

# 2020 Systems Integration

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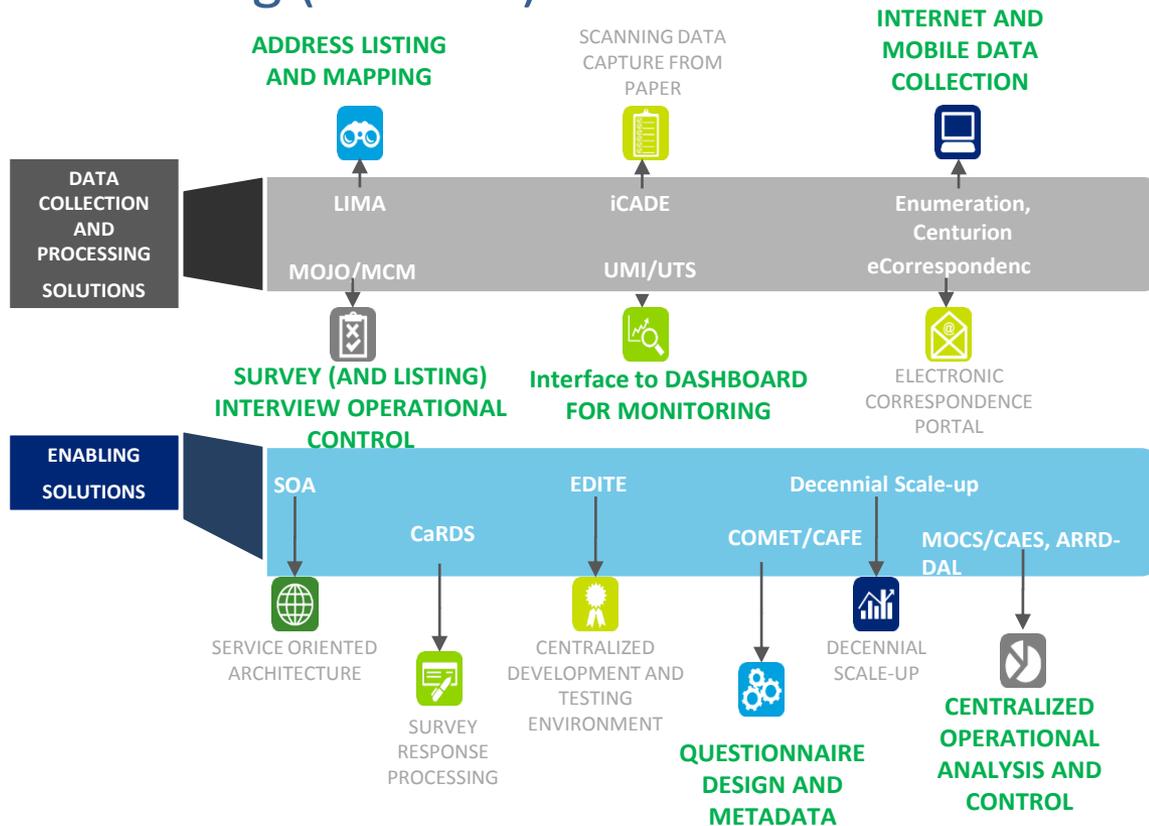
**Patty McGuire**, Information Technology Directorate

# 2020 Systems Integration

- Build/Buy Decision
- Platform Implementation
- 2020 Census Solution Architecture
- Systems Readiness for Upcoming Tests

# 2020 Census Systems Integration

## Census Enterprise Data Collection and Processing (CEDCaP)



Capabilities shown in **green** were part of the COTS Capability Assessment and Analysis (CCA) and will be provided by the Enterprise Censuses and Surveys Enabling Platform (ECaSE)

CEDCaP Data Collection & Processing Capabilities and Solutions Delivered:	
CEDCaP Capability	CEDCaP Solution
1) Centralized Development and Testing Environment	Enterprise Development, Integration, & Test Environment (EDITE)
2) Service Oriented Architecture (i.e., common infrastructure and efficient system interfaces to allow IT applications to communicate without the need for costly system re-writes)	Application Programming Interface (API) Infrastructure (API-I)
3) Centralized Operational Analysis and Control and Adaptive Survey Design capability, including statistical modeling and administrative records	ECaSE Administrative Records and Response Data–Data Access Layer (ARRD-DAL) Concurrent Analysis and Estimation System (CAES)
4) Survey (and Listing) Interview Operational Control	ECaSE
5) Address Listing and Mapping	ECaSE
6) Dashboard for Monitoring Survey Cost, Progress, and Quality and Enterprise Paradata Repository	ECaSE-Interface to Unified Tracking System (UTS)
7) Questionnaire Design and Metadata	ECaSE
8) Internet and Mobile Data Collection	ECaSE
9) Electronic Correspondence Portal	eCorrespondence
10) Scanning Data Capture from Paper	Integrated Computer Assisted Data Entry (iCADE)
11) Survey Response Processing	Control and Response Data System (CaRDS)

