

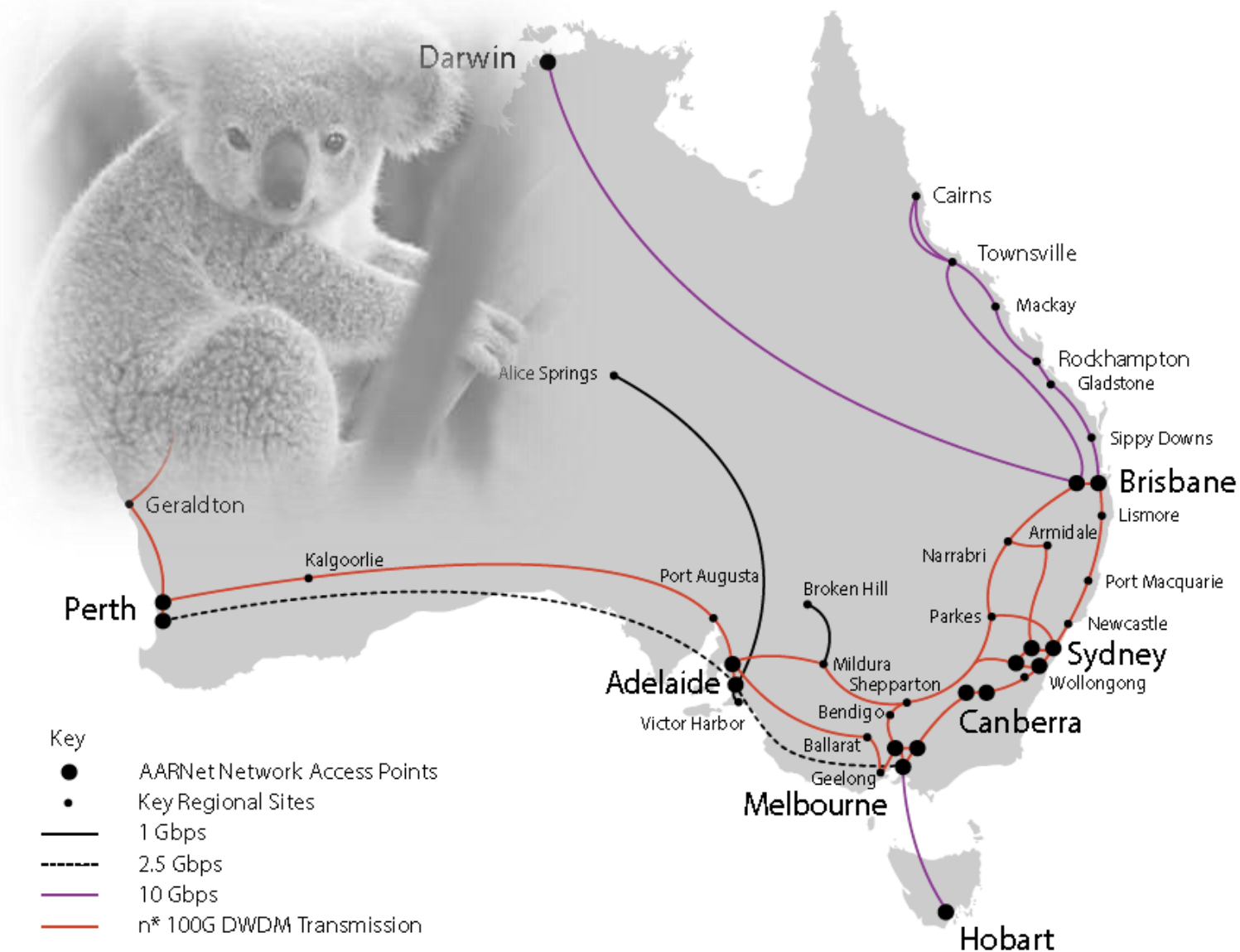
# How to quadruple the reach and value of your NREN

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Director Business Development and  
International

