Architecture and Governance in Large IT Infrastructure Projects

Paul Brand
Stratix Consulting

e-IRG workshop, June 12 2012

Stratix

Who am I …

- Paul Brand
- Stratix Consulting
- My background:
  - Telecommunications & networking
  - Large IT projects
  - Governance & policy

Stratix

Today's talk is about…

- Governance models
  - Central versus decentral
  - Project versus line organization
- Architecture
  - Organic versus coordinated
  - Points of control

Stratix

Define governance…

- Governance is how to…
  - Ensure a good balance between different interests
  - Ensure effective decision making

- More formal definition:

  Governance is the set of structures, processes and policies by which the functions within an organization are directed and controlled so as to yield business value and to mitigate risk.

  (based on A. Finkelstein)

Stratix

Why different interests?

- In any (international) collaboration, there will be tensions:
  - Between service delivery and innovation
  - Between vision and execution
  - Between central and decentral control
  - Between different views on how the collaboration should work
- Those tensions are normal
- Good governance makes them explicit

Stratix

Tensions between: service delivery and innovation

Service delivery

- ICT infrastructures exist to serve the users
- Innovation can disrupt service delivery
- Most users are not prepared to pay for innovation
- Stick to what works!

Innovation

- Without innovation, the infrastructures will soon become obsolete
- Innovation can provide completely new services or service delivery models
- Innovation can make the service cheaper – in the long run
- Try new approaches!

Stratix

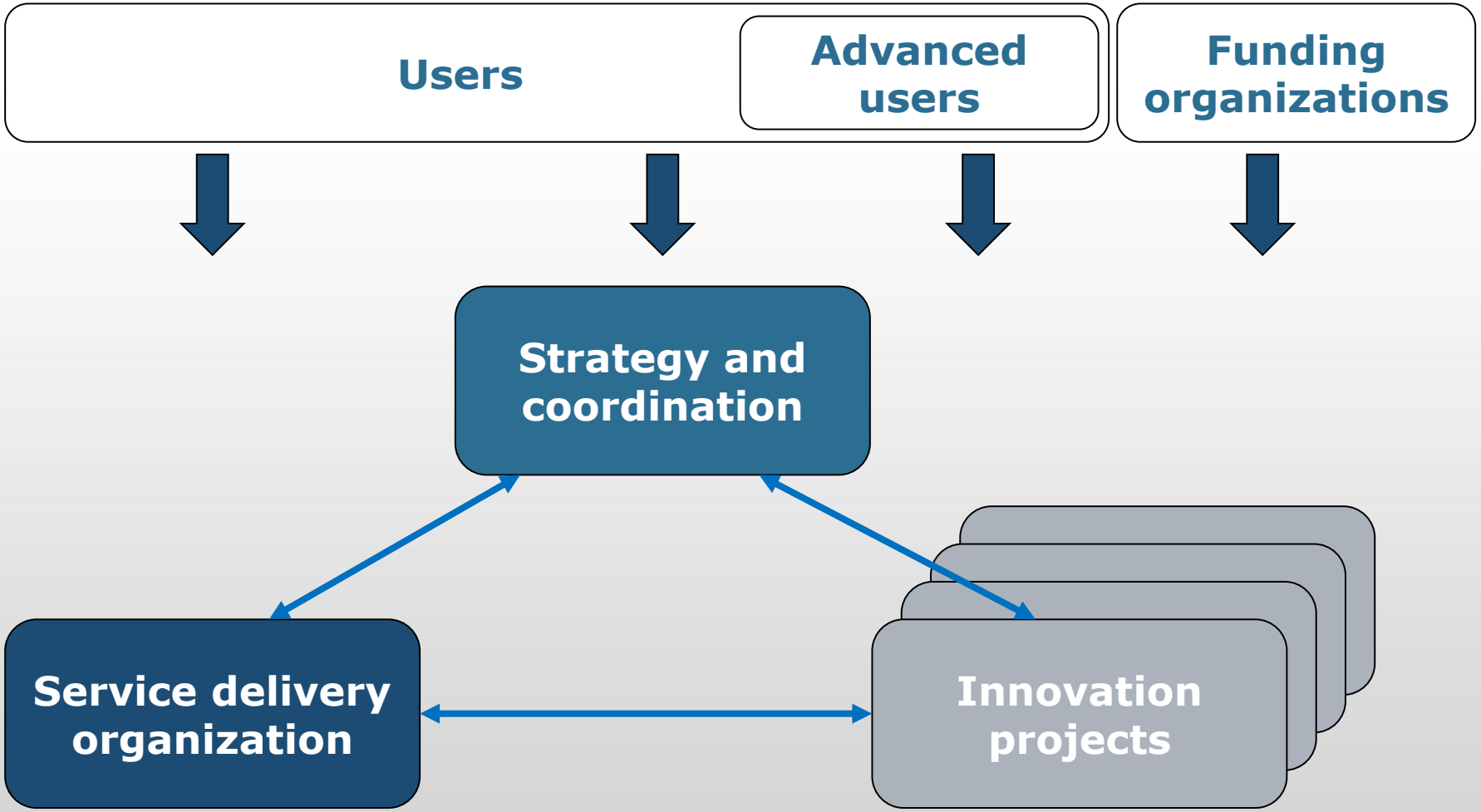
Separate service delivery and innovation

