GEODESIA GLOBAL DAS NAÇÕES UNIDAS
CENTRO DE EXCELÊNCIA

MODERNIZAÇÃO DO SISTEMA DE REFERÊNCIA GEOESPACIAL
OFICINA DE DESENVOLVIMENTO DE CAPACIDADES

Comunicando a geodesia

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COMO

Dia 4, Sessão 1 [4_1_1]

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Síntese

- A comunicação e o envolvimento das partes interessadas são fundamentais para obter e manter o apoio necessário para modernizar o sistema de referência geoespacial (GRS) de seu país.
- “Mostre, não conte” – organize eventos ou demonstrações que mostrem exemplos práticos e aplicações dos benefícios de um GRS moderno.
- Crie exemplos customizados que demonstrem o valor de um GRS moderno para o usuário com quem você está interagindo.

ONDE Sessão 1:
Tornando a geodesia compreensível e visível


Foto: Kyoung-Soo Eom

Mais fortes. Juntos.

Converse com os tomadores de decisão


Foto: Dag Høgvard

THE GLOBAL GEODETIC REFERENCE FRAME

The United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM), established in 2011 by the Economic and Social Council (ECOSOC), recognizes the growing demand for more precise positioning services, the economic importance of the global geodetic reference frame, and the need to improve global cooperation within geodesy.

Geodesy provides a coordinate reference frame for the whole planet, fundamental for:

- *Monitoring changes to the Earth including the continents, ice caps, oceans and the atmosphere*
- *Mapping, navigation and universal timing*

This coordinate system allows us to know where people and features are on the Earth. "Location" is a vital component for effective decision making.


PHOTO: BJØRN-OWE HOLMBERG


PHOTO: ANNE JØRGENSEN


PHOTO: MORTEN BRUN

IMPORTANT APPLICATIONS ARE:

Natural hazard and disaster management

Decision makers need an accurate and stable global geodetic reference frame to make good decisions for the future and to identify areas under threat of flooding, earthquakes or drought and to adopt preventive measurements to protect them. Geodesy provides the location basis for such decisions.

Climate change and sea level monitoring

Climate change is a global challenge that puts stronger requirements on the precision of the global geodetic reference frame. Geodesy provides information about sea level changes, plate movements, land uplift, and ice sheet and glacier changes. Global society requires information about current trends at a scale measured in millimeters to detect changes of the Earth system with sufficient accuracy, for local, regional and global planning.

To be able to monitor and estimate future sea level variations, significant improvements in both geodetic infrastructure and data analysis are needed.

Geospatial information, mapping and navigation

'Location-based' services are becoming increasingly important in modern society.

The global geodetic reference frame supports satellite positioning technology and is a critical enabler of geospatial information interoperability and applications such as land titling and ownership, engineering construction, precision agriculture, intelligent transport and navigation.

UN-GGIM | United Nations Initiative on Global Geospatial Information Management

ggim.un.org

Converse com o setor

Foto: Ryan Keenan

United Nations

United Nations Global Geodetic Centre of Excellence

POLICY BRIEF NO 001

Hidden Risk

How weaknesses in the global geodesy supply chain could have catastrophic impacts on critical infrastructure and national economies

INTRODUCTION

Modern society is dependent on satellites. In many countries, satellite information is essential for economic growth, the operation of critical infrastructure, and is a cornerstone of national defence forces.

In some cases, the dependence is so strong that countries have developed sovereign space systems. For example, several countries or regions, e.g., the European Union (EU), have their own Global Navigation Satellite System (GNSS) to provide Positioning, Navigation and Timing (PNT) services for civilian and defence applications including the Global Positioning System (GPS; USA), GLONASS (Russian Federation), Galileo (EU) and BeiDou (PRC). These countries recognize that a loss of PNT services, either due to technological failures or malicious activity, would have catastrophic and cascading effects for their economy and critical infrastructure. This reliance and need for control is not limited to GNSS satellites which provide PNT services, but extends to telecommunications satellites and Earth Observation (EO) satellites.

Observing the Earth

Satellites providing vital defence and civilian applications are reliant on constant updates about their 'place in space' (satellite orbit information) and the Earth's 'place in space' (shape, orientation, gravity field, and coordinate reference frame).

This Earth and satellite 'place in space' information are collectively known as geodetic products. Constant updates to the geodetic products are needed because the Earth and satellites are always moving. Without updates to geodetic products, satellite applications that society takes for granted, and all the benefits they provide would degrade or fail.

GLOBAL GEODESY SUPPLY CHAIN

The geodetic products are created through the global geodesy supply chain (Figure 1) which includes:

- ground observatories and scientists who constantly observe the movement of the Earth and satellites;
- data centres and data centre operators who quality check the data from observatories and make it available to the global geodesy analysis community; and,
- analysis centres, correlation centres and analysts who translate the raw data into geodetic products.

