

# 2020 Census Readiness Operations and Systems

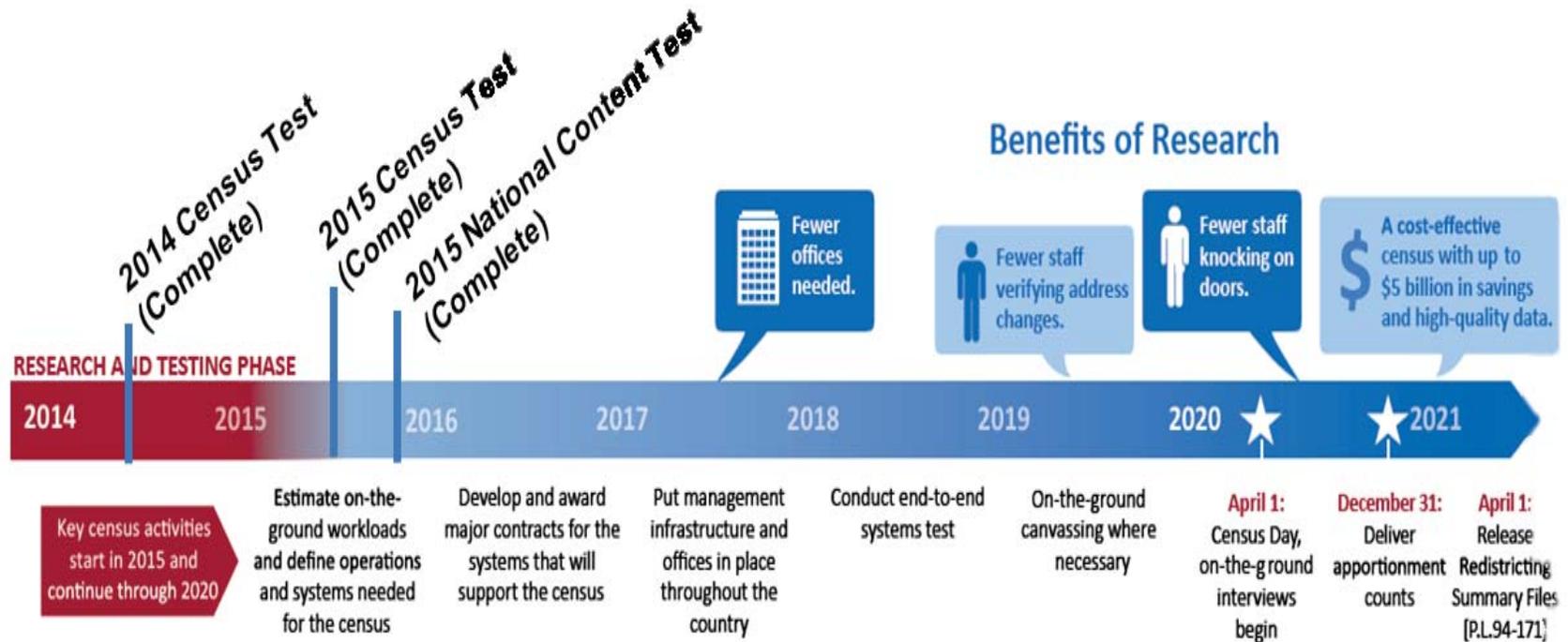
**Deirdre Bishop**, Decennial Census Management Division

**Atri Kalluri**, Decennial IT Division

**Patty McGuire**, IT Directorate

# 2020 Census Readiness

## Where Are We Today?



# 2020 Census Readiness

## 2020 Census Decision Inventory\*

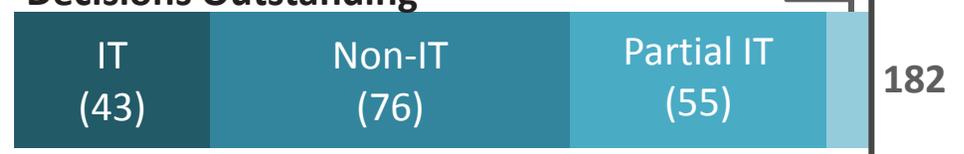
### Total Decisions by Type



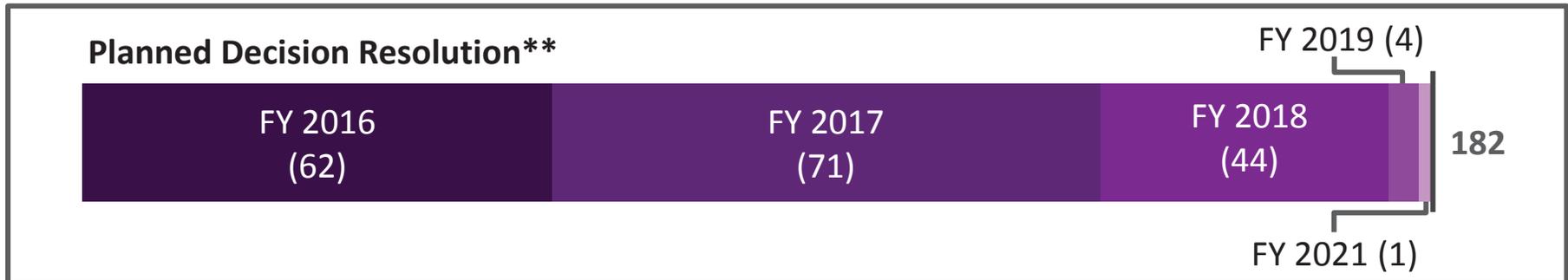
### Decisions Resolved



### Decisions Outstanding



### Planned Decision Resolution\*\*



\* As derived from the 2020 Census Operational Plan.

\*\* Planned dates represent a final point in the decision inventory. However, there are many interim deliverables that will be produced before decision resolution.

# 2020 Census Readiness

## 2016 Census Test

- April 1, 2016 Census Day
- A site test in parts of Los Angeles County, CA and Harris County, TX
  - Language diversity
  - Demographic diversity
  - High vacancy rates
  - Varying levels of Internet usage
  - Multiple locations across different time zones
  - Approximately 225,000 housing units in each test area

# 2020 Census Readiness

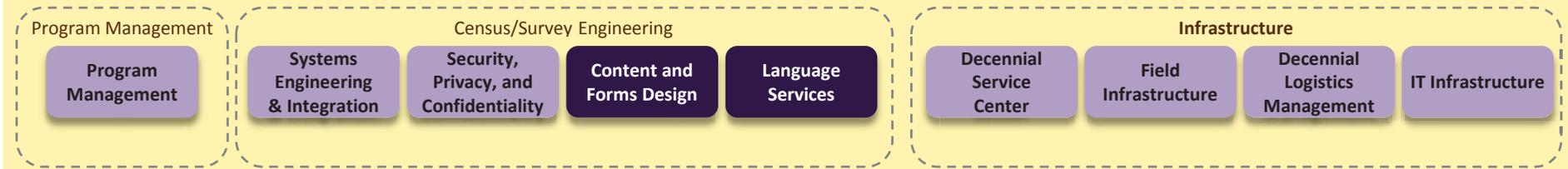
## 2016 Census Test Continued

- Purpose
  - Refine technologies and methods associated with Self-Response and Nonresponse Followup operations
  - Self-Response:
    - Provide non-English support for respondents with limited English proficiency – both in terms of our contact strategies and response options
    - Form partnerships and conduct outreach efforts to reach historically hard to count populations
    - Refine Real Time Non-ID Processing methods
    - Test languages utilizing non-Roman characters (Chinese and Korean) in all response modes
  - Nonresponse Followup:
    - Finalize the strategy for using administrative records in support of Nonresponse Followup
    - Test multiple ratios of enumerators to supervisors (20:1 and 30:1)
    - Implement enhanced procedures for conducting interviews at multi-unit structures and via proxy
    - Continue to refine our use of technology and automation to reengineer field operations

# 2020 Census Readiness 2016 Census Test

<b>Focus of the Test</b>	<b>Required to Support the Test</b>	<b>NOT Included in the Test</b>
<i>CEDCaP System</i>	<i>Non-CEDCaP System</i>	

