

# A Blueprint for Digital Health

## *Beyond the EHR*

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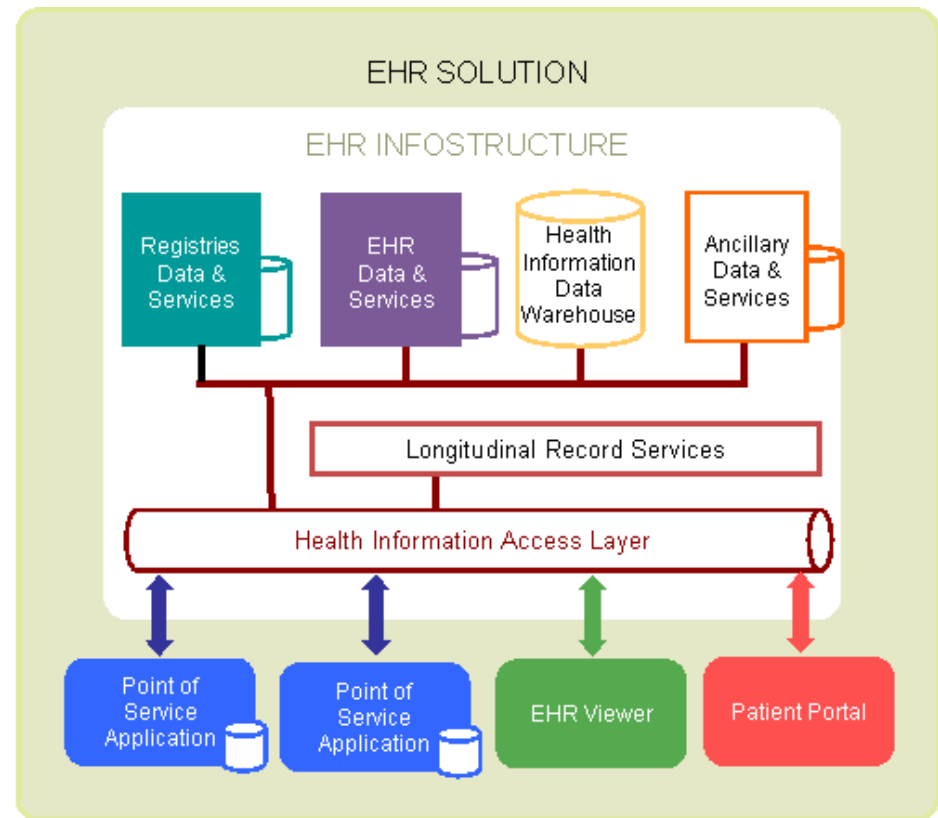
# The EHRS Blueprint

- The EHR Solutions (EHRS) Blueprint
  - Initially published in 2003
  - A second more comprehensive version published in 2006
- Original focus of the Blueprint
  - Achieving a longitudinal lifetime Electronic Health Record for every person in Canada
  - Interoperability of clinical applications and portals via an information infostructure
  - Patient-centric health data that is *clinically relevant for sharing*, across the continuum of care, where and when it is needed
- Has guided and shaped investment of approximately \$4.2B in federal and provincial funds since 2003



# Architecture for EHR Solutions

- **Common** business and technical architecture accepted by jurisdictions and vendors
- Links local clinical systems with jurisdiction and regional registries and repositories using a **data sharing** approach
- Most **cost effective** approach, limiting the number of **integration** points
- Extensible to support new functions, scalable to allow for a **large number** of participating **point-of-service applications**



# Refreshing the Blueprint

- Address new priorities for health care IT
- Reflect new digital health functional opportunities
- Align with health system transformation initiatives
- Enable transformation
- Guidelines for new programs
- Now the “**Digital Health Blueprint**”



# Blueprint Focus - Managing Complexity

- Blueprint is a ***guide*** for managing the complexity and simplifying the implementation of digital health
  - Leveraging existing EHR capabilities
  - Evolutionary and sustainable way
  - End-user needs (clinician and consumer) in the forefront
- Ensuring “Fit-for-Purpose”
  - Aligning use of technology with clinical needs
  - Allows for tailoring of clinical and administrative workflow and decision support based on clinical data, context (role and place) and personal preferences
  - Emphasizing value for providers and patients

# Differences Between Blueprints

## EHRs Blueprint

- ❑ Enterprise Architecture for EHR
- ❑ Reading and writing of information for sharing
- ❑ Systems Interoperability
- ❑ Infostructure ICT services
- ❑ Singular Scope – interoperable EHR, connecting PoS systems
- ❑ Creating new infostructure
- ❑ Singular EHRs deployment model

## Digital Health Blueprint

- Guidance for ICT Strategies and Architectures for Digital Health
- Information as part of process
- Business and Clinical process interoperability
- Business and clinical functions
- Broader scope – functioning in multiple computing environments
- Building upon existing infostructure
- Considerations and methodology for implementation and function-specific deployment models

# Five Technology Enablers Impacting Health



**Cloud Computing**



**Mobile Computing**

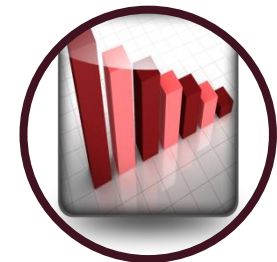


**Internet of Things**



**Consumer Enablement**

These enablers are intertwined, creating a new computing ecosystem which is user-driven. One that is beginning to accelerate in health. One that will transform health delivery.



**Data & Analytics**

# Digital Health is Complex

- Health care is complex
  - Communications
  - Information
  - Coordination
  - Collaboration
  - Knowledge and Evidence
- Automating aspects of health care with ICT adds another dimension of complexity
- Emerging technologies are disruptive and complex
- Requires thoughtful ICT strategic decisions



# Collaborative and Coordinated Care





*Technologies are not simply inventions which people employ but are the means by which people are reinvented.*

***Marshall McLuhan***

## How?

“Providers must do their part by reengineering care processes to take full advantage of efficiencies offered by health IT...”

