



Thanks to SWF for the invitation

ISU is interdisciplinary, international, intercultural, intergenerational and involved 34 people, from 19 to 53 years old, from 12 countries, to produce, in less than 3 weeks, the work I will now present to you

*Outline*

- Looking back on *Paths to Progress*  
– *Space and the Southern Hemisphere*
- What is *Reach2020*?
- Needs and Applications
- *telereach.org*
- Infrastructure
- Business Model (**WILL NOT BE DISCUSSED HERE**)
- Policy
- Implementation
- Conclusions and Recommendations (**PART OF THEM**)

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2

This presentation will bring forth some findings from last year's Southern Hemisphere Summer Space Program's white paper, and will review infrastructure, policy, and economic frameworks to enable the sustainable operation of current and potential tele-reach solutions in the Global South.



What is Reach2020?



**Mission Statement**

*“To develop a framework under which states can collaborate on economic and social needs, and maximize Information and Communication Technology (ICT) to provide space and terrestrial tele-reach applications”*



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3

So, what is *Reach2020*?

Our mission this year was to develop a framework under which states can collaborate on economic and social needs, and maximise Information and Communication Technology – ICT – to provide space and terrestrial tele-reach applications.

*What is Reach2020?*

**REACH 2020**

- Inform decision makers on the core need for collaboration
  - Sustainable progress
  - Increase connectivity
  - Coherence in collaboration

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4

It is a white paper that provides an investigation of current and potential tele-reach solutions from the viewpoint of the Global South's needs, and addresses the prospect of increased connectivity amongst nations of the Global South, as well as the difficult task of sustaining progress.



*What is Tele-reach?*

REACH 2020

- Tele-reach is a term that refers to...  
*Technologies and applications which allow remote presence, participation or interaction or control.* (Madry and Pelton, 2011)
- Complete tasks and activities at a distance
- Enabled through synergy of ICT infrastructures

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5

And what is *tele-reach*?

Tele-reach is a term.

A term that refers to “technologies and applications which allow remote presence, participation, or interaction, or control”.

Basically, it enables people and organisations to complete tasks and activities... at a distance.

This could be a business meeting, teaching a course, or even performing a medical procedure....

And a synergy of Information and Communication Technology enables such tele-reach solutions.



You must be wondering, “who are the Global South?” or “what on Earth is Global South?”

Well... Here, the ‘Global South’ refers to all regions and States that touch – or are situated below – the Tropic of Cancer. This white paper addresses the common challenges faced by the region, whilst taking into consideration the inherent political, socioeconomic, and cultural diversity from nation to nation.

For us – and from the perspective of the inhabitants – the Global

South is the location where new visions of the future are emerging.



To manage the complexity of comparing nations of the Global South, *Reach2020* employs a three-tiered approach to thinking about regions, countries and communities in their capacity for tele-reach:

The Advanced Tier – Here, countries or communities are particularly ready and capable of implementing advanced tele-reach solutions. They already have reliable infrastructure, credible political and legal institutions, and predictable markets. It is likely that members of the Advanced Tier will have indigenous capacity for technology and science.

The Intermediate tier may consist of a combination of these elements shown in the diagram – but they might not be fully developed, and they may face difficulties in accessing all necessary resources. Thus, some solutions may be too advanced or complex to attain.

Finally, the Emerging Tier. This Tier refers to countries or communities whose access to an indigenous capacity for technologies is limited... or non-existent. Furthermore, their political institutions and economic markets may be weak or unstable. As a consequence, these groups may need support from partners in order to implement basic tele-reach solutions.



The slide features a header image on the left showing a rocket launch and a modern building. The title 'Reach2020' is in the top right. A 'REACH 2020' logo with a satellite and globe is in the top right. The main content is a bulleted list. Logos for the University of South Australia and International Space University are at the bottom.

## Reach2020

- Tele-reach portal – *telereach.org*
  - Regional and multinational collaboration
- Tele-reach Operational System of Systems (TeOSS)
  - Recommend implementation by 2015
  - Collaboration between regional and international governments, and other significant partners
- *Reach2020* recommends full international collaboration by 2020

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8

Overall, this paper describes the first viable step in a framework for tele-reach implementation – a tele-reach portal for regional and multinational collaboration – *telereach.org*... Secondly, *Reach2020* proposes a Tele- Reach Operational System of Systems, or TeOSS, by 2015 – with regional and international governments, and other significant partners joining for collaboration.

The implementation of *Reach2020* means full international collaboration by 2020.



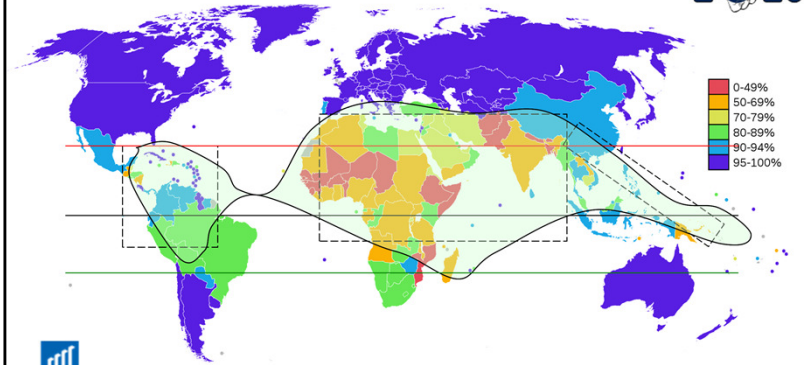
## NEEDS AND APPLICATIONS



- Tele-reach opportunities and needs are commonly found within and across each of the three Tiers
- Need for advanced technologies, particularly within the Emerging Tier



# Needs – Literacy




Critical for advancement from the Emerging to Intermediate Tier






Talk about the images


# Applications







- Nested nature
- Interdependent, hierarchical
- Common and interconnecting properties

- Tier 1 - Advanced
- Tier 2 - Intermediate
- Tier 3 - Emerging



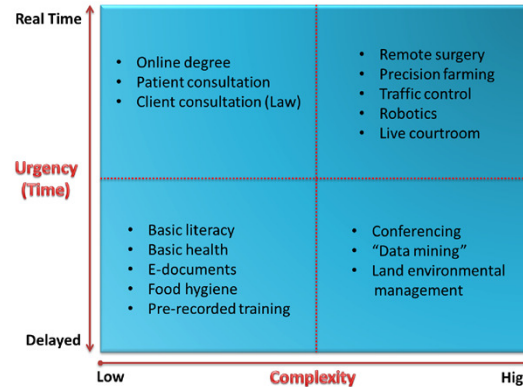


12



Slow down and explain how we get from green to orange to red

Applications  
– The Level  
of Complexity





## Key Points



- Basic educational tele-health for emerging communities requires investment
- Tele-reach opportunities for international communities require collaboration
- Advanced communities are better able to expand and enhance high technology
- **Tools and methods used to develop needs-analysis is an example of content available on [telereach.org](http://telereach.org)**