## SUPPORT



## FRAME

- Geographic Programs
- Local Update of Census Addresses
- Address Canvassing

## RESPONSE DATA

- Forms Printing and Distribution
- Paper Data Capture
- Integrated Partnership & Communications
- Internet Self-Response
- Non-ID Processing
- Update Enumerate
- Group Quarters
- Enumeration at Transitory Locations
- Census Questionnaire Assistance
- Nonresponse Followup
- Response Processing
- Federally Affiliated Americans Count Overseas

## PUBLISH DATA

- Data Products and Dissemination
- Redistricting Data
- Count Review
- Count Question Resolution
- Archiving

## OTHER CENSUSES

- Island Areas Censuses

## TEST AND EVALUATION

- Coverage Measurement Design & Estimation
- Coverage Measurement Matching
- Coverage Measurement Field Operations
- Evaluations and Experiments

# 2020 Census Readiness

## Address Canvassing Test

- Fall 2016
- Two contiguous sites
  - One site where partner data are available
  - One site where commercial data are available
  - Approximately 8,000 blocks in total
- Purpose
  - Measure the effectiveness of In-Office Address Canvassing in a set of clustered blocks through In-Field Address Canvassing
  - Measure the effectiveness of In-Field Address Canvassing
  - Measure the effectiveness of partner and commercial data on the quality of the MAF
  - Understand the implications of moving from Assignment Area to Basic Collection Unit (BCU)

# 2020 Census Readiness Address Canvassing Test

**Focus of the Test**

**Required to Support the Test**

**NOT Included in the Test**

*CEDCaP System*    *Non-CEDCaP System*

## SUPPORT

Program Management

Program Management

Census/Survey Engineering

Systems Engineering & Integration

Security, Privacy, and Confidentiality

Content and Forms Design

Language Services

Infrastructure

Decennial Service Center

Field Infrastructure

Decennial Logistics Management

IT Infrastructure

## FRAME

Geographic Programs

Local Update of Census Addresses

Address Canvassing

## RESPONSE DATA

Forms Printing and Distribution

Update Enumerate

Nonresponse Followup

Paper Data Capture

Group Quarters

Response Processing

Integrated Partnership & Communications

Enumeration at Transitory Locations

Federally Affiliated Americans Count Overseas

Internet Self-Response

Census Questionnaire Assistance

Non-ID Processing

## PUBLISH DATA

Data Products and Dissemination

Redistricting Data

Count Review

Count Question Resolution

Archiving

## OTHER CENSUSES

Island Areas Censuses

## TEST AND EVALUATION

Coverage Measurement Design & Estimation

Coverage Measurement Matching

Coverage Measurement Field Operations

Evaluations and Experiments

# 2020 Census Readiness

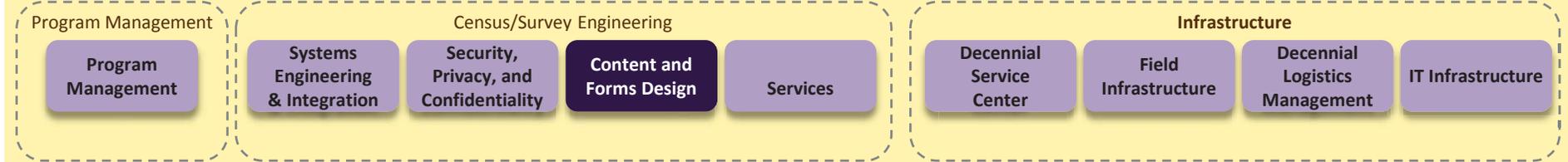
## 2017 Census Test

- April 1, 2017 Census Day
- A site test on tribal lands and in areas with Update Enumerate style addresses
- Purpose
  - Refine the definition type of enumeration area (TEA) for Update Enumerate
  - Test integration of operations and systems for Update Enumerate
  - Test the feasibility of collecting tribal enrollment information

# 2020 Census Readiness 2017 Census Test

<b>Focus of the Test</b>	<b>Required to Support the Test</b>	<b>NOT Included in the Test</b>
<i>CEDCaP System</i>	<i>Non-CEDCaP System</i>	

## SUPPORT



## FRAME

- Geographic Programs
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- Address Canvassing

## RESPONSE DATA

- Forms Printing and Distribution
- Paper Data Capture
- Integrated Partnership & Communications
- Internet Self-Response
- Non-ID Processing
- Update Enumerate** (Focus of the Test)
- Group Quarters
- Enumeration at Transitory Locations
- Census Questionnaire Assistance** (Focus of the Test)
- Nonresponse Followup
- Response Processing
- Federally Affiliated Americans Count Overseas

## PUBLISH DATA

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- Redistricting Data
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## OTHER CENSUSES

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## TEST AND EVALUATION

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# 2020 Census Readiness

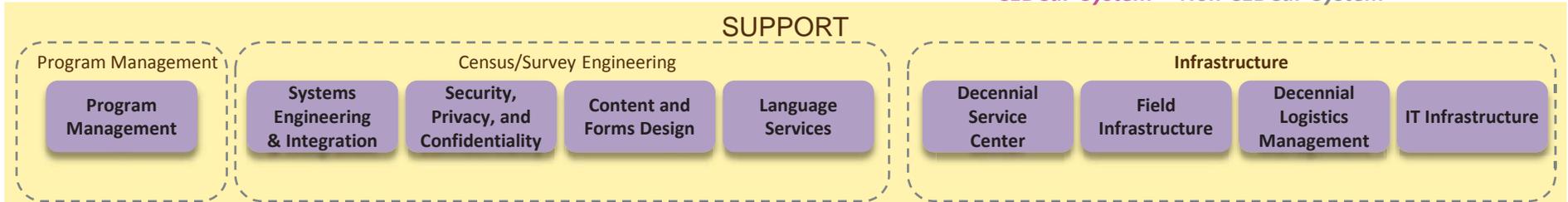
## 2017 Puerto Rico Census Test

- April 1, 2017 Census Day
- A site test in Puerto Rico
- Purpose
  - Determine how the recently updated Puerto Rico MAF supports address listing, self-response, and enumeration
  - Develop, test, and deploy systems in Puerto Rico

# 2020 Census Readiness

## 2017 Puerto Rico Census Test

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<i>CEDCaP System</i>	<i>Non-CEDCaP System</i>	



**FRAME**

- Geographic Programs
- Local Update of Census Addresses
- Address Canvassing**

**RESPONSE DATA**

Forms Printing and Distribution	<b>Update Enumerate</b>	<b>Nonresponse Followup</b>
Paper Data Capture	Group Quarters	Response Processing
Integrated Partnership & Communications	Enumeration at Transitory Locations	Federally Affiliated Americans Count Overseas
<b>Internet Self-Response</b>	Census Questionnaire Assistance	
Non-ID Processing		

**PUBLISH DATA**

- Data Products and Dissemination
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**OTHER CENSUSES**

- Island Areas Censuses

**TEST AND EVALUATION**

- Coverage Measurement Design & Estimation
- Coverage Measurement Matching
- Coverage Measurement Field Operations
- Evaluations and Experiments