Source: Arthur L. Kellermann and Spencer S. Jones, “What It Will Take To Achieve The As-Yet-Unfulfilled Promises Of Health Information Technology”, Health Affairs, 32, no.1 (2013):63-68

## Did You Know?

- Clinical and administrative workflow and decision support can be tailored based on:
  - Clinical data
  - Context (role and place)
  - Personal preferences
  - Business rules
  - Clinical practice guidelines
- Benefits
  - Monitoring, evaluating, and management of workflow processes as process improvements are identified
  - Adaptive and agile workflow

# Functional Aspects of Digital Health



## Health Information

- Nature of information
- Where is it Stored
- Shared
- Exchanged



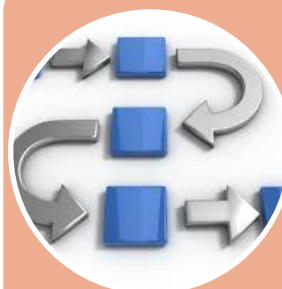
## User Interface & Experience

- Which device
- Centralized
- Consistency



## Digital Health Services

- Common and Reusable
- Cross organizational
- Embedded in devices and applications



## Workflow Across the Care Continuum

- Configurable
- Rules-based
- Monitored
- Managed



## Communication Across the Care Continuum

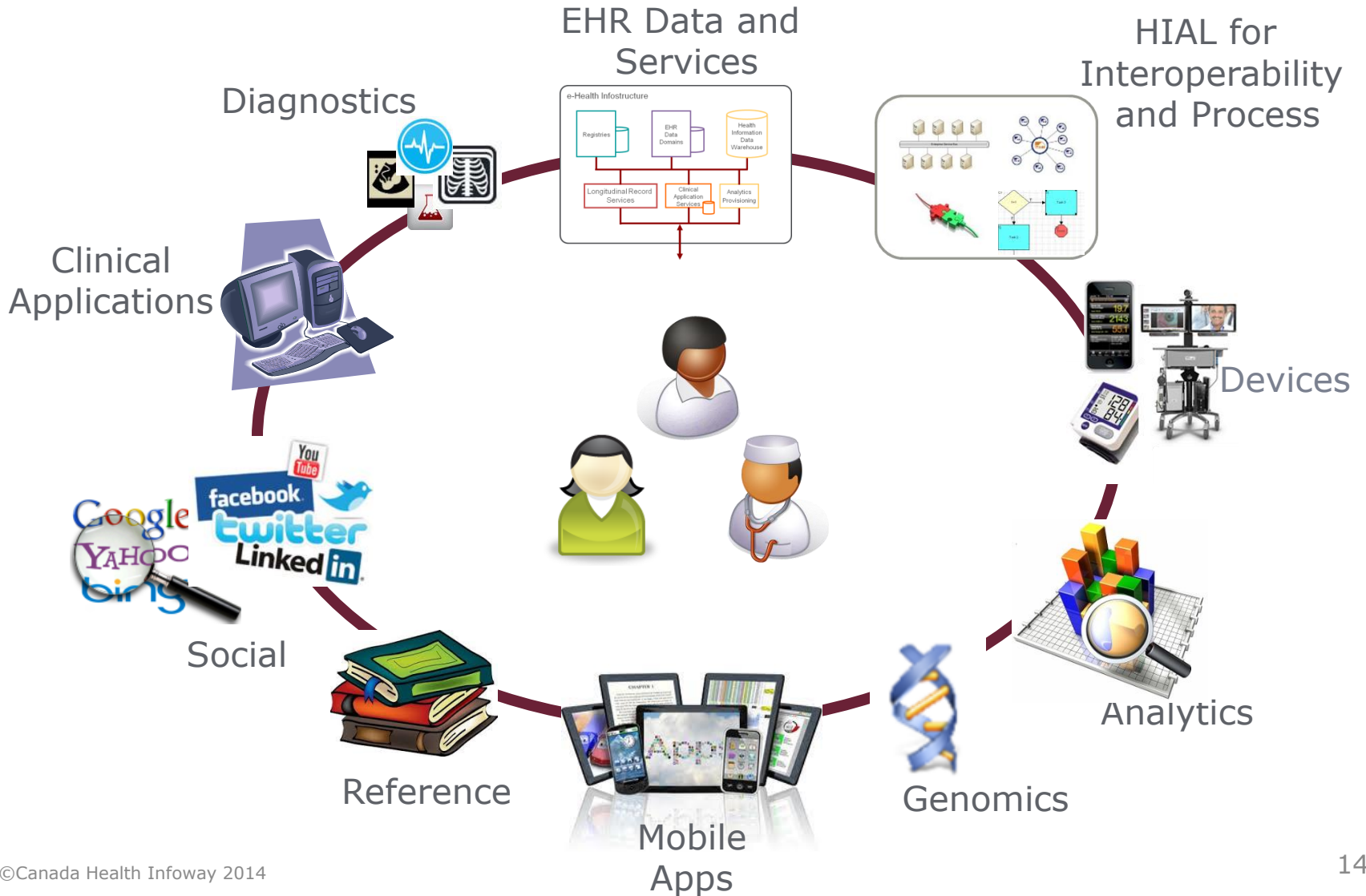
- Real time
- Store and forward
- Push-pull
- Which device(s)



