



# Agenda

- **Overview**
- **Role Today**
- **How We Fulfill Our Role**
- **Closing Message**



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# Overview

The General Commission for Survey (GCS) is:

- The National Mapping Agency of the Kingdom of Saudi Arabia
- Established 2010
- Corporate body reporting to the Defense Minister
- GCS President is the Chairman of the National GIS Committee (NGISC)
- Provides the Secretariat for the NGISC



# Overview – Mandate

## Mandate

- Carry out Geodetic, Topographic and Hydrographic surveys
- Develop Products that provide a Kingdom-Wide Base for:
  - Location
  - Geo-Referencing
  - Marine Navigation
- Serve Geospatial Data, Products and Services to all users

# General Commission for Survey (GCS)



**First formal meeting of the UN-GGIM Arab States  
Riyadh, Kingdom of Saudi Arabia  
24th – 25th February 2015**



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# Role Today – What we do



GEODESY & LAND  
SURVEY

AIRBORNE  
SENSORS

TOPOGRAPHIC  
SURVEY

HYDROGRAPIC  
SURVEY

GEOSPATIAL  
INFORMATION  
CENTER

PRINTING &  
REPROGRAPHICS

**GCS Support Environment**



# Role Today – GCS Fundamental Data Themes

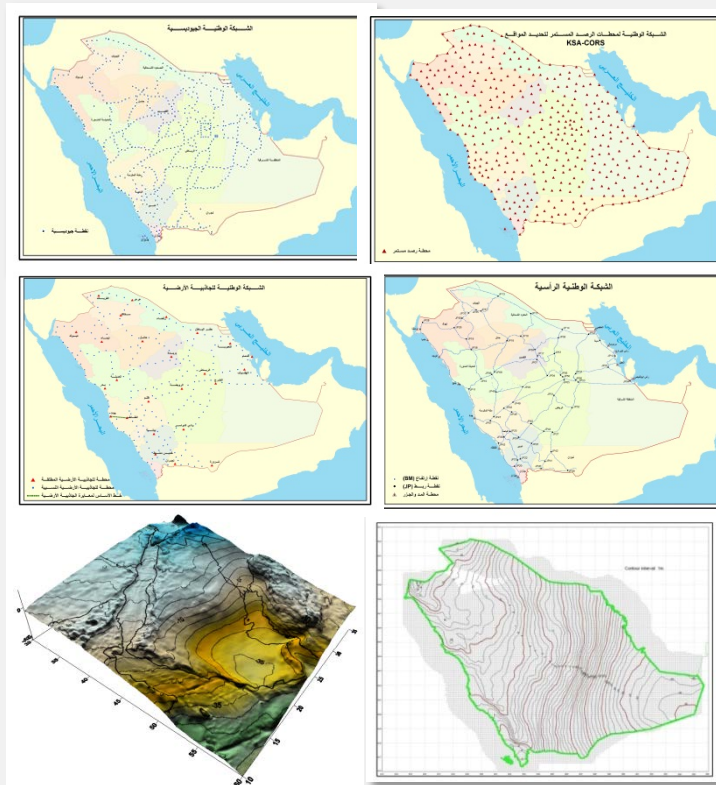
**GCS Provides the Fundamental Data Themes that other agencies can use to reference their Geospatial data:**

- 1. Geodetic infrastructure
- 2. Topographic Base Maps
  - Vector Data
  - Raster Data
  - Elevation Data
- 3. Hydrographic Charts
  - Electronic Navigation Charts (ENC)
  - Paper Navigation Charts (PNC)
  - Bathymetric maps



