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Establishing and maintaining an integrated business survey program (IBSP)

International Workshop on Economic Census, Business
Registers and Integrated Economic Statistics

(Panel V - Integrated economic statistics)

Pierre Felx, Statistics Canada

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Introduction and Background

- The Integrated Business Statistics Program (IBSP) is a major transformational project being implemented over a 10 year period
- Covers all statistical processes from sampling to estimation
- 150 surveys to be integrated by 2019
- Mandatory use of generic corporate services for collecting, processing, storing and disseminating statistical information



IBSP Objectives and Guiding Principles

■ Six Core Objectives

- Improving data quality by applying standardised methods and processes, implementing harmonised content, and facilitating coherence analysis
- Reducing response burden
- Modernizing data processing infrastructure
- Integrating the majority of economic surveys into the new model
- Simplifying and standardizing processes to reduce learning curves and improve timeliness
- Reducing ongoing costs associated with operational aspects of surveys to realize efficiencies



Cornerstones of an Integrated Infrastructure System

- Scalable and Efficient
 - Designed to incorporate many different surveys while minimising processing constraints
 - Designed to facilitate changes to requirements and addition of surveys while minimising impact on processing staff



Cornerstones of an Integrated Infrastructure System

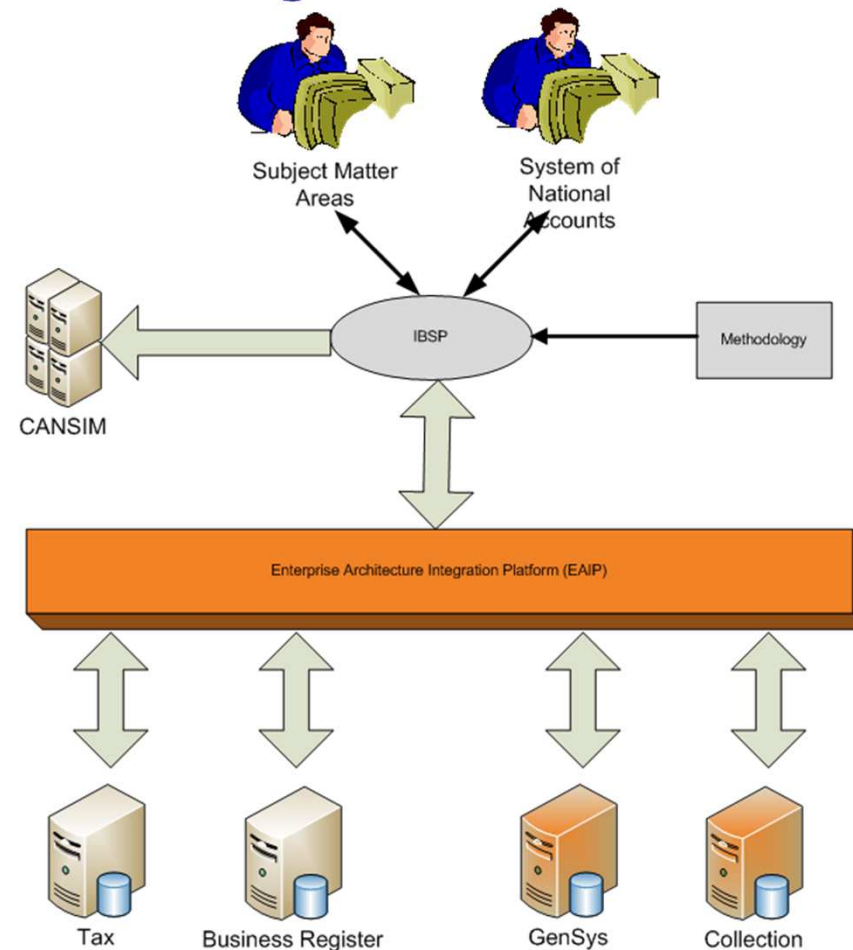
- Metadata driven model
 - Expansion of a metadata framework to cover all aspects of survey processing
 - Allows for customisation to meet survey needs through metadata adjustments
 - Increases efficiency, robustness, and responsiveness in delivering processing services for IBSP programs



Cornerstones of an Integrated Infrastructure System

- Building an integrated infrastructure
 - Core components for processing are a suite of generic services for sampling (G-SAM), edit and imputation (BANFF), estimation (G-EST), confidentiality (G-CONFID) and dissemination (G-EXPORT)
 - Data, Paradata and Metadata repositories acting as Data Service Centres
 - Integration of generic services and repositories facilitated by the Enterprise Architecture Integration Platform (EAIP).