# 2020 Census Systems Integration

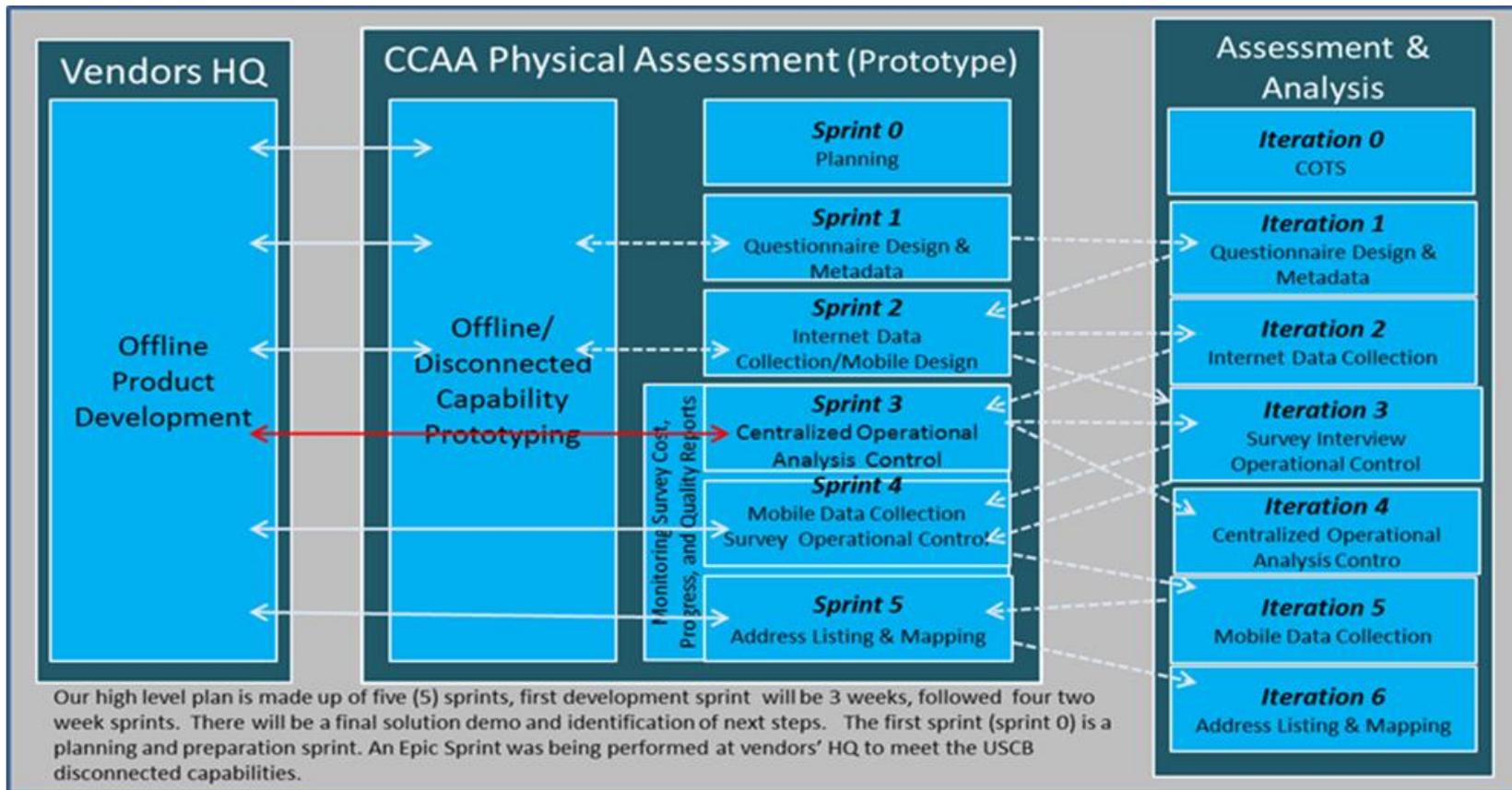
## CEDCaP COTS Capability Assessment and Analysis Approach (CCAA)

Process Milestones	
Identify core and key business capabilities	✓
Conduct extensive market research on which capabilities may be commercially available	✓
Prepare a Request for Information (RFI) for industry response	✓
Conduct vendor demonstrations	✓
Prepare a Request for Quotation (RFQ) based on requirements	✓
Complete vendor demonstrations and select qualified vendor solutions	✓
Leverage Carnegie Mellon University's Software Engineering Institute to assist with COTS Capability Assessment and Analysis (CCAA)	✓
Develop the CCAA process	✓
Complete the CCAA process (including three subcomponents)	✓
Complete analysis, including documentation and findings	✓
Prepare overall recommendations and next steps	✓

