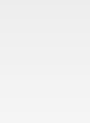**FAST**

FHIR AT SCALE TASKFORCE

ONC *FAST* 101

FAST Taskforce Antitrust Notice

- The ONC FHIR At Scale Taskforce (*FAST*)
(Hereinafter "Taskforce") is committed to full compliance with existing
federal and state antitrust laws.

- All members involved in the Taskforce effort, including its advisory groups, will comply with
all applicable antitrust laws during the course of their activities. During Taskforce meetings and other
associated activities, including all informal or social discussions, each member shall refrain from discussing or
exchanging competitively sensitive information with any other member. Such information includes, but may not
be limited to:
  - Price, premiums, or reimbursement charged or paid for products or services
  - Allocation of customers, enrollees, sales territories, sales of any products or contracts with providers
  - Any other competitively sensitive information that is proprietary to a member company

- If you have any specific questions or concerns, seek guidance from your own legal counsel.

- Members should not bring confidential information or intellectual property (hereinafter "Intellectual Property")
owned by their respective member companies into Taskforce meetings. To the extent such Intellectual Property
is shared with the Taskforce that shall not be construed as a waiver of member company's rights to, or ownership
in, the Intellectual Property.

SK

Agenda

- **What is FHIR?**
  - FHIR Adoption Rates
  - Industry Levers for FHIR Adoption
  - Infrastructure

- **What is *FAST*?**
  - Patient Journey
  - Technical and Regulatory Barriers

- **Collaboration and Getting Involved**
  - *FAST* and other FHIR Initiatives
  - *FAST* Process & Collaboration
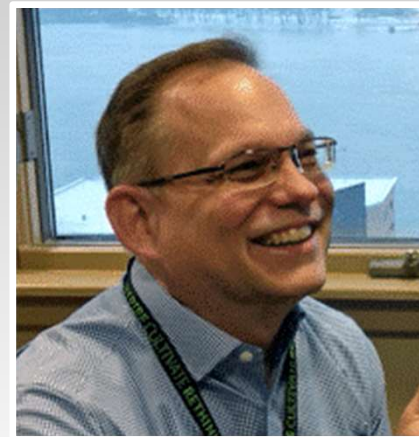 - Technical Learning Community

SK

Presenters – *FAST* Chief Architects

PAUL OATES

Senior Enterprise Architect and Lead for the IT M&A Practice
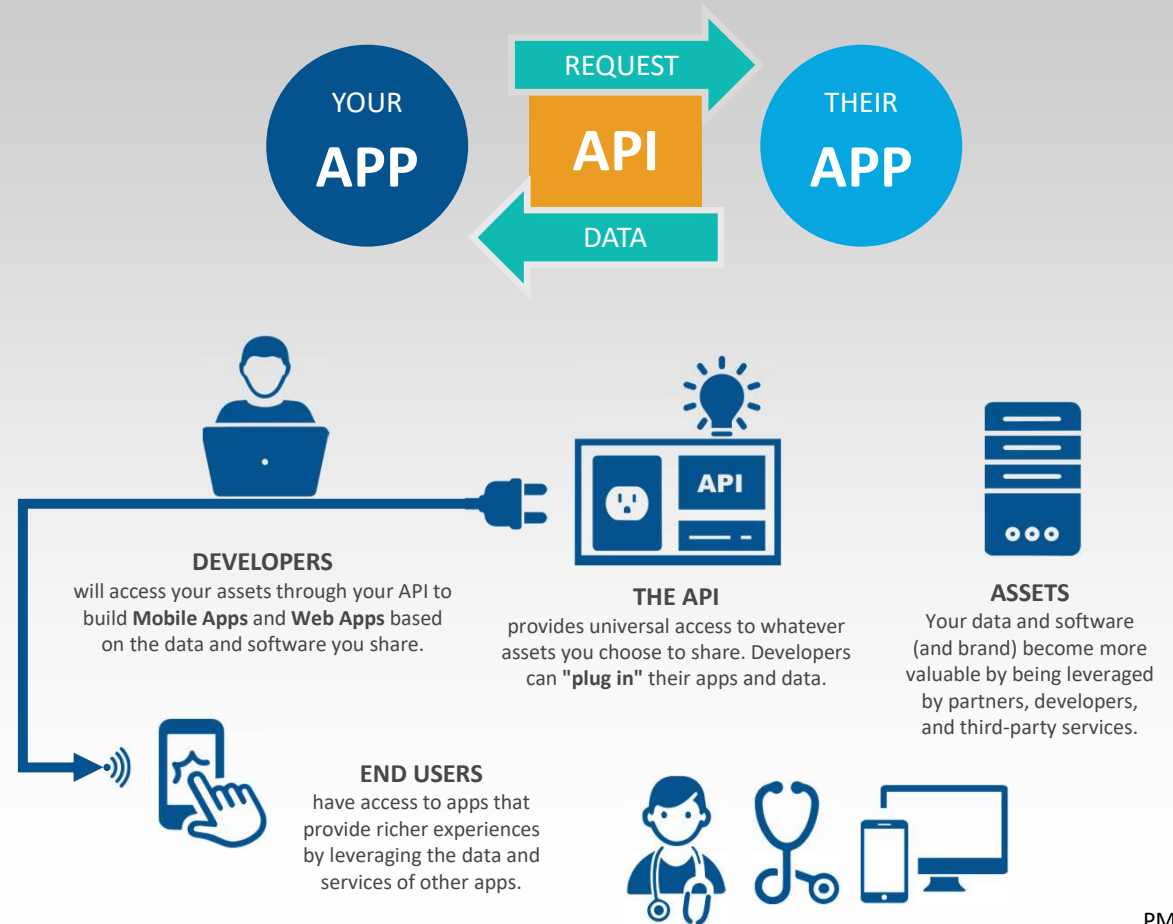
Cigna

PATRICK MURTA

Solutions Architect Fellow

Humana

SK

APIs…

- **A**n API is a software intermediary which allows applications to talk to each other

- **APIs** allow the capabilities or data of one computer program to be used by another
  - Lego blocks of data
  - Doesn't matter what the underlying computer or technology is

- **APIs** are a foundational technology that drives modern computing and the API economy (Amazon, Netflix, Google, Facebook, EBay, YouTube, Twitter, & etc.)

- **APIs** enable innovation in an unprecedented manner

- **APIs** are not new… simplified, easy to use versions of them are

YOUR **APP** REQUEST **API** DATA THEIR **APP**

DEVELOPERS
will access your assets through your API to build **Mobile Apps** and **Web Apps** based on the data and software you share.

THE API
provides universal access to whatever assets you choose to share. Developers can **"plug in"** their apps and data.

ASSETS
Your data and software (and brand) become more valuable by being leveraged by partners, developers, and third-party services.

END USERS
have access to apps that provide richer experiences by leveraging the data and services of other apps.

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WHAT IS FHIR?

FHIR® — Fast Healthcare Interoperability Resources

- An HL7 next generation standard
- Helps two computer systems talk to each other

FHIR "resources" are standardized & reusable

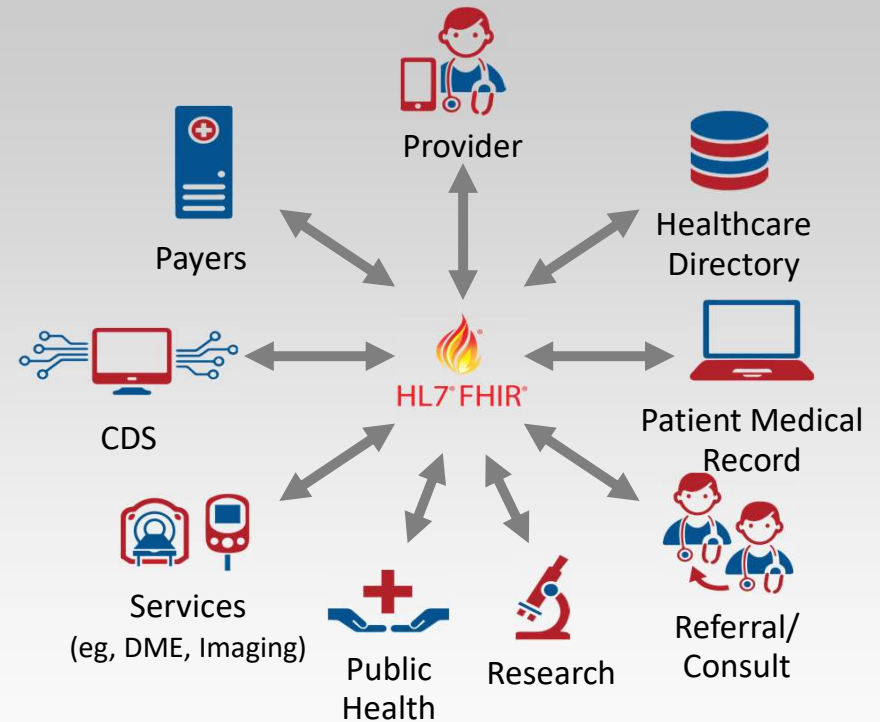- Patient, practitioner, organization, deviceRequest

