



Documentation diaries: MN's approach to IIS documentation

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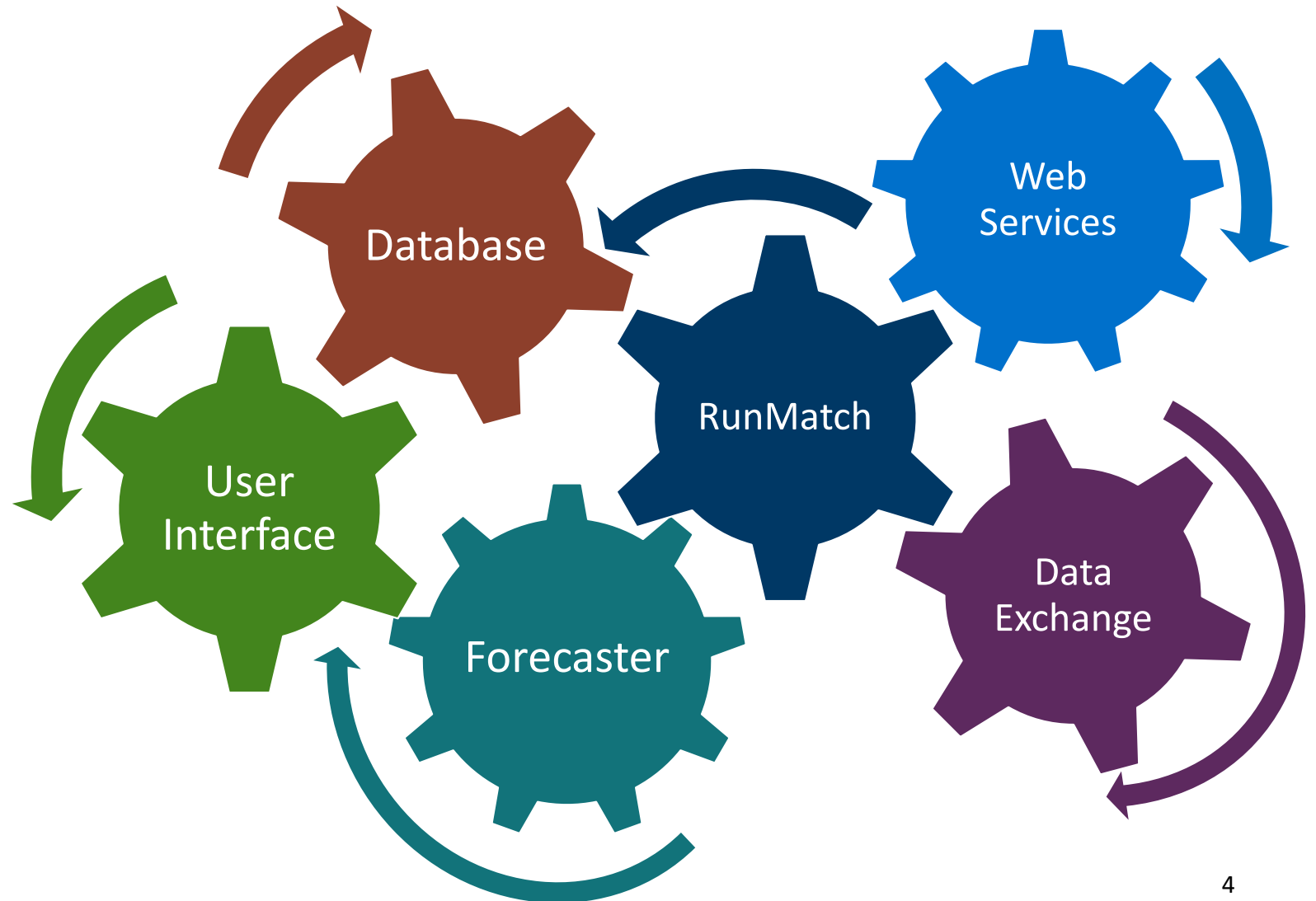
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- Background
- Documentation Project Overview
- Example
- Final Thoughts

Background

Minnesota Immunization Information Connection (MIIC)

- Minnesota's IIS
- Created in 2002
- Multi-component public health information system
- Supports immunization practice, monitoring, and improvement in MN



Maintain a robust repository of data from which we can generate actionable information that people can use to reduce the burden of vaccine-preventable diseases.



Achieving the Vision: MIIIC Interoperability

Technical Interoperability

- The ability of systems to communicate and exchange data.