# 2020 Census Systems Integration

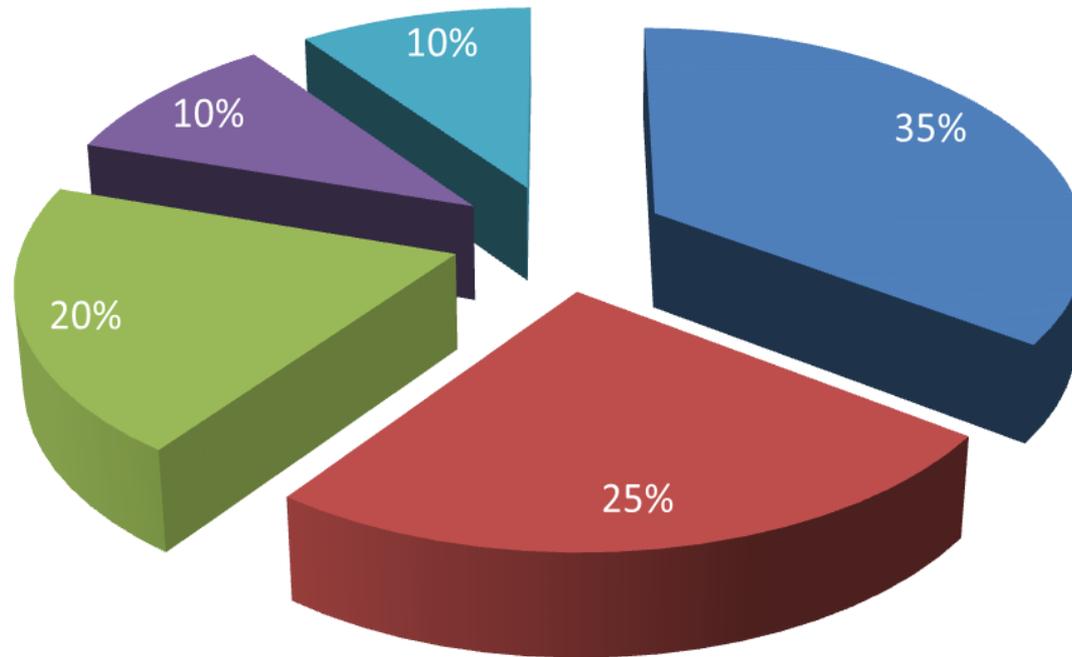
## CEDCaP CCAA Proof of Concept Phase

90-day period, made up of 6 sprints



# 2020 Census Systems Integration

## CEDCaP CCAA Criteria and Weights for Build/Buy Decision



### ■ Business Functional Need

35% - The degree to which the alternative satisfies a set of defined business requirement and related quality attributes.

### ■ System Design

25% - The degree in which the alternative satisfies an identified set of important architectural quality attributes (e.g. illities).

### ■ Schedule

20% - The ability of the alternative to be confidently deployed to meet the required timelines.

### ■ Cost

10% - The relative comparison of estimated five-year total cost of ownership for a given alternative.

### ■ Vendor/Dev Team Viability

10% - Indicator of vendor/development team and tool's stability and ability to meet the Bureau's long term needs.

# 2020 Census Systems Integration

## CEDCaP CCAA Decision

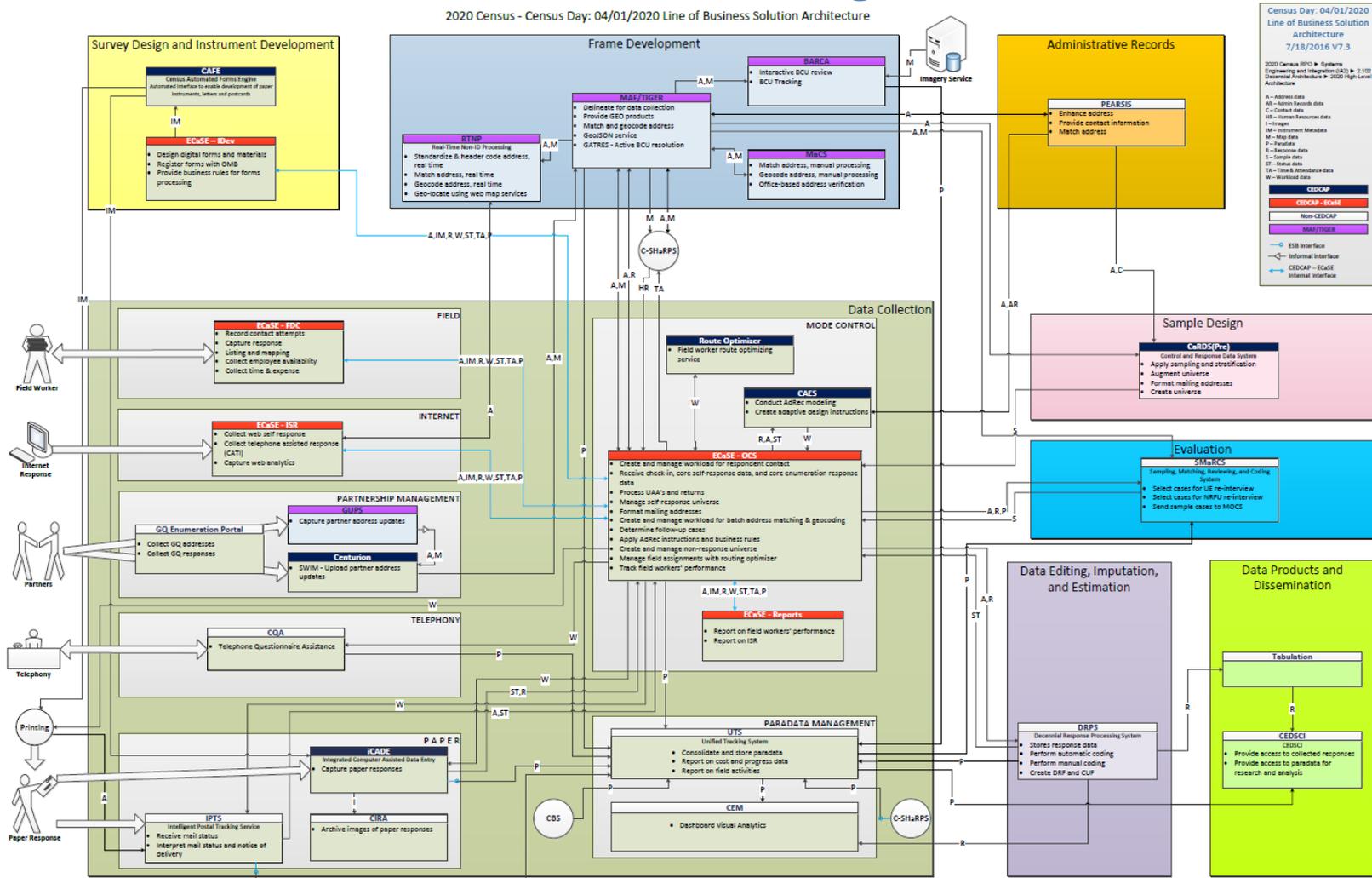
- Complete review of the process and findings is available:  
<http://www2.census.gov/about/policies/cedcap/cedcap-report-final.pdf>
- The hybrid approach combines the selected COTS platform with select in-house custom solutions
- This approach will address the short-term goal of successfully deploying the 2017 Census Test, in preparation for the 2018 End-to-End Census Test and ultimately the 2020 Census