FHIR supports common exchange methods

- REST*, messaging, documents and services

FHIR supports the spectrum of integration

- Mobile phone apps, EHR-based data sharing, institutional solutions

FHIR helps with existing use cases & provides for future innovation

HL7° FHIR®

Provider
Payers
Healthcare Directory
CDS
Patient Medical Record
Services (eg, DME, Imaging)
Public Health
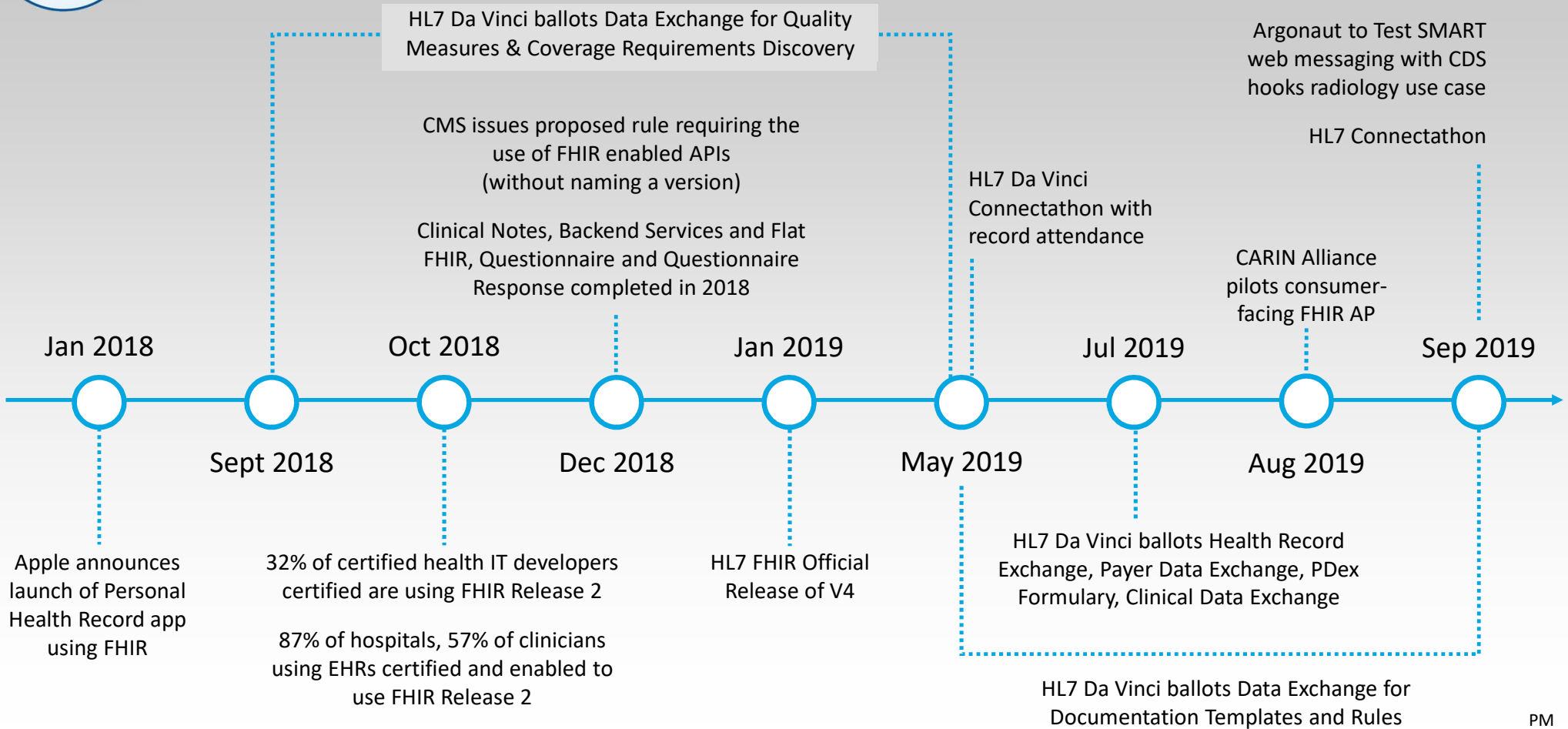Research
Referral/ Consult

Data available in-workflow supports value-based care and population health management

*Representational State Transfer (REST) defines a set of constraints used for creating web services

6

PM

Groundswell of FHIR Activity

HL7 Da Vinci ballots Data Exchange for Quality Measures & Coverage Requirements Discovery

CMS issues proposed rule requiring the use of FHIR enabled APIs (without naming a version)

Clinical Notes, Backend Services and Flat FHIR, Questionnaire and Questionnaire Response completed in 2018

HL7 Da Vinci Connectathon with record attendance

Argonaut to Test SMART web messaging with CDS hooks radiology use case

HL7 Connectathon

CARIN Alliance pilots consumer-facing FHIR AP

Jan 2018 — **Oct 2018** — **Jan 2019** — **Jul 2019** — **Sep 2019**

Sept 2018 — **Dec 2018** — **May 2019** — **Aug 2019**

Apple announces launch of Personal Health Record app using FHIR

32% of certified health IT developers certified are using FHIR Release 2

87% of hospitals, 57% of clinicians using EHRs certified and enabled to use FHIR Release 2

HL7 FHIR Official Release of V4

HL7 Da Vinci ballots Health Record Exchange, Payer Data Exchange, PDex Formulary, Clinical Data Exchange

HL7 Da Vinci ballots Data Exchange for Documentation Templates and Rules

PM

Why FHIR Adoption?

Industry value levers for FHIR adoption:

Comprehensive data integration

Promote progressive FHIR adoption

Reduce redundancy and duplication

Improve in-workflow data exchange to support value-based care and population health

CMS and ONC rules call for widespread APIs adoption using FHIR to enable consumers access to their health data

Drive innovation through data accessibility

Unlock new capabilities through API/ service methodologies

Improve consistency as an impetus for accelerating clinical data exchange

Reduce costs and time needed for infrastructure so it can be spent on patient care

Tying to Reality and Making Practical via CMS & ONC Proposed Rules

Mandating FHIR and consumer mediation as foundations of an integrated, competitive, and innovation friendly ecosystem.

CMS Proposed Rule (CMS-9115-P)

- Patient access through standards based FHIR APIs
- Information exchange and care coordination across payers
- API based provider directories
- Care coordination through trusted exchange networks

ONC Proposed Rule (RIN 0955-AA01)

- Implements information blocking provision of Cures Act (and 7 exceptions)
- Standards based APIs
- Certification criteria
- Content specifications

Member Empowered

Standards Based

Open APIs

Care Coordination Across Payers and Providers

Innovation

CMS/ONC proposes rules that align with market forces and reflect industry trends.
They provide yet another dimension to the interoperability inflection point we are in.

PM

Lack of Consistent Infrastructure Impacts Flow

PM
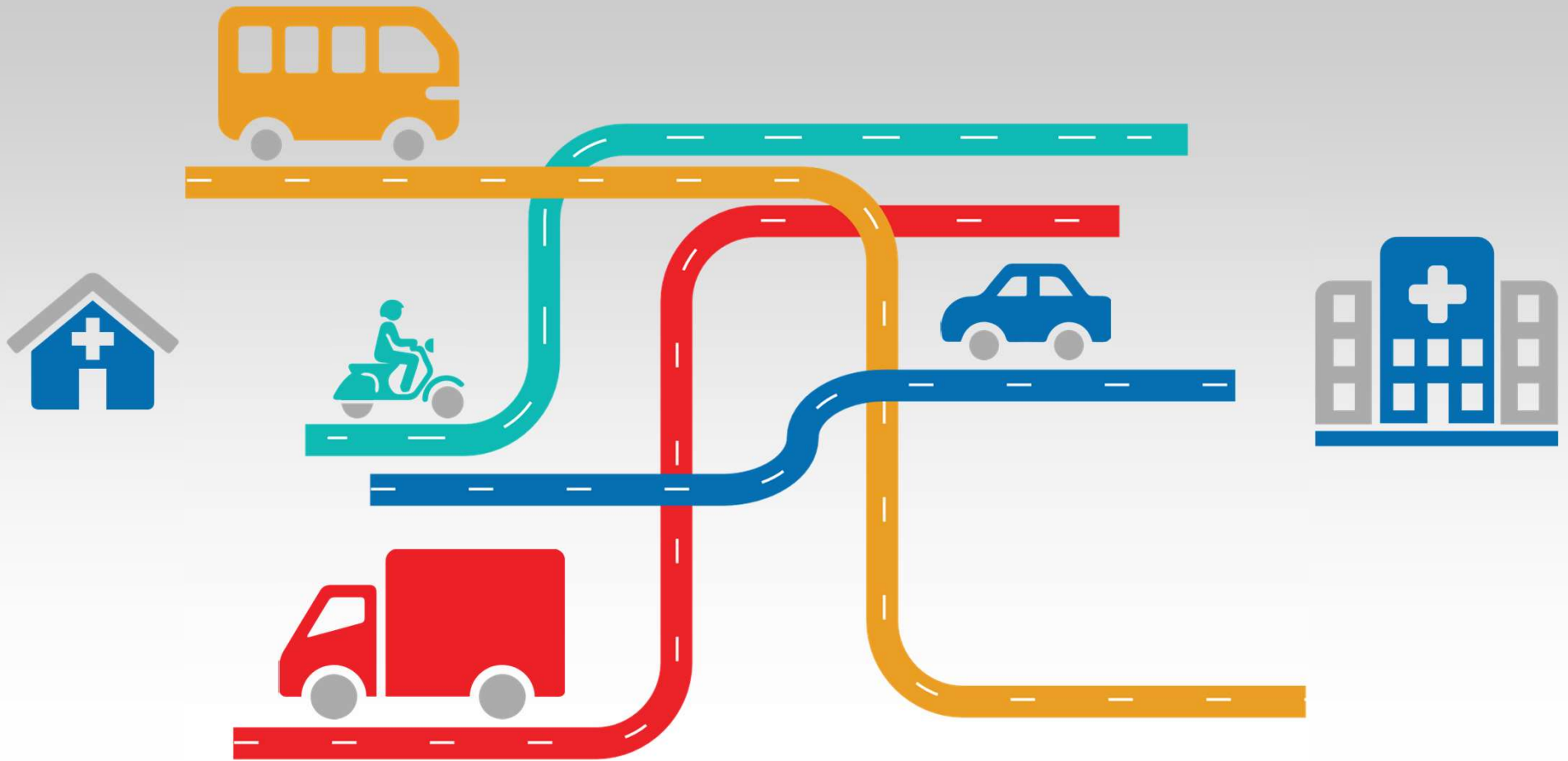
Well-Planned Infrastructure Creates Efficiency

