Global Network Architecture

An inclusive Blueprint for a Global R&E Network Interconnect

Washington, DC, USA – 26 April 2017

Presented by: René Buch (CEO, NORDUnet)

2017 global SUMMIT

Dimensions of GNA

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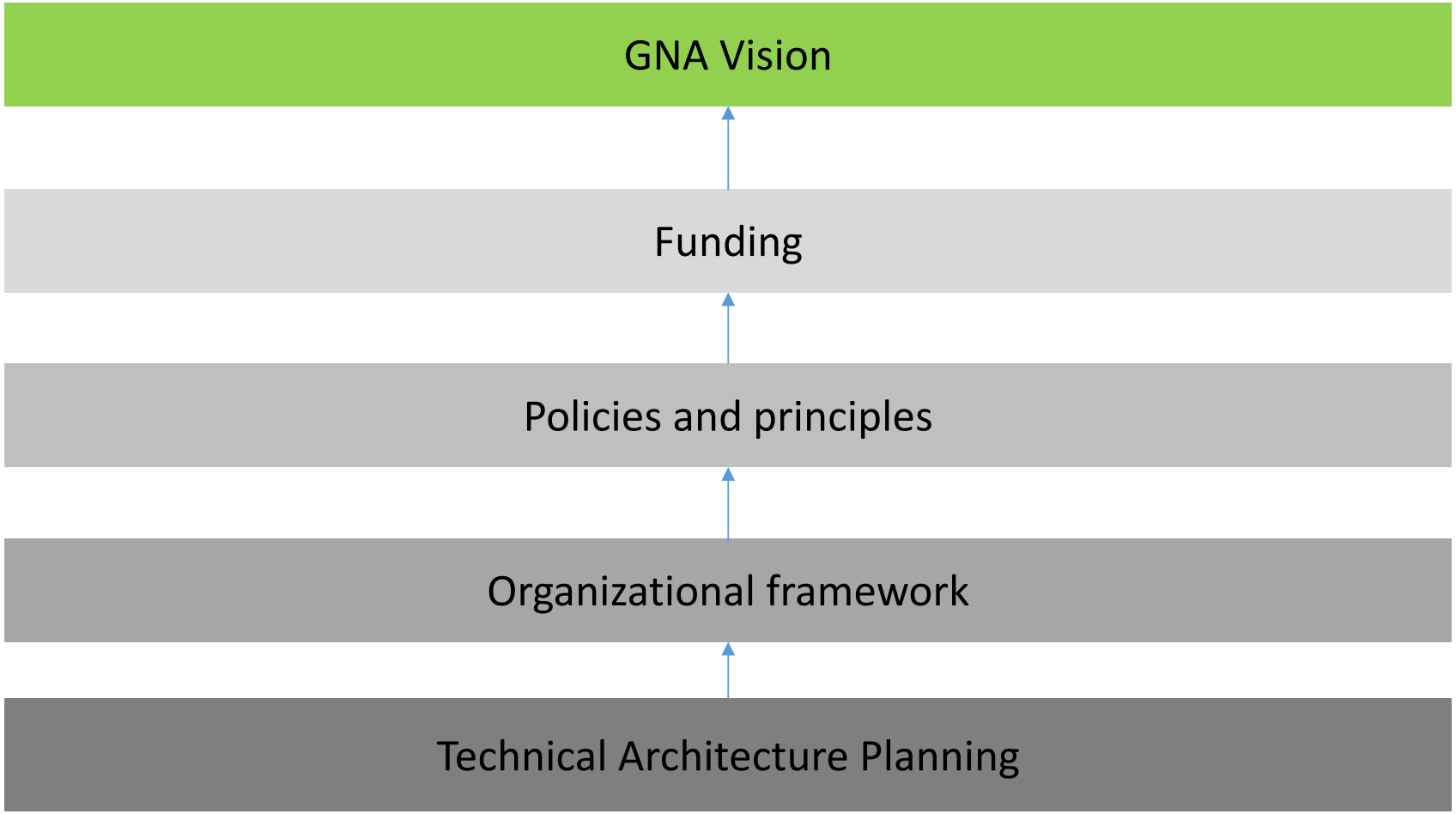

The Vision & Mission of GNA

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The GNA Vision:

- Globally Connecting Science, Research & Education;

  Assuring that bandwidth and services in support of research and education between continents is equivalent to that within continents.

