IPv6 and the Future of the Internet Economy from a public policy perspective.

Global IPv6 Summit, Beijing, China,
15 April 2009

What is the OECD?

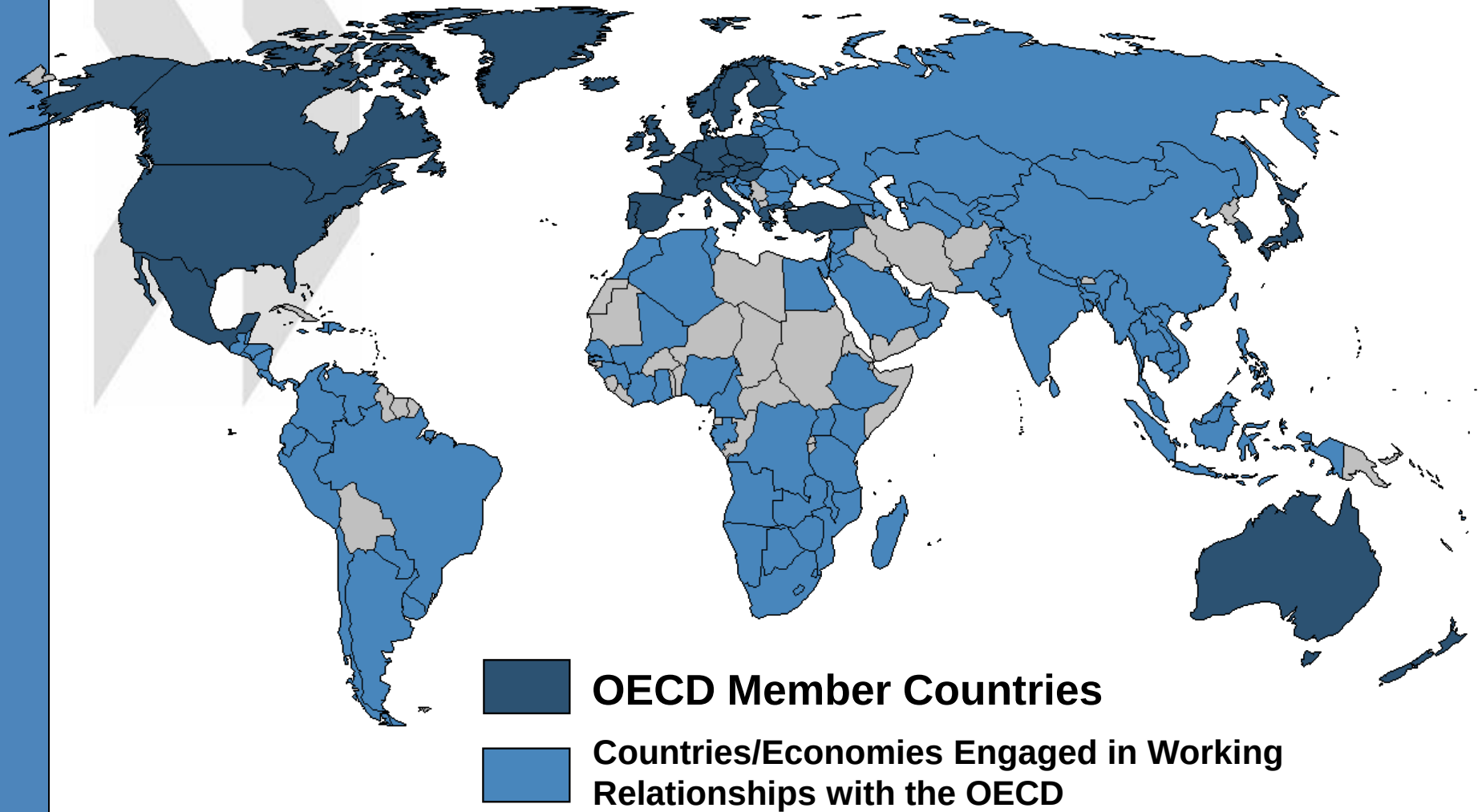
- **Forum** for governments to together address economic and social challenges of globalisation
  - **30 member countries**: **40 000 senior officials from national administrations** come to OECD meetings each year
  - Over **70 other countries/economies** engaged in working relationships with the OECD, e.g. through APEC
  - **Committees and Working Parties: about 200**

- **Committee on Information and Communication Policy**

  Private sector, Internet technical community, civil society and trade unions are represented.

