ARKANSAS DEPARTMENT OF HUMAN SERVICES

ARIES
Arkansas Integrated Eligibility System

Arkansas Integrated Eligibility System (ARIES)

EMCI Deep Dive

December 11, 2019

Agenda

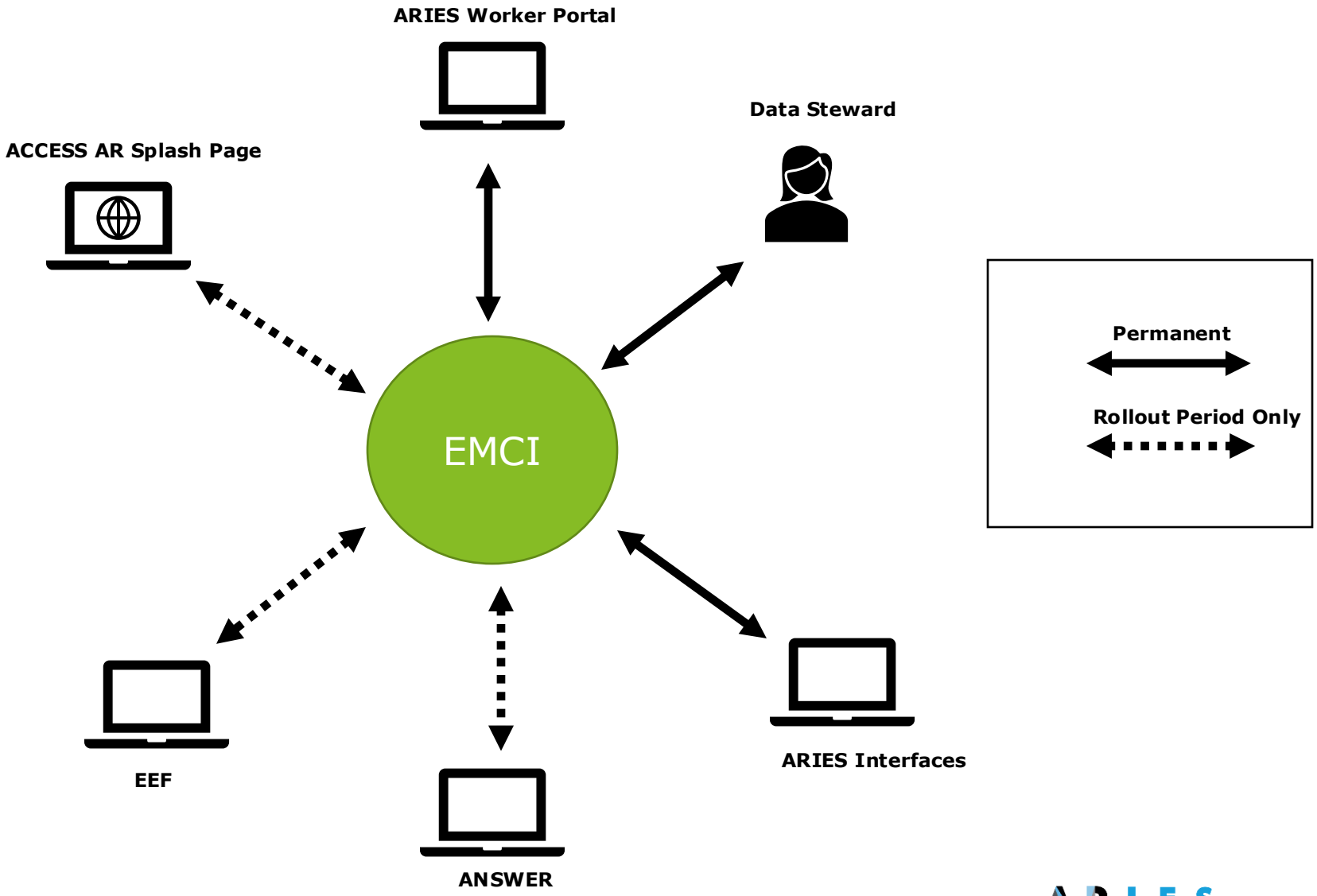
- Overview of EMCI
- MDM Overview
- Implementation Timeline
- EMCI Services
- EMCI Data Structures
- EMCI Matching Logic
- Business Scenarios
- Legacy (EEF/ANSWER) Changes for EMCI
- Data Steward Process

What is EMCI?

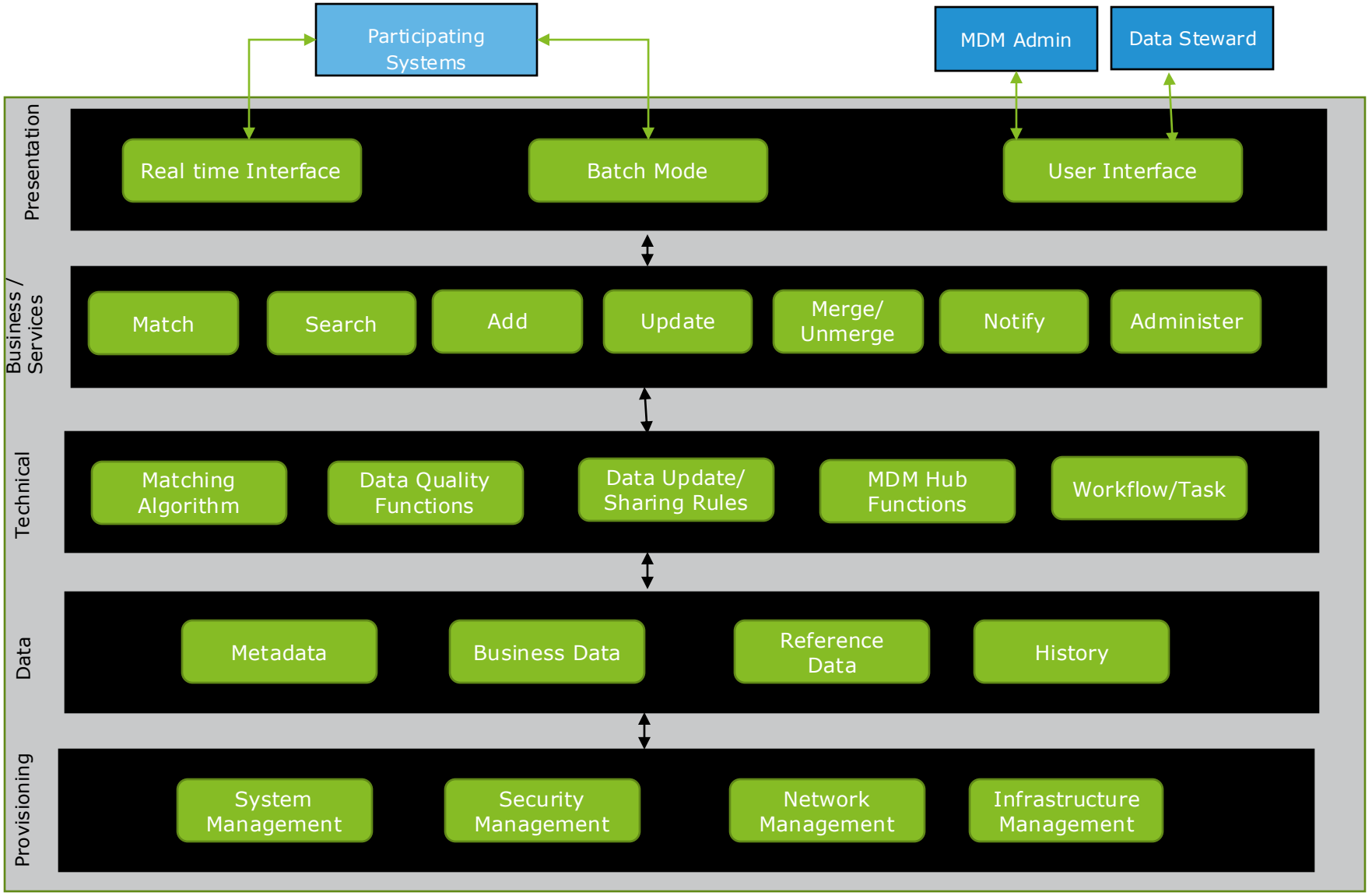
- **Enterprise Master Client Index** is an implementation of Master Data Management (MDM) solution
- Provides capabilities to identify a unique individual across multiple systems to establish a common identity for an individual
- Stores and shares master data for the benefit recipients and household members
- Support application and client registration process for benefit programs in participating systems
- Combines elements of clients, services/benefits, and other essential data across the agency into consolidated records to create trusted data to be shared
- EMCI will be implemented using Informatica MDM tool