The GNA Mission:

- Creating an inclusive “architecture” to increase collaboration and resource sharing between the global R&E community maximizing utilization of funds
- Developing an strategic blueprint that R&E Networks can use to align their investments in intercontinental circuits

Global Network Architecture Vision

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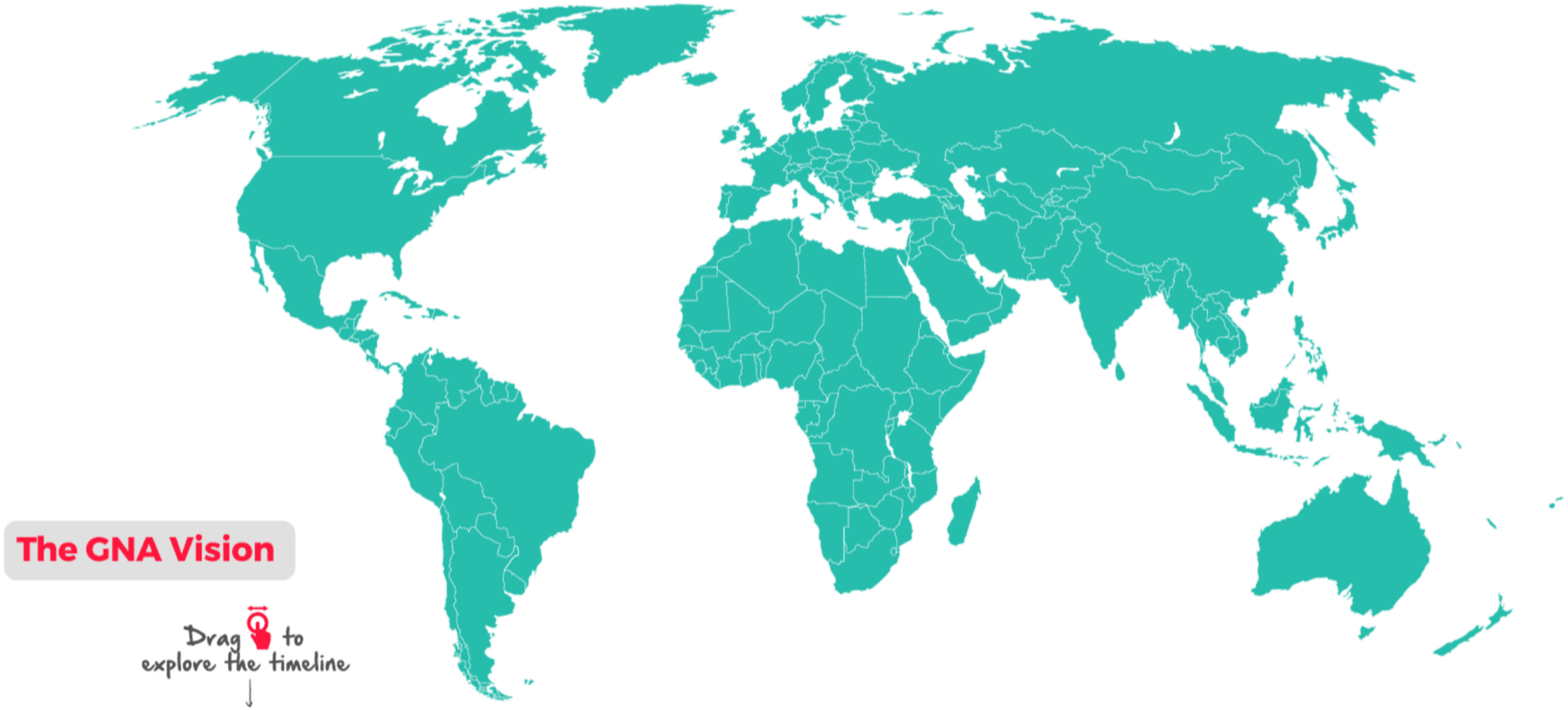