- Provider of comparative data, analysis and forecasts to underpin multilateral co-operation, and best practices

OECD has a global outreach



IPv6 in the OECD Seoul Declaration

- OECD report, mid 2008: *Economic Considerations in the Management of IPv4 and in the Deployment of IPv6*
  Available at http://www.oecd.org/dataoecd/7/1/40605942.pdf
- OECD Ministerial meeting on the Future of the Internet Economy, Seoul, Korea, 17-18 June 2008

Ministerial Declaration for the Future of the Internet Economy

Adopted by over 40 Ministers: high-level political commitment

« *WE DECLARE that, to contribute to the development of the Internet Economy, we will… Encourage the adoption of the new version of the Internet protocol (IPv6), in particular through its timely adoption by governments as well as large private sector users of IPv4 addresses, in view of the ongoing IPv4 depletion*… »

IPv4 insufficient and IPv6 offers opportunities…

- Facing **IPv4** address space issue has become more **urgent** due to consumption *acceleration* since 2005.
- **IPv6** widely viewed as **way forward.**
  - To ensure scalability of the Internet
  - Satisfy public procurement mandates
  - Enable innovative applications, including sensor networks and embedded systems
  - Less expensive network administration
  - Mobility support

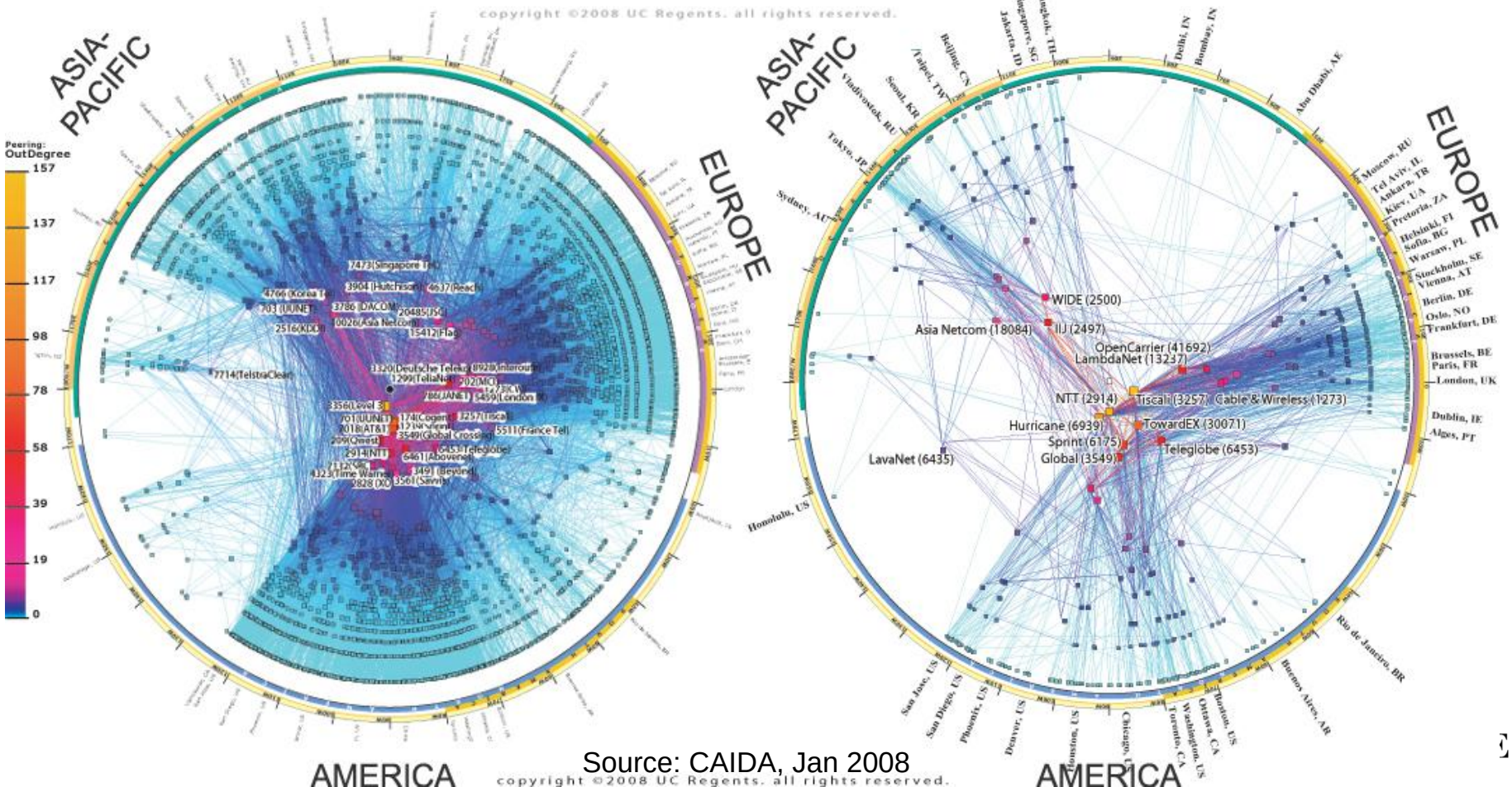
…but transition to IPv6 is slow and poses important challenges