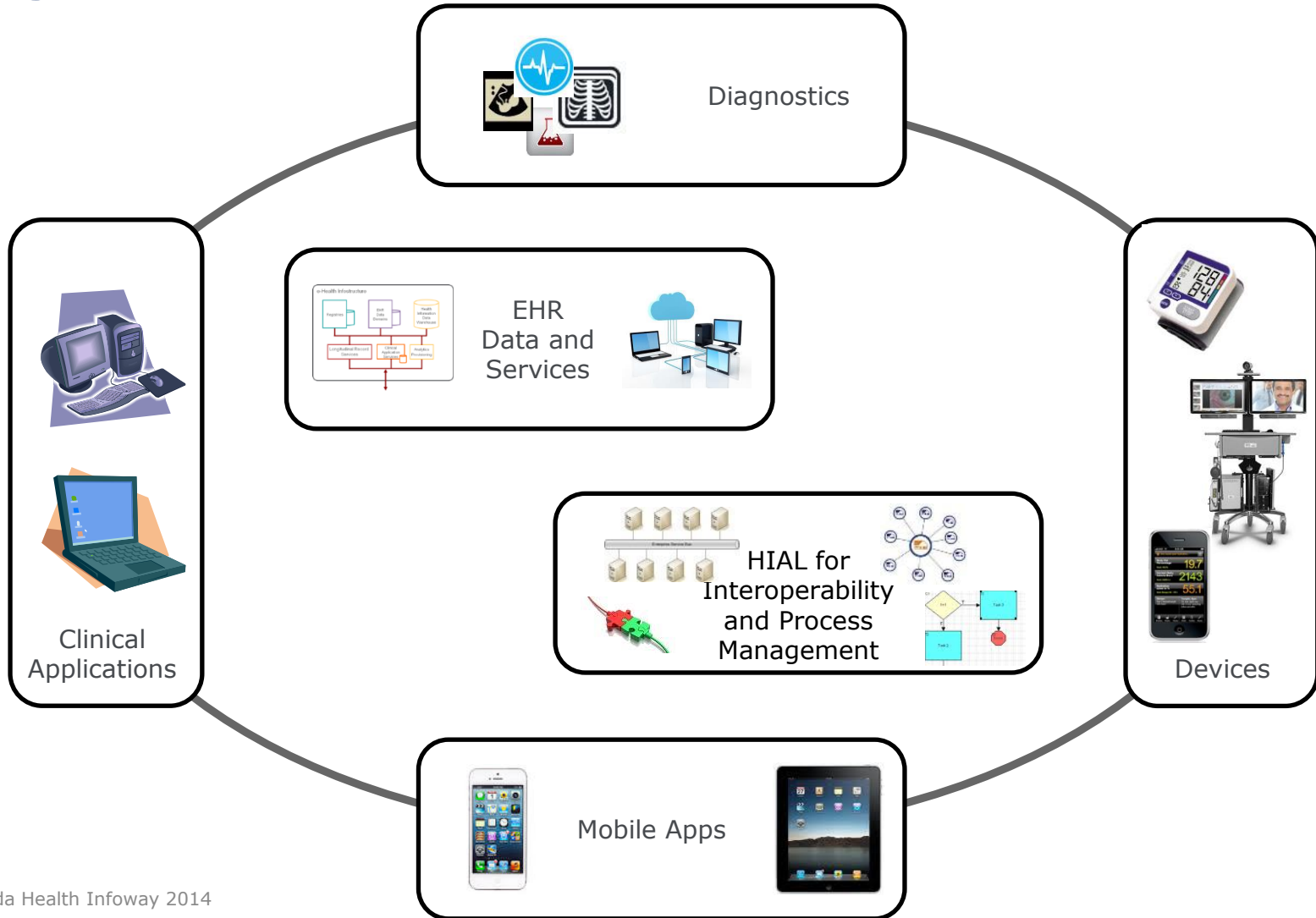
## Health Analytics

- Real time or periodic
- Contextually appropriate
- Across multiple sources

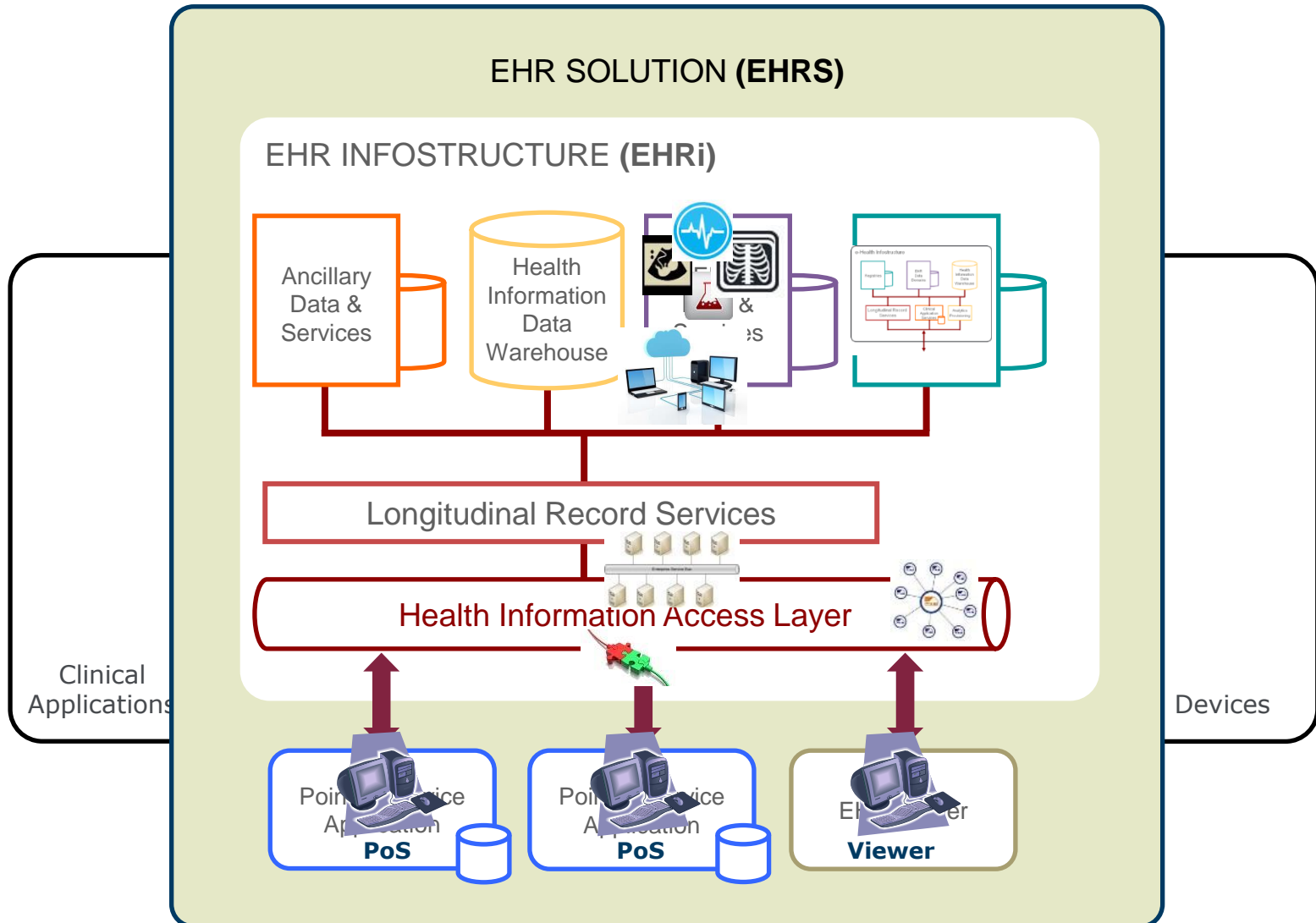
# Digital Health Environments



# Digital Health