Abuntunet - 19 November 2015

# Greetings from AARNet - Australia's NREN





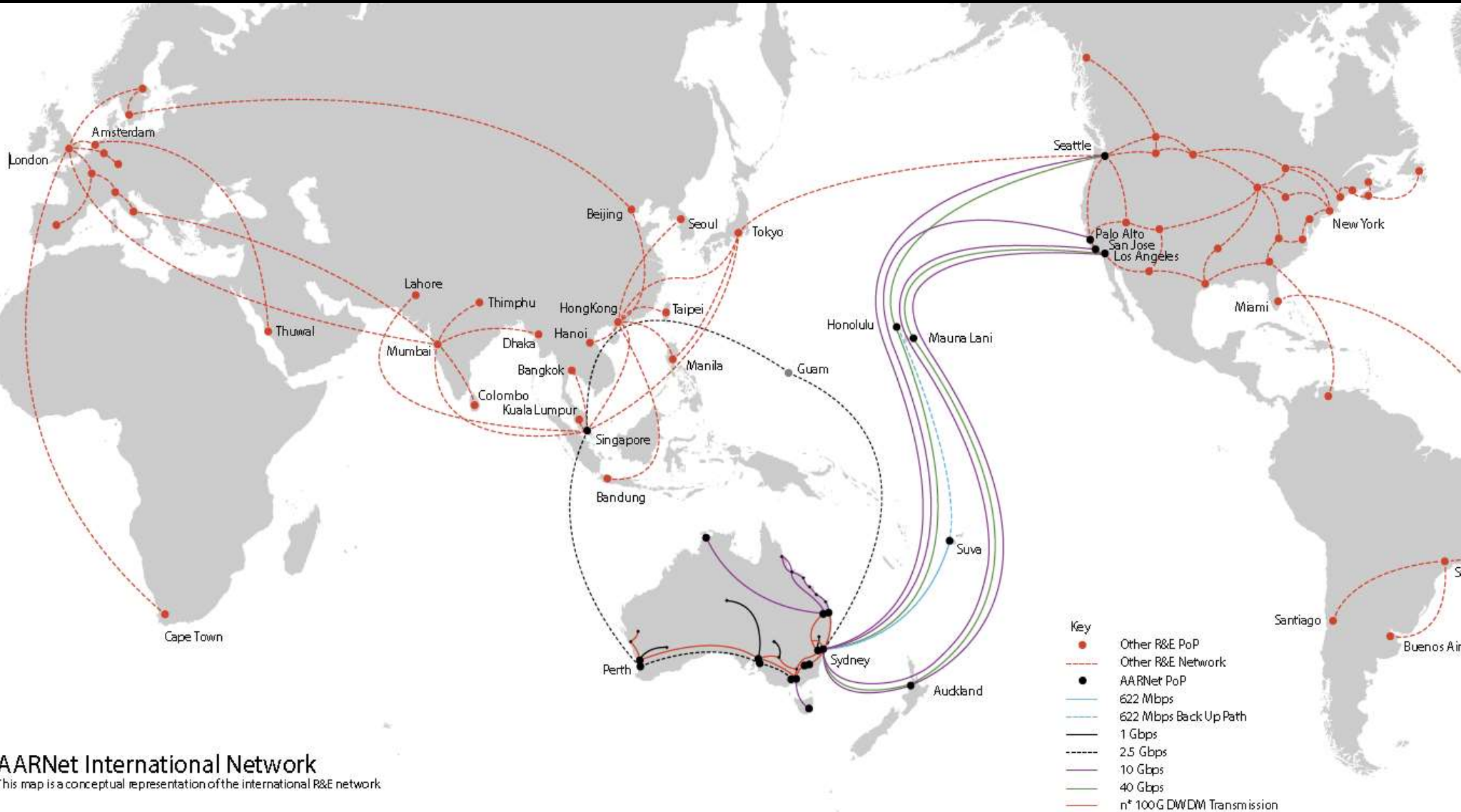
## Some quick facts.....

- Established in 1989
- Not for profit company limited by shares
- Licensed telecommunications carrier #61
- Owned by the universities and CSIRO
- 12 Board Members elected by the Shareholders
- Shareholders are also major customers
- Funded through membership subscriptions
- Supported by Commonwealth Investments
- Owned infrastructure is a differentiator
- 72 Staff in 5 States