- Service delivery requires:
  - Permanent institutions and infrastructures
  - Focused on *excellent services* or on *cost reduction*
  - Controlled by users, funded by users

- Innovation requires:
  - Temporary projects and consortia
  - Focused on *creating new possibilities*
  - Controlled by leading users, visionaries, …
  - Funded by public institutions

Stratix

Managing service delivery and innovation



Stratix

Tensions between: vision and execution

Vision

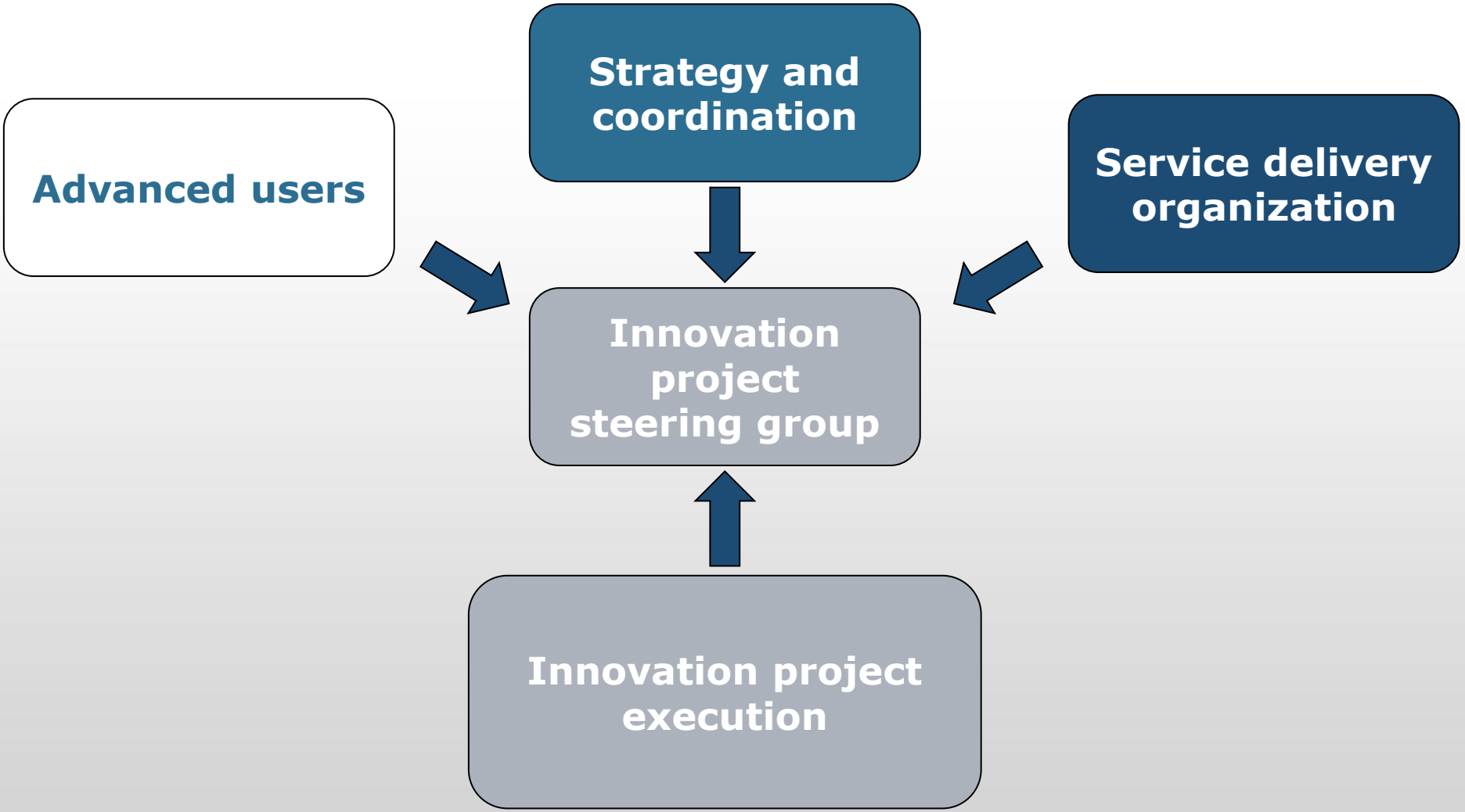
- Priority: move towards an "perfect" set of new services
- Look past the current structures and possibilities
- Change the project if new ideas come up

