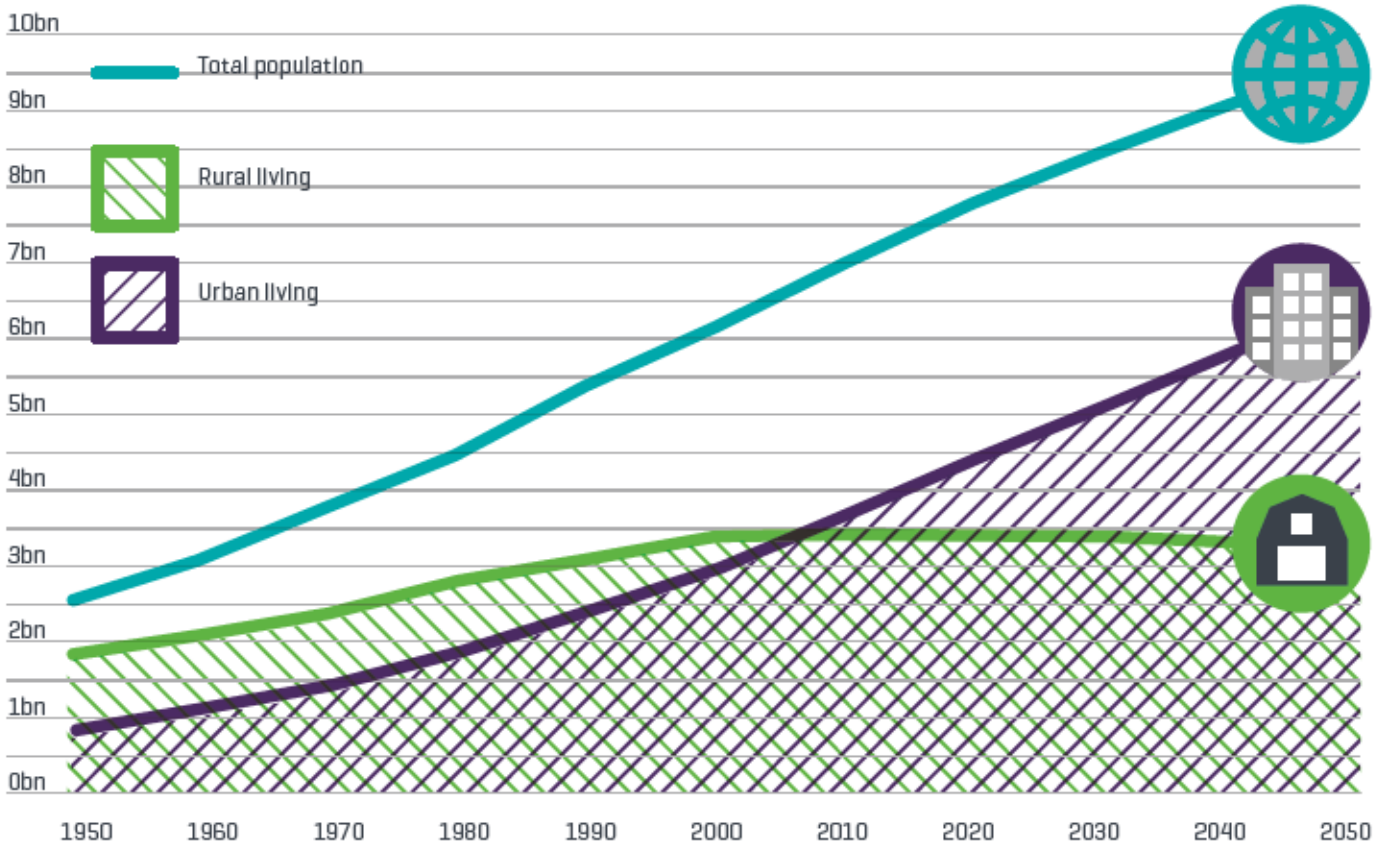
What are the challenges and trends affecting Geospatial Information ; Geodetic Infrastructure; and Surveyors?

Global Challenges and Trends Affecting Geospatial Information

Rapid Urbanisation -

- By 2050 - 2/3 thirds of the world's population (approx. 6 billion people) to live in "**mega**" cities serviced by "**smart**" technology.