PM
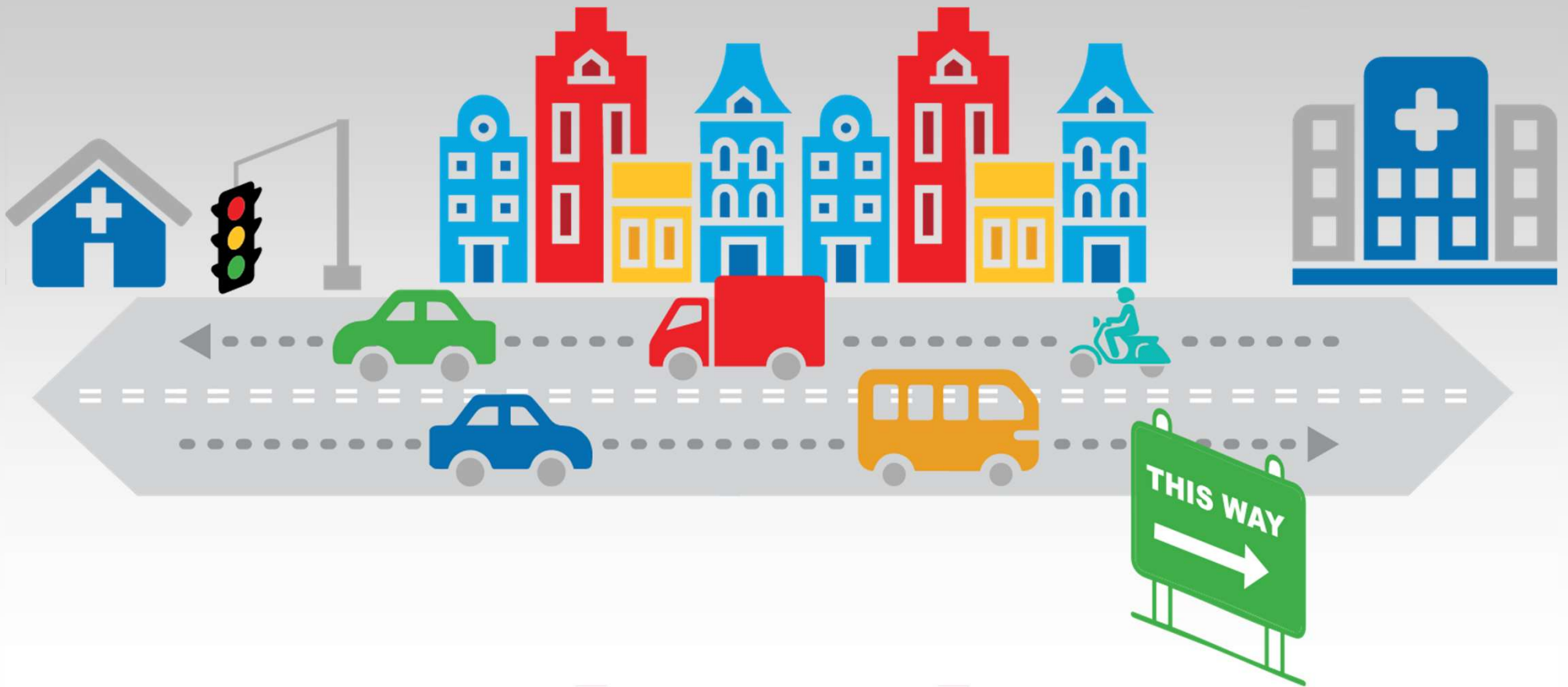
What is *FAST*?

The FHIR at Scale Taskforce (FAST), convened by the Office of the National Coordinator for Health IT (ONC), brings together a highly representative group of motivated healthcare industry stakeholders and health information technology experts.

The group is set to identify HL7® Fast Healthcare Interoperability Resources (FHIR®) scalability gaps and possible solutions, analysis that will address current barriers and will accelerate FHIR adoption at scale.

PO

Sophisticated technology exists but without consistent data integration, phone and fax are still the default

PO
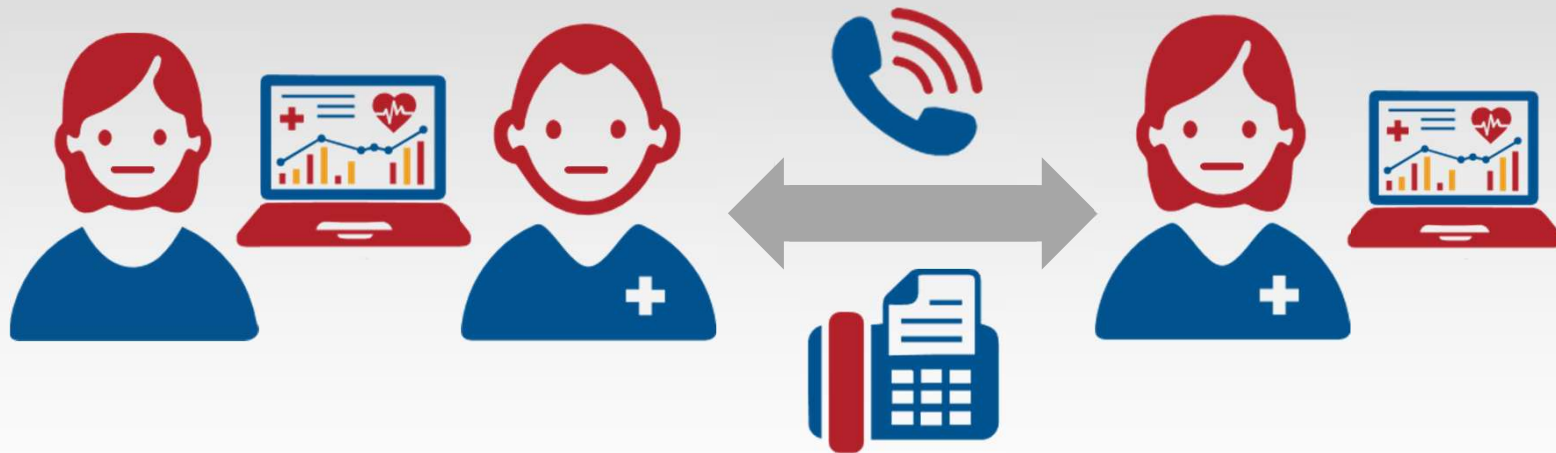
Patient Journey - Ideal

Real-time data exchange removes the need for phone calls and faxes, streamlining the entire interaction.

