IMDRF International Medical Device Regulators Forum

Software as a Medical Device (SaMD)

Clinical Evaluation

IMDRF/SaMD WG (WD2)/N41R1: 2016

Bakul Patel, USA FDA

Chair – SaMD Working Group

NWIE Proposal - Software as a Medical Device (SaMD): Clinical Evaluation

Scope

Guidance on when clinical data may be needed for an original SaMD and for a modification to a SaMD based on the risk classification for SaMD (SaMD N12) adopted by IMDRF to support market authorization.

Rationale

Though current clinical guidance are intended to be relevant across a broad spectrum of technology, SaMD operates in a complex socio-technical environment heavily influenced by the inherent nature of software that enables a highly interactive and iterative technological environment. A majority of the respondents (from the IMDRF survey) either believe current clinical guidance needs to be revised with criteria specific for SaMD, or don't know whether it applies to SaMD.

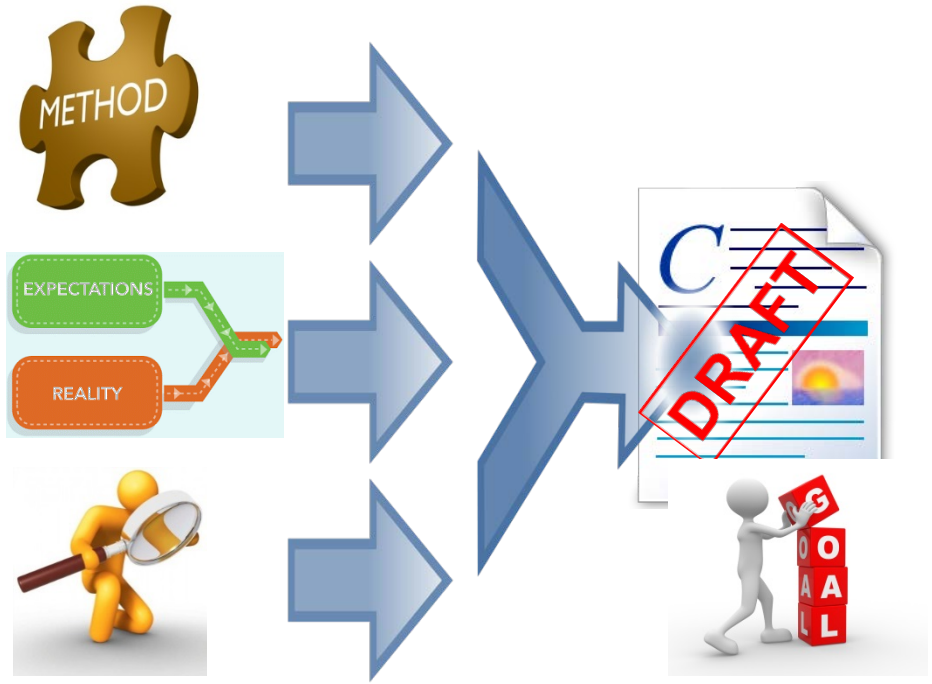
Alignment with Goals/Objectives

A common understanding on the application of clinical evaluation and clinical evidence processes and the need for clinical data to support market authorization will lead to increased transparency and promoting a converged thinking on this topic.

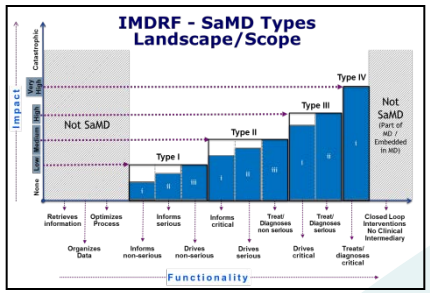
Goal

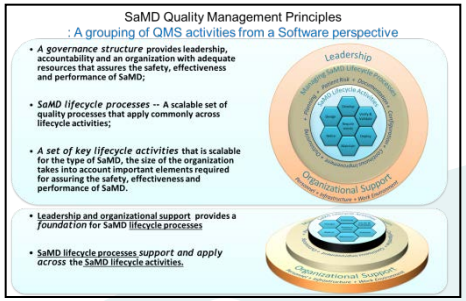
International Guidance -- Based on "SaMD category" (level of impact on public health) and unique aspects of software

