The Information Base for Exchange, Administration and Management (IBEAM)

Technology Innovation for the 2010 Decennial Census

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Agenda

- IBEAM Background
- Technology Innovation
- Innovative Approach
- Future Plans

Agenda - continued

Topics that won't be covered:

- IBEAM Demonstration
- Discussion of most of the IBEAM capabilities

The presenters will be happy to cover these and other topics in more appropriate forums.

Agenda Topic: IBEAM Background

IBEAM: Metadata-driven system that supports paper questionnaire: Content development,



40⁺
2010 Decennial
Questionnaires

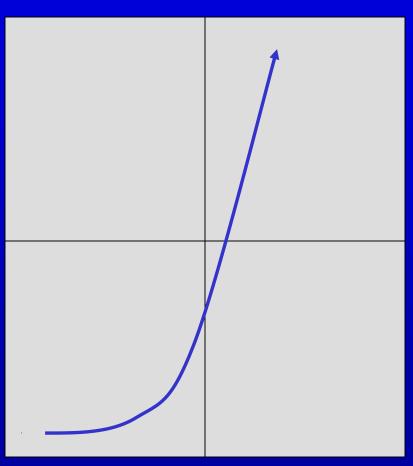
Design,
Capture,
Processing,
Analysis &
Tabulation.

Repository

Questionnaires Definitions
Data structures
Keying specifications

IBEAM Background - continued



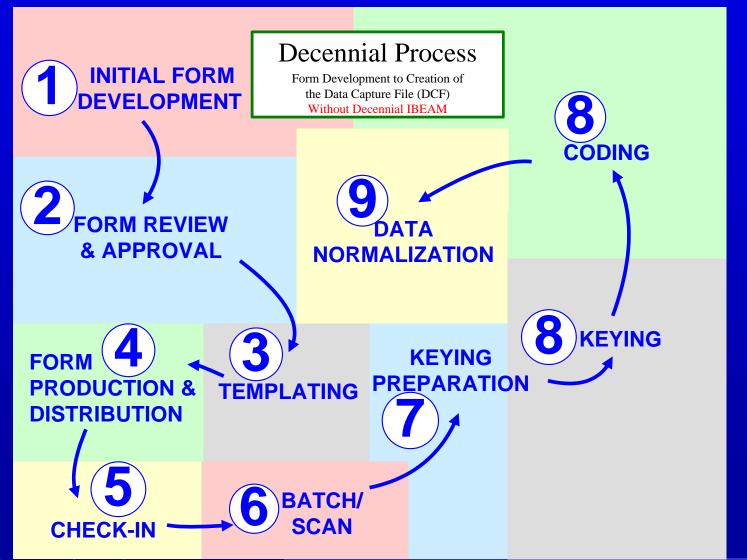


Metadata Usage

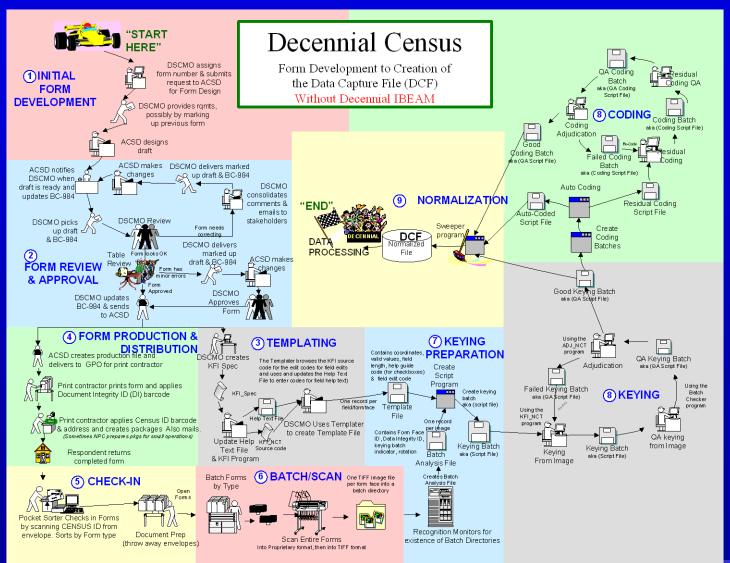
Business goals
achieved rapidly
through the use of
structured metadata...