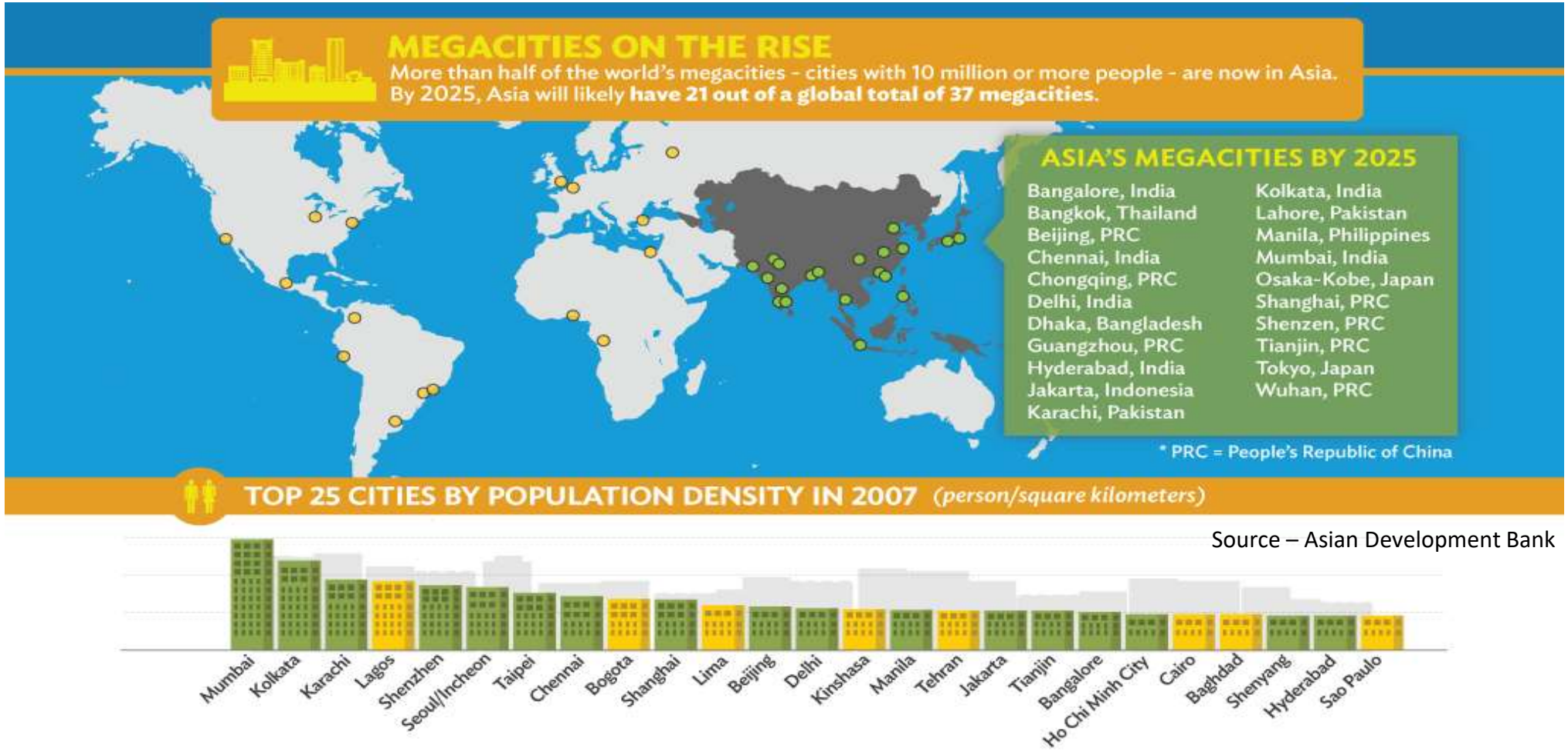


Sources – UN DESA, rics.org/futures

Global Challenges and Trends Affecting Geospatial Information

Rapid Urbanisation -

- Predictions indicate this will occur primarily in **Asia** along with an ***expanding middle class and increased economic activity*** in numerous sectors



Source – Asian Development Bank

Global Challenges and Trends Affecting Geospatial Information

IMPACT of Rapid Urbanisation, will require ….

Provision of geospatial information, *about a* ***"complex environment",*** that will ***influence*** decisions (incl. resource allocation and investment) by government or industry wrt -

- Evaluation and implementation of urban and land use planning
- Management of sustainable development of finite resources and the environment (land and marine)
- Administration / establishment of utilities, services, public infrastructure and assets such as power generation and distribution, water reticulation, waste treatment, transportation networks
- Affordable and efficient housing
- Generation, supply and delivery of sufficient food for the population

Global Challenges and Trends Affecting Geospatial Information

Disruptive Technologies

(technologies which will transform the way we do our normal business or affect the present day lifestyle patterns)

- Mobile Internet enabled low-cost computing devices
- Automation of work, knowledge and tasks via software and systems with artificial intelligence
- Internet of things – networks of Internet based sensors that collect data to assist with processing, analysis, monitoring and decision making
- Cloud technology for provision of data, services or applications through the Internet or networks
- Advanced robots or robotics that has ability to perform delicate procedures or assist with everyday life
- Autonomous vehicles (includes UAVs)