Environments in Scope

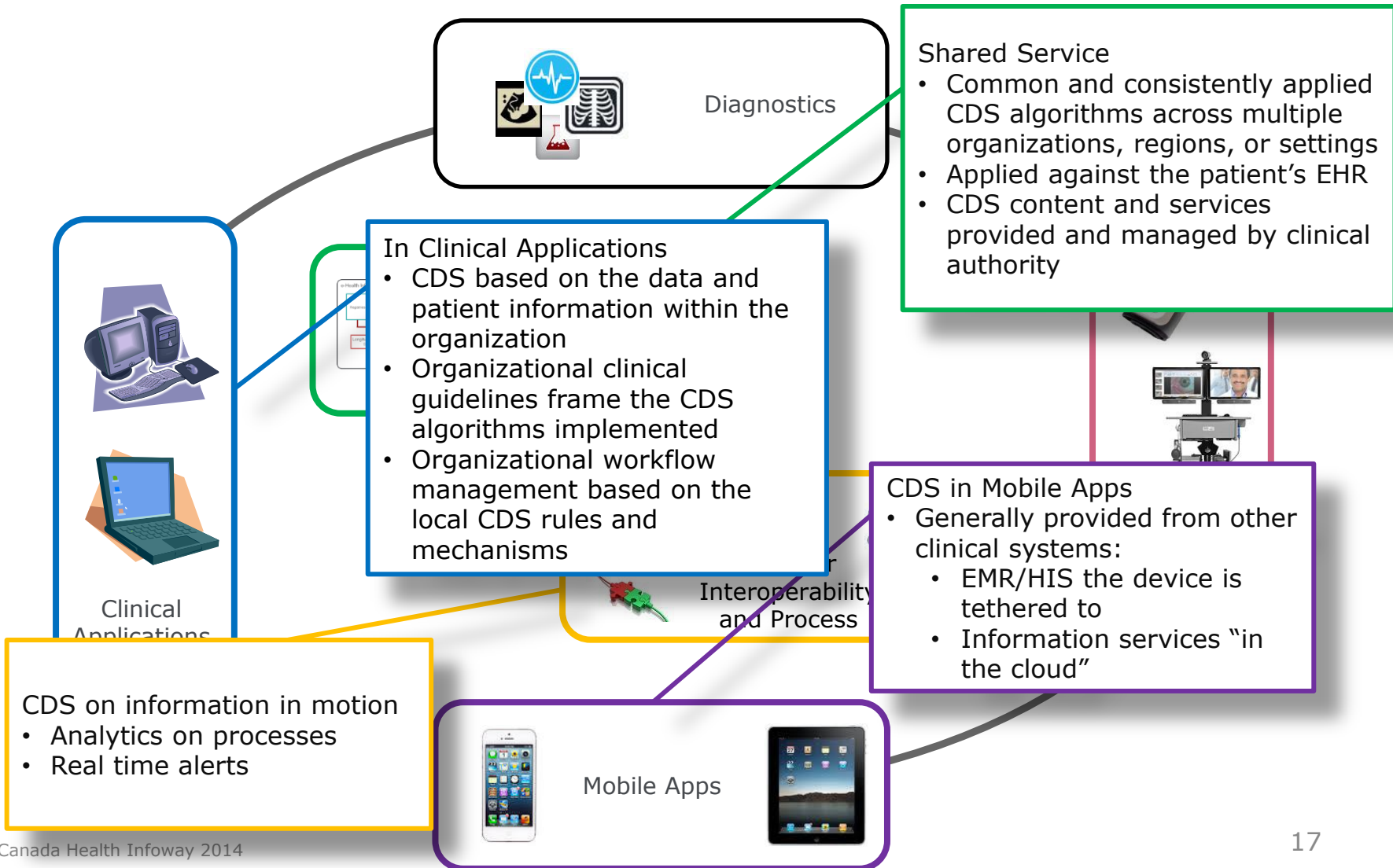


# Incorporating the EHRs Blueprint

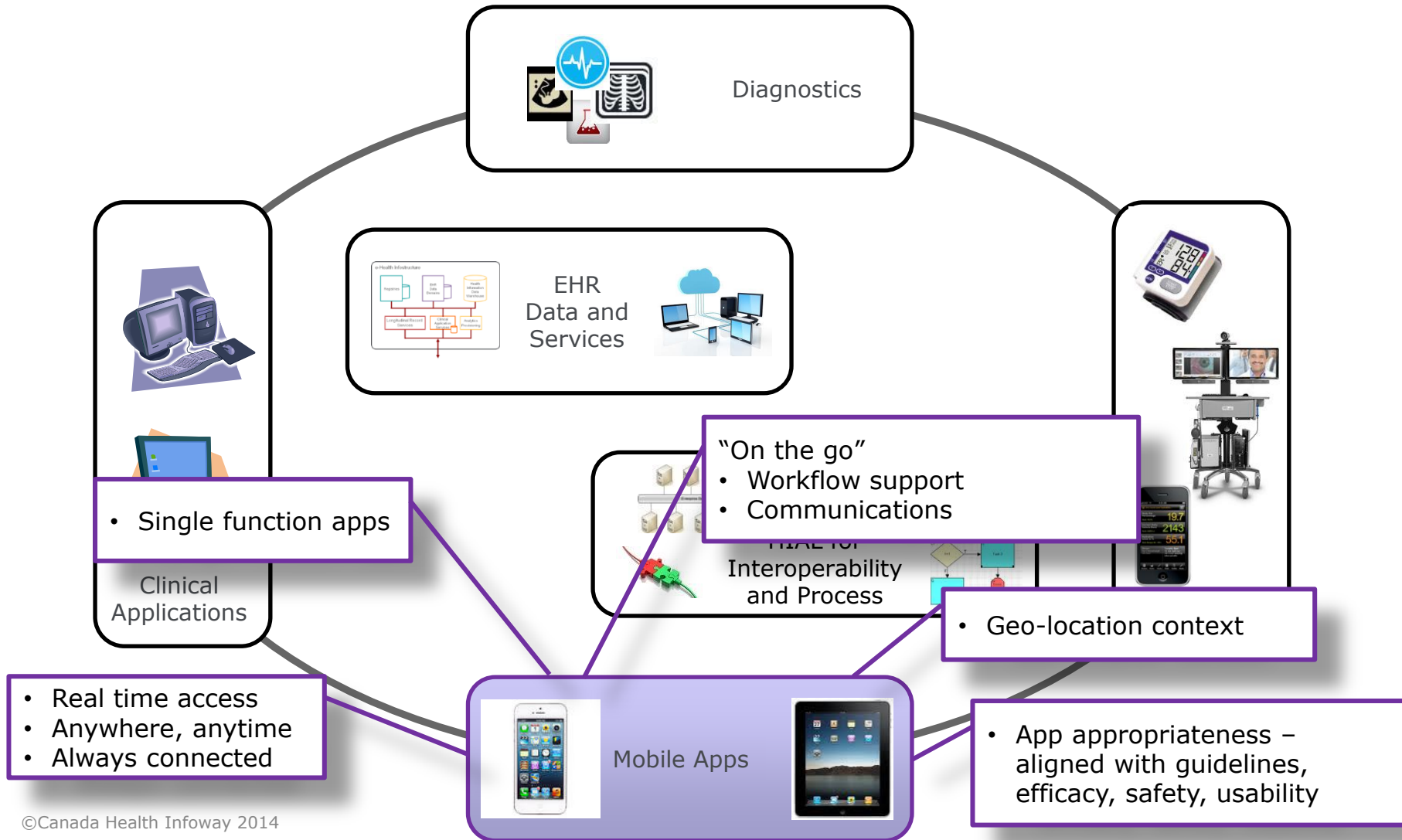




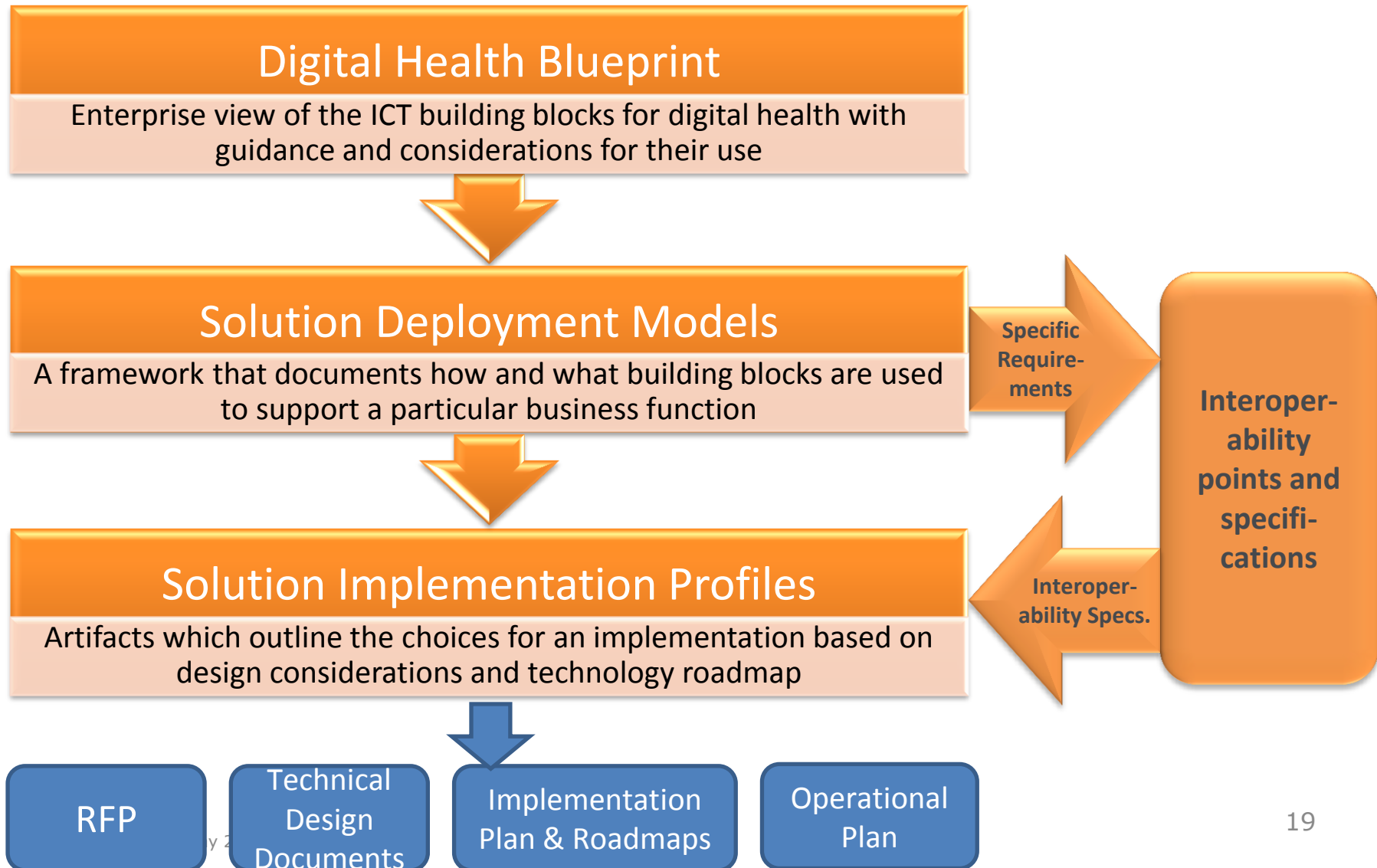
# Clinical Decision Support Deployment



# Use of Mobile Devices and Apps



# From Concept to Implementation



# From Concept to Implementation

## Digital Health Blueprint

Enterprise view of the ICT building blocks for health with guidance and considerations for the