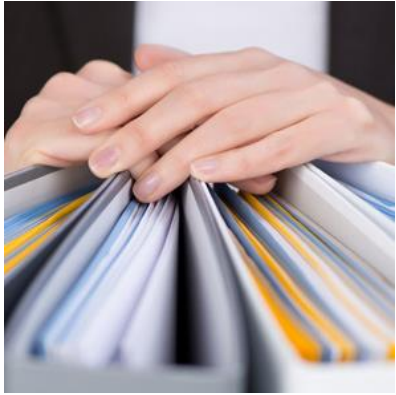
Semantic Interoperability

- The ability of systems to understand the data in a shared way.

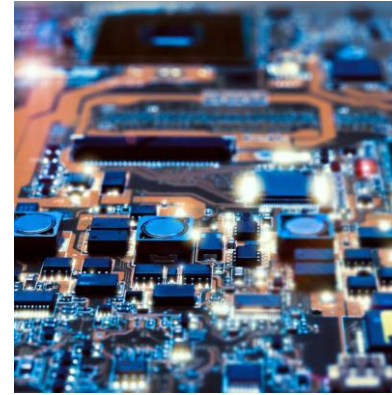
Process Interoperability

- When human beings share a common understanding across a network.

Technical Interoperability: Sogeti Review



Existing
Documentation



Hardware

```
public static void main(String[] args) {
    OutputStream outputStream = new DataOutputStream(
        new FileOutputStream("data.txt"));
    long t1 = (new Date()).getTime();
    double q1 = Math.random();
    byte[] protected1 = ProtectionUtil.encrypt(q1);
    long t2 = (new Date()).getTime();
    double q2 = Math.random();
    byte[] protected2 = ProtectionUtil.encrypt(q2);
    outputStream.writeUTF(user);
    outputStream.writeInt(protected1.length);
    outputStream.write(protected1);
    outputStream.writeUTF(user);
    outputStream.writeInt(protected2.length);
    outputStream.write(protected2);
    outputStream.flush();
}
```

Comprehensive
Code Review



Compare to Other
Jurisdictions

Semantic and Process Interoperability

- **Semantic interoperability goals:**
 - Better identifying data MIIIC stores and exchanges
 - Ensuring data can be mapped to standard terminologies
 - Ensuring data can be shared using existing data exchange standards
- **Process interoperability goals:**
 - Identifying internal and external MIIIC business processes

Business Needs: MIIC Documentation

- Shared understanding of MIIC
- Improved staff onboarding
- Increased institutional knowledge
- Improved knowledge retention
- Increased efficiency at addressing MIIC issues
- Increased ability to conduct quality improvement around MIIC

Documentation Objectives



Documentation Project Overview

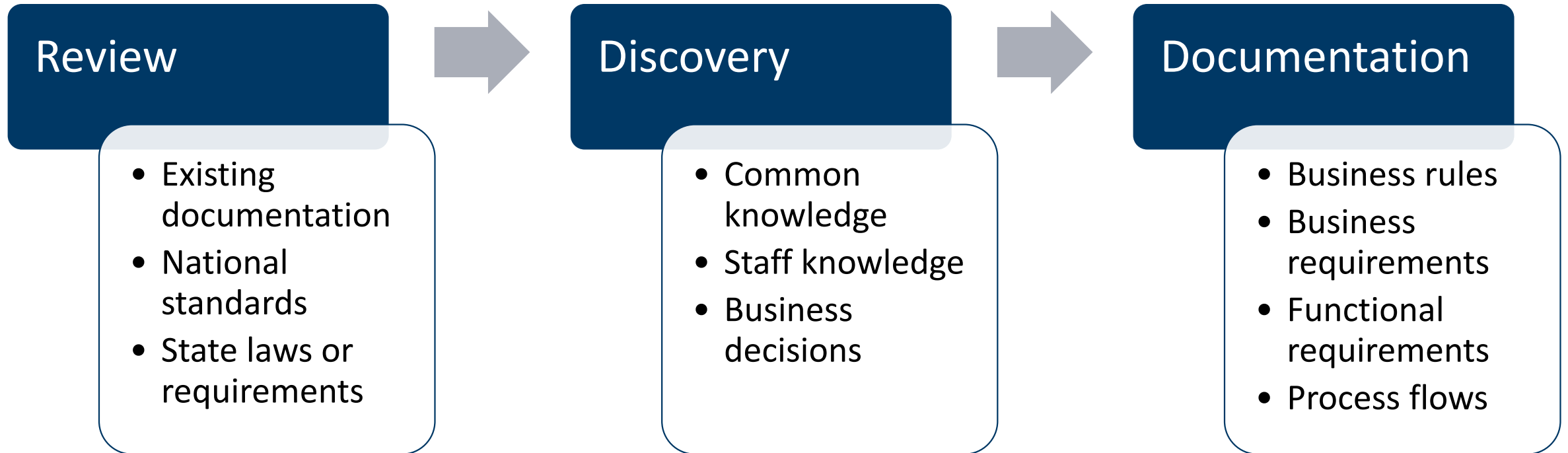
Semantic Interoperability

- Data dictionary
- Terminology mapping
- Data exchange standards

Process Interoperability

- Internal business processes
- External business processes

Documentation Process



Example

Rules and Requirements – New Client

Business Rules

- A client must have a valid first name.
- A valid first name must contain at least 2 characters.