# 2020 Systems Integration Platform Implementation

- Enterprise **Censuses and Surveys Enabling** (ECaSE) Platform
- A new project in Decennial IT Division under the CEDCaP Program
- Five key areas of application development on the ECaSE platform:
  - Content Metadata
  - Control Systems
  - Internet Self Response
  - Enumeration
  - Listing and Mapping
- Agile/Scrum Methodology

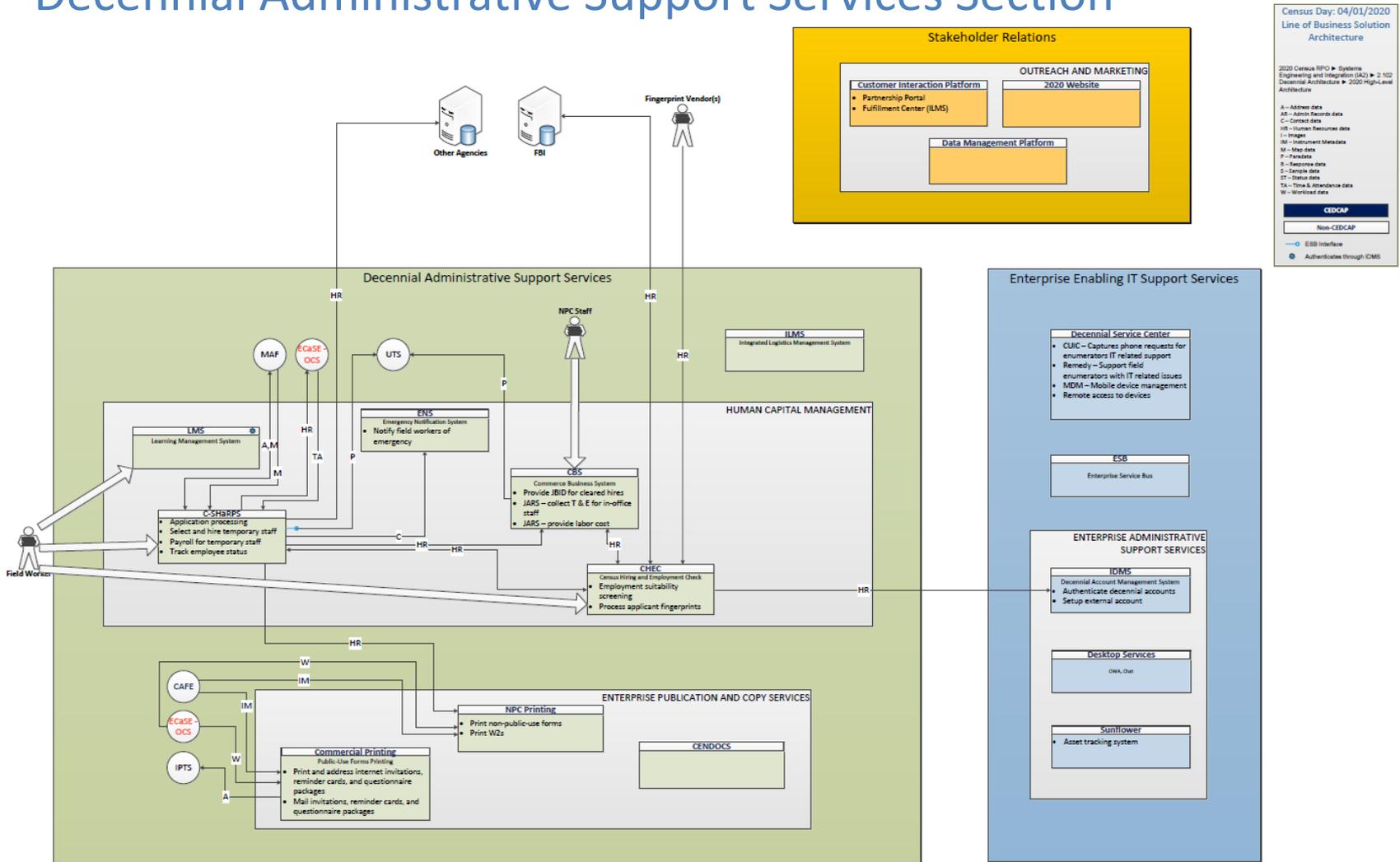
# 2020 Systems Integration

## 2020 Census Solution Architecture Diagram



# 2020 Systems Integration

## Decennial Administrative Support Services Section



# 2020 Systems Integration

## Survey Design and Instrument Development

Census Day: 04/01/2020  
 Line of Business Solution  
 Architecture  
 7/18/2016 V7.3

2020 Census RPO ► Systems  
 Engineering and Integration (IA2) ► 2.102  
 Decennial Architecture ► 2020 High-Level  
 Architecture

A – Address data  
 AR – Admin Records data  
 C – Contact data  
 HR – Human Resources data  
 I – Images  
 IM – Instrument Metadata  
 M – Map data  
 P – Paradata  
 R – Response data  
 S – Sample data  
 ST – Status data  
 TA – Time & Attendance data  
 W – Workload data

