Back to the Future 4 eHealth Issues *Messaging perspective*

HL7 Australia – May 2019

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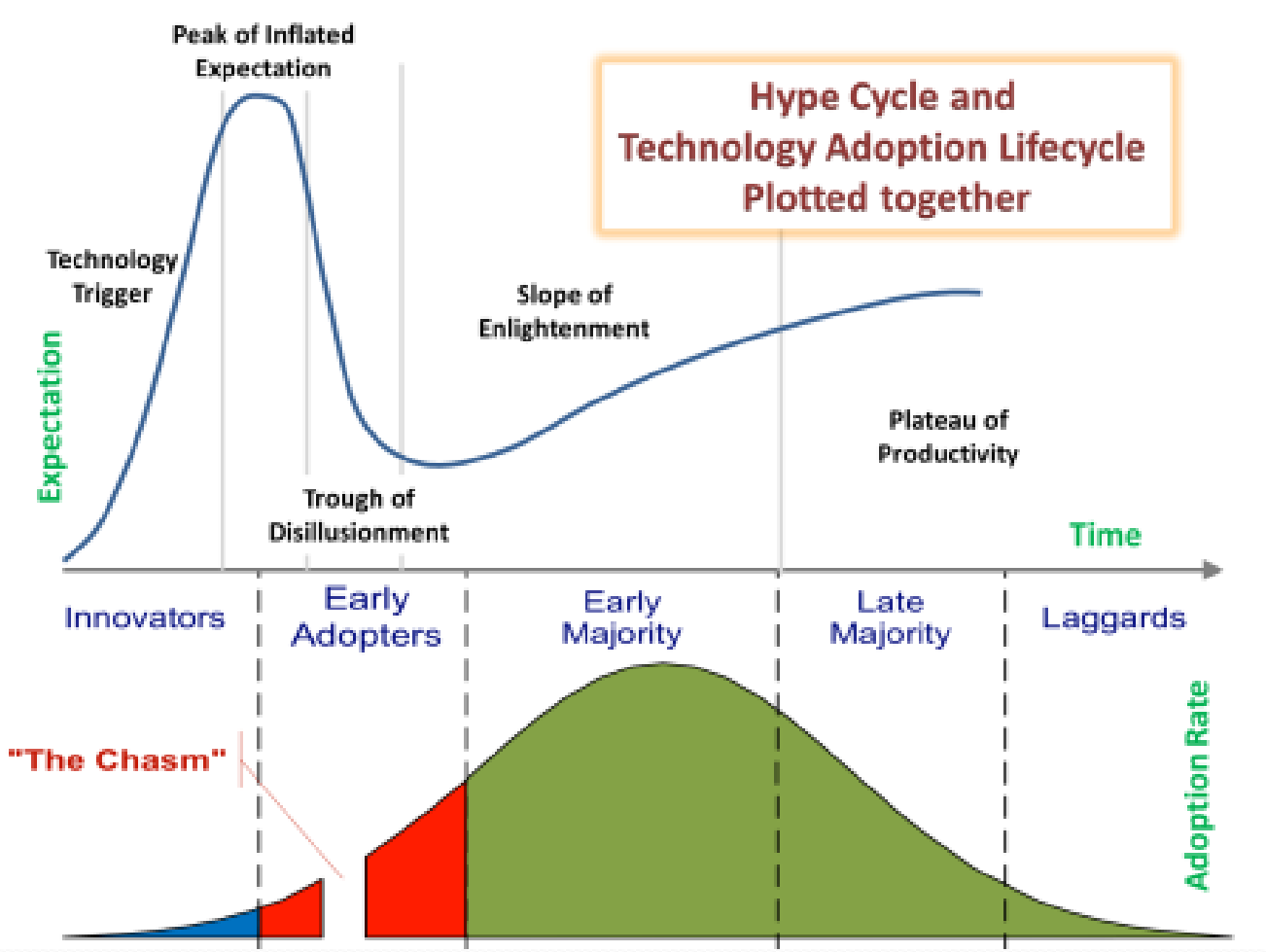
Health Messaging in Australia

- PIT Pathology Information Transfer
  - Developed by QML and S&N in Brisbane in 1990s
  - Transmitted via dialup
  - Display orientated Text format
- In late 1990s decision made to move labs to HL7v2
  - Australian Standards developed AS4700.2
  - Some labs still using PIT, but HL7V2 in widespread use
  - No formal compliance program
  - Still used as display format within HL7V2 messages**
- Extensive use of ADT messages in Hospital systems
- CDA used in National systems
  - Is document, not a message!
  - No real underlying clinical model – not two level modelling

HL7V2 in Australia

- Majority of Lab results transmitted electronically
  - High volume usage
- Majority of Clinical messaging is HL7V2
- Despite issues its working
  - Atomic data for most results except Histology
  - Display formats added for Australia usage
    - PIT
      - Provides for coloured and formatted text
      - Allows inclusion of cumulative display
      - Simpler to process
    - PDF –currently favoured by RACP
      - Display issues remain
      - Large file size reduces efficiency
    - HTML
      - Often not displayed with browser control
      - Would be most standard and efficient format
    - RTF
      - Embedded viewers have limited coverage of rtf specification
      - Some systems do not want it

HL7 V2.3.1 turns 20 this year!