....confirming the success possible through leveraged metadata.

Agenda Topic: Technology Innovation "Define the Business – High Level"



Technology Innovation - continued "Define the Business — Low Level"



Technology Innovation - continued "Identify Improvement Goals"



Improvements Required

- 1. Reduce Time to Create Initial Layout Design
- 2. Improve Quality of Content
- 3. Reduce Reliance on Heroes through Standardization

Technology Innovation - continued "Define Features to Achieve Improvement"

IBEAM Features to Improvements Required Achieve Improvement 1. Integration between IBEAM 1. Reduce Time to Create and COTS Software to reduce **Initial Layout Design** layout effort 2a. Preview simulated layout with 2. Improve Quality of interspersed annotations Content 2b. Content Compare functionality for determining consistency Generic and Standardized Reduce Reliance on Support for graphical objects in Heroes through questionnaires

Standardization

Technology Innovation - continued "Utilize Technology to Make it Happen"

IBEAM	Features to
Achieve	Improvement

Technology

- 1. Integration between IBEAM and COTS Software to reduce layout effort
- 1. XML Interchange & Web Distributed Authoring & Versioning (WebDAV)
- 2a. Preview simulated layout with interspersed annotations
- 2a HTML & Javascript
- 2b. Content Compare functionality for determining consistency
- 2b Hashing Algorithm
- 3. Generic and Standardized
 Support for graphical objects in questionnaires
- 3. Universal Graphic Objects

	for all the people at this address. un consumerate your answers are protected by law.
te a like or black pers	5. Please pooleds information for each person listing here. Start with a person listing here who cent or rands this house, aper street, or raceble hause. If the senser or renter lives names here also, start with any adult listing been. This will be Person 1.
Start here	Heing been This will be Person 1. What is Person To make? Philippers below.
he Cestras reust count every person living in the United tales on April 1, 3010.	Let Name
infore you arrower Question 1, count the people living in his house, spartment, or mobile borne using our guidelines.	First Name MI
 Count all people, including tasties, who live and steep have most of the tites. 	6. What is Person 1's sec1 Mark <u>x</u> ONE tox ☐ Male ☐ Female
he Census Bureus also condects coests in institutions and other places, so:	 What is Person I's age and what is Person I's date of birth? Places report bubble as age 0 when the child is less than 1 year old. This combers in buse.
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Do not count anyone in a numbing forme, juil, place, detended facility, etc., on April 1, 2018.	→ HOTE: Please answer BOTE Question & about Hispanic origin and
 Leave these people off your form, even if they will return to live here after they leave college, the running home, the military, juil, etc. Officentse, they may be counted twice. 	Question 6 about race. For this ceases, Hispanic degine are not races. 8. La Person 1 of Hispanic, Latino, or Spanish origin1
he Consus must also include people without a permanent lace to star, no:	Mo, nat of Hispanic, Latine, or Spanish critis Yee, Medican, Medican Am., Chicano
If someone who has no personent place to stay is staying here on April 1, 2010, observable places. Otherwise, his of	☐ Yes, Puerto Ricen ☐ Yes, Cuberi
the may be related in the certuid. How many people more living or staying in this bouse, spartness, or should be come on April 1, 20101	 Yes, arether Hisparto, Latino, or Spanish cright — Phrintin Invancja, Agentus, Crimins, Dennios, Rusquet Selectus, Şistest, and n. in. 2
Number of people -	□ Mrs
. Mane there are <u>additional</u> people staying laws. A pril 1, 2018 that you <u>did but lackeds</u> in Question 17. Mark X, solidar apply.	Elads, African Am., or Negro Arranican Indian or Alaska Native — Philippe of excilet crystopic life. 2
Ehildren such as newtorn babies or loater children Retailers, such as adult children, country, or in-less	
Microsoft was such as recommanded or live-in bette states	Asian Indian
Feople staying here temperarily No additional people	Chinese
Lis this house, speciment, or mobile home — Mark X ONE tour	□ Differ Anien — Filtr dos for □ Other Field in Interdet — Filt example Plants Date Date □ Date □ Cons for example Filtr a Torque Parties □ □ Date □
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Oarned be set or terresona in this bousehold here and dear pathous a managege or loans? Element?	□ Some other race — Frict rate. gr
☐ Dicoupled without payment of rent?	
. What is your telephone number? We may call if we don't understand an answer.	10. Does Person 1 coresi see live or stay corestness else1
Area Code + Mumber	☐ In college hatcaing ☐ For drild custody
THE No. DECT. OF N.C. Approval Engine 122/10011.	I in the military in juli or pisson II At a seasonal in a numano home
No D-1 passeng	er second residence

