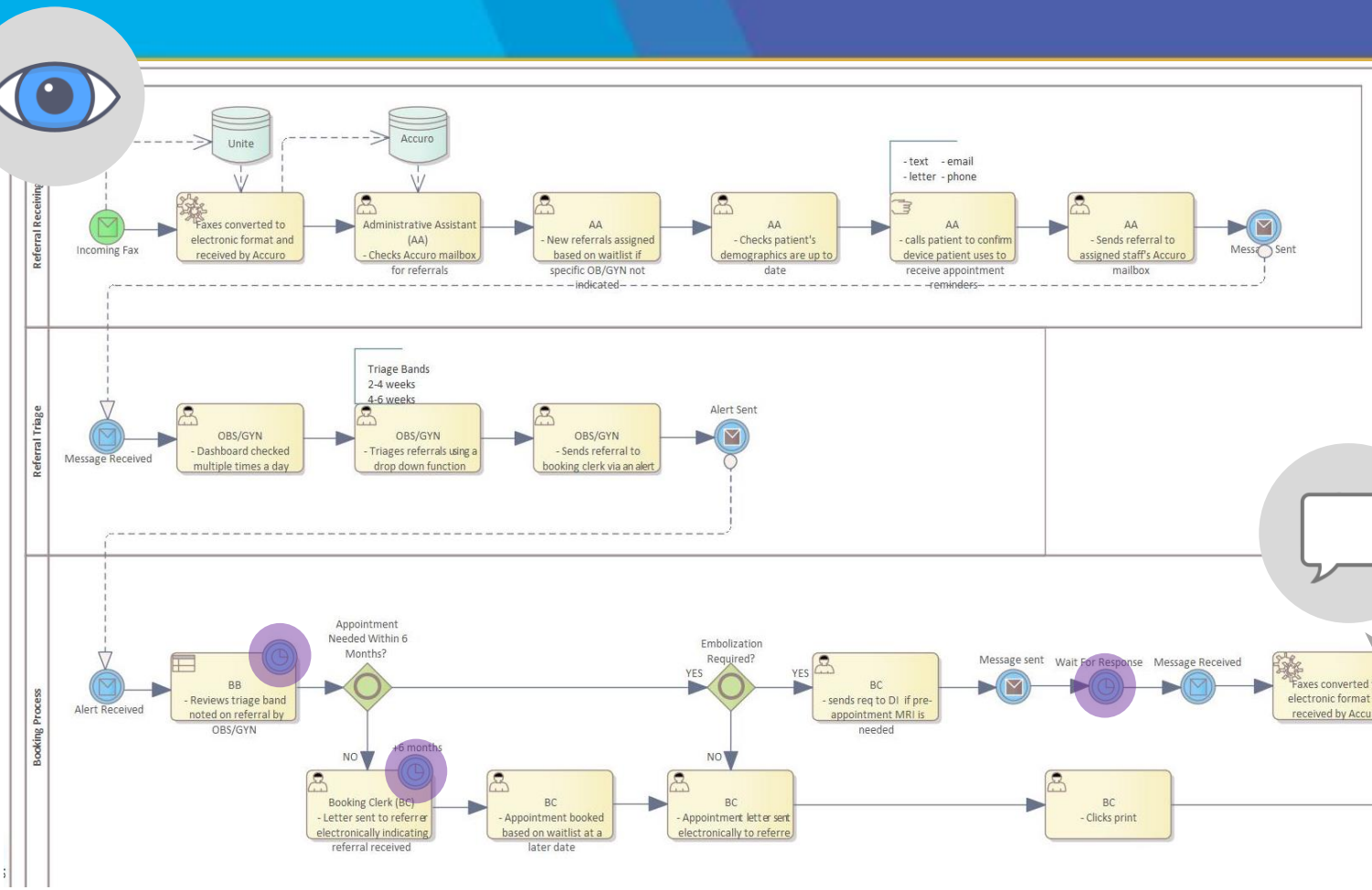


Tracing the History of One Person's Diagrams

Draft #3 – Standardized with BPMN



Using SQL for our BPMN Diagrams