## Infrastructure



- Infrastructure independent of application specifics
- Enable cooperation through design
- Cost effective implementation at all levels
- Space is the essential tool




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15

Space provides the connectivity to share globally  
Provides the only means of access to remote areas




*Factors*

- Existing Satellites
- Remote locations
- Sharing of satellite data
- Communication
- Levels of development



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16



Space has the assets available. No requirement to launch a satellite in order to utilise space technologies

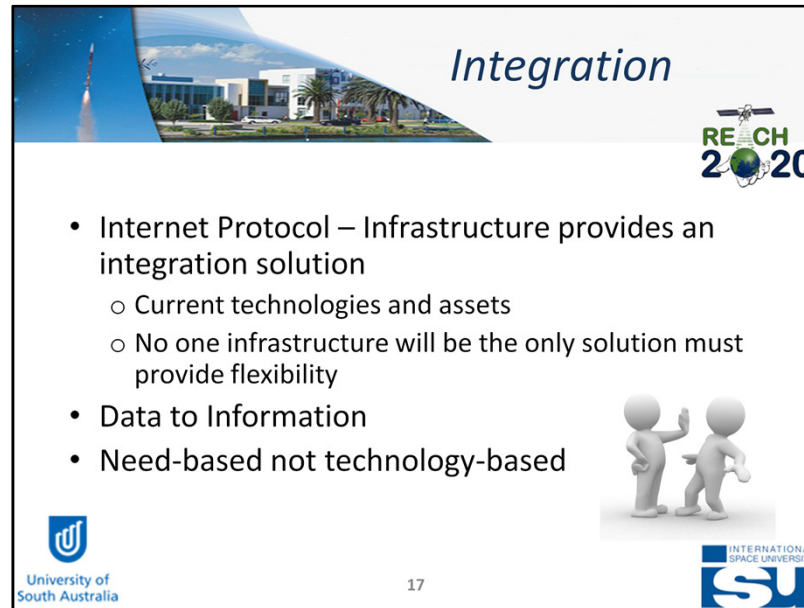
Remote locations need space resources.

The need to share data is essential to this cooperation (telereach.org)

The integrated communication requirements

Infrastructure needs to support the tier system, but there are levels of infrastructure within these tiers





*Integration*

REACH 2020

- Internet Protocol – Infrastructure provides an integration solution
  - Current technologies and assets
  - No one infrastructure will be the only solution must provide flexibility
- Data to Information
- Need-based not technology-based

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17

IP provides a standardised communication standard that is used both in terrestrial and satellite communications networks. This provides a standard infrastructure requirement with the flexibility required to satisfy specific Tele-reach applications.

Infrastructure needs to provide resources to exploit satellite data.

Must be needs based not technology based. Importance of levels.

## Layered Approach



- No technological limitations. Expensive option with full expansion capability **Adv**
- Some compromise on the technology employed. Achieve required outcomes. Expansion will require some further investment **Int**
- Uses available technology and is a precursor to further development **Emr**





<http://www.itsy.com.au>

<http://www.gs4sat.com/>

<http://cityspace.org/>

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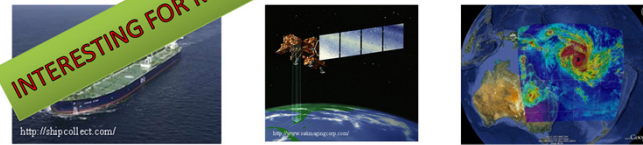
18

All three levels can exist in one region and are independent of the tiers

## Layered Approach



- Do not have to launch a satellite
- Can provide a solution tailored to a specific need
- Provides a platform for development



**INTERESTING FOR MANY LATIN AMERICAN COUNTRIES**



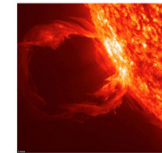
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## Critical Paths



- Power for infrastructure
  - Renewable Energy - Solar Ground Support
  - Data storage and sharing need to be supported
  - Infrastructure to support applications to exploit shared data and create knowledge





*Key Points*

REACH 2020

- Integration and cooperation are essential to the infrastructure design stages
- Global benefits require the sharing of information
- Effective use of current infrastructure requires a resource that allows and encourages collaboration
- One of the tools that will encourage national and international collaboration is *telereach.org*

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LATIN AMERICAN COLLABORATION

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What type of resource? Add it (if you think it's appropriate)



*National Space Direction*

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- Provides policy guidance within States
- Provides insight into each state's priorities
- Enables other nations to identify cooperative opportunities and benefits

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22

There are three advantages from national space policy and direction. They can get guidance, insight into each state's priorities and help other nations to see where they can cooperate and how they can benefit from the cooperation.

An increasing number of nations are developing space policy and strategies for sustainable socio-economic development.

This is also an approach that will also foster confidence in the local industries to participate in space activities.

*Interdepartmental Cooperation*

REACH 2020

- Data sharing between government departments avoids duplication of effort and maximizes data efficiency
- Multiple regional policies create duplication and reduce data sharing

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23

Data sharing between government departments can avoid duplication of effort, to standardize information storage, and to provide a common platform for easy sharing of information. By adopting an information-sharing model within a nation, governments can maximize their data efficiency and allow the best return on resources invested in tele-reach programs. On the other hand, multiple regional policies will create duplication and reduce data sharing.

*Legal and Policy*

REACH 2020

- Tele-reach program development may require:
  - Bilateral and multilateral cooperation
  - Creation of national laws and policies
  - Understanding how international law affects national law

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24

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Tele-reach program development may require:

Bilateral and multilateral cooperation

Creation of national laws and policies

Understanding how international law affects national law

Furthermore, these legal requirements must be formulated prior to negotiations for regional cooperation.

Next, development of a Charter to address the issues raised in this section could provide a blueprint for further cooperation within the Global South.





Interdepartmental cooperation is key to a continued successful partnership. Within government frameworks, there are a number of stakeholder departments to monitor social benefit, investment and return, as well as to coordinate infrastructure and delivery of services. In the figure, the main administration stakeholders maybe include education department, health department, information and industry department and so on. Each stakeholder department needs access to demographic information to have a common understanding of unique cultural differences and to provide a tailored solution. Governments need to find a mechanism for creating commercial opportunities for local industry within the tele-reach area to meet their

national space policy goals.

*Case Study: Deforestation monitoring in Brazil*



**REACH 2020**

Centralized approach  
 PRODES – Brazilian Amazonian Forest Monitoring by Satellite  
 DETER – Real Time Deforestation Detection System

Landsat, CBERS and MODIS data used by IBAMA and Federal Brazilian police to detect illegal deforestation




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26

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I will give an example from the Brazilian deforestation monitoring system. Brazil has made a centralized approach to the deforestation monitoring.

Different departments in the government can share the monitoring data from satellite and ground.


Inter-department cooperation can be done in the same legal and policy framework. They have formed a model to control the deforestation from data sharing, decision making and action.

