

Karen B. DeSalvo, M.D., M.P.H., M.Sc.
National Coordinator for Health Information Technology

RE: IHE Comments on Interoperability Roadmap

Dear Dr. DeSalvo,

On behalf of IHE International and IHE USA, we are pleased to offer comments on the draft document entitled, "Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap."

We have submitted responses to the specific questions included with the request for comments using the form available on the www.healthit.gov website and convey them in the attachment to this letter.

We would first like to thank ONC for focusing the attention of the healthcare community on interoperability. We believe we are poised to make tremendous advances in the quality, safety and efficiency of healthcare by taking full advantage of data in the care of each patient and the broader patient population. Currently we fail to do so because the patient's full record is scattered in inaccessible data silos. This information needs to be made available to care providers, safely and securely, with proper patient control and consent. Effective, standards-based interoperability is the path toward this goal.

Thank you for the opportunity to share these views. We look forward to taking part in the ongoing discussion and collective efforts to use information technology to enable higher quality care and better health outcomes.

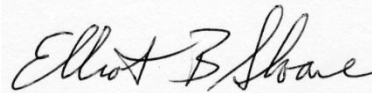
Sincerely,



David S. Mendelson, MD
Co-chair, IHE International Board



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President, IHE USA



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Co-chair, IHE International Board

IHE Comments to ONC on “Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap”

1. General

ONC has identified three critical pathways required to deliver better care and health:

- 1) Requiring standards;
- 2) Motivating the use of those standards through appropriate incentives; and
- 3) Creating a trusted environment for the collecting, sharing and use of electronics health information.

We applaud each of these objectives. Continuous focus and progress on achieving these objectives will lead to success in creating a “learning health system.”

The principle expressed early in the Roadmap to “Build upon Existing Health IT Infrastructure” deserves even more emphasis than it receives through the remainder of the document. IHE has developed an extensive set of standards-based implementation guides (called IHE profiles) that address interoperability issues within and across care settings that have been deployed widely in health IT products and care sites around the world. Many commercial vendors have also put in place technical solutions that provide interoperability features. Some of these, however, are proprietary, limiting the breadth of adoption and emphasizing the need for a strong national policy on standards.

In the near term, much can be accomplished using existing technologies by promoting and incentivizing the adoption of appropriate policies for information sharing. The introduction of new technical solution is likely to require a more measured pace to ensure that they have been carefully validated.

We are pleased with the Roadmap’s emphasis on innovation, but also wish to call out the value of stability in the health IT ecosystem, since billions of dollars will be spent to implement interoperable systems. In the world of consumer technology quick transition from established technologies may be acceptable and the market alone may govern the pace of change. In healthcare, providers invest enormously in training and technology, and this investment should be encouraged and supported. Volatile market forces must be balanced with considerations of patient safety, data security, and societal cost.

The Roadmap encourages innovation partly through an emphasis on “open APIs,” especially those based upon RESTful services and HL7 FHIR. (This approach was also advocated in the recently published JASON reports.) We also look forward to the availability of these technologies, but fear that too great an emphasis on them may delay implementation and use of other interoperability standards being used successfully by HIEs, like the IHE XDS family of profiles, which are based on Web services. These technologies have been widely deployed for only a few years, yet they have successfully supported the goals of secure exchange in implementations around the globe.

We recognize that there are use cases where RESTful solutions provide lightweight and nimble solutions. We should, however, carefully identify where a measured transition is needed in implementation of new technologies. For example, while the draft document cites the architectures of modular consumer applications, none of these platforms has so far been shown to support the granular level of information

required in the management of complex health conditions. Hastily adopted solutions may not prove adequate to support healthcare practice. This should not discourage new development, but should caution us about the pace at which these solutions reach maturity. Moreover, the discipline required to provide effective technical solutions does not change fundamentally as technology evolves. Applications based on RESTful services, for example, still require expert health IT support.

