Health IT Standards Committee

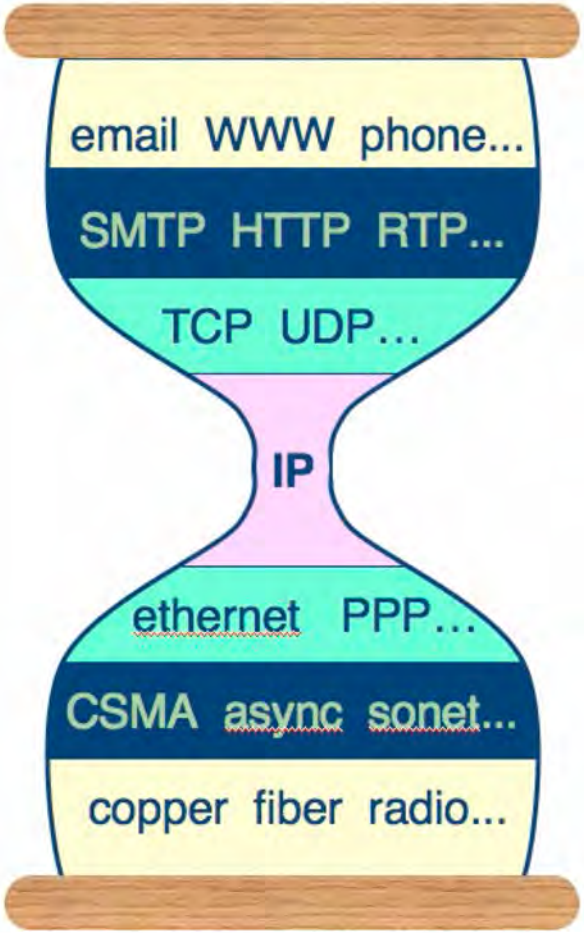
A Public Advisory Body on Health Information Technology to the National Coordinator for Health IT

Architecture, Services, and Application Programming Interfaces (APIs) Workgroup

Framework Recommendations and Interoperability Roadmap Compiled Comments

David McCallie, Jr., co-chair
Arien Malec, co-chair
April 22, 2015

Mapping Healthcare APIs to the "Internet Hourglass"