In the world, there are many areas that have the deforestation problem.



Close to Brazil, there are Panama, Northern Argentina; far away from Brazil, there are Indonesia, Malaysia, Philippines and Africa.

All these countries can share Brazilian information from the tele-reach portal on the internet. They can solve their problem by learning the Brazil model.

*Case Study: Tele-medicine  
in Canada*




- No centralized approach
- No existing Canadian federal legislation regulation tele-medical services
- Canadian provincial legislation was created resulting in a duplication of effort

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27




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I will give you a tele-medicine example from Canada. Aboriginal communities in northern Canada may have limited access to healthcare services. People with medical emergencies need to be transferred to distant regional medical centers for definitive medical care. Healthcare professionals may use tele-medicine for the electronic access of lab results and diagnostic imaging and for diagnostic, treatment, and patient management video consultations. Since the late 1970s, tele-health and tele-medicine in Canada has been in different stages of development and discussion. Tele-medicine networks have been established in Ontario and Alberta by their provincial governments to aid the Aboriginal communities in the far north of Canada. As there is no existing federal legislation regulating tele-medical services, the provincial governments of Ontario and Alberta have developed legislation to support the tele-medicine networks, which has set a precedent for other provinces to follow.



The case of tele-medicine in Canada demonstrates that public and government support is required for the successful and sustainable implementation of a tele-reach solution.

Furthermore, to sustain funding and ensure reliable provision of service, clearly communicated and transparent policy needed at the national level.

# Comparison



	Brazil	Canada
Policy	Central government policy <ul style="list-style-type: none"> <li>• No duplication of efforts</li> <li>• Same staff training</li> </ul>	Many provinces policy <ul style="list-style-type: none"> <li>• Many duplication of efforts</li> <li>• Different staff training</li> </ul>
Legal	Same legal <ul style="list-style-type: none"> <li>• Same laws</li> <li>• Benefit to national and international cooperation</li> </ul>	Different legal <ul style="list-style-type: none"> <li>• different laws</li> <li>• Difficult for national and international cooperation</li> </ul>
Data sharing	Easy to share	Difficult to share
Efficiency	High efficiency	Low efficiency

28

This is the comparison from four aspects which are policy, legal, data sharing and efficiency between Brazil and Canada examples.

Brazil has central government policy and there is no duplication of efforts, but Canada has no centralized policy, many provinces has different policies. They pay much more duplication of efforts than Brazil.

Brazil has the same laws, it is easy to manage deforestation, it is benefit to cooperate in national and international projects. Canada has different laws in different provinces to manage tele-medicine, it is difficult to cooperate in national and international projects. Brazil model is easy to share data information and has high efficiency to work together, but Canada model is difficult to share data and has low efficiency to work together.



*Key Points*

REACH 2020

- Interdepartmental cooperation is necessary
- A national space direction is necessary
- International cooperation in terms of governance and policy can be assisted by the information found on *telereach.org*

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29

Interdepartmental communication and cooperation enhances the results of collaborative projects

Establishing a national space direction can improve management and use of state resources, reduce duplication of effort, provide direction to industry within a nation, and inform partners outside the nation

All the information can be loaded on *telereach.org*, where other countries can learn about different solutions that they could apply to their own similar problems.

Now edu will explain the tele-reach application.

*Implementation*

**REACH 2020**

*Tele-reach represents a reallocation of resources and priorities to **benefit** the specific needs of the **Global South**.*

NEED → POLICY → BUSINESS MODEL → INFRASTRUCTURE → SOLUTION

Each country

... **LATIN AMERICA IS GLOBAL SOUTH!!!**

same process      specific models could vary

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30

This means that we first have to detect a need. That can be specific for each country or general for the Global South also.

Once you have detected the need, you have to think about what is the policy needed to approach the solution. What kind of policies, frameworks or laws are required to ensure the correct outcome.



*Implementation*

**REACH 2020**

A **national space direction** is an essential step forward.

Political will can either impede or enhance collaborative activities by providing internal guidance and external rhetoric on fostering international cooperation. (Williamson, 2011)

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31

Each nation has to know what role they want to be playing in tele-reach programs. What problem does it need to solve and how is it going to contribute. Do the “homework” before looking forward.

*Implementation*

REACH 2020

Collaboration  
Cooperation

Tele-reach  
➤ Existing programs

**Global South**  
Space Technology is facing rapid development  
Space is a finite and vulnerable resource

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32

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So what is essential to make this work? Collaboration, Cooperation, Sharing... without this nothing can work.

It is time to change concepts. We should not use 5 cars to go to work, when we could share one car between 5 people.

Telereach is real collaboration, real cooperation, real sharing, the ISU 3I (international, interdisciplinary and intercultural). Real means that people are in the right mood to do it,. When you “want to” understand someone, you do it. One of the most valuable things I have learned here is that “culture is an issue”, but it is just an excuse to not understand each other. Open hands, open mind

open world.

And in addition, we don't have to start from scratch, we already have infrastructure, policies, business models, and programs that can be used and shared to the Global South benefit.



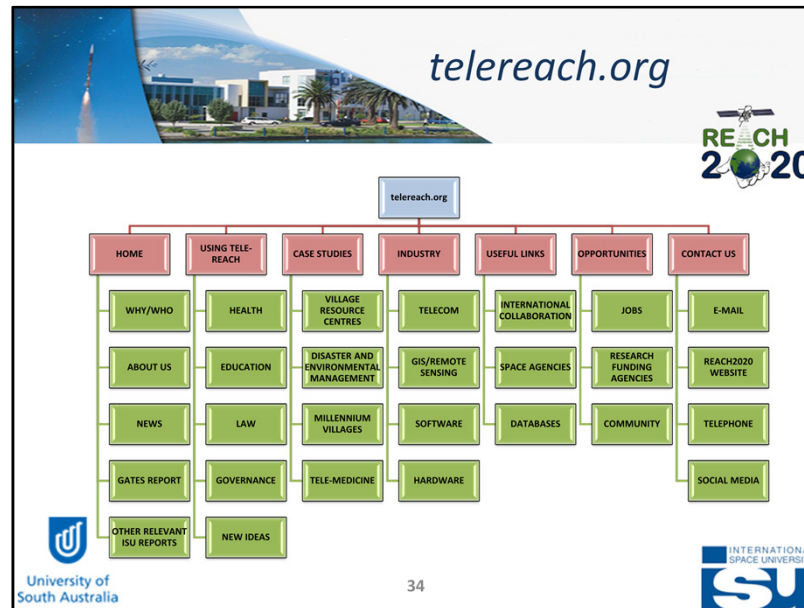
The proposed process to be followed in order to pursue a similar collaborative initiative for any given need and its Tele-reach solution.