Cornerstones of an Integrated Infrastructure System





Cornerstones of an Integrated Infrastructure System

- Information management functionality
 - Designed to facilitate management of data holdings based on both legislative requirements and Statistics Canada's information management directives
 - Requires documentation that provides context for micro data and aggregate data files
 - Application of retention rules to information holdings and deletion of information with no business value



Cornerstones of an Integrated Infrastructure System

- Advantages
 - Anchored on approved methodologies and technologies
 - Reduces the number of tools and customized systems in use
 - The level of vertical integration prevents the use of customized tools
 - Customization supported by metadata adjustments
 - Interchangeability of resources across surveys



Optimal Use of Corporate Services

- Centres of Expertise
 - Methodology
 - Business Register
 - Questionnaire Design and Resource Center
 - Collection
 - Processing
 - Dissemination
 - Administrative Data



The Business Register

- Common Frame for all surveys using the IBSP
- Data Service centre updated from multiple sources
- Ensures quality while avoiding overlap between surveys
- Source of data for allocation of data reducing response burden



Developing a Harmonized Content Model

- Implementation of a harmonized conceptual framework through the application of standards
 - North American Industrial Classification System (NAICS)
 - North American Product Classification System (NAPCS)
 - Chart of Accounts (COA)
- By harmonising variables and systematically applying standards, common content has been developed and implemented across programs.
- Use of generic modules for common variables



Managing Response Burden

- Maximize Tax Replacement
 - Complete integration with the IBSP sampling design
 - Backbone of financial data for the IBSP for small and medium enterprises for generic revenue and expense modules
 - Co-operation with the Canadian Revenue Agency
 - Enhances coherence
- Smart Replacement



Managing Response Burden

- Implementation of Electronic Questionnaires (EQ) as the primary mode of collection
 - Common platform for respondents and interviewers
 - Optimized and integrated with processing
 - Instant editing of data by the system, instant response by respondents
 - Paper only available on demand
 - Data available for processing on questionnaire submission
 - Over 60 surveys used EQ in 2014 with an average take-up rate in 2014: 85%



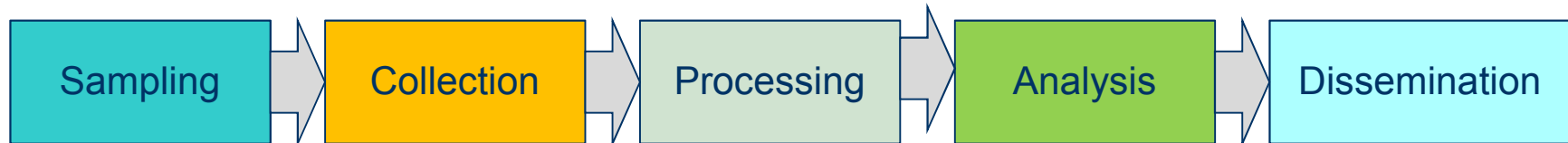
Managing Response Burden

- Active collection management
 - A term used to indicate that collection efforts are dynamically adjusted based on data already received
 - The cornerstone of active collection management is the Rolling Estimates (RE) model whereby estimates are produced in an iterative fashion until an acceptable level of quality is reached
 - Quality indicators for key variables of key domains of estimation will provide the information necessary to determine which outstanding units need to be followed up and which do not
 - If all quality targets are met for a specific survey, active collection will be closed and follow-up can be stopped; otherwise, follow-up or editing resources will be allocated to units that are deemed influential to key estimates and their quality.