Heterogeneity, competition, innovation, duplication

Parsimony, lack of duplication

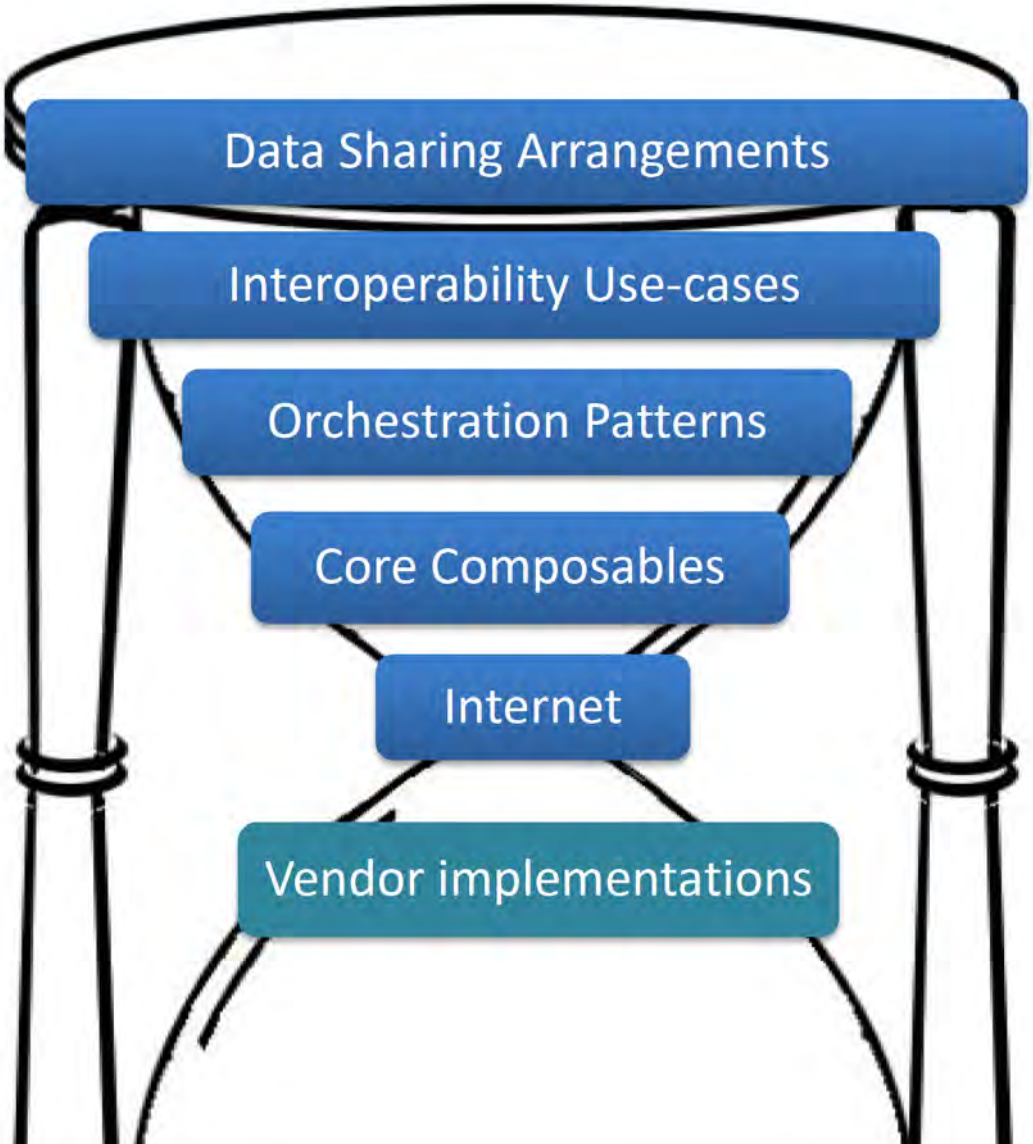