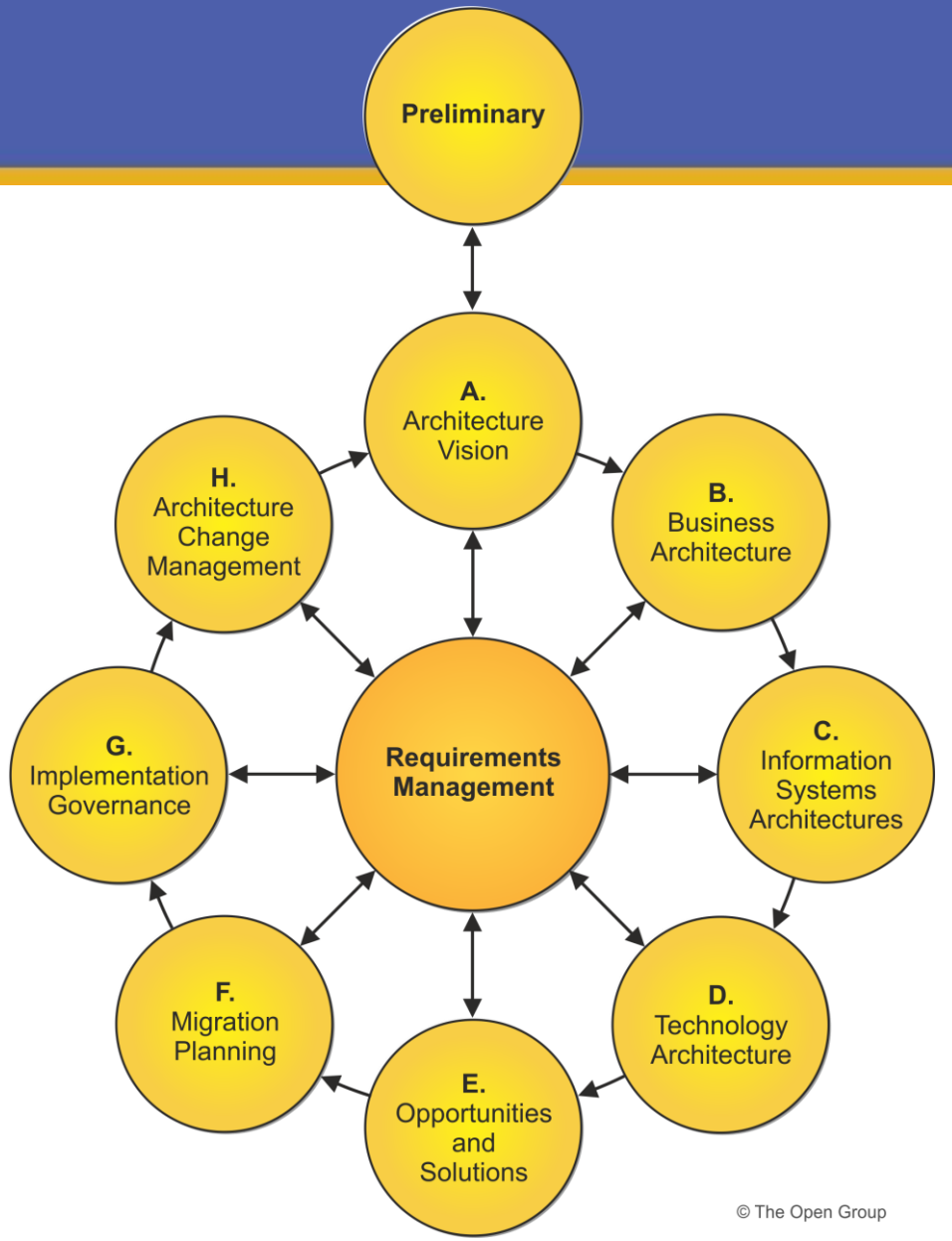


Show me where we spend time waiting for care to be delivered at Dartmouth's OB/GYN outpatient clinic.