Execution

- Priority: get the project finished on time, on scope, and on budget
- Use only what is available now (or very near future)
- Keep the scope stable

Stratix

Each project needs its own steering group



Stratix

Tensions between central and decentral control - in service delivery

Central

- Interoperability: every interface conforms to centrally agreed standards
- Security: only approved usage by approved users
- Efficiency: avoid duplication of central functions

Decentral

- "Islands" of interoperability, based on bilateral agreements
- Users want to use the infrastructure in new ways; can't wait for approval
- More flexible by keeping management tasks close to the users

Stratix

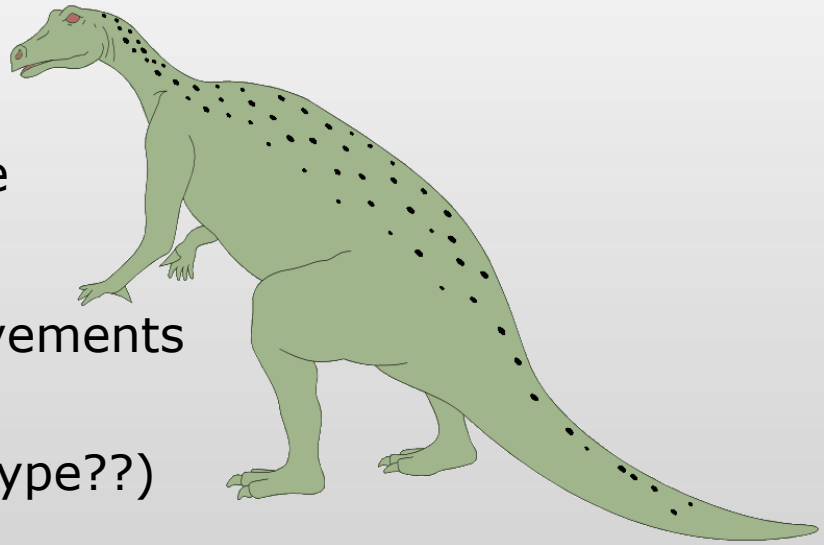
Tensions between central and decentral control - in innovation

Central	Decentral
A single, consistent program for innovation	Multiple initiatives, partly collaborating and partly competing
No duplication of efforts	Duplication and overlap
Agree on the best approach towards an objective, then execute	Multiple, competing approaches
Interoperability ensured up-front	Interoperability arranged afterwards

Stratix

So, a central approach is better?