Homogeneity

Parsimony, lack of duplication

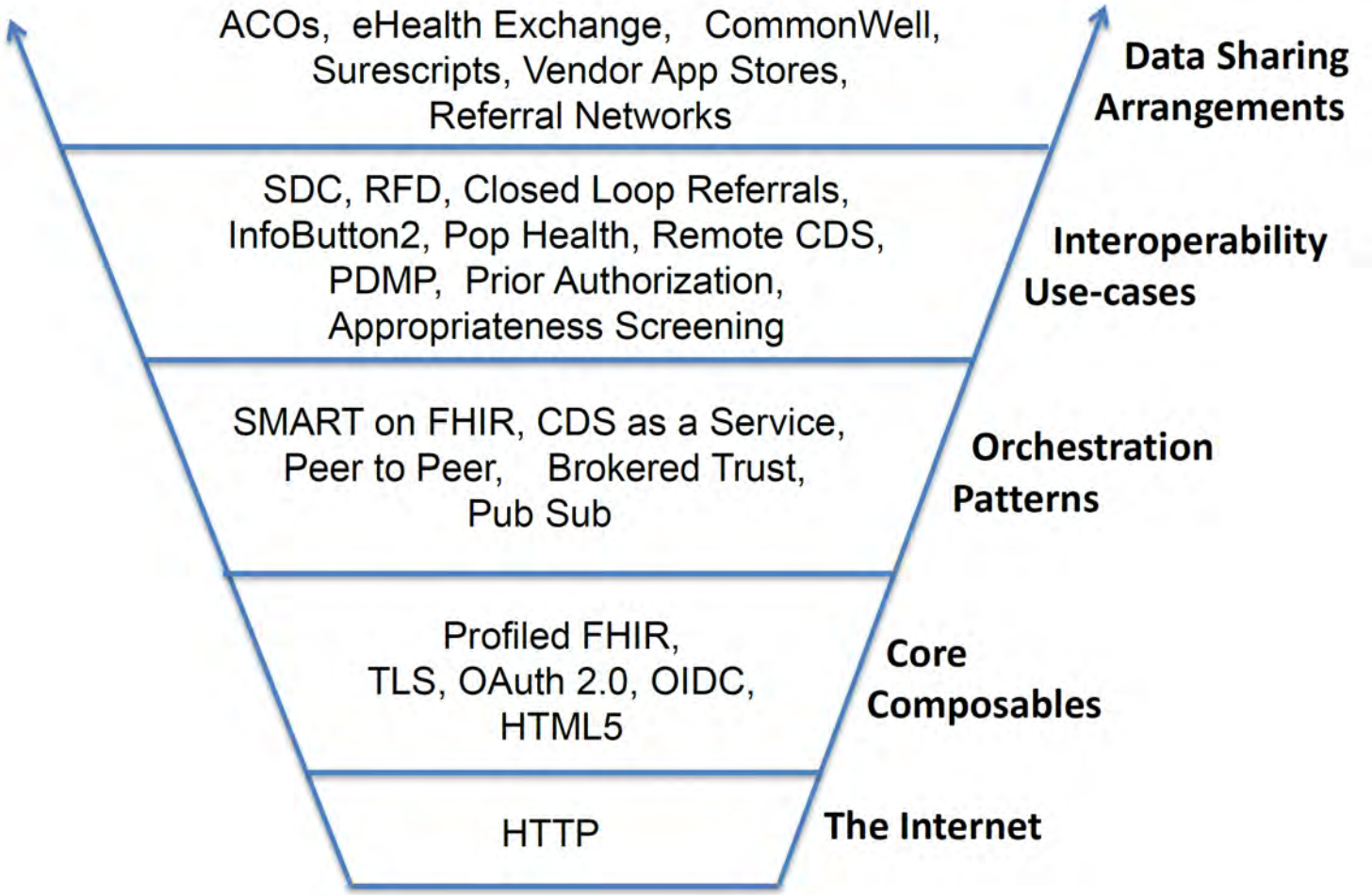
Heterogeneity, competition, innovation, duplication