# 2020 Census Readiness

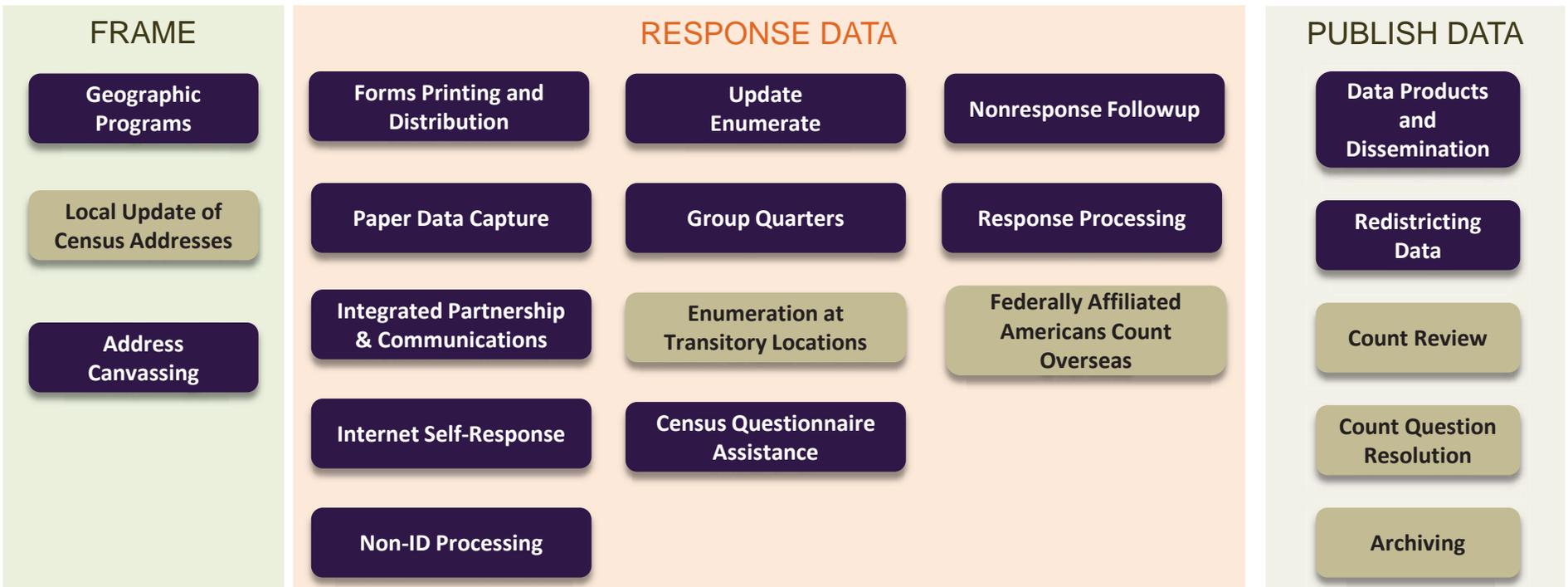
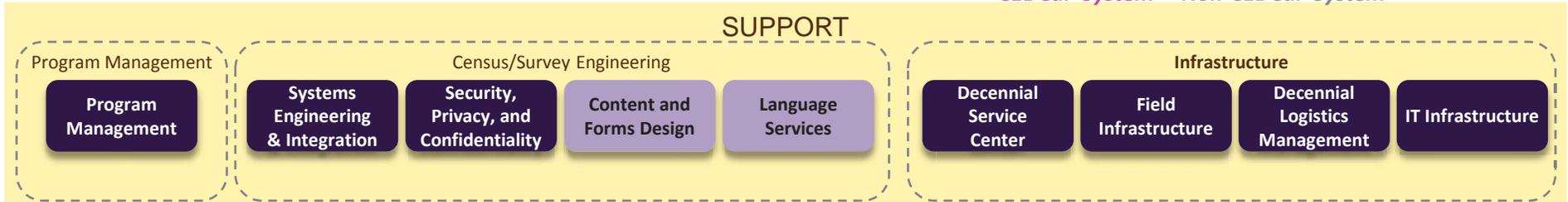
## 2018 Census End-to-End Test

- April 1, 2018 Census Day
- Purpose
  - Test and validate 2020 Census operations, procedures, systems, and field infrastructure together to ensure proper integration and conformance with functional and non-functional requirements
  - Produce a prototype of geographic and data products

# 2020 Census Readiness

## 2018 Census End-to-End Test

<b>Focus of the Test</b>	<b>Required to Support the Test</b>	<b>NOT Included in the Test</b>
<i>CEDCaP System</i>	<i>Non-CEDCaP System</i>	