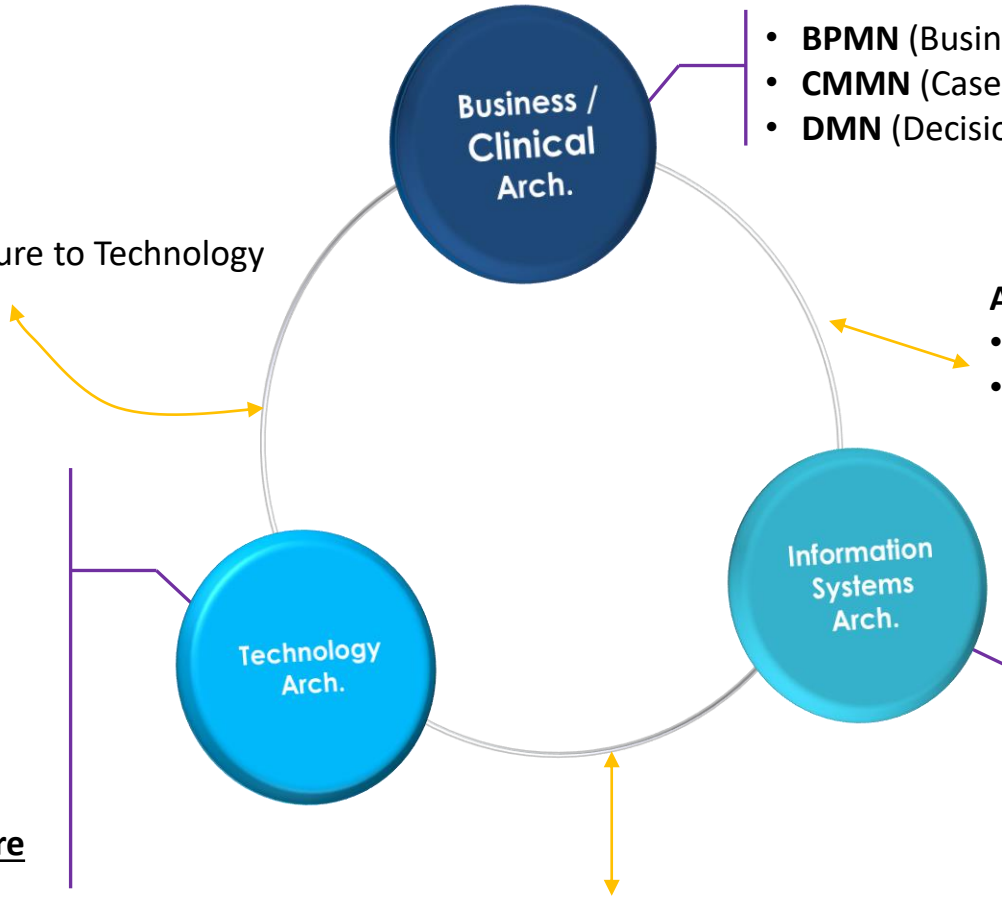
PkgName	DiagName	Lane	ObjName	TagVal_T...	TagVal...	StereoTy...	Author
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Day of MAID Procedure	MAID Provider completes MAID Procedure documentation	Manual	Physician	Activity	MaryEile...
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Day of MAID Procedure	Maid Provider contacts appropriate recipient program	Manual	Physician	Activity	MaryEile...
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Day of MAID Procedure	MAID Provider discuss with Legal Substitue Decision Maker wil...	Manual	Physician	Activity	MaryEile...
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Day of MAID Procedure	MAID Provider discusses next steps with family	Manual	Physician	Activity	MaryEile...
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Day of MAID Procedure	MAID Provider returns both MAID medication kits to pharmacy	Manual	Physician	Activity	MaryEile...
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Day of MAID Procedure	Patient & Provider choose a new date	Manual	Physician	Activity	MaryEile...
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Day of MAID Procedure	Patient identified as a donor	Manual	Physician	Activity	MaryEile...
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Day of MAID Procedure	Proceed with MAID	Manual	Physician	Activity	MaryEile...
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Day of MAID Procedure	Proceed with MAID	Manual	Physician	Activity	MaryEile...
Mary Eileen BPMN Diagram	MAID (OPOR_MDG)	Access to MAID	Practitioner(NP/MD) completes Referral for MAID Assessment	Manual	Physician	Activity	MaryEile...
Leanne's BPMN Diagram	Dartmouth Gyn Clinic (B...	Patient's Appointment	Gyn - See's patient and completes any needed assessments	Manual	Physician	Activity	Leanne R...
Leanne's BPMN Diagram	Dartmouth Gyn Clinic (B...	Patient's Appointment	OB/GYN - Reviews and signs consent with patient	Manual	Physician	Activity	Leanne R...