Parsimony --> the simplest and most economical way to construct something

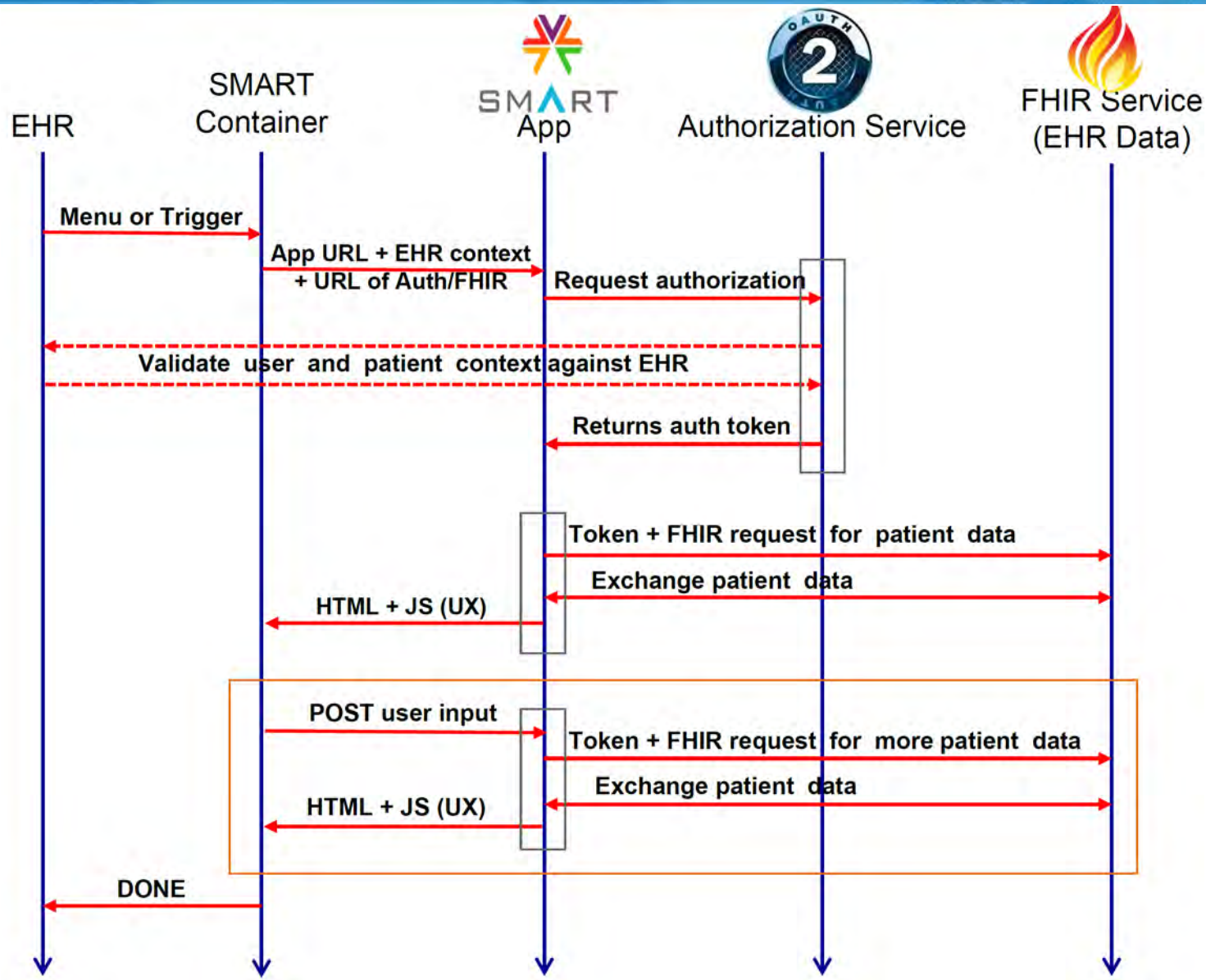
Proposed Health IT Hourglass



Composable API Era – Mapping to the hourglass - Examples



Orchestration Example: Pluggable Apps (e.g., SMART)



Framework Recommendations

Define a roadmap towards the Health IT Hourglass

- To create greatest modularity, move towards parsimony of composables for Transport, Security and Data composibles and extend with common orchestration patterns such as Pluggable Apps and CDS as a service. Adopt a deliberate policy of “rebalancing” the standards portfolio towards the Health IT Hourglass model
- Allow sufficient time to develop, adopt, and use Core Composables and Orchestration Patterns to allow for demonstrations of success during the rebalancing period
- As recommended in the joint Health IT Policy and Health IT Standards Committee recommendations from the JASON Task Force [7], provide flexibility for detailed policy governance of specific use-cases to be performed by Data Sharing Arrangements

Framework Recommendations, con't

Identify critical priorities for 2015–2017

- Create a glide-path to Core Composables and Orchestration
- Reduce “friction” and distraction to adopters and implementers

Identify roadmap priorities for 2018–2020

- Refine and extend core composable services, profiles, and orchestration patterns
- Expand the number of piloted use-cases based on the core composable model
- Address needs for national-scale services such as MPI, RLS, Directories, etc.
- As Data Sharing Networks emerge, address needs for network-bridging services
- Consider mature APIs, orchestrations, and use-cases as candidates for addition to Certified HIT
- Begin transition from non-Core/Orchestration standards and APIs

Identify roadmap priorities for 2021–2024

- Address complex data profiles that require more robust data models (as may be needed for the Learning Healthcare System
- Contemplate transition to new Core/Orchestrations based on the- current technology directions

HITSC - Architecture, Services & APIs

Health IT Standards Committee
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Workgroup	Architecture, Services & APIs
ONC FACA WG Lead(s)	Debbie Bucci
Chair / Co-Chairs	• David McCallie, Jr., Chair, Cerner Corporation • Arien Malec, Co-Chair, RelayHealth Clinical Solutions
General Questions (as they apply to the assigned Roadmap section)	• Are the actions proposed in the draft interoperability Roadmap the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term? • What, if any, gaps need to be addressed? • Is the timing of specific actions appropriate? • Are the right actors/stakeholders associated with critical actions?
Roadmap Section	K. Standard, secure services L. Consistent, secure transport technique(s)
Charge / Question(s)	• Does the roadmap advance towards the architectural and architectural patterns identified by ASA? • Do the standards selected in the standards advisory advance towards the same? • What changes to the roadmap are suggested to better meet the roadmap's goals?

Interoperability Roadmap Section K API's

Health IT Standards Committee
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Questions for Workgroup Discussion	General Questions	Workgroup Charge / Questions
	• Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term? • What, if any, gaps need to be addressed? • Is the timing of specific actions appropriate? • Are the right actors/stakeholders associated with critical actions?	• Does the roadmap advance towards the architectural and architectural patterns identified by ASA? • Do the standards selected in the standards advisory advance towards the same? • What changes to the roadmap are suggested to better meet the roadmap's goals?