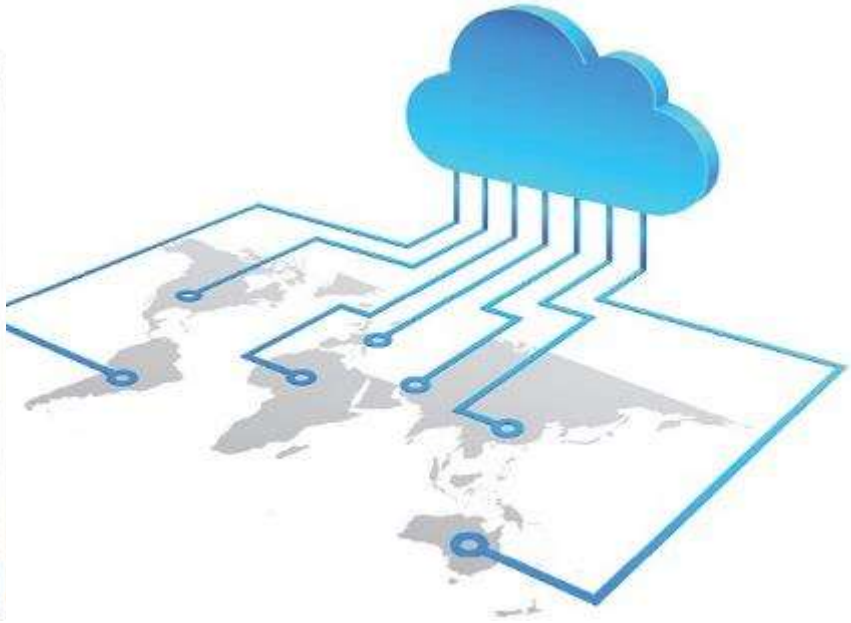





Global Challenges and Trends Affecting Geospatial Information

Will **IMPACT** the work of the geospatial industry by -

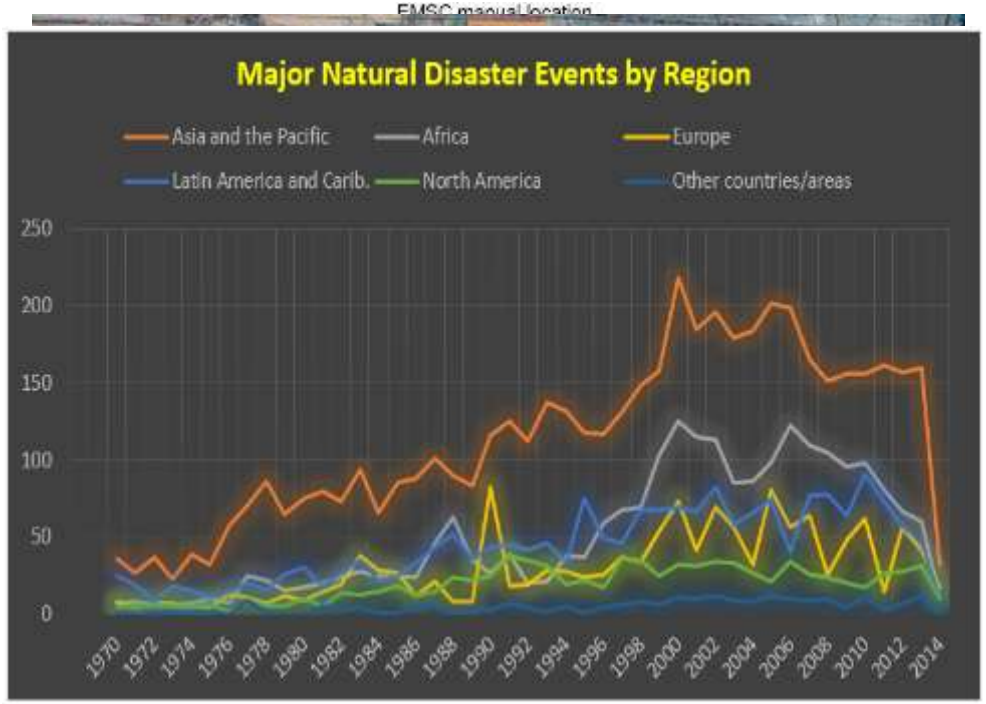
- Facilitating greater connectivity and access to geospatial data in real time thus enabling ***real time monitoring and analysis***.
- Creating business opportunities and innovation to improve productivity and revenue;
- Fostering more location based applications or services and or embedded intelligent systems.
- Changing the way surveyors generate digital information, visualise and interact with multi land / geographic / infrastructure / asset mgt / resource systems –
  - BIM and 3-d modelling
  - emergency management where authorities merge the physical and virtual worlds and
  - computational and visualisation software accessible via online or the Cloud.

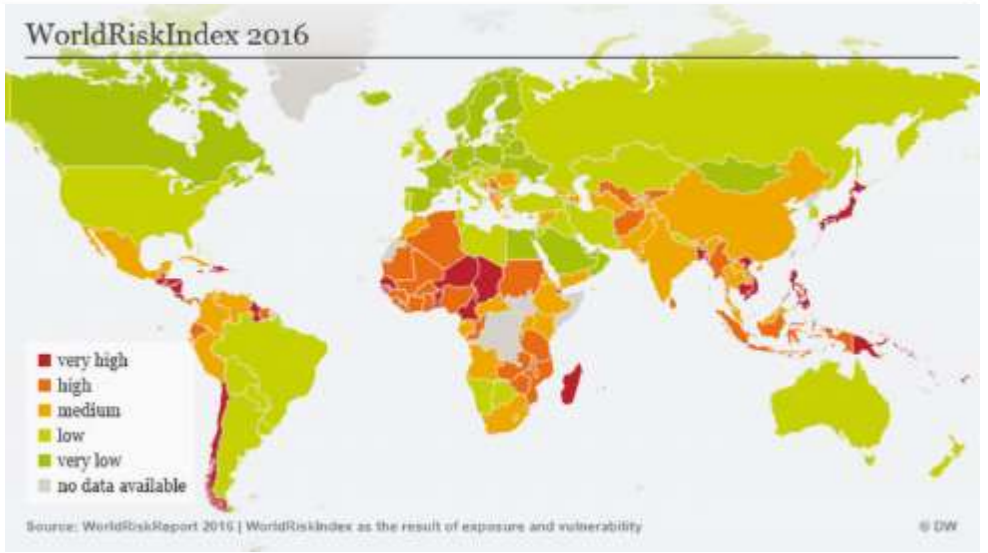


Global Challenges and Trends Affecting Geospatial Information

Environmental phenomena

- Climate change, sea level rise, earthquakes, tsunamis, and cyclones.
- In 2015, **346 disasters affected 98.6 million people** ; estimated economic damage of **$66.5 billion USD**.
- Asia and the Pacific are rated high on the world risk and vulnerability index, translating to an increased incidence of natural disasters and therefore greater impact on inhabitants.
- Reports also state that the quality of critical infrastructure such as communication, transportation and utility systems will determine the effectiveness of disaster response.
- **IMPACT** – reliance on geospatial industry to ***supply and deliver information*** for such systems will be vital to the management and outcomes of ***disaster relief, re-construction and the building of resilience***.

