United Arab Emirates

UNITED ARAB EMIRATES دولة الإمارات العربية المتحدة
NATIONAL BUREAU OF STATISTICS المركز الوطني للإحصاء

From Dissemination Toward:

Official Statistics Smart Solutions

Empower the UAE' statistical system to drive toward improvement, modernization and integration

January 2015

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Overview

The National Bureau of Statistics (NBS) in line with the UAE government policy starts its development process to move toward mobile government services, aiming to maximize the satisfaction and trust of users with regard to government services where official statistics represent a major role in that. And for that purpose NBS had launched a development project which consists of 4 components in its first phase; Data portal, open data, smart device applications, and data collection and management initiative. The following parts represent a description of the logical and physical structure of the NBS data portal, as it's the starting step in developing a more integrated and up to date SMART STATISTICS project, and in short NBS can be summarized:

NBS Legal framework

- The Federal Law No. 1 of 1972 concerning the role of ministries
- The Federal Law No. 9 of 1974 concerning the role of statistics
- The Federal Law No. 9 of 2009 concerning establishment of NBS

NBS Scope of work

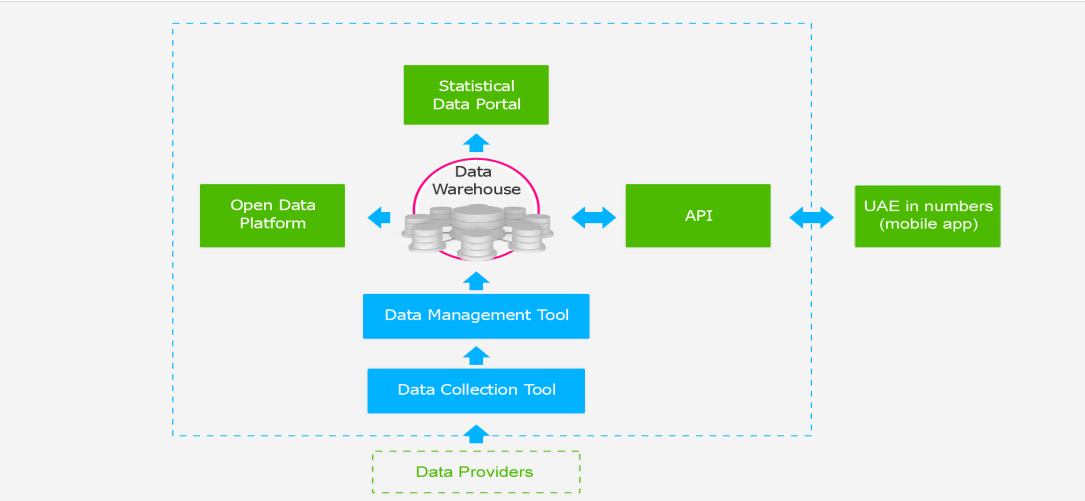
- Developing the UAE statistical strategic plan.
- Methodological standardization of methods / measures for compiling official statistics
- Coordination, capacity building (training), statistical awareness
- Quality control of reliable, and comparable statistics

NBS Purpose

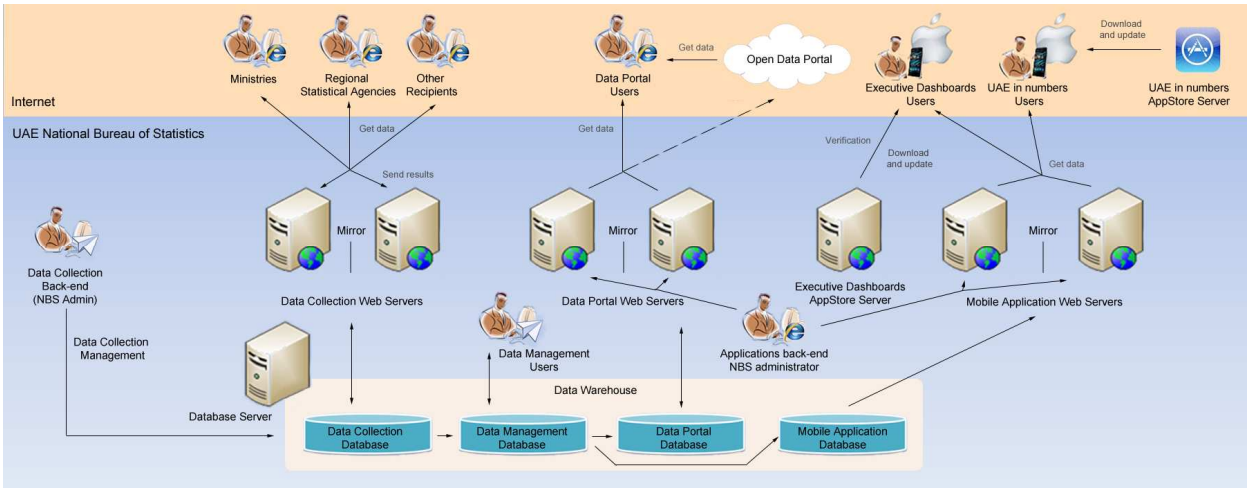
- Aggregating, and Collecting, classifying, analyzing and dissemination of UAE official statistics