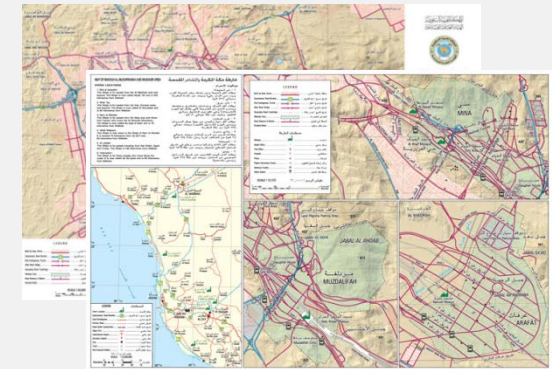
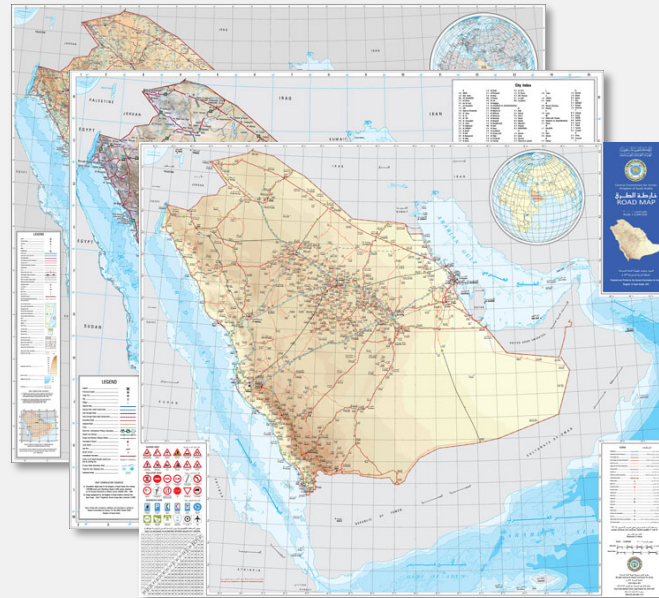
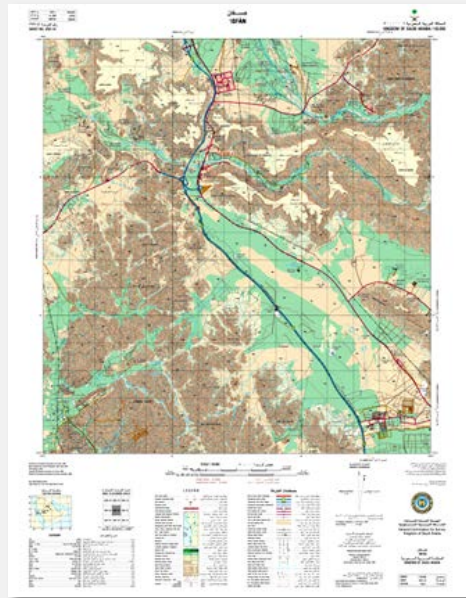
# 1. Geodetic Infrastructure

- Geodetic Horizontal Network (Passive)
- KSA-CORS
- Gravity Network (Absolute and relative)
- Vertical Network
- Geoid



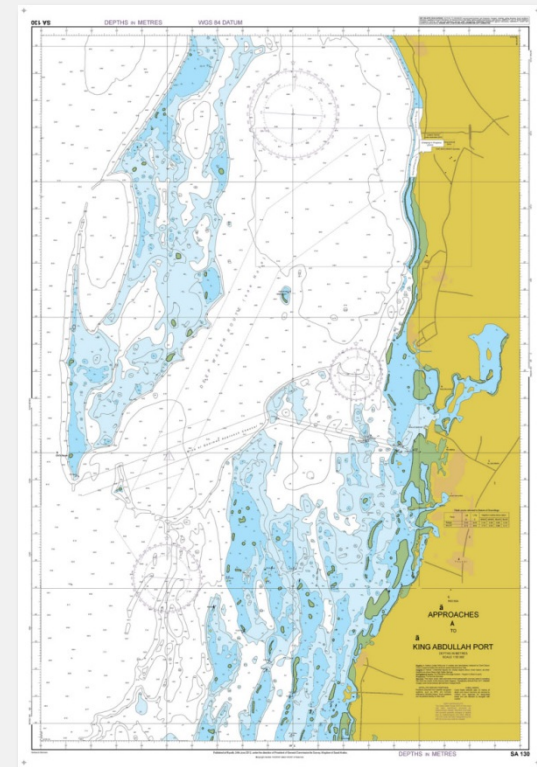
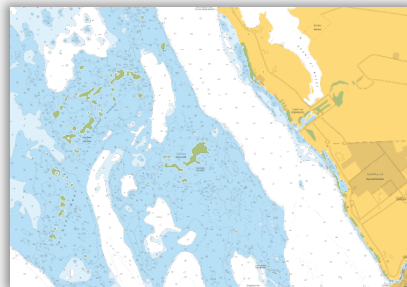
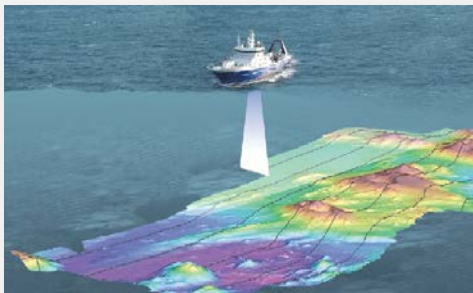
# 2. Topographic Base Maps