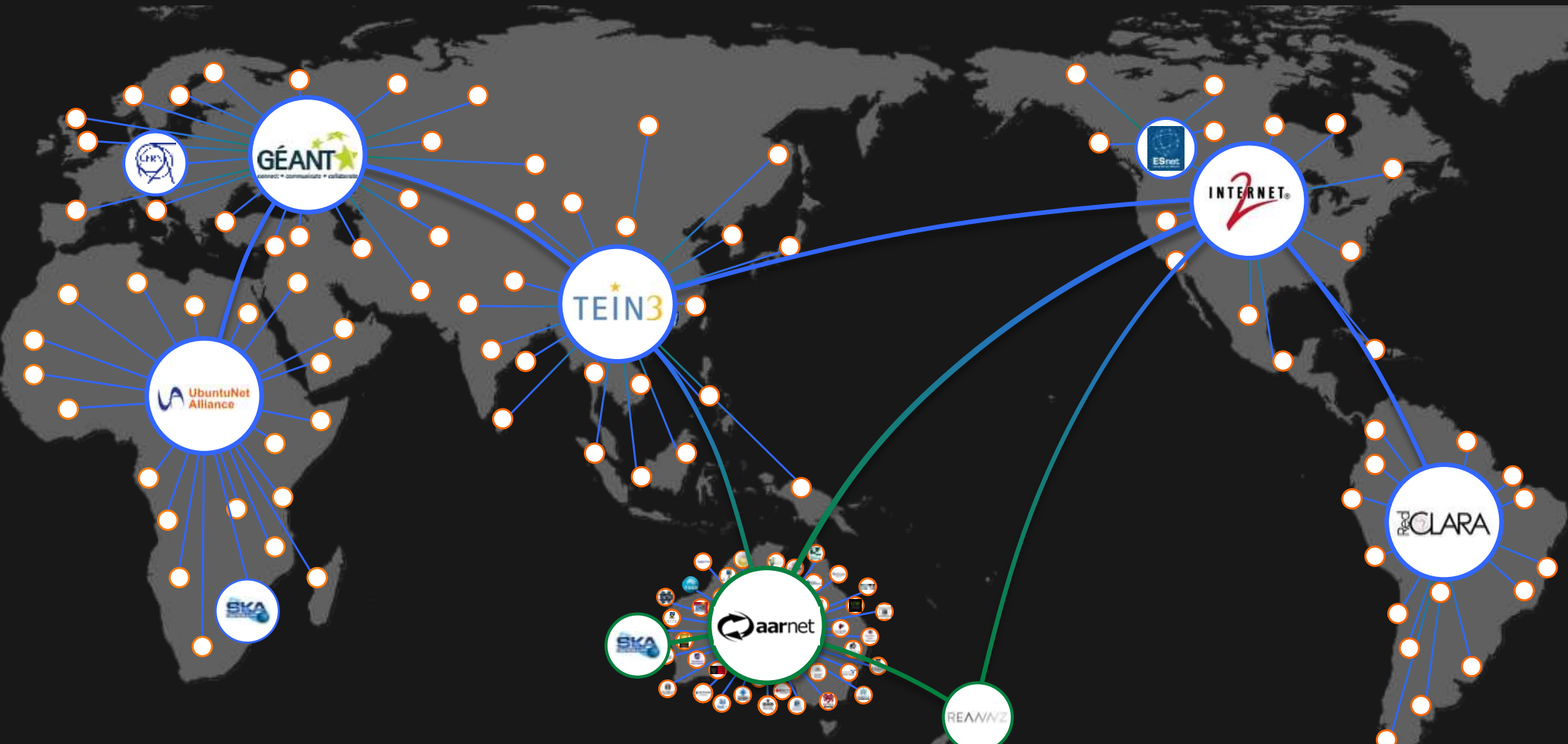




# A significant commitment to international capacity

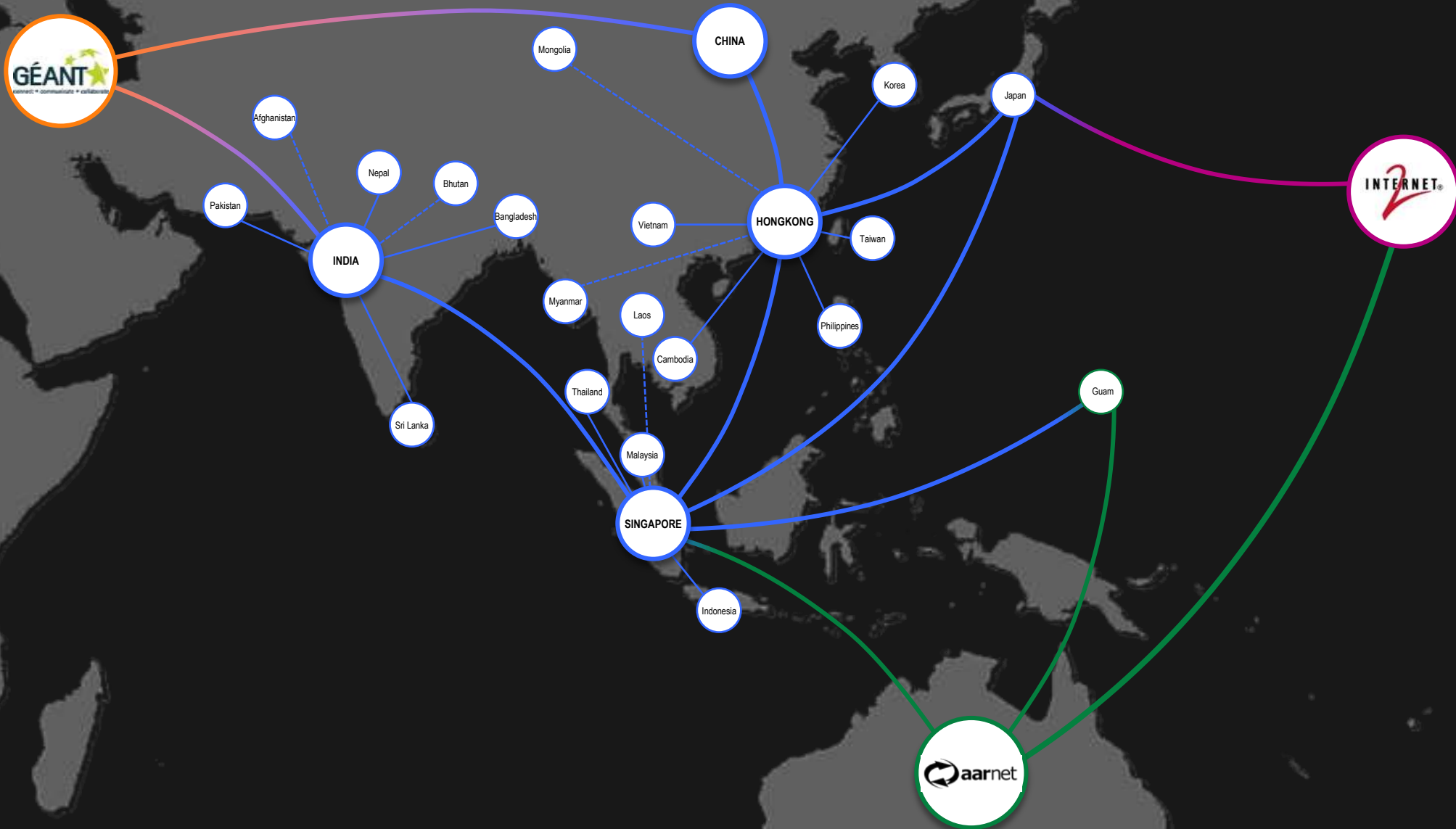


# To connect to the International Research Networks

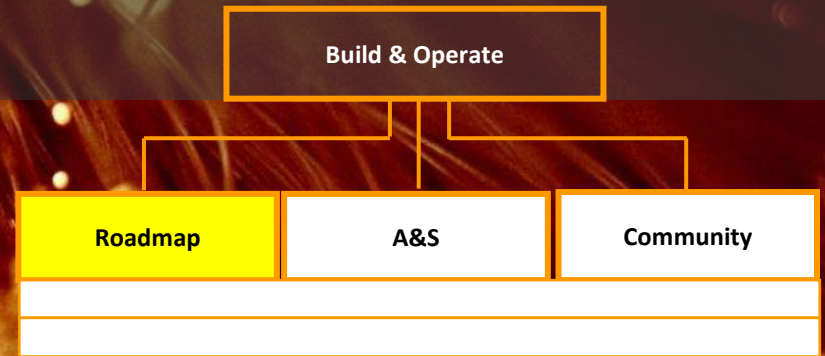