It is a *global* geodesy supply chain because the observatories and highly qualified people need to be distributed around the world to achieve the required accuracy and reliability of the geodetic products.

Recognizing the risk of a degrading supply chain, the United Nations General Assembly adopted resolution 69/266 in 2015, entitled 'A Global Geodetic Reference Frame for Sustainable Development'. The resolution encourages Member States to

Key Messages

- Society's dependence on satellite services for economic development, the operation of critical infrastructure, and defence applications is very high and growing at a rapid pace.
- Satellite services are at risk of degradation or failure due to the lack of resources provided to the global geodesy supply chain.
- For satellites to operate accurately and reliably, their 'place in space' and Earth's 'place in space' need to be observed and analyzed constantly. This information is provided through the global geodesy supply chain.
- The global geodesy supply chain is the collection of ground observing stations, data centres, analysis centres and highly qualified experts who observe the Earth and convert these observations into geodetic products which are essential to communicate accurately and reliably with satellites.
- Although the supply chain is a vital foundation of the space sector, it is relatively unknown and therefore under-resourced. Less than 0.05% of the revenue generated from GNSS and EO services are reinvested in the global geodesy supply chain.
- Member States and partners are forming a Joint Development Plan describing how they will work together to strengthen the supply chain to enhance the reliability and integrity of the geodetic products.
- Key activities for Member States include: strengthening national awareness and governance in geodesy, recognizing the global geodesy supply chain as national critical infrastructure and engaging in bilateral or multilateral agreements with other Member States.

Authors: Nicholas Brown and Sarah Kowal, United Nations Global Geodetic Centre of Excellence, UNDESA.

Mais fortes. Juntos.

Fale com a mídia

- Defina objetivo, missão e conclusões do evento
- Sobre o que você quer que seu público pense após o evento?
- Prepare a mensagem e a agenda em detalhes
- Combine o programa com palestrantes importantes (tanto internos quanto externos) e em campo (mostre, não conte)
- Convide a imprensa nacional
- Aprenda e pratique os principais pontos de discussão/mensagens (+ para a mídia)
- Se prepare para uma sessão de perguntas e respostas

MOSTRE – NÃO CONTE – EVENTOS: Eventos no campo: Excursão para ver as mudanças nas geleiras e pesquisa geodésica. Exemplo de um evento em Ny-Ålesund, Svalbard. Foto: Bjørn-Owe Holmberg

Eventos para sinalizar um marco histórico

NY-ÅLESUND: IInauguração do Observatório Geodésico da Terra da Noruega.
Foto: Bjørn-Owe Holmberg

Mais fortes. Juntos.

Eventos para defender a decisão que você deseja

Foto: Anne Jørgensen

Mais fortes. Juntos.

