Responsible Distribution
of Internet Numbering Resources
over the Years

Prepared by
Regional Internet Registries

APNIC, ARIN, LACNIC and RIPE NCC

Overview

- History & Evolution

- Structure

- IP Address Management

- Development of Internet Number Resource Management Policies

History & Evolution

The RIR System

Pre 1992

iana

**RFC 790
1981**

"The assignment of numbers is also handled by Jon. If you are developing a protocol or application that will require the use of a link, socket, port, protocol, or network number **please contact Jon to receive a number assignment**."

1992

RIPE NCC

iana

RFC 1366
Geographic Allocations

1993

RFC 1466
1993

1997

1998

ICANN / ASO MoU
1999

2002

Emerging RIR

Structure

The RIR System

Not-For-Profit

- Membership / Service Fee
- Open Financial Reporting

Structure

Participation

- Open to All Interested Parties
- Consists of Thousands
  - ISPs
  - Other Companies
  - Stakeholders

Members

- Elect Executive Board
- Approve Budget & Activities

Internet Number Resource Allocation

- IPv4 & IPv6
- AS Numbers
- Whois Directory
- Internet Routing Registry
- Reverse DNS
  - In-addr.arpa
  - Ip6.arpa

Services

Policy Development

- Email Discussion Lists
- Open Policy Meetings
- Publication of Policy Documents

Member

- Meetings
- Elections
- Web Portal
- Information
- Training

ASO Support

- ASO Secretariat
- ASO AC Support
- General Assembly

Activities

Outreach

- Meetings and Presentations
  - Government representatives
  - Industry groups
  - IPv6 Forum
- Training Programs

Coordination

- Registration Services
- Policy
- Documentation
- Engineering
- Outreach
- Presentations

Number Resource Organisation

http://www.nro.org

Strong Operational Co-ordination

- NRO Executive Council
- NRO Secretariat

Goals

Facilitate ICANN ASO

One Entry Point into RIR System

- NRO Number Council
- Offer to ICANN to function as ASO

IP Address Management

The RIR System

IP Addressing

- What is an IP Address?
- How is IP Address Space Managed?

What is an IP Address?

- A Number Used for Routing
- Not Dependent on Domain Name System
- A Finite Public Resource
- Not Owned
- IP Does Not Mean "Intellectual Property"

How is IP Address Space Managed

- Address Space Management Objectives
- Implementation of Policy

Conservation

- Efficient Use of Resources
- Allocation Based on Need

Address Management Objectives

Aggregation

- Limit Routing Table Growth
- Support Provider-Based Routing Policies

Registration

- Ensure Uniqueness
- Facilitate Trouble Shooting

Policy Implementation
[Industry Self-Regulation]

- **RIR Staff**
  - Publish Policy Documents
  - Publish Procedure Documents
  - Implement Policy
- **ISP/LIR**
  - Develop Internal Procedures
  - Implement Policy