- Remember the PTTs?
  - Central
  - State-owned
  - Monopoly



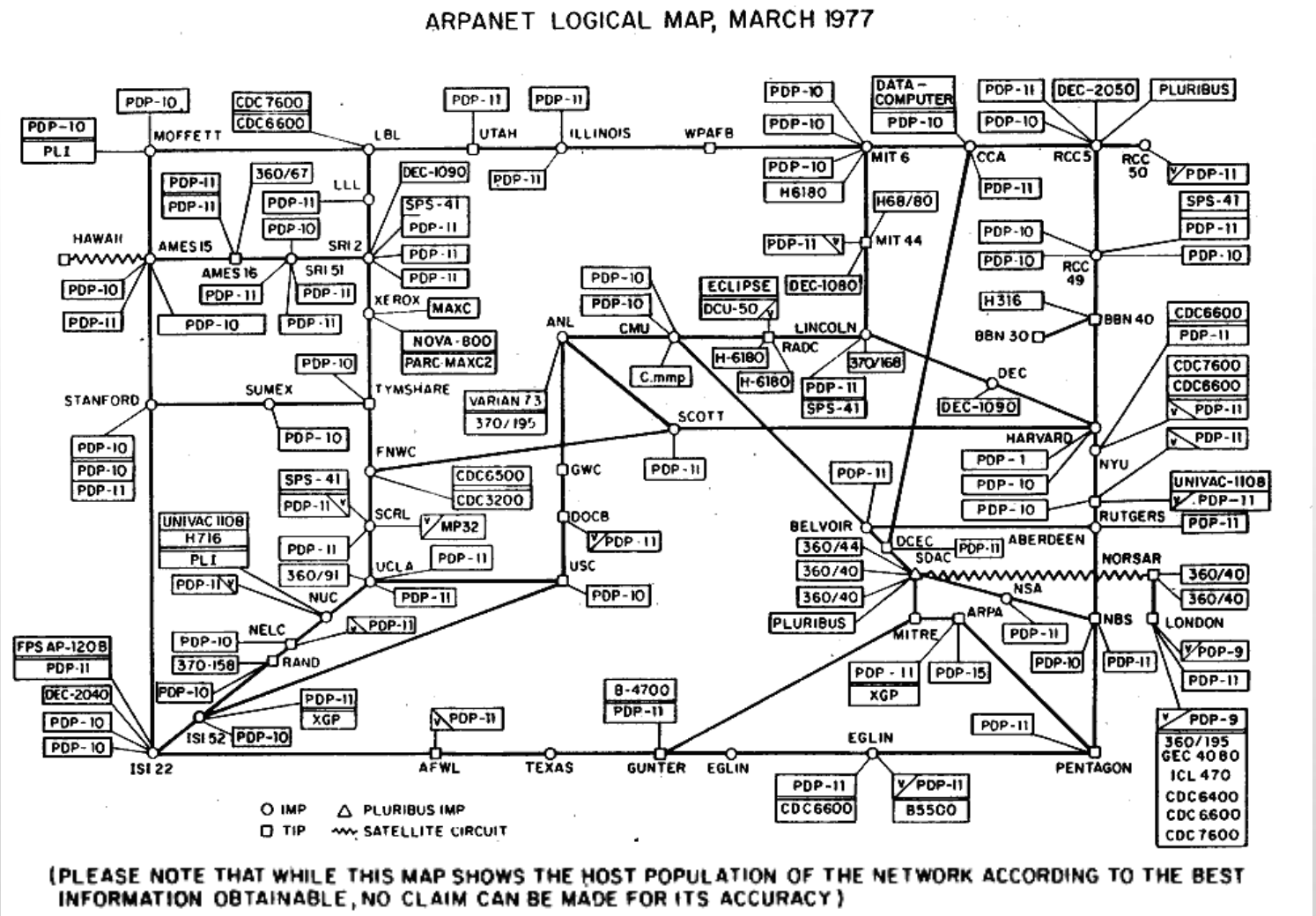
- Disadvantages:
  - No real incentive to innovate
  - Too big for effective change
  - Good for incremental improvements
  - No radical changes
    (would a PTT ever invent Skype??)

Stratix

How about a completely organic model?

- Lots of small initiatives
- Lots of bright ideas
- All competing for funding
- Interoperability arranged bilaterally – does it scale??

Organic growth can lead to chaotic structures…



… like the internet.