Generic Design

The following diagram shows the entire flow from the Data Collection through the Data Management to the Data Dissemination.



This technical design is executed through the following architecture:



All the data collected from the local and federal data sources go through the validation and transformation processing using the Data Management Tool and be stored in the UAE Data Repository to be disseminated via the UAE Data Portal, Open Data Platform or mobile application, where the released mobile application have access to the database via the API.

Overall components roles

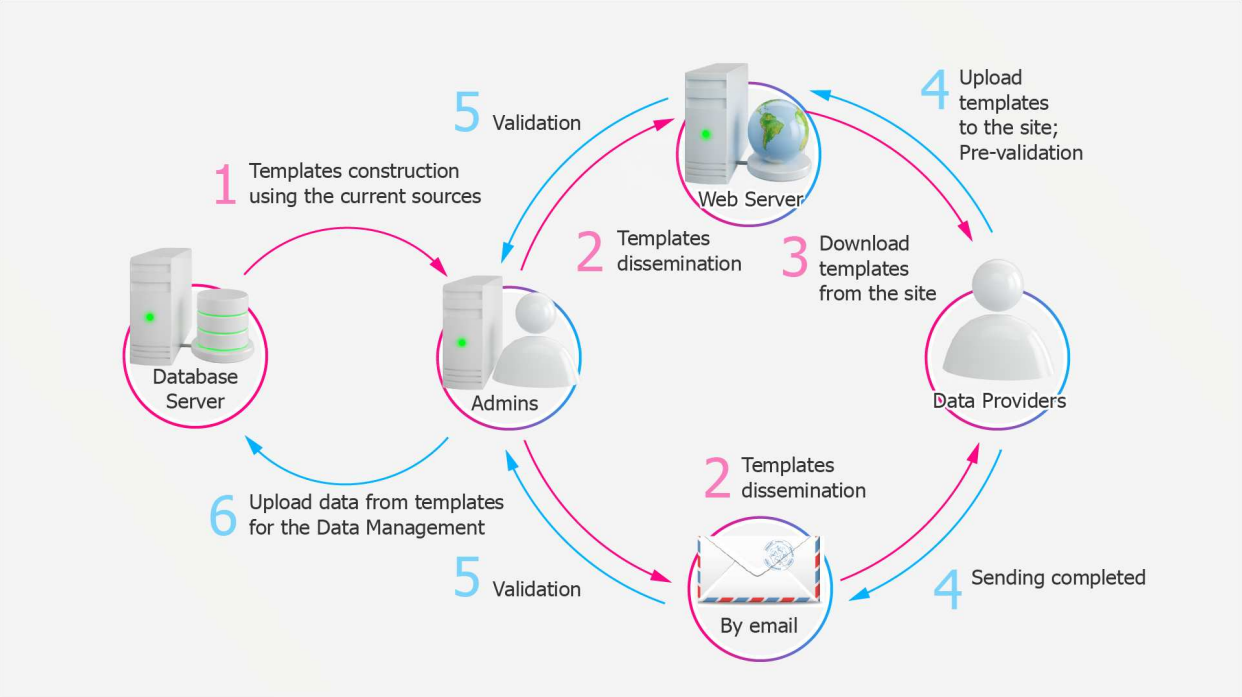
The following roles were defined to support the entire process the system:

- **Data Collection administrator** creates templates on the NBS side, disseminate them and validate to upload raw data to the Data Management Tool.
- **Data Provider** is external users who populate the NBS templates and them to be validated.
- **Data Analyst/Statistician** is a user of the Data Management Tool.
- **Data Portal Administrator** is responsible to upload the data and create content within the Data Portal.
- **Open Data Platform and Data Portal users** are external users which are able to use all the functionalities of the web-based solutions.
- **UAE in numbers users** are external users of the mobile application.