EMCI Implementation for ARIES

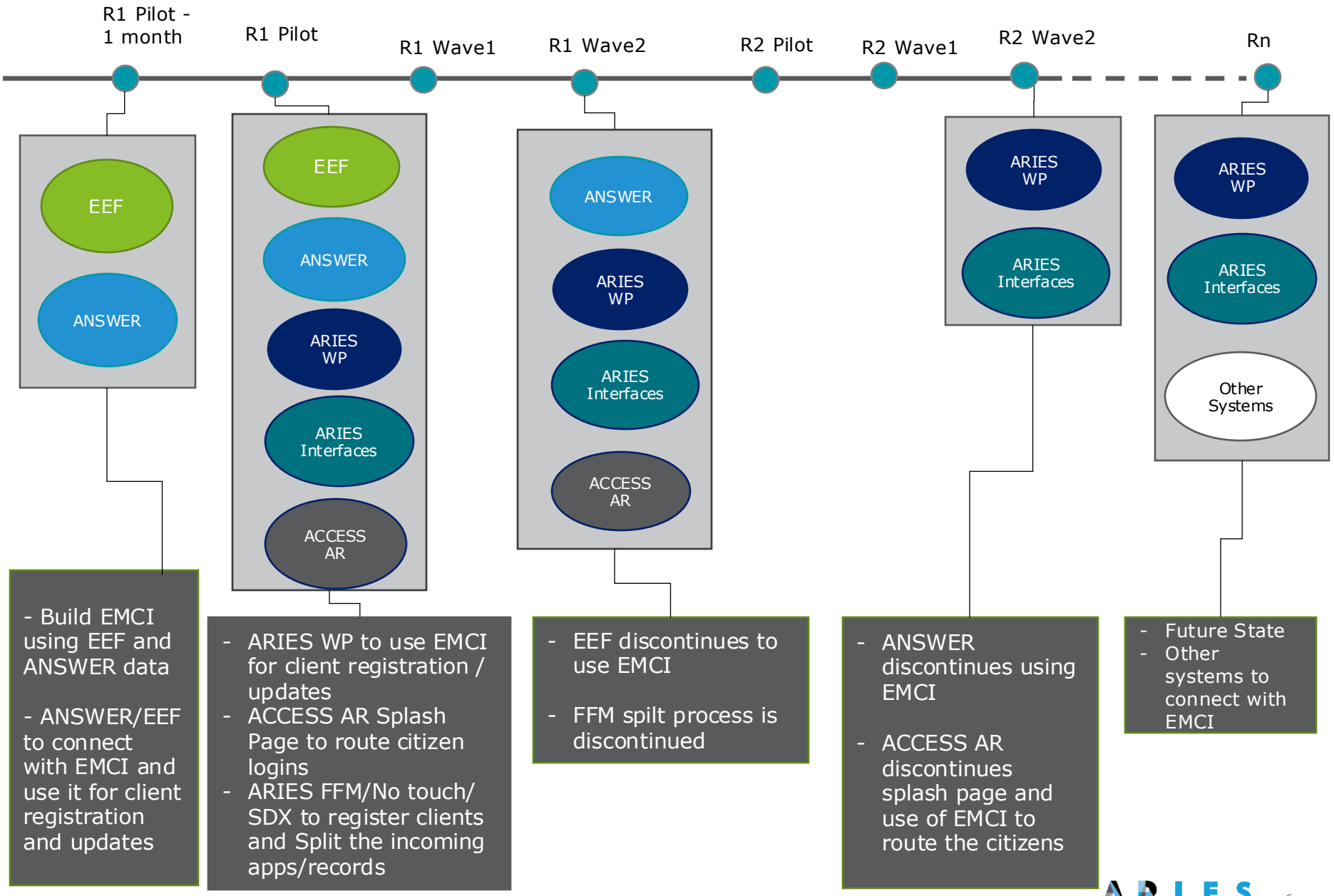
Participating Systems/Components



MDM Overview



EMCI Implementation – Timeline



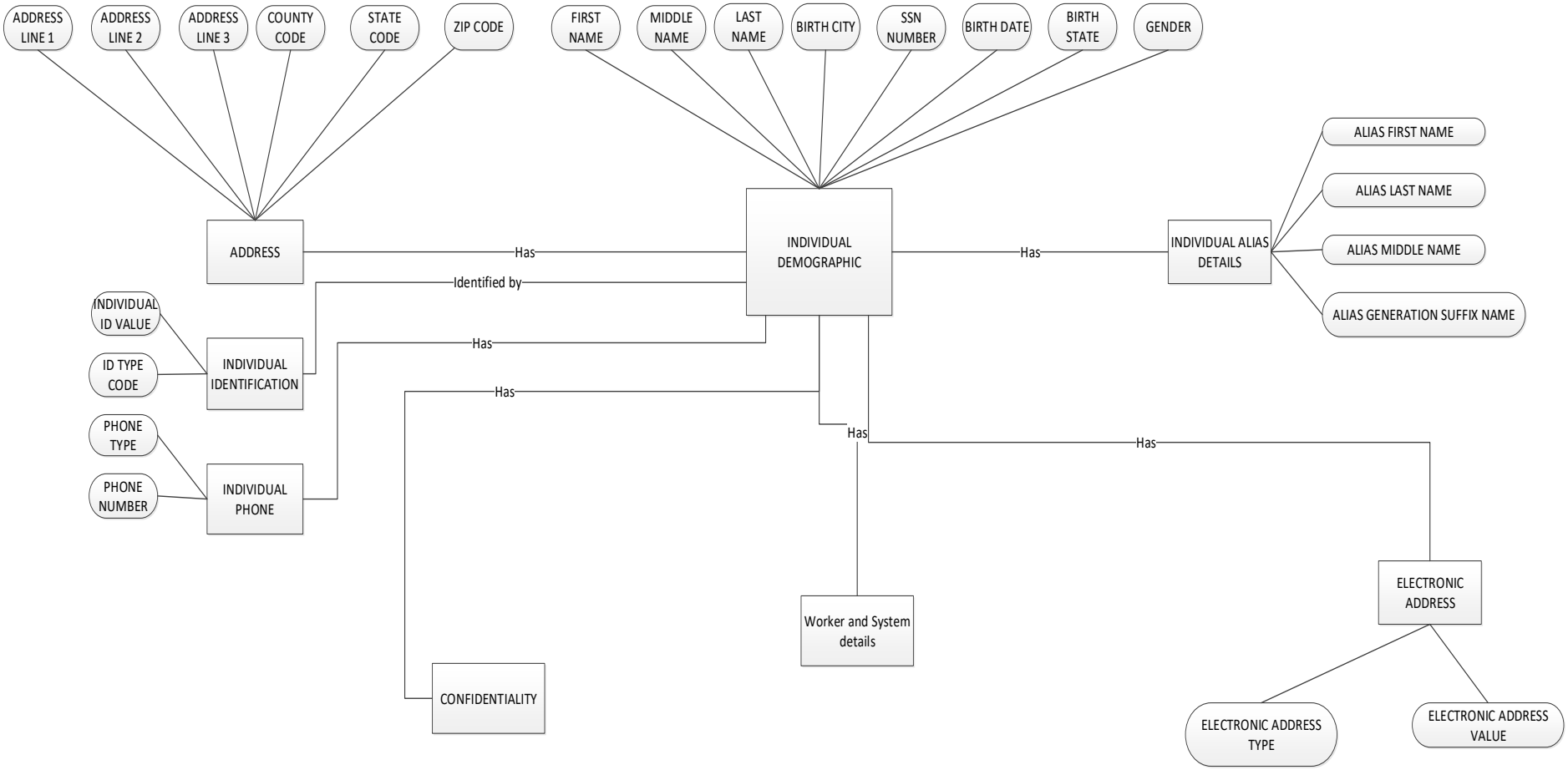
EMCI Services

EMCI Services (Real-time & Batch)

Services	Description	Participating Systems/ Components
Create Person	Creates a new client on EMCI	• ARIES Worker Portal • ARIES Interfaces • EEF • ANSWER
Update Person	Updates individual's demographics and other data	• ARIES Worker Portal • ARIES Interfaces • EEF • ANSWER
Match Person	Provides all potential matches for a person along with weightage for match proximity	• ARIES Worker Portal • ARIES Interfaces • EEF • ANSWER
Search Person	Provides search capability using key identifier or other search parameters and shares certain high-level data	• ARIES Worker Portal • ARIES Interfaces • EEF • ANSWER • ACCESS AR
Search Person Details	Provides search capability using key identifier and shares detail information about the client including program participation details	• ARIES Worker Portal • EEF • ANSWER

EMCI
Data Structures

EMCI Data Structures



EMCI – Individual Attributes

Data Element	Description	Mandatory
Individual ID	Identification Id of the individual.	Yes (System Generated)
First Name	First Name of an Individual	Yes
Last Name	Last Name of an Individual	Yes
Middle Name	Middle Name of an Individual	No
Name Prefix Code	Prefix Name (e.g. Mr., Ms., Mrs., etc.)	No
Generation Suffix Code	Suffix Name (e.g. Jr, Sr, etc.)	No
Gender Code	Gender (e.g. M, F)	Yes
Language Code	Primary language (e.g. English, Spanish, Marshallese, etc.)	No
Birth Date	Date of Birth of an Individual	No
SSN Number	Social Security Number	No
Race Code/Indicators	Race Code of the Individual (e.g. Asian, White, Black, etc.)	Yes
Ethnicity Code	Ethnicity Code of the Individual (e.g. Hispanic, Not-Hispanic, etc.)	Yes
Marital Status Code	Marital Status Code of the Individual (e.g. Single, Married, etc.)	No
Deceased Indicator	Indicates if an individual is Deceased	No
Death of Date	Death date of an Individual	No
US Citizenship Indicator	Indicates if an Individual is an US Citizen (Immigration Status)	No
EMCI Individual Status Code	Status of the Individual record (e.g. Active, Inactive)	No
Birth State	Birth State	No
Birth City	Birth City	No
Maiden Name	Maiden name of an Individual	No
SSN Verification Code	SSN verification Code of the individual	No
SSN Verification Date	SSN verified date of the Individual	No
DOB Verification Code	Date of Birth verification code of the Individual	No
DOB Verification Date	Date of Birth verified date of the individual	No

EMCI – Alias Attributes

Data Element	Description	Mandatory
Alias First Name	Alias First Name	N
Alias Last Name	Alias Last Name	N
Alias Middle Name	Alias Middle Name	N
Alias Generation Suffix Code	Alias Suffix Name (e.g. Jr, Sr, etc.)	N
Alias SSN Number	Alias Social Security Number	N

EMCI – Program Participation Attributes

Data Element	Description	Mandatory
Case Number	Case number of the Program	No
Program Cd	The Program code as defined in IES for e.g. MA, TEA, SNAP	No
Sub Program Cd	The Sub Program cd as defined in IES. For E.g. MAGI, FC, etc.	No
Participation Status	The Status whether individual is active or inactive in the Program or Sub Program	No
Relationship	The Relationship of the individual to the Household head in the case	No
Source system	The system which has the case details. For e.g. ARIES, ANSWER, EEF	No

Data Element	Description	Mandatory
ID Type Code	Defines the type of ID associated with the Client (EEF Person Ref. ID, ASNWER Household ID, etc.)	Yes
ID Values	ID Value	Yes
ID Status	Defines if the status of the identification in the respective system (Active, Inactive)	Yes

EMCI – Contact Information Attributes

Data Element	Description	Mandatory
Address Type Code	Indicates the type of address (e.g. Mailing, Residence, etc.)	No
Address Line1	It can include Street number, Street name	No
Address Line2	It can include Apartment number or Suite Number	No
City/Locality Name	The name of the City	No
State Code	The code of the state	No
Zip Code	Postal code of the area	No
Country Cd	The country Cd	No
County Code	The code of the county	No
Verified Address Indicator	Indicates if the address was verified using a Address Verification System (such as Smarty Streets)	No

Data Element	Description	Mandatory
Phone Type Code	Type of Phone for the Individual (e.g. Work, Home, Mobile, etc.)	No
Phone Number	Phone Number of the individual ,provider and employer	No
Phone Extension	Phone Extension Number	No

Data Element	Description	Mandatory
Electronic Address Type Code	Type of Electronic Address for the Individual (e.g. Email, URL, etc.)	No
Electronic Address Value	Electronic Address Text which can be a URL or a email id	No

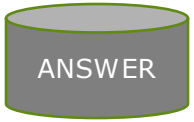
EMCI – Merge History Attributes

Data Element	Description	Mandatory
First Name	First Name of merged individual	N/A – System Tracked
Last Name	Last Name of merged individual	N/A – System Tracked
Middle Name	Middle Name of merged individual	N/A – System Tracked
Birth Date	Date of Birth of merged individual	N/A – System Tracked
SSN Number	Social Security Number of merged individual	N/A – System Tracked
Gender Code	Gender (e.g. M, F) of merged individual	N/A – System Tracked
Birth State	Birth State	N/A – System Tracked
Birth City	Birth City	N/A – System Tracked
Merged Client ID	Inactive Client ID	N/A – System Tracked

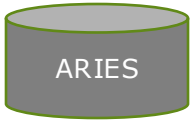
Data Element	Description	Mandatory
Source System	System which added the individual record	Yes
Worker ID	User ID of the worker (as known in the source system)	Yes
Worker Email	Email Address of the Worker, if available.	No

EMCI Data Example

Id: 1000
Name: Bill Smith
SSN: 123456789
DOB: 2.1.1980
Gender: Male



Id: 2000
Name: William Smith
SSN: 880-12-3456
DOB:1/2/1980
Gender: M



Id: 3000
Name: William Smith
SSN: 123456789
DOB:1-2-1980
Gender: M

EMCI Data

Core

Record No.	Internal ID	Name	SSN	DOB	Gender
1	1234	William Smith	123456789	1-2-1980	M

System Xref

Record No.	Internal ID	Source	Name	SSN	DOB	Gender
1	1234	ARIES	William Smith	123456789	1/2/1980	M
2	1234	EEF	Bill Smith	123456789	2/1/1980	M
3	1234	ANSWER	William Smith	880-12-3456	1/2/1980	M

Identifiers

Record No.	Internal ID	ID Type	ID
1	1234	ARIES/EMCI	3000
2	1234	EEF	1000
3	1234	ANSWER	2000

Pgm. Particp.

Record No.	Internal ID	System	Program	Status
1	1234	ARIES	Medicaid	Eligible
2	1234	EEF	Medicaid	Closed
3	1234	ANSWER	SNAP	Eligible

EMCI Matching Logic

EMCI – Person Match Scoring Logic

The objective of the scoring algorithm is:

- To assign a weighted score to search results
- Scores translate into degree of confidence
- Help maintain data integrity
- Help prevent fraud and abuse

Individual match scores use two principles to assign points:

- Exact Match Vs. Fuzzy Match
  - An Exact match assigns scores based on exact match (non case sensitive).
  - A fuzzy match logic assigns a weighted score to the search results based on the degree of match found on each data element used in the search
  - An exact match score will always be higher than the fuzzy match score

- Match with SSN Vs. Match Without SSN
  - A match with a SSN will potentially yield higher scores than without an SSN

EMCI – Person Match Scoring Logic

Match Attribute	Match Score With SSN		Match Score Without SSN	
	Exact Match	Fuzzy Match	Exact Match	Fuzzy Match
SSN	45	3 for each digit (0-24)	N/A	N/A
Gender*	4	None (0)	4	None (0)
Last Name*	15	3 - 12 (score of 3 for first 3 characters match and character 4, 5 and 6 gets 2, 3 and 4 points respectively)	15	3 - 12 (score of 3 for first 3 characters match and character 4, 5 and 6 gets 2, 3 and 4 points respectively)
First Name*	11	3 - 9 (score of 3 for first 3 characters match and character 4, 5 and 6 gets 1, 2 and 3 points respectively)	11	3 - 9 (score of 3 for first 3 characters match and character 4, 5 and 6 gets 1, 2 and 3 points respectively)
DOB	25	Year - 15, Month - 5, Day - 5 (0-20)	25	Year - 15, Month - 5, Day - 5 (0-20)
Total	**100**	**18-69**	**55**	**15-45**