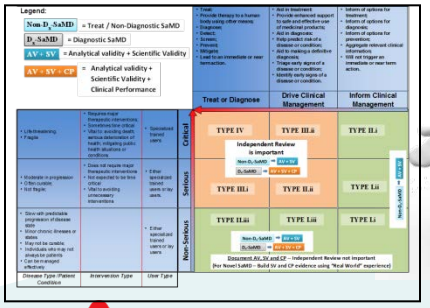
- Relevant clinical evaluation methods and processes which can be appropriately used for SaMD to generate clinical evidence
- The necessary level of clinical evidence for different categories of SaMD
- SaMD categories where independent review is important or not important



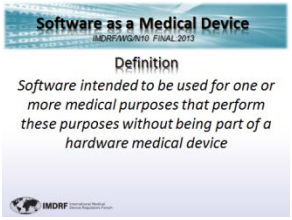
On a path towards global convergence







2013 Foundational vocabulary



2014 – Risk framework based on impact to patients

2015 – QMS control ➔Translating Software development practices to regulatory QMS

SaMD – Application of clinical Evaluation

Final MC Approval September 2017

Desired State – WG summary

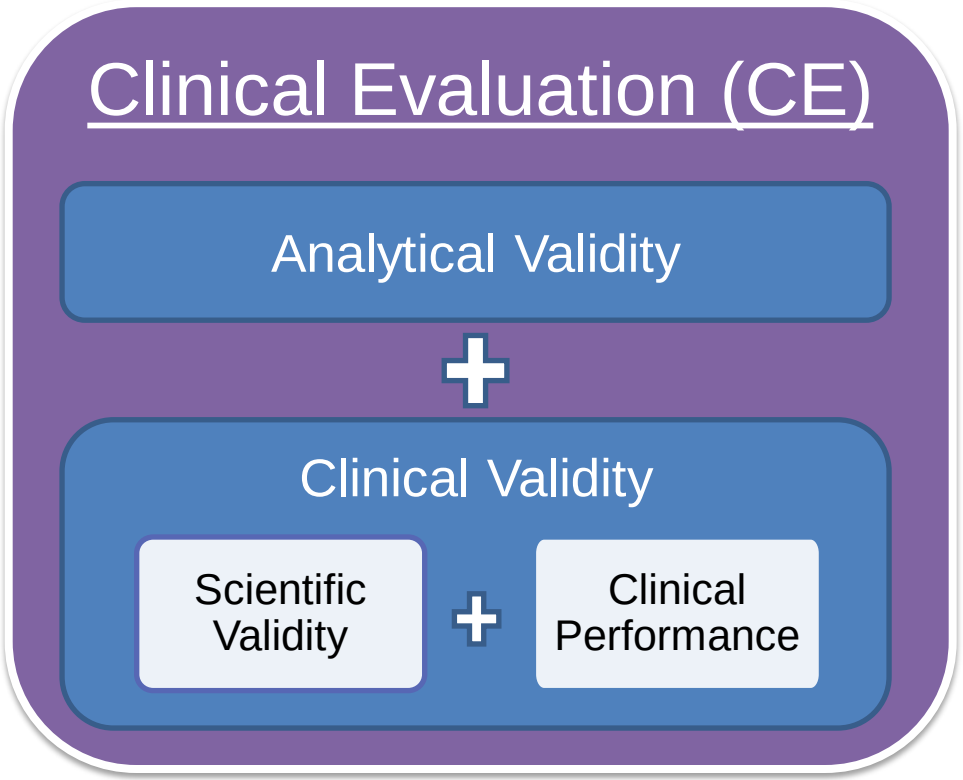
- Promote an Agile / learning clinical evaluation framework.
- For continuously changing SaMD – need:
  - Ability to update Clinical Evidence continuously
  - Leverage the capability of learning new evidence
  - Allow self-learning
- Allow postmarket continuous evaluation paradigm (real world performance).
- Promote technology capabilities to facilitate collecting & learning real world clinical evidence.
- Allow SaMD outcomes to evolve in claims and functionality as postmarket evidence is being collected.
- Pre-market clinical evidence may be different for SaMD, requiring methods that allow postmarket collection.