Category	2015-2017 Send, receive, find and use a common clinical data set	2018-2020 Expand interoperable health IT and users	2021-2024 Achieve nationwide LHS
K1. API's **Workgroup Member(s):**	1. Through the coordinated governance process, health IT developers, SDOs, ONC and others should implement a coordinated approach to developing and standardizing a targeted set of public APIs for nationwide interoperability 2. HIT developers & SDOs should develop public APIs for (i.e., sending, receiving and finding a common clinical data set) 3. Certification bodies (including ONC) should develop certification approaches to encourage the adoption of specific or consistently functioning APIs as to reduce switching costs but that does not prevent the adoption of innovative new APIs 4. SDOs should advance and accelerate the development of standardized RESTful APIs 5. Health IT developers should work with SDOs to develop standards for interoperable electronic health devices	6. Stakeholder input requested	7. Stakeholder input requested

Interoperability Roadmap Section K API's, continued

Charge Questions	Comments
• Does the roadmap advance towards the architectural and architectural patterns identified by ASA?	Leveraging the hourglass model , as proposed in our transmittal letter, would advance the roadmap towards the Core Composable and Orchestration Patterns that we have identified as necessary for the future. Continue to support production adopted standards while minimizing changes, avoid endorsing new standards that are not based on Core, and seek alternatives that are based on Core.
• Do the standards selected in the standards advisory advance towards the same?	The standards advisory ,as it exists today, does not reflect the forward thinking of the roadmap. In future editions, the standards advisory should focus on the core standards agreed upon, emerging orchestrations and have a curation process to better determine what standards are appropriate for the list.
• What changes to the roadmap are suggested to better meet the roadmap's goals?	The roadmap should focus on the activities necessary to produce a vibrant and multi-use-case ecosystem that can flourish on a foundation of uniformity Reduce "friction" and distraction to adopters and implementers by minimizing certification requirements overall to allow ample time to pilot, adopt and refine Core and Orchestrations, ensure that government incentives can be met using the newer approaches, even if not formally adopted into Certified HIT.

1. Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term?
2. What, if any, gaps need to be addressed?
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4. Are the right actors/stakeholders associated with critical actions?

2015-2017 Send, receive, find and use a common clinical data set	Comments (Section K, API'S)
1. Through the coordinated governance process, health IT developers, SDOs, ONC and others should implement a coordinated approach to developing and standardizing a targeted set of public APIs for nationwide interoperability	Many coordinated approaches to such APIs (interfaces / use cases / whatever) already exist today. It's unclear where and how a governance process across such a disparate group would convene, or work over time Instead, ONC should encourage industry to focus on APIs that provide the most return on investment at the narrow waist of the interop hourglass. Those activities s should also **in**clude maintenance, and versioning of APIs to ensure long term interoperability as functionality transitions over time. .
2. HIT developers & SDOs should develop public APIs for (i.e., sending, receiving and finding a common clinical data set)	Many public APIs for sending, receiving, and finding a common clinical dataset already exist. It is preferable to identify deficiencies in the existing clinical data set and augment as necessary, rather than developing a new approach, unless a new approach is truly warranted.

1. Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term?
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2015-2017 Send, receive, find and use a common clinical data set	Comments (Section K, API'S)
3. Certification bodies (including ONC) should develop certification approaches to encourage the adoption of specific or consistently functioning APIs as to reduce switching costs but that does not prevent the adoption of innovative new APIs	We do not believe that developing an approach thru certification is the answer. Many feel that there is an enormous gap in testing tools today and that the existing certification program is not meeting the stated goals. Instead we encourage ONC to focus on testing and testing tools to meet the same aim as certification.
4. SDOs should advance and accelerate the development of standardized RESTful APIs	As we stated earlier, APIs exist today. Instead, ONC should encourage industry to focus on APIs that provide the most return on investment at the narrow waist of the interop hourglass. We discourage the use of "SOA" and "REST" in the roadmap recommendations . It's too generic and confusing
5. Health IT developers should work with SDOs to develop standards for interoperable electronic health devices	We do agree that data collected from electronic devices should flow into health information technology. We recommend that both the FDA and electronic health device manufacturers should directly involved to ensure that data is collected and used from both regulated medical devices as well as consumer devices Given the that this a rapidly emerging space that is not at the level of maturity to consider involving SDOs in the process

Interoperability Roadmap Section L1 Common Transport Standards

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Questions for Workgroup Discussion	General Questions	Workgroup Charge / Questions
	• Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term? • What, if any, gaps need to be addressed? • Is the timing of specific actions appropriate? • Are the right actors/stakeholders associated with critical actions?	• Does the roadmap advance towards the architectural and architectural patterns identified by ASA? • Do the standards selected in the standards advisory advance towards the same? • What changes to the roadmap are suggested to better meet the roadmap's goals?