Business Requirements

- The business needs a first name of a client.

Functional Requirements

- The system shall be able to store first name of a client.

Use Case - Enter New Client

ROLE	<u>All user roles</u> with exception of: Reports Only, Read Only, Read Only with Client Query, Data Exchange/Health Plan User
ASSUMPTIONS	<ol style="list-style-type: none">1. User has successfully logged into MIIC.2. User cannot find client in MIIC with information they have.3. User has first name, last name, and birth date of client.
DESCRIPTION	User cannot find a client in MIIC, yet the user has sufficient demographic information to enter a new client. User selects, 'Enter New Client' and proceeds to enter the new client's first name, last name, birthdate, and any other identifying information the user has at hand. After selecting, 'Save' a warning appears regarding Mother's Maiden Last Name assisting in de-duplication process. User selects, 'Okay.' The client is now saved, and immunizations can be added by selecting, 'Immunize.'
ALTERNATIVE FLOW 1	The information entered by the user triggers an existing client record to appear on the screen. Based on the identifying information made available to the user, the user must determine whether the existing client records is—in fact—the record of interest. If it is the client of interest, the user selects the existing record. If it is not the client of interest or there is insufficient information to confirm a relationship, the user proceeds with the creation of a new client in MIIC.



Data Dictionary - Client Information

FIELD NAME	TYPE	LEN	DEFAULT	COMMENTS	% NULL	DATA ELEMENT	
CLIENT_ID	NUMBER	22		miic unique patient identifier	0.00	patient identifier	
FIRST_NAME	VARCHAR2	25		client first name	0.00	patient first name	
MIDDLE_NAME	VARCHAR2	25		client middle name	0.28	patient middle name	
LAST_NAME	VARCHAR2	35		client last name	0.00	patient last name	
ALTERNATE_LAST_NAME	VARCHAR2	35		NOT USED	1.00		
NAME_SUFFIX	VARCHAR2	10		last name suffix	0.99	patient name suffix	
BIRTH_DATE	DATE	7		date of birth	0.00	patient date of birth	
BIRTH_CERT	CONCEPT			VALUES	ONC/ISA STANDARD CODE SETS	ONC/ISA CODE SET OID	FHIR RESOURCE
MULTIPLE_B	patient identifier			system generated identifier			
MULTIPLE_B	patient first name			human name (proper noun)			Client
DEATH_DATE	patient middle name			human name (proper noun)			Client
DEATH_CERT	patient last name			human name (proper noun)			Client
MOTHERS_F							
MOTHERS_M							
SEX_CODE							
RACE_CODE	patient name suffix			human name suffix			Client
ETHNICITY_C	patient date of birth			human birthdate			Client
SSN	patient birth certificate number			state patient identifier			Client
	number of babies delivered in multiple birth			human multiple birth limits			Client
	order in which patient was born in a multiple birth			BIRTH ORDER			Client
	patient date of death			human death date			Client
	patient death certificate number			state patient identifier			Client
	first name of mother of patient			human name (proper noun)			Client
	maiden name of mother of patient			human name (proper noun)			Client
	patient sex			HL7 SEX CODE	PHVS AdministrativeGender HL7 V3	2.16.840.1.113883.1.11.1	Client
	patient race			HL7 RACE CODE	PHVS_Race_CDC		Client
	patient ethnicity			HL7 ETHNICITY CODE	PHVS EthnicityGroup CDC	2.16.840.1.114222.4.11.877	Client

Final Thoughts

- Not a linear process
- Doing it well takes time
- Creating templates to meet our needs is key
- Creating a culture of documentation is important for sustainability

Continued Work

- Data dictionary
- Terminology mapping
- Internal business processes

Upcoming Work

- External business processes
- Application functionality
- Create documentation mapping

- Maintain documentation
- Address issues identified during documentation
 - Technical
 - Business process

- Documentation...
 - Is important for supporting and maintaining IIS
 - Must be kept up-to-date
 - Must be integrated into all processes
 - Requires staff and leadership buy-in

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Thanks!