<ol style="list-style-type: none"> <li>1. National Space Policy and Direction</li> <li>2. Prioritize Tele-reach Applications</li> <li>3. From Pilot Program to Sustainable Tele-reach Solution</li> </ol>	<ol style="list-style-type: none"> <li>1. Regional Steering Group</li> <li>2. Regional Collaboration Entity</li> <li>3. Overcome Challenges</li> <li>4. Priorities in Collaboration</li> <li>5. Sustainability</li> </ol>	<ol style="list-style-type: none"> <li>1. International Body for the Global South</li> <li>2. Charter, Membership, Funding</li> <li>3. Standardization of Processes</li> <li>4. Evolving Framework</li> <li>5. Integration with the Global North</li> </ol>
<p>POLICY, PRIORITIES AND POSTURING <b>2012</b></p>	<p>REGIONAL COLLABORATION <b>2015</b></p>	<p>INTERNATIONAL COLLABORATION <b>2020</b></p>



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Mention that there's an area for each stakeholder...

A web site. So simple, so powerful!

A wiki based web site. So free, open source and sharing of knowledge.

The structure is thought to be like this (show the web site) so anyone can edit, add, comment and use this is a resource for all related to

tele-reach.



*Reach2020* has identified the first step, and a process, for collaboration on tele-reach in the Global South.

Identifying needs, defining policy, selecting a business model, and providing infrastructure are required to establish a way forward at a national level.

Within each Tier, the path may differ, but the elements required are always the same.

The tele-reach portal, *telereach.org*, provides a mechanism for stakeholders to collaborate, share, discuss, learn, and develop better ways of applying tele-reach to the social and economic needs of the region. This white paper *Reach2020*:

Telereach for the Global South – provides the means for enabling the global south to collaborate on telereach solutions to meet their own needs by 2020.



*Conclusions relevant to this forum*



- Investment in basic education for underprivileged communities is essential
- A national space direction improves management and use of state resources, reduces duplication of effort, provides direction to national industry, and informs foreign partners.
- Interdepartmental communication and cooperation is vital
- Tele-reach applications should be delivered in a timely, cost-effective way
- To facilitate national and international cooperation, a central repository of tele-reach information is required such as [telereach.org](http://telereach.org)



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36



From this it has been identified that there are common components required for tele-reach applications within all of the three tiers.

One of these needs is education, which includes education for the use of infrastructure and technology to enable tele-reach applications, as well as implementing education programs for underprivileged communities.

From the infrastructure perspective towards tele-reach it has been concluded that there should be an enhancement of existing wireless infrastructures for smart devices in remote areas. It is also important that the integration of data services, satellites, and ground communication networks have to occur at the initial design stages for applications. Advances in renewable energy technologies can also provide the infrastructure support for Tele-reach applications in

locations where it was not previously possible.

*The First Step*

REACH 2020

- Web-based portal telereach.org
  - Concise tele-reach information
  - Acts as first step to collaboration
  - Centralized information resource
  - **Starting point to launch TeOSS**
  - Access point for promotion of tele-reach projects
  - Policy makers could assess latest activities

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37

It was identified within the process of developing this white paper that there was a need for a place of concise tele-reach information.

Therefore, *Reach2020* initiated the first step by establishing a unique web-based portal telereach.org for sharing experiences and information about tele-reach. Telereach.org acts as the first step to a collaborative process for tele-reach.

The success of this portal will depend upon attracting relevant stakeholders in the concept of a central tele-reach portal and an eventual TeOSS.

Ultimately, the telereach.org will act as a centralized information resource; a forum where decision makers, experts, industry, and Non-Governmental Organisations can network.

Telereach.org is the starting point from which to launch the Telereach Operational

System of Systems and also provides an access point through which governments and other agencies could promote their tele-reach approach and post links to their tele-reach projects.

This could act as a common point in which policy makers could assess the latest activities occurring in the industry.

*The Way Forward*

REACH 2020

Tele-reach 'system of systems' (TeOSS)

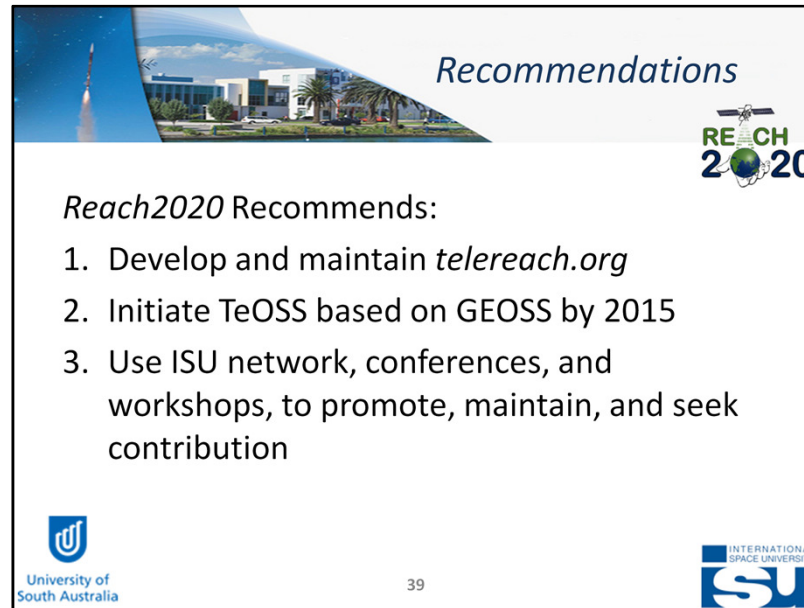
- Identify duplication of effort
- Gaps in current infrastructure and applications
- Better use of resources
- Identify future opportunities

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38

The creation of a Tele-reach Operational System of Systems or TeOSS, will help reduce duplication of effort, filling gaps in current infrastructure and application, ensure resources are used more efficiently, and opportunities for further tele-reach applications and collaboration are identified. Initiation of this TeOSS model will occur by 2015.



The slide features a header with a blue and white background showing a rocket launch and a modern building. The word "Recommendations" is written in a blue serif font. In the top right corner is the "REACH 2020" logo, which includes a satellite icon and a globe. The main text is centered and lists three recommendations. At the bottom left is the University of South Australia logo, and at the bottom right is the International Space University (ISU) logo. The number "39" is centered at the bottom.