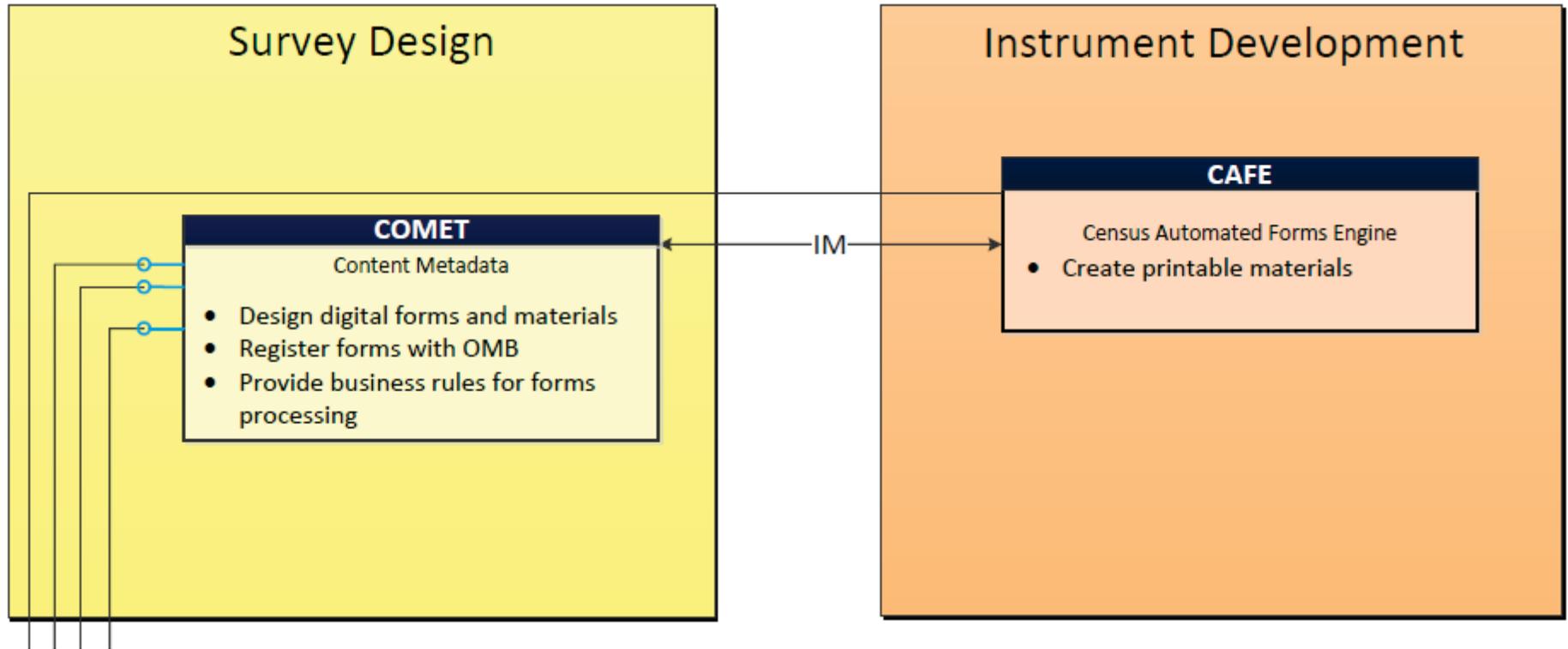


# 2020 Census Readiness Systems

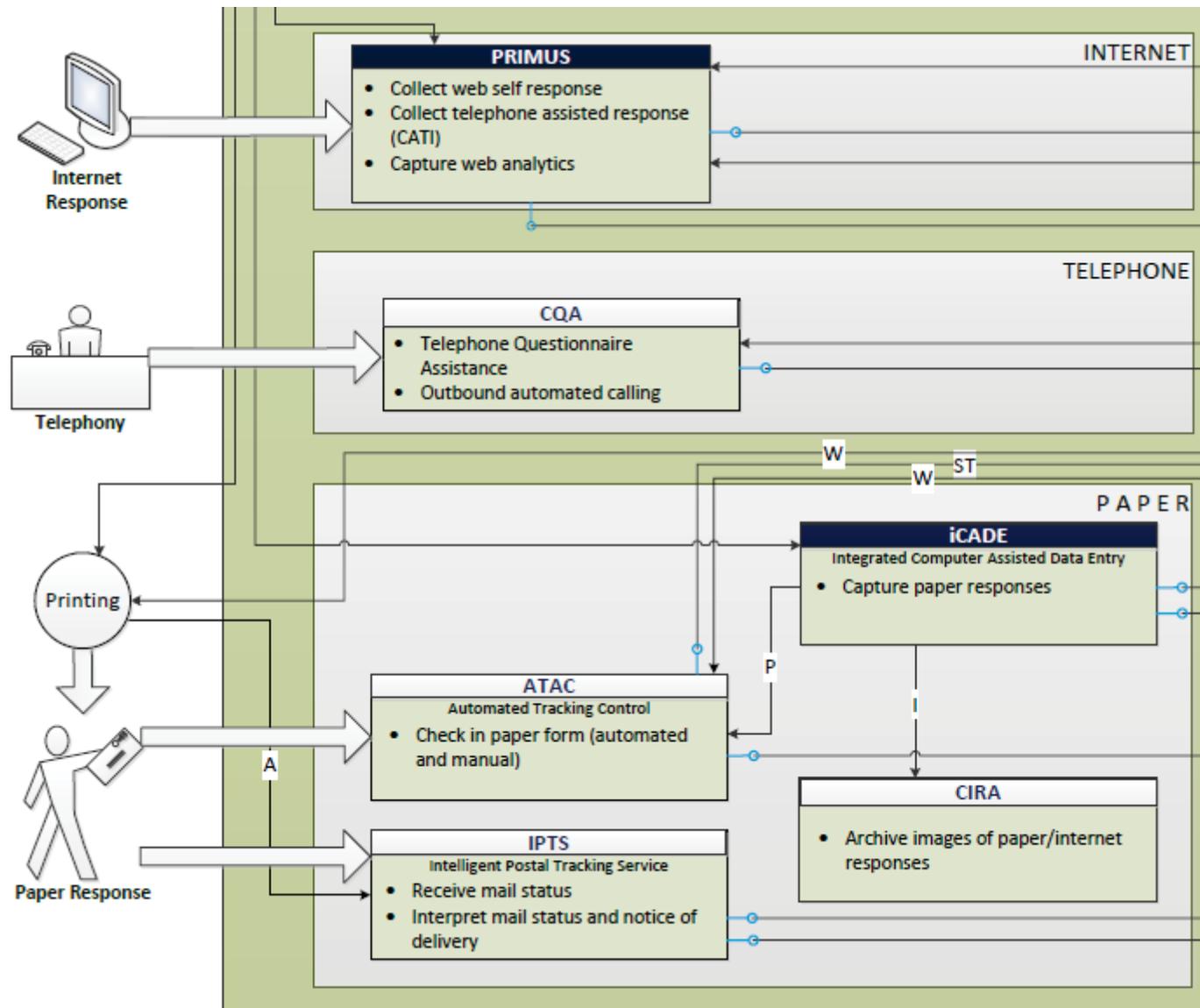
- Use of off-the-shelf, existing technology
- Iterative testing, strengthening the design
- Schedule and well defined process for making critical IT decisions
- Engaged the Carnegie Mellon Software Engineering Institute