TIMELINE

GNA VISION 2013 2014 2015 2016 2017 2018 2020 2025

Funding the GNA

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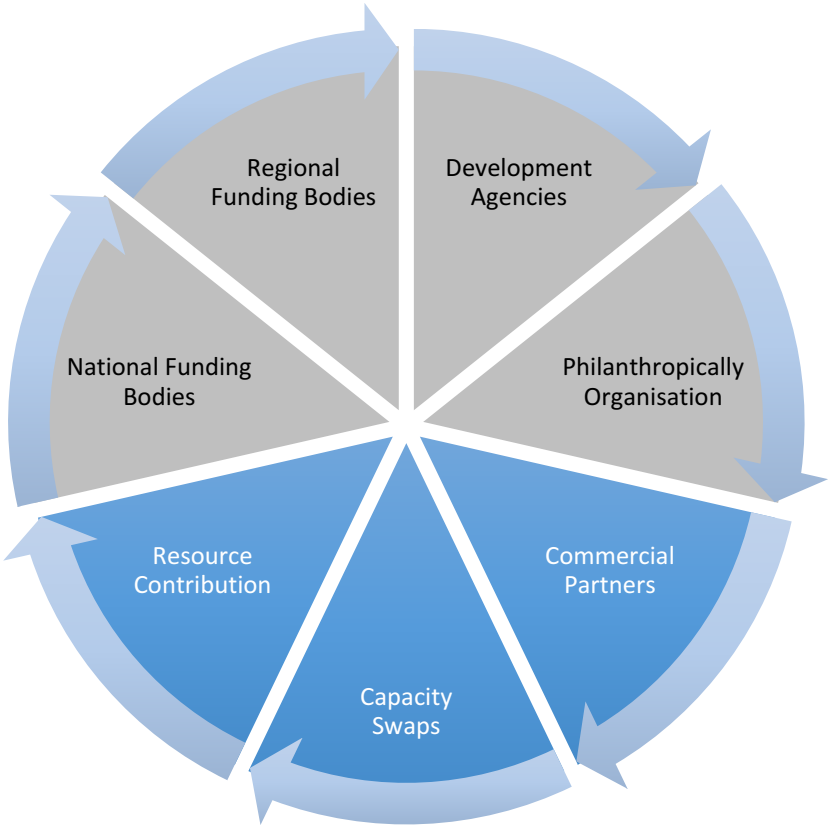
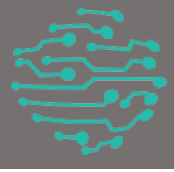
Funding the GNA encompasses:

1. Contributions:
   - National and Regional Network contributes capacity/links/GXPs in accordance with the GNA Technical Architecture
   - Capacity Swaps
   - Commercial Partners
2. Funding for Expanding existing Footprint:
   - National and Regional Funding Bodies
   - Development Agencies
   - Philantropical orgnisations



Why the GNA Matters



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- Science and Education are increasingly global
- Science and Education are increasingly collaborating globally
- Science depends on global shared instrumentation
- Data and Computation - the need to move and correlate data are increasing exponentially
- Significant infrastructure at global scale is necessary to support these trends
- The current global intercontinental R&E network infrastructure has developed through bi-lateral single project investments.
- A coherent architecture and collaborative investments and implementations is the only way to meet future demands efficiently at at cost efficient way.

The Policies & Principles of GNA

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- **Participation:**
  - Contribute Resources
  - Contribute to and Comply with GNA Architecture Documents
  - Adhere to Policies & Practices
- **Restrictions**
  - State your limitations – AUP
- **Fair use**
  - Usage and contributions by GNA partners must reflect a fair and equal use principle
  - GNA is a common endeavour where partners contribute the resources in a way that benefits the common good
- **Behaviour**
  - The GNA collaboration is based on trust and open discussion between partners
  - Members work towards the common goal and should strengthen national, regional and international reach by continuous discussion and engagement between all relevant partners