- Small and Medium scale



# 3. Hydrography Charts

- Electronic Navigation Charts (ENC)
- Paper Navigation Charts (PNC)
- Bathymetric Maps

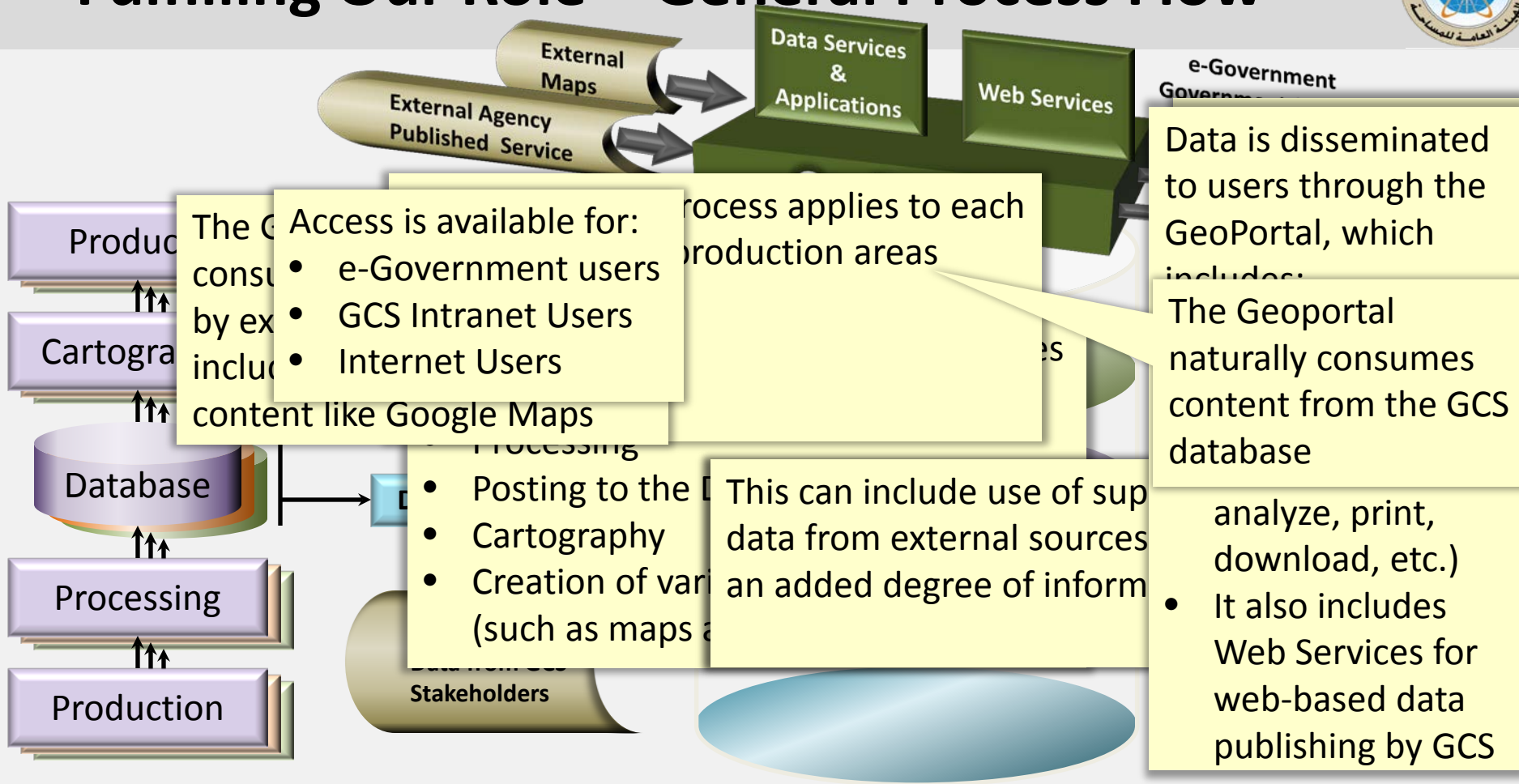




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# Fulfilling Our Role – General Process Flow