Category	2015-2017 Send, receive, find and use a common clinical data set	2018-2020 Expand interoperable health IT and users	2021-2024 Achieve nationwide LHS
L1. Common Transport Standards **Workgroup Member(s):**	1. ONC will identify, and health IT developers should adopt, a minimum set of common transport standards to enable priority learning health system functions. 2. SDOs should update standards and health IT developers should adopt standards as needed.	3. SDOs should update standards and health IT developers should adopt standards as needed.	4. Stakeholder input requested

1. Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term?
2. What, if any, gaps need to be addressed?
3. Is the timing of specific actions appropriate?
4. Are the right actors/stakeholders associated with critical actions?

2015-2017 Send, receive, find and use a common clinical data set	Comments (Section L1, Common Transport Standards)
1. ONC will identify, and health IT developers should adopt, a minimum set of common transport standards to enable priority learning health system functions.	We recommend that ONC continue to support production adopted standards for transport while minimizing changes, avoid endorsing new standards that are not based on Core, and seek alternatives that are based on Core. As suggested in the S&I Framework recommendations, we would suggest a different approach to the ecosystem and particularly the role of government under which the standards are identified.
2. SDOs should update standards and health IT developers should adopt standards as needed.	As suggested in the S&I Framework recommendations, we would recommend ONC consider a different approach to the ecosystem and particularly in the way in which standards are identified and adopted. Instead we will use this opportunity to restate the guidance we provided in our framework transmittal to provide guidance to both transports and APIs

Interoperability Roadmap Section L2 Send

Health IT Standards Committee
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Questions for Workgroup Discussion	General Questions	Workgroup Charge / Questions
	• Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term? • What, if any, gaps need to be addressed? • Is the timing of specific actions appropriate? • Are the right actors/stakeholders associated with critical actions?	• Does the roadmap advance towards the architectural and architectural patterns identified by ASA? • Do the standards selected in the standards advisory advance towards the same? • What changes to the roadmap are suggested to better meet the roadmap's goals?

Category	2015-2017 Send, receive, find and use a common clinical data set	2018-2020 Expand interoperable health IT and users	2021-2024 Achieve nationwide LHS
L2. Send **Workgroup Member(s):**	1. Public health agencies should converge on the use of standardized web services to support data submission as well as data query from registries and other systems. 2. Providers (including hospitals, ambulatory providers, long-term care centers and behavioral health providers) should adopt and use DIRECT to reach critical mass. 3. Providers and health IT developers should provide individuals with the ability to easily and securely transport their health data to a destination of their choice.	4. Stakeholder input requested	5. Stakeholder input requested

1. Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term?
2. What, if any, gaps need to be addressed?
3. Is the timing of specific actions appropriate?
4. Are the right actors/stakeholders associated with critical actions?

2015-2017 Send, receive, find and use a common clinical data set	Comments (Section L2, Send)
1. Public health agencies should converge on the use of standardized web services to support data submission as well as data query from registries and other systems.	We've established a general pattern for preserving currently functioning APIs with a high level pattern for cross-over to core composables as vendors get comfortable with exposing and consuming FHIR services that have been managed with the core composable authorization methods, older interfaces can begin to migrate towards the newer approach.
2. Providers (including hospitals, ambulatory providers, long-term care centers and behavioral health providers) should adopt and use DIRECT to reach critical mass.	Direct is an appropriate standard for these use cases; however, additional work needs to be done to standardize the content that's transferred, to make it easier to locate Direct addresses via the use of directories, improved content standards and conformance to EDGE protocol

1. Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term?
2. What, if any, gaps need to be addressed?
3. Is the timing of specific actions appropriate?
4. Are the right actors/stakeholders associated with critical actions?