The GNA Framework

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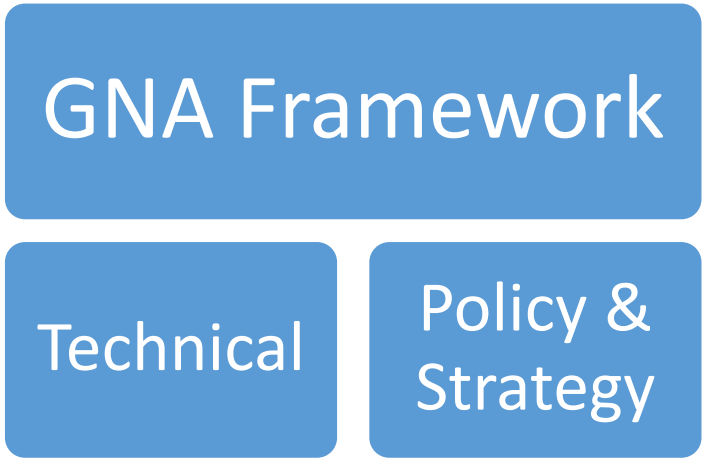
The GNA Framework is an open forum that includes:

1. GNA Technical Working Group (GNA-TWG)
   - An open forum where all GNA interested partners can contribute and to the GNA framework with:
     - Provisioning structure
     - Technical Standards
     - Operational Paradigms
2. GNA Strategy & Policy Working Group (GNA-SPWG)
   - An open forum where all GNA interested partners can contribute to the GNA framework within:
     - Strategy & Vision
     - Funding
     - Policies
     - Procedures
     - Behaviour



The GNA - Technical WG

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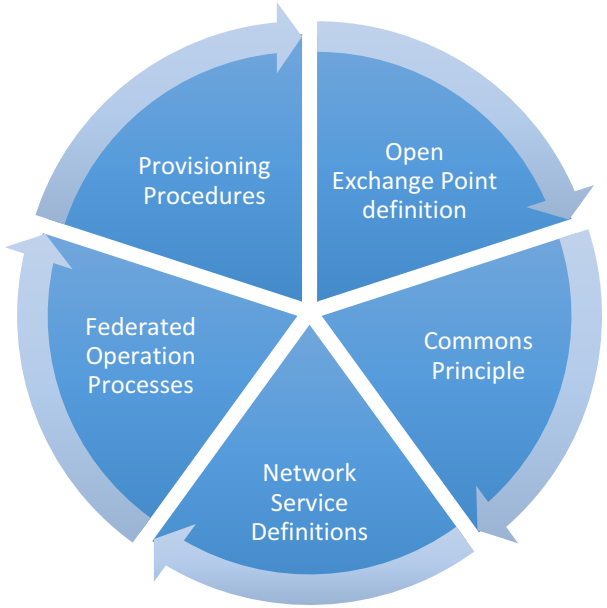
- The GNA Technical Working Group is a open forum focused on the Technical GNA Architecture
- Interested partners can contribute to the GNA network architecture discussions and documents
- Work items include:
  - Provisioning procedures
  - Global Exchange Point definitions
  - Federated Operational Procedure
  - Network Services definitions
  - Commons principles and architecture



- Work is done through face to face meetings, VCs and via the mailing list

The GNA - Strategy & Policy WG

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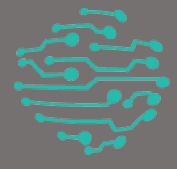
- The GNA Strategy & Policy Working Group is a open forum focused on the Strategy and Policy Discussion relating to the GNA Infrastructure
- Interested partners can contribute to the GNA Strategy & Policy discussions and documents
- Work items include:
    - Strategy & Vision
    - Funding
    - Policies
    - Procedures
    - Behaviour
- Work is done through face to face meetings, VCs and via the mailing list

The GNA Organisational Framework



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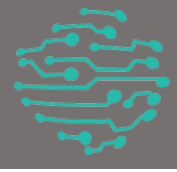
- GNA Technical WG:
  - **CEO Forum Executive Sponsors:**
    - Dave Lambert (Internet2)
    - Christian Grimm (DFN)
    - Prof. Wu (CERNET)
  - **Co-Chairs:**
    - Erik-Jan Bos (NORDUnet)
    - Dale Finkelson (Internet2)

- GNA S&P WG:
  - **CEO Forum Executive Sponsors:**
    - Dave Lambert (Internet2)
    - Chris Hancock (AARNet)
    - René Buch (NORDUnet)
  - **Co-Chairs:**
    - TBD
    - TBD

Transitioning GNA to Actual Infrastructure



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- The GNA concept has achieved near-universal buy-in
- The ‘Proof of Concept’ project (ANA) has proved successful and stable
- Consortia are developing (similar to ANA) in other regions
- The number of Global Exchange Points continues to grow
- Formal announcement of the GNA Phase One implementation at I2 Global Summit 2017, i.e. NOW!

