



Sultanate of Oman
Ministry of Defence
National Survey Authority



Oman Geospatial Forum 3rd Edition

23-24 November, 2015
Grand Hall, Sultan Qaboos University
Muscat





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National Survey Authority

Geo-Enabling Oman

Saleem Al-Hashmi
Director of Geospatial Information







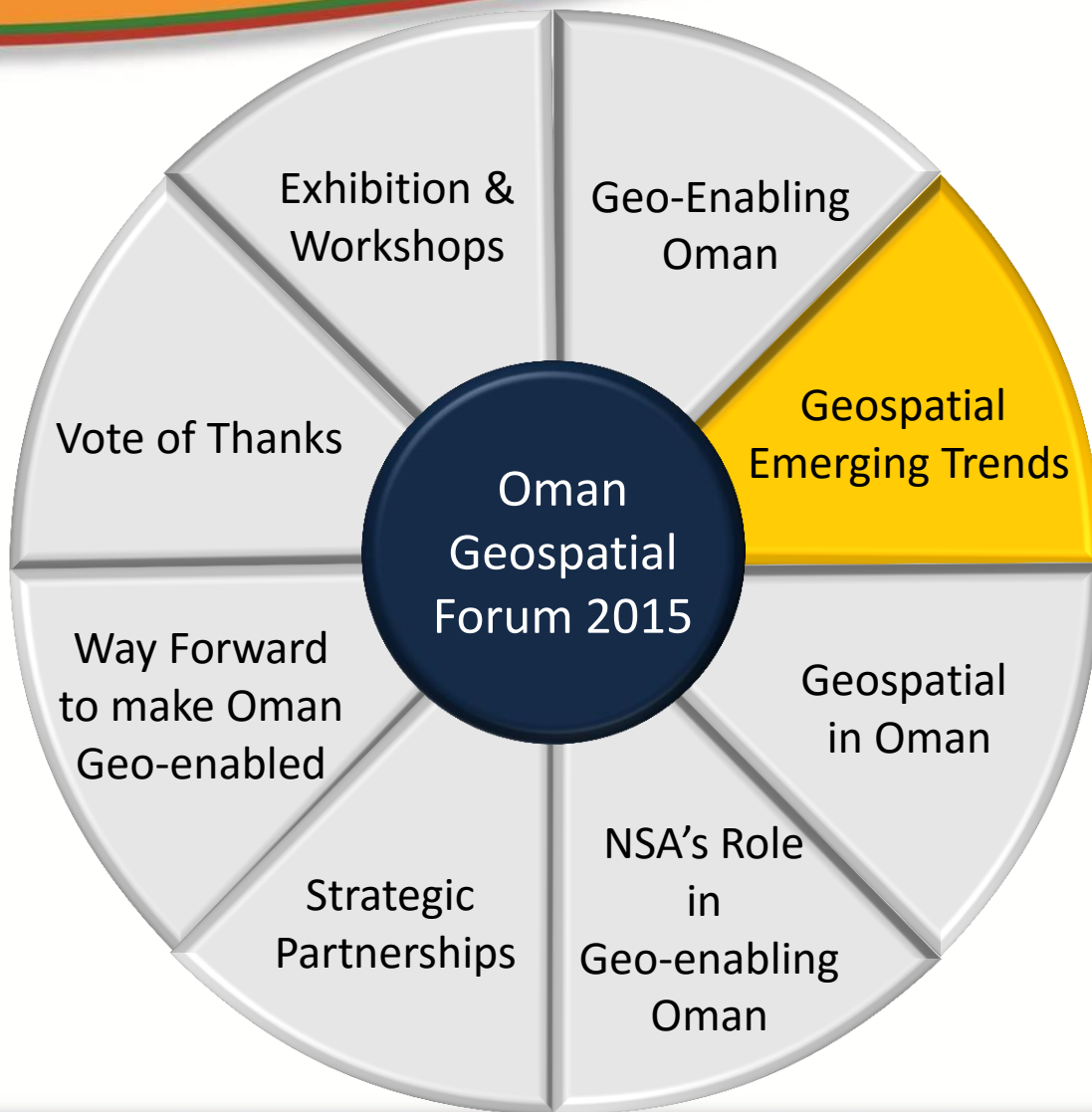
Geo-Enabling Oman - Theme

- Oman is witnessing rapid urbanization and increase in population in major cities
- Due to this there has been a tremendous uptake of Geospatial Technology in major sectors like Construction, Utilities, Oil & Gas and Natural resources
- Geospatial Technology was first introduced in Oman in late 1980 but became effective since the inception of NSA in 1984
- Currently prestigious organisations in Oman like NCSI, PDO, MoH, Haya, MRMWR etc are using this technology along with NSA