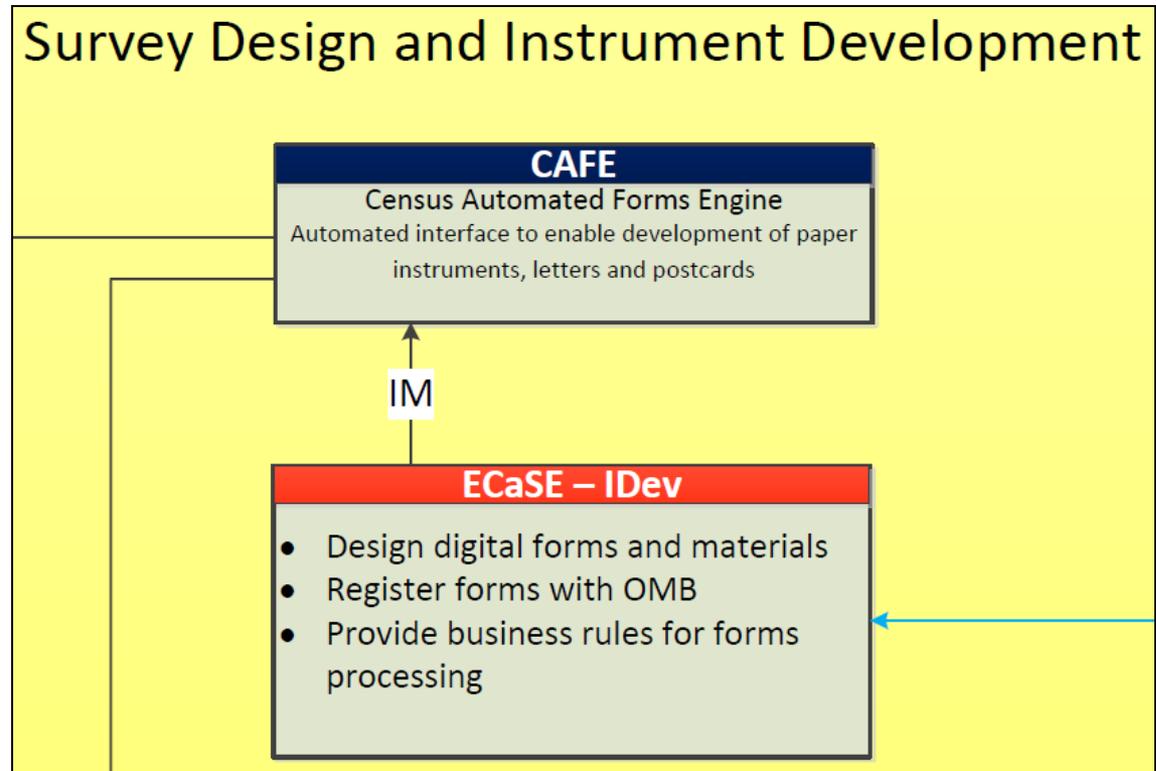
**CEDCAP**

**CEDCAP - ECaSE**

Non-CEDCAP

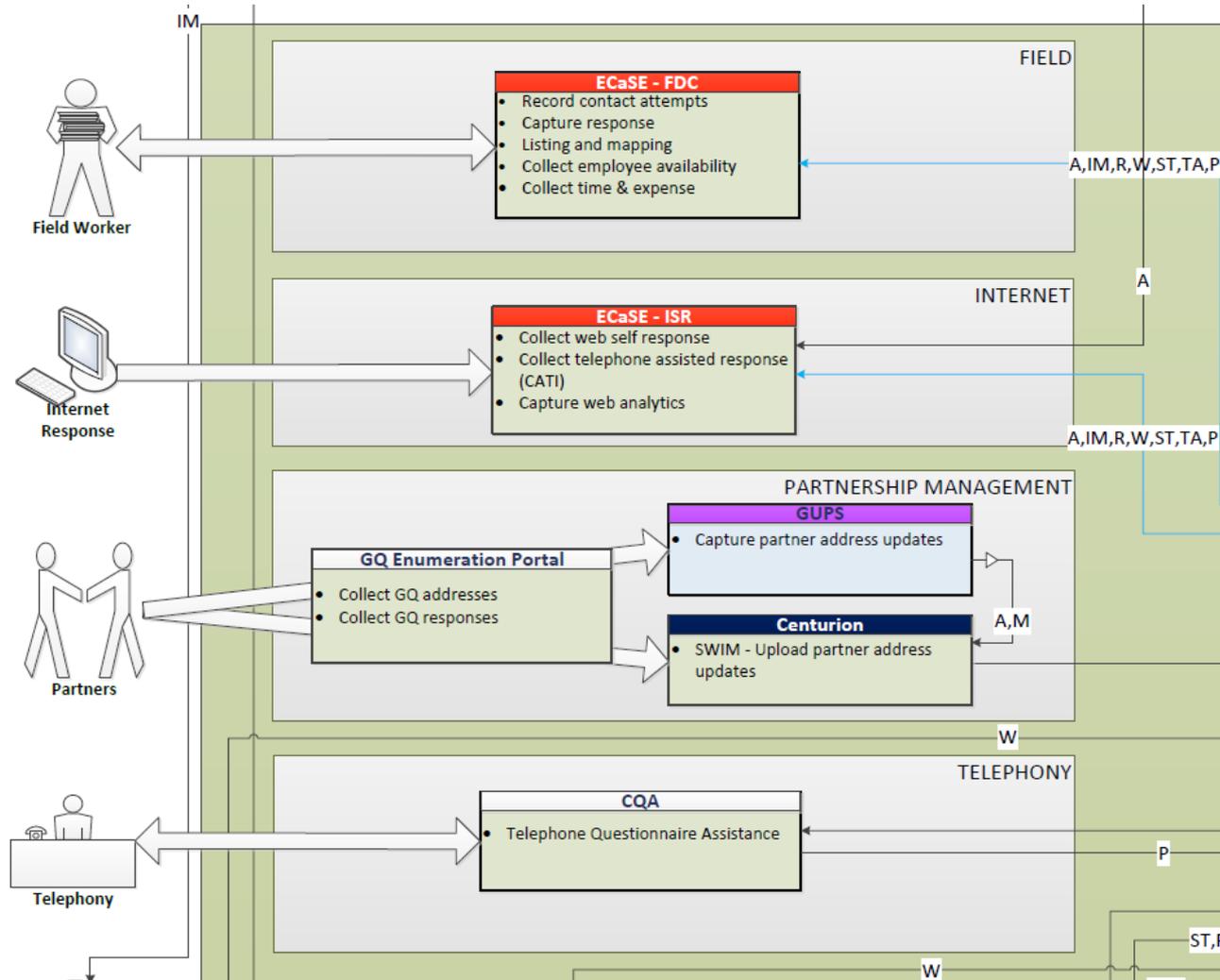
MAF/TIGER

○ ESB Interface  
 ◁ Informal interface  
 ↔ CEDCAP – ECaSE  
 internal interface



# 2020 Systems Integration

## Field and Internet Components



# 2020 Systems Integration

## Address Canvassing and Self-Response Videos

9:41 AM 100%

ADCAN - BLOCK 2006 (A-503)

Block Name	Unworked	Worked
Block 2006	2	0

Block GEOID	Block Status
240338020012006	Assigned
Total Units	Distance (m)
2	40,467.396m

**Warning: You are too far from the Block**

Operation Name: AdCan  
Survey ID: 3333

Tract: 802001  
Tract GEOID: 24033802001

County: Prince George's (033)  
State: MD (24)

[OPEN BLOCK MAP](#)

[CANCEL](#) [SAVE](#) [NEXT >>](#)

Address Canvassing

United States Census Bureau

ACCESSIBILITY PRIVACY SECURITY

### Welcome to the 2016 Census.

YOU WILL NEED THE MATERIALS WE MAILED TO YOU IN ORDER TO START. ALL THE INFORMATION THAT YOU PROVIDE WILL REMAIN CONFIDENTIAL.