*Recommendations*

**REACH 2020**

*Reach2020* Recommends:

1. Develop and maintain *telereach.org*
2. Initiate TeOSS based on GEOSS by 2015
3. Use ISU network, conferences, and workshops, to promote, maintain, and seek contribution

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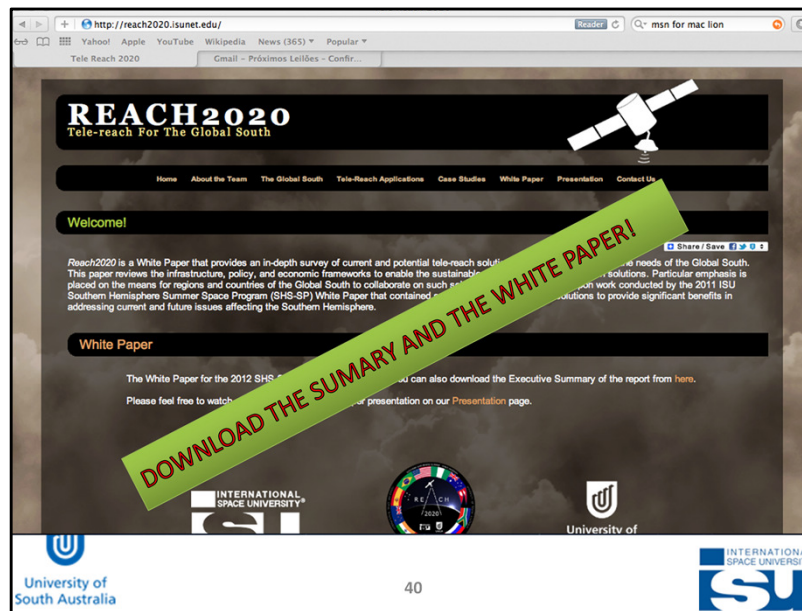
39

From the process of developing this white paper Reach2020 recommends

- Develop and maintain [telereach.org](http://telereach.org)
- Initiate Tele-reach Operational System of Systems based on the GEOSS model by 2015
- Use the ISU network, conferences, and workshops to promote, maintain, and seek contribution to [telereach.org](http://telereach.org) and to develop TeOSS

This concept can be extended to a number of organisations, such as

the Space Generation Advisory Council, and be a topic of discussion  
International Space University Symposium.



*Reach2020* has identified the first step, and a process, for collaboration on tele-reach in the Global South.

Identifying needs, defining policy, selecting a business model, and providing infrastructure are required to establish a way forward at a national level.

Within each Tier, the path may differ, but the elements required are always the same.

The tele-reach portal, *telereach.org*, provides a mechanism for stakeholders to collaborate, share, discuss, learn, and develop better ways of applying tele-reach to the social and economic needs of the region.



The major lesson learned is that it is possible to work together in a very diverse and multicultural environment – this forum is composed by very educated and highly trained individuals. Motivation and enthusiasm seem to be the rule around.



MUCHAS GRACIAS!  
THANK YOU!

CA.WUENSCH@INPE.BR





*Southern Hemisphere Summer  
Space Program 2012*

REACH  
2020

- 34 participants from 12 countries
- Interdisciplinary, Intercultural, International, Intergenerational
- Tele-reach solutions
- Socio-economic perspective

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42

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Reach2020 – Tele-reach for the Global South is the result of research by 34 participants from 12 countries.

We came together to solve a problem...

We employed interdisciplinary, intercultural, international, and intergenerational approach to tackle the needs and challenges specific to the Global South... And it was found that unity through tele-reach for communities is best achieved by collaboration at regional and national levels.

And....



*Paths to Progress – Space and the Southern Hemisphere*  
2011

REACH  
2020

- Discussed several viable space-related solutions
- Recommended an investment in tele-health and tele-education

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43

*Reach2020* builds upon the 2011 white paper *Paths to Progress – Space for the Southern Hemisphere*.

Last year's Southern Hemisphere Summer Space Program cohort discussed several viable solutions and concluded that there would be significant benefits in addressing current and future issues affecting the Southern Hemisphere. One of their recommendations was to invest in tele-health and tele-education.

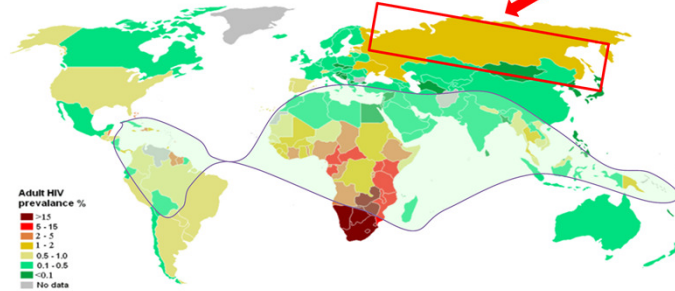


# Needs and Applications

Alex Wuensche  
Brazil



# Needs - HIV



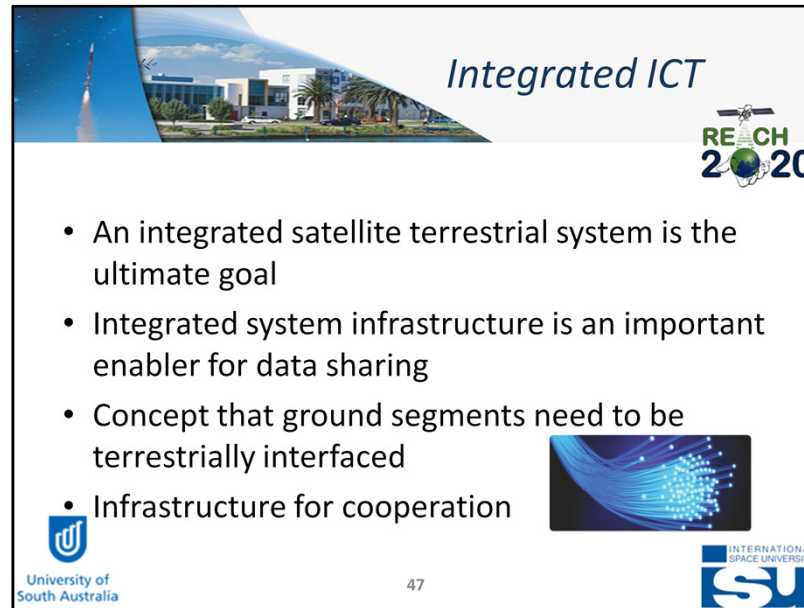


# Infrastructure

Paul Ferguson  
Australia







The slide features a header with the title "Integrated ICT" in blue. To the left is a photograph of a modern building with palm trees. To the right is the "REACH 2020" logo, which includes a satellite icon and a globe. The main content is a bulleted list. A small image of fiber optic cables is positioned to the right of the last two bullet points. The footer contains the logos for the University of South Australia and International Space University, along with the page number 47.

## Integrated ICT

REACH 2020

- An integrated satellite terrestrial system is the ultimate goal
- Integrated system infrastructure is an important enabler for data sharing
- Concept that ground segments need to be terrestrially interfaced
- Infrastructure for cooperation

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47

Infrastructures goal is to make the interface between nations, regions and users transparent. A single infrastructure that supports both terrestrial communications and satellite technologies and resources will reduce maintenance and implementation costs.

Design concepts must have cooperation, integration and sharing of data as a critical design goal. If the infrastructure can not support cooperation cost effectively it will become a major obstacle.