120+ NRENs worldwide

# The TEIN Community



# Building fibre has been the differentiator



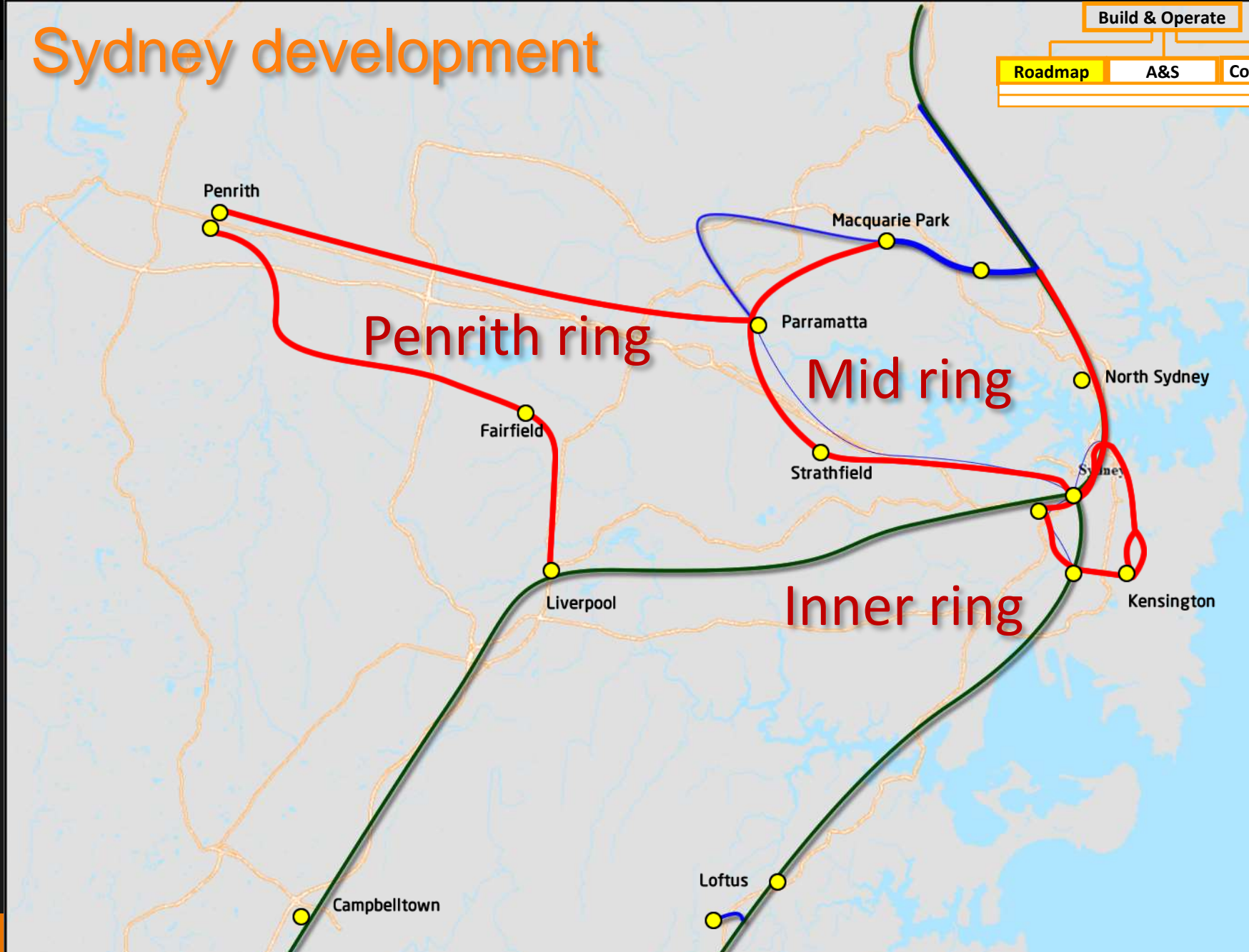
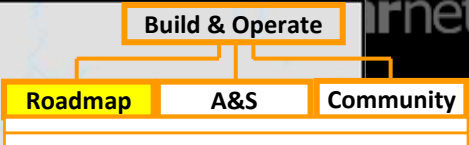