- Keeping track of evolving technology innovations
- Versatile operations and system designs that allow for changes
- Formal risk management and governance process



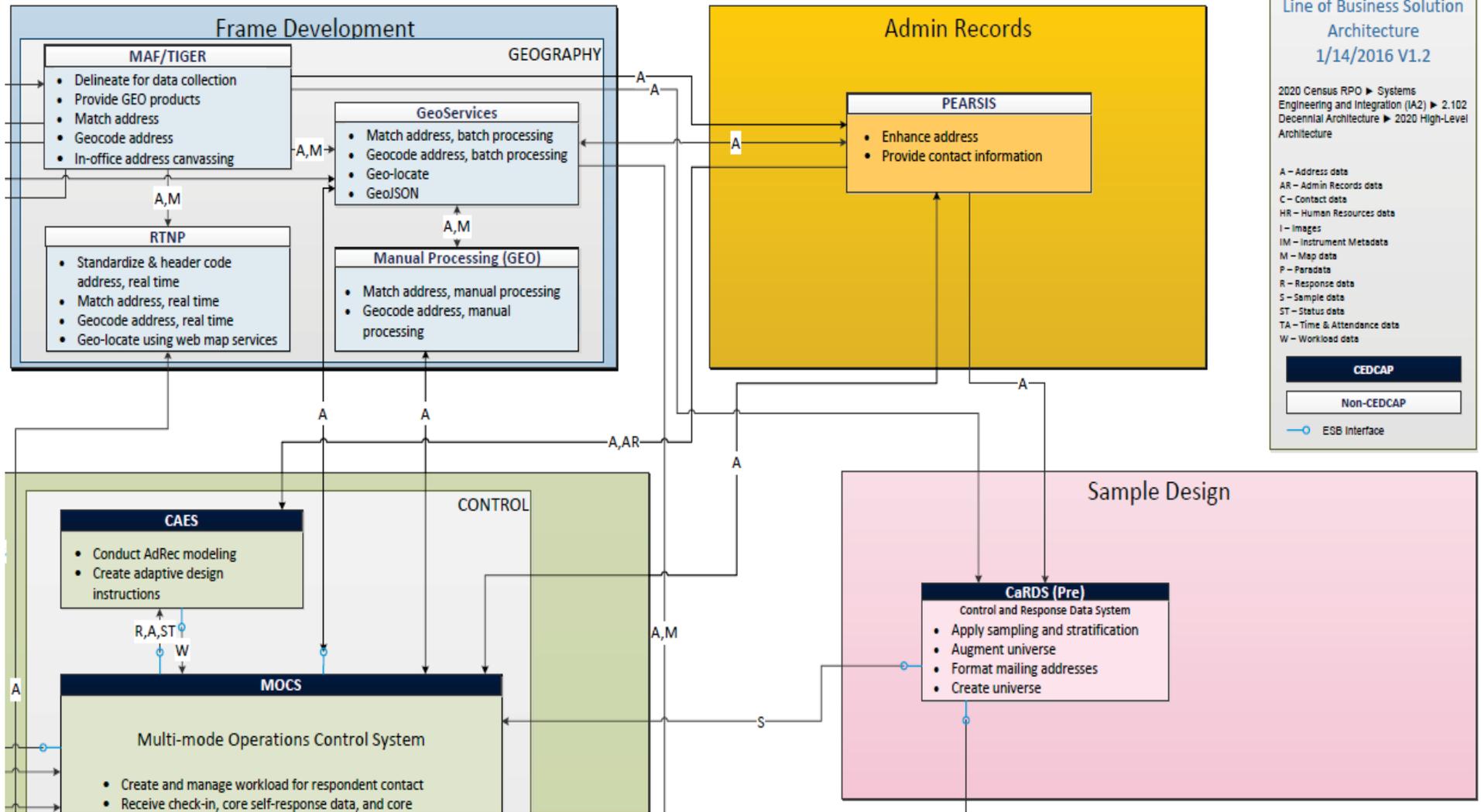
# 2020 Census Readiness | 2020 System Architecture



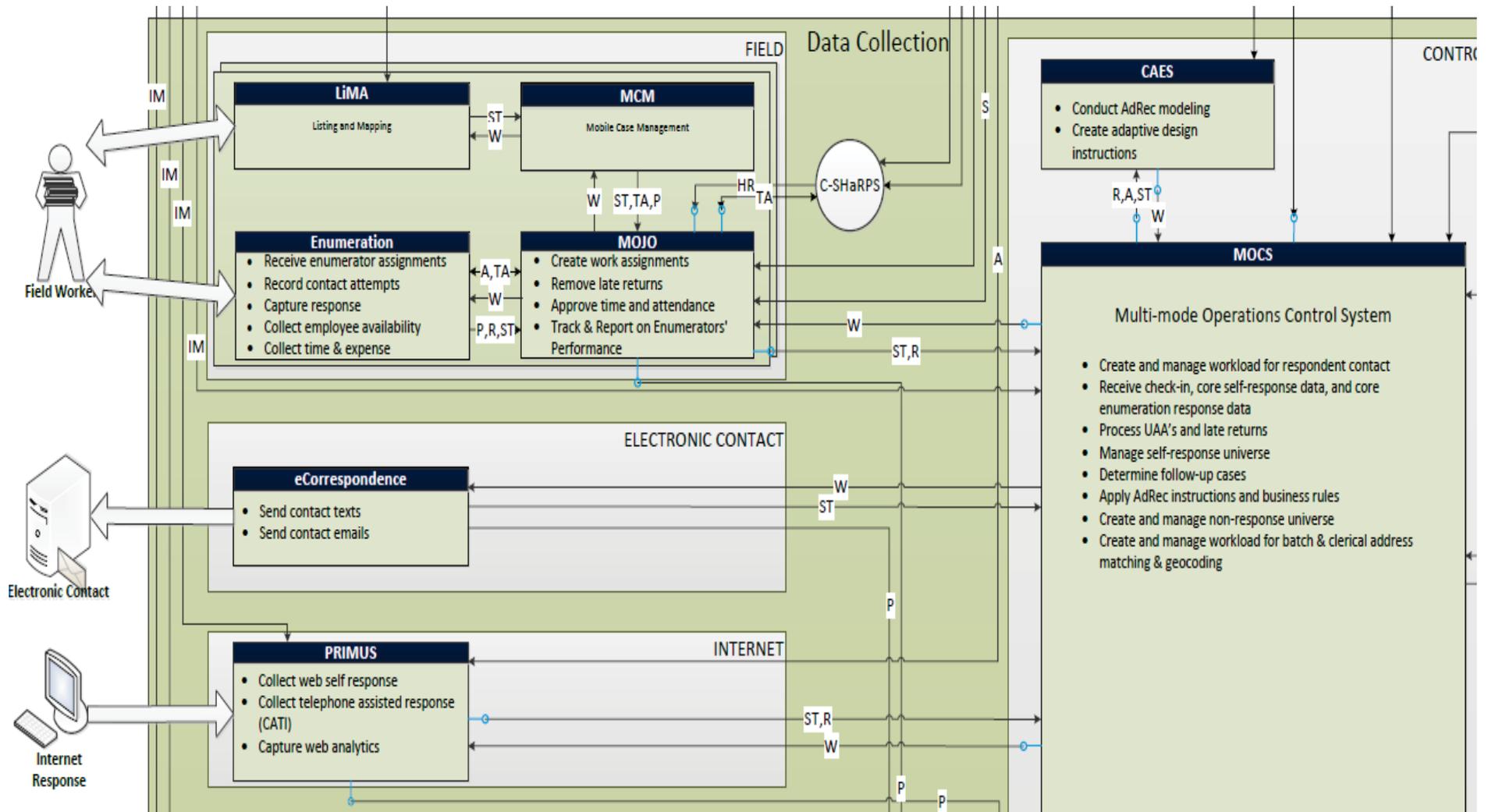
# 2020 Census Readiness | 2020 System Architecture