## Communication Methods



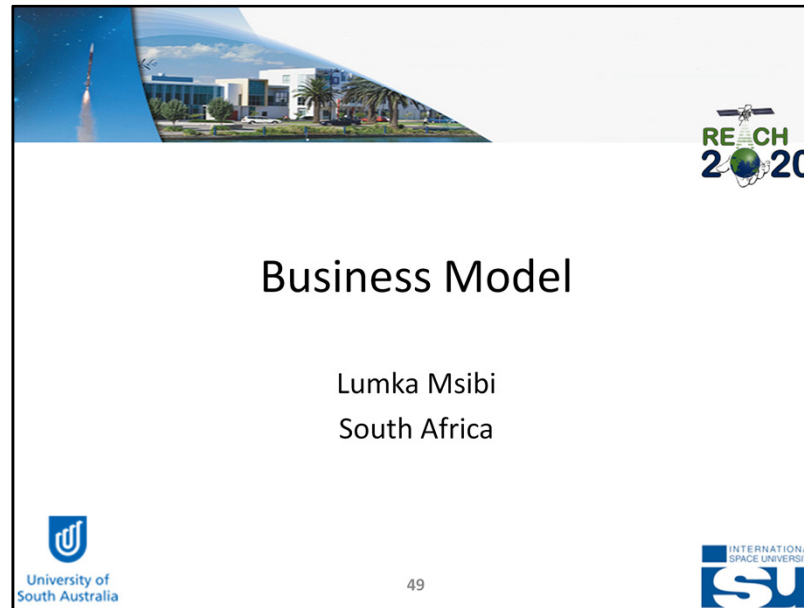
- Fiber optic technologies, high capacity technology – expensive
- Wireless – good specific small infrastructure, limited expansion
- 3G/4G/5G developing and providing better services, good value for money, good step towards optimum solutions



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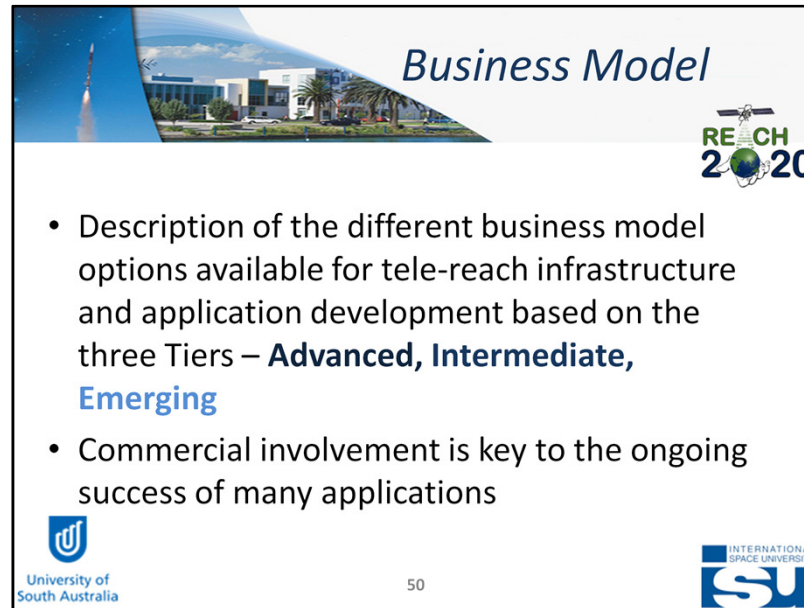
48





Good day, I'm Lumka Msibi from South Africa, I am currently in my 4<sup>th</sup> and final year of my Aeronautical engineering degree

I will be talking to you about the business model options available for tele-reach applications and infrastructure



*Business Model*

REACH 2020

- Description of the different business model options available for tele-reach infrastructure and application development based on the three Tiers – **Advanced, Intermediate, Emerging**
- Commercial involvement is key to the ongoing success of many applications

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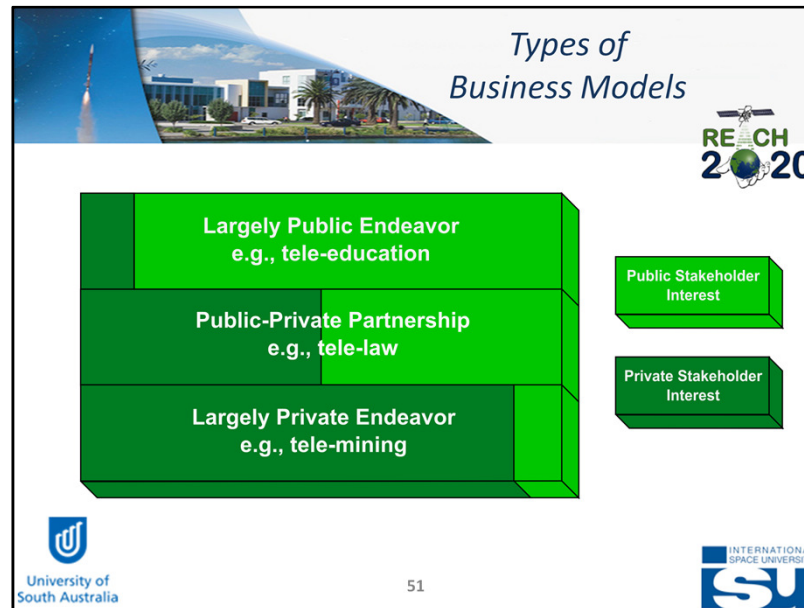
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50

Different countries have different needs thus will have different applications as explained by Alex. Different countries also have different economies and geography. Thus business models will vary, I will be giving a.....

A tele-reach application allows the remote presence and interaction such as tele-education, tele-law and tele-mining.

A variety of factors affect the selection of a suitable model and...



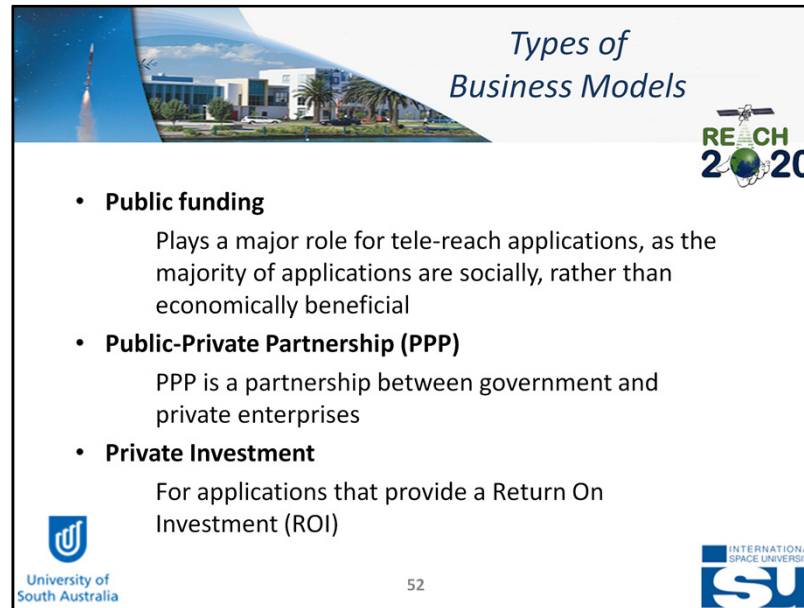
The figure above shows the business models applicable to tele-reach applications.