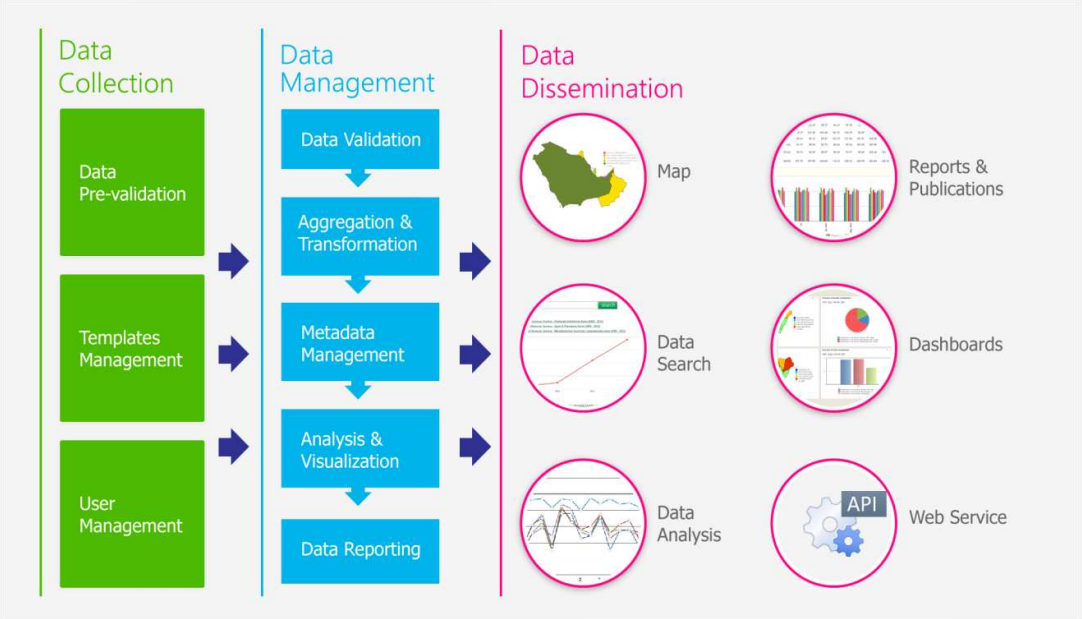
System Overview

Data Collection Application

To develop an integrated statistical system covering Federal and local partners in the UAE national Statistical system, and to have a functional ,multidimensional applications (Data portal, Open data, and smart devices applications), a well-organized process covering data collection, management and dissemination of data was established to insure integrating data collection process between the headquarter office and its regional and local offices as well as other federal and local data providers.



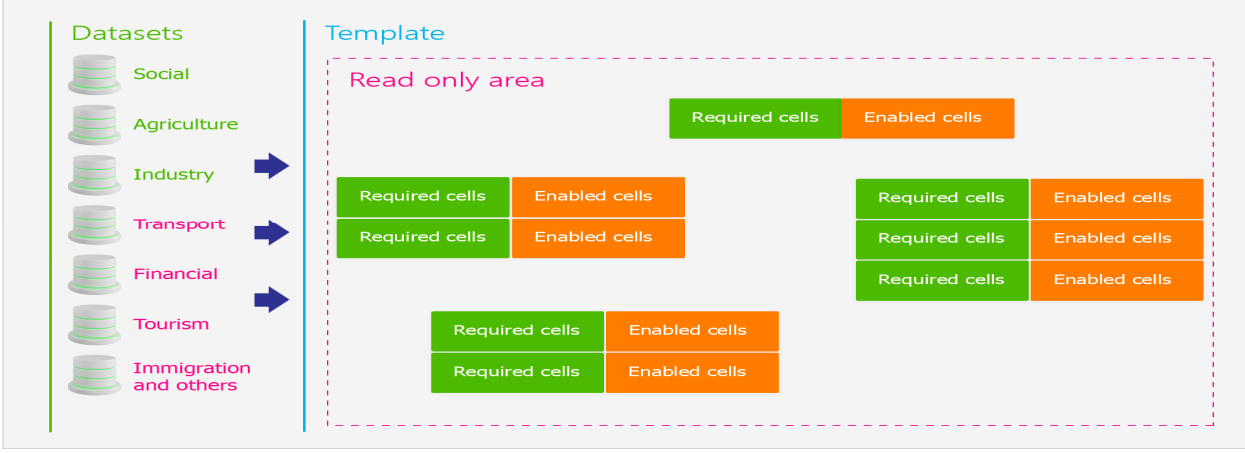
The Data Collection part consists of the back-end application that can be used to create data collection forms, as well as a Web front-end application for data providers to download such forms for offline data work and subsequent data upload once forms are completed. And this component of the project plays the most significant role along the whole work, as it needs to insure fulfilling the needs the other parts.



