Welcome
YOU

A Global Community of Geospatial and Statistical Professionals
Why is This Meeting . . .

. . . So Important Now?
OUR WORLD
Is Increasingly Challenged

The Evidence Is Clear...
We Need Better Understanding...
...and More Collaboration

...and Action
OUR WORLD
Is Undergoing a Massive
Digital Transformation
THE SCIENCE OF WHERE

A Fundamental Digital Language

For Understanding and Managing Our World
Geography and Statistical Data Are Foundational

An Integrated Data Model is Essential

Nested Administrative Hierarchy

Provinces

Districts

Localities

Enumeration Areas

Diagram and information taken from the "Handbook on the Geospatial Infrastructure in Support of Census Activities", Department of Economic and Social Affairs, United Nations Statistics Division
Enabling Understanding

An Age Profile of Ireland

Pre school families and families living in rented accommodation, Census 2016

The map represents pre school families and families living in accommodation rented from Local Authorities, 2016 at Electoral Division level.

% Pre school families, 2016

> 11.7
8.59
< 5.5

> 1,518
1,100
800
400
< 6

DUBLIN

MAYNOOTH

Kilcock
Imagery is an Essential Data Source

Integrating Earth Observations and Providing Periodic Reporting

Image Integration and Machine Learning are Becoming a Fundamental Part of a Modern GIS
Integration of Statistical and Geospatial Data

Geospatial Framework (GSGF)

Usable
Interoperable
Common Geographies
Geocoded Units
Fundamental Geospatial Infrastructure

Statistical Process Model (GSBPM)

Planning/Pre Enumeration
Specify Needs
Design
Build

Enumeration
Collect
Process
Analyze

Post Enumeration/Dissemination
Disseminate
Evaluate

Quality / Metadata Management
GIS Provides a Platform
For Managing, Analyzing, and Applying
Geographic, Statistical & Imagery Information
Integrating People,
Processes, Things,
and Data About Them

Using the Power of Where

System of Engagement

System of Record

System of Insight

Using the Power of Where
to Integrate Everything
GIS Applications Across UN-GGIM Working Groups

- **Topographical**
  - Multiscale Topo Map
  - Switzerland swisstopo

- **Cadastral**
  - Jamaica National Land Agency

- **Official Statistics**
  - US Census Bureau

- **Maritime**
  - Bathymetry

- **Imagery**
  - Change Analysis

- **Global Foundation**
  - NGA

- **Comprehensive Planning**
  - Korea KICT

- **Vulnerable Populations**
  - Korea Incheon Metropolitan City

- **Disaster Preparedness**
  - Japan Kajima Corporation

- **Access to Health Facilities**
  - Haiti UNICEF

- **Population Change**
  - Vulnerable Populations

- **NGA**
GIS is advancing rapidly, integrating and leveraging many innovations. Web GIS makes GIS easier, open, and accessible.
Web GIS Is the Modern GIS Architecture
Helping Everyone Do Their Work Better

Leveraging Web Services
Sharing Knowledge
Improving Productivity and Efficiency

Growing Exponentially

Individuals
Teams
Departments
Organizations
Web GIS Simplifies Working With All Types of Data
Using Web Maps, Scenes, and Layers

Creating A Common Language

Apps

Portals

Distributed

Map

Tabular

Imagery

3D

Real-Time (IoT)

Big Data

Lidar

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Real-Time (IoT)

Big Data

Lidar
Apps Make the System Come Alive
Leveraging Open Data and Services

Across Organizations and Beyond
Smart Mapping and Exploratory Data Analysis
Simplifies the Use of Analytics and Creates Beautiful Maps
Advanced Spatial Analysis

Web-Based Analysis
- Hot Spot Outliers

Spatial Statistics
- Vector Analysis in Space-Time Cubes
- Space-Time Pattern Mining
- Enhanced Cube Explorer

Science Integration
- Geostatistical Wizard

Improved Processing
- Parallel Processing
- Big Data Analytics

Many Enhancements
- Dynamic Aggregation
- Model Builder
- Optimized VRP Clustering

Integration of Raster and Lidar
- Areal Interpolation
- Optimum Site Selection

Science Integration
- ArcGIS API for Python
- Machine Learning Tools
- Improved R Integration

Many Enhancements
- New Raster Functions
- LAS Classification

Improved R Integration
- Spatial Statistics
- Science Integration

Improved R Integration
- Advanced Spatial Analysis
Big Data Spatial Analytics | Faster and Massively Scalable

Spatial Observations
Large Collections and Real Time

- Power Outages (50+ Million)
- Density
- Hot Spots
- Space-Time Cube

Faster (10x+)

Imagery
Large Imagery Collection

- Riparian Areas
- Lidar: First Return
- Lidar: Bare Earth
- Imagery

Leveraging Distributed Computing, Machine Learning and Parallel Processing
Web GIS Enables New Types of Collaboration
Connecting Individuals, Organizations and Communities
Connecting Everyone
Using Web Maps and Apps to Share and Collaborate

Supporting Communication and Real-Time Awareness
Web GIS Enables Community Engagement

Organizing and Managing Community Interactions

Providing Citizens Information . . .
. . . And Leaders Input

Citizen Communication
Citizen Surveys (Crowdsourcing)
Status Reporting
Open Data
Storytelling
Demographic Information

Community GIS Hub

Policy Initiative Based

Using Shared Templates
Web GIS Enables National SDI
Web GIS Enables Whole New Scale of GIS
Helping Everyone do Their Work Better

Leveraging Web Services

Individuals

Teams

Departments

Organizations

System of Systems

Sharing Knowledge
Collaboration

Improving Productivity and Efficiency
GIS Now Provides the Means . . .