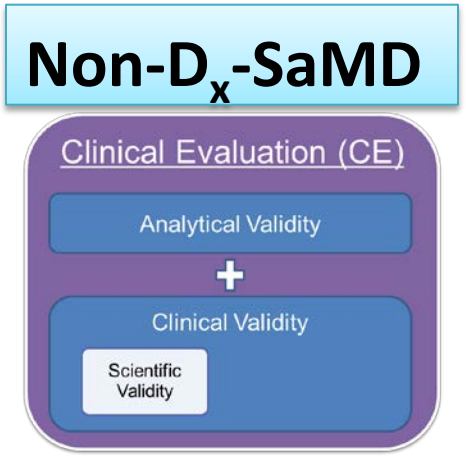
Document Scope

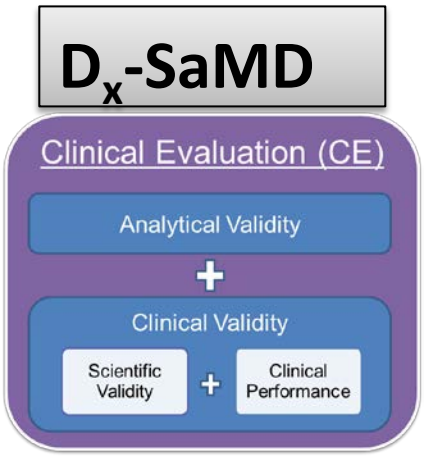
Provides guidance on principles for clinical evaluation for SaMD by describing:

- Relevant clinical evaluation methods and processes which can be appropriately used for SaMD to generate clinical evidence;
- Recommended levels of clinical evidence for different categories of SaMD;
- Where independent review is appropriate based on risk profile of SaMD categories; and
- Principles for using a postmarket paradigm (real world performance) to continuously evaluate clinical applications of a SaMD:
  - SaMD technology capabilities facilitate collecting & learning from real world clinical evidence;
  - SaMD outcomes may evolve in claims and functionality as postmarket evidence is being collected; and
  - Pre-market clinical evidence may be different for SaMD, requiring methods that allow postmarket collection.