PO
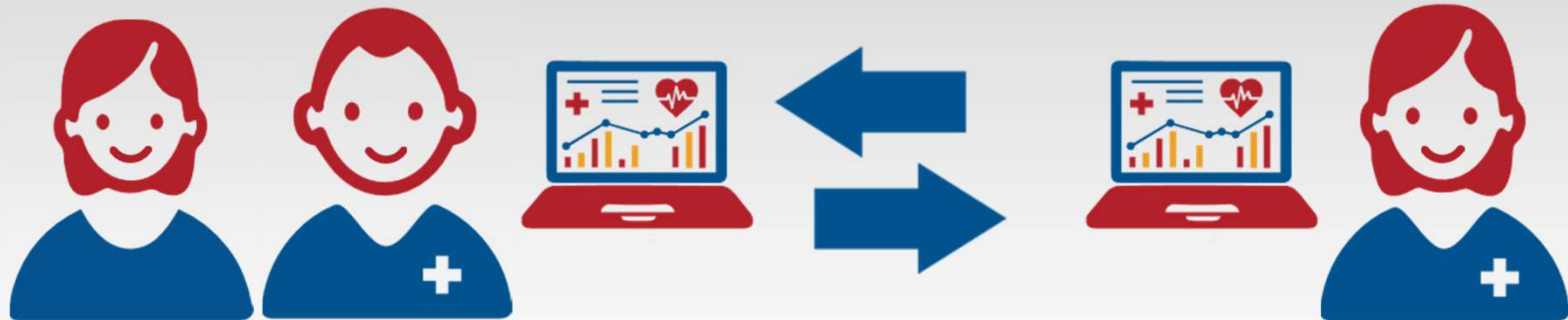
We want to identify and address the barriers for data exchange to happen consistently, for every transaction, specifically FHIR transactions
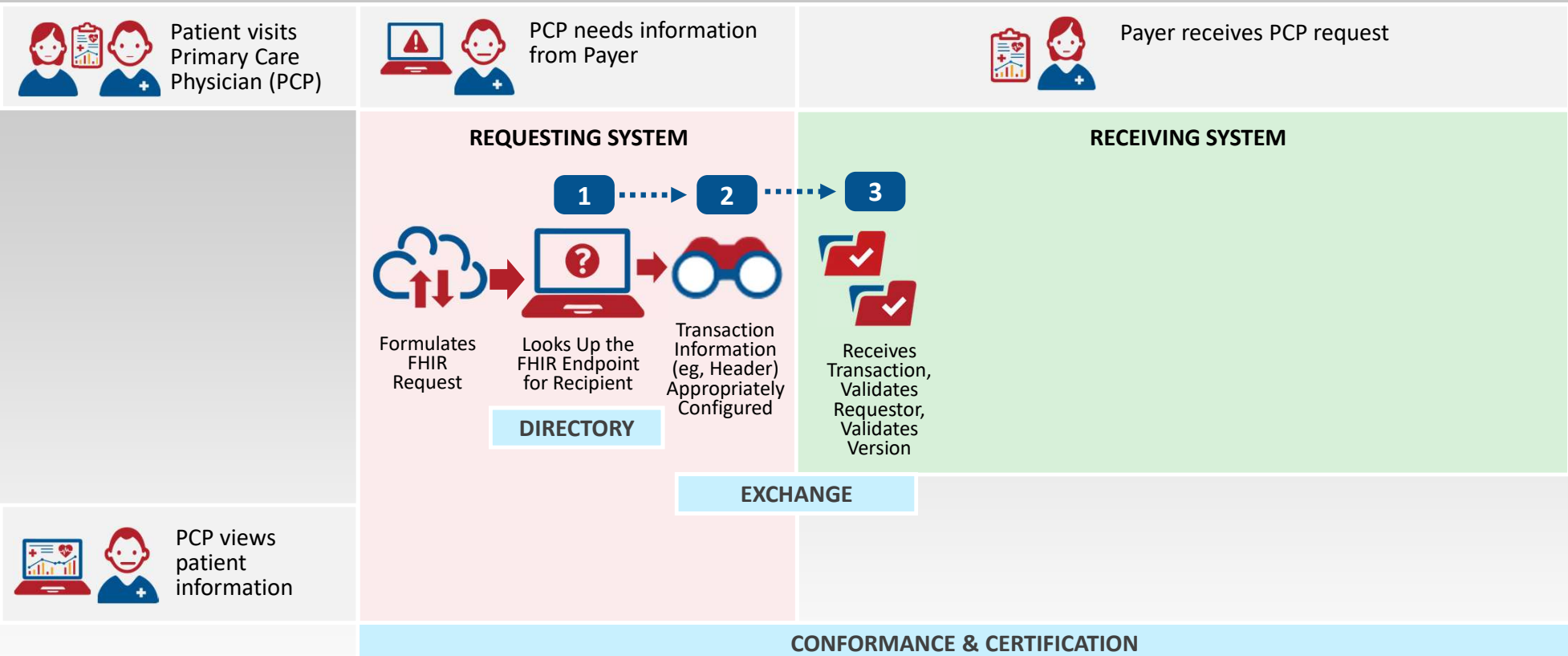
PO

Example FHIR Transaction Journey

Patient visits Primary Care Physician (PCP)	**PCP needs information from Payer**	**Payer receives PCP request**

REQUESTING SYSTEM

1

Formulates FHIR Request

Looks Up the FHIR Endpoint for Recipient

DIRECTORY

RECEIVING SYSTEM

PCP views patient information

CHALLENGE: There are multiple places to find endpoints.
Is there a place I can go to find all of them?

SOLUTION: Directory services approach for endpoint discovery

PM

Example FHIR Transaction Journey

Patient visits Primary Care Physician (PCP)	PCP needs information from Payer	Payer receives PCP request

REQUESTING SYSTEM

RECEIVING SYSTEM

1 ┈┈▶ 2

Formulates FHIR Request

Looks Up the FHIR Endpoint for Recipient

Transaction Information (eg, Header) Appropriately Configured

DIRECTORY

EXCHANGE

PCP views patient information

CHALLENGE: Enabling transaction exchange

SOLUTION: Exchange and meta data approach

PM

Example FHIR Transaction Journey

Patient visits Primary Care Physician (PCP)	PCP needs information from Payer	Payer receives PCP request

REQUESTING SYSTEM

RECEIVING SYSTEM

1 ┄┄> **2** ┄┄> **3**

Formulates FHIR Request

Looks Up the FHIR Endpoint for Recipient

Transaction Information (eg, Header) Appropriately Configured

Receives Transaction, Validates Requestor, Validates Version

DIRECTORY

EXCHANGE

PCP views patient information

CONFORMANCE & CERTIFICATION

CHALLENGE: A way to measure conformance to the standard

SOLUTION: Conformance & certification approach
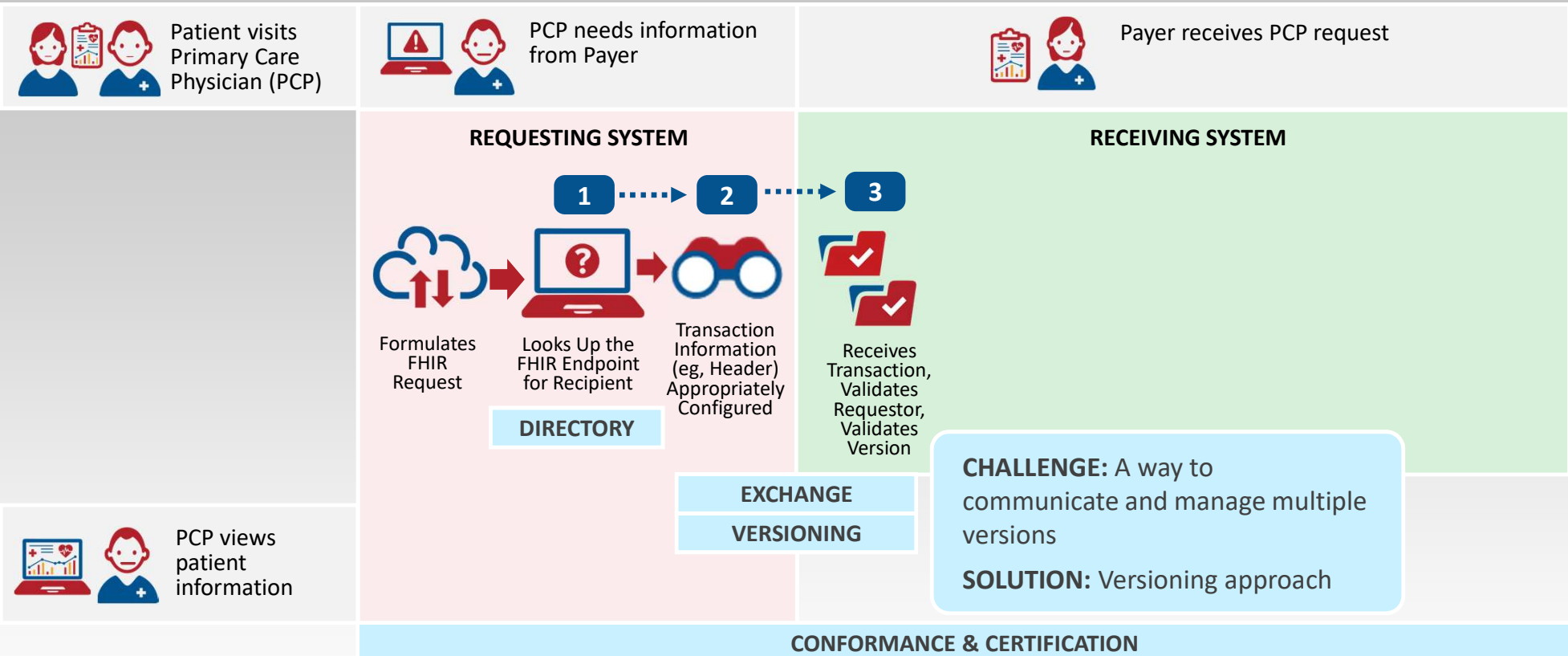
PM

Example FHIR Transaction Journey

Patient visits Primary Care Physician (PCP)	PCP needs information from Payer	Payer receives PCP request