We thus also applaud the principle stated as, “Interoperability is More than Technology,” and suggest that it too deserves greater emphasis throughout the report. In order to ensure that technical standards are, as the report recommends, “embedded in a market ecosystem of reasonable and customary practices,” the definition of clear and prioritized use cases must precede the choice of available technical solutions and governing standards.

Social, economic and political forces have often been more important barriers to interoperability than an absence of technical standards. Interoperability will be achieved rapidly and efficiently when clear business incentives for adopting interoperable systems are provided and policy barriers to sharing information are removed.

Market-based strategies that center on purchasers of care and private payers, with the support and leadership of CMS, can incentivize adoption of standards-based interoperability solutions for specific clinical use cases. ONC can help by convening private and public-sector payers to coordinate strategies that promote interoperability. ONC can also play a role in coordinating across federal agencies to inform them about activities to achieve standards-based interoperability across the health IT ecosystem and to encourage their participation.

The Roadmap acknowledges that security and privacy concerns have sometimes been a barrier to achieving interoperability and information sharing. Again, ONC can play a role by clearly articulating the impact of federal health IT policies regarding privacy and security to the health IT community and by coordinating efforts with other agencies to reduce unnecessary obstacles to information access.

Proper, sustained governance of standards remains a pre-requisite for effective interoperability, even with new technologies such as Open APIs. This need has been known for many years by the health IT industry and was recognized in the JASON reports. It has been a motivating principle of IHE over its fifteen years of continuous work. IHE committees conduct annual cycles of development, testing and review of these specifications in 13 domains overseen by numerous stakeholder organizations. The work of IHE also involves ongoing collaboration with other standards development organizations like HL7, DICOM, IEEE, OASIS, IETF, and W3C; trade associations like NEMA-MITA and the EHRA; industry initiatives such as Continua, the Care Connectivity Consortium, Carequality, and the EHR|HIE Interoperability Workgroup; and HIE networks, including the eHealth Exchange.

We believe that ONC can incentivize the process by convening and working with the diverse stakeholders in health IT and communicating clear and consistent direction on national priorities such as the learning health system. When appropriate, ONC should act as a convener and an active participant in these groups. ONC has a key role to ensure that standards selection process follows transparent, objective, and neutral processes. Recent examples of successfully joint efforts are the Data Access Framework (DAF) and Healthcare Provider Directory/Federated (HPD/Federated). In both of these cases, the ONC provided convening functions, and provided staff support to the SDO, which has helped to accelerate these important efforts. ONC should use these two highly successful efforts as a pattern

for future collaboration. ONC should also convene stakeholders to determine what is in and out of scope for the roadmap and how it can be used to achieve goals and avoid pitfalls.

Finally, a learning health system must include testing, test tooling and certification as intrinsic parts of planning and implementation. Currently available testing tools are not sufficient to the need. Development of adequate tools should become a national priority in which ONC and other health IT stakeholders invest substantial resources. ONC should convene stakeholders to develop a coordinated national system for testing that eliminates redundant efforts and gaps in testing capabilities and includes a feedback loop to ensure continuous improvement of testing tools as new knowledge is gained.

To reiterate, IHE is very much aligned with the general goals and objectives stated in the Roadmap and ready to collaborate with ONC and other stakeholders to progress toward achieving an effectively interoperable learning health system.

Question: 1.1. 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?

We are generally supportive of the actions proposed in the Roadmap, particularly the four foundational “Critical Actions for Near Term Wins.” We offer the following comments on these recommended actions:

1. *Establish a coordinated governance framework and process for nationwide health information interoperability.* The Roadmap should emphasize the role of ONC in convening health IT stakeholder workgroups to outline a general governance and trust framework, establish roles and responsibilities and identify areas of collaboration and harmonization. These workgroups should also be responsible for curating the Roadmap itself, an activity that should be iterative and consensus-based.
2. *Improve technical standards and implementation guidance for sharing and using a common clinical data set.* ONC’s primary role should, again, be to convene stakeholders, including developers and users of health IT data standards and systems, to select appropriate standards for specific use cases and plan the ongoing development and curation of necessary standards. ONC should not develop new standards, but should influence development and selection of standards, mainly through the identification of use cases. Standards development should be performed by standards development organizations with expertise in the relevant domain. ONC has a key role to ensure that standards selection process follows transparent, objective, and neutral processes. Recent examples of successfully joint efforts are the Data Access Framework (DAF) and Healthcare Provider Directory/Federated (HPD/Federated). In both of these cases, the ONC provided convening functions, and provided staff support to the SDO, which help accelerate these important efforts. ONC should use these two highly successful efforts as a pattern for future collaboration. In addition, ONC should recognize that standards will require broad review, piloting, and feedback loops in order to mature sufficiently that they can be used in stable national-scale production deployments.

3. *Advance incentives for sharing health information according to common technical standards, starting with a common clinical data set.* We strongly agree that additional incentives are needed to provide a clear business case for interoperability and information exchange. The ONC should provide incentives for organizations that demonstrate true interoperability, which can be defined as secure and seamless access to patient information across care settings. Market-based strategies that center on purchasers of care and private payers, with the support and leadership of CMS, can incentivize adoption of standards-based interoperability solutions for specific clinical use cases. ONC can help by convening private and public-sector payers to coordinate strategies to promote interoperability. ONC can also play a leadership role in coordinating across federal agencies to inform them about activities to achieve standards-based interoperability across the health IT ecosystem and to encourage their participation. ONC should provide non-regulatory incentives that align with the objective of lowering the barriers to provider-to-provider and patient-to-provider information sharing.
4. *Clarify privacy and security requirements that enable interoperability.* We strongly agree that clarification of these requirements can help remove concerns underlying privacy and security policies that needlessly hinder sharing of information.

Question 1.2 What, if any, gaps need to be addressed?

We believe that the most important gap ONC needs to address is, through a collaborative process with stakeholders, to define national priority use cases. Without well-defined use cases, it is impossible to judge the adequacy of a given standard, architecture, or solution. We applaud the roadmap's recognition of the value use cases in Appendix H, and question 2. The ONC should take the list of use cases in Appendix H, and convene a broad stakeholder group to further refine them and create a prioritized list that drives other provisions of the Roadmap.

For example, the Direct Project might have been adopted more broadly if it were clearly based on well-defined use cases. This would have allowed any gaps in the Direct Project, as measured by high value use cases, to have been proactively identified, and remediated, before Direct was selected for a national implementation.

We believe the Roadmap should identify a more detailed sequence of activities to address interoperability priorities, from standards development through piloting, reference implementations and training. Keeping in mind the natural sequencing and interdependencies of these activities will help the roadmap achieve optimal deployment and adoption.

ONC should provide more details to define the "person-centric" focus of the Roadmap, by providing policy guidance on consent, data access, corrections, remote monitoring, person engagement, and personal control of and accountability for their records. The term *persons*, in this context, refers to care givers, patients, and patient surrogates, as well as healthy individuals. One encouraging example of positive personal engagement is the OpenNotes project, which shared laboratory results with patients and that resulted in essentially universal acceptance by both patients and physicians. ONC should also more explicitly incorporate the use of personal health records into the national roadmap as these types of person-centric systems can provide a multitude of functions to engage patients and provide them with valuable services such as a user interface that helps them better understand their health, manage

chronic conditions, manage other family members health (such as children and elderly parents), a way to interact with care team members, express consent preferences, track progress, etc.

Question 1.3. Is the timing of specific actions appropriate?

Generally, yes. The roadmap implicitly reflects the fact that open, standards-based solutions that are already being adopted and deployed in HIE and EMR systems, though not all are yet in production. The roadmap timing should recognize that in many cases standards are ready for deployment, but that due to conflicting policies and insufficient incentives, these standards are not actually turned-on and enabled for production use. Many of these standards, notably IHE profiles, are based on well-defined use cases, mature technical standards, and detailed implementation guidance. IHE profiles serve the same essential functions as APIs. With appropriate policies, deployment architectures, and business incentives, they are ready now for production use. Many health IT systems have already been tested for their support of IHE profiles to share clinical data. But these capabilities are not configured or “turned on” in many production deployments, resulting in a lost “easy win” for interoperability and information exchange. Again, clear incentives for sharing would encourage purchasers of these systems to take full advantage of their information sharing capabilities.