Match Score with SSN

- Calculation for 18= 4(gender)+3(min First name)+3(Min Last name)+5(Min for DOB)+3(min for SSN)
- Calculation for 69= 4(gender)+9(Max First name)+12(Max Last name)+20(Max for DOB)+24(Max for SSN)

Match Score without SSN

- Calculation for 15= 4(gender)+3(min First name)+3(Min Last name)+ 5(Min for DOB)
- Calculation for 45= 4(gender)+9(Max First name)+12(Max Last name)+ 20(Max for DOB)

EMCI – Person Match Scoring Logic – Practice Examples

Example-1 (a) : Change in Client's Last Name			
		Client Data	Score
	Input	**Nora Thomas 3/15/1932 F 222445679**	
	Output	Nora Thomas 3/15/1980 F No social	40

Match Type	SSN	Gender	Last Name	First Name	DOB	Total
Score w/o SSN	N/A	4	15	11	10	40
		Exact	Exact	Exact	Fuzzy	

Example-1 (b) : Change in Client's Last Name			
		Client Data	Score
	Input	**Nora Thomas 3/15/1932 F 222445679**	
	Output	Nora Thomas 3/15/2000 F 222445673	64

Match Type	SSN	Gender	Last Name	First Name	DOB	Total
Score w/ SSN	24	4	15	11	10	64
	Fuzzy	Exact	Exact	Exact	Fuzzy	

EMCI – Person Match Scoring Logic - Examples

	Client Data	Score
Example-1 : Change in Client's Last Name		
Input	**Nora Thomas 3/15/1932 F 222445679**	
Output	Nora Thomas 3/15/1980 F No social	40
Output	Nora Thomas 3/15/2000 F 222445673	64
Output	Nora Thomas 8/15/1932 F 322445673	71
Output	Nora Thomas 7/15/1932 F No social	50
Output	Nora Roberts 3/15/1932 F 222445679	85
Output	Nora Thomas 3/15/1932 F 822445678	79
Example-2: No SSN entered		
Input	**Nora Thomas 3/15/1932 F No Scoial**	
Output	Nora Thomas 3/15/1980 F No social	40
Output	Nora Thomas 3/15/2000 F 222445673	40
Output	Nora Thomas 8/15/1932 F 322445673	50
Output	Nora Thomas 7/15/1932 F No social	50
Output	Nora Roberts 3/15/1932 F 222445679	40
Output	Nora Thomas 3/15/1932 F 822445678	55

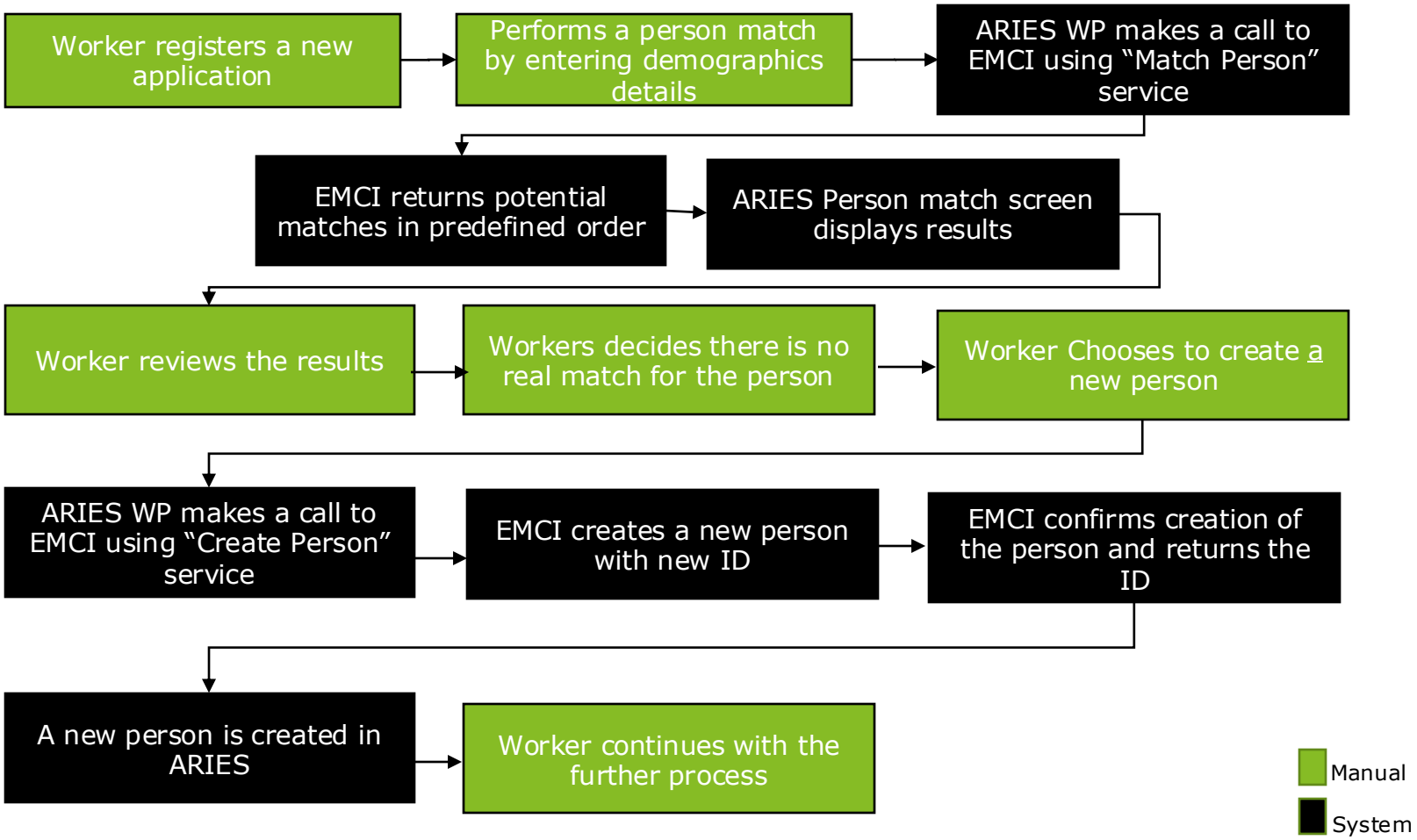
EMCI – Person Match Scoring Logic - Examples

	Client Data	Score
Example-3: Typo in DOB		
Input	**Philip Brown 2/10/1971 M 345671234**	
Output	Philip Brown 10/2/1971 M 345671234	85
Output	Philip Brown 2/10/1971 M 345671285	76
Example-4: Typo in Gender		
Input	**Joy Smith 01/30/2010 M 123456789**	
Output	Joy Smith 01/30/2010 F 123456789	96
Output	Joy Smith 01/30/2010 M 453456789	76
Example-5 SSN Mismatch		
Input	**Joy Smith 01/30/2010 M 123456789**	
Output	Joy Smith 01/30/2010 M 123456712	76
Output	Joy Smith 01/30/2010 M 423456789	76
Example-6: Clients' with Suffix or Middle Name		
Input	**Jack(I) Martin Ross 8/28/2015 M No Social**	
Output	Jack (II) Ross 8/28/2015 M 627980123	55
Output	Jack Malcom Ross 1/15/2015 M No social	45

EMCI Business Scenarios

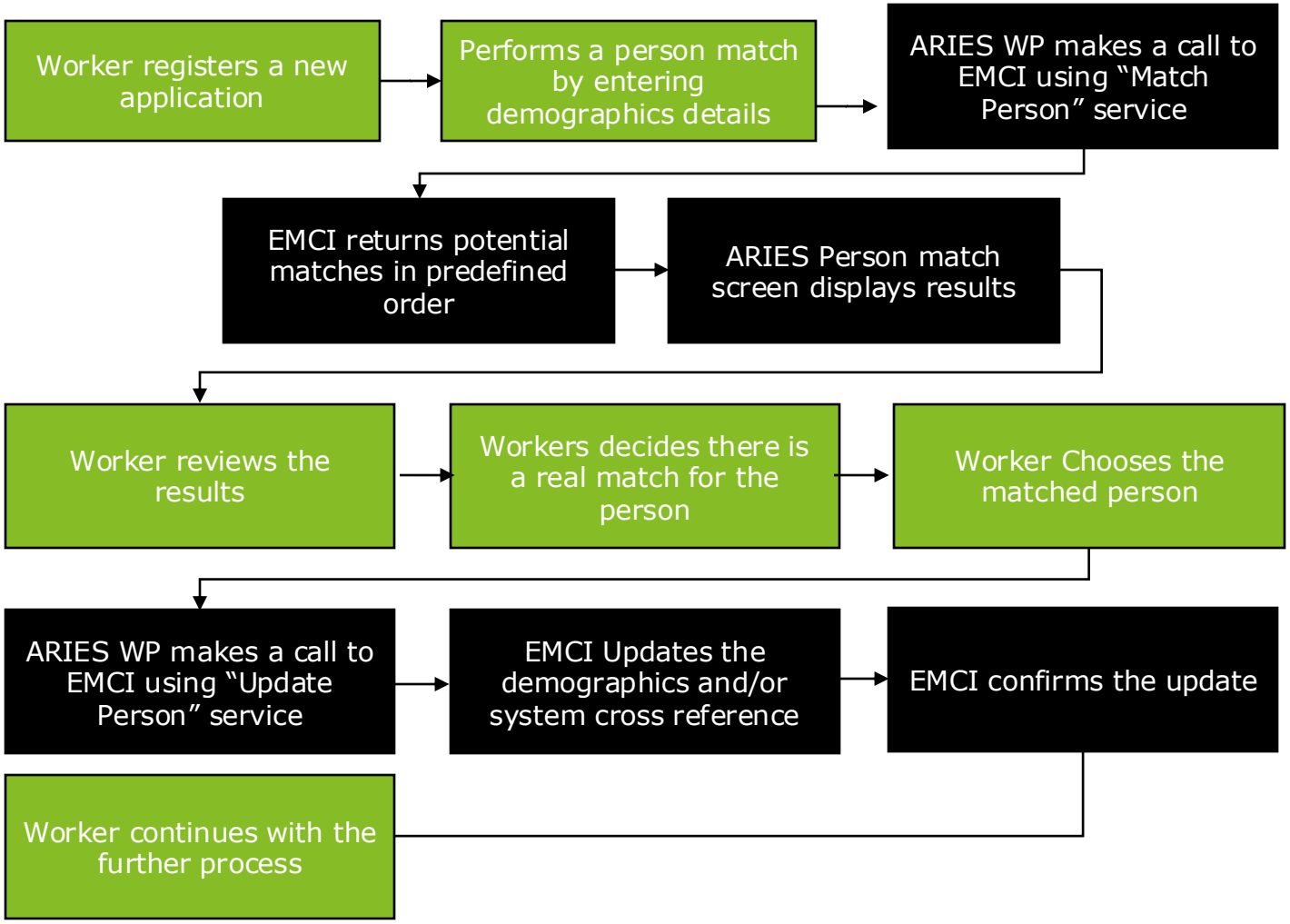
EMCI Business Scenario-1

For a new application received, a worker performs a person match in ARIES and no match is found in EMCI. The worker proceeds to create a new record.