Stratix

The internet today…

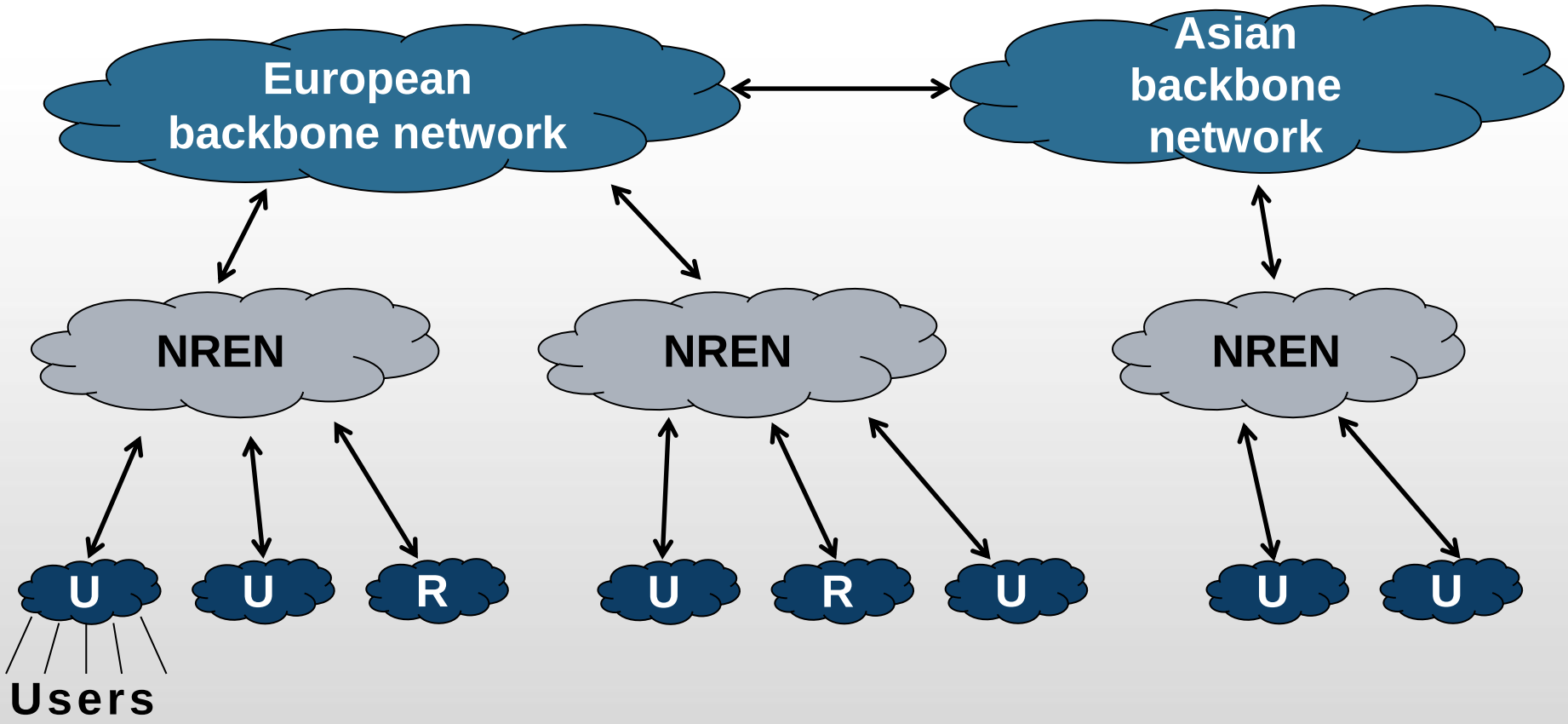
- Very little central control
- Centrally agreed and coordinated standards
- Content and application agnostic
- Driven by user requirements
- Open exchange points connecting the “islands”

What does this mean for the architecture of Research and Education networks?