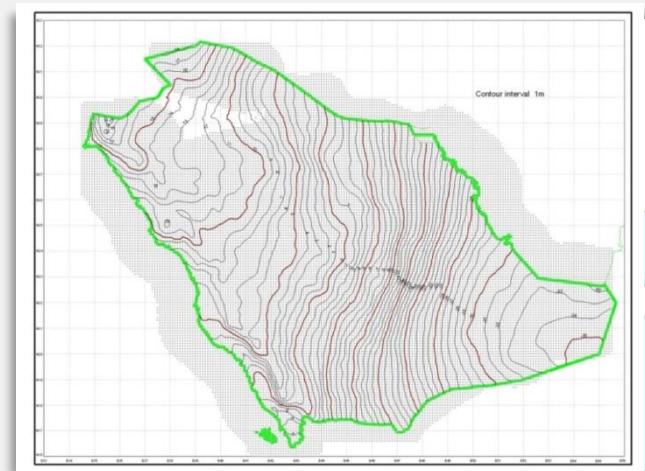


# Fulfilling Our Role – Use of Standards

- **GCS Applies standards based on ISO TC211/OGC/IHO for**
  - Data Dictionaries
  - Data Models
  - Metadata
  - Web Services
  - etc.

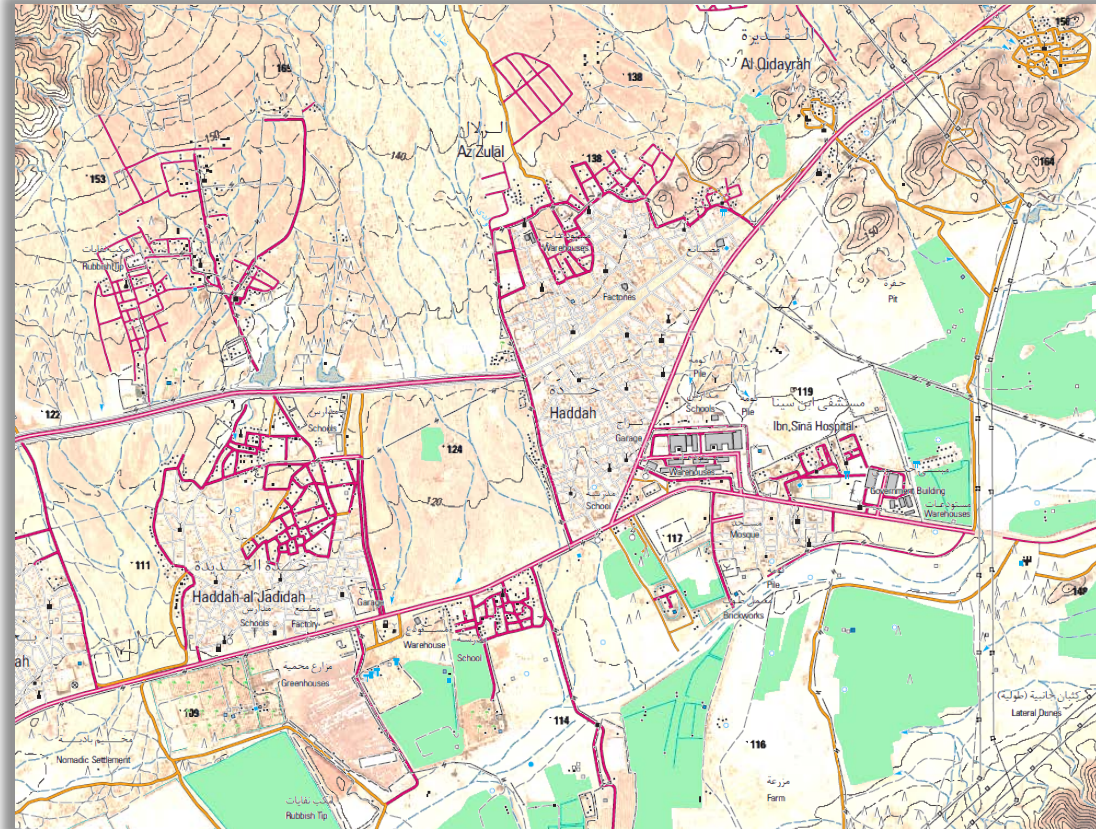
# Fulfilling Our Role – Geodesy

- **Establishment and Operation of “Continuously Operating Reference Stations” (CORS)**  
Allowing surveyors to calibrate their observations with known and established values
- **Gravity Surveys and Geodetic Levelling**  
To determine the separation of the Geoid from the WGS 84 datum
- **Manage NGN**  
The National Geodetic Network, comprising the Gravity Survey, GLS levelling, and CORS