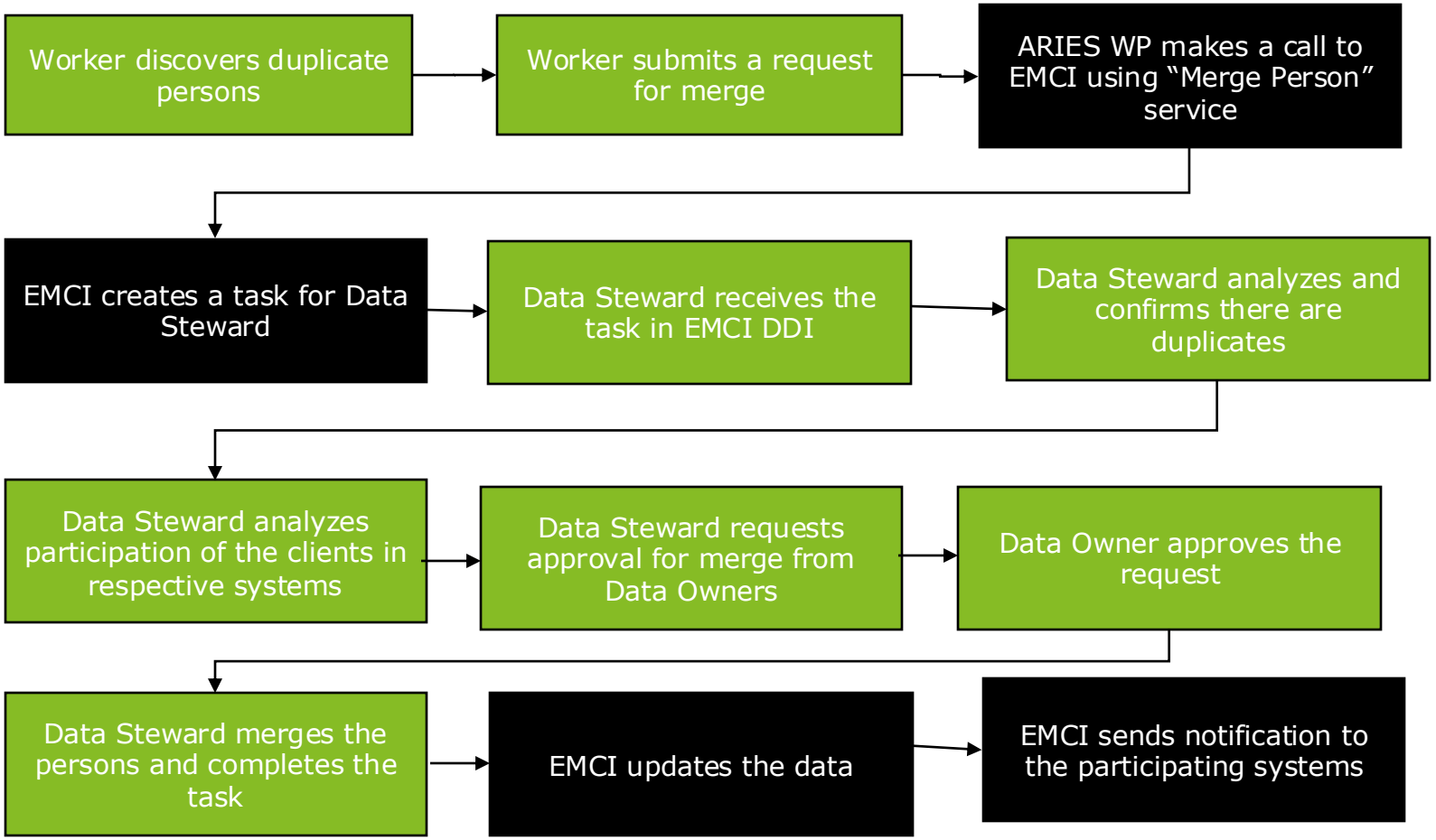
EMCI Business Scenario-2

For a new application received, a worker performs a person match in ARIES and a match is found in EMCI. The worker proceeds to use the existing client.



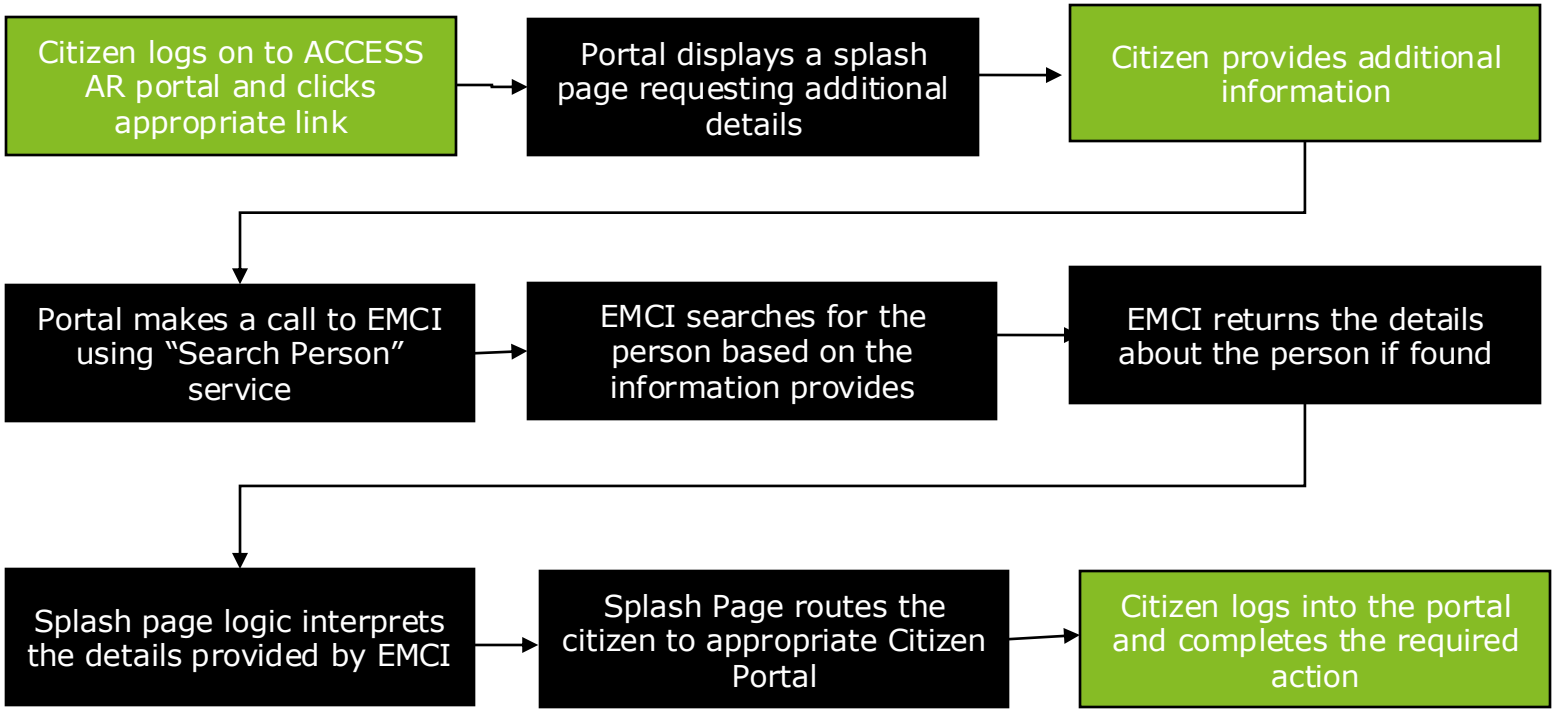
EMCI Business Scenario-3

ARIES worker discovers a duplicate persons in EMCI and sends a request to data steward for resolution



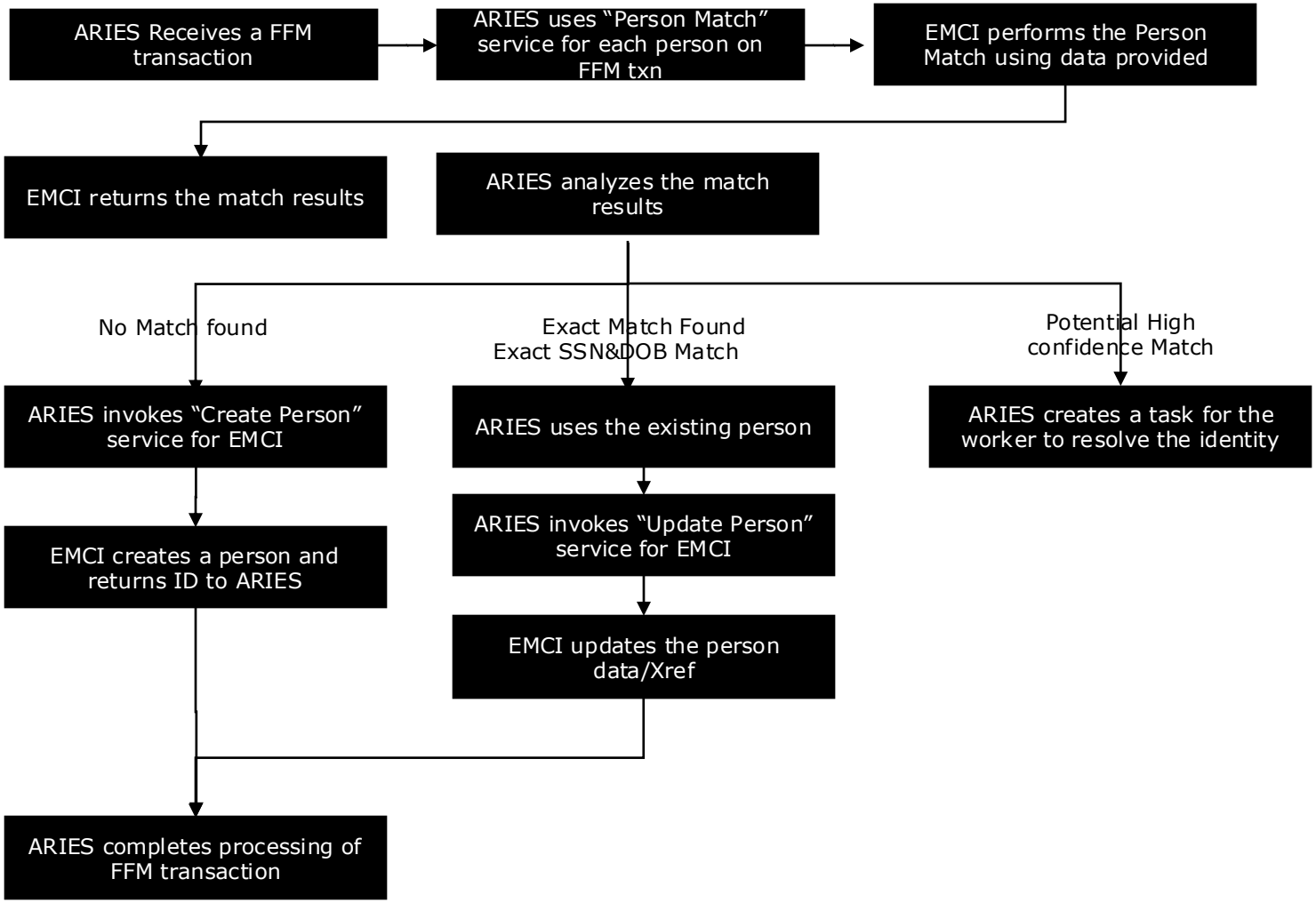
EMCI Business Scenario-4

Citizen logs onto ACCESS AR portal to submit a new application or report changes or submit renewal information



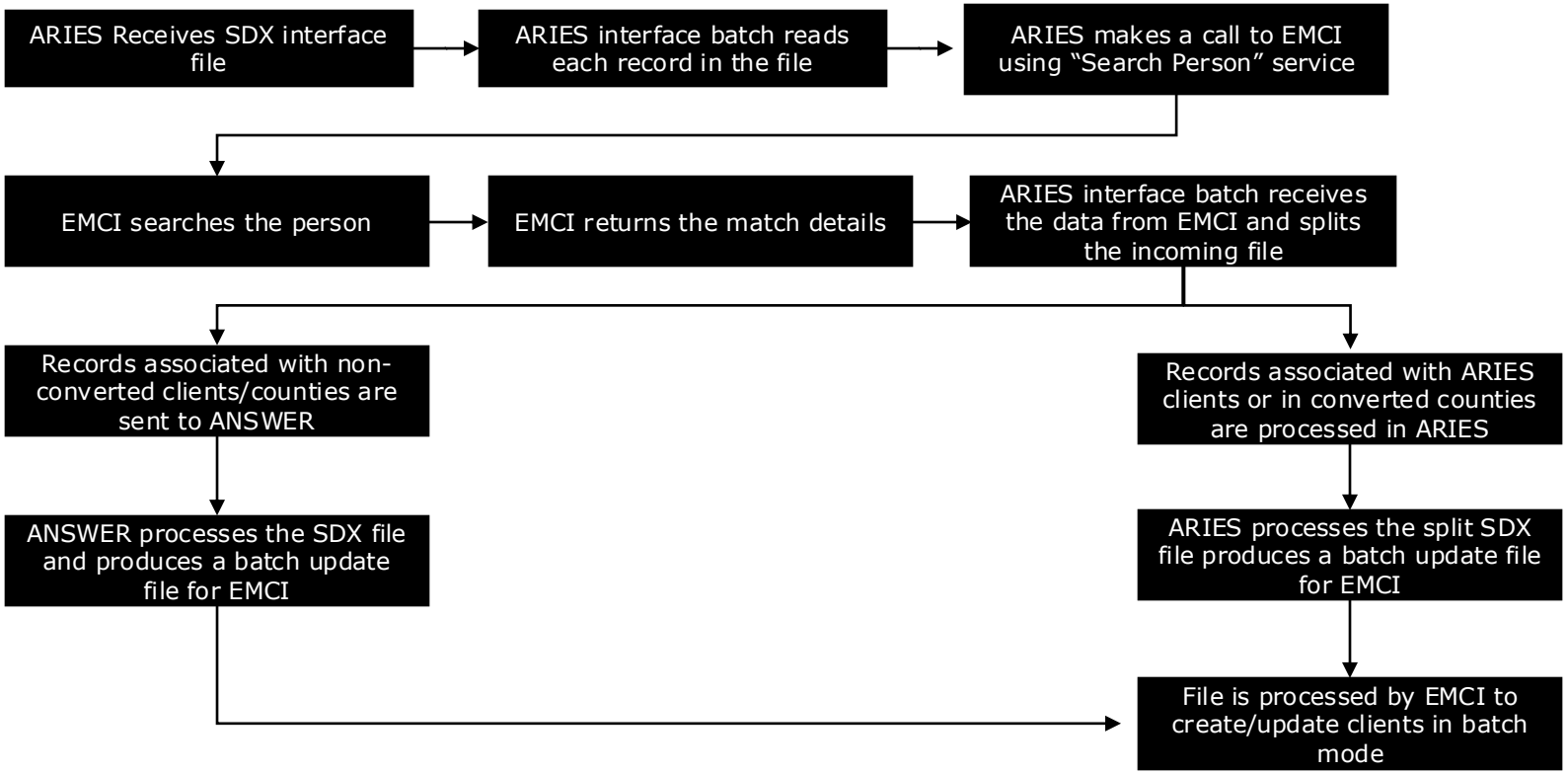
EMCI Business Scenario-5

FFM Transaction is processed by ARIES



EMCI Business Scenario-6

Incoming SDX interface file is processed during the rollout period by ARIES interface batch.