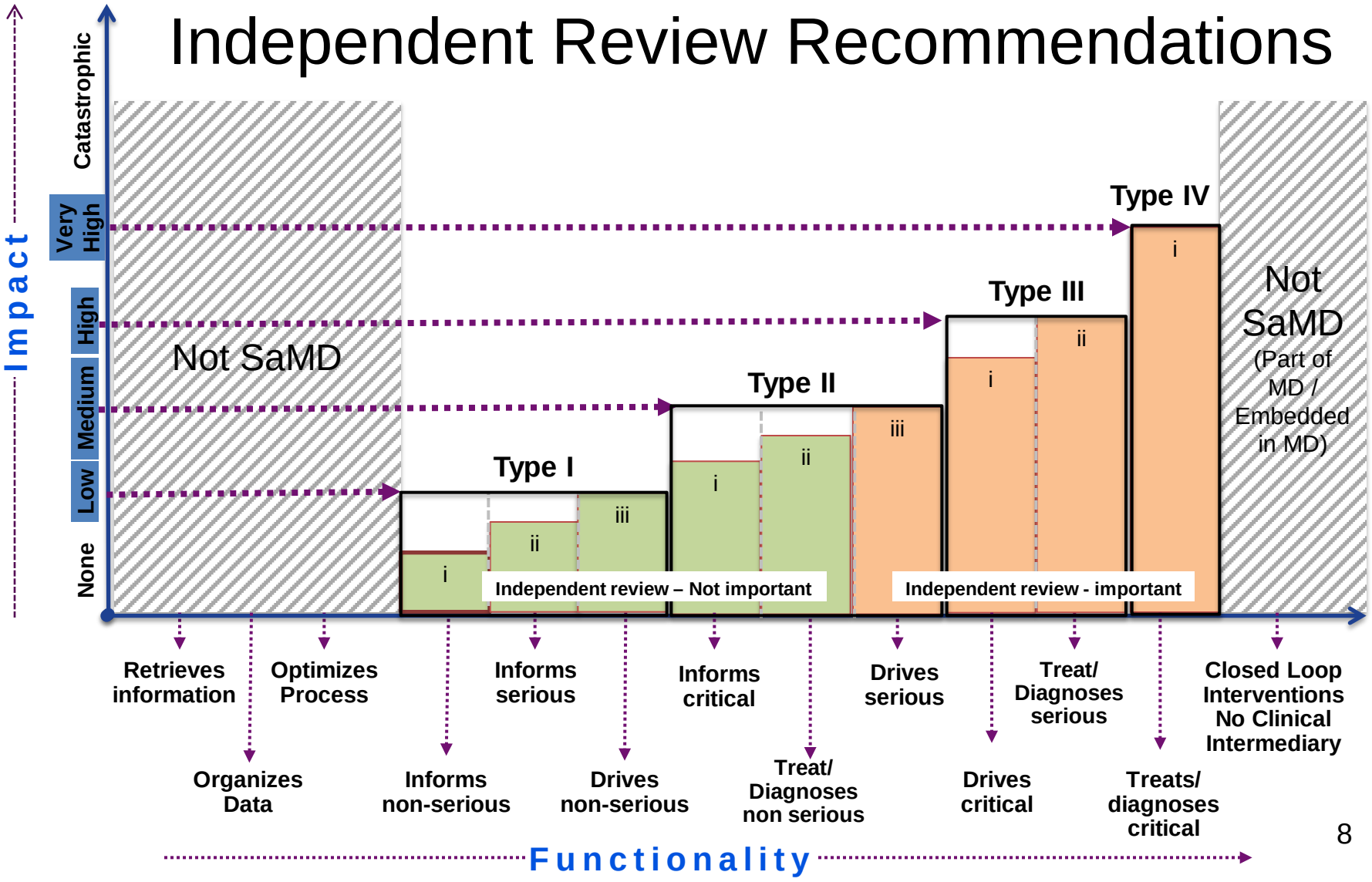
Document Highlights: Clinical Evaluation & Evidence