# Fulfilling Our Role – Topography

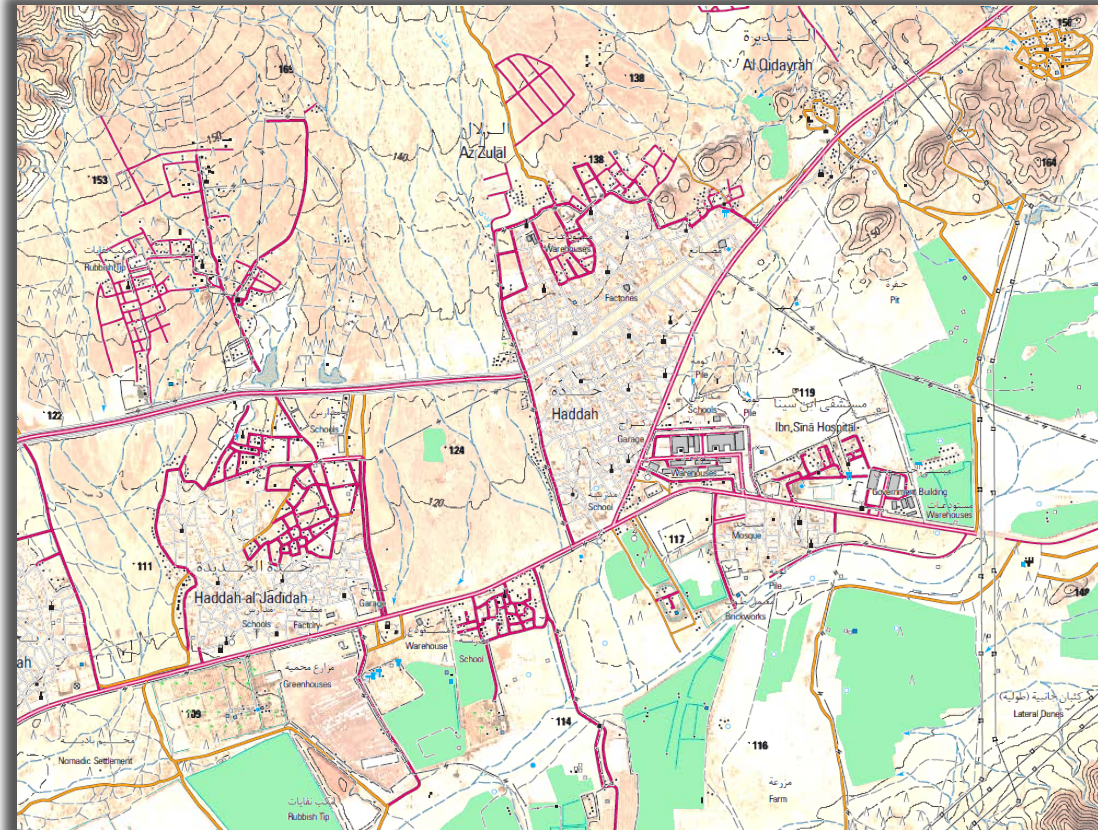
- **Managing Topographic Data Acquisition, which includes:**
  - Aerial Photography
  - Ground Control
  - Triangulation
  - Photogrammetry
  - Field Verification
  - Geographic Name Collection / Validation





# Fulfilling Our Role – Topography

- **Managing Topographic Data, which includes:**
  - Imagery
  - Terrain features
  - Cultural features
  - Annotation in both English and Arabic



# Fulfilling Our Role - Topography



- **Topographic Products, which includes:**
  - 1:25K Topographic Line Maps
  - 1:2M National Topographic Line Map
  - 1:3M Road Map
  - 1:4M Reference Map
  - Acquisition of a wide range of imagery