Geo-Enabling Oman - Theme

- To balance the development and keep it sustainable for future generation using Geospatial Technology
- Inducting Geospatial Technology in handling various challenges caused due to rapid urbanization through cost effective solutions, better decision making and improved Project management solutions
- Utilising the services of Geospatial Technology to improve quality of life citizens thereby ensuring the sustainable development of Oman





Infrastructure projects planned between 2015-2017 such as **Oman National Railway & Al Batinah Expressway**

Oman's current 5 year plan involves infrastructure projects for **Airports, Ports and highway expansion**

To promote tourism in country, government has planned and initiated several projects for **Hotels and Resorts**

Geospatial Technology improves the mechanics and management for building new infrastructure projects by integrating design and site data, providing framework for as-built data collection and thus simplifying communications between stakeholders





Oman's power requirements continue to rise due to urbanization and population growth

This requires increasing the generation capacity along with up-gradation and technological improvements to maximize the efficiency

Geospatial Technology plays a major role in efficient operation, expansion and planning for the future





Oman's economy is largely driven by industries such as Petrochemicals, Steel and Aluminum

Many world class exploration and production projects are under development, including investment in heavy enhanced oil recovery scheme

Oman government will continue to strengthen the economy by investing in Hydrocarbon industry where Geospatial Technology can play a special role to manage resources and preserving environment for future





Due to extreme changes in last 40 years or so, environment factors have been affected such as human beings, flora n fauna, soil, water, air, climate, landscape, material asset and cultural heritage

Currently environmental issues in Oman are mainly dealt within he context of nature conservation and protection

But no systematic base mapping focusing on environmental aspects has been produced considering spatial distribution

Establishment of new and a sustainable management of all protected areas seem to be an adequate proposal using Geospatial Technology is essential







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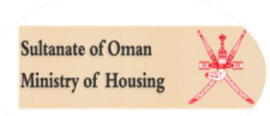


بلدية مسقط
MUSCAT MUNICIPALITY



Sultanate of Oman
Ministry of Transport &
Communications

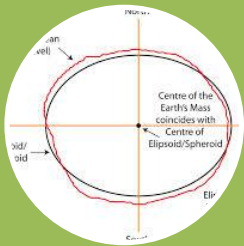
- Many Users
- No common base-map
- No common Standards for data creation and sharing
- Duplication of data and efforts
- Data can not be used in combination