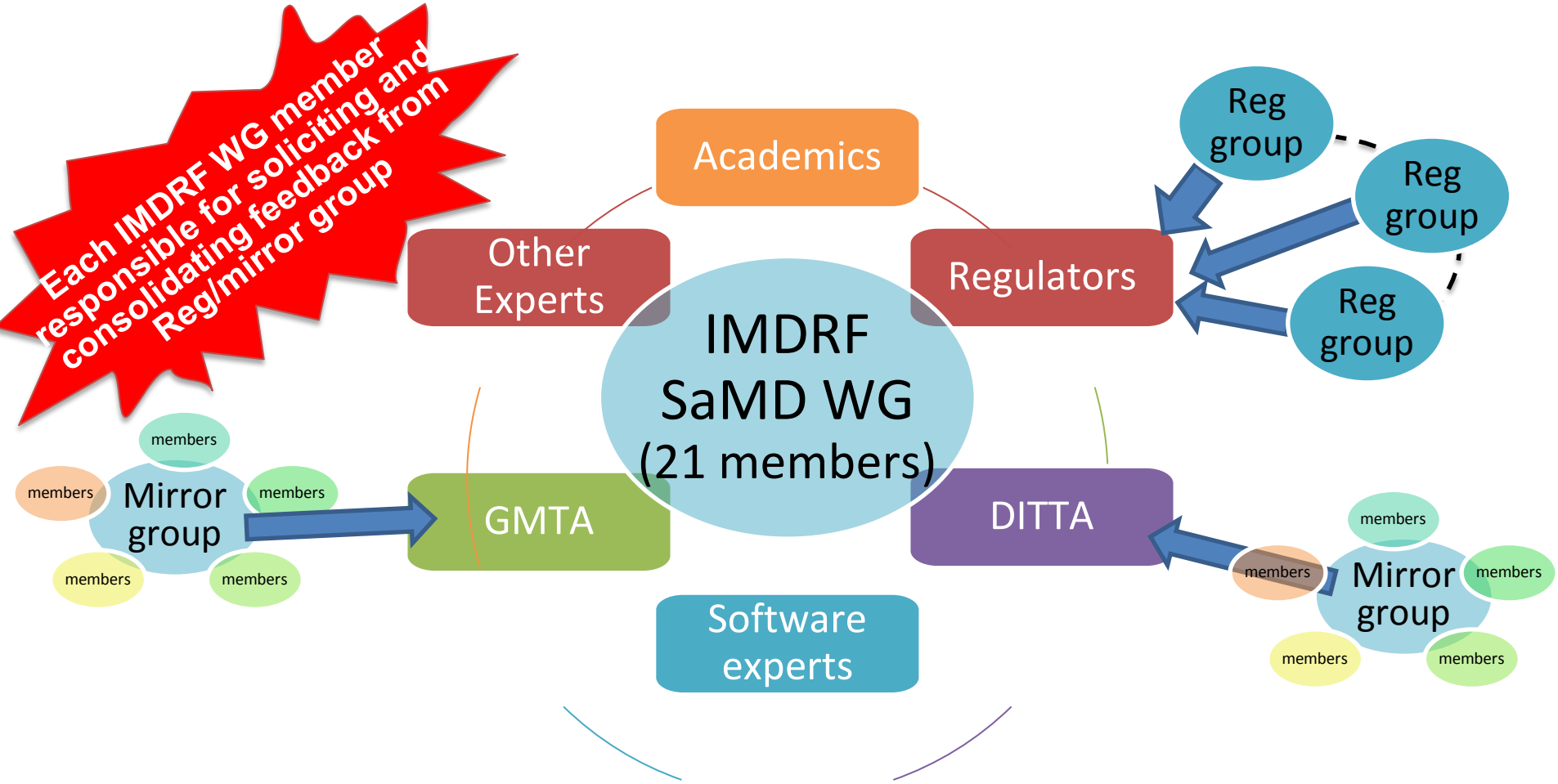




Document Highlights: Independent Review Recommendations



Feedback from Stakeholders



Summary of 1400+ Comments Received

- Comments received from 62 organizations/individuals
- Broad global cross-section of respondents:
  - 9 Global Regulators (ANVISA, EU, Sweden MPA, FDA (7 offices), HC, HSA, TGA, PMDA, Tasmania)
  - 5 Academia/Academic Medical Centers
  - 21 Industry
  - 9 Trade Associations & Members
  - 18 Other (Legal, Consultants, Individuals)
- 150+ responded to targeted questions
- 1250+ provided “content” comments

- 75%+ respondents say document meets the intent
- Comments highlight need for clarity on nomenclature … reflects bias from respondents’ experience
- Explore opportunities to streamline and reduce length … find right balance between *user readability* and *repetition of concepts from prior documents*