The Journey:
The Evolution of Workflows into Enterprise Architecture

TOGAF and Working Towards Increasing Complexity



Translating the Reality of Care into Modeling Languages



- **BPMN** (Business Process)
- **CMMN** (Case Management)
- **DMN** (Decision Management)

ArchiMate connects:
- Business/Care Architecture to Technology Architecture

ArchiMate connects:
- Business/Clinical Architecture to Data Architecture
- Business/Clinical Architecture to Application Architecture

Equipment Architecture
- Biomedical Devices
- Smart Pumps

Communications Hardware Architecture
- Servers
- Network

Systems Software Architecture
- AWS
- Azure

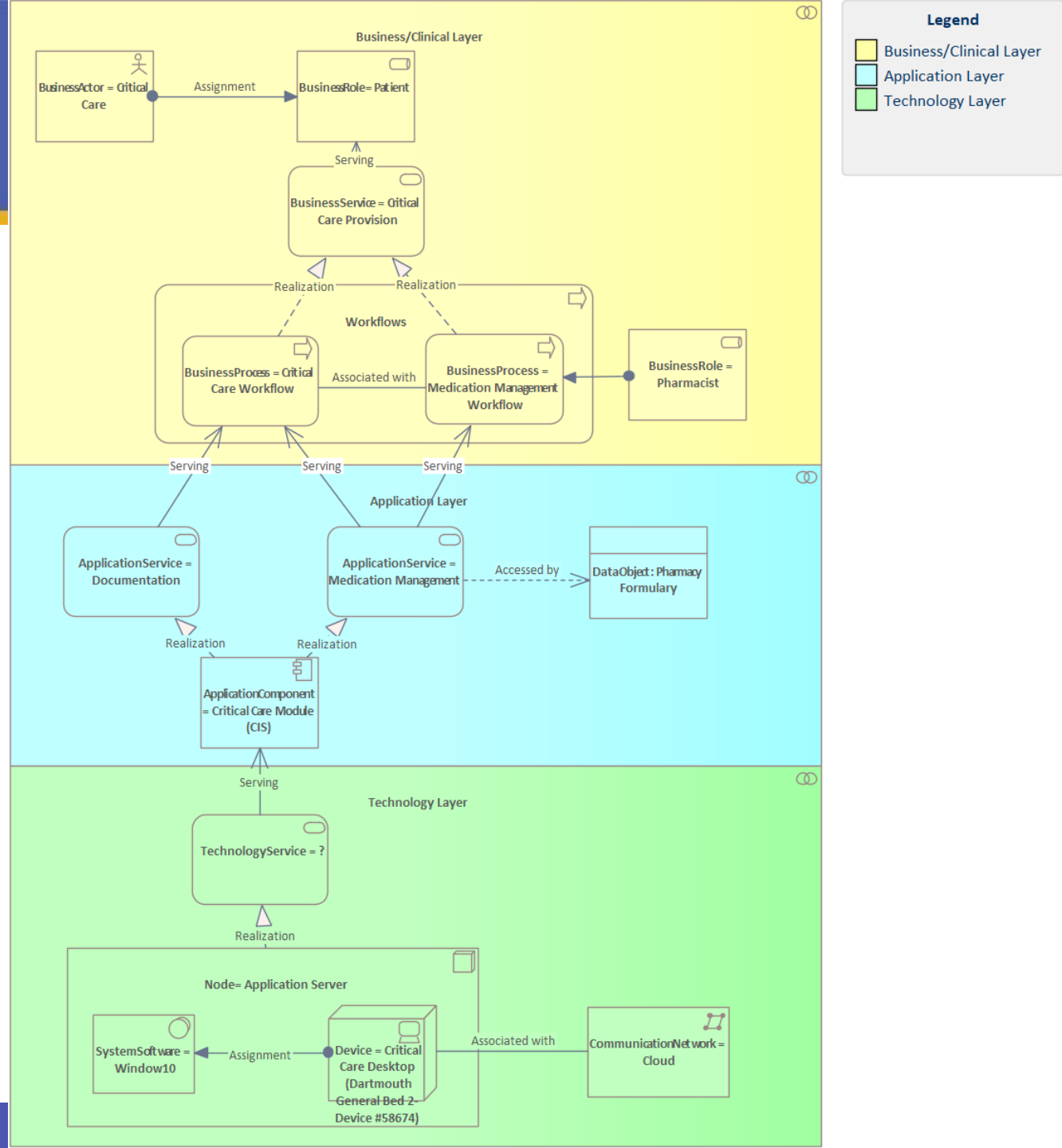
Data Architecture
- Conceptual Data Diagrams
- Logical Data Diagrams