# AARNET's Civil works program

- **Ensuring long term access to the backbone for our customers.**
  - The conduit in the ground is the greatest asset.
  - Extend on existing to reach new customers.
  - Share infrastructure between customers.
- **Access to dark fibre is critical for our high speed connections.**
  - No restrictions on usage and who we connect.
  - Easy and cheap to upgrade capacity around a city if we have dark fibre.
  - Future proofing future capacity requirements.
- **Strategic arrangements with utilities who have or need fibre.**
  - Build in utility easements and pay license with fibre or services.
  - Swap fibre or services.
- **Swap of spare fibre with other carriers.**
  - Allows access to new locations and new customers at minimal cost.
- **Alliances with other social "not for profits" eg councils.**
  - Engagement with entities that may have fibre or ducts eg BCC allows AARNET access to a very large area of Brisbane.



# Sydney development





Build &amp; Operate

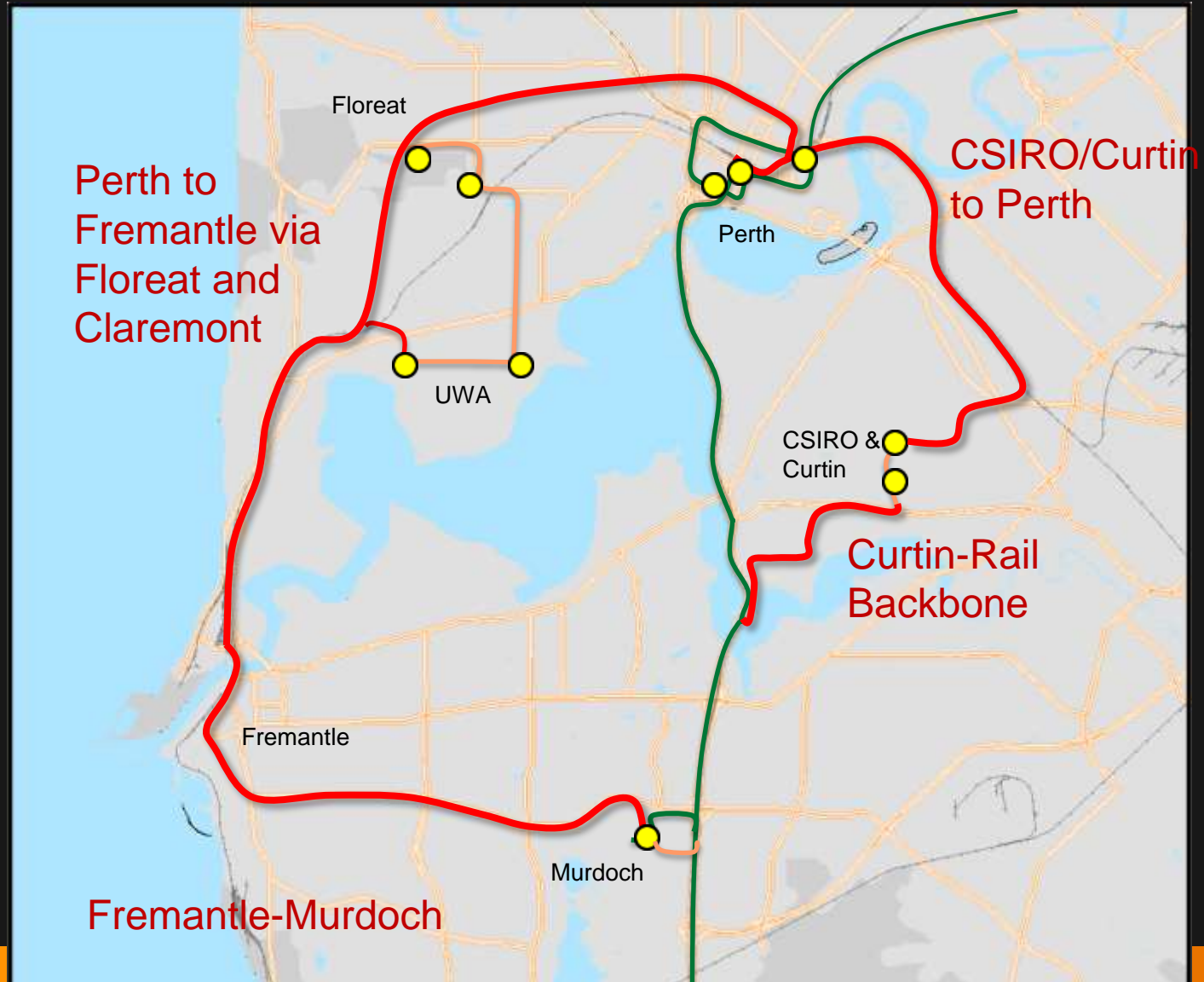
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Roadmap