9. What is Person 1's race? Mark

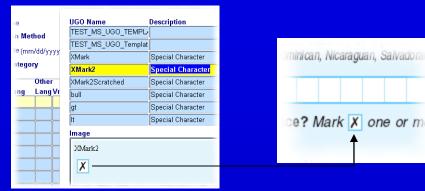
What is Person 1's race? Mark X one or more boxes.	
White	
☐ Black, African Am., or Negro	
American Indian or Alaska Native — Print name of enrolled or principal tribe.	
☐ Asian Indian ☐ Japanese ☐ Native Hawaiian	
☐ Chinese ☐ Korean ☐ Guamanian or Chamorro	
☐ Filipino ☐ Vietnamese ☐ Samoan	
Uther Asian — Print race, for Uther Pacific Islander — Pri example, Hmong, Laotian, Thai, race, for example, Fijian, Tongan,	
Pakistani, Cambodian, and so on. and so on.	

After Synchronization

Use a blue or black pen. Start here	5. Please provide information for each person living here. Start with a person ining here who owns or create this house, apertment, or mobile home. If the owner or ronter these consenters also, start with any adult. What is Person if the name? After came before the person.
The Census rauet count every person living in the United States on April 1, 2010. Sefore you arrower Gassilon 1, count the people living in	Last Name
his horse, spartment, or mobile horse using our geldelines. Count all people, including bables, who like and sleep here most of the time.	First Name 6. What is Person 1's sea? Mark ONE box.
The Cansus Bureau also conducts counts in institutions and other places, so:	 What is Person 1's age and what is Person 1's date of birth? Please report bables as age 0' when the oldd is less than 1 year old. Pitch numbers in boses.
Do not count anyone living away either at college or in the Armed Forces. Do not count anyone in a nursing horse, jall, prison,	Age on April 1, 2010 Month Day Year of birth
determine facility, etc., on April 1, 2010. Leave these people off your form, even if they will return to live here after they leave college, the nutsing frome, the relitary, [31, etc. Otherwise, they may be counted twice.	→ HOTE: Please oneser BOTH Question 8 about Hispanic origin and Question 9 about race. For this consus, Hispanic origins are not races. 8. is Person 1 of Hispanic, Latino, or Spasies origin?
The Concue must also include people without a permanent place to stay, so:	No, not of Hispanic, Latino, or Spanish origin Yea, Maxican, Mexican Am., Chicano Yea, Dusto Bican
 if someone who has no parmanent place to stay is staying here on April 1, 2010, count that person. Otherwise, he or she may be missed in the census. 	☐ Year, Puerto Hoen ☐ Year, Cubern ☐ Year, Cubern ☐ Year, Amother Hapanio, Latino, or Spanish origin — Petrospi, for saseph, Apprican, Colorbin, Bornicas, Noragan, Selasbor, Spanish andro or. 7
 How many people were living or staying in this house, apartment, or mobile home on April 1, 2010? 	
Number of people z	. What is Person 1's race'l Mark x one or more boxes.
 Were there any additional people staying here April 1, 2010 that you did not include in Guestion 1? Mark x at that apply. 	
Children, such as newborn babies or foster children Relatives, such as adult children, cousins, or in-laws	
 Nonrelatives, such as roommates or live-in baby sitters 	☐ Asian Indian ☐ Japanese ☐ Native Hawaian
☐ People staying here temporarily ☐ No additional people	Chinese Korean Guernanian or Chemomo
3. In this house, apartment, or mobile home —	☐ Fāpino ☐ Vietnamese ☐ Samoan ☐ Other Asjan — Phint may for ☐ Other Pacific Islander — First
Mark / ONE box.	
 Owned by you or someone in this household with a mortgage or loan? Include home equity loans. 	Parkielani, Cambodian, and so on. gr and so on. gr
Owned by you or someone in this household free and clear (without a mortgage or loans)?	☐ Some other race — Print race. ☑
☐ Floritad?	_ com our race _ com rack g
Occupied without payment of next?	
 What is your telephone number? We may call if we don't understand an answer. 	10. Does Person 1 sometimes live or stay somewhere else?
Area Code + Number	No ☐ Yes — Mark all that apply.
	☐ In college housing ☐ For child custody
OMD No. 0607-0919-C: Approval Expine 12/51/5011.	☐ In the military ☐ In juil or prison ☐ At a sessional ☐ In a running home