The Present Australian Situation(2009!)

- Clinical Models basic
  - Blob of text in single OBX
  - Blob of RTF (un-escaped) in single OBX
  - Little or No semantic interoperability
  - Opaque documents eg. PDF
  - No atomic data, minimal terminology
- Pathology Models improving
  - Atomic data
  - Terminology (LOINC) in private labs
  - Hamstrung by unreliable imports of HL7
  - Many packages lack CE (Coded Entry) support

MSIA Project – The issues

- Collaborative effort to define issues with HL7V2
  - Document produced 2011, no action
  - The major issue with messaging interoperability working
    - NEHTA asked to take action by messaging vendors
- Issues relate to quality of messages, not standards
  - Escaping reserved characters
  - Display of FT in fixed width font
  - Display of html/PDF/PIT segments poor
  - Non unique message/document IDs
  - Poor understanding of HD values eg Author vs Sender
  - Lack of recognition of clinical area of reports eg Clinical vs lab
  - Lack of suitability of individual provider identifiers – not location specific
  - Non standard Addressing
  - etc

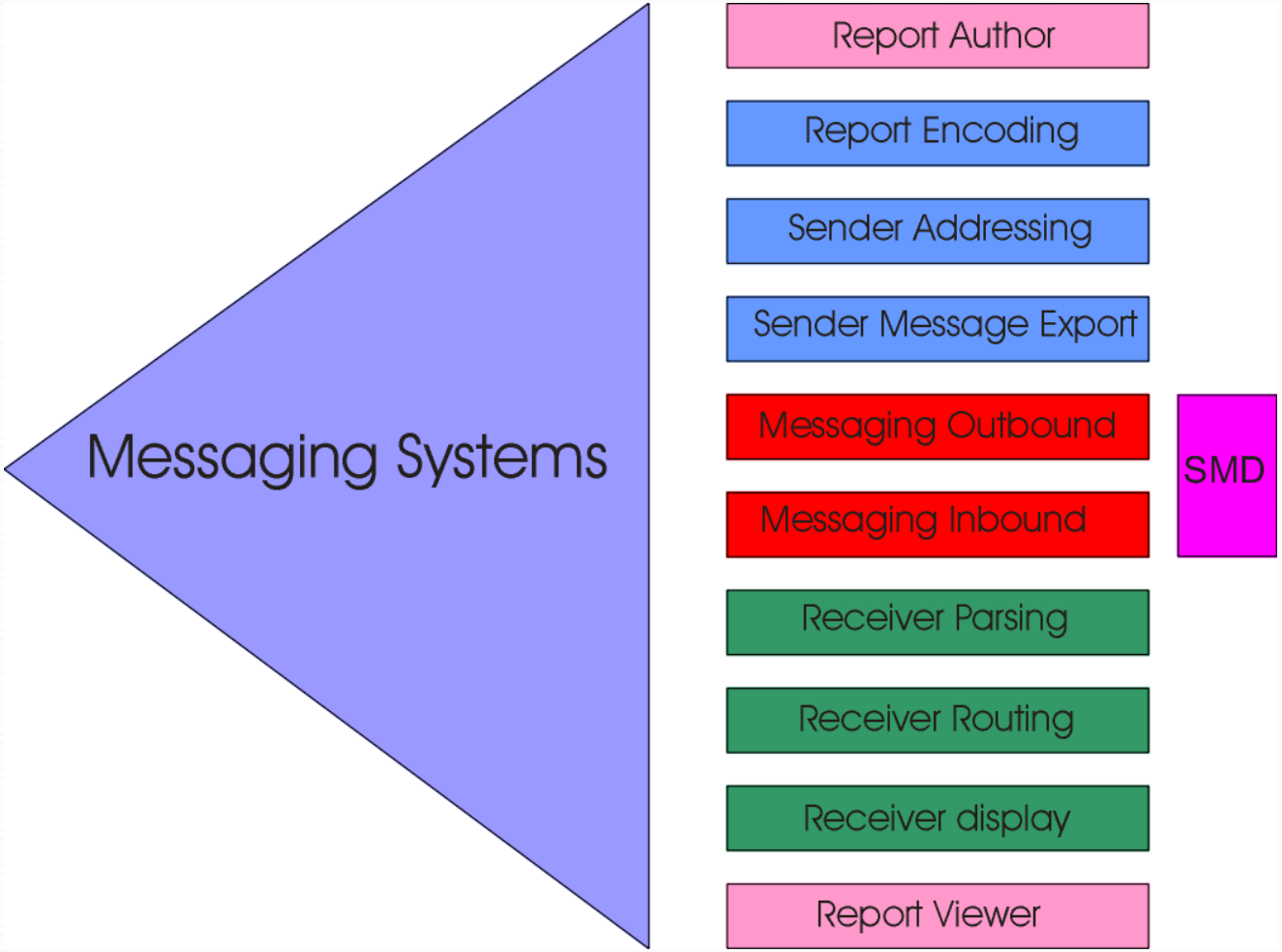
Messages vs Documents

- Messages are transient and used once
  - Can transmit documents or events/orders etc
- Documents persist in legal and practical sense
  - Eg you receive a report in a message but keep the document
- HL7V2 does not separate concepts in documentation
  - OBR is report header and contains document
    - OBX contains report contents
  - PID identifies patient
- Same document can be sent in may message types
  - Eg ORU, ORF, REF, ORM
- It is possible to identify document part and digitally sign it
  - Exclude MSH (Message Header components)

Messaging interoperability is hard

- Messages do NOT interoperate freely
  - Incorrect addressing
    - PV1-8 vs PV1-9 vs MSH in ORU
    - Wrong Specification of Target in REF PRD segments
    - Refusal to implement standards
  - Incorrect rendering
    - Display rules are ignored
      - Senders customize for recipient system
  - Incorrect workflow
    - REF messages = “Clinical” vs OBR-24
    - Message is a container, not the document
    - Reading CDA document rather than message addressing
    - Reading PIT display segment rather than HL7V2
- Manual ACK configuration
- Inability to export messages!
- Each recipient system requires custom changes
- Release of fixes takes months to years, or never
- Lack of participation in standards process
- Enabling free messaging inter-operability would be a disaster
- The actual messaging is not trivial either
  - IT security designed to stop messaging happening!

SMD for interoperability?



Prerequisites for Change

- Inter-operable messaging requires:
  - Interoperable messages!
  - Trusted PKI
  - Reliable workflow
  - Ack generation
  - Message export!
    - File pickup is baseline
  - Error handling
  - Agile response to errors
- Unregulated Messaging between non-complaint systems
  - System crashes
  - Lost messages, wrong recipients
  - Disrupted workflow
  - Incorrect display
  - Increased support costs
  - Increased risk of patient harm

ADHA Solution?