For Creating Federated Systems
The UN is Working with Member States to Develop a Web System for Reporting on the SDG’s
UNSD Created Applications for SDG Reporting
Story Maps Illustrate Data Driven Progress

The Sustainable Development Goals Report 2017

Overview

The Sustainable Development Goals Report 2017 reviews progress made towards the 17 Goals in the second year of implementation of the 2030 Agenda for Sustainable Development. The report is based on the latest available data. It highlights both gains and challenges as the international community moves towards full realization of
Information Products Can Be Published Using An Open, Interoperable, and Services-based Approach
Tools Like This. . .
Are Already Determining Mexico’s Development Progress
Helping Ireland Understand Where to Apply Resources

Legacy of the Recession across Ireland

Census 2016 Unemployment Rate

In order to get an understanding of unemployment at a local scale, we have mapped unemployment rates at Electoral Division level (EDW) using Census 2016 Principal Economic Status data. The GMI reports all regions in Ireland as having unemployment rates below 10% (the ESI uses the EU definition for unemployment).

Number of Electoral Divisions with a 10% or Less Unemployment Rate

Census 2016

1559

Census 2011

442

Click the orange button below to view 2011 Unemployment Rates across Ireland.

Unemployment Rate, Census 2011

The national map displays Census 2016 unemployment rates. High unemployment rates are concentrated in the West, Midlands, and South-East. The lower rates dominate the Dublin region and areas surrounding the five main cities ( Cork, Galway, Dublin, Limerick & Waterford) reflecting the urban/rural divide in feeling the benefits of the recovery.
Empowering the Philippines To Understand Poverty
Helping South Africa Visualize Statistical Patterns

## Data Table

<table>
<thead>
<tr>
<th>District</th>
<th>2001</th>
<th>2011</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC10: Cacadu</td>
<td>6.9</td>
<td>3.2</td>
<td>2.2</td>
</tr>
<tr>
<td>DC12: Amathole</td>
<td>6.6</td>
<td>3.7</td>
<td>2.6</td>
</tr>
<tr>
<td>DC13: Chris Hani</td>
<td>7.4</td>
<td>3.9</td>
<td>2.6</td>
</tr>
<tr>
<td>DC14: Joe Goba</td>
<td>7.6</td>
<td>3.2</td>
<td>2.8</td>
</tr>
<tr>
<td>DC15: O.R.Tambo</td>
<td>3.8</td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td>DC44: Alfred Nzo</td>
<td>13.0</td>
<td>4.6</td>
<td>3.0</td>
</tr>
<tr>
<td>EUP: Buffalo City</td>
<td>4.8</td>
<td>2.5</td>
<td>3.1</td>
</tr>
</tbody>
</table>

### Maps

- **2001**
- **2016**
SDG 1.2.1, Proportion of Population Living Below the National Poverty Line, NUTSIII, 2015, Ireland, CSO & OSI

This feature layer represents Sustainable Development Goal indicator 1.2.1 'Proportion of Population Living Below the National Poverty Line' for Ireland in 2015. The layer was created using 'at risk of poverty rate' data from the Survey on Income and Living Conditions (SILC) 2013 produced by the Central Statistics Office (CSO) and NUTSIII boundary data produced by Ordnance Survey Ireland (OSI). In 2015 UN countries adopted a set of 17 goals to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to help achieve the goals set out in the agenda by 2030.

Indicator 1.2.1 Proportion of population living below the national poverty line, by sex and age

Source of statistical information used to calculate the indicator:

Unit of measure: Percentage
Time reference: 2010-2014

Poverty at Provincial Level

This includes all measure of poverty (among family and population) at the provincial level for the years 2006, 2009, 2012, and 2015. These are Poverty Incidence and Magnitude, Poverty and Food Thresholds, Poverty Gap, Income Gap, and Extent of Poverty. These data were derived from the result of their corresponding Family Income and Expenditure Survey.

Map Displays at Scale: 1:100 to 1:6,000,000

Source: http://mapstat-psa.opendata.arcgis.com/datasets/poverty-at-provincial-level
Web GIS Has Enabled a Global SDG Hub

- A UN Network (Initiatives, Templates and National Data)
... and a Network of National SDG Hubs

Supporting National and Partner Initiatives

...Open for everyone, an inclusive and enabling environment
A Federated System for the SDGs Is Emerging

Creating a System of Systems

Making Data Available to Governments, the Civil Society and Citizens

January 2017

Driven By Participating Member States... . . . Country Owned and Country Led
Humans Are More Capable Than Ever

. . . of Sharing and Applying Geographic Knowledge
. . . of Understanding
and Acting
Technology Is Not Enough... 

- Tech-Savvy Leadership
- Understanding What's Needed
- Data-Driven Culture
- Collaboration Across Departments
- Willingness to Learn
- Citizen and Private Sector Engagement

...Good People / Good Attitude / Good Relationships
The pieces are fitting into place…