NSA's Nationwide Geospatial Footprint



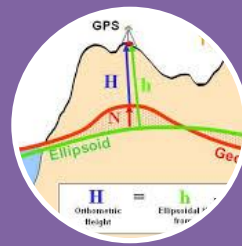
ONGD-14

Localised
Datum for
accurate
Surveys



ONCN

Offers GPS
data with
cm level
accuracy



ONGM

Geoid
Model
enables
Orthometric
Heights



TOPO50K & 100K

Orthophoto,
Seamless
Vector data
&
Topographic
Maps



Oman Geospatial Manual

Standards,
& Policies

Backbone for any Geospatial Activity / Project

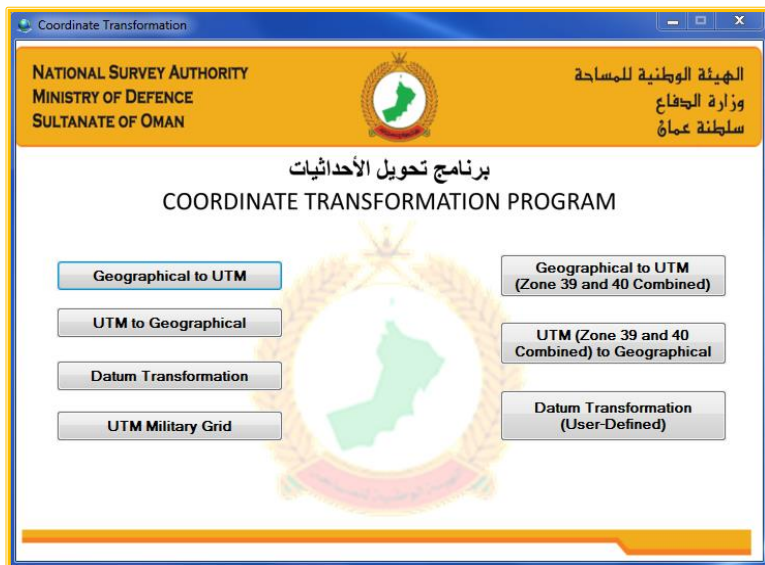


NSA's Role in Geo-Enabling Oman- Infrastructure

ONGD-14

Localised Datum established to enable accurate data measurement

Geospatial World Forum 2014 award for technology implementation





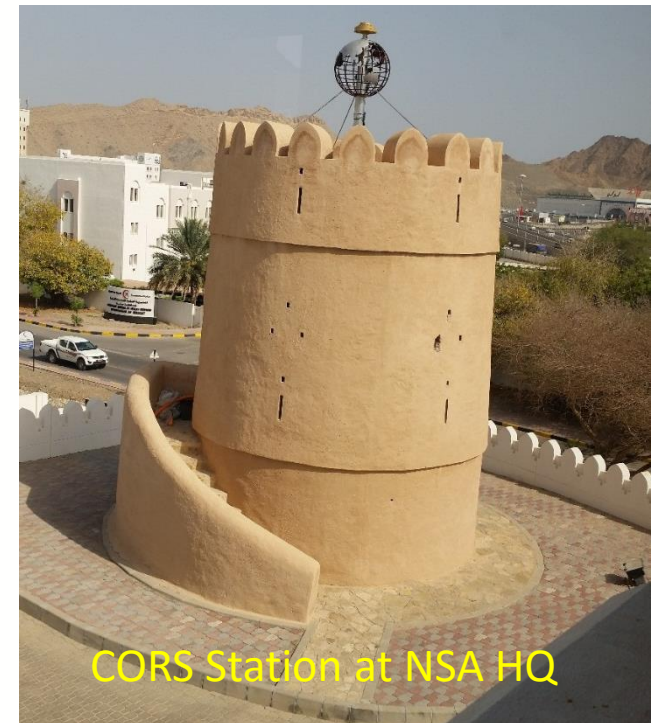
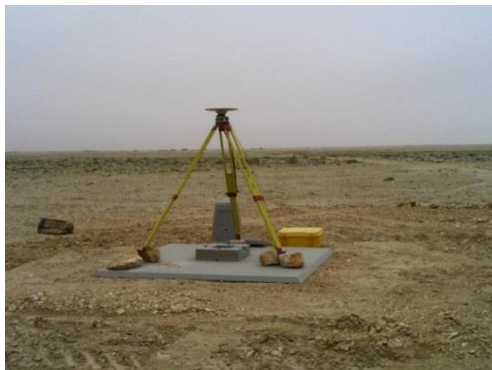
NSA's Role in Geo-Enabling Oman- Infrastructure

Oman National CORS Network (ONCN)

A network of Continuous Operating Reference Stations (CORS) that will continuously record Global Positioning System (GPS) signals and provide organizations, within the Sultanate of Oman, real time as well as post-processing positioning capabilities using single GPS receivers (Rover).

Improves the Precision of GPS Collected Data

This project is now under execution stage.