GNA Phase I – GXPs

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EXCHANGE POINTS IN THE GNA PHASE I

GNA Phase I – GXPs & Links

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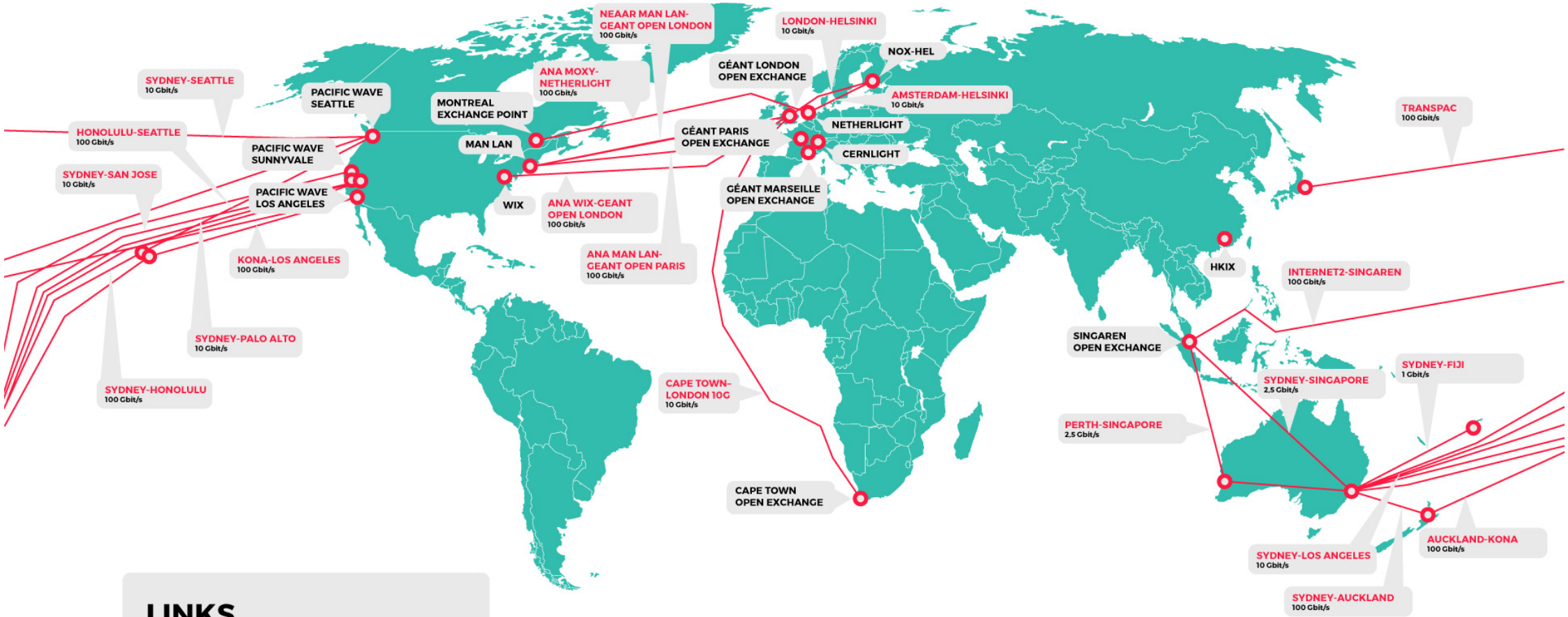
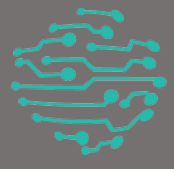


LINKS IN THE GNA PHASE I

2017 Goals



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- Formally publish technical architecture document as stable version 1.0
- Announce GNA Framework at the Global Summit in April
- Formally launch GNA Strategy & Policy WG
- Continue the work of the ‘Commercial Partners’ team
- Fund the creation of a ‘GNA Vision & Mission’ to support our communication activities
- Schedule and complete briefing meetings with current and potential government funding entities
- Schedule and complete briefing with the major global science instrument and project teams

Thank you! Questions?

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Nordic Gateway for Research & Education