Previous Processing Model

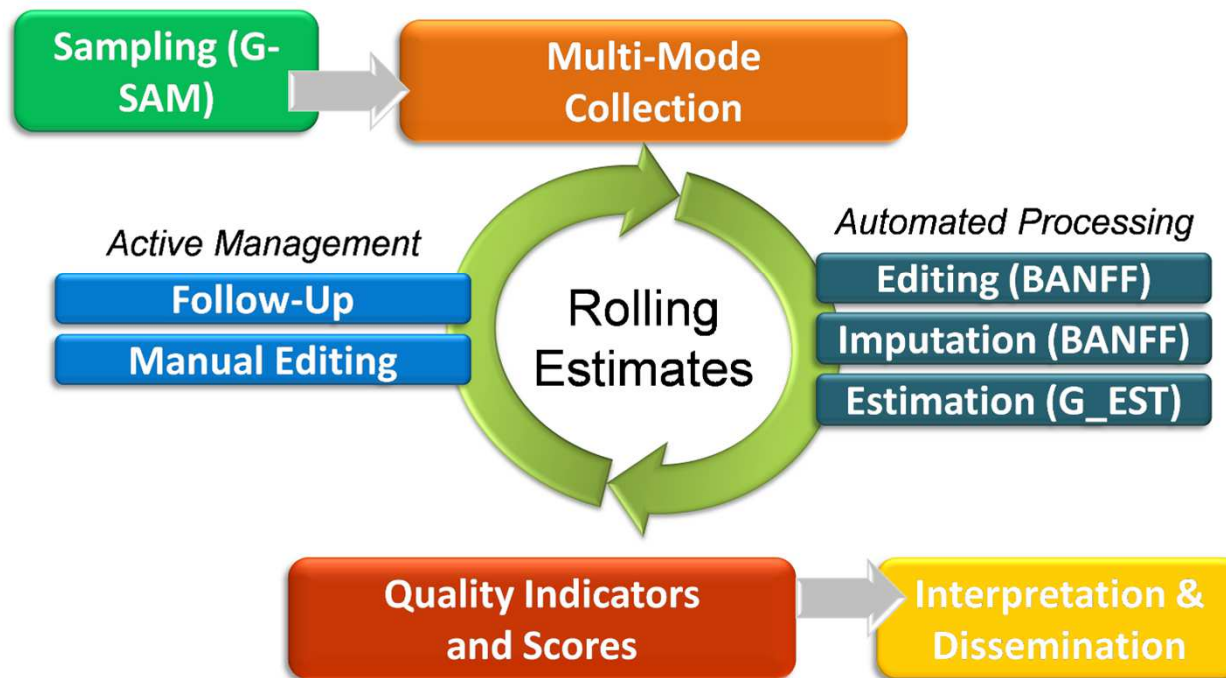
- Linear Process



- Very long processing period
- Prioritization of follow-ups based on a score established a priori
- Several occurrences of manual interventions although...
- Estimates and Quality Indicators are produced after collection closes
- Heterogeneous micro and macro-editing strategies



Rolling Estimates Model





Incorporating a Coherence Analysis Framework

- Coherence Analysis throughout processing
- Dedicated personnel for coherence analysis
- Development of more sophisticated tools for coherence analysis
- Involvement of subject matter experts on a regular basis



Large and Complex Enterprises

- Key goal of the IBSP is to attain high quality estimates while minimising response burden.
- Enterprise Portfolio Manager (EPM) Program
- Use of a new tool for customized reporting arrangements



Methodology Approach

- The methodological approach makes use of core IBSP objectives including reducing response burden, maintaining quality and maximizing use of administrative data.
- Key methods include:
 - Two-Phase Sampling
 - Calibration
 - QIMI