Australian Government
Geoscience Australia

Positioning Australia

Posicionamento preciso e confiável para todos

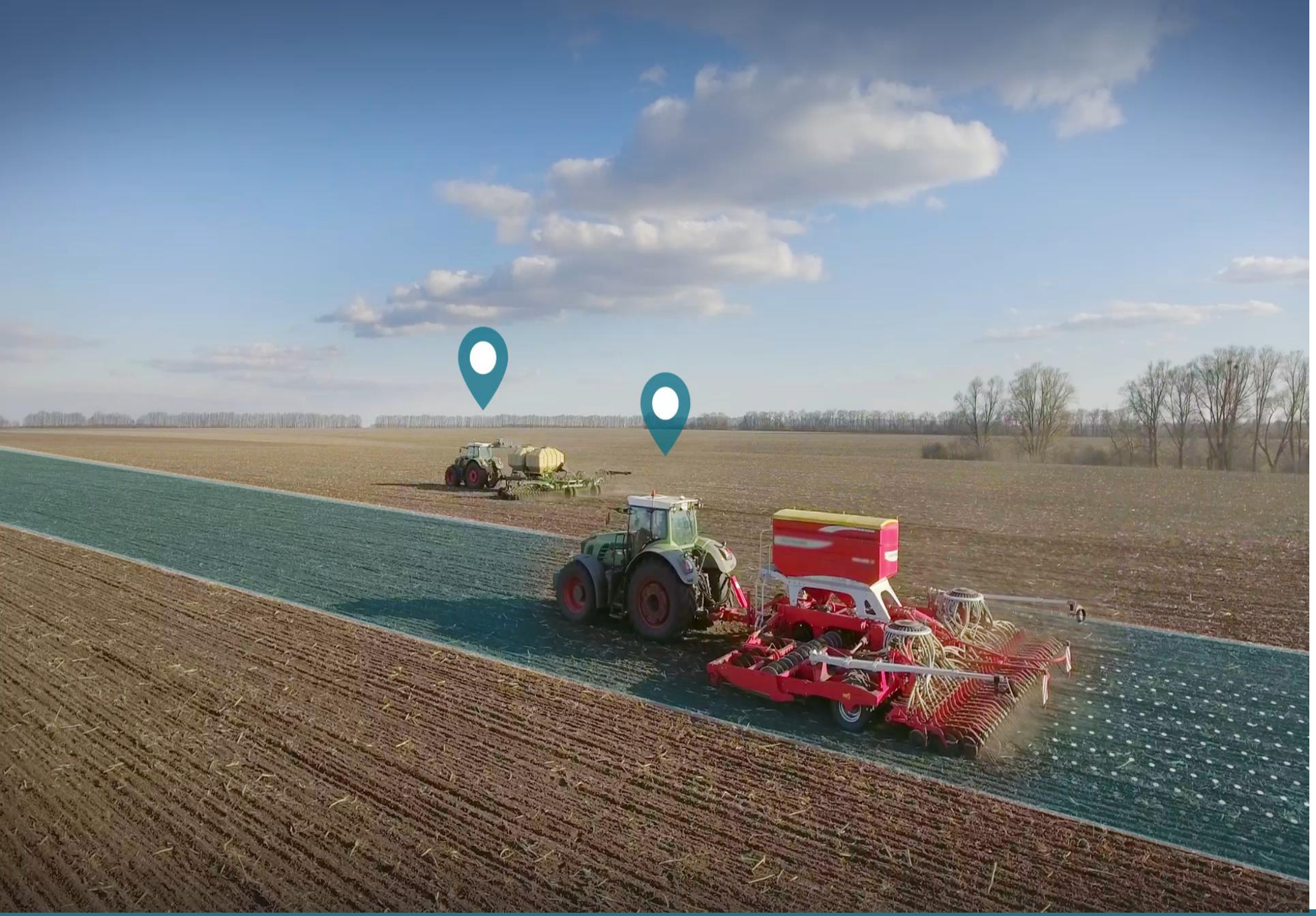
A alocação de um **financiamento contínuo de 83,6 milhões de dólares por ano** a Geoscience Australia para estabelecer uma capacidade de posicionamento por satélite de classe mundial.

1. GPS melhor para a região rural da Austrália

- serviço de posicionamento preciso com uma precisão de apenas 10 cm em toda a Austrália
- alta integridade para aplicações relacionadas a segurança de vida

2. GPS melhorado para apoiar as empresas australianas

- capacidade de posicionamento preciso de 3 a 5 cm em áreas com cobertura móvel
- ferramentas e software de código aberto para fornecer serviços de posicionamento



Setor agrícola:

- ✓ Agricultura de precisão
- ✓ Pulverização precisa de água e nutrientes
- ✓ Pastoreio automatizado em faixas e cercas virtuais
- ✓ Monitoramento de gado
- ✓ Semeadura entre fileiras
- ✓ Monitoramento de riscos ambientais e de doenças e realocação
- ✓ Mapeamento aprimorado do rendimento
- ✓ Agricultura com tráfego controlado

Benefícios econômicos

6,2 mil milhões de dólares

Benefícios do posicionamento SouthPAN
Mais de 30 anos de serviços.

Accessibile city navigation: enable assitive technologies

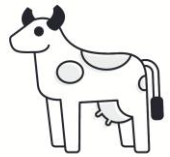
for the visually impaired, reducing the risks of incidents associated with trips, falls and collsions

Decrease of network delays by 29% and $36 million savings

through SBAS enabled C-ITS

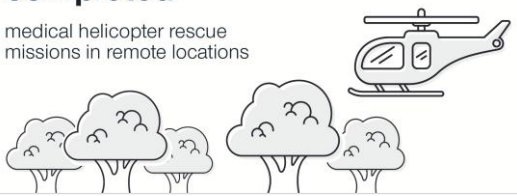
Livestock monitoring: save $100 per dairy cow

every year with virtual fencing and 6 million sellable Australian sheep valued at $80 million