A&amp;S

Community

# Perth development





## Built '000's kms of thick fibre (an asset)

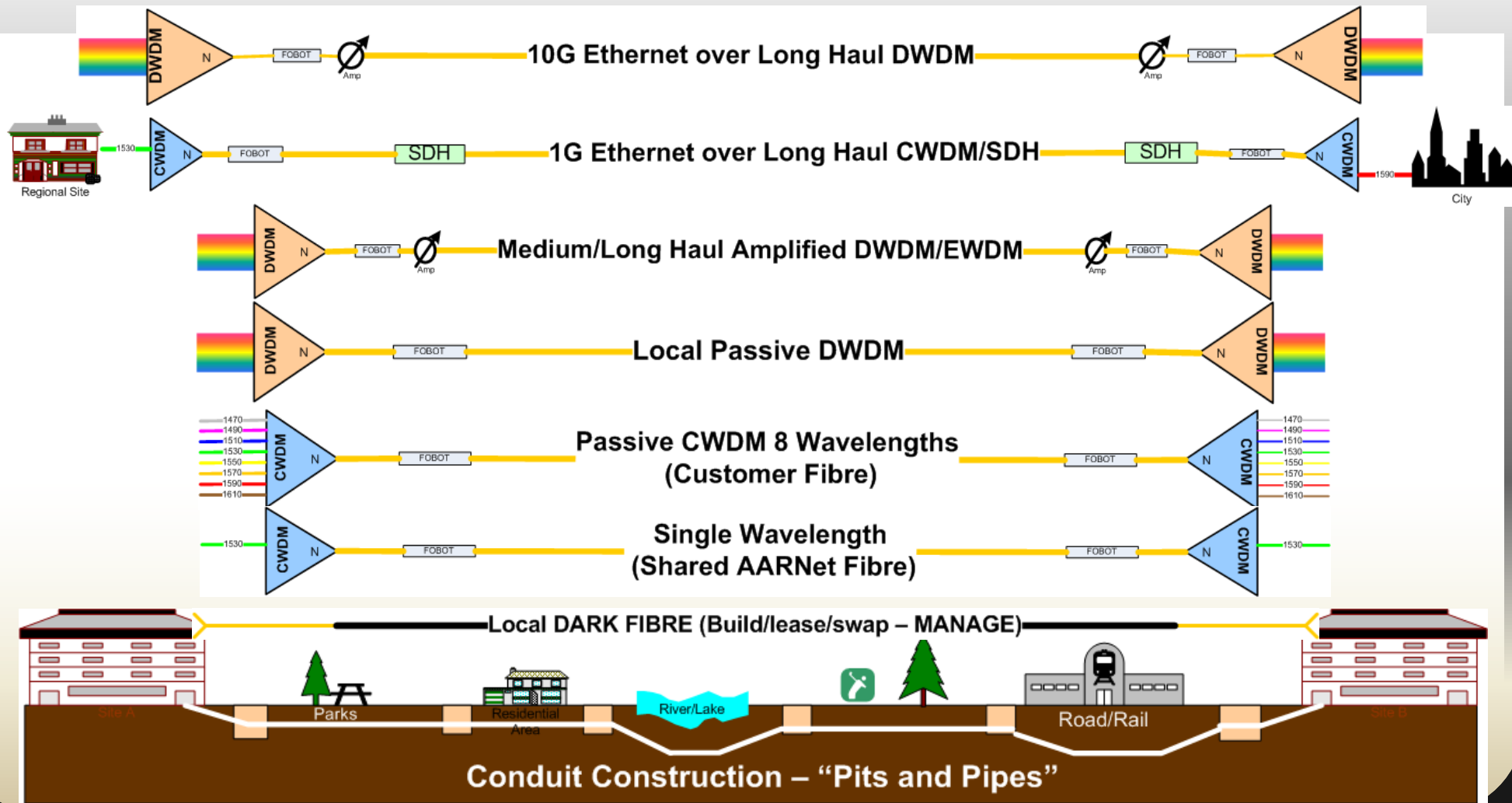
- “Swap don't sell” Use spare fibre cores to swap with other carriers and utilities
- Don't under-estimate the commercial value
- Fibre cost is a small fraction of the construction cost – so always install spare capacity
- Agreement should be “Indefeasible Right to Use” (IRU) based and unconstrained
- Plan routes past potential users and data-centers, even if they are not yet members/customers
- Design for loops, precincts and interconnections