## Solution Deployment

A framework that documents how and what to support a particular business

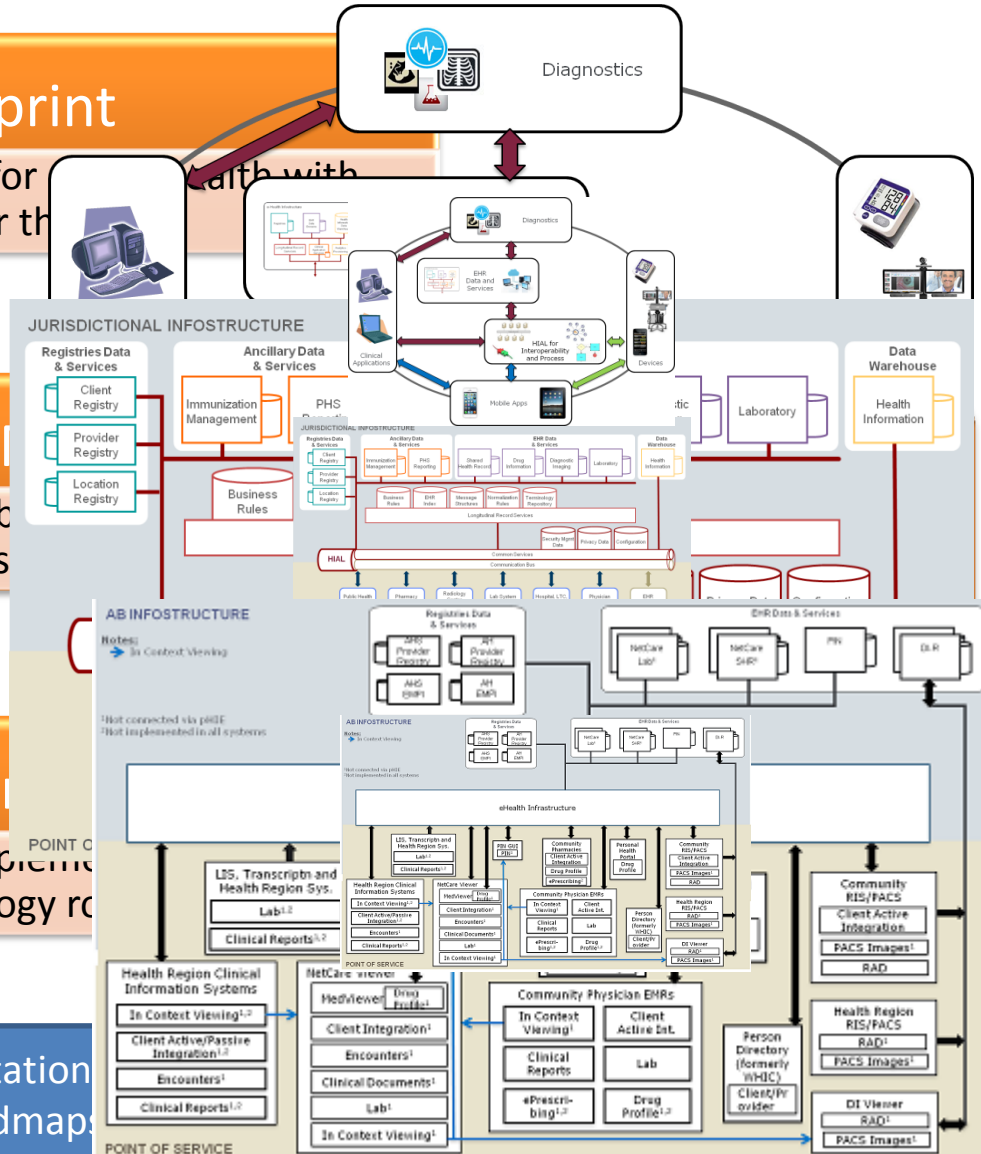
## Solution Implementation

Artifacts which outline the choices for an implementation design considerations and technology requirements