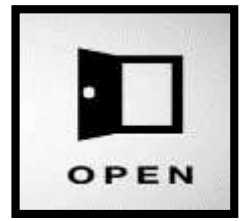


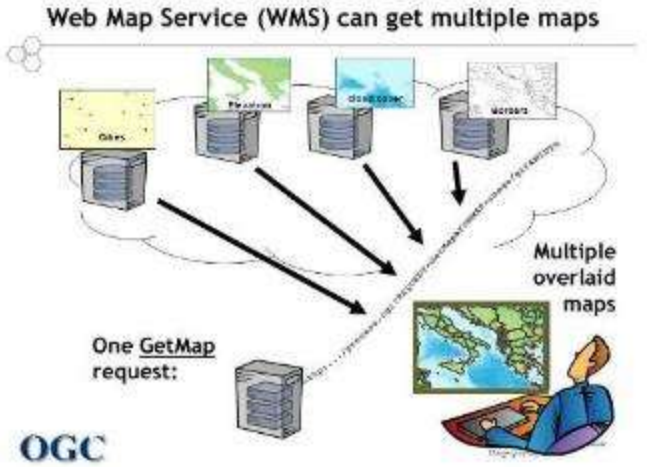


Challenges and Trends Affecting Geospatial Information

Meeting Expectations and Demands

- For agencies to make spatial information / datasets “open” or “shared”
- For agencies to comply with standards (and practices) to enable the integration, interoperability, exchanging of data
- For agencies to leverage the power of the internet, mobile phones, web-based data portals, crowd sourcing, web services
- For agencies to provide data in distributed web services, data retrieval through catalogues and visualisation via Web Map Services