# So why do we do this?

- Provide the most cost effective long term bandwidth to our customers and shareholders
- Provide a carrier grade IP network to operate their business:
  - E-Learning
  - Student Enrolments
  - Collaboration across the globe
- Stay ahead of the technology curve
  - Push new and emerging technologies
  - Very early adopters of IP, VoIP, Multicast and IPv6
  - New collaboration tools
    - Uncompressed HD video for telemedicine
    - Access to scientific instruments with extremely high data requirements
    - Cloud services
- Support for "Big Science" initiatives such as the SKA

# Provides layered solutions.....



# .....and so what is the SKA?

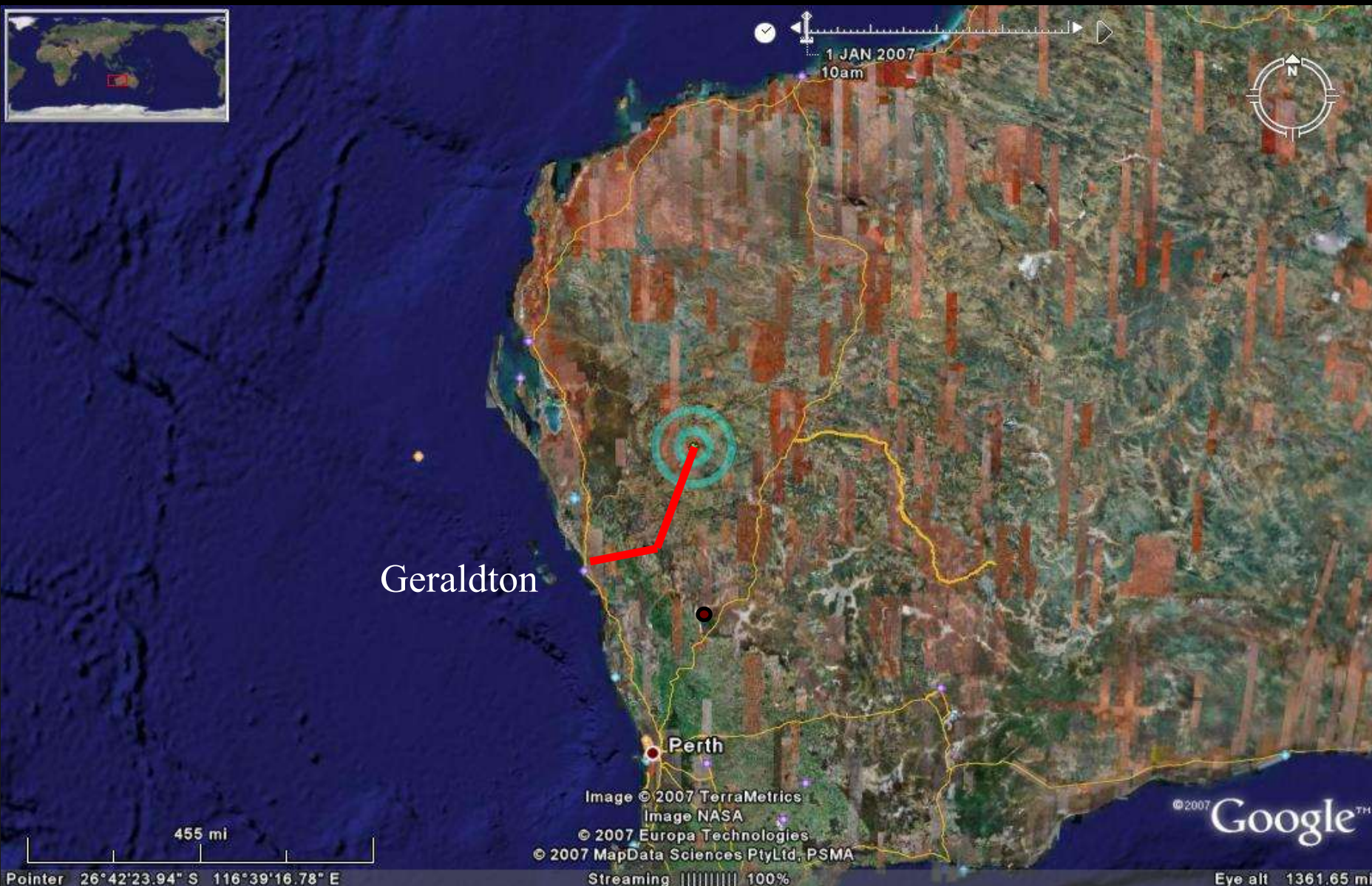
- One Project
- Two Observatories in two Continents
  - Australia – Murchison WA
  - South Africa – Karoo
- Three Telescopes
  - SKA Mid
  - SKA Survey
  - SKA Low
- One Square Kilometre of Receiving Area



# AARNet's role in building for the SKA



# AARNet's role in building the SKA network



Geraldton

Perth

Image © 2007 TerraMetrics  
Image NASA  
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© 2007 MapData Sciences PtyLtd, PSMA