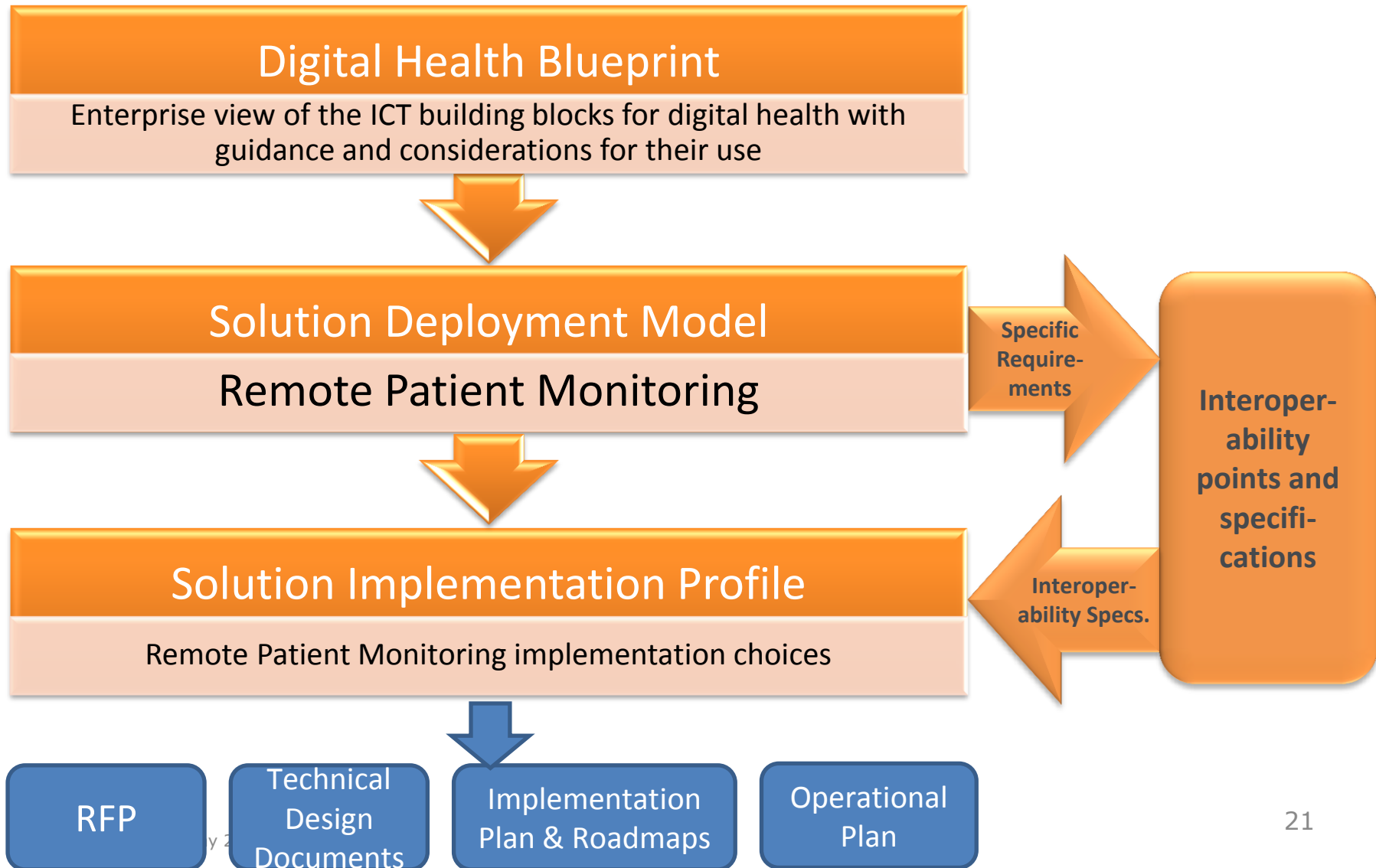
RFP

Technical Design Documents

Implementation Plan & Roadmap



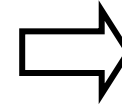
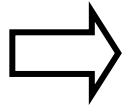
# From Concept to Implementation



# Remote Patient Monitoring Use Case

- Remote patient monitoring of blood pressure
  - Utilizing a mobile device and app
  - Biometrics to an electronic monitoring service
  - Alerts to family physician
  - Communication to patient

# Remote Patient Monitoring - Workflow

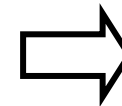
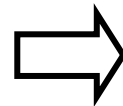
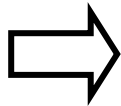


**1. Referral to RPM service:** Based on RM service availability the clinician refers the patient into a specific RM program (ex. diabetes management, post surgical discharge, etc.)

**2. RPM Service enrollment:** Service determines if the patient qualifies for the RPM program. Patient record and care plan created.

**3. Asset Management:** New patient request sent to Asset Management. Equipment, ordered, configured, shipped to patient's home.

**4. Setup & Training:** Setup performed by the patient or care provider, then training delivered remotely or via the care provider



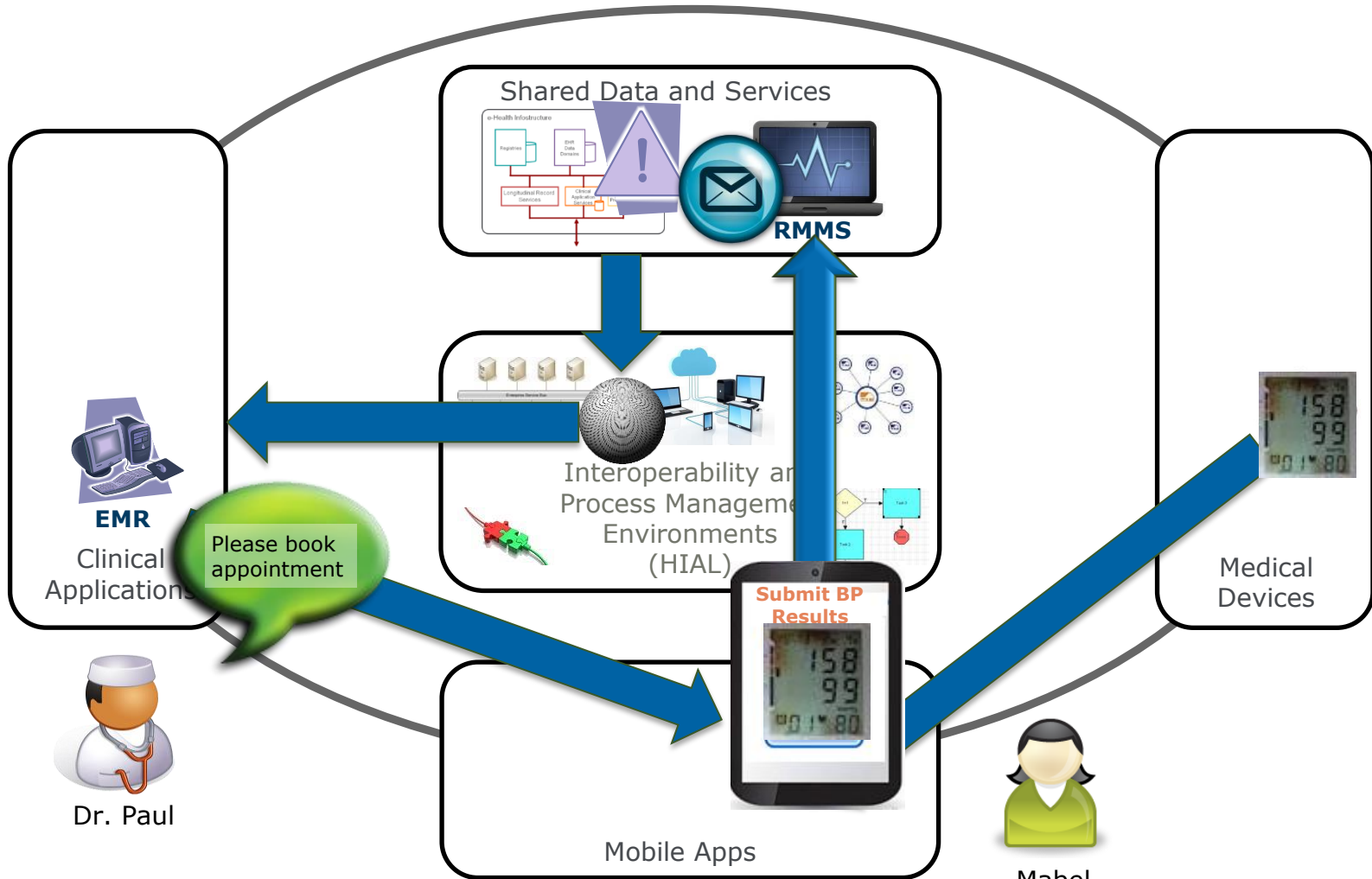
**5. Health data collected & transfer:** Biometric & health data collected and transferred to a RPM service provider.