9.	What is Person 1's race? Mark	one or more boxes.			
	☐ White ☐ Android				
	Black, African Am., or Negro				
	American Indian or Alaska Native	e — Print name of enrolled or principal tribe. 🍞			
	Asian Indian	☐ Native Hawaiian			
	☐ Chinese ☐ Korean	Guamanian or Chamorro			
	Filipino Vietnamese	Samoan			
	☐ Other Asian — Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on. ✓	Other Pacific Islander — Print race, for example, Fijian, Tongan, and so on.			

Universal Graphic Objects



IBEAM

Final Questionnaire

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Content Synchronization

Before

9.	Wh	at is P	erson 1	's rac	e? Marl	k 🗶 on	e or n	ore box	es.		
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		Asian I Chines Filipino Other A example Pakistan	e Asian — <i>Hmong</i> ,	Print ra Laotian		iese	☐ G ☐ Sa ☐ 0	ative Ha uamania amoan ther Pac ce, for ex d so on	n or Ch cific Isla ample, Fi	nder —	Print

After

9.	What is Person 1's race? Mark X one or more boxes.
	☐ White ☐ Android
	☐ Black, African Am., or Negro
	American Indian or Alaska Native — Print name of enrolled or principal tribe. 7
	☐ Asian Indian ☐ Japanese ☐ Native Hawaiian
	☐ Chinese ☐ Korean ☐ Guamanian or Chamorro
	☐ Filipino ☐ Vietnamese ☐ Samoan
	☐ Other Asian — Print race, for example, Hmong, Laotian, Thai, ☐ Other Pacific Islander — Print race, for example, Fijian, Tongan,
	Pakistani, Cambodian, and so on. 🔻 and so on. 🔀

incluyó en la Pregunta 1?

Marque E todas las que apliquen.

Trusted sites

2. ¿Había personas <u>adicionales</u> quedándose aquí el 1 de abril de 2010 que usted <u>no</u>