CORS Station at NSA HQ



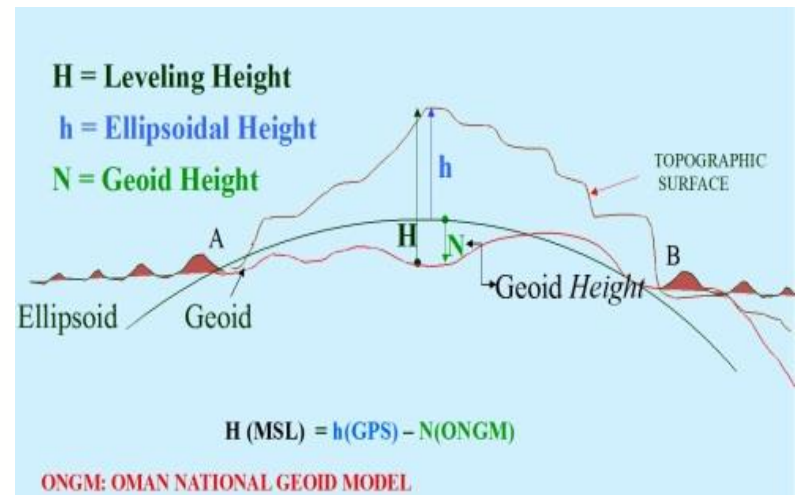
NSA's Role in Geo-Enabling Oman- Infrastructure

Oman National Geoid Model (ONGM)

A height modernization effort by developing a gravity network that will enable all organizations within the Sultanate of Oman to determine accurate orthometric heights.

Geoid is an equipotential surface of the Earth's gravity field

This project is also under execution Stage.





NSA's Role in Geo-Enabling Oman– Data Creation

New 50K & 100K Mapping

Expected Completion by 2015

NATO STANAG rating AAOM12, highest rating in terms of currency, horizontal & vertical accuracy



Orthophoto



TOPO100K Map



TOPO50K Map



NSA's Role in Geo-Enabling Oman– Standards & Policies

Oman Geospatial Manual, Expected Completion by Mar 2016

- Survey Licensing Policy & Process
- Geospatial Standards Policy
- Policy for Quality Control for Survey and Data
- Survey Accreditation Policy
- Data and Map Licensing
- Policy for Survey Infrastructure



NSA's Role in Geo-Enabling Oman– Services

- Custodian of Geographic Place Names
- Assist and Control Field Survey Operations
- Issuing flight permit and data vetting procedure
- Nationwide Mapping and Supply of Geospatial Data
- Training and Education through Institute of Topographic Sciences





Strategic Partnerships in Oman



Common Base Map

SDI Implementation

Integration of Geospatial and Census Data



Strategic Partnerships in Oman



Geospatial Data
Exchange

Datum
Transformation

Field Survey
Support



Strategic Partnerships in Oman



SULTANATE OF
oman
Ministry of Tourism



Sultanate Of Oman
Ministry Of Education



Sultanate of Oman
Ministry of Transport &
Communications

قطارات عمان
OMAN RAIL

Sultanate of Oman
Ministry of Housing



الدقم
Social Economic Zone Authority

هيئة المنطقة الاقتصادية الخاصة
Social Economic Zone Authority



Vector Data,
GCPs, GPNs,
VOBs

Raster Maps,
Satellite Images,
Aerial Photos

DTM, DTED,
Contours, Spot
Elevations





Way forward to make Oman Geo-Enabled

- Use of Common base map for Geospatial Data Production
- Use of common standards, procedures and data model
- Easy mechanism for Data sharing and securing
- Use of localized datum (ONGD14)
- Empowering GIS users in Sultanate with Geospatial data & GIS technology
- Use of Geospatial data to benefit the people of Oman





**Sultanate of Oman
Ministry of Defence
National Survey Authority**

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SUPPORTING ORGANISATION	KNOWLEDGE PARTNER	MEDIA PARTNER
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NSA Booth

Sr	Speaker	Date & Time	Venue
1	Yousuf Al-Nabhani	23 Nov (13:30pm)	Al Fahm Stage
2	Bibhudatta Swain	24 Nov (09:00am)	Al Fahm Stage
3	Amol G Deshmukh	24 Nov (10:00am)	Al Fahm Stage
4	Ahmed Al-Wardi	24 Nov (09:00am)	Meeting Room CG-38
5	Issa Al-Balushi	24 Nov (11:30am)	Meeting Room CG-38

Technical Workshops

Saleem Al-Hashmi
Director of Geospatial Information
National Survey Authority, Ministry of Defence