There are 3 different types of business model options,

firstly the top section, Largely Public Endeavor consists of applications that are not commercially viable and will be funded and owned by the Government eg tele-education

The second section, the Public-Private Partnership (PPP) business model requires a combination of private and public stakeholders. e.g tele-law.

The last section, Largely Private Endeavour consists of stakeholders for commercial applications that are largely private companies that will gain a significant Return On Investment (ROI). e.g tele-mining



The slide features a header with the title "Types of Business Models" in a blue serif font. To the left of the title is a photograph of a modern university building with palm trees. To the right is a logo for "REACH 2020" featuring a satellite and a globe. The main content is a bulleted list of three business models. At the bottom left is the University of South Australia logo, and at the bottom right is the International Space University logo. The page number "52" is centered at the bottom.

## Types of Business Models

- **Public funding**  
Plays a major role for tele-reach applications, as the majority of applications are socially, rather than economically beneficial
- **Public-Private Partnership (PPP)**  
PPP is a partnership between government and private enterprises
- **Private Investment**  
For applications that provide a Return On Investment (ROI)

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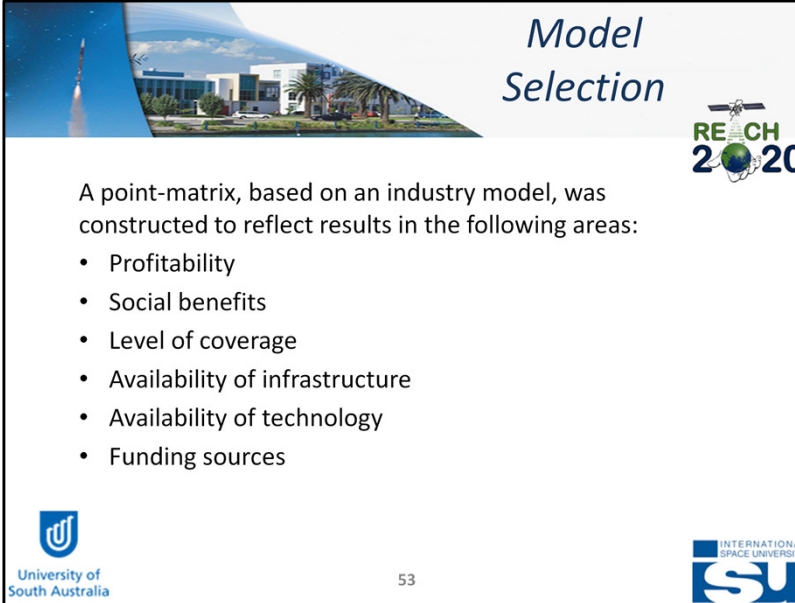
52

We then elaborated more on each business model and gave each a name...

These applications could be implemented more efficiently with a lower total cost of ownership...

. Multiple PPP models exist, including private design and funding in exchange for long-term government contracts and government funding, which later leads to commercial involvement...

Noting that attracting private investment is difficult because the economic benefits are not quantifiable.



## Model Selection

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A point-matrix, based on an industry model, was constructed to reflect results in the following areas:

- Profitability
- Social benefits
- Level of coverage
- Availability of infrastructure
- Availability of technology
- Funding sources

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53



These factors directly relate to the three-tiered approach to developing tele-reach application.

For example, the availability of infrastructure and the availability of technologies relate to the capacity of a country to implement tele-reach.

*Example:  
Tele-mining*



Factor	Score	Weighting	Score weighting
Profitability	9	3	27
Social Benefits	8	2	16
Coverage	9	0.5	4.5
Availability of Infrastructure	7	1	7
Availability of Technology	9	0.5	4.5
Availability of other funding	2	1	2
Availability of government funding	8	1	8
		<b>Total score</b>	<b>69</b>


54

I will now be going over an example of how to use the matrix, the important factors to be considered are the application and the country the application will be implemented.



Using the application tele-mining in Australia the following table was constructed.



*Selecting the Right Business Model*



Factor	Weighting
<b>Profitability</b> 10 - Highly Profitable 5 - Break even 1 - Large losses	<b>3</b>
<b>Social Benefits</b> 10 - No social benefits 5 - Benefits a small number of people in a small way 1 - Benefits lots of people in a large way	<b>2</b>
<b>Coverage</b> 10 - Multi-National 5 - Regional 1 - National	<b>0.5</b>

55

The matrix guideline figure to select a business model was constructed so that it




Includes the extremes of each factor such as No social benefits and benefiting large amount of people.  
 AND

It was developed from an industry perspective hence profitability is ranked highly because a large Return On Investment is desired by private investors.

Since the matrix below has been modified to a private sector perspective, the higher the social benefits, the lower the total score.

Multinational coverage is easier for business to implement than government.

## Selecting the Right Business Model

Factor	Weighting
<b>Availability of infrastructure</b> 10 - Infrastructure exists and is operational 5 - Infrastructure is planned and will be available 1 - No infrastructure available to support application	<b>1</b>
<b>Availability of technologies - Non-space related technological components</b> 10 - All the technology exists and is in use elsewhere 5 - Some of the technology exists but is rarely used 1 - Technology does not exist	<b>0.5</b>
<b>Availability of other funding - NGO's, IMF, etc</b> 10 - No other funding exists 5 - Partial funding exists 1 - Full funding exists	<b>1</b>
<b>Availability of Government funding</b> 10 - No Government funding exists 5 - Partial Government funding exists 1 - Full Government funding exists	<b>1</b>


56

The available infrastructure and technologies allows implementation to be easier and less risky for investors.



No funding from government scores highly as the only way to fund the project is through the private sector. Each factor is then weighted based on the level of importance, where profitability and social benefits are ranked highest.

The score can be ANY number between 1point and 10points it does not necessarily have to be 1point, 5points or 10points. The scores are then multiplied by the respective weighting for each factor

## Business Model Selection




Score	Business Model selection
30 points and below	Public funding
Between 30 points and 60 points	Public-Private Partnership (PPP)
60 points and above	Private Investment



57

The total points are used to determine the appropriate business model.



## Result for Business Model



A result for the tele-mining business model selection:

Total score of **69 points**, therefore use

**Private investment business model**

*Develop Industry Involvement*

- Drives innovation and efficiency
- Vital for the sustainability of tele-reach projects
- The majority of countries in the Global South lack the technical and financial capabilities compared to countries in the Global North
- Lack of capability in the Global South can be addressed with a tele-reach industry policy program

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59


These countries struggle to find the necessary expertise and funding within the Global South to carry out the development phase of any given tele-reach project.

This challenge can be addressed by promoting collaboration between the Global South and existing tele-reach industries, NGOs, development agencies, and banks of the Global North.