Children, such as newborn babies or foster children

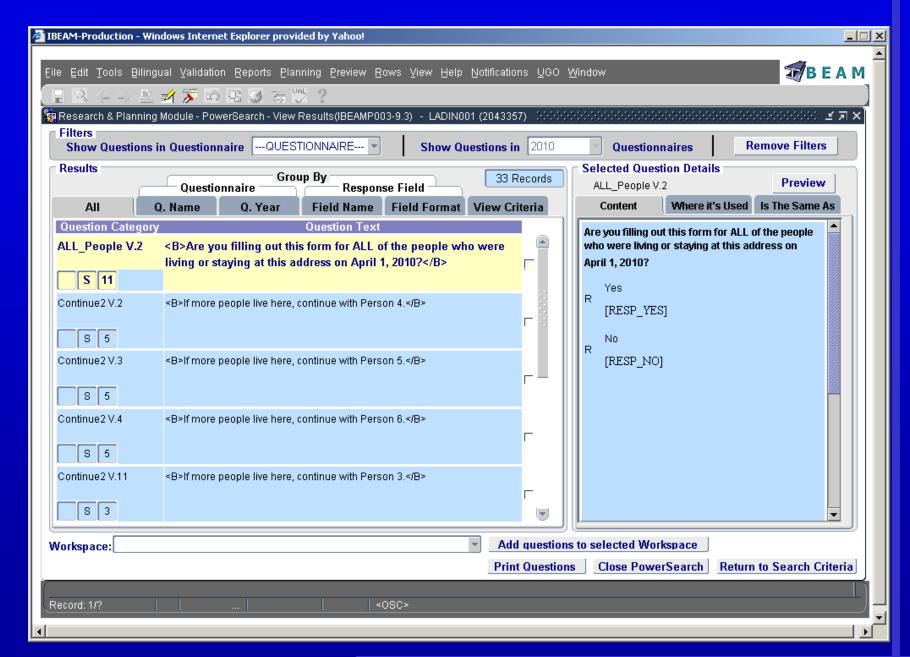
□ Relatives, such as adult children, cousins, or in-laws