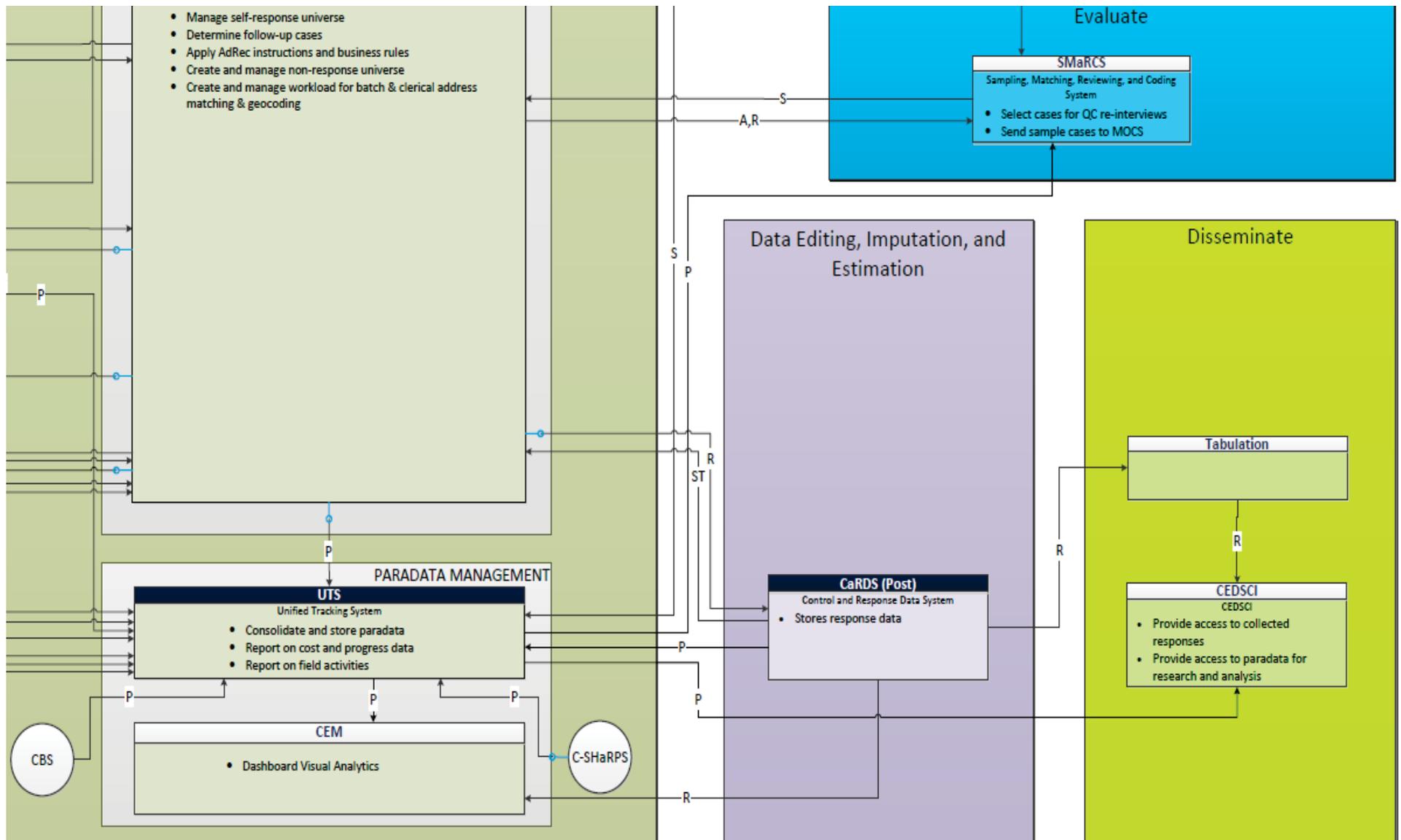
# 2020 Census Readiness | 2020 System Architecture



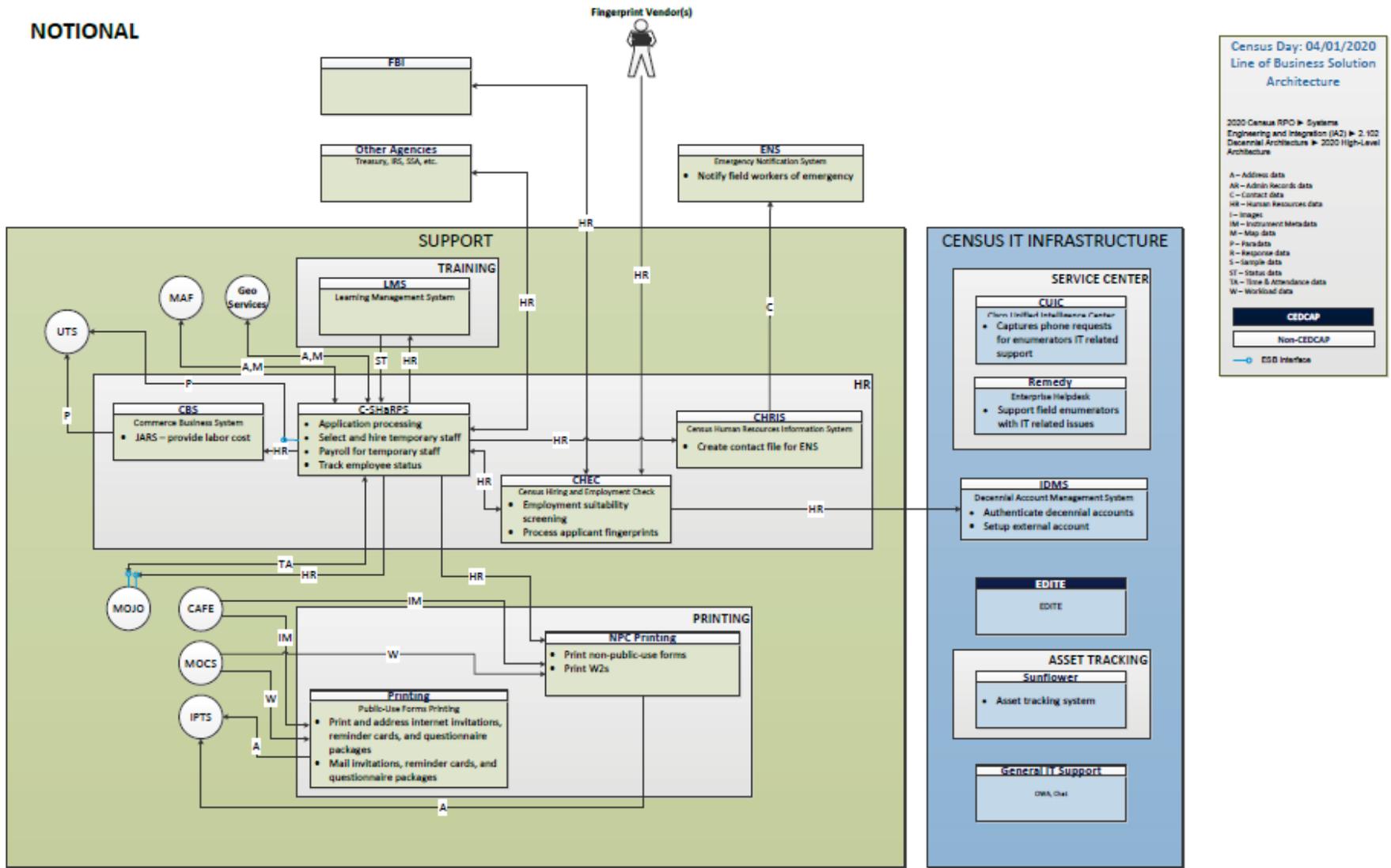
# 2020 Census Readiness | 2020 System Architecture