New standards and implementation guides must be piloted before they can be effective at the national level. These considerations should be addressed in the ONC roadmap. A key example where a more detailed process and timeline is needed is in the implementation of HL7 FHIR, which is listed in the roadmap for immediate adoption. ONC should instead take into account the full standards maturation process to determine when any new technology will be ready for use.

Question 2: Priority Use Cases

2.1. Appendix H lists the priority use cases submitted to ONC through public comment, listening sessions, and federal agency discussions. The list is too lengthy and needs further prioritization. Please submit 3 priority use cases from this list that should inform priorities for the development of technical standards, policies and implementation specifications.

We agree that the list of priority use cases in Appendix H needs to be reduced, but it also must be defined in sufficient detail to allow technologists and clinicians to use them to drive requirements and assess solutions. We recommend that ONC convene stakeholders to create a “top 10” list of fully detailed use cases to incorporate in the Roadmap. Many of the current use cases in Appendix H seem to overlap or have dependencies. We believe that an early effort to consolidate this list into a smaller group of high-level use case with component use cases listed as sub-categories would be useful organization in establishing priorities.

We provide a list of use cases in Attachment A.

Question 3.1. The draft interoperability roadmap includes a call to action for health IT stakeholders to come together to establish a coordinated governance process for nationwide interoperability. ONC

would like to recognize and support this process once it is established. How can ONC best recognize and support the industry-led governance effort?

There are currently stakeholder-led governance initiatives (including IHE and other SDOs, trade associations, clinician groups and health information exchanges) with growing participation and well-defined, transparent processes. We would emphasize ONC's role in coordinating these efforts. ONC should create national policies and goals and provide an open forum where stakeholders can participate, exchange ideas and plan and execute joint projects.

Question 4. 1. How can private health plans and purchasers support providers to send, find or receive common clinical data across the care continuum through financial incentives? Should they align with federal policies that reinforce adoption of standards and certification?

Where payers have provided incentives to use interoperable standards-based solutions, this has proven to an effective driver of change. ONC should act as a convener to encourage payers to coordinate implementation of existing health IT standards that support priority use cases. ONC and other federal agencies should provide specific financial incentives for query/retrieve functionality, a capability necessary to make care data available as a patient moves across care settings.

Question 5.1. What security aspects of RESTful services need to be addressed in a standardized manner?

This question is difficult to answer until we have a prioritized list of well-defined use cases to drive security requirements. Assuming that the selected use cases require local autonomy, sufficient information about the context of the request to allow the disclosing party to make an access control decision, and detailed audit logging, then the security aspects of RESTful services can be met with the existing IHE profile called Internet User Authorization (IUA), which defines the use of OAuth 2.0 for RESTful services. IUA enables 42 CFR Part 2 point-to-point patient authorizations, support for patient consent, the ability for role based access control, high resolution audit logging, and much more.

The IUA profile will allow the security model of RESTful services to be compatible with the established Cross-community User Authentication (XUA) SOAP-based web services, serving as a bridge between present and future technologies.

Question 6.1. Which data elements in the proposed common clinical data set list need to be further standardized? And in what way?

Once again, the answer depends on the priority use cases to be supported. Generally, we agree with the observation stated early in the Roadmap that "Electronic health information is not sufficiently structured or standardized and as a result is not fully computable when it is accessed or received." There needs to be an emphasis on remedying this situation, especially prior to depending on robust RESTful solutions that will take advantage of granular information.

Assuming that the foundational use case to be addressed is a transitions of care summary” use case, one issue that needs to be further specified in proposed common clinical data set, is that certain problems, medications, procedures, and other elements can appear in multiple locations. This makes it much more difficult for systems to “receive, find and use” the data elements effectively. The locations of these elements need to be constrained to meet well-defined use cases.