Application Architecture
- Conceptual Data Diagrams
- Logical Data Diagrams

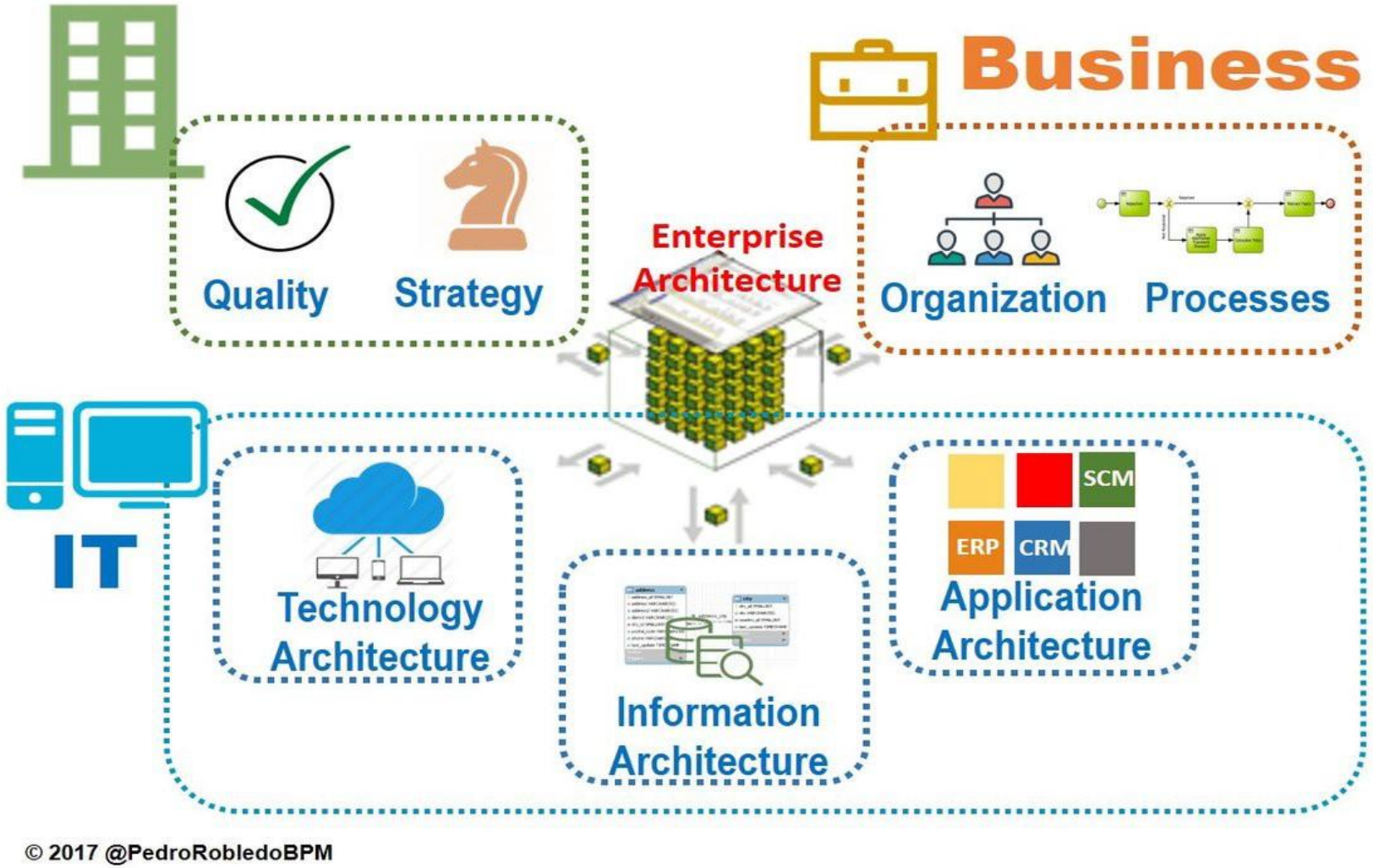
ArchiMate connects:
- Data Architecture to Application Architecture

ArchiMate connects:
- Data Architecture to Technology Architecture
- Application Architecture to Technology Architecture

ArchiMate Model



What's Next?


Business
Quality
Strategy
Enterprise Architecture
Organization
Processes
IT
Technology Architecture
Information Architecture
SCM
ERP
CRM
Application Architecture
© 2017 @PedroRobledoBPM

Let's Talk Informatics certifications:

- **Digital Health Canada -** participants can claim 1CE hour for each presentation attended.
- **College of Family Physicians of Canada and Nova Scotia Chapter -** participants can earn one Mainpro+ credit by providing proof of content aimed at improving computer skills applied to learning and access to information.
- **Canadian College of Health Information Management** - approves 1 CPE credit per hour for this series for professional members of Canada's Health Information Management Association (CHIMA).

Thank You

Need More Info?
letstalkinformatics@nshealth.ca