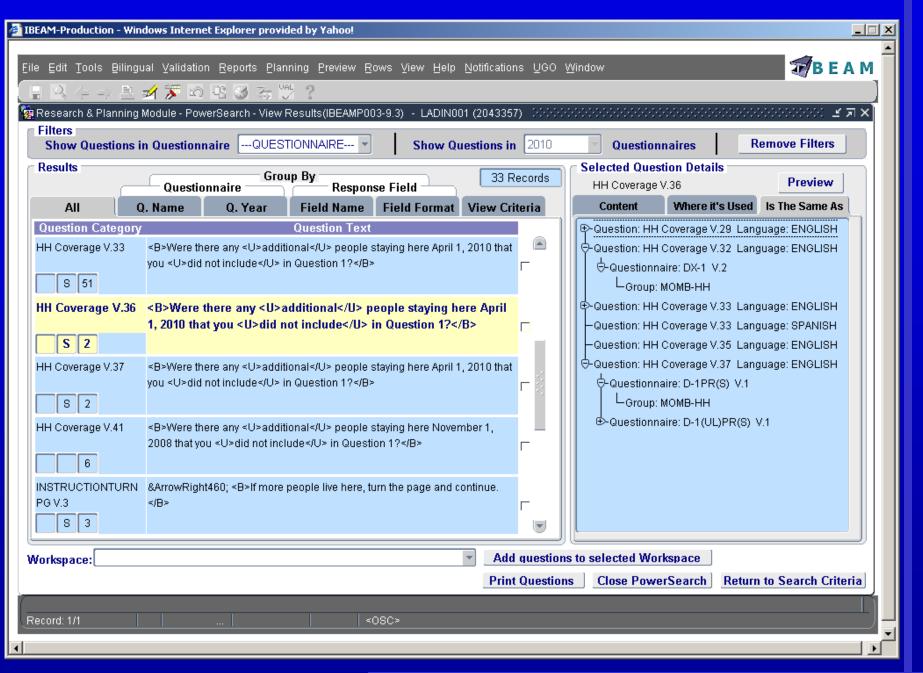
Done |

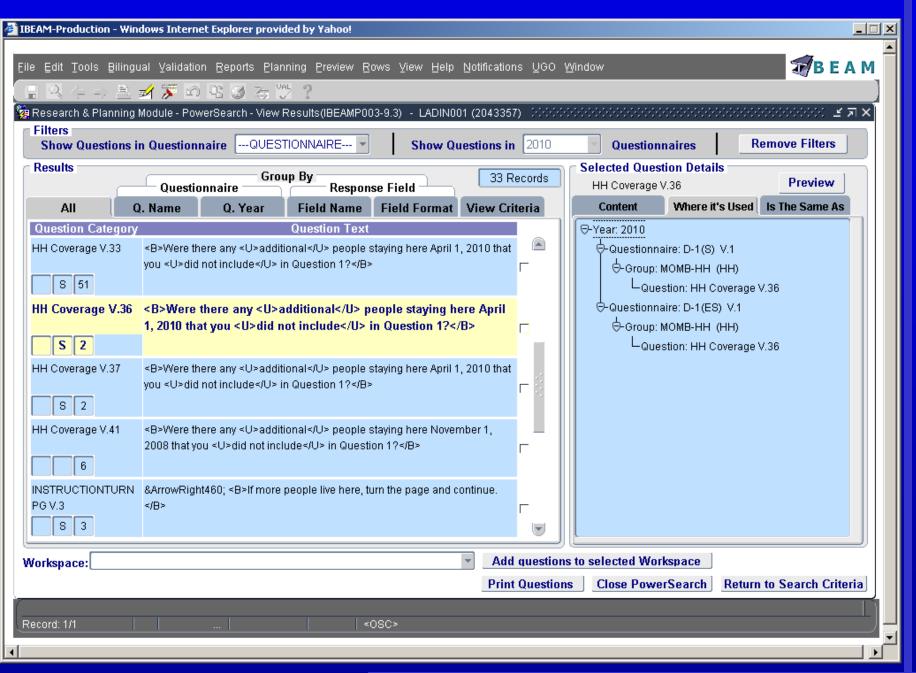
□ Nonrelatives, such as roommates or live-in baby sitters