Legacy (EEF/ANSWER) Changes for EMCI

EEF/ANSWER Changes for EMCI Integration

Impact due to EMCI changes – (EMCI/Flagging)

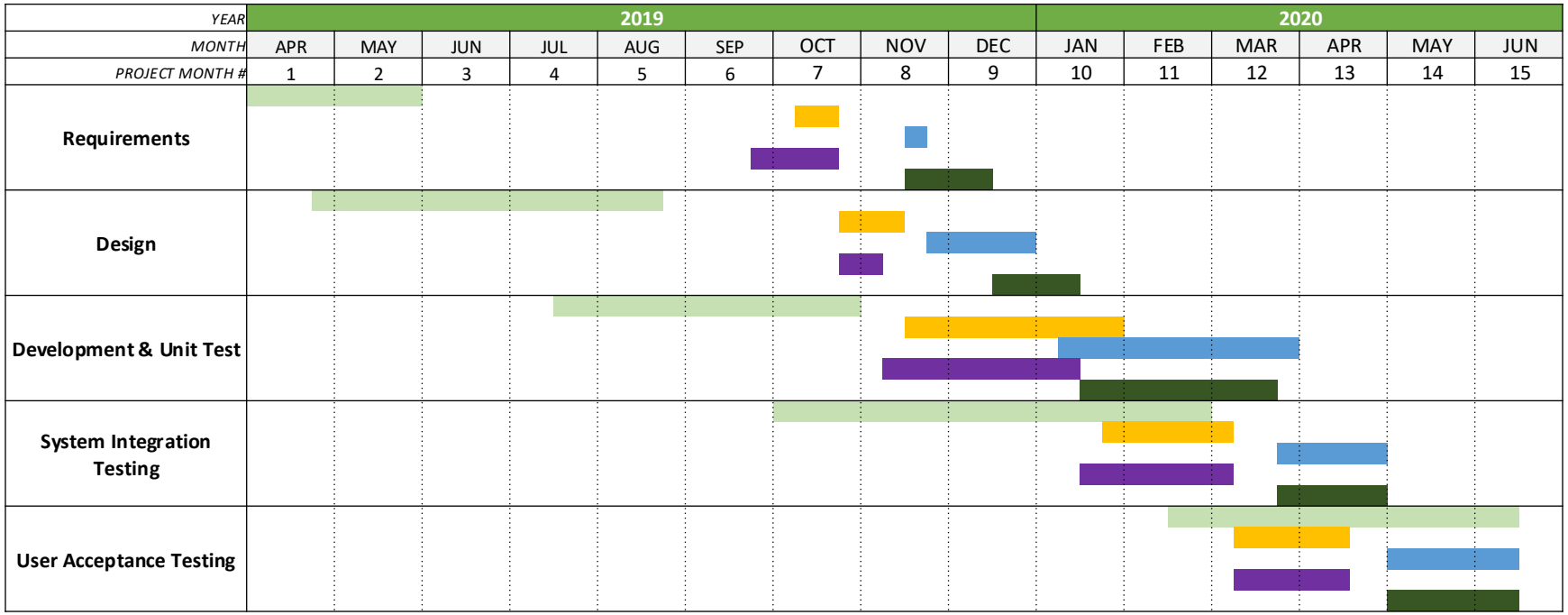
- **EEF integration with the ARIES Enterprise Master Client Index (EMCI)**
  - Modify EEF Person Search, Person Registration to look up EMCI
  - Modify Application Processing Workflow to use person match using EMCI
  - Demographic & address data update workflows to transmit updates to EMCI
  - Send EEF updated eligibility data to EMCI

- **EEF Conversion Integration**
  - Provide capability to mark the Case / Client as converted when the Case / Client is successfully converted to ARIES
  - Change notification workflow and notice generation batch
  - Preventing updates to MMIS and stopping notice generation
  - Provide capability to restrict addition of ARIES Clients in EEF

Impact due to ARIES Conversion Requirements

- **EEF Conversion Integration:**
  - Provide capability to not reopen Cases that have been converted successfully to ARIES
  - Restrict Users from adding converted Clients to any Medicaid programs in EEF
  - Restrict processing of Cases / Clients where the closed status is due to "Converted" reason.
  - Modify EEF interface to stop processing converted clients
  - ESB Interface Services Modifications to include ARIES Security Wrapper (For FDSH)

Implementation Timeline – EMCI-Conversion Integration

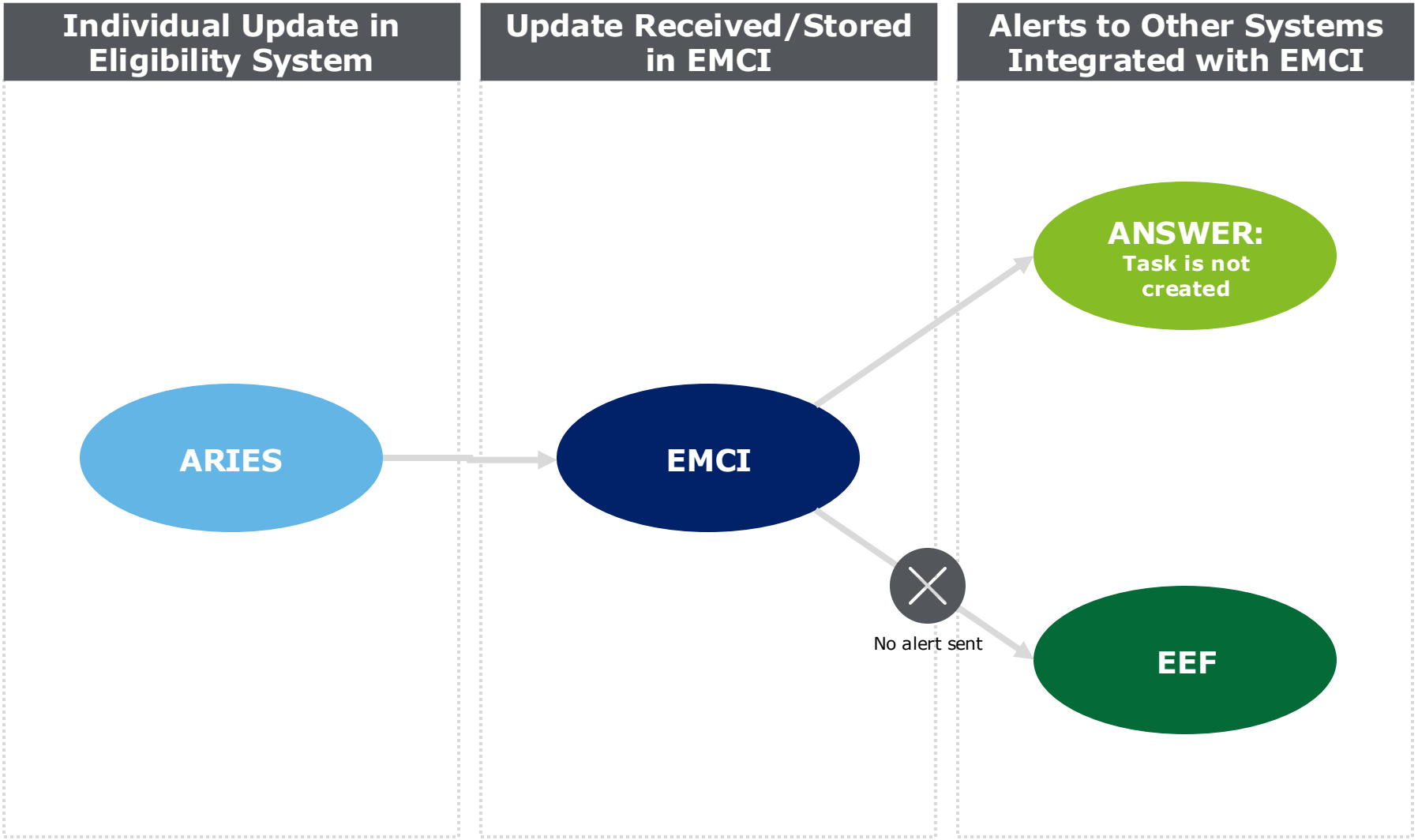


- ARIES
- EEF Release 1 – EMCI/Flagging
- EEF Release 2 – Conversion Integration
- ANSWER Release 1 – EMCI/Flagging
- ANSWER Release 2 – Conversion Integration

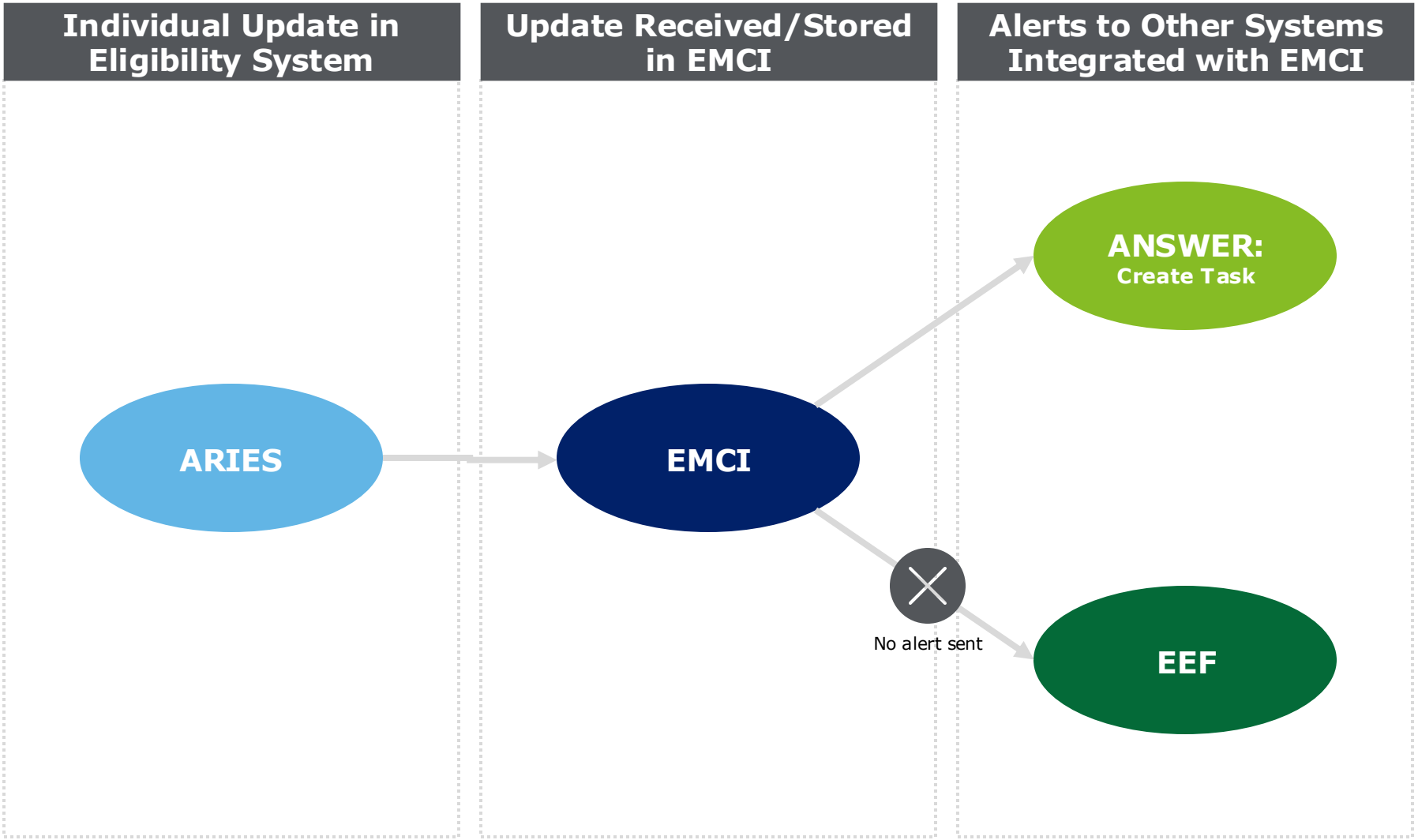
- EMCI Go-Live: 08/10
- Pilot Go-Live: 09/07