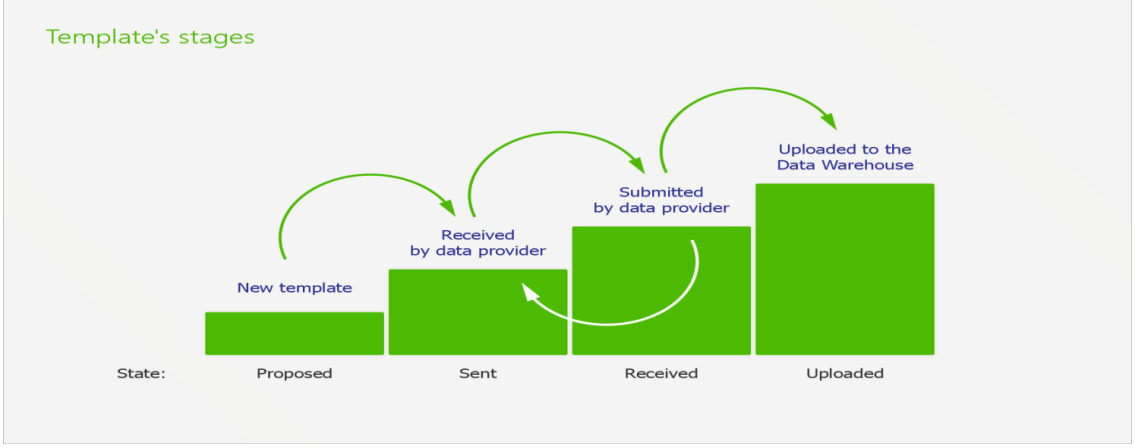
Key steps supported by the Data Collection Application can be described as follows:

- Using the Data Collection Application, NBS data administrators can design or create a set of data templates by specifying the structure and the data or information to be collected.
  NBS can set up various rules in a template, including basic data validation rules and rules to check for inaccurate or inconsistent data records, typos or spelling errors, obsolete records or data, and incomplete records or data. Validation rules can be modified or expanded by NBS administrators using the Data Collection Tool back-end.
- Once created, a data template can be published on the Web front end, where various authorized data providers can download it and use it to provide the necessary data. In addition to online publishing of data templates, the data collection tool will also enable data administrators to send these templates by email.
- As the data work is done, the completed data templates can be uploaded back to the Web front end of the Data Collection Application.
- During the data upload process, validation procedures can be performed in real time to reveal inaccuracies or inconsistencies in data (outliers or out-of-range values, incorrect and missing values, and so on) while a template is being uploaded by the contact person.
- As the data validation procedures are completed, users will be presented with a validation report outlining where values might be incorrect; users can then correct data in the template and upload it again if needed. All these procedures will be logged, and they can be reviewed (along with the uploaded files) by the data administrators.
- In the case where data is exchanged via email (such as the case where the data administrators choose to send the data templates to data providers via email or receive data back via email), the administrators will need to upload data using the back-end and review the validation reports. Subsequent errors in the data can then be communicated to the data providers.
- As data is ready and approved, it can be loaded into the data warehouse and subsequently processed using data management software and then disseminated through various means.

The data template contains hidden sheets with metadata and functions written in Visual Basic for Applications (VBA) for simple data-checking purposes (such as preventing data providers from submitting invalid entries). Certain cells within the data template can be locked to protect the worksheet from unwanted changes.