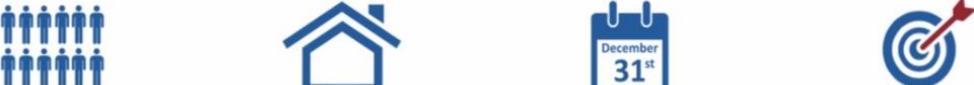
Example User ID

Please enter the 14-digit User ID found below the barcode on the materials we mailed to you.

User ID:  [LOGIN](#)

If you do not have a User ID, [click here](#).

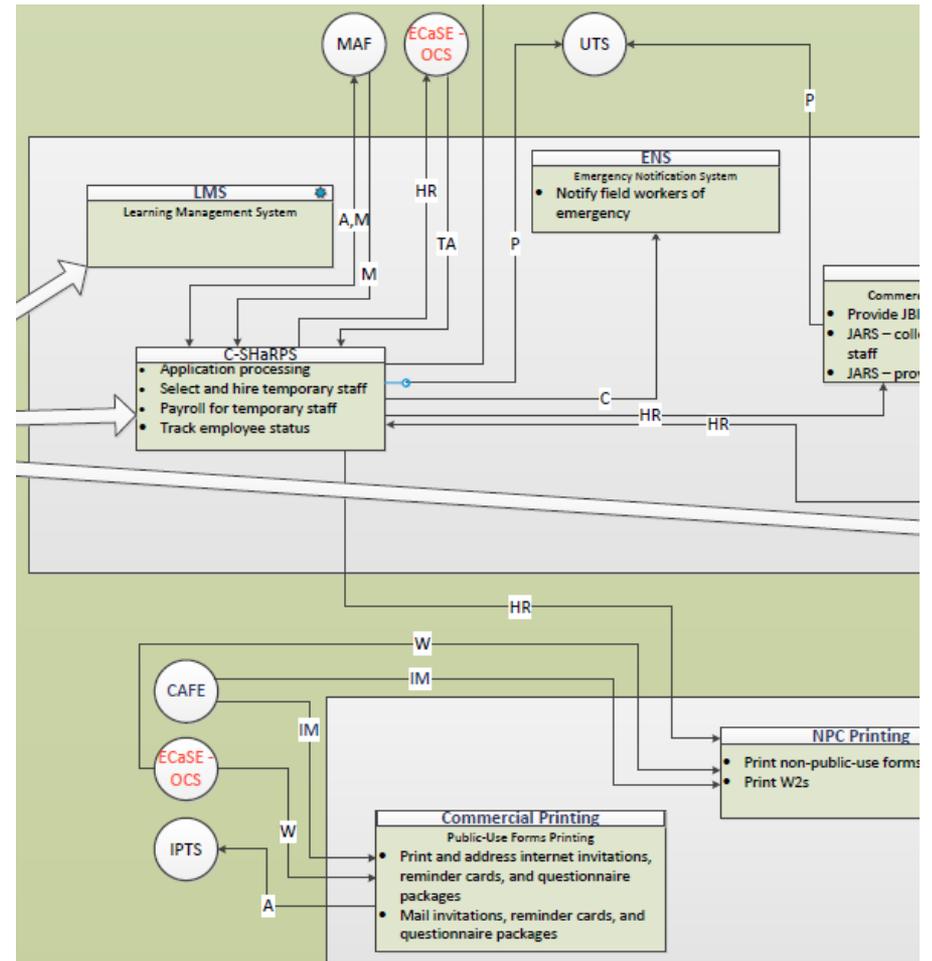
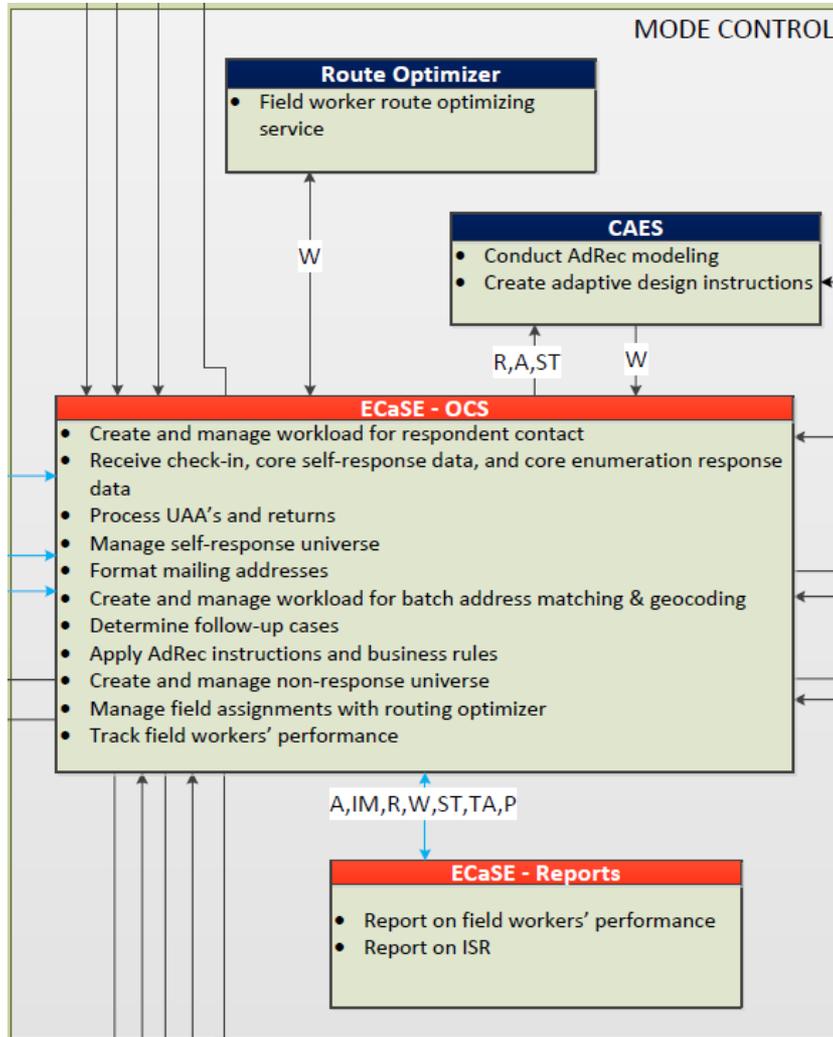
The U.S. Census Bureau estimates that, for the average household, this survey will take about 10 minutes to complete, including the time for reviewing the instructions and answers. Send comments regarding this burden estimate or any other aspect of this burden to: Paperwork Reduction Project 0607-####, U.S. Census Bureau, DCMD-3H174, 4600 Silver Hill Road, Washington, DC 20233. You may e-mail comments to 2020.census.paperwork@census.gov, use "Paperwork Project 0607-####" as the subject. You are not required to respond to this collection of information if it does not display a valid approval number from the Office of Management and Budget (OMB). The eight-digit OMB number is 0607-####.