EMCI Update Process – ARIES, ANSWER, and EEF

Scenario 1.1: Individual receiving Medicaid in ARIES with no open SNAP or TEA budget in ANSWER

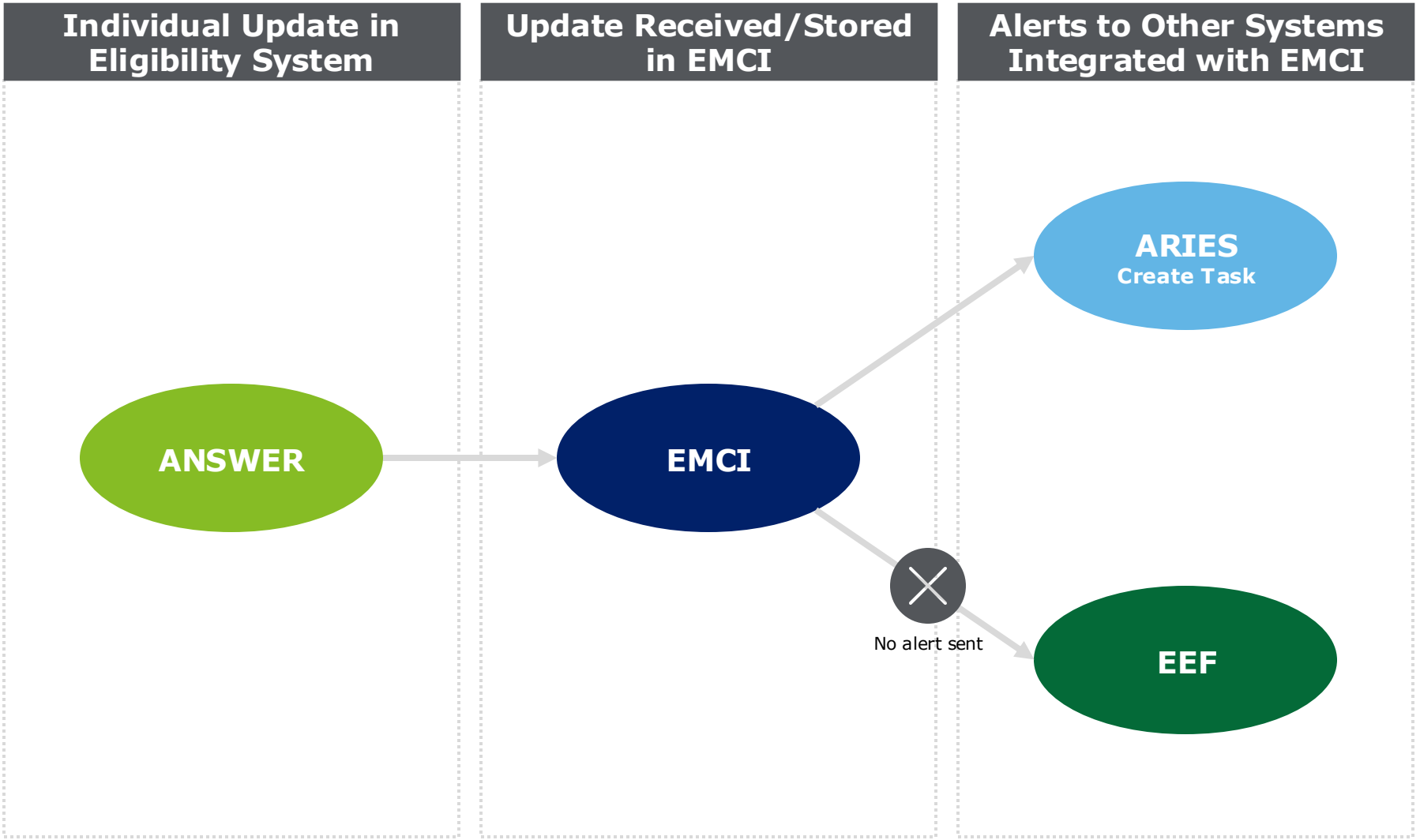


Scenario 1.2: Individual receiving Medicaid in ARIES with open* SNAP or TEA budget in ANSWER – Update initiated in ARIES

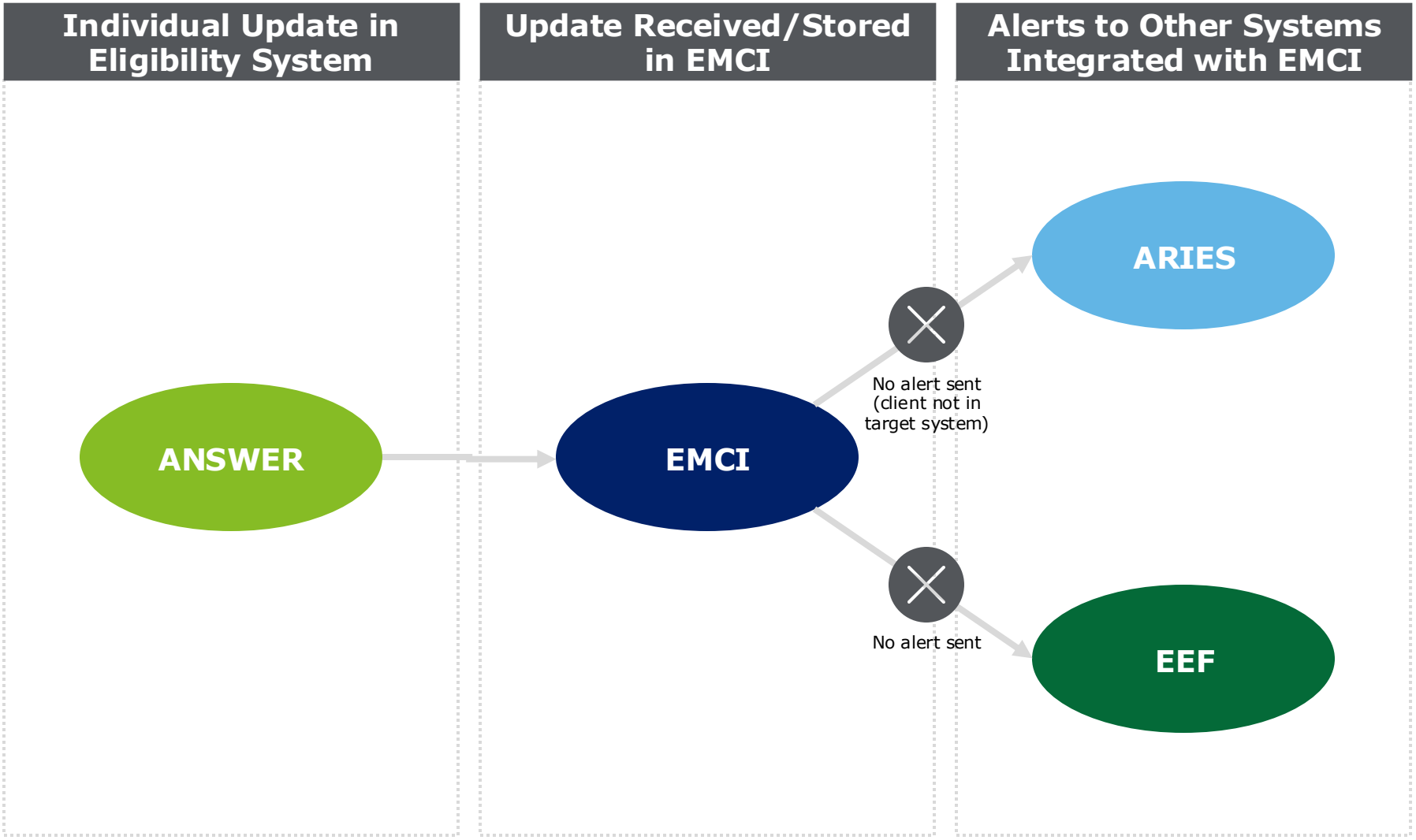


*Clients with open SNAP or Tea budget may also have pending applications (for example, renewal). However, status of the application will not impact task creation. Tasks are created only when the client has an open budget.

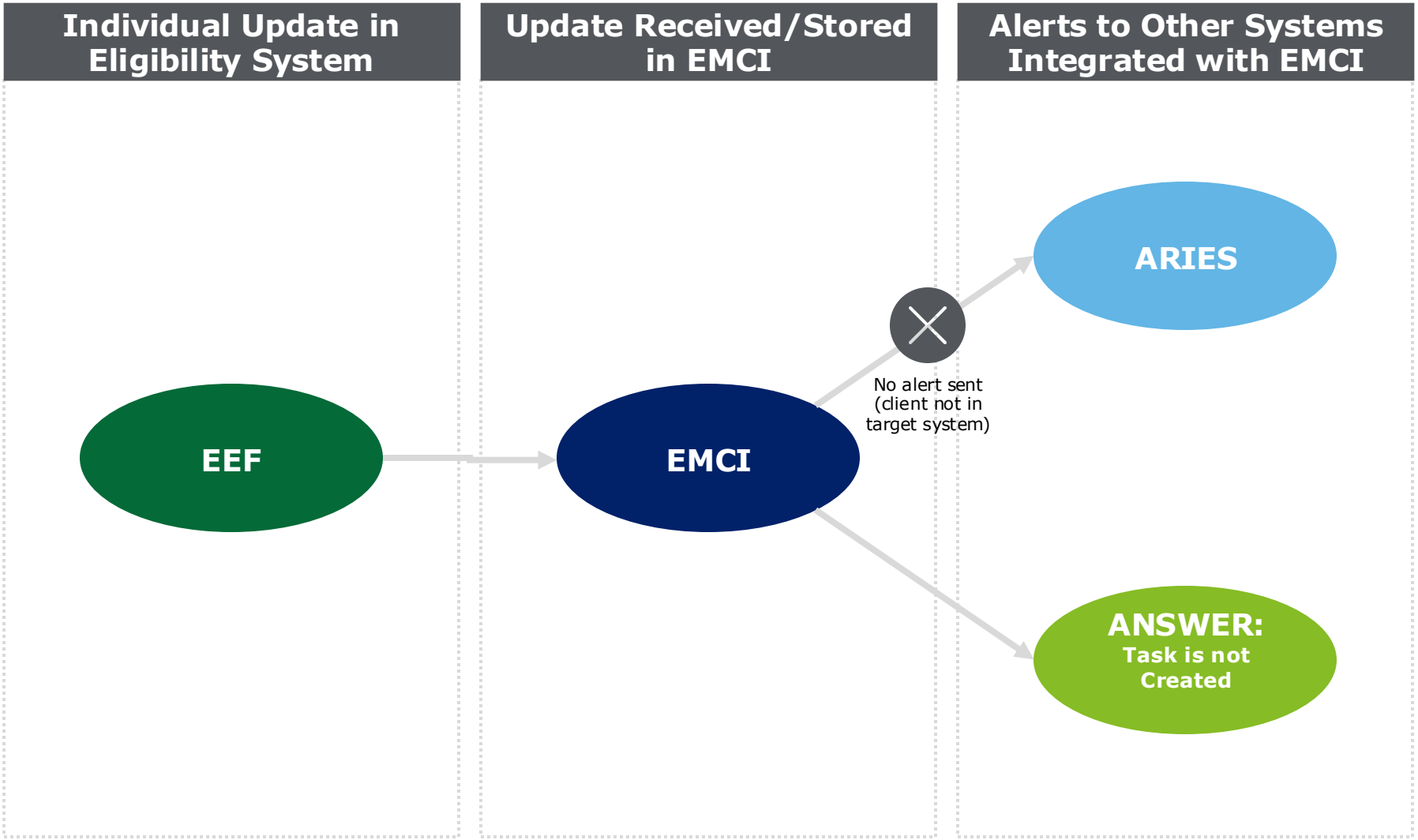
Scenario 1.3: Individual receiving Medicaid in ARIES with open SNAP or TEA budget in ANSWER – Update initiated in ANSWER