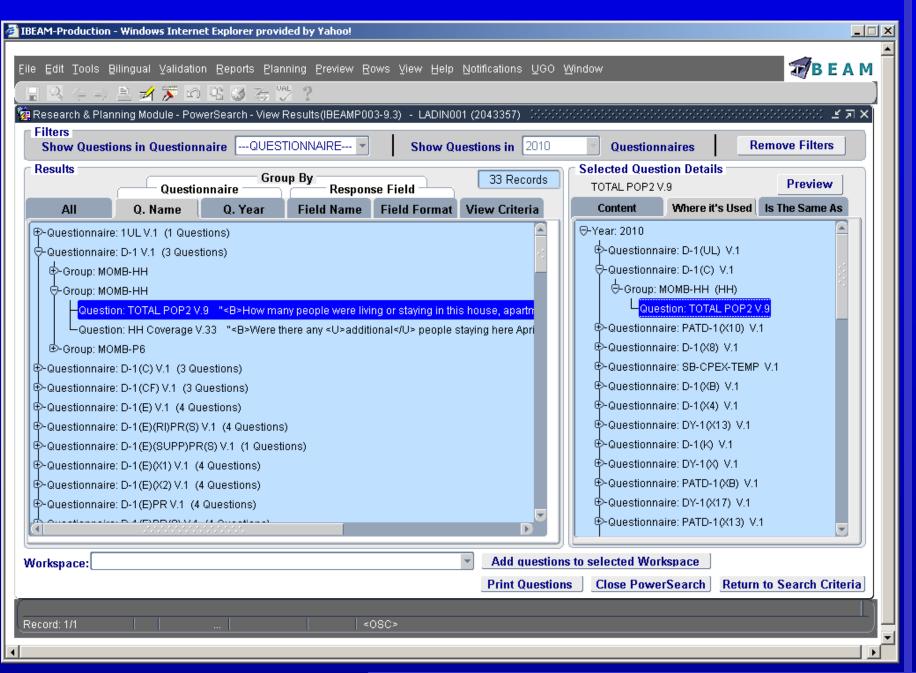
Census 2010 US DEPARTMENT OF COMMERCE D-1(ES) Economics and Statistics Administration 2010 Census U.S. CENSUS BUREAU **Javascript Controls** ☐ Hide Response Field Names ☐ Hide English Content ☐ Hide Spanish Content ☐ Show Questionnaire Details **Ouestion Group** MOMB-HH(Face-Page:1-1) SP-MOMB-HH(Face-Page:1-1) Face and Page on the questionnaire 2010 Census [Question Category: TITLEsp, Version: 8, Hidden] 2010 Censo [Question Category: TITLEsp, Version: 8, Hidden] This is your official U.S. Census form. It is quick, easy, and your answers are Éste es su cuestionario oficial del Censo de los EE.UU. Es fácil, rápido de contestar y protected by law. Please complete your form in the language most comfortable for you sus respuestas están protegidas por ley. Por favor, complete su cuestionario en el and return it today, [Question Category: INTRO, Version: 3] idioma que le, sea más cómodo y devuélvalo por correo hoy. [Question Category: INTRO, Version: 3] **Ouestion Version** (No question text) [Question Category: Total Pop, Version: 53] In this case it (No question text) [Question Category: Total Pop, Version: 53] Use a blue or black pen. contains only Use un bolígrafo de tinta azul o negra. instructions, there The Census must count every person living in the United States on April 1, 2010. is no question text El Censo tiene que contar a cada persona que vive en los Estados Unidos el 1 de abril Before you answer Question 1, count the people living in this house, apartment, or de 2010. mobile home using our guidelines. Antes de contestar la Pregunta 1, cuente a las personas que viven en esta casa, Count all people, including babies, who live and sleep here most of the time. apartamento o casa móvil usando nuestras instrucciones. The Census Bureau also conducts counts in institutions and other places, so: Cuente a todas las personas, incluyendo a bebés, que viven y duermen aquí la mayor parte del tiempo. Do not count anyone living away either at college or in the Armed Forces. La Oficina del Censo también lleva a cabo recuentos en instituciones y otros lugares, Do not count anyone in a nursing home, jail, prison, detention facility, etc., on April 1, por lo tanto: No cuente a alquien que no vive aquí por estar en la universidad o en las Fuerzas Armadas. Leave these people off your form, even if they will return to live here after they leave college. the nursing home, the military, jail, etc. Otherwise, they may be counted twice. No cuente a alguien que está en un hogar de convalecencia, cárcel, prisión, centro de detención, etc., el 1 de abril de 2010. The Census must also include people without a permanent place to stay, so: No incluya a estas personas en su cuestionario, aunque vuelvan a vivir aquí después de If someone who has no permanent place to stay is staying here on April 1, 2010, count salir de la universidad, hogar de convalecencia, ejército, cárcel, etc. De otra manera, serán that person. Otherwise, he or she may be missed in the census. contadas dos veces. **Unique Question** 1. How many people were living or staying in this house, apartment, or mobile home El Censo también tiene que incluir a las personas sin un lugar permanente donde Version on April 1, 2010? [Question Category: TOTAL POP2, Version: 13] quedarse, por lo tanto: Response Field Number of people = [HH POP COUNT] • Si alguien sin un lugar permanente donde quedarse se está quedando aquí el 1 de abril de Type and length (CSB3, 2) 2010, cuente a esa persona. De lo contrario, puede que no sea contada en el censo. (ComboBox with a length of 2) 1. ¿Cuántas personas vivían o se quedaban en esta casa, apartamento o casa móvil 2. Were there any additional people staying here April 1, 2010 that you did not el 1 de abril de 2010? [Question Category: TOTAL POP2, Version: 13] Static Graphic include in Question 1? [Question Category: HH Coverage, Version: 36] Object (SGO) Número de personas = [SP-HH POP COUNT] Mark | all that apply. (CSB3, 2) ☐ Children, such as newborn babies or foster children [HH COVERAGE CHILD] ☐ Relatives, such as adult children, cousins, or in-laws [HH COVERAGE RELAT] 2. ¿Había personas <u>adicionales</u> quedándose aquí el 1 de abril de 2010 que usted <u>no</u> incluyó en la Pregunta 1? [Question Category: HH Coverage, Version: 36] □ Nonrelatives such as roommates or live-in hahv sitters IHH COVERAGE NONRELL Morano X todos los ano entimos Unique Response Field Name It contains response text, response

type (checkbox in this case)