Internet Self-Response

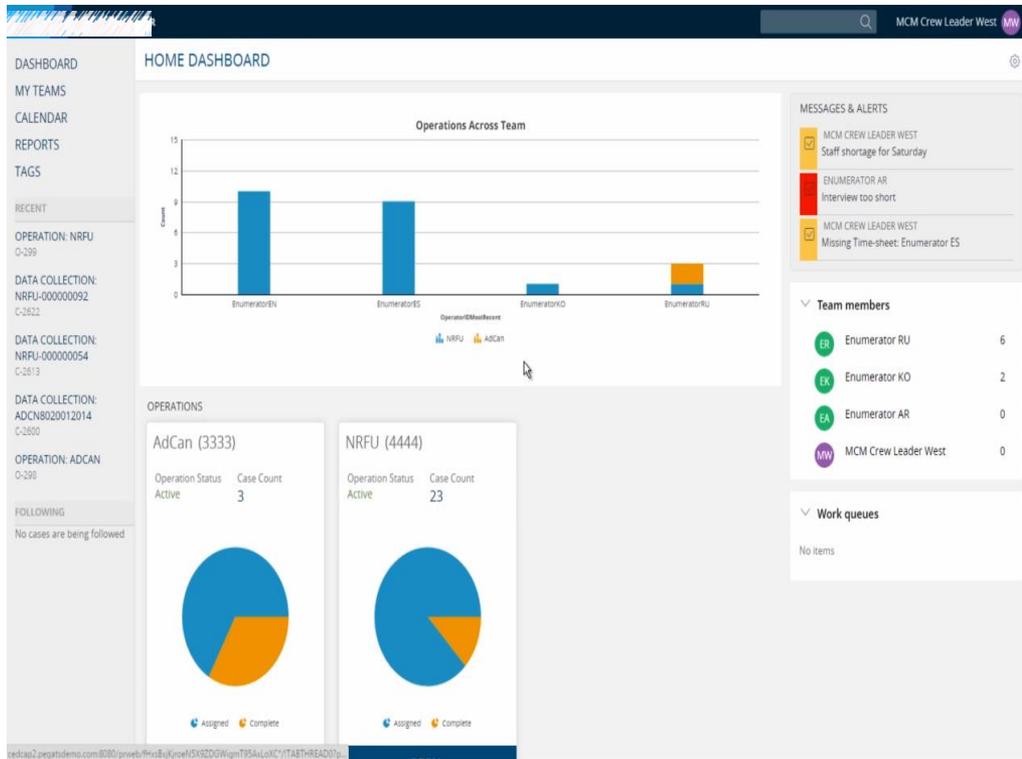
# 2020 Systems Integration

## Operational Control



# 2020 Systems Integration

## Operational Control System and Enumeration Videos



Operational Control System



Enumeration

# 2020 Systems Integration

## Systems Readiness for Upcoming Tests

### 2020 Census Lifecycle