- Restrict documents to PDF!
  - No decision support
  - No Atomic data
  - No atomic medications
  - No path forward
  - Does not fix addressing, escaping, workflow etc
- Pathology already contains atomic data
  - Rendering unreliable, customised reports per endpoint
    - Patient safety already at risk
    - Display of Clinical documents with atomic data identical to pathology
  - Terminology still patchy
    - OBR-4 – “report titles” non standard
    - Compliance with OBX-3 PITUS LOINC is patchy

What is wrong with SMD?

- PKI infrastructure failed
  - Many HCP do not have certificates
  - Short Expiry, manual renewal
  - Multitude of certificate types
- Provider Identifiers not location specific!
  - Huge privacy implications
  - Location identifiers absent or not location specific
  - Directory services vapourware
- “Trendy” technology choices – inefficient
  - Eg xml encryption/SOAP
- Focus on Store and forward
- Inability to perform required “Fixes” via interface engine

What's wrong with messaging

- Demands for Custom
  - Message formats
  - Addressing
  - Address book integration
- Not open market
  - Financial relationships not transparent
- Doing a lot more than messaging
  - Interface engine functionality
    - Precludes interoperating unless this is solved
  - Becomes commodity if endpoint systems are compliant
- Lack of common PKI infrastructure

What is wrong with industry?

- Lack of testing for standards compliance
- Poor investment in low level abilities/technical capability
- Focus shifted by government white elephants
  - More targeting of government $$, rushed programs
- Lack of participation in standards process
- No compliance bar to entry
  - New systems can enter market without any compliance requirement
  - User/feature focus over quality and safety
- Patient risks ignored
- Used to government funding of standards
- Will not produce messages without payment
- Generic management?

The Future

- HL7V2 is not going away
  - Huge investment in Labs and ADT messaging
  - Widespread support by receiving applications
  - High cost of changeover
- Likely to coexist with FHIR
  - FHIR much easier for web developers initially but complexity remains
  - New areas likely focus
- Lack of governance wrt standards compliance
  - A problem that persists
  - Clinical safety issues being ignored
  - Useful Clinical Decision support possible with better compliance
    - Would not require major investment compared to MyHR
- Significant extension possible with Templating
  - Clinical data models are not widespread or standard currently
  - Allows add hoc templating with backward compatibility
    - This is best way to progress clinical templates
  - PDF precludes atomic data

The solution?

- No leadership on horizon
  - Up to industry to solve
  - Compliance essential for
    - Patient safety
    - Messaging interoperability and addressing
    - Scaleable systems
    - Level playing field
- A government solution is unlikely to be good
  - ?MSIA
  - Ideally need government PKI infrastructure?
- Need focus on quality
  - A compliance “bar to entry” is not unreasonable!