The C-CDA implementation guide is rapidly improving in this regard, and ONC should encourage further improvements by soliciting clinical input to help create a more constrained (and thus more interoperable) version of C-CDA. ONC should also consider providing SDO staff support for this effort, similar to the successful DAF and HPD/Federated projects.

The same is true, to an even greater degree, if the proposed clinical data set is to be expressed in HL7 FHIR. FHIR is designed as an “80% standard,” meaning that it will require extensions and content profiling for each use case. ONC can play a critical role in the work to profile FHIR for use with the selected priority use cases.

Medical vocabularies and ontologies are maturing but yet widely enough adopted to achieve the goals expressed in the roadmap. Initiating exchange of C-CDA level 1 and 2 documents would be a significant advance in providing clinicians narrative text information. Transitioning to level 3 documents as vocabularies mature would build on an established practice of information exchange to achieve greater levels of automation and data analysis. The Roadmap lists 19 elements in the Common Clinical Data Set, but to achieve a learning health system, we will need to come to consensus on vocabularies containing significantly more elements.

In the near term, exchange of even relatively unstructured narrative documents will serve to significantly improve care. It will provide a transitional step toward data-rich, person-centric health IT environment for clinicians still adjusting to electronic medical records and the absence of the traditional patient chart.

Question 6.2. Do you believe the approach proposed for Accurate Individual Data Matching will sufficiently address the industry needs and address current barriers?

The proposed efforts to improve Accurate Individual Data Matching provide a sensible approach to addressing a critical issue in information exchange. Building on the IHE PIX/PDQ and XCPD profiles by defining a detailed set of required demographic information would address the problem of variability in implementations of matching algorithms. We also support the goal of establishing acceptable risk levels for probabilistic matching algorithms and the proposed data gathering and analysis effort to achieve this goal. If modifications to the relevant IHE profiles are required to implement lessons learned and support the improvements envisioned, IHE committees would act expeditiously on any requested changes.

We recommend that ONC convene stakeholders to review and refine the recommended minimal set of standardized attributes for patient matching. For example, the list should be augmented with pediatric demographics to help with that vulnerable population. Other additions might include name history, and, phone number types (work/ mobile/home).

We concur with observations in the Roadmap concerning data quality and completeness issues. A holistic approach, including training and design optimization should be used, taking into account issues such as human workflow motivators that often result in suboptimal use of software systems.

The ONC should also recognize that it takes time to align health systems across organizational boundaries. Existing approaches for patient matching are sufficient to enable secure exchange of health information with appropriate supporting policies and practices. The efficiency of exchange and alignment will improve incrementally as methods are refined and become widely familiar.

Question 7.1. In what ways can semantic interoperability be best tested? (e.g., C-CDA content and semantics)

IHE has been engaged in interoperability and conformance testing for more than 15 years and for the past several years, working with partners including the National Institute of Standards and Technology, has validated the general structure of C-CDA and other structured documents referenced in IHE profiles. As more detailed constraints are applied to these documents to meet specific use cases, we are working to implement testing methods that validate their more granular semantic content.

The best practice, we believe, is to require that systems demonstrate all of the following capabilities:

- 1) Receiving systems can display all information provided in the transmission including discrete data elements, narrative text elements, information provenance, author(s) and more.
- 2) Receiving systems can incorporate all information provided in the transmission into a data repository both as a single unit of information AND by parsing and storing each individual element of the transmitted data.
- 3) Receiving systems can generate reports of the discrete data showing that the data is useful for analytics. (Many systems today simply store the clinical data documents as a single unit making it unavailable for analytics or reporting.)
- 4) Sending systems can store and transmit all discrete data elements and demonstrates production deployment of such capabilities. (Many systems in production today have passed MU2 and MU2 / NIST C-CDA and C32 content tests, but in production many data elements are missing.)
- 5) Sending systems can deploy trigger events to push clinical data to exchange partners automatically. (Many systems today have not deployed the ability to share data even though they have implemented and tested this capability.)
- 6) Clinical systems can respond to automated queries for clinical data. (Many systems have demonstrated the capability to perform this function, but have not deployed it in production.)