- Market has been **slow** to adopt IPv6
  - 22% IXP support (Packet Clearing House, 03/09)
  - 0.26% of clients have IPv6 (Google, 03/09)
  - 2.2% ASes with IPv6 activity / 31% of *transit* Ases (Geoff Huston 03/09)
  - 60-70% TLD support in DNS (ICANN 03/09) …
- Transition to IPv6 poses important **challenges**:
  - Many networks, services and users will need both IPv4 **and** IPv6.
  - Immediate costs // long-term benefits + need critical mass.
  - Requires time, awareness and finding skilled resources.
- Cannot ignore future of IPv4:
  - More IPv4 « à la NAT ».
  - Transfers of previously allocated IPv4 addresses.

10 years on, much more use of IPv4 than of IPv6. Europe & Japan have more IPv6 connectivity.

IPv4/IPv6 Internet topology maps at the AS-level

IPv4 **IPv6**



Source: CAIDA, Jan 2008

Why is the IPv4/IPv6 issue relevant to public policy makers?

1. Public institutions rely on Internet as others

2. Internet as platform for innovation & growth requires IPv6

- IPv6 necessary for Internet economy growth LT the alternatives entail unacceptable risks
  - Limitations on scalability (dense NAT without IPv6)
  - Hurried/unstable IPv6 deployment (wait and rush).
- Need to promote interoperability where possible
- As IPv6 becomes norm, IPv6 expertise key for economic competitivity.

3. Competition concerns regarding <u>IPv4</u>:

- New entrants will need IPv4 resources to interoperate with IPv6.
- Need ability to transfer addresses between parties.

All stakeholders, including governments, have a role to play…

Government's role is not about regulation, but about working with technical experts and business to:

- Role 1: Build awareness of issue & help to ease bottlenecks through multi-stakeholder co-operation.
- Role 2: Being early adopters.
- Role 3: International co-operation and helping to monitor progress of deployment.

Need for multi-stakeholder co-operation.

Role 1: Education & awareness and easing bottlenecks

- IP addressing should not be considered a technical specialist's topic only.
- Target decision-makers' awareness.
- During IPv4/IPv6 co-existence: need to maintain operations & interoperability.

- Ease bottlenecks…
  - **Operators** to facilitate IPv6 deployment: training, equipment renewal...
  - **Operators** to consider IPv6 connectivity in traffic exchange agreements
  - **Software developers** to be « IP agnostic » + develop new apps leveraging IPv6 functionality.
  - **Greenfield deployments** to use IPv6 from the outset.
  - **CPE providers** to plan for IPv6.

Role 2. Government adoption of IPv6

- Plan adoption of IPv6 for governments' internal use and public services.
- Ensure new public programmes consider IPv6. Assess existing programmes & priorities to see whether could benefit from IPv6.

FEDS BUY THEIR WAY TO IPv6 COMPLIANCE

Here's how federal information technology officials responded to the question, "What percent of your new IT procurements are IPv6-capable?"

RESPONDENTS N=110	NEW IT PURCHASES THAT ARE IPV6-COMPLIANT
44%	100%
10%	75% or less
5%	50% or less
4%	25% or less
3%	10% or less
5%	None
29%	I don't know

Source: Federal Computer Week

- Ensure relevant government security entities integrate IPv6 security dimension.
- Include IPv6 in training initiatives.

Role 3. International co-operation & monitoring

- International co-operation, *e.g.*:
  - Beijing IPv6 Summit; dialogue builds on long-lasting involvement
  - European Commission Action Plan
  - OECD Ministerial Declaration on the Future of the Internet Economy
- *Measurement and statistics* Essential for informed policy.
  - Encourage all relevant parties to gather data to track the deployment of IPv6
  - Compile case studies

Moving forward… OECD interested in co-operation to help measure and build awareness of progress in deployment of IPv6, with the European Commission, Hurricane Electric and others.

谢谢您！

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www.oecd.org/dataoecd/7/1/40605942.pdf

www.oecd.org/FutureInternet