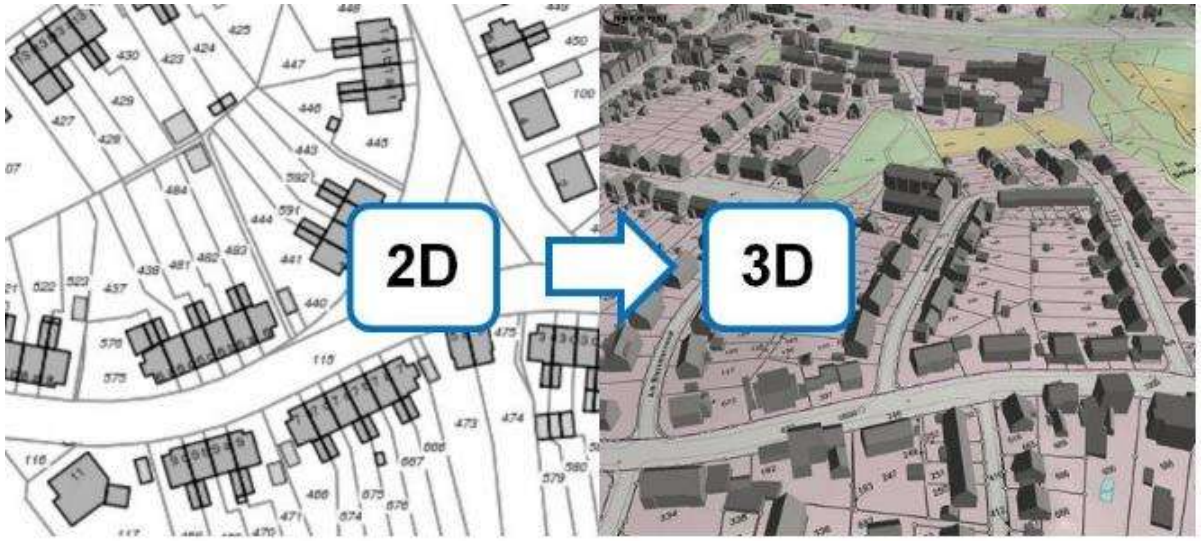


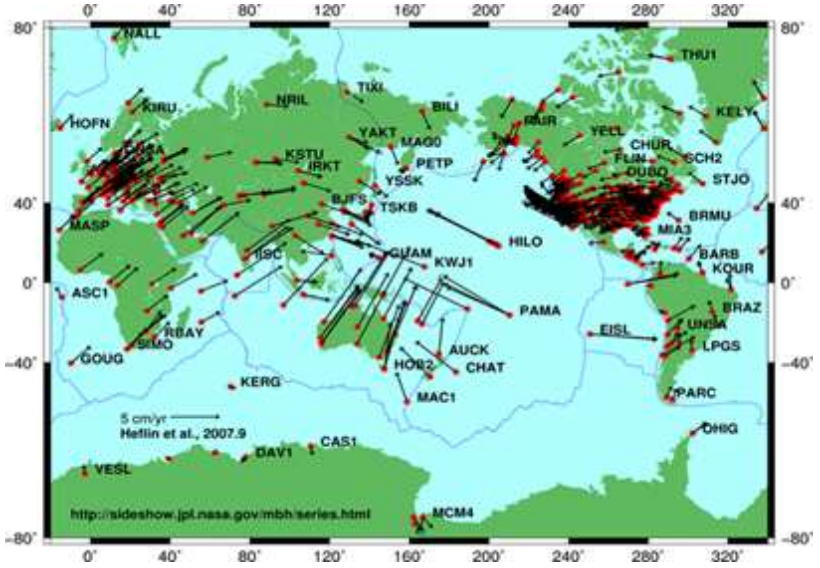


Challenges and Trends Affecting Geospatial Information

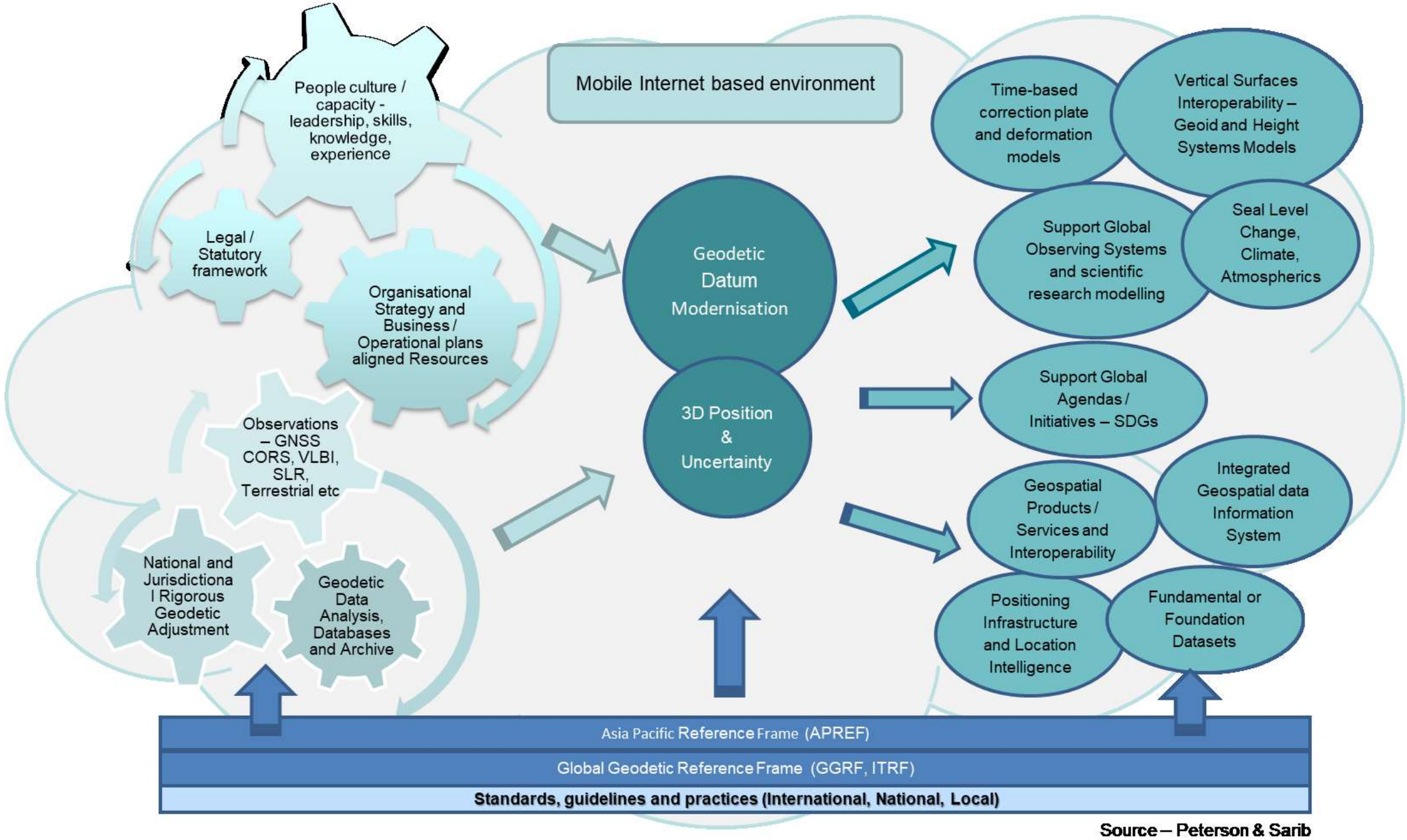
Meeting Expectations and Demands

- For agencies to develop relevant and agile policies and guidelines
- For agencies to administer and visualise 3 dimensional cadastres and registration of rights, restrictions and responsibilities
- For agencies to model the dynamics of the earth
- For agencies to implement dynamic reference frames and datums