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# 2020 Census Readiness | 2020 System Architecture



## 2020 Census Readiness

### 2016 Census Test

- Cloud based deployment of Internet Self-Response systems
- Integrated System of Systems with CEDCaP Components
- First time deployment of CEDCaP systems MOCS and CaRDS
- Enterprise Service Bus for data transfer and communication
- Opportunity to test in two discontinuous areas
- Self-Response and Nonresponse Followup operations in one test

# 2016 Census Test Requirements Readiness

Focus of the Test

Required to Support the Test

NOT Included in the Test

**Complete** 100% Complete for operation

## SUPPORT

### Program Management

Program Management

### Census/Survey Engineering

Systems Engineering & Int.

Security, Privacy, and Confidentiality

Content and Forms Design

Complete

Language Services

Complete

Decennial Service Center

Complete

Field Infrastructure

Complete

Decennial Logistics Management

Complete

IT Infrastructure

Complete

### Infrastructure

## FRAME

Geographic Programs

Complete

Local Update of Census Addresses

Address Canvassing

## RESPONSE DATA

Forms Printing and Distribution

Complete

Paper Data Capture

Complete

Integrated Partnership & Communications

Complete

Internet Self Response

Complete

Non-ID Processing

Complete

Update Enumerate

Group Quarters

Enumeration at Transitory Locations

Census Questionnaire Assistance

Complete

Nonresponse Followup

Complete

Complete

Federally Affiliated Americans Count Overseas

## PUBLISH DATA

Data Products and Dissemination

Redistricting Data

Count Review

Count Question Resolution

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## OTHER CENSUSES

Island Areas Censuses

## TEST AND EVALUATION

Coverage Measurement Design & Estimation

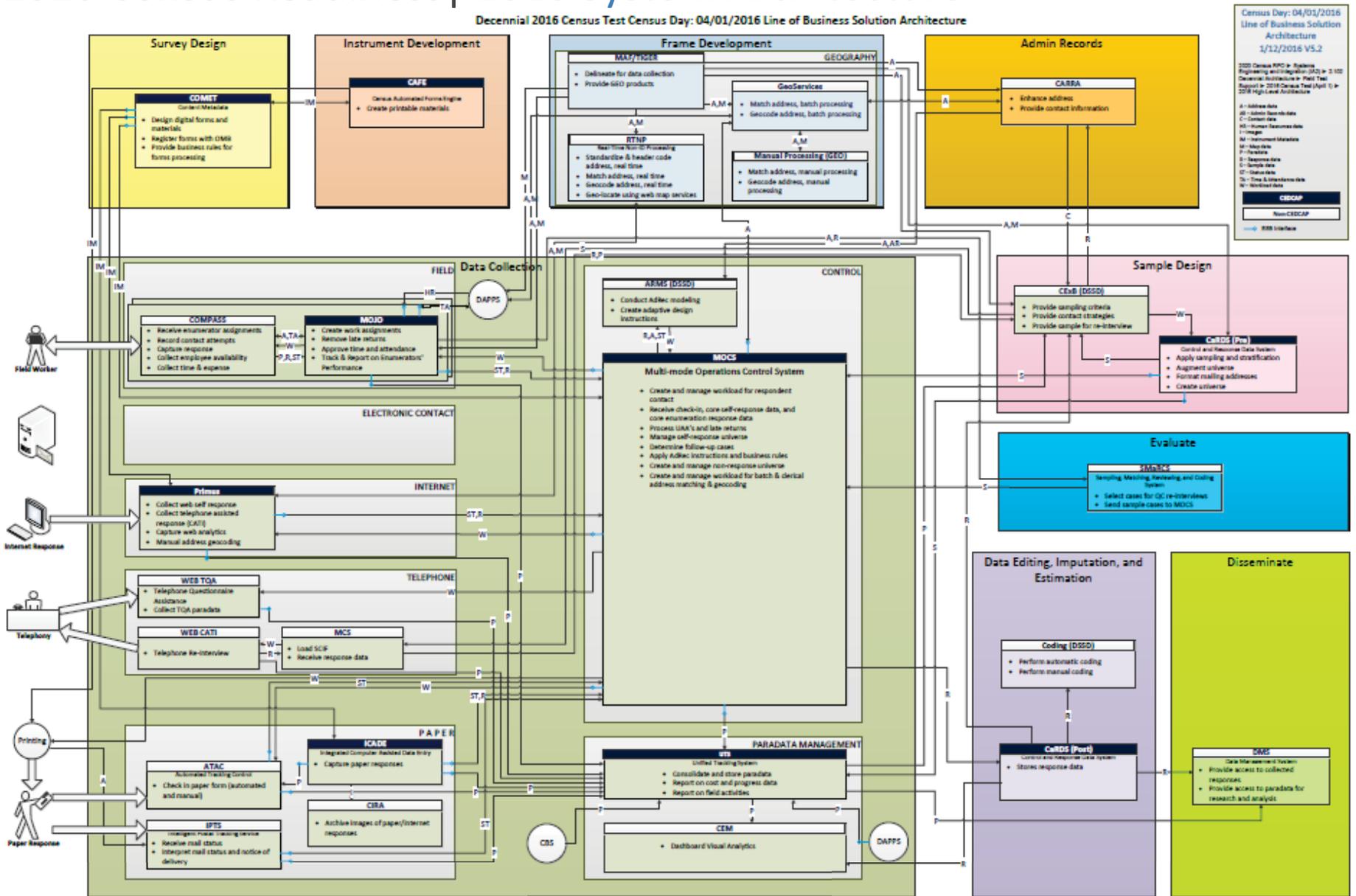
Coverage Measurement Matching

Coverage Measurement Field Operations

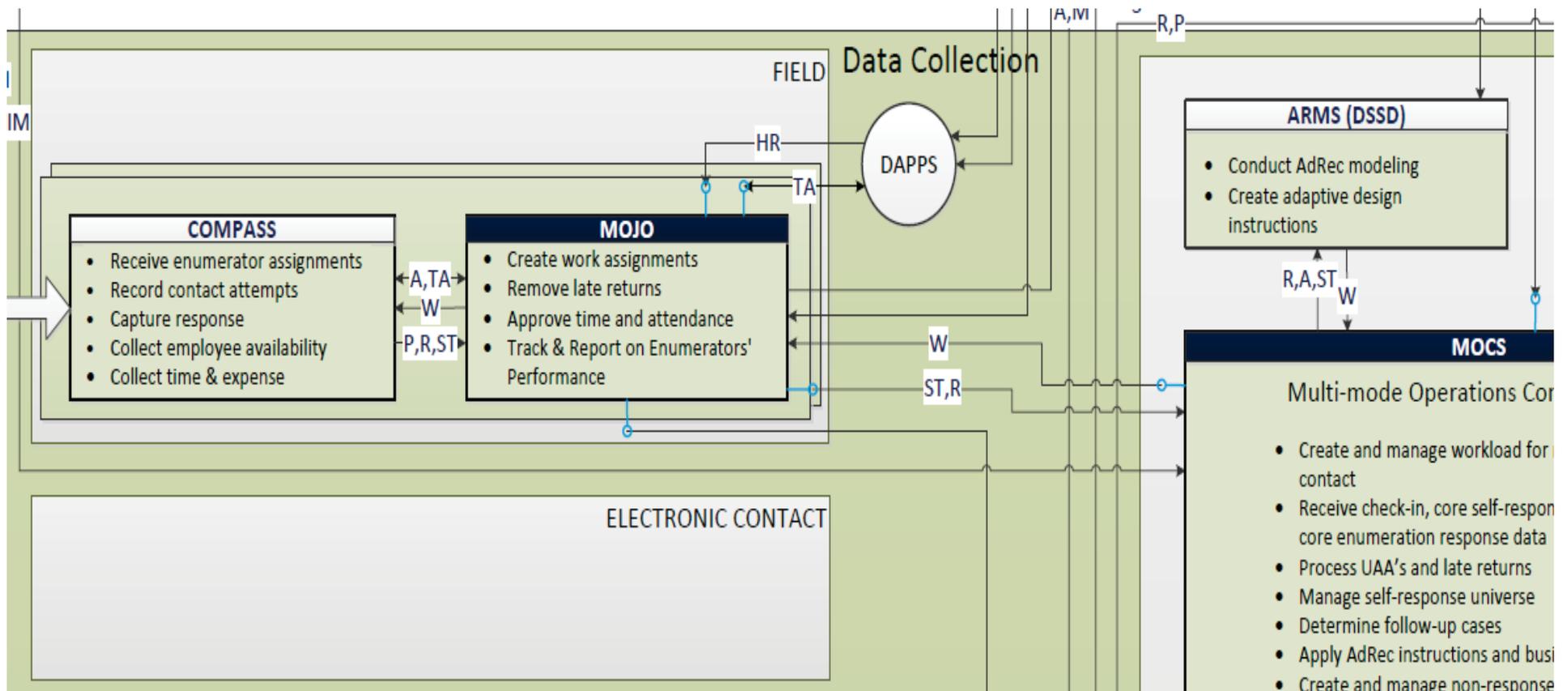
Evaluations and Experiments

# 2020 Census Readiness | 2016 System Architecture

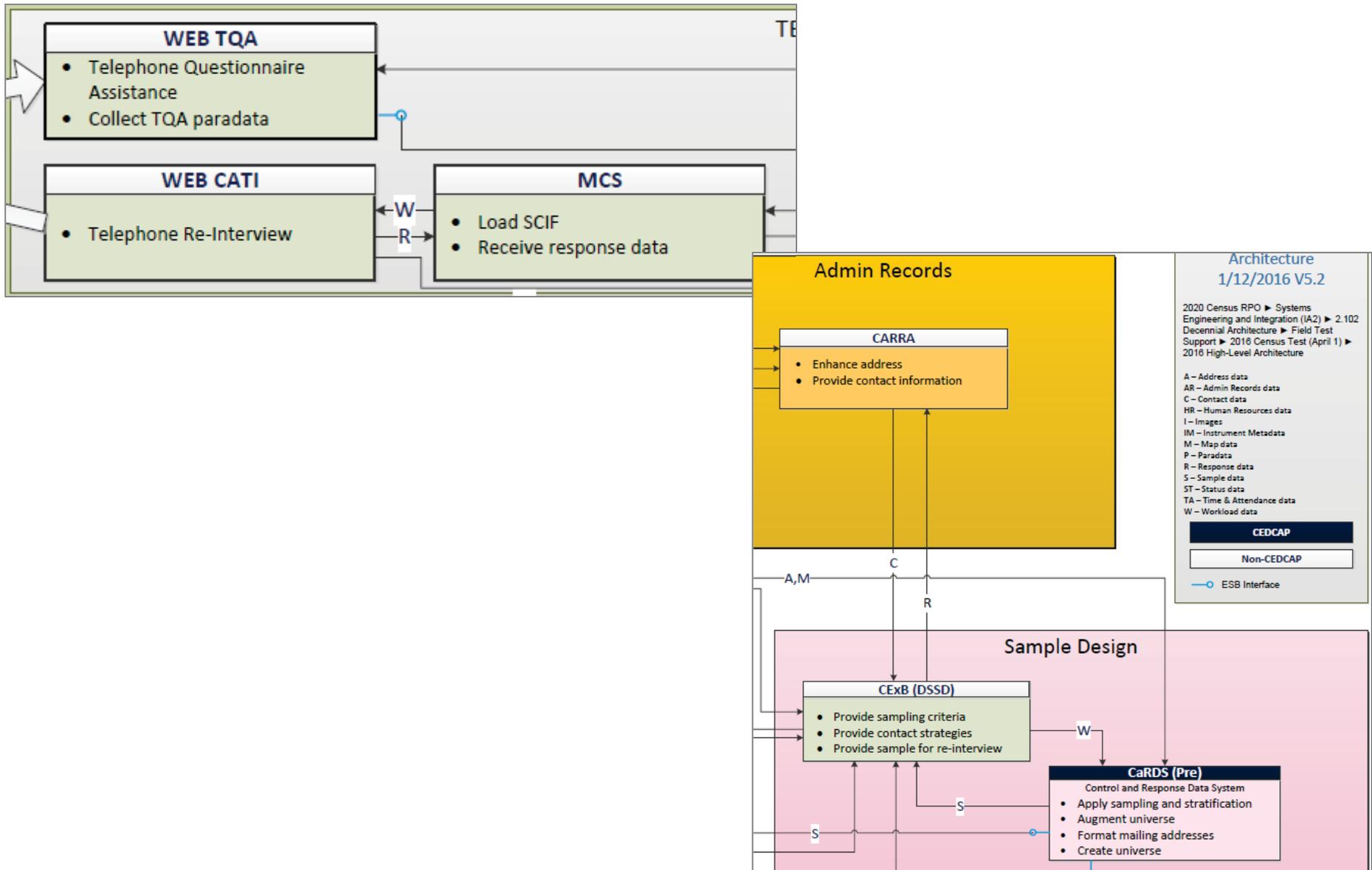
Decennial 2016 Census Test Census Day: 04/01/2016 Line of Business Solution Architecture