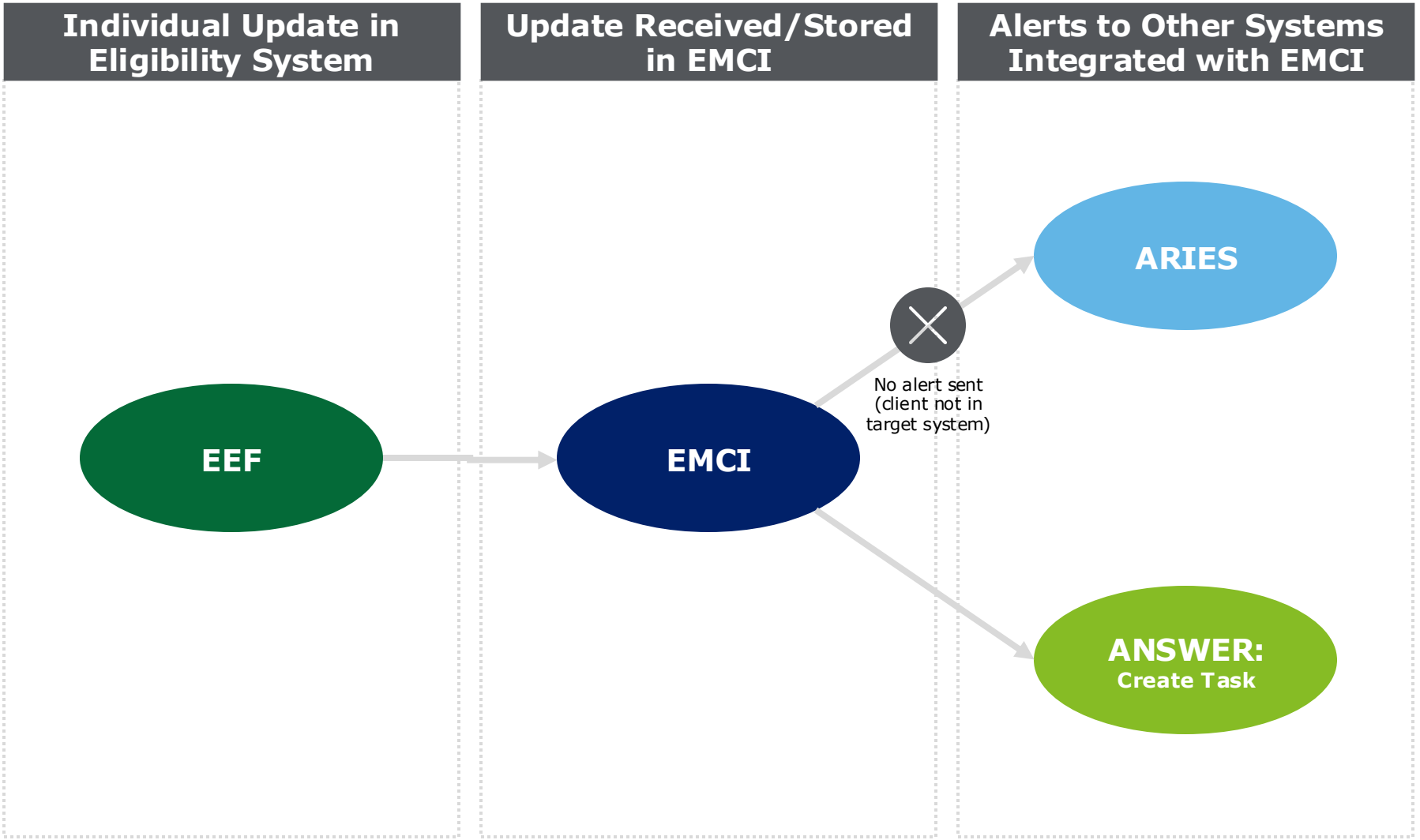
Scenario 2.1: Individual receiving Medicaid in ANSWER



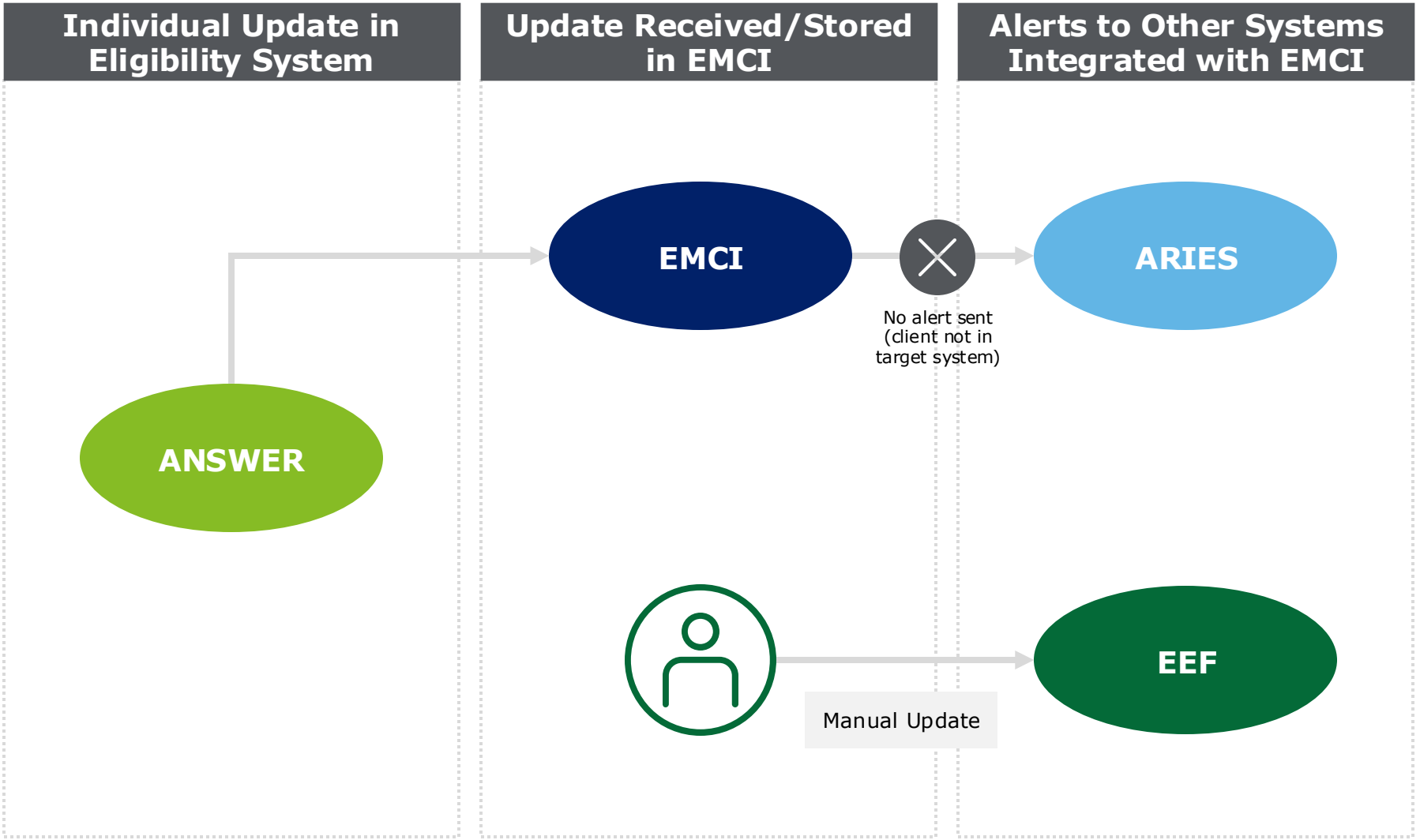
Scenario 3.1: Individual receiving Medicaid in EEF with no open SNAP or TEA budget in ANSWER



Scenario 3.2: Individual receiving Medicaid in EEF with open SNAP or TEA budget in ANSWER – update initiated in EEF



Scenario 3.3: Individual receiving Medicaid in EEF with open SNAP or TEA budget in ANSWER – update initiated in ANSWER



EMCI
Data Steward Process

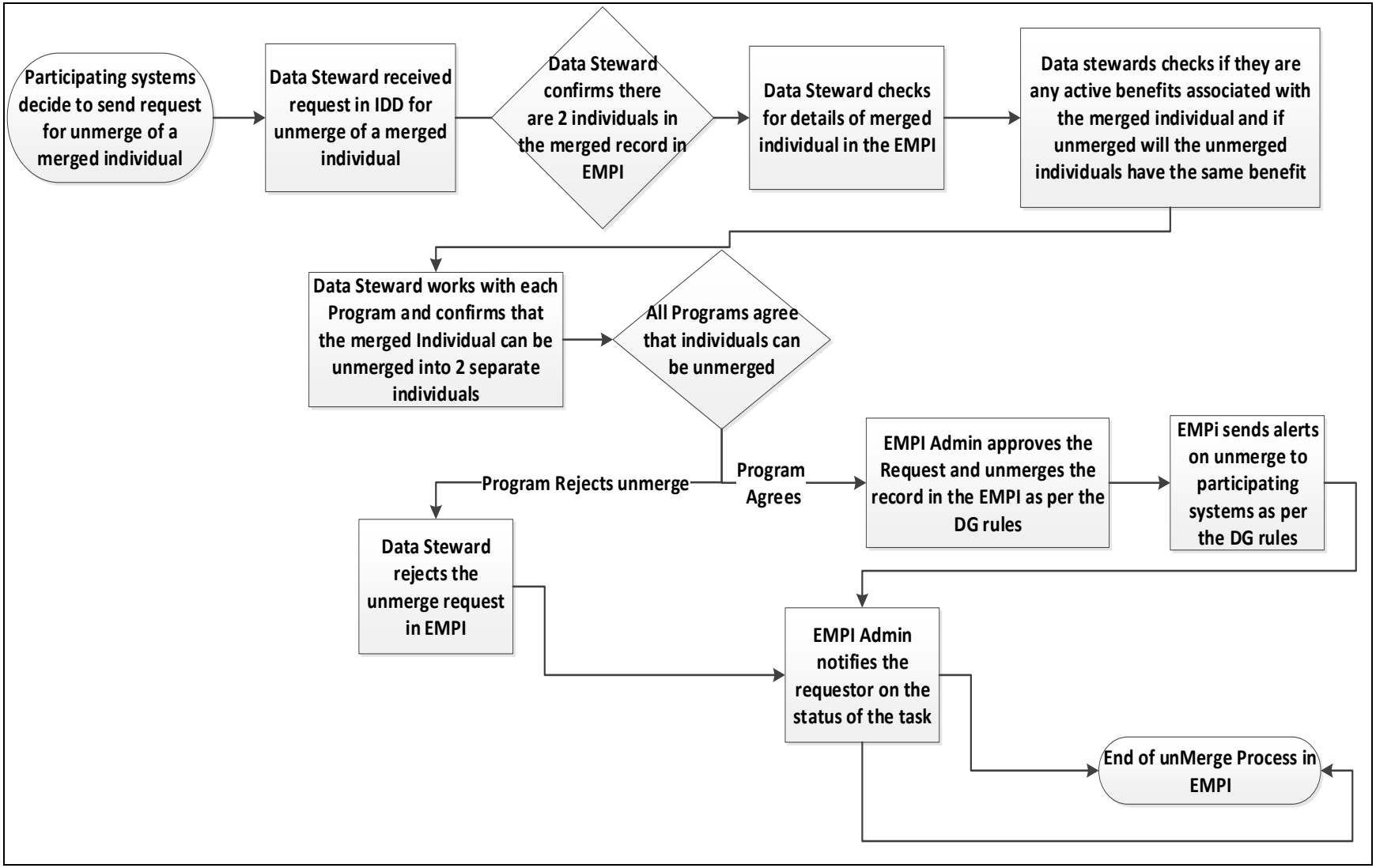
MDM Roles

To effectively manage the master data and maintain data quality, MDM provides data governance and stewardship through the following roles.