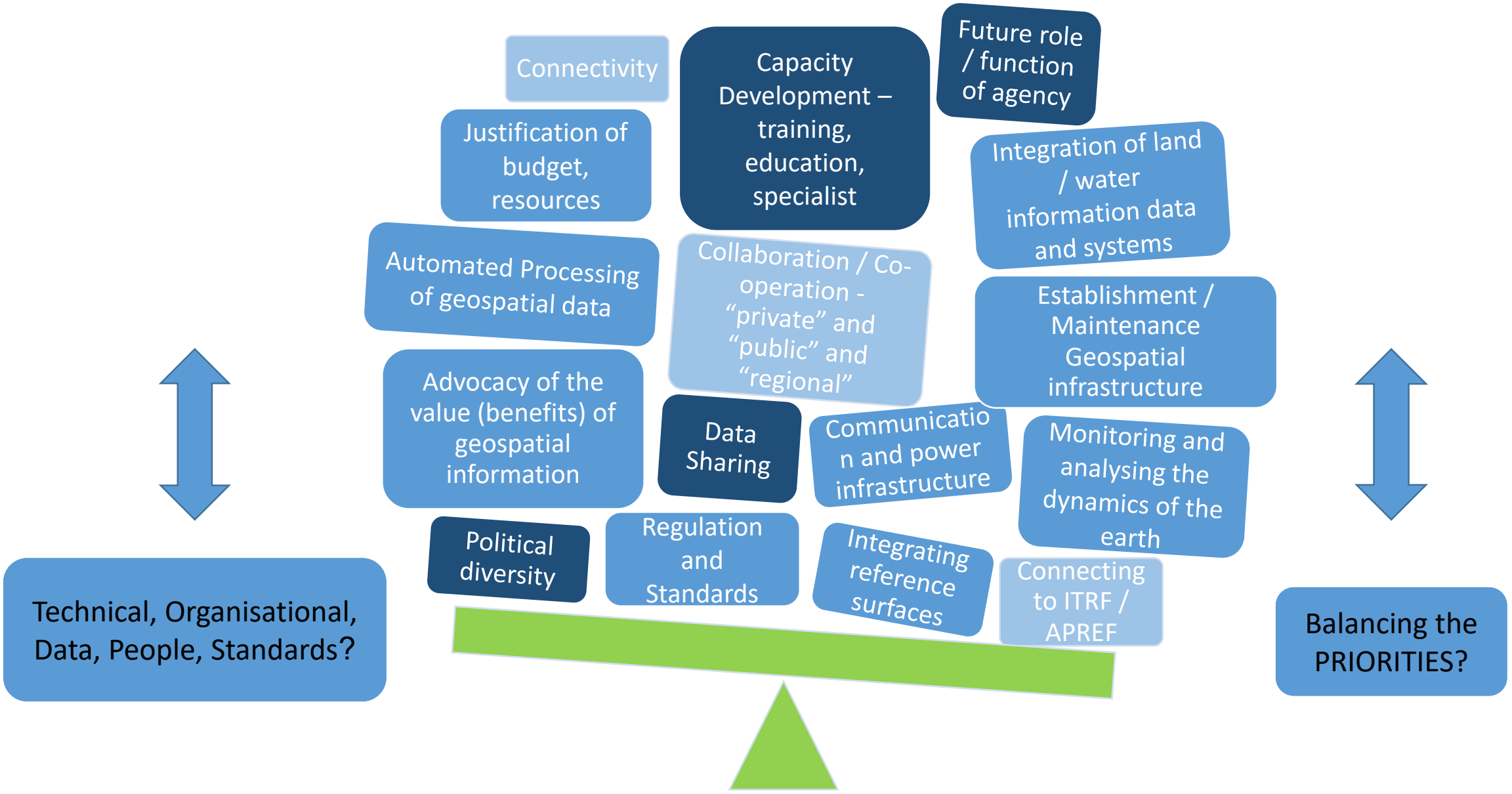


Modernising Geodetic Infrastructure



Source – Peterson & Sarib

Regional Challenges Affecting Geospatial / Geodetic Information



The Future – Asia Pacific Region Capacity Development Plan

Collaboration is the KEY !
Our geospatial future is in our hands

Consolidate our network to consider

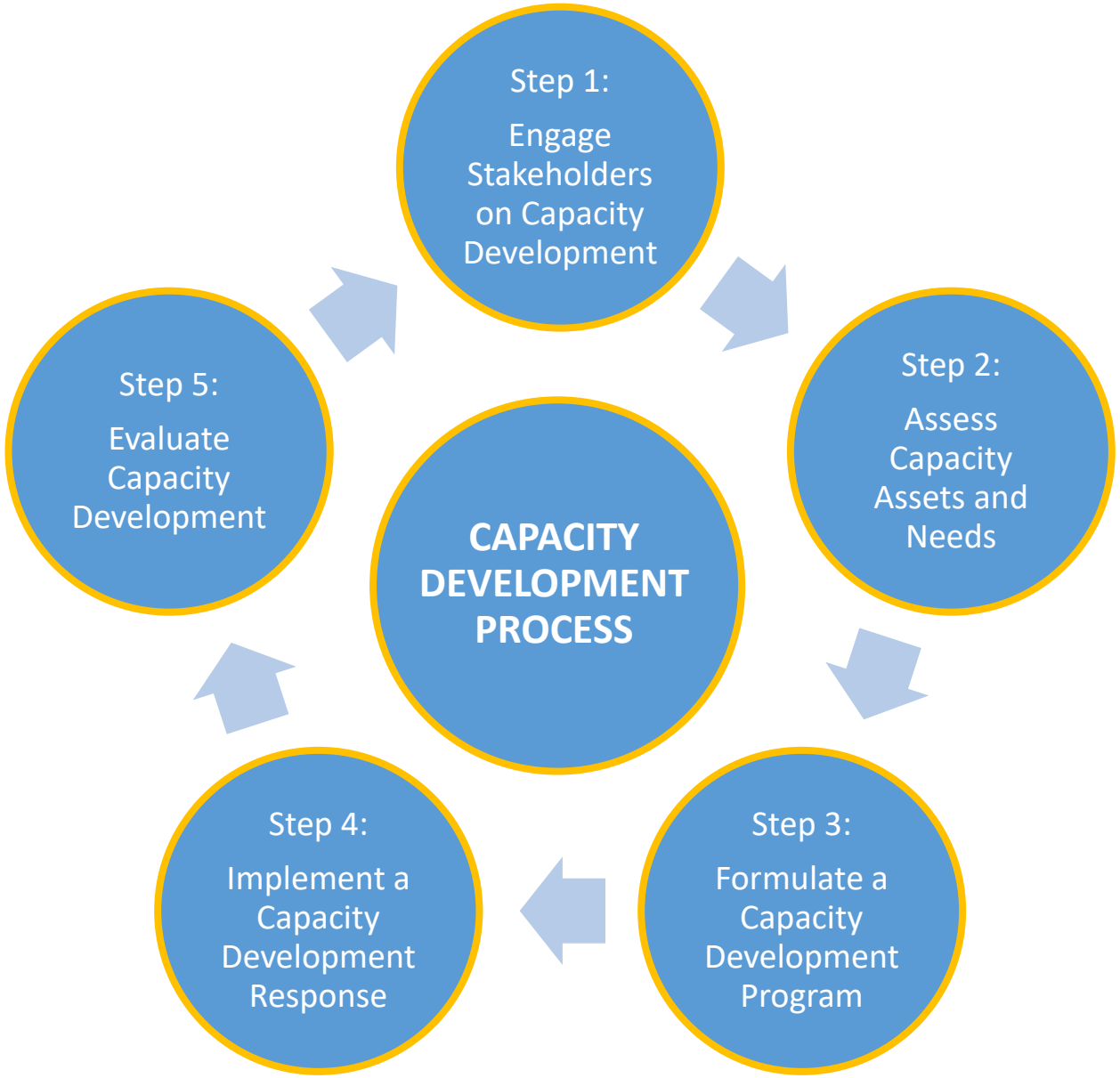
TO WHAT END do we need to develop our capacity? What will be its purpose? Drivers – social, economic, political?