# Fulfilling Our Role – Hydrography

- **Managing Hydrographic Data**

This includes

- Terrain
- Shallows
- Symbols
- Soundings
- Annotation

- **Managing Hydrographic Products**

This includes Electronic and Paper Navigation Charts (ENCs, and PNCs)



# Fulfilling Our Role – Hydrography

- **Other services such as:**
  - Monitoring Tides
  - Predicting Tides
  - Issuing Permits
  - Conducting or participating in oceanographic studies



# Fulfilling Our Role – Validation and Dissemination

- The Geospatial Information Center (GIC) has as primary role:
  - Receiving processing and validation (QA/QC) of production data before external dissemination
  - Dissemination of geospatial data from different sources (including external)
- To that end, deployment of a Geospatial Portal (Geo Portal) has been central to achieving its role, that allows all stakeholders the ability to store, manage, find, access, and use geospatial data

# Fulfilling Our Role – Validation and Dissemination



## GCS Geo Portal

- **GCS Geo Portal phases include:**
  - Using spatially enabled BI (Business Intelligence) dashboards
  - Allow GCS stakeholders to build new maps and new applications based on existing infrastructure using a collaborative platform
  - Engaging its external stakeholders involved with CAD Supplementary Data projects
  - Support the Preparedness for Emergency and disaster Management capabilities for the government, through dissemination of appropriate geographic information

The screenshot shows the GCS Geoportal website. At the top, there are navigation links: 'For Public', 'For Business/ Professionals', and 'For Govt. Agencies & Partners'. The header includes the Kingdom of Saudi Arabia logo and 'General Commission for Survey', along with 'GCS Geoportal' and 'Welcome Guest ?'. The main content area features a map background with a 'GCS Geoportal' text box describing the portal's focus on geospatial survey information and a 'Download Center' panel with a 'Start' button. Below the map, there are two main sections: 'Emergency Management Data Support' with a brief description and 'Explore'/'Download Center' buttons, and 'Search Data Catalog' with a search input field and a 'Search' button.

# Fulfilling Our Role – Validation and Dissemination



## GCS Geo Portal

- GCS Geo Portal with the following capabilities:
  - Discovery
  - Viewer
  - Download
  - Transformation from GIS to CAD
  - Invoke spatial web processing services
  - Web GIS Services

The screenshot displays the GCS Geoportal interface. At the top, there are navigation links for 'For Public', 'For Business/ Professionals', and 'For Govt. Agencies & Partners'. The main header identifies the 'Kingdom of Saudi Arabia General Commission for Survey' and includes a 'GCS Geoportal' logo. The 'Download Center' section is active, featuring a 'Download Center' breadcrumb and an 'Explore Interactive Map' button. Below this, the 'GCS Products' section describes available pre-generated map products. A grid of eight map thumbnails is shown, each with a caption: 'General', 'Geodesy', 'Topography', 'Hydrography', 'Imagery', 'Terrain', 'International Boundary', and 'GCS Partners'. Two columns of download instructions are provided: 'Download Vector Data' and 'Download Ortho/Elevation Imagery', each with a numbered list of steps and a 'Download Now' button.

# Fulfilling Our Role – GIC

GCS Geo Portal Content can include:

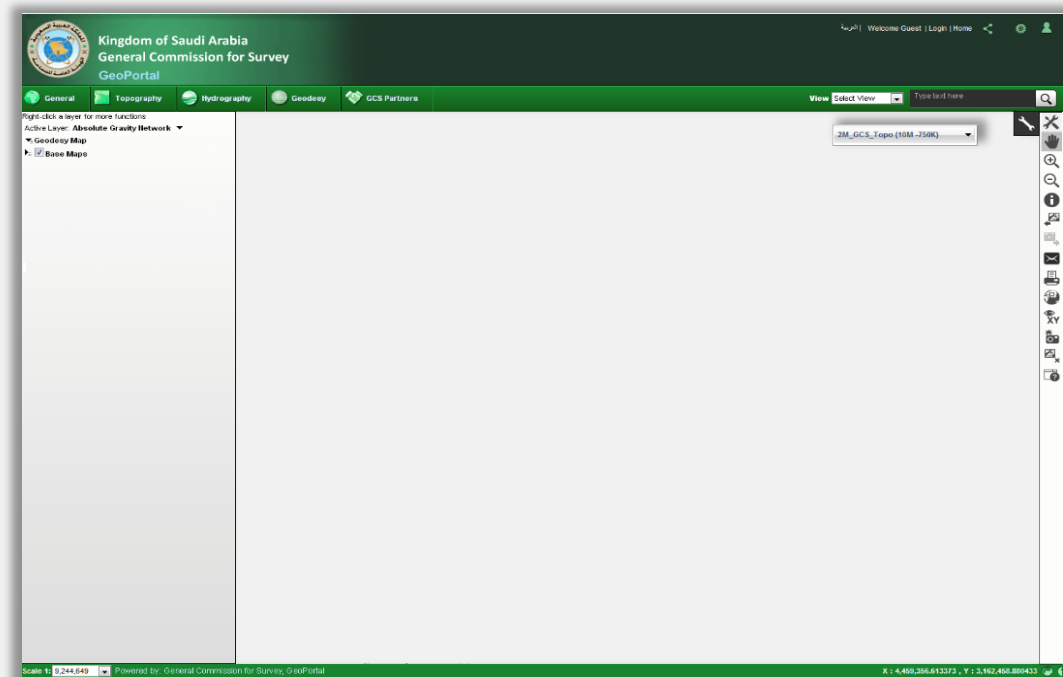
Topographic



Hydrographic

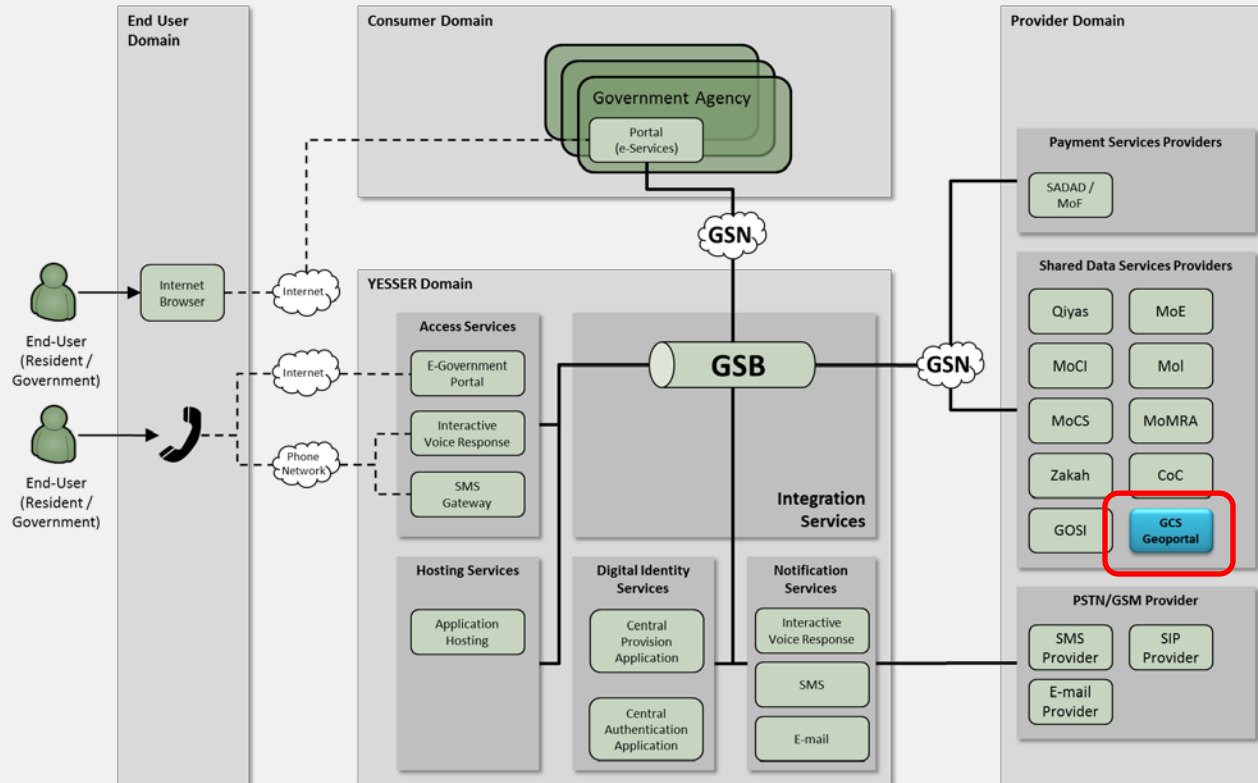


Geodetic

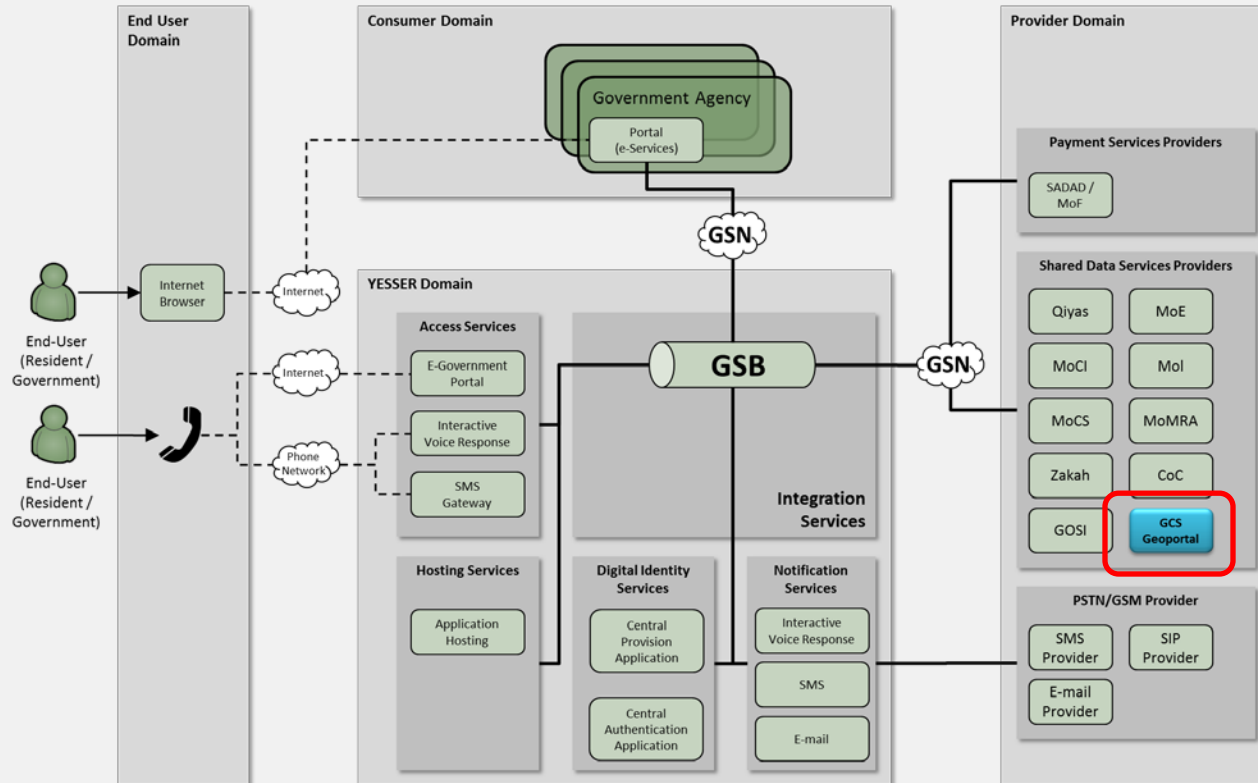




# GCS Geoportal within the E-Gov Infrastructure



# GCS Geoportal within the E-Gov Infrastructure





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# Closing Message – Evolving Technology

- **Our business is experiencing significant changes due to evolving geospatial technologies and map-aware users**
- **This in turn, drives a new mental perception (paradigm shift) of how we function**
  - Where we used to think of our data by its map “scale”, we now think of it by its positional accuracy
  - Where we used to think of building paper map sheets as a static tool for use by others, we now think of a dynamic seamless geospatial infrastructure that can be combined with layers from other agencies, providing a far richer ability to analyze data, and support more complex decisions



# Closing Message – Evolving Technology

- **These evolving technologies will play a part in driving our approach to product and service deployment in the years ahead**
- **We believe our current path allows GCS to promote geospatial technology use in the Kingdom of Saudi Arabia, ensuring we get the greatest return on our geospatial data investment by providing an ever broader range of analytical and decision support services**

# Thank You