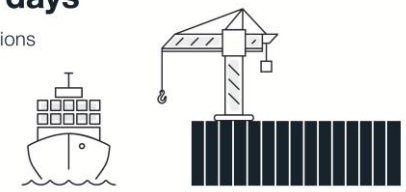
Increase of 1866 successfully completed

medical helicopter rescue missions in remote locations



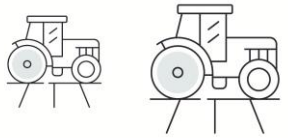
Increased vessel capacity of 1375 days

for port operations



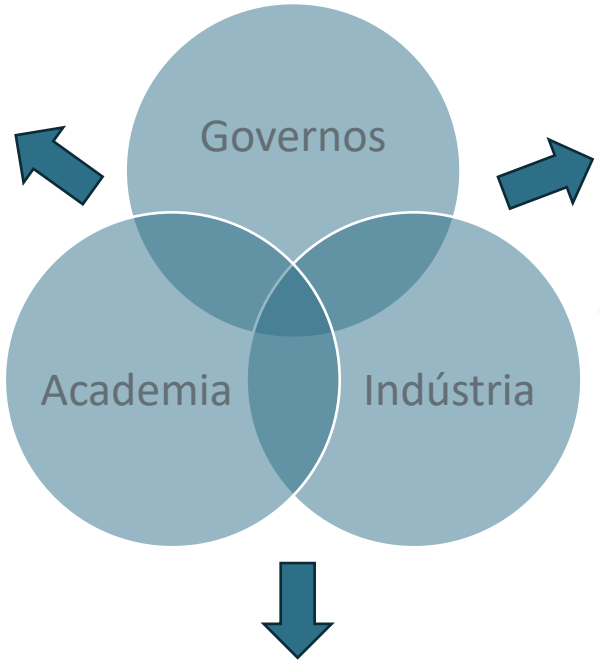
Precision agriculture

Improve the efficient spraying of nutrients, chemicals and water by 1-7%



Mobilização das partes interessadas

Infraestrutura GNSS
Outras infraestruturas geodésicas
Sistema Global de Observação Geodésica, ITRF



Serviços de posicionamento
Serviços geoespaciais

Inovação, tecnologia e normas

Relações com a mídia

Mais fortes. Juntos.

Faça com que a mídia compareça aos seus eventos

- Aprenda como funciona a mídia
- Convide jornalistas exclusivamente ou faça um convite aberto – exclusivo e direcionado, melhor retorno
- Ofereça boas situações e fontes para entrevistas

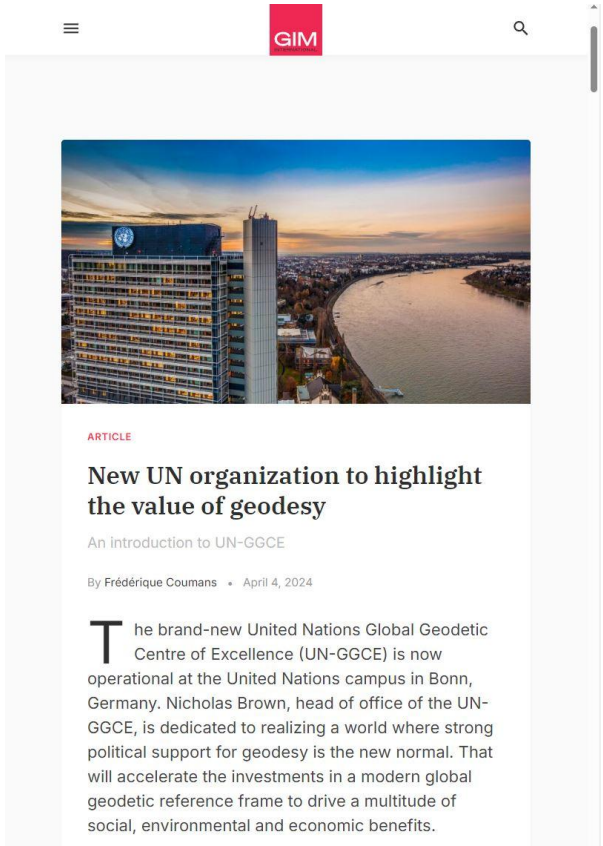
Foto: Bjørn-Owe Holmberg

A situação da entrevista

Boa dica:

- Seja você mesmo
- Fale a verdade
- Esteja preparado
- “Mate seus queridinhos”
- Solicite a revisão de suas citações antes da impressão ou transmissão.
- Faça pausas
- Fale claramente, use frases curtas
- Olhe para o jornalista
- Pratique diante do espelho

Entenda os critérios das notícias: O que torna algo digno de notícia?



- Conflito
- Impacto
- Proximidade
- Sensacional
- Moeda

Entrevistas em vídeo

- Trabalhe em grupos de 2.
- Prepare um discurso de venda rápido
- ***Por que seu país deve modernizar o sistema nacional de referência geoespacial?***
- Grave um vídeo, uma mensagem para um jornalista ou para seus representantes governamentais com duração máxima de 30 segundos!