REQUESTING SYSTEM

RECEIVING SYSTEM

1 ┈┈► **2** ┈┈► **3**

Formulates FHIR Request

Looks Up the FHIR Endpoint for Recipient

DIRECTORY

Transaction Information (eg, Header) Appropriately Configured

Receives Transaction, Validates Requestor, Validates Version

EXCHANGE

VERSIONING

PCP views patient information
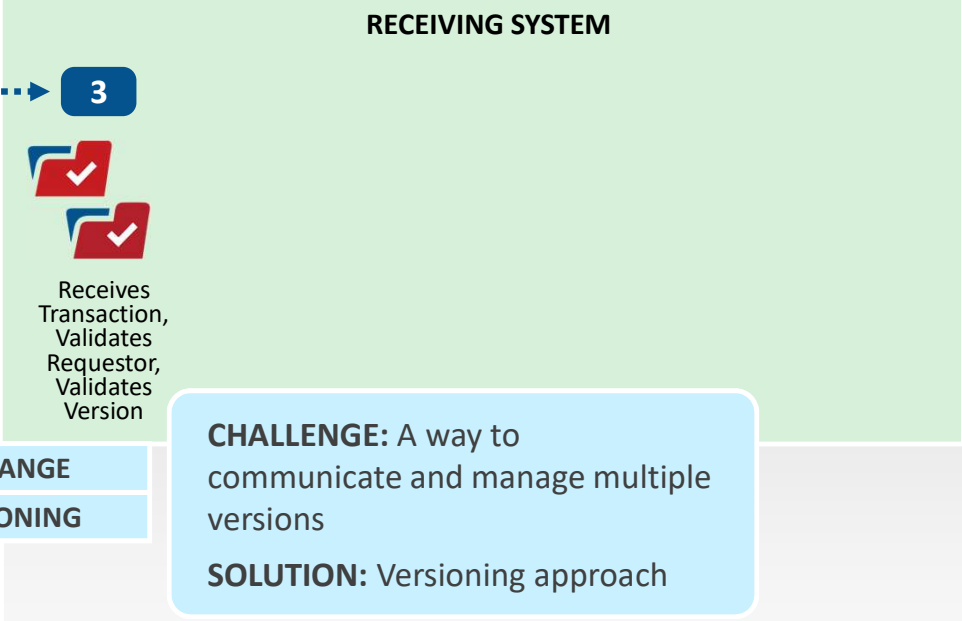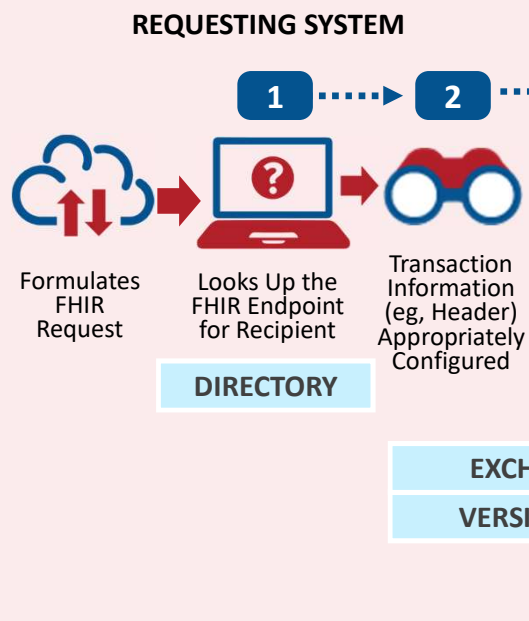
CHALLENGE: A way to communicate and manage multiple versions

SOLUTION: Versioning approach

CONFORMANCE & CERTIFICATION
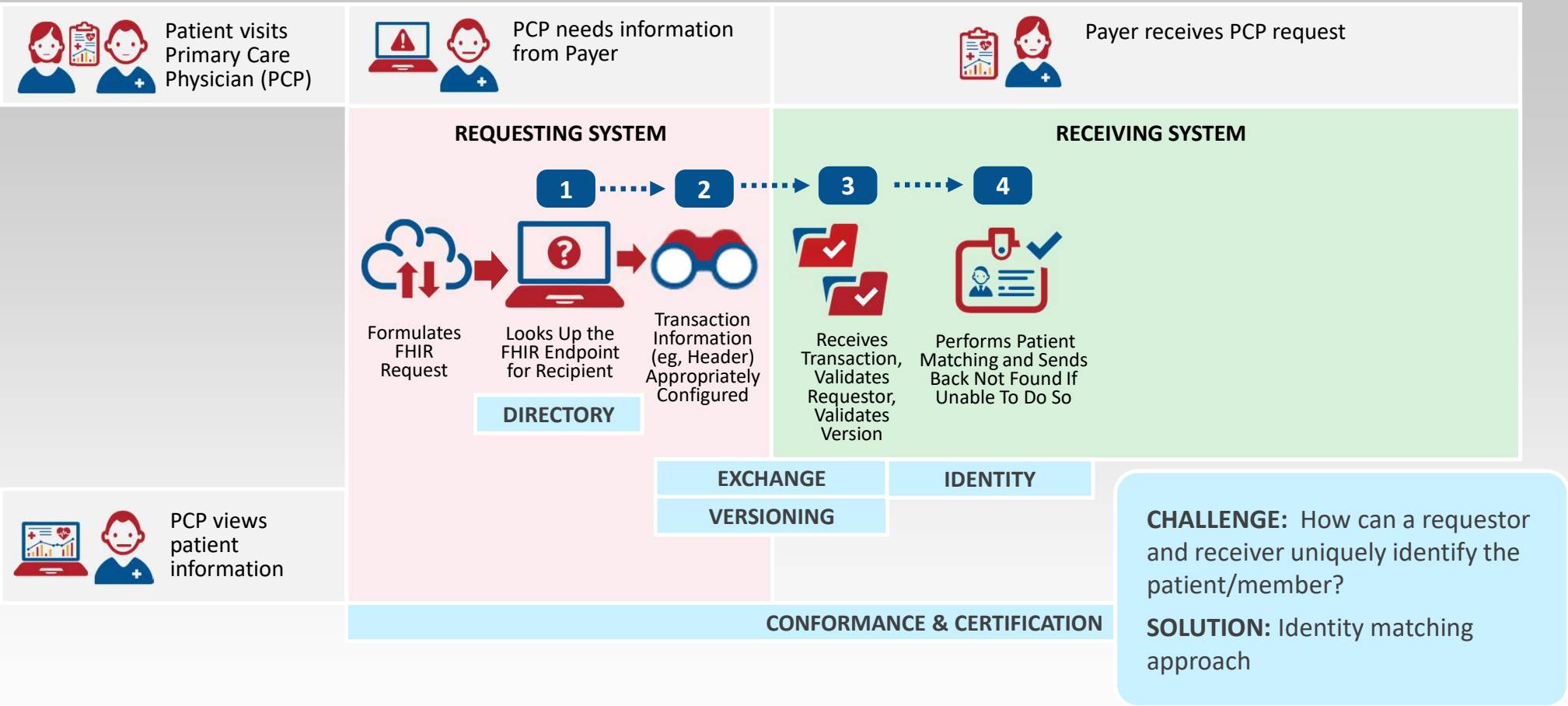
PM

Example FHIR Transaction Journey

Patient visits Primary Care Physician (PCP)

PCP needs information from Payer

Payer receives PCP request

REQUESTING SYSTEM

RECEIVING SYSTEM

1 → 2 → 3 → 4

Formulates FHIR Request

Looks Up the FHIR Endpoint for Recipient

DIRECTORY

Transaction Information (eg, Header) Appropriately Configured

Receives Transaction, Validates Requestor, Validates Version

Performs Patient Matching and Sends Back Not Found If Unable To Do So

PCP views patient information

EXCHANGE   **IDENTITY**

VERSIONING

CONFORMANCE & CERTIFICATION

CHALLENGE: How can a requestor and receiver uniquely identify the patient/member?

SOLUTION: Identity matching approach

PM

Example FHIR Transaction Journey

Patient visits Primary Care Physician (PCP)

PCP needs information from Payer

Payer receives PCP request

REQUESTING SYSTEM

1 Formulates FHIR Request

2 Looks Up the FHIR Endpoint for Recipient
DIRECTORY

Transaction Information (eg, Header) Appropriately Configured

RECEIVING SYSTEM

3 Receives Transaction, Validates Requestor, Validates Version

4 Performs Patient Matching and Sends Back Not Found If Unable To Do So

5a Authenticates FHIR User's Role

5b Filters Out Data That Does Not Have Consent

EXCHANGE   IDENTITY
VERSIONING

PCP views patient information

CONFORMANCE & CERTIFICATION
SECURITY

CHALLENGE: How can the industry ensure only "right to know" requestors access data and patient consent is followed?