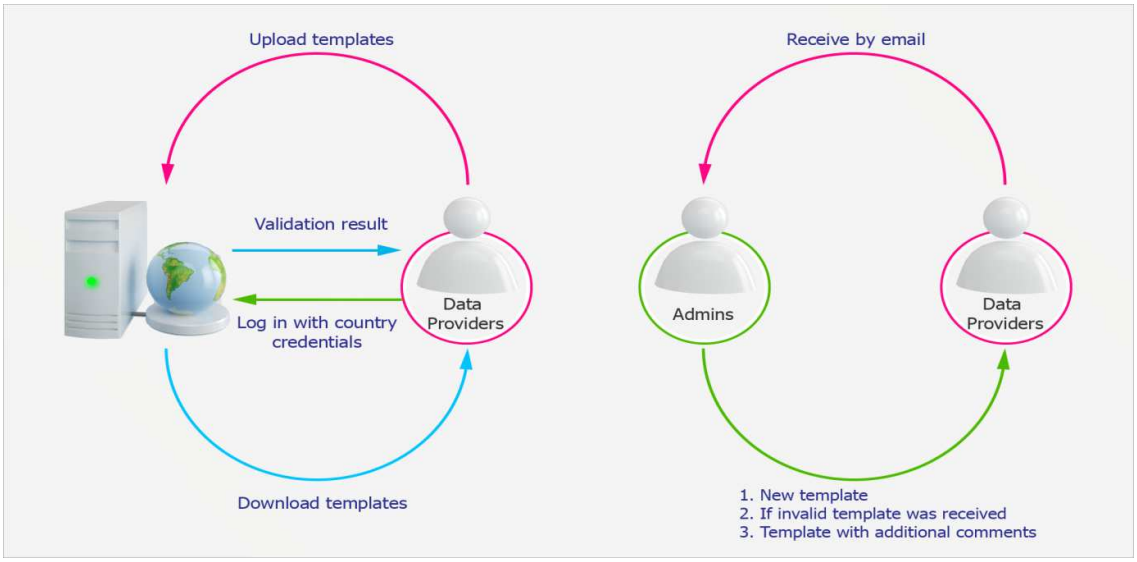
The administrator may choose among all available templates to include to a task. A template within a task will go through several stages between the administrator and the country manager during the process of the data collection. All template revisions are available to review.



During the upload process, validation procedures will be performed in real time to reveal inaccuracies or inconsistencies in data, including outliers and out-of-range values, incorrect and missing values, and so on.

Upon completion of data validation, the system generates a validation report that identifies possible errors or inaccuracies; the data provider can then correct the data in the template and upload it again if needed. The system logs all these procedures, along with the uploaded files, for review by the NBS data administrator.

If the NBS data administrator opts to send the data template by email or receive data back by email, he or she can upload the data using the back-end application to perform validation and review the results. Subsequent errors in the data can be sent to an appropriate data provider.



Once data is ready and approved, it can be loaded into the NBS Data Warehouse to be processed using the Data Management Tool and to feed in later stage the data portal on regular base>

Data Portal

Create an official data dissemination channel for UAE (http://dataportal.nbs.gov.ae) .

The Statistical Data Portal is built atop of the UAE Data Repository for data dissemination purposes. As the official data dissemination channel for NBS, the portal provide many advanced features for analyzing, visualizing, and reporting statistical data for UAE at the national and regional level.

Key features of the Statistical Data Portal include:

- Data Search that enables users to easily perform data search over the entire Data Portal
- Interactive Maps to help visualize and compare data across geographic regions and time
- At-a-glance Dashboards that provide snapshots for the country or a specific region/topic
- Data Analysis for ad-hoc data analysis and visualization (for power users)
- Bulk Download to enable users to extract data from the portal into various external formats
- Document Library for sharing commonly-used papers, reports, and publications
- Administrative Tools to manage various contents within the Data Portal

The Country Data Portal is built on a web-based platform. It contains six components: Data Search, Dashboards, Map, Indices, Data Analysis, Documents, and Bulk Download.

Data Search

The module provides an easy and efficient tool for searching any indicator data in any of the data sources of the Portal and offers the following functionality:

- Users are able to search indicators within one source or a set of sources.
- For an exact search users can type key words or phrases, use the logical operators AND and OR, operands and double quotes in a search string.
- After typing the search criteria in the search field the searching process begins automatically, the list of data series found is displayed under the search field.
- Users are able to preview the data of the found data series in a table and a chart forms.
- Users can select the desired data in the table for the following representation and exporting the results to an external file format, such as XLS and PDF.

Data Analysis

This module will make use of the PROGNOZ OLAP technology, an efficient analytical tool for performing multi-dimensional queries on various data sets, with resulting display exportable to external formats.

The Data Analysis module provides users with the following capabilities:

- Users can interact directly with the data to create an explorer view that best meets their needs. Users are able to conduct custom analyses effortlessly and visualize the results in table and chart form.
    - Table view offers the following features:
        - The “Rotate table” function is used to change the position of dimensions in a table.