Question 8. Measurement

8.1. Does the measurement and evaluation framework cover key areas? What concepts are missing?

Beyond initial measurement of core data sets, ONC should look to measure the exchange of specific data types. Survey data should be employed secondarily as it is subject to a variety of behavioral influences

that may skew the results. The import of data elements should receive focus more so than the capability to export, as this is a better indication of true demand for and exchange of data.

8.2. Which concepts from the framework are the most important to measure? What types of measures should be included in a "core" measure set?

ONC should focus on early demonstration of the capability to exchange a core measure set. Subsequently the measurement of exchange by providers of real world data should be the primary focus. Ultimately, measurement of improvements in the efficiency and quality of care through the learning health system is a desirable goal, but such changes will have many underlying causes and measuring the role of interoperability in achieving them may be difficult.

8.3. Should measurement focus on certain use cases, priority populations or at certain levels of the ecosystem (e.g., encounter, patient, provider, organization)?

This should be sequenced. Provider and organization interoperability should be measured first followed by patient- and encounter-level measures.

8.4. What other types of metrics have been successfully used at the local or regional level that might be considered for nationwide use? Would stakeholders be willing to propose novel metrics and provide "test beds" to assess the potential for nationwide use?

Some useful measures of outcomes might come from disease surveillance programs and changes in the spread of target diseases.

8.5. What measurement gaps should be prioritized and addressed quickly?

The measurement of information retrieval rather than push of information will be a true indicator that the health system is utilizing data arising from external source.

HIPAA breaches should be measured as part of this program. These are indicators where "rushed" interoperability solutions may need to be revisited.

8.6. What other available data sources at the national level could be leveraged to monitor progress?

Payment data indicating redundant utilization of resources would be a useful indicator. Redundant services should diminish with the achievement of full interoperability.

8.7. Are the potential mechanisms for addressing gaps adequate? What are other suggestions?

In general, the plan to address gaps in measurement through coordination with other federal agencies and imposing sharing rules on grantees seems like a good approach. The use of other regulatory levers to compel reporting of data should be used sparingly as it may impose significant cost burdens.

Other sources of measurement data might become available over the projected term of the Roadmap. Patient-connected devices are likely to rapidly escalate in utilization during the timeframe encompassed by the roadmap. ONC should develop a set of metrics to indicate how this information is incorporated into the medical record. The exchange of data from the local device into the longitudinal medical record will be a measure of the progress of the overall system with regard to interoperability.

8.8. How should data holders share information to support reporting on nationwide progress?

Data holders should be incentivized to provide key impact measures using a specified standards-based mechanism for exchanging this information.

8.9. What are appropriate, even if imperfect, sources of data for measuring impact in the short term? In the long term? Is there adequate data presently to start some measurement of impact?

In the near term, existing claims data for redundant services in areas like laboratory and imaging may provide a reasonable measure of the impact of interoperability solutions. In the longer term, it should be the goal to use structured clinical data to perform outcomes analysis and comparative evaluation of population health measures across different health IT regimes.

ATTACHMENT A: IHE PRIORITY USE CASES

In reference to IHE's response to Question 2, we have identified the following priority use cases, with the highest priority listed first.