# 2020 Census Readiness | 2016 System Architecture



# 2020 Census Readiness | 2016 System Architecture





# 2020 Census Readiness

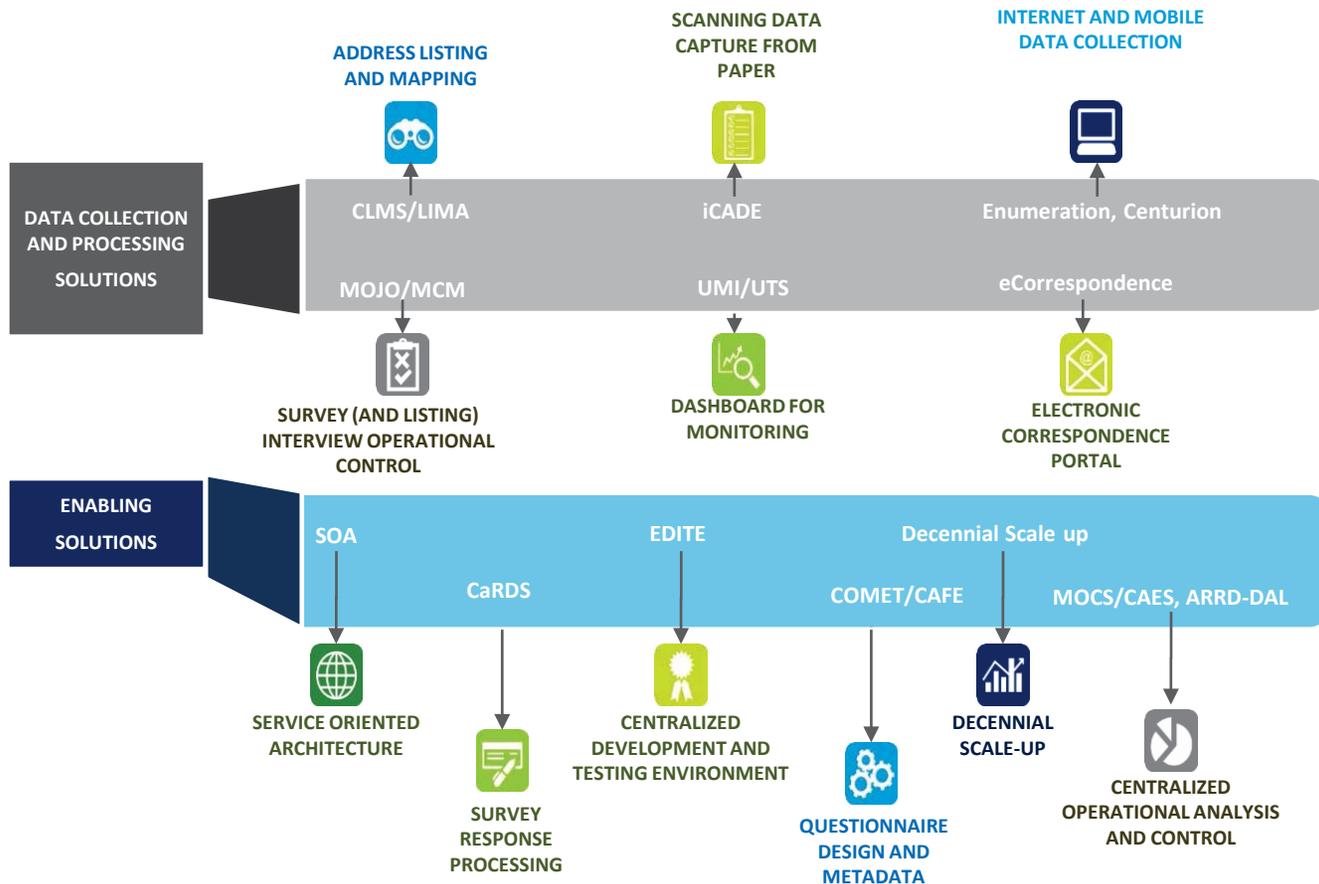
## Enterprise Initiatives for the 2020 Census

- Census Enterprise Data Collection and Processing (CEDCaP)
- Build/Buy
- Infrastructure
- IT Security

# 2020 Census Readiness

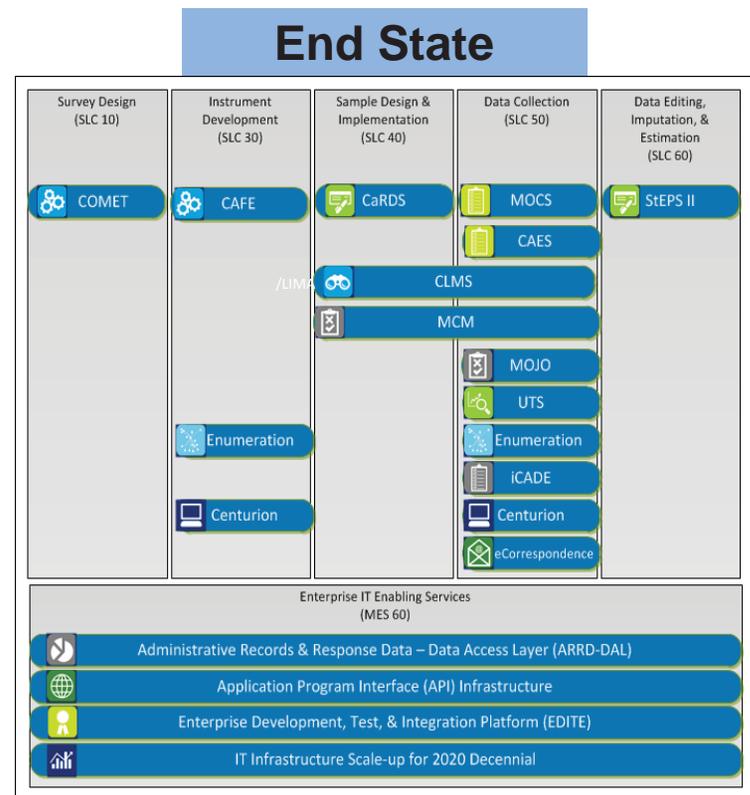
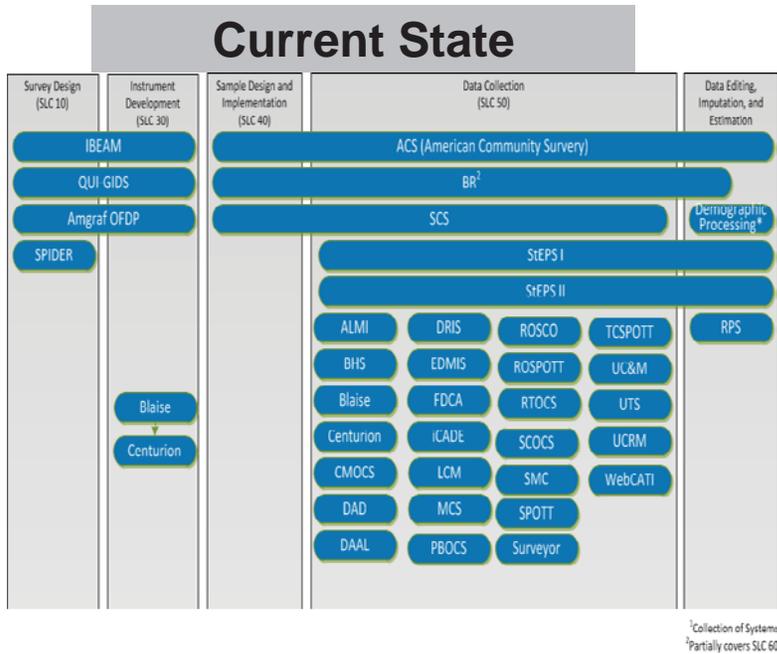
## Census Enterprise Data Collection and Processing (CEDCaP) Capabilities and Solutions

CEDCaP is comprised of delivery of 12 enterprise capabilities and the solutions to provide those capabilities.



# 2020 Census Readiness

## Census Enterprise Data Collection and Processing (CEDCaP) Current State (Pre-CEDCap) & End State



## 2020 Census Readiness

### Build/Buy

- Analyze the market offerings for COTS software to meet our cost, schedule and scope needs for the enterprise solutions
- Focus on availability/timing to accomplish programs' mission minimizing custom development
- Deliver analysis/conclusions in March/April 2016 on a priority flow
- Research does not stop – continually ensure that chosen enterprise solutions provide the best value cost effective solution to achieve the mission

## 2020 Census Readiness

### Infrastructure: Cloud

- The cloud solutions for the Census Test are being deployed for Internet Self-Response (Primus) and the Real-Time Non-ID Processing (RTNP) systems
- Future deliveries will focus on supporting the enterprise solutions and scalability for the 2020 Census

Activity	Date	Status
Enterprise Solutions Framework (ESF) Contract Multi-Award	08/31/15	COMPLETE
Delivery Order 1 Award	09/16/15	COMPLETE
Infrastructure Provisioned for Primus and RTNP	11/25/15	COMPLETE
Primus/RTNP Authority to Operate (ATO)	03/01/16	ON TARGET

## 2020 Census Readiness

### Infrastructure: Development and Test

- Provide the Census Bureau with an enterprise environment for development, integration, and testing activities that includes both:
  - CEDCaP development, integration, and testing
  - Non-CEDCaP development, integration, and testing
- Improve the effectiveness and performance of delivered solutions by providing:
  - Standardized, approved development and test tools
  - Standardized developer and tester workstations with development and test tools
  - Comprehensive testing with controlled release to production
  - Governance of environments and tools

# 2020 Census Readiness

## IT Security

- Embed security engineer support from the Office of Information Security to the 2020 Census Program
- Provide additional security staff support for Situational Awareness, Incident Response and Security Assessment (Continuous Monitoring) beginning in FY17 through FY21
- Provide IT security guidance at the senior management level by Chief Information Security Officer
- Ensure systems and applications comply with Federal IT security requirements (FISMA, CyberCAP, Presidential Management Council Directives, DHS initiatives)
- Use layered cyber security defenses for systems and information
- Research on-going IT security threats and best practices to defend against them
- Provide user education on IT/Cyber security responsibilities
- Use Government-approved encryption of information
- Review and monitor continually the 2020 Census systems and applications