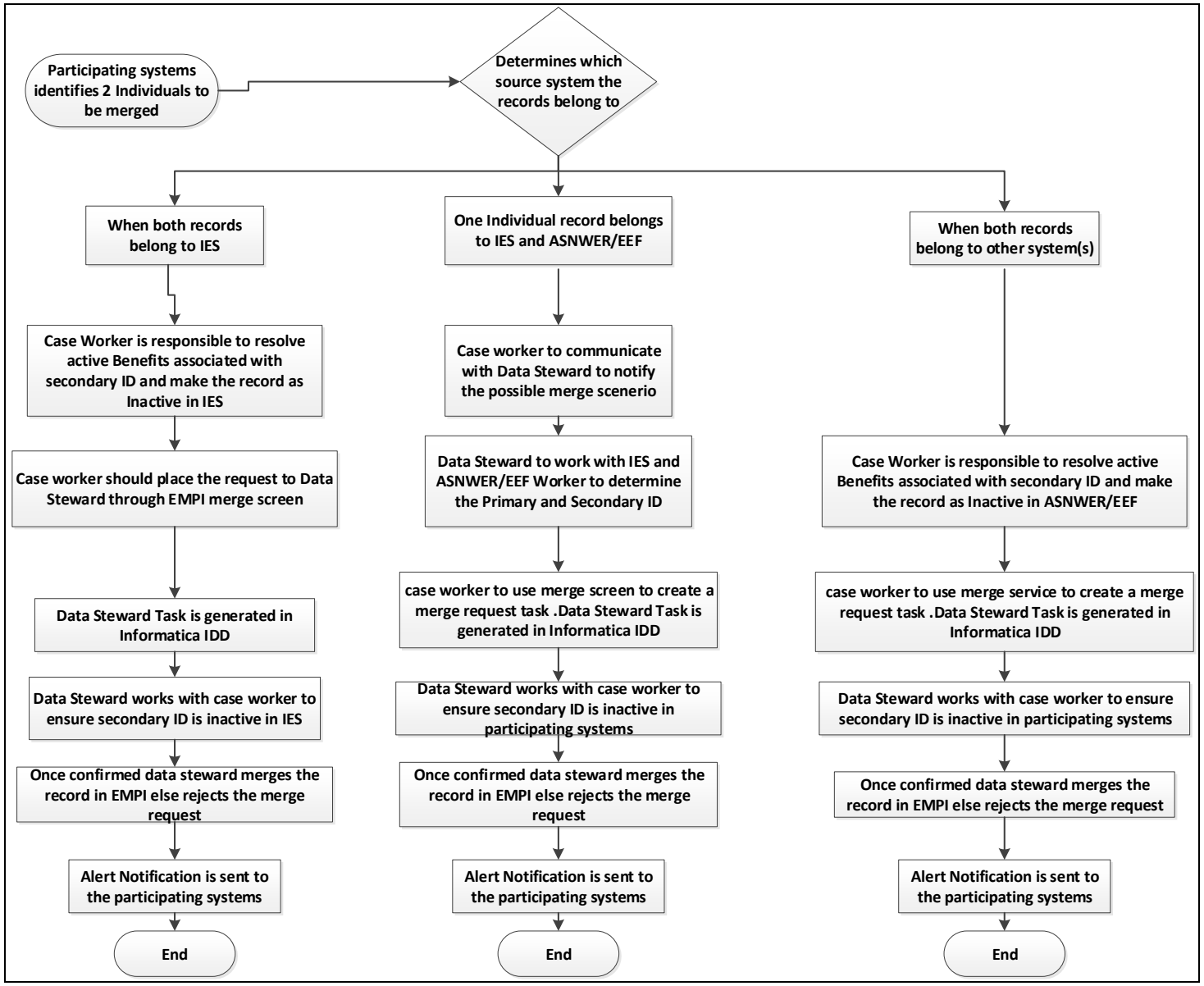
Staff with these roles will use MDM user Interface (Data Director Interface) to complete their tasks

Data Manager	Responsible for establishing standards, processes, practices for data domain management and approving data changes. E.g. Data Governance council
Data Steward	Responsible for demonstrating business expertise in their data domain, incorporating governance into daily activities, proposing and making data changes, and communicating issues through defined issue and escalation procedures. E.g. Help Desk, Data Integrity
Data Custodian	Responsible for providing **technical expertise** in their data domain, incorporating governance into daily activities, proposing data changes, and communicating issues and questions through the issue and escalation procedures. E.g. Administrator, Data Analyst, DBA

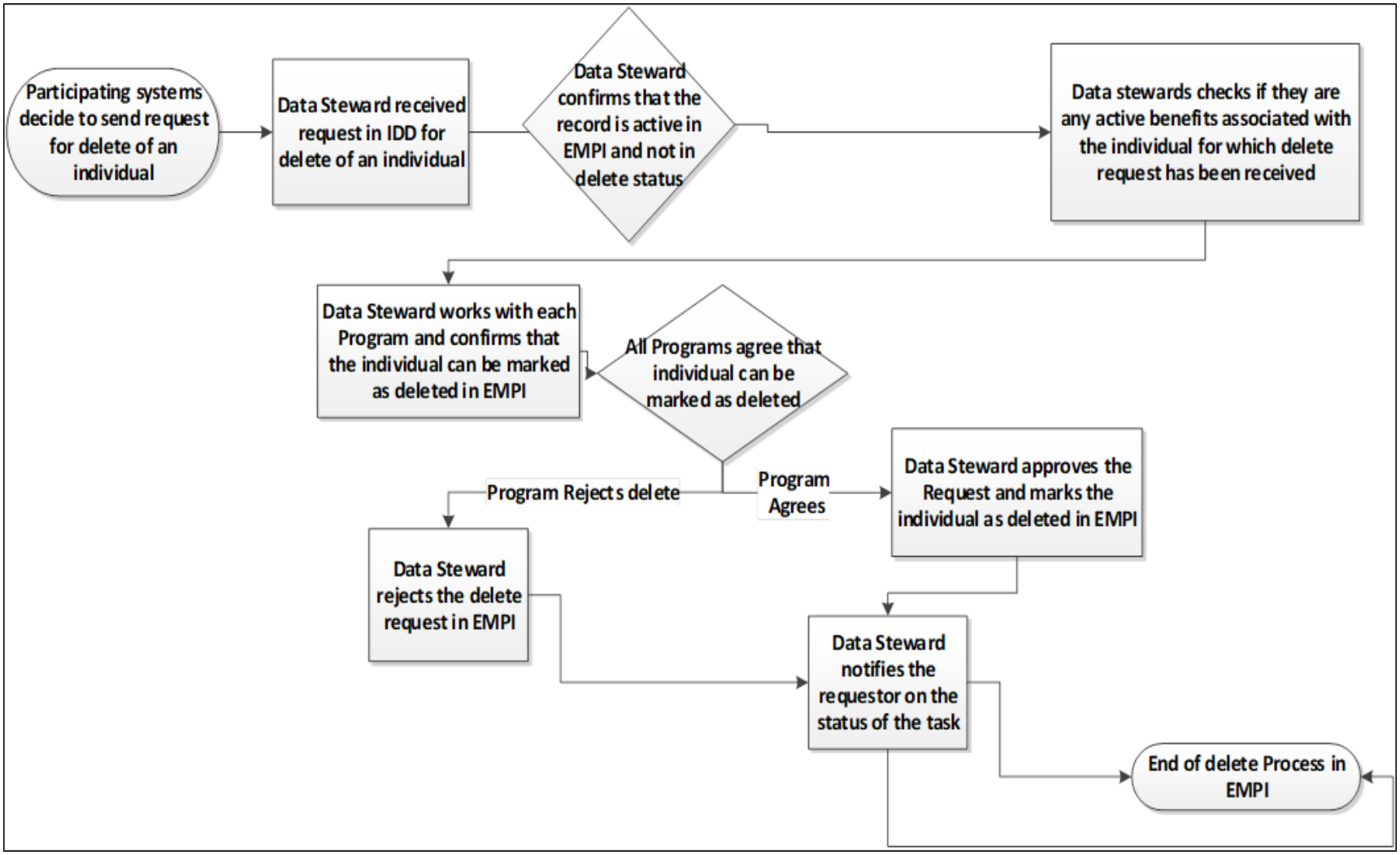
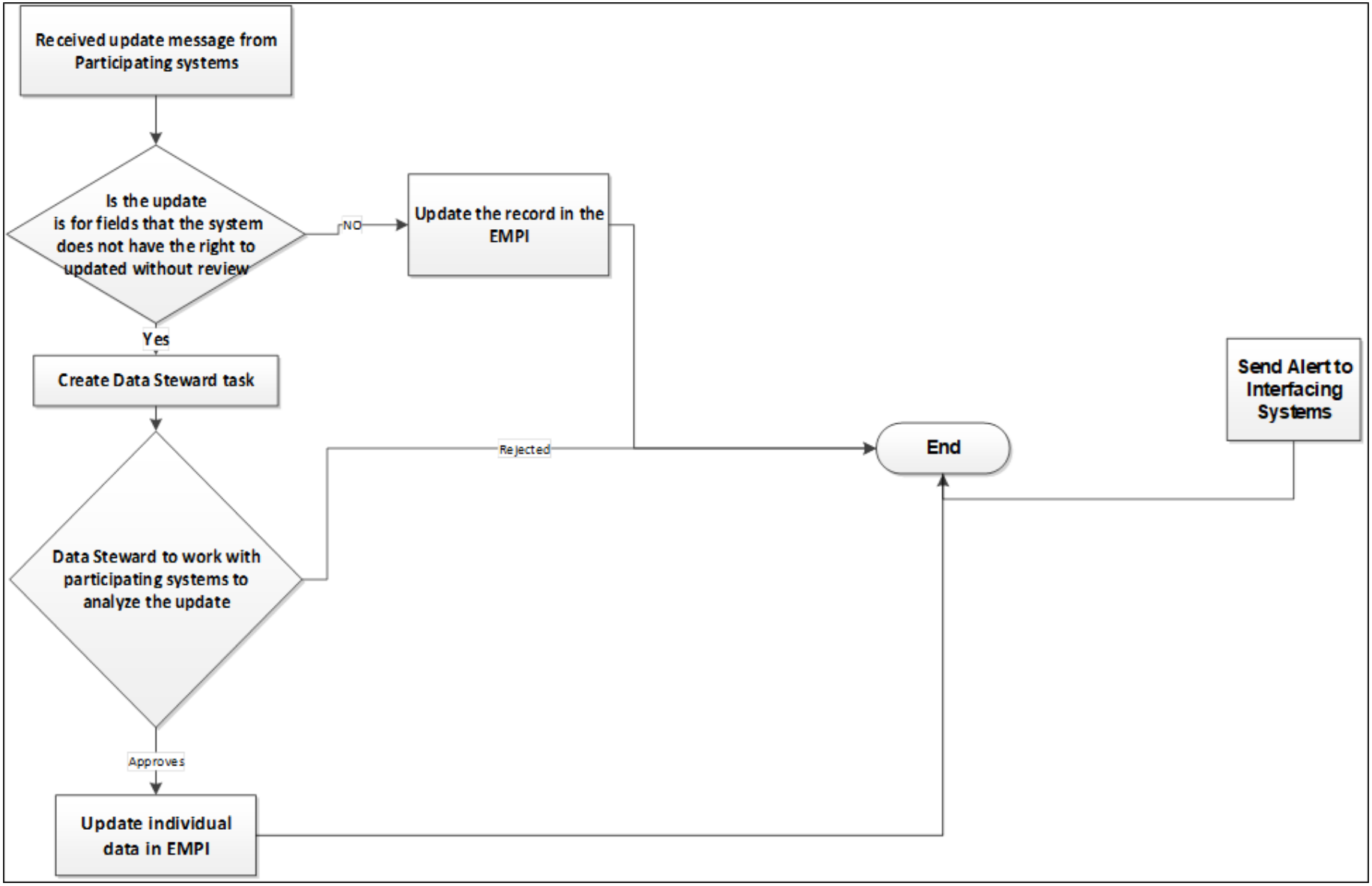
EMPI UnMerge Process



EMPI Merge Process



EMPI Remove Individual Process



EMPI Update Individual Process