18. Patients have the ability to access their holistic longitudinal health record when and where needed.
43. System users have access to provider directory information that is developed to support healthcare communications as well as other use cases
29. Query-based exchange should support impromptu patient visits in all settings.
2. Clinical settings and public health are connected through bi-directional interfaces that enable seamless reporting to public health departments and seamless feedback and decision support from public health to clinical providers.
3. The status of transitions of care should be available to sending and receiving providers to enable effective transitions and closure of all referral loops.
21. Patients have access to and can conveniently manage all relevant consents to access or use their data.
39. Primary care providers share a basic set of patient information with specialists during referrals; specialists "close the information loop" by sending updated basic information back to the primary care provider
4. Federal, State, provider and consumer use of standardized and interoperable patient assessment data to facilitate coordinated care and improved outcomes.
6. Providers and their support staff should be able to track all orders, including those leaving their own organization and EHR, to completion.
9. Providers should be alerted or have access to notifications that their attributed patients have had an ER visit, or an admission to or discharge from a hospital.
11. Narrative components of the medical record are preserved for provider and patient use and augmented with metadata to enable effective storage, routing and searching for these documents.
26. All providers in a care team will have unique access, authorization and auditing functionality from health IT systems necessary to fulfill their role on the care team.
33. Providers have the ability to query data from other sources in support of care coordination (patient generated, other providers, etc.) regardless of geography or what network it resides in
37. Individuals regularly contribute information to their electronic health records for use by members of their care team

ATTACHMENT B: Response by Integrating the Healthcare Enterprise (IHE) to Comment Question: What actions are your organization planning to take and willing to commit to that will support interoperability?

IHE's mission is to improve healthcare by providing specifications, tools and services for interoperability. IHE engages clinicians, health authorities, industry, and users to develop, test, and implement standards-based solutions to vital health information needs.

IHE International convenes domain experts from across the spectrum of healthcare and health IT to develop technical specifications and implementation guides (called IHE profiles) that address specific clinical use cases. These are published and made freely available in a set of documents called the [IHE Technical Frameworks](#). This resource is made available for the global health IT community, and IHE profiles have been implemented in numerous health IT products, care sites and regional and national health information exchange projects.

ONC and other federal agencies have made use of many profiles in the IHE Technical Frameworks to support interoperability and information exchange projects such as HITSP, Direct, the Nationwide Health Information Network, the Data Access Framework and Structured Data Capture. Many have also been identified in the ONC's recently published Interoperability Standards Advisory as "best available standards and implementation specifications." IHE values greatly the contribution of ONC to its work, the recognition of its work by ONC and, most importantly, the use of its standards and implementation guides in projects of ONC and other federal agencies.

Some of these profiles were developed with direct input by ONC and other federal agencies (including CDC, CMS, VA and DoD). We invite and welcome continued collaboration with and direct participation by ONC and other federal representatives on IHE committees to perform work that may be needed to support the goals of the Roadmap and related federal initiatives.

IHE USA's mission is to improve our nation's health care by promoting the adoption and use of standards, tools, and services for interoperability. IHE USA engages all levels of public and private sector participants to test, implement, and use standards-based solutions for all health information needs. IHE USA conducts a regular program of interoperability and conformance testing for health IT products, including the annual IHE Connectathon and IHE USA certification.

These testing services focus on the adoption of IHE profiles and related standards-based interoperability features. They expedite the availability of interoperability features in the marketplace and their implementation at care sites and health information exchanges. We would be pleased to work collaboratively with ONC and other federal agencies to leverage these resources to meet the interoperability requirements of the Roadmap and of specific federal health information initiatives.

IHE International and IHE USA also conduct programs to educate developers, implementers and users regarding the benefits of health IT interoperability and how to achieve them. This includes regularly publishing education materials, conducting workshops and Webinars, and participating in public demonstrations, including the HIMSS Interoperability Showcase and demonstrations at other healthcare meetings around the World. We would be happy to collaborate with ONC to ensure that messages supporting the goals of the Roadmap are communicated to the broader health and health IT community.

Finally, IHE has participated actively as a stakeholder in ONC sponsored activities and committees. Joyce Sensmeier, the President of IHE USA, regularly participates on the ONC FACA HITSC Content Standards Workgroup. Drs. David Mendelson and Elliot Sloane, co-chairs of the IHE International Board and other IHE participants have provided testimony and participated in meetings of ONC committees on behalf of IHE. IHE also regularly participates in the Standards Charter Organization (SCO), which convenes regularly to coordinate the work of standards development organizations.

IHE looks forward to continued opportunities to participate as a stakeholder in ONC committees and activities, including those outlined in the Roadmap, and to comment on and contribute to the work of ONC in achieving the goals the Roadmap puts forth.