2015-2017 Send, receive, find and use a common clinical data set	Comments (Section L2, Send)
3. Providers and health IT developers should provide individuals with the ability to easily and securely transport their health data to a destination of their choice.	The focus should not be just on transport but instead provide standard ways to , share data between provider, patient and third parties of the patient's choice. Individuals should have the ability to access to their data in applications and destinations of their choice
2018-2020 Expand interoperable health IT and users	**Comments (Section L2, Send)**
4. Stakeholder input requested	No comment

Interoperability Roadmap Section L3
Receive and Find

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Questions for Workgroup Discussion	**General Questions** • Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term? • What, if any, gaps need to be addressed? • Is the timing of specific actions appropriate? • Are the right actors/stakeholders associated with critical actions?	**Workgroup Charge / Questions** • Does the roadmap advance towards the architectural and architectural patterns identified by ASA? • Do the standards selected in the standards advisory advance towards the same? • What changes to the roadmap are suggested to better meet the roadmap's goals?	
Category	**2015-2017** **Send, receive, find and use a common clinical data set**	**2018-2020** **Expand interoperable health IT and users**	**2021-2024** **Achieve nationwide LHS**
L3. Receive and Find **Workgroup Member(s):**	1. Health IT developers, providers and researchers should increase use of national standards for query functionality 2. Health IT developers, providers and public health agencies should increase use of national standards for publish/subscribe functionality. 3. SDOs should pilot, assess and refine standards for RESTful web services. 4. Health IT developers should widely implement national standards for query. 5. Health IT developers should widely implement national standards for publish/subscribe. 6. Health IT developers should implement national standards for RESTful web services as they are available.	7. Stakeholder input requested	8. Stakeholder input requested

1. Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term?
2. What, if any, gaps need to be addressed?
3. Is the timing of specific actions appropriate?
4. Are the right actors/stakeholders associated with critical actions?

2015-2017 Send, receive, find and use a common clinical data set	Comments (Section L3, Receive and Find)
1. Health IT developers, providers and researchers should increase use of national standards for query functionality	We agree that Query is a necessary function recommend doing it via broader adoption of core and orchestrations as well as continue to support production adopted standards while minimizing changes, avoid endorsing new standards that are not based on Core.
2. Health IT developers, providers and public health agencies should increase use of national standards for publish/subscribe functionality.	Specific pub-sub like use cases including ED and admit notification services have been useful and are in wide use today, but a majority of it is ad hoc. Currently there are no common national standards for publish/subscribe.

1. Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term?
2. What, if any, gaps need to be addressed?
3. Is the timing of specific actions appropriate?
4. Are the right actors/stakeholders associated with critical actions?

2015-2017 Send, receive, find and use a common clinical data set	Comments (Section L3, Receive and Find)
3. SDOs should pilot, assess and refine standards for RESTful web services.	We discourage the use of "SOA" and "REST" in the roadmap recommendations . It's too generic and confusing . Instead, We recommend that ONC continue to support production adopted standards, avoid endorsing new standards that are not based on Core, and seek alternatives that are based on Core.
4. Health IT developers should widely implement national standards for query.	We agree that Query is a necessary function but recommend doing it via broader adoption of core and orchestrations as well as continue to support production adopted standards while minimizing changes, avoid endorsing new standards that are not based on Core

1. Are the actions the right actions to improve interoperability nationwide in the near term while working toward a learning health system in the long term?
2. What, if any, gaps need to be addressed?
3. Is the timing of specific actions appropriate?
4. Are the right actors/stakeholders associated with critical actions?

2015-2017 Send, receive, find and use a common clinical data set	Comments (Section L3, Receive and Find)
5. Health IT developers should widely implement national standards for publish/subscribe	Specific pub-sub like use cases including ED and admit notification services have been useful and are in wide use today, but a majority of it is ad hoc. Currently there are no common national standards for publish/subscribe.
6. Health IT developers should implement national standards for RESTful web services as they are available. • National standards for publish/subscribe • National standards for RESTful web services (when available)	We discourage the use of "SOA" and "REST" in the roadmap recommendations . It's too generic and confusing . Currently there are no common national standards for publish/subscribe. Instead, We recommend that ONC continue to support production adopted standards, avoid endorsing new standards that are not based on Core, and seek alternatives that are based on Core.