Internet Number Resource Management Policy Development
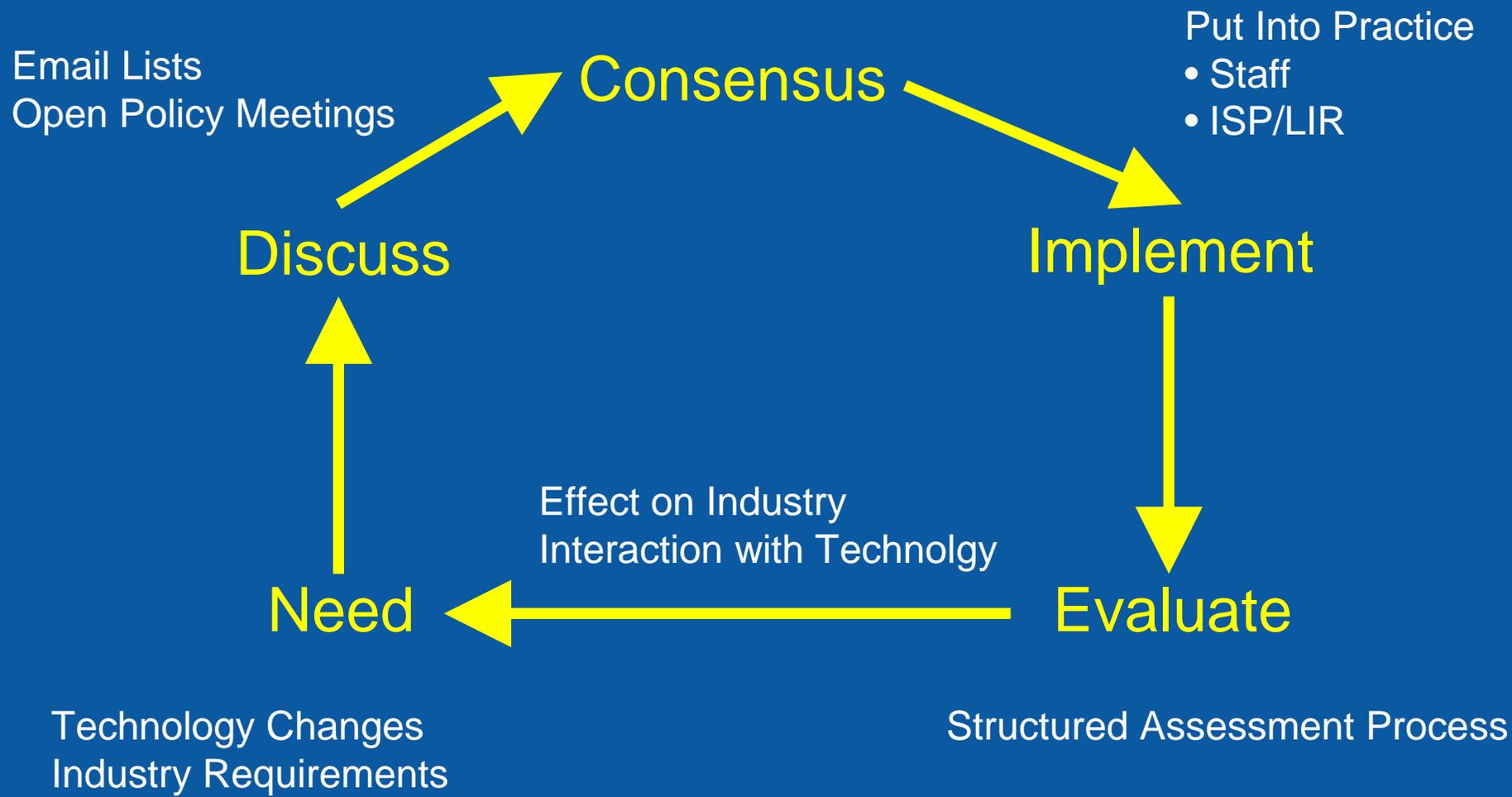# [Industry Self-Regulation]

The RIR System

How is IP Address Policy Developed?

- According to Policy Development Principles

- In a Cyclical Manner

Policy Development Principles

- **Transparent**
  - **Mail List Archives**
  - **Minutes**
    - **Policy Fora**
    - **RIR Boards**

- **Open**
  - **Anyone Can Participate**
  - **Policy Fora**
  - **Mail Lists**

- **Documented**
  - **Formal Policy Documents**
  - **Implementation Procedures**

- **Developed Bottom-Up**
  - **Internet Community**
  - **Stakeholders**
  - **Technology Changes**
  - **IETF**

Policy Development Cycle

Email Lists
Open Policy Meetings

Consensus

Put Into Practice
• Staff
• ISP/LIR

Discuss

Implement

Effect on Industry
Interaction with Technolgy

Need

Evaluate

Technology Changes
Industry Requirements

Structured Assessment Process

Common Misconceptions about IP Allocation Issues

- IPv4 address exhaustion is imminent.
- Regional Address Registries are obstructing IPv6 deployment
- Digital Divide between address-rich and address-poor Countries
  - Newcomers cannot get addresses anymore
- Regional Address Registries advocate NAT

- Visit the source for address statistics / policies.
- Take part in policy making process.
- We offer workshop for any interested party.

Upcoming Public Policy Meetings

- ## ARIN (2 per year)
  18-21 April, ARIN XIII, Vancouver, Canada
- ## LACNIC (2 per year)
  29 April, 1 March, LACNIC VI, Montevideo, Uruguay
- ## RIPE NCC (2 per year)
  3-7 May, RIPE 48, Amsterdam, Netherlands
- ## APNIC (2 per year)
  Aug / Sep, APNIC 18, Asia Pacific Region (tba)

Links to RIR Statistics

Raw Data/Historical RIR Allocations:

http://www.aso.icann.org/rirs/stats/index.html

http://www.iana.org/assignments/ipv4-address-space

RIR Stats:

http://www.apnic.net/info/reports/index.html

http://www.arin.net/statistics/index.html

http://www.lacnic.net/IP-ASN-LACNIC-stat-en.pdf

http://www.ripe.net/ripencc/pub-services/stats

THANK YOU

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