SOLUTION: Security approach for authorization & authentication

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Example FHIR Transaction Journey
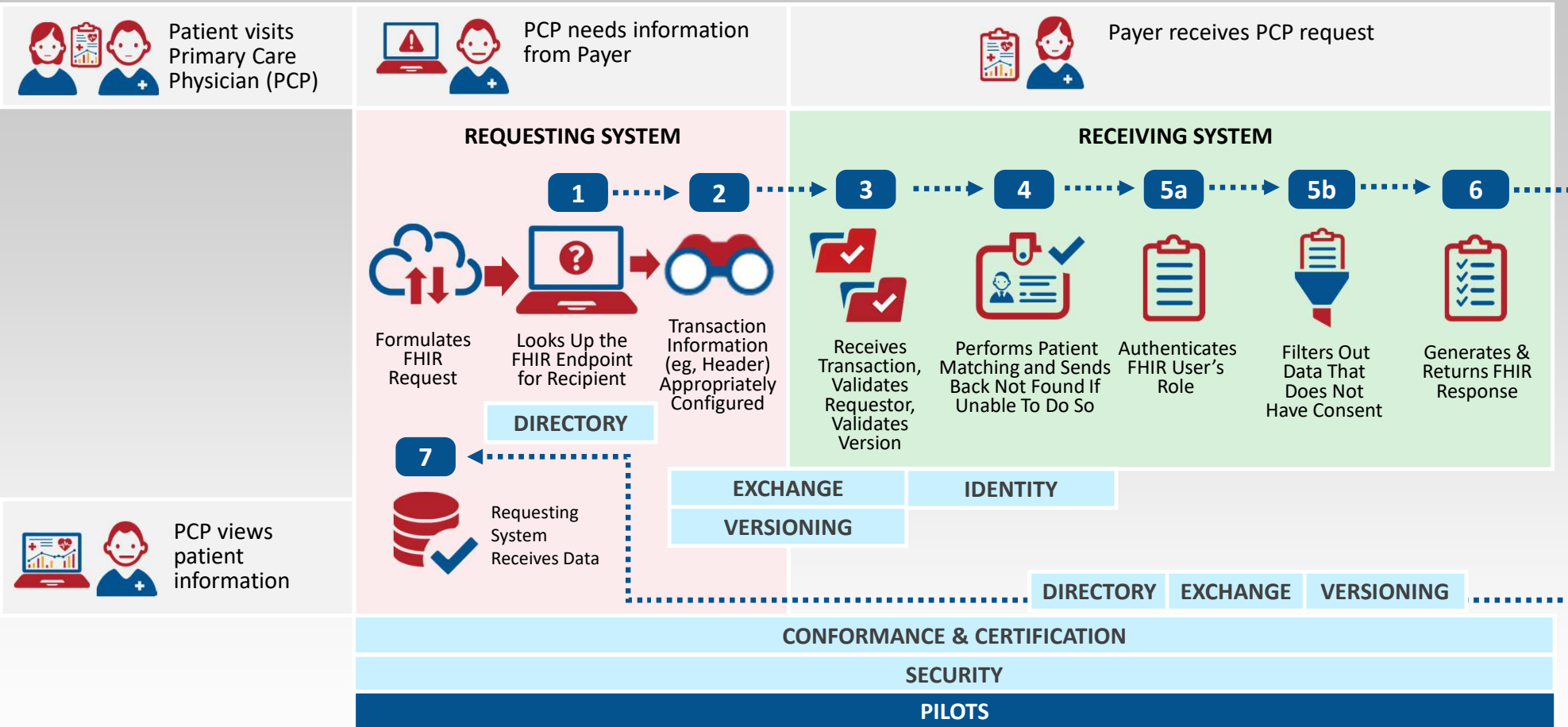
Known Technical Barriers
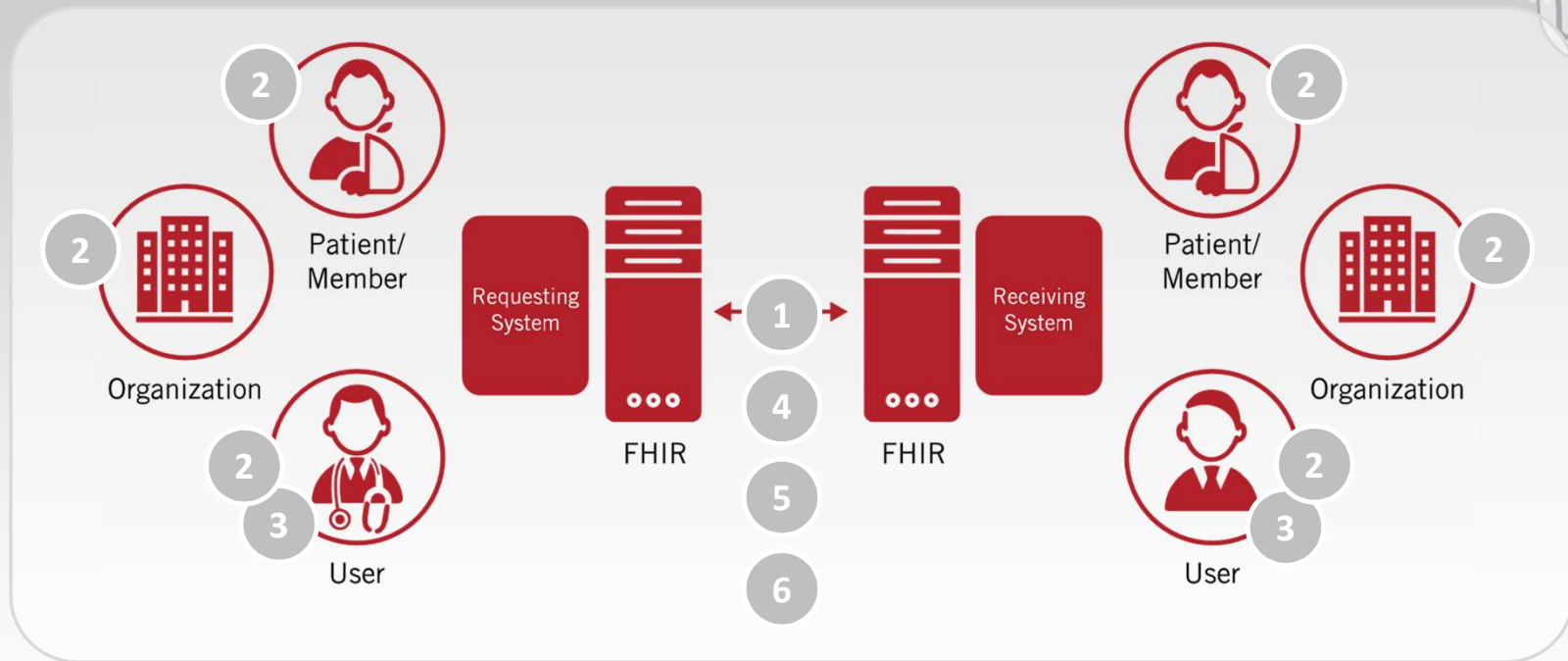
1 Directory Services   2 Identity   3 Security

4 Testing, Conformance, & Certification 5 Versioning   6 Scaling

PO

FHIR Adoption Technical Challenges

DIRECTORY

- How does physician know which payer?
- How does payer know which physician?
- How do we address the exponential growth in the number of endpoints?
- How do we find an endpoint across organization boundaries?
- How do we address potential endpoint variation across partners?
- How do we protect endpoints from malicious attacks?

SECURITY

- How do we know the service consumer has permission to ask or see?
- What does a scalable authentication and authorization models for FHIR based information exchange look like?
- Will a scalable solution to support millions of patients/payers/ providers
- How do we leverage existing security guidelines and best practices?
- How do we know the FHIR consumer has permission to ask or see?

IDENTITY

- How do we know who the patient is? The payer? The physician?
- How do we know the minimum patient data to return?
- Can we rely on the consistency of identity-matching services across organizations?
- How do we map patient identity real-time?
- How do we address the misidentification risk?
- When is member/patient ID a requirement in a FHIR resource?

PO

FHIR Adoption Technical Challenges

TESTING, CONFORMANCE & CERTIFICATION

- How do we test and version across multiple stakeholders with varying degrees of maturity?
- How do we adequately test/validate consistently in a scalable environment ? Automated tool?
- How do we define the minimum level of transaction conformance and validation required?
- What steps and stakeholders should be included for governance of FHIR certification?

VERSIONING

- How do we ameliorate the challenges adoption of different versions causes?
- How do we support specific functionality when vendor's adoption variances mean they support different functions at different times?
- How can we address different FHIR versions being used for the same patient?
- Can Implementation Guides across multiple FHIR versions be harmonized?
- How do we remove definition variances between FHIR and standard RESTful APIs cause confusion?

SCALING

- How do we make response times more predictable and consistent to better support real-time exchanges?
- How can standards be successfully implemented to support hybrid exchange models?
- How do we anticipate the volume of FHIR-based transactions?