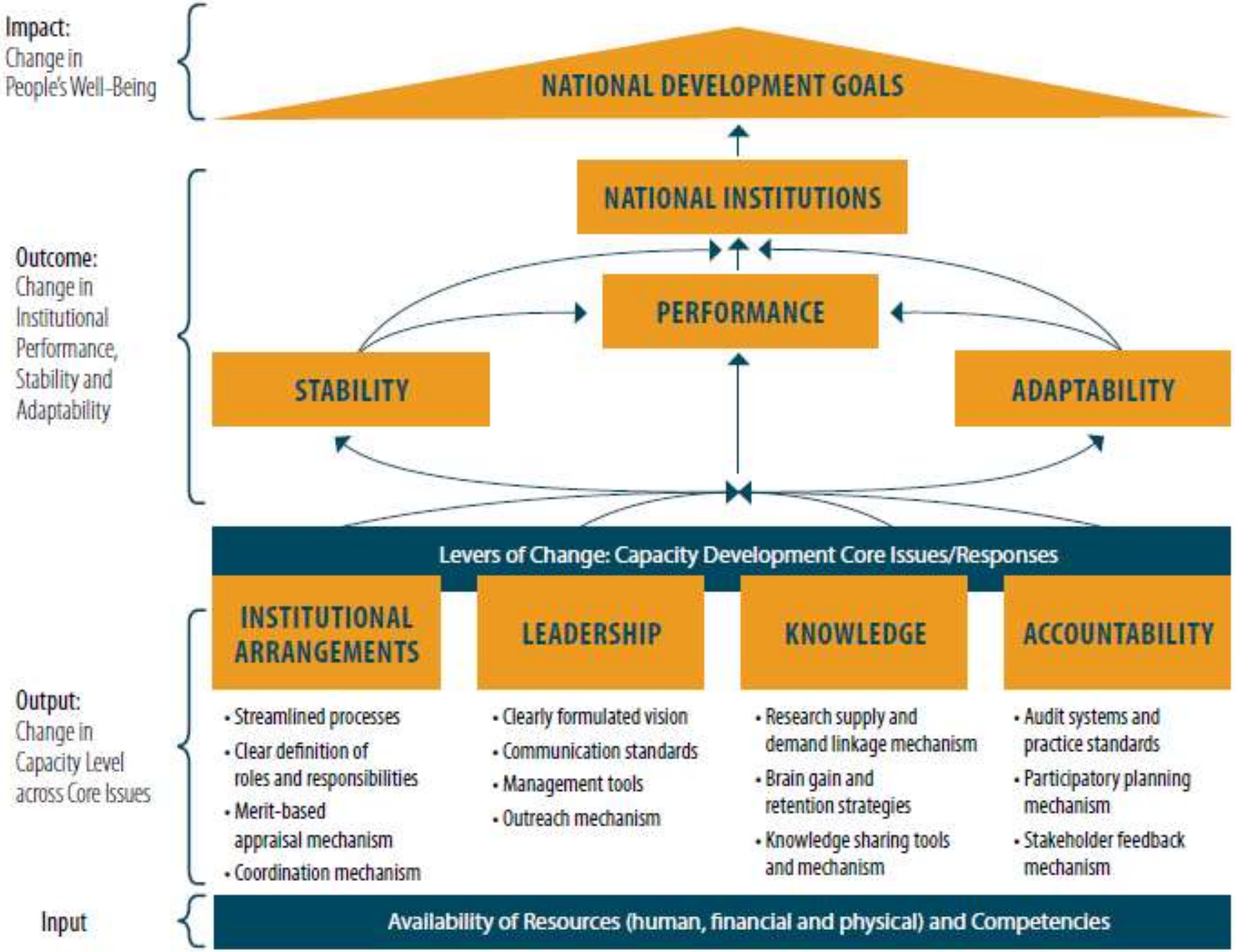
WHOSE capacities need to be developed? Which groups or individuals need to be empowered? Local / Regional? Who needs to be involved?