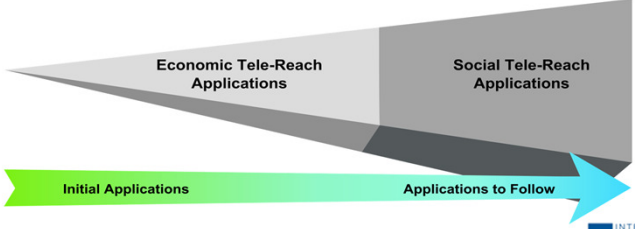
Opportunities for partnerships and cooperation could originate on [telereach.org](http://telereach.org) or by the introduction of a tele-reach industry policy program.

There are a number of **policy areas** that will support tele-reach industry development:

### Business Policy Areas



- Tax incentives
- Encourage the migration of expertise
- Exchanging ideas through dialogue
- Integrated services



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60

As shown in the figure an option for a sustainable business model initially requires implementing applications that have an **economic focus** and that generate a **return for investors**.

The infrastructure provided to support these applications can then be used as the **framework** for applications that are focused on social needs.



## Key Points



- Clear industry policies ensure that tele-reach applications are delivered in a timely, cost-effective way
- Private investment ensures the economic sustainability of tele-reach applications
- Tools and methods used to determine a business model is an example of content that can be made available on [telereach.org](http://telereach.org)



61

The following key points are important....

I will now hand over to Gao who will talk about Policy.



Hello, I am Gao Xiangwu, I am an engineer. I come from China Academy of Launch vehicle Technology.  
I am going to introduce tele-reach



governance and policy.

*Governance and Policy*

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- Governance and policy are crucial to tele-reach program outcomes regardless of which tier
- Factors that help to ensure long-term tele-reach program success are:
  - Staff training for implementation
  - Education at all academic levels
  - Public outreach

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63

No matter where countries or regions are on the tiers, governance and policy are crucial to tele-reach program outcomes.

There are three administrative factors that help to ensure long-term tele-reach program success.

They are staff training for implementation, education at all academic levels and public outreach.

Governance of tele-reach programs can require coordinating multiple national and international aspects in line with the three-tiered approach, and all facets must work efficiently toward an

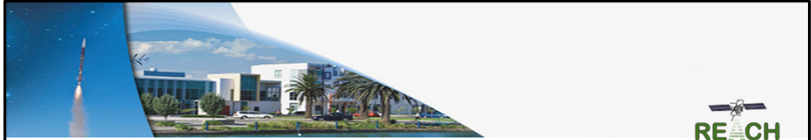
effective outcome.



In the figure, important policy development considerations are outlined.

In the middle of the figure, tele-reach charter, collaboration framework, funding mechanism and dissemination are all the mechanism for collaboration. They are all influenced by the national law and international law.

For example, the International Charter-Space and Major Disasters, provides a coordinating mechanism for countries and other entities to collaborate on disaster management.



# Implementation

Edu F. Aymerich



## Case Study: Millennium Village




Many rural areas lack

- Basic facilities
- Communication
- Health
- Resource management and power



### Millennium Villages

Developed by Dr. Joe Pelton with the Arthur C. Clarke Foundation (Clarke Foundation) in collaboration with Dr. Richard Freling of the Solar Electric Light Fund (SELF).

## Case Study: Millennium Village



This idea provides an **innovative** way for remote villages to **communicate** with each other and the outside world. **Training** is **provided** to villagers to use Information and Communication Technologies (ICT) and Tele-reach solutions. (Pelton, 2012)



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67

Separate into two slides (diagram and second para)


## Case Study: Millennium Village



The concept has been **implemented** in Moratuwa, **Sri Lanka** as a trial project, with current and future funding support being jointly sought through the **Japan International Cooperation Agency (JICA)** and **SELF**.



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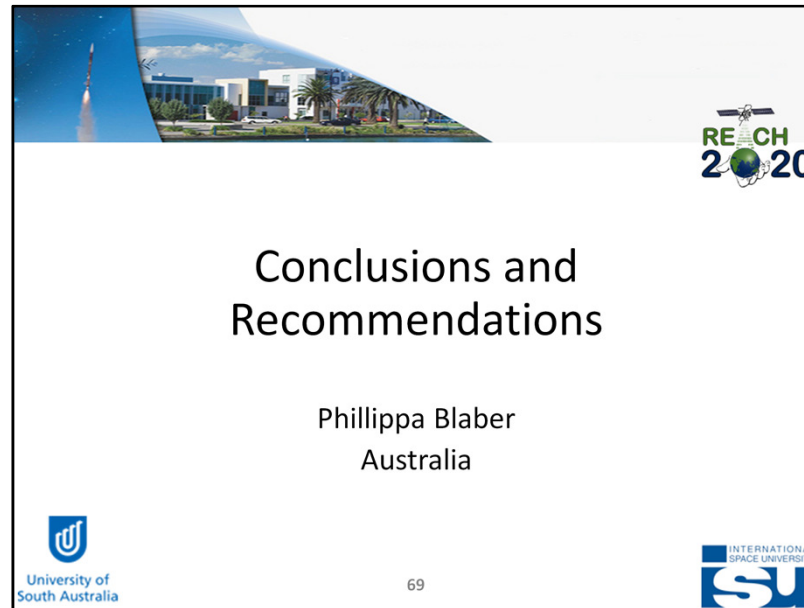


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68

Separate into two slides (diagram and second para)





*Reach2020: Tele-reach for the Global South* has identified a number of pathways toward establishing a Tele-reach solution for any given community within the Global South. This has included: identifying the needs of the community, defining policy and space direction, selecting a business model, the infrastructure needed, and analyzing a number of case studies and existing tele-reach solutions.

*The Way Forward*

REACH 2020

- Tele-reach Operational System of Systems (TeOSS) is based on Global Earth Observation System of Systems (GEOSS) concept
- In GEOSS concept:
  - Allows us to use existing space technologies more effectively
  - Fostering cooperation and collaboration on space projects

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70

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*Reach2020* outlines important elements of tele-reach in the Global South and concludes that the existing network of satellites, ground segments, and user applications lends itself to a ‘system of systems’ approach similar to the Global Earth Observation System of System or GEOSS concept.

In the very successful GEOSS concept, experts from participating countries and organizations look at the aspects of Earth observation with a view to avoid redundancies and fill in service gaps. Existing space technologies are used in this concept, rather than the development of new technologies. One of the most important aspects of GEOSS is cooperation and collaboration on space projects.

This concept is very much an interdisciplinary and international approach to research and applications which is also important to implementation of our tele-reach goals.

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72

I'd like to – again – thank everyone for joining us this morning.

Hope you enjoyed our presentation; and we look forward to receiving feedback from the Reviewers.

Now I'd like to invite one of our Directors, Scott Madry, up to make an important announcement...



THIS!

Is what we produced.



Hi! Good morning!

I'm Cynthia Chen from Monash University ra ra ra

I'd like to welcome you to this year's International Space University and University of South Australia Southern Hemisphere Summer Space Program's White Paper presentation: Reach2020