©2007 Google™

455 mi  
Pointer 26°42'23.94" S 116°39'16.78" E

Streaming ||||| 100%

Eye alt 1361.65 mi

# 450kms of red dirt



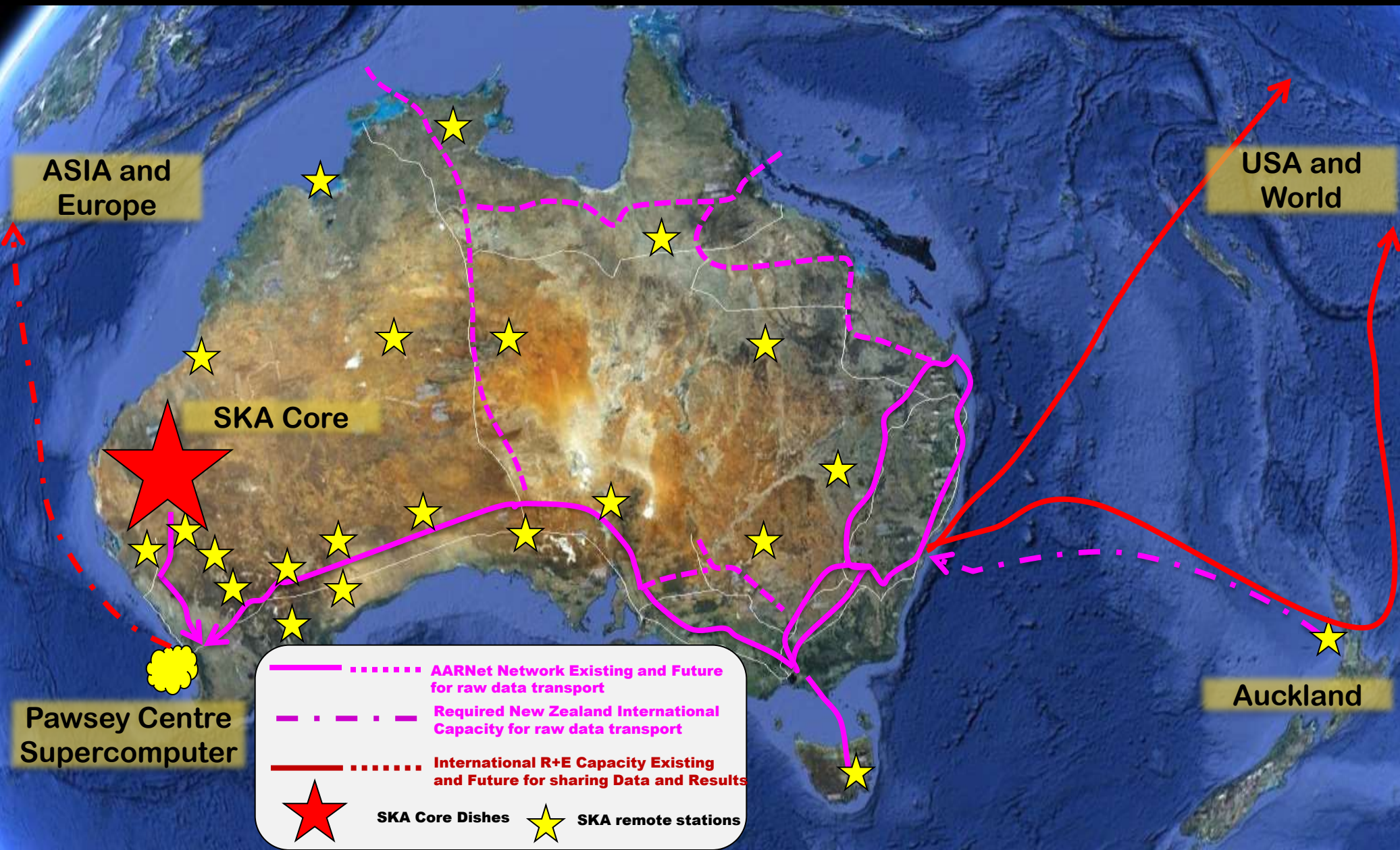
.....rocks, and



and rain!



# The SKA and the network





# A cookbook to start such a program

- Determine the statutory rights of the NREN as a carrier
- Contract the civil works out under installation agreements that pass the risk until acceptance and payment
- DBYD is essential
- AARNet can provide details and templates of civil works contracts, fibre swap agreements-  
*[mary.fleming@aarnet.edu.au](mailto:mary.fleming@aarnet.edu.au)*



# The Essential First Step.

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3. Why should I use the service before I begin excavation?
4. Who should use the Dial Before You Dig service?
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6. What type of information is provided?

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**WARNING**

**UNDERGROUND  
OPTICAL FIBRE  
CABLE IN THIS  
AREA**

Before digging,  
excavating, or  
boring in this area

Please contact  
Dial Before You Dig

**Free Call 1100**

Thank you  
[mary.fleming@aarnet.edu.au](mailto:mary.fleming@aarnet.edu.au)

We ate the elephant a bite at a time.....