- The "Totals" can be shown by rows and columns based on data from summary table cells.
- The "Data filtering" is used to exclude unnecessary information from the table.
- The "Data Highlighting" function is used to highlight cells that satisfy the conditions set by the user.
- The "Table style" enables to choose from numerous default styles or create own style of a table.
- The "Conditional formatting" is used to adjust appearance attributes for cells meeting a set of conditions.

o Various chart formats are available: Lines, Columns, Bars, Areas, and Pies. Chart view offers the following features:
- A user is able to show labels with values on a chart.
- A user can view series in columns or in rows.
- A user is allowed to put a legend onto any place of a chart or hide a legend.

- Module support all key features of multidimensional data technology:
  - "slice and dice"
  - "drill-down"
  - "roll-up"
- Users can drag and drop dimensions from one component to another and select any set of locations, time frame, and any other indicators of their choice.
- Using of context menu is available. Users can review extended selection functions by right clicking on dropdown list of any dimension.
- After changing a selection or positions of dimensions of a data source, a table, chart or a map will be updated automatically. Or user can forbid an automatic refresh and set a necessary selection and positions of dimensions and then click the button to update a table or a chart.
- Data dynamically linked to the data warehouse for automatic data update.
- Export to appropriate Microsoft Office products, Adobe products, and other common file types, and print.

UAE Statistics: Smart Devices Application:

This part covers the development of SMART DEVICES applications (mobile apps) covering all key UAE statistics in one place.

As more users turn to mobile devices to access data and information, implementing a mobile strategy can increase engagement and satisfaction of users, particularly those who are keen to have information on-the-go. Key UAE statistics can be incorporated into an app, namely UAE in numbers, to provide the mobile population quick access to data from tablets and smartphones alike.

The UAE in numbers is a public application and available to download from different stores on the web.

Key features of the UAE Statistics include:

- Browse through country profiles or indicator reports
- Analyze data across regions, indicators, or time

- Gain access to presentation-ready graphics and tables
- Share data and charts for use in presentations and projects
- Access the latest statistical publications (market briefs, policy briefs, working paper, and other reports)

The application allows users to visualize the data for the selected indicators on the line or bar chart, table or map, create, edit and save reports, and export the data.

The Statistics consists of four different sections:

1. Overview
2. Indicators
3. Data Query
4. Notifications

Main Talking points: Lessons learn and things to do

This product represent the new development path that NBS starts to incorporate new developments in IT arena to serve statistical proccess and to inhance the utilization of official statistics and comunicating its statistics to a wide range of users; and this proccess developed by progress and time, the first stage of this work witnessed anumber of chalenges and accomulation of experiences including:

- The need for a harmonized statistical proccess, and for that NBS introduces the ISO standards to document and to organize its proccess in the most proper standards, and for that its now certified with by BSI on ISO9001:2008, ISO 10015 for training, and ISO 27001:2013 for information security, and also through EFQM C2E (Committed to Excellence certificate).
- The Harmonization of concepts and diffinitions and statistical clasifications among all statistical system partners: and for that the NBS had developed and launched the Statistical Quality and Standards Gate and release online for all users, to serve as the sole methodological refernce for all users in UAE.
- The need to harmonize the timeleness of stattistics: where NBS worked on tow dimentions; first harmonising the timing of statistical peoccess , by developing the national statistical strategy, and producing the Advanced Release Calender (ARC) , and also by developing the capacity of partners through joint ccordination teams and task forces, ending with using same surveys tools for statistical programs>
- The need to biuld a common understanding and common values and litreture among statistical system partners, through developing the National Statistical Net, and executing a training program to benefit all relevant institutions in the UAE.
- The need to develop a user friendly products and services: for that the NBS had conducted several coordination and needs assesments meetings and workshops with partners and key users, in order to incorporate their needs and expectations in the development proccess, and also to formalize the flow of needs and inputs to NBS on regular base, by signing memo of cooperation and understanding with partners.

- The need for a proper documentation: and for that the NBS uses the Quality and Standards Gateand the smart application for documentation purposes and for metadata initiative.
- The need to insure effectiveness and efficiency; and for that the NBS applied the project cycle methodolgy over the whole phases of the project which was directed by the senior statistical expert at the NBS.
- This initiative had served as the official one stop station for deriving all needed information by users and will play a significant role in the future in promoting statistics in evidence based decision and policy making proccess, and extra follow up will be necessary to insure that the initiative keeps as user oriented driven.