PO

Potential Regulatory Barriers

HIPAA Minimum Necessary

Regulatory Mandate for a
Single Named Standard

HIPAA Transactions Requiring X12

Use of NPPES as the Repository
for Endpoints
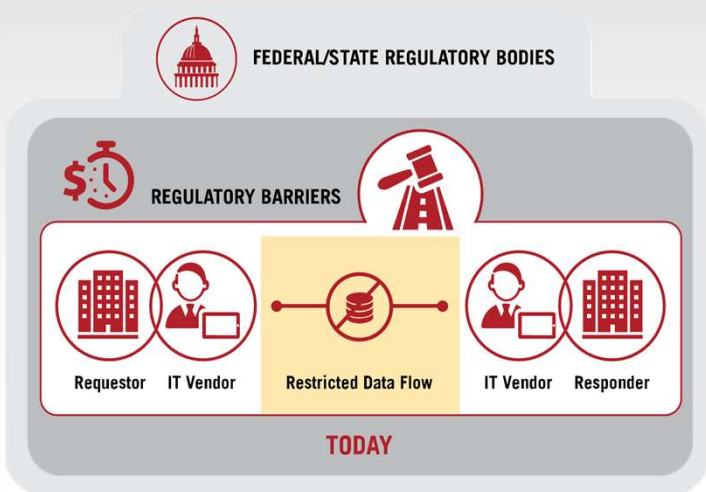
Patient Identifier

Data Blocking

FEDERAL/STATE REGULATORY BODIES

REGULATORY BARRIERS

Requestor   IT Vendor   Restricted Data Flow   IT Vendor   Responder

TODAY

FEDERAL/STATE REGULATORY BODIES

REMOVAL OF
REGULATORY BARRIERS

Requestor   IT Vendor   More Efficient Data Flow   IT Vendor   Responder

FUTURE

PO
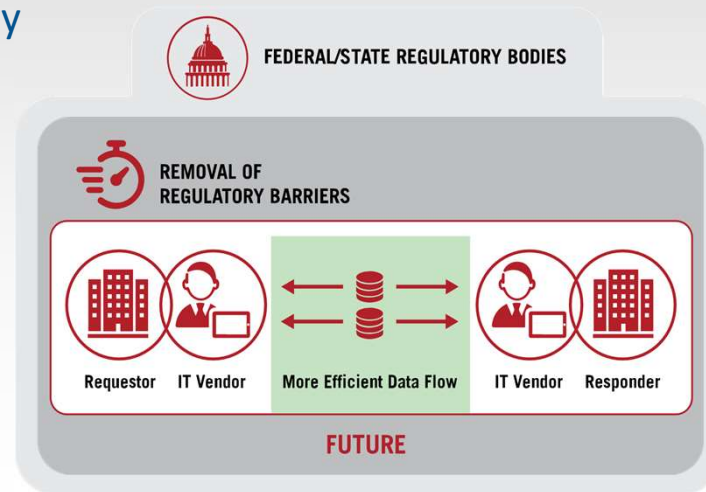
Standards Efforts Towards FHIR Adoption

FHIR Solutions for VBC

DA VINCI
HL7 FHIR

Payers/Providers

Core Data Services

ARGONAUT PROJECT
HL7 FHIR

Provider/Provider

FHIR Consumer Solutions

carin

Consumers

Other Collaborative Efforts to Develop & Implement FHIR Solutions

FUNCTIONAL USE CASES

SHARED
Technical Challenges to FHIR Scalability

Patient & Provider Identity Management

Directory Services

Version Identification

Scale

Exchange Process/Metadata

Testing, Conformance & Certification

Security

FAST
FHIR AT SCALE TASKFORCE

RAPID INDUSTRY ADOPTION

Common Scalability Approaches

INFRASTRUCTURE USE CASES

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PO

Core Capabilities & Solutions Summary

DIRECTORY, VERSIONING & SCALE

Endpoint Discovery

**Solution:
FHIR Endpoint Discovery**

Standard Based Endpoint Access
Guaranteed Message Delivery
Resource Version Identification

EXCHANGE

Reliable Routing

**Solution:
Reliable Routing with Metadata
Across Intermediaries**

IDENTITY

Reliable Patient Identity Management

**Solutions:
Real Time Patient Matching
Mutually Known Identifier for Patient**

Authentication
Authorization
Reliable Provider Identity Management
Role/Context Identification

SECURITY

Authentication
Authorization
Reliable Patient Identity Management
Reliable Provider Identity Management
Role/Context Identification

CONFORMANCE & CERTIFICATION

Readiness Credential

**Solution:
ONC FHIR Testing & Certification Program**

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CLEARING HOUSES

EMR/EHR

INDUSTRY ORGANIZATIONS

CONSORTIA

ASSOCIATIONS

INFRASTRUCTURE VENDORS

HIEs

PM

CLEARING HOUSES

EMR/EHR

INDUSTRY ORGANIZATIONS

CONSORTIA

ASSOCIATIONS

INFRASTRUCTURE VENDORS

HIEs

FAST
FHIR AT SCALE TASKFORCE

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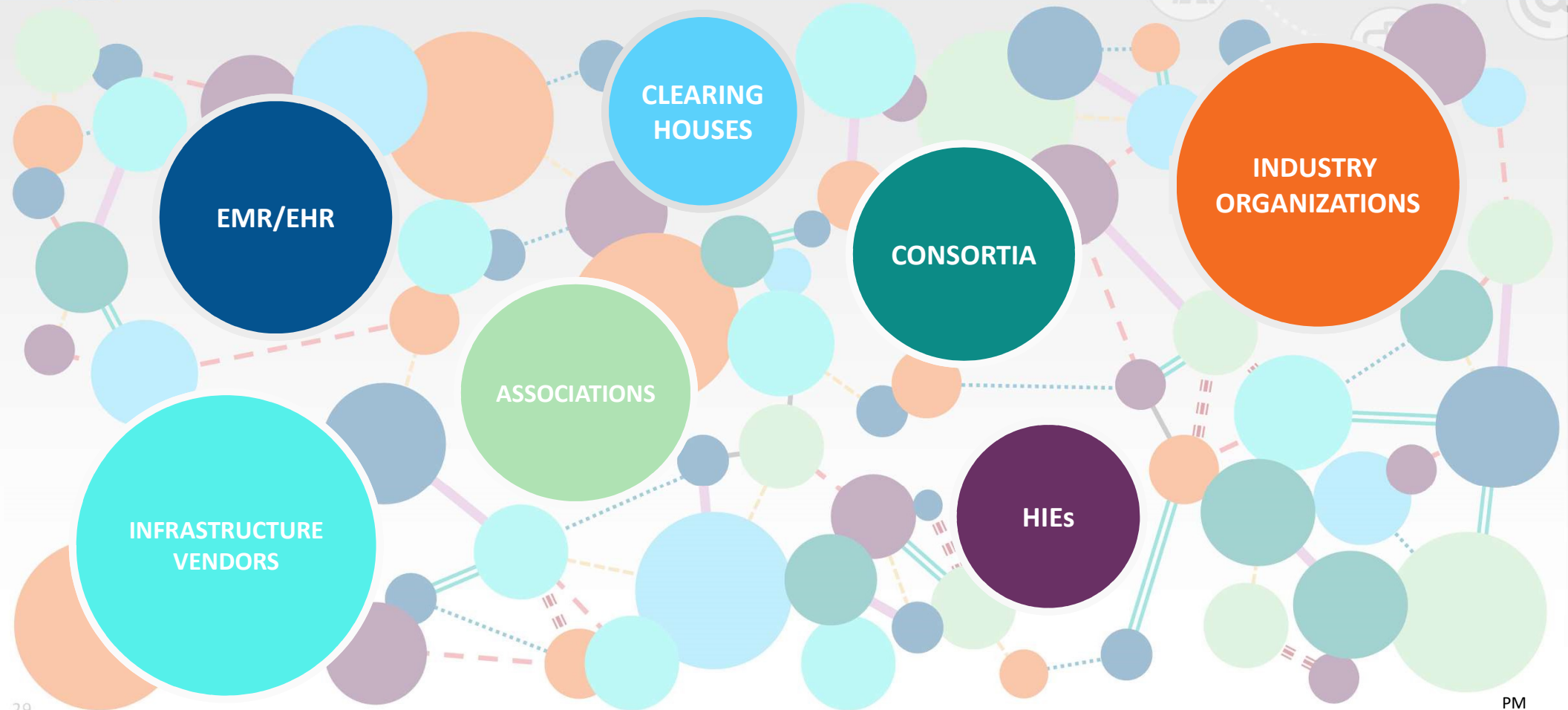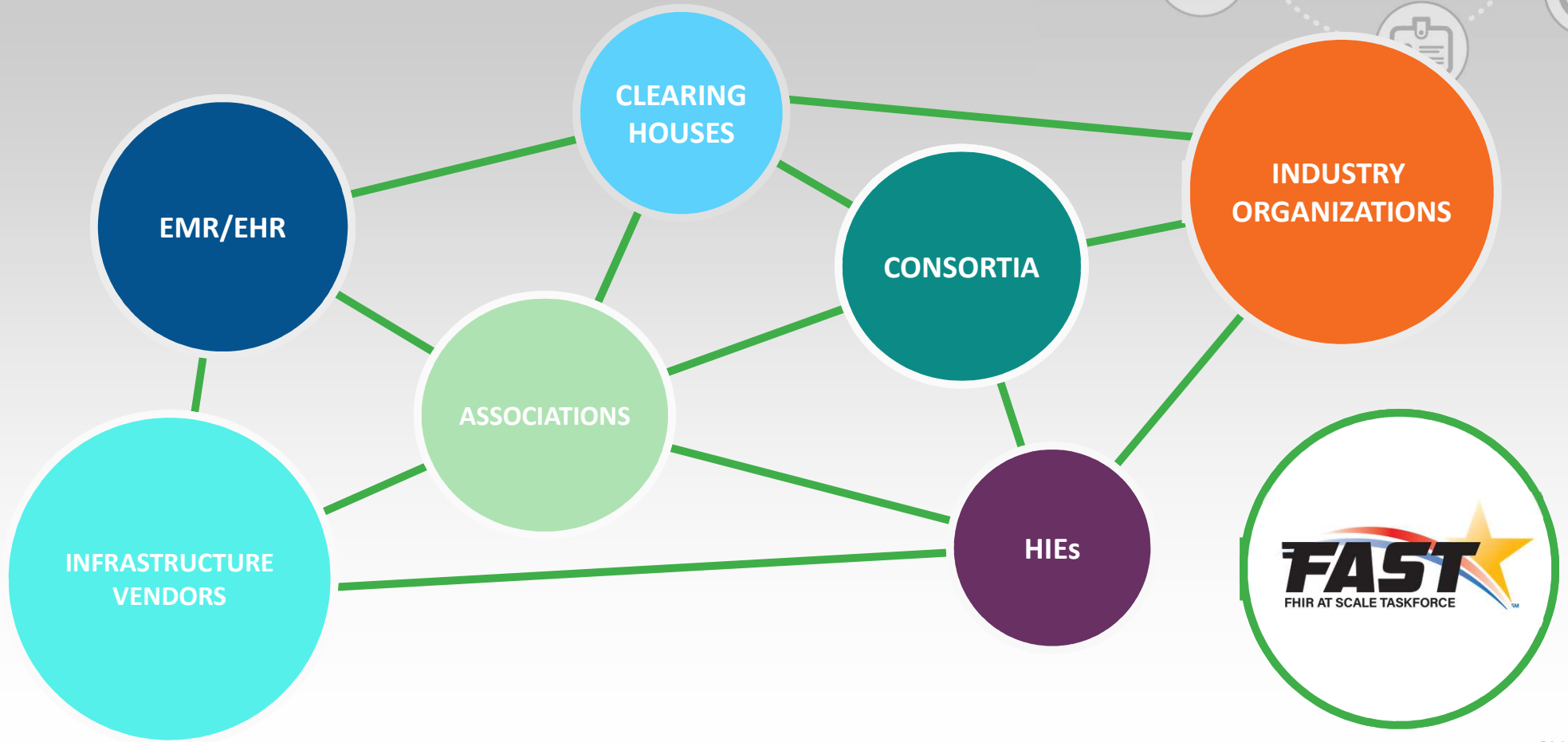
P2 FHIR to *FAST*