Feedback on Targeted Questions

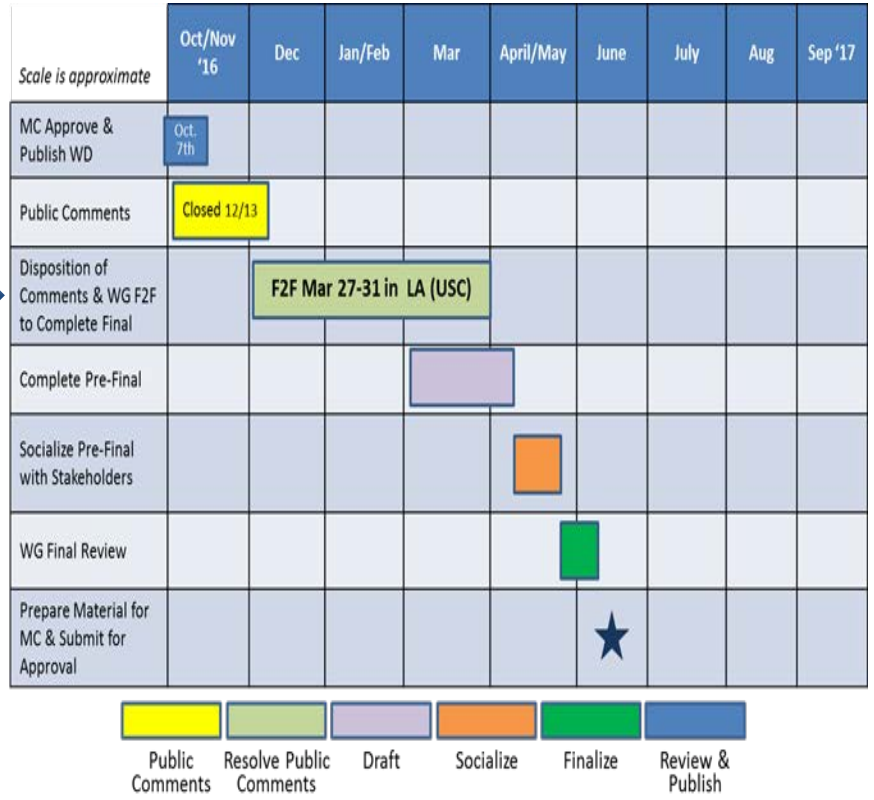
Targeted Questions	Yes	Highlights of "No"
1. Does the document address the intention captured in the introduction/scope or vice versa?	**76%**	Further simplicity and clarity sought
2. Does the document appropriately translate and apply current clinical vocabulary for SaMD?	**66%**	Reflects specific experience, e.g., respondents familiar with clinical laboratory standards
3. Are there other types of SaMD beyond those intended for non-diagnostic, diagnostic and therapeutic purposes that should be highlighted/considered in the document?	**48%**	Opportunity to better balance descriptions and examples across spectrum of SaMD
4. Does the document adequately address the relevant clinical evaluation methods and processes for SaMD to generate clinical evidence?	**48%**	Opportunity to better describe how to use postmarket (real world experience)
5. Are there other appropriate methods for generating clinical evaluation evidence that are relevant for SaMD beyond those described in the document?	**63%**	Clinical evaluation may not be required for all SaMD; may need different approach for novel SaMD
6. Are the recommendations identified in section 7.2 related to the "importance of clinical evidence and expectations" appropriate as outlined for the different SaMD categories?	**66%**	Reflects lack of familiarity with SaMD Risk Framework (N12) and activities that are part of SaMD QMS (N23)
7. Are the recommendations identified in section 7.3 related to the "importance of independent review" appropriate as outlined for the different SaMD categories?	**64%**	Uncertainty with "who" would perform independent review; lack of criteria for independent review
8. Given the uniqueness of SaMD and the proposed framework – is there any impact on currently regulated devices or any possible adverse consequences?	**85%**	General concern with how recommendations align with current requirements for specific products (e.g., IVD) and to MEDDEV

Initial Analysis of Comments

- **Nomenclature** - different terms may be used for same concept, some terms may not be relevant or applicable to SaMD, some terms need to be defined, some terms not defined appropriately
- **Content** –
  - Concept - ensure concepts presented are appropriate for SaMD
  - Balance – balance descriptions and examples between the different types of SaMD (diagnostic, non diagnostic and treat)
  - Consistency – explain how aligns with prior GHTF/IMDRF SaMD documents and with current regulatory requirements
- **Clarity and Organization** – simplify figures/graphics; structure of sentences to improve comprehension of how to apply concepts to SaMD; assess how best to balance use of repetition of concepts from prior IMDRF SaMD documents for ease of readability
- **Regulatory Implementation** – clearly state boundaries of IMDRF guidance and principles and how the guidance and principles feed into regulatory implementation

Timeline and Next Steps

1. Discuss and create working draft document Dec ‘15-Feb ‘16
2. WG member solicit input from mirror groups (Mar-April ‘16)
3. Create formal draft document from input (May-June ‘16)
4. Submit to IMDRF MC for public consult (July ‘16)
5. **Consolidation and disposition of comments (Jan-Mar ‘17)**
6. Draft preliminary final document (April ‘17)
7. WG member solicit input from mirror groups (May ‘17)
8. Create formal final document from input (May-June ‘17)
9. Submit to IMDRF MC for public consult (June ‘17)



Special thanks to all working group members and stakeholders for engaging and providing valuable input towards N41/FD