**6. Monitoring of health data:** analyse and monitor patient data comparing it against patient's care plan

**7. Patient follow up as required:** Clinician calls or books an appointment with the patient when results vary from Care Plan.

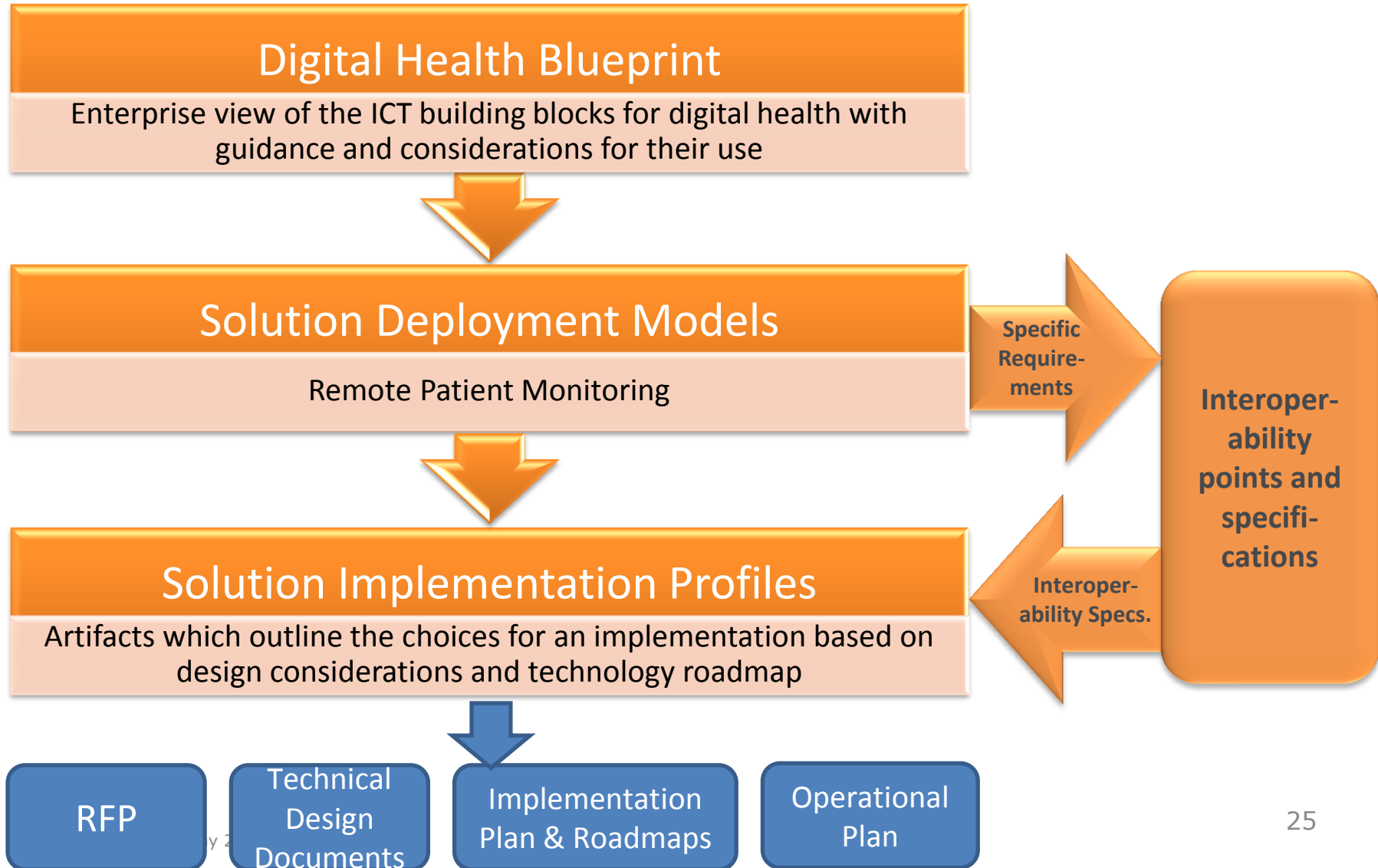
**8. Summary data submitted to EHR:** Relevant clinical summary data submitted to a Digital Health System (e.g., EHR, EMR, PHR, etc.)

# Remote Patient Monitoring





# From Concept to Implementation



# Blueprint as a Living Asset

- Blueprint will be continually enhanced, extended, and refined
  - Using a modeling tool and shareable architecture repository
  - Content will periodically versioned and re-published
- Blueprint will be published on the Infocentral Wiki
- New deployment models will emerge and evolve over time based on need
  - *Infoway* will propose deployment models for its specific investment programs and will support development and publication of additional models
  - Deployment models may be developed collaboratively or by individual stakeholders

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## **In Summary - Blueprint Illustrates**

- Leveraging existing investments in the EHRS
- Guide for the solution architecture
  - Appropriate use of various computing environments for specific functionality
  - How to tailor, configure and manage clinical and administrative processes
  - Effective use of modern and emerging technologies
  - Future *Infoway* investment programs
- Guidance for strategic plans and ICT roadmaps based on priority business functions and implementation choices

# Thank You

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