Agenda Topic: Innovative Approach

The IBEAM approach implements a 3-Dimensional strategy:



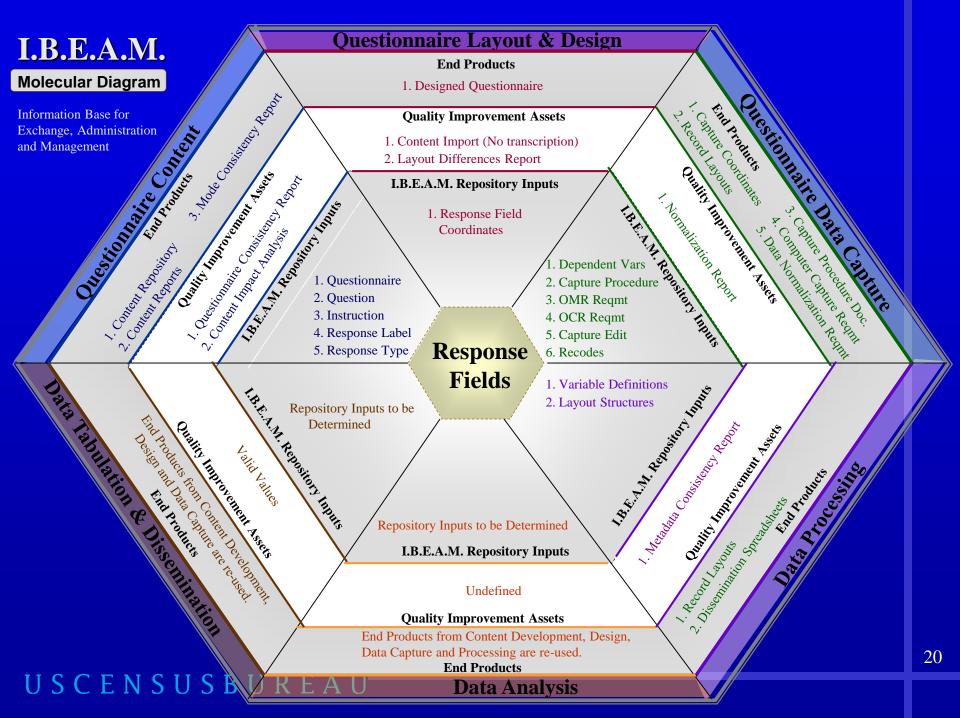
Dimension 1: Well-developed business Processes



Dimension 2: Innovative Businessfocused Solution to support processes

Repository
Questionnaires Definitions
Data structures
Keying specifications

Dimension 3: Well-structured Repository



Introduction of a COTS Solution

OneForm Designer Plus © by Amgraf, Inc. incorporated an XML interface to facilitate content exchange with the IBEAM system.

Later efficiencies
Content attributes (e.g., bold, italic) **B**I

Capture fields (e.g., checkboxes, segmented boxes)



Graphic objects (e.g., arrows, shapes)

"Get my Work done – Get Metadata for free"

All system development was focused on allowing users to accomplish business goals.

Metadata repository was transparent.

Unconventional Approach

Occasionally, functionality was omitted until users determined it was needed.

Additionally...

Make Resource Development a Priority

Competence and trust critical to effectiveness

Focus on System Reliability & Alignment with Business Goals – Not Metadata

Make sure technical mistakes did not undermine the effort

Assume Other Responsibilities as needed

Issues could be attributed to IBEAM.

Business First

& last

Everything begins and endswith the Business needs

Agenda Topic: Future Plans

- 1. Debrief and re-factor system
- 2. Increase Breadth (more lifecycle traction)
- 3. Increase Depth (even more functionality)
- 4. Address other modes
- 5. Incorporate new technologies as appropriate

Remember:

"Get my work done... get my metadata for free."

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