> **Oct 2017 – Payer + Provider (P2) FHIR Taskforce Established**
> Originally focused on Payer/Provider collaboration

> **Q1 2018 – Taskforce Charter Created**
> **Problem**: Ecosystem and infrastructure barriers prevent wide-scale adoption and deployment of FHIR
> **Purpose**: Address ecosystem barriers and accelerate adoption of FHIR for production exchange of clinical information between payers and providers
> **Need:** Establish a national architecture for standardized exchange of information using FHIR
> **Scope:** Establish ONC taskforce that leverages "tiger teams" to focus on near term, practical approaches for the standardized exchange of information using FHIR

Initial Tiger Team Calls Commenced
Q2/Q3 2018

Ecosystem Tiger Team Identified & Prioritized 21+ Use Cases
Q2/Q3 2018

Executive Steering Committee Formed & 1st Meeting
Q4 2018

P2 Becomes FAST
Jan 2019
Same mission, new name to better reflect work *FAST* is doing and broader stakeholder engagement

Technical & Regulatory Barriers v1 Published
Q2 2019

14 Ecosystem Use Cases v1 Published
Q2 2019

Possible Solutions to Tech Barriers
Q3 2019

1st FAST 101 Webinar
Sept 12th
10amET

Recommendations for Regulatory Barriers
Ongoing

1st TLC Virtual Webinar
End of Sept 2019

Companion "Scalability" Guides & Pilots
TBD

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FAST Organization & Community Engagement

EXECUTIVE STEERING COMMITTEE
(public-private mix)

COORDINATING COMMITTEE
(public-private mix)

SEVEN TIGER TEAMS

Directory

Security

Identity

Testing, Conformance and Certification

Versioning

Scaling

Pilots

FEEDBACK

UPDATES

TECHNICAL LEARNING COMMUNITY (TLC)

TIGER TEAMS IDENTIFY:
- Use Cases
- Technical/Regulatory Barriers
- Core Capabilities
- Gap Analysis

Information Sharing with TLC through:
- Website
- Periodic webinars
- Newsletters
- TLC Meetings
- LinkedIn Group

SK

FAST Initiative Output & Products Update

FAST CONTENT

FAST COMMUNICATION STRATEGY

FAST Initiative Use Cases, Version 1

FAST Initiative Core Capabilities

FAST Regulatory and Policy Barriers, Version 1

FAST Technical Barriers, Version 1

FAST Solutions (In Development/ Drafts)

Public Webinar Announcement

FAST 101 and Keystone Presentations

Technical Learning Community Planning
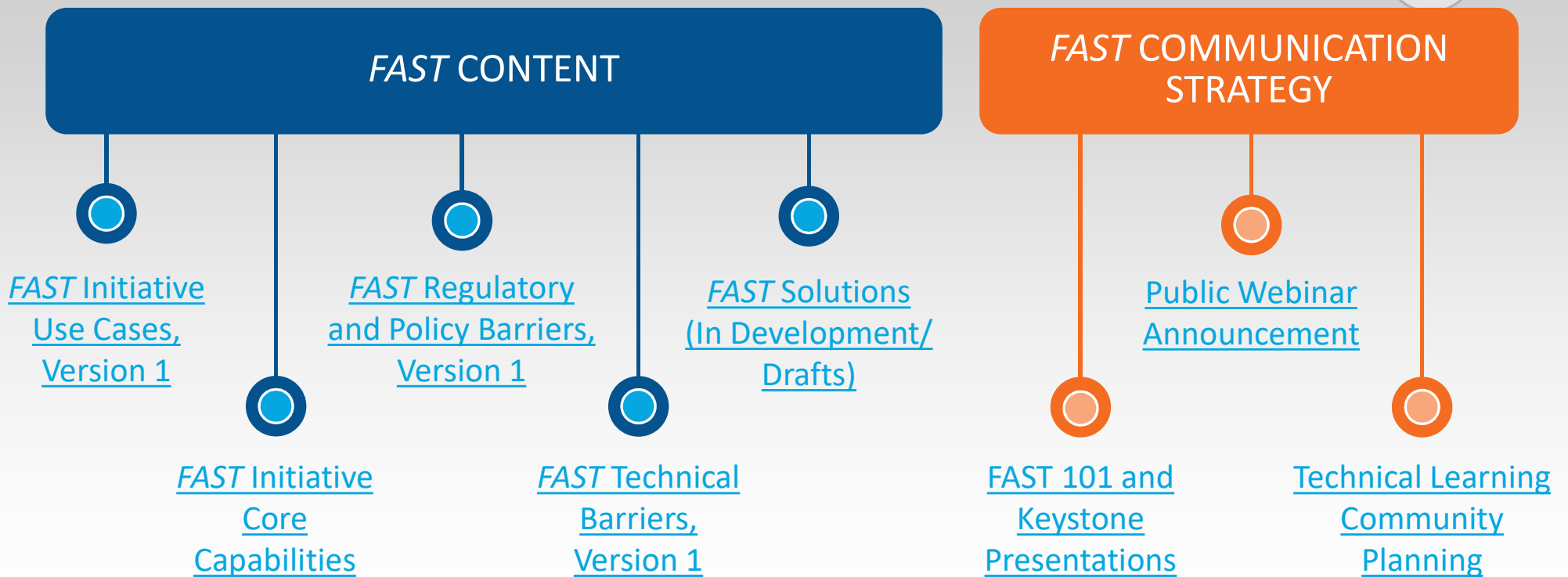
All content is available on the *FAST* Project Page *or* https://tinyurl.com/ONC-FAST

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Published Content and *FAST* Artifacts

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FAST Focus

Patient & Provider Identity Management

Directory Services

Version Identification

Scale

Exchange Process/Metadata

Testing, Conformance & Certification

Security

Pilots

WANT TO GET INVOLVED??

Join the Technical Learning Community to get updates and provide input on the technical and regulatory barriers, use cases, and proposed solutions as they are developed.

SIGN UP!!

&

JOIN THE LINKEDIN GROUP

SK

Questions?

Thank You – Today's Presenters

Paul Oats
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Stephen Konya
ONC – *FAST* Lead
Stephen.Konya@hhs.gov

For more information on the *FAST* Initiative,
visit the *FAST* Project Page

Have any further questions/suggestions?

Please contact Stephen Konya at Stephen.Konya@hhs.gov
& Diana Ciricean at Diana.Ciricean@hhs.gov