WHAT KINDS of capacities need to be developed to achieve the broader development objectives? Technical & Non-technical? What are the priorities?

HOW are we going to build capacity?

UNDP


Step 1:
Engage Stakeholders on Capacity Development
Step 2:
Assess Capacity Assets and Needs
Step 3:
Formulate a Capacity Development Program
Step 4:
Implement a Capacity Development Response
Step 5:
Evaluate Capacity Development
CAPACITY DEVELOPMENT PROCESS


Impact:
Change in
People's Well-Being
NATIONAL DEVELOPMENT GOALS
Outcome:
Change in
Institutional
Performance,
Stability and
Adaptability
NATIONAL INSTITUTIONS
PERFORMANCE
STABILITY
ADAPTABILITY
Levers of Change: Capacity Development Core Issues/Responses
Output:
Change in
Capacity Level
across Core Issues
INSTITUTIONAL ARRANGEMENTS
LEADERSHIP
KNOWLEDGE
ACCOUNTABILITY
• Streamlined processes
• Clear definition of roles and responsibilities
• Merit-based appraisal mechanism
• Coordination mechanism
• Clearly formulated vision
• Communication standards
• Management tools
• Outreach mechanism
• Research supply and demand linkage mechanism
• Brain gain and retention strategies
• Knowledge sharing tools and mechanism
• Audit systems and practice standards
• Participatory planning mechanism
• Stakeholder feedback mechanism
Input
Availability of Resources (human, financial and physical) and Competencies

UNITED NATIONS DEVELOPMENT PROGRAMME

SUSTAINABLE DEVELOPMENT GOALS | OUR FOCUS | TAKE ACTION | MORE | DONATE

HOME / NEWS CENTRE / NEWS / 2017 / UNOOSA AND UNDP TO EXPAND COOPERATION ON SPACE TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT

Posted on December 15, 2017

UNOOSA and UNDP to expand cooperation on space technology for sustainable development

Reconstruction of a public health center in Douentza, Mali. Photo: UNDP

GENDER EQUALITY

CRISIS RESPONSE

DEVELOPMENT IMPACT

"The Office for Outer Space Affairs works closely with other United Nations entities to ensure that the benefits of space reach everyone, everywhere. We have had great success supporting UNDP in a pilot project to use satellite imagery to support reconstruction in Mali, and I am pleased that our partnership is being strengthened and formalized through this MOU. This is also a great example of Sustainable Development Goal 17 "Partnerships for the Goals", and of improving efficiencies and cooperation within the United Nations system," said Ms. Di Pippo.

"Within a year, more than 25 UNDP Country Offices used satellite technologies, sometimes in collaboration with other agencies. We look forward to further collaborate with UNOOSA and scale them up to all our projects in the field," said Susan McDade, Assistant Secretary-General and Director of UNDP's Bureau for Management Services.

The MOU was signed during the UNOOSA-UNDP Discovery Day on Geospatial Solutions for Sustainable Development. The Discovery Day, held at the United Nations Headquarters in New York on 6 December, brought together stakeholders from space agencies, private sector, educational institutes and United Nations entities to consider geospatial solutions that can aid the United Nations to achieve the 2030 Agenda for Sustainable Development and its Sustainable Development Goals.

FIG AP CDN – Definition of “capacity development”

What is capacity development?

It is about understanding the challenges or obstacles;
that hinder an individual / organisation / community from accomplishing their objectives; and then developing the necessary knowledge / skills / abilities / competencies / frameworks to achieve them….

It is also about ……

The process of learning to adapt to change (or shifting the paradigms of practice)

Who and how and where the decisions are made….

Being supported by a sustained resource and political commitment to yield longer term results ….

Source : Allan Kaplan

Capabilities / Competencies for the Future

Surveyors (and Spatial leaders of organisations) need to have skills to -

- Prepare for ***continuous change*** by transforming their attitude towards change, ***be progressive in their thinking, be agile, be less risk adverse***
- ***Collect, process, deliver, reliable, accurate, interoperable and "24/7" geospatial information*** to decision makers in real time via a combination of "***disruptive technologies", crowd sourcing techniques, and web services***
- Convey ***professional advice and services*** to facilitate design, risk assessment, investment analysis, asset management and resource deployment.
- ***Innovate in multi-disciplinary teams*** to effectively manage diminishing resources, increased data volumes; and resolve legal data matters such as privacy, custodianship, sharing, liability etc.

Capabilities / Competencies for the Future

Surveyors (and Spatial leaders of organisations) need to have skills to –

- Actively ***lead, negotiate, influence, and permeate collaboration*** amongst a diverse team of survey and land professionals
- Understand and balance commercial influences
- ***Advocate and communicate relevance*** to influence leaders, decision makers, politicians; and attract a ***diverse group of new professionals***
- ***Form and administer strategic plans*** with an outcome / output focus; and qualitative and quantitative monitoring / evaluation frameworks.
- ***Develop sustainable policies*** to balance consumption of resources with environmental needs; and to ensure ***a self-reliant, self-determinate community that has gender equity***

PACIFIC ISLANDS
GEOSPATIAL AND SURVEYING STRATEGY
2017-2027

POSITIONING PACIFIC ISLAND COUNTRIES AND TERRITORIES FOR THE FUTURE

The Seventh Plenary Meeting of UN-GGIM-AP

in conjunction with

The First United Nations World Geospatial Information Congress

19-21 November 2018

Deqing , Zhejiang, China

The Pacific GIS / RS Users Conference