- *Very little central control*
  - Network architecture is multi-domain by nature
- *Centrally agreed and coordinated standards*
  - Using existing fora (IETF) or new ones if needed (OGF, GLIF)
- *Content and application agnostic*
  - No Acceptable Use, just Acceptable Users (Reseach and Education)
- *Driven by user requirements*
  - IP for most applications, lightpaths for point-to-point
- *Open exchange points connecting the "islands"*
  - Internet exchanges for IP, Open Lightpath Exchanges for lightpaths

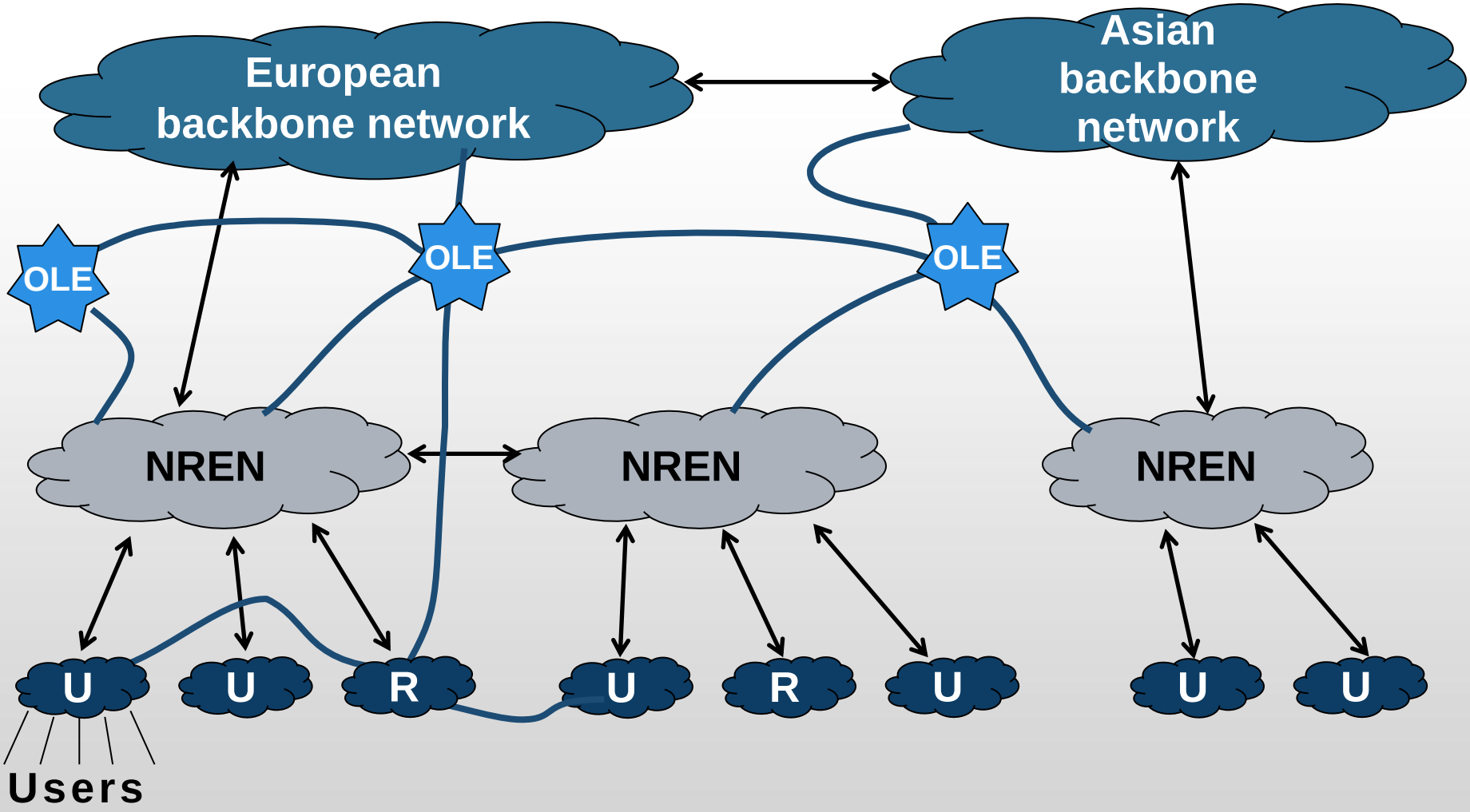
Stratix

Perhaps instead of this…



Stratix

...it should become more like this.



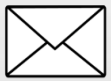
Stratix

Questions…

Stratix

Paul Brand
Stratix Consulting
The Netherlands

WWW **www.stratix.eu**



paul.brand@stratix.nl

Stratix