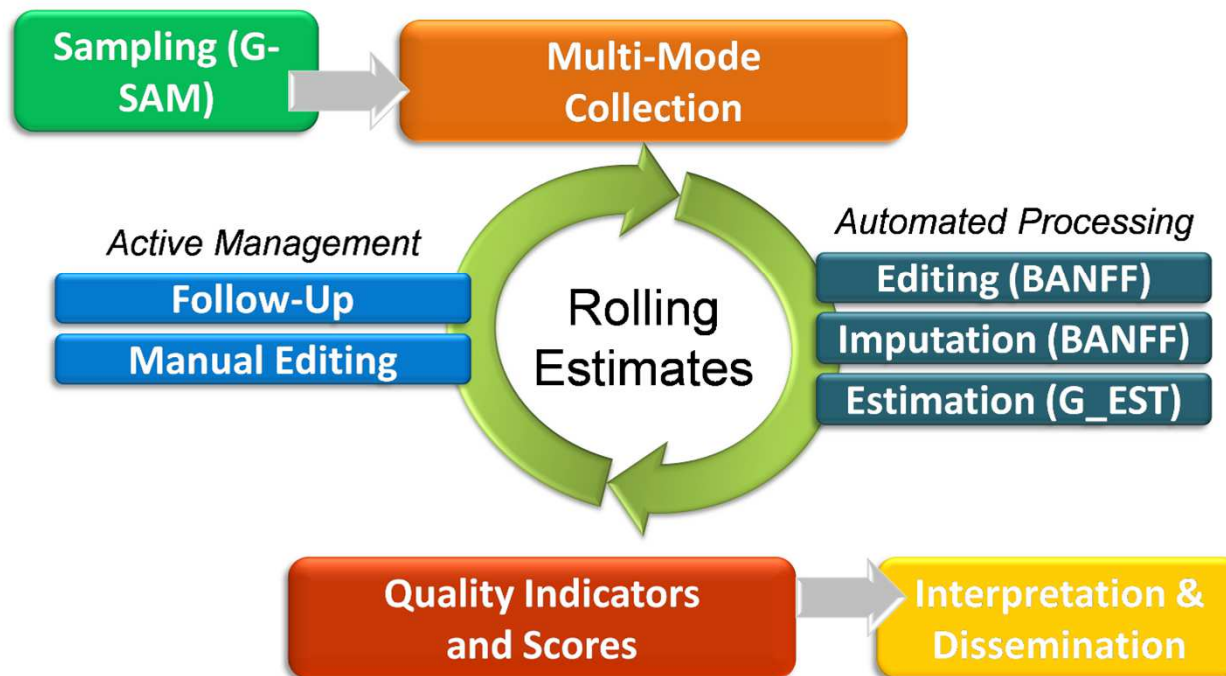


Strategy for Analysis and Dissemination

- Top-Down Approach for data analysis and validation
 - Produce and review estimates early, resulting in significant quality improvements of the estimates
 - Timeliness gains since some domains will not require significant manual intervention to achieve quality targets
- Integration with the system of national accounts (SNA)
 - Harmonized content based on industry, commodity and financial standards results in more coherent information that is designed to mesh with the SNA conceptual framework
 - IBSP analytic and data access tools have been designed so that both subject matter and SNA staff can use the same interfaces to access and analyse data residing in the IBSP data mart



Strategy for Analysis and Dissemination





Governance Model

- Committee structure
 - 8 operating committees with specific mandates and decision making authority with two key committees
 - Project Management Team (PMT)
 - Change Management
 - Corporate tool (JIRA) for communication and change management
- Management information system
 - Integrated Schedule
 - Standardised Reports



Challenges

- Obtaining Wide Support
 - Strong belief in the uniqueness and non-standard nature of the program
 - Fears that client needs will not be met
 - Uncertainty as to the new roles and responsibilities
- Overcoming the Challenge
 - Strong governance
 - Engaging program managers
 - Deconstruction of existing programs
 - Proof of concepts
 - Communication plan



Changes

- Changes in all activities from content review to compiling estimates and everything in between.
- The way different areas interact with each other has been modified.
- A continuous need to refine as we learn more about what works well and what needs adjusting.



Benefits

- Updated survey methods and processes will take advantage of the latest available systems technologies.
- Data will be more coherent across programs through the application of harmonized concepts and standardized questionnaire content.
- Response burden will be reduced through more intensive use of administrative data, an EQ option and less collection follow-up.
- Analysis will be facilitated through the introduction of rolling estimates and the application of common tools for validating data.



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Thank You