Internet Number Resources

Key Internet resources
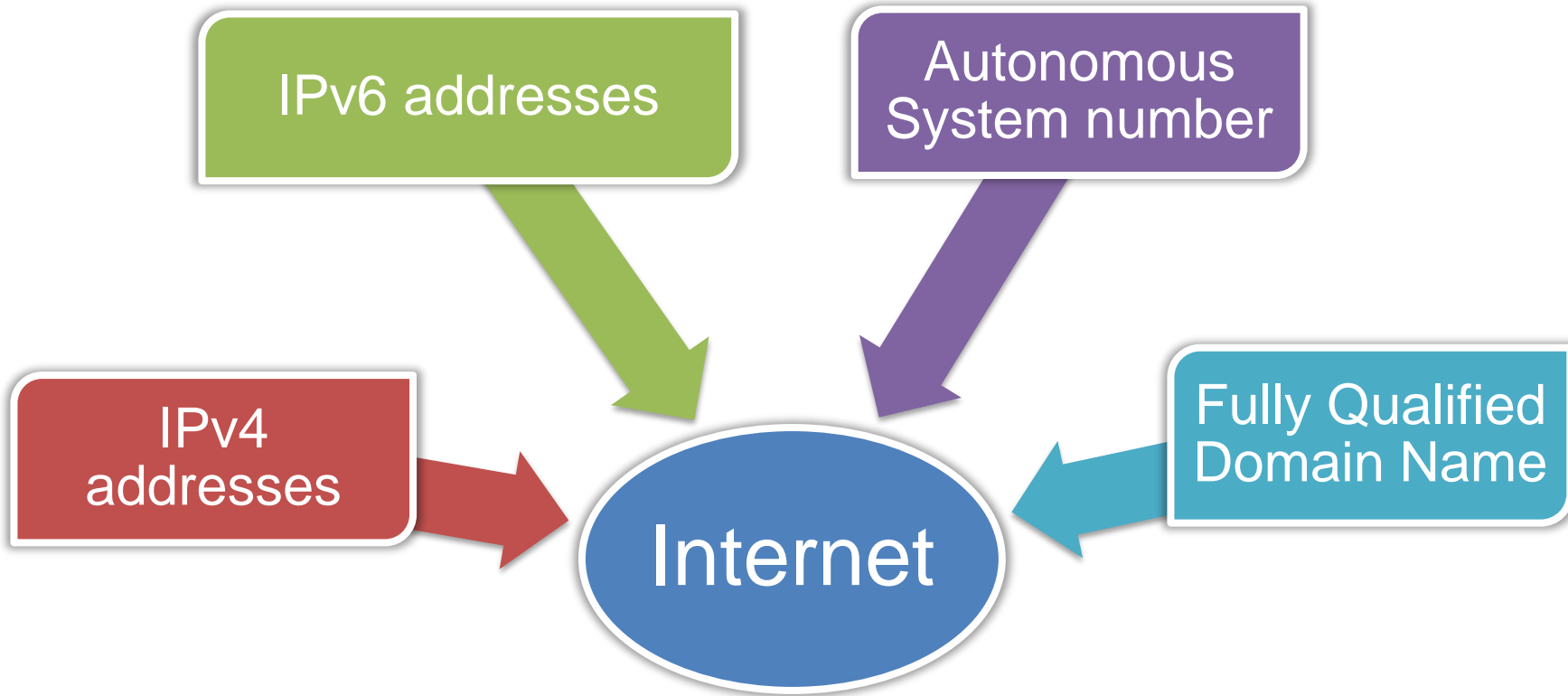
The IP resources management hierarchy

Internet Number Resources

IANA

AfriNIC   **ARIN**   **RIPE NCC**   **LACNIC**   **APNIC**

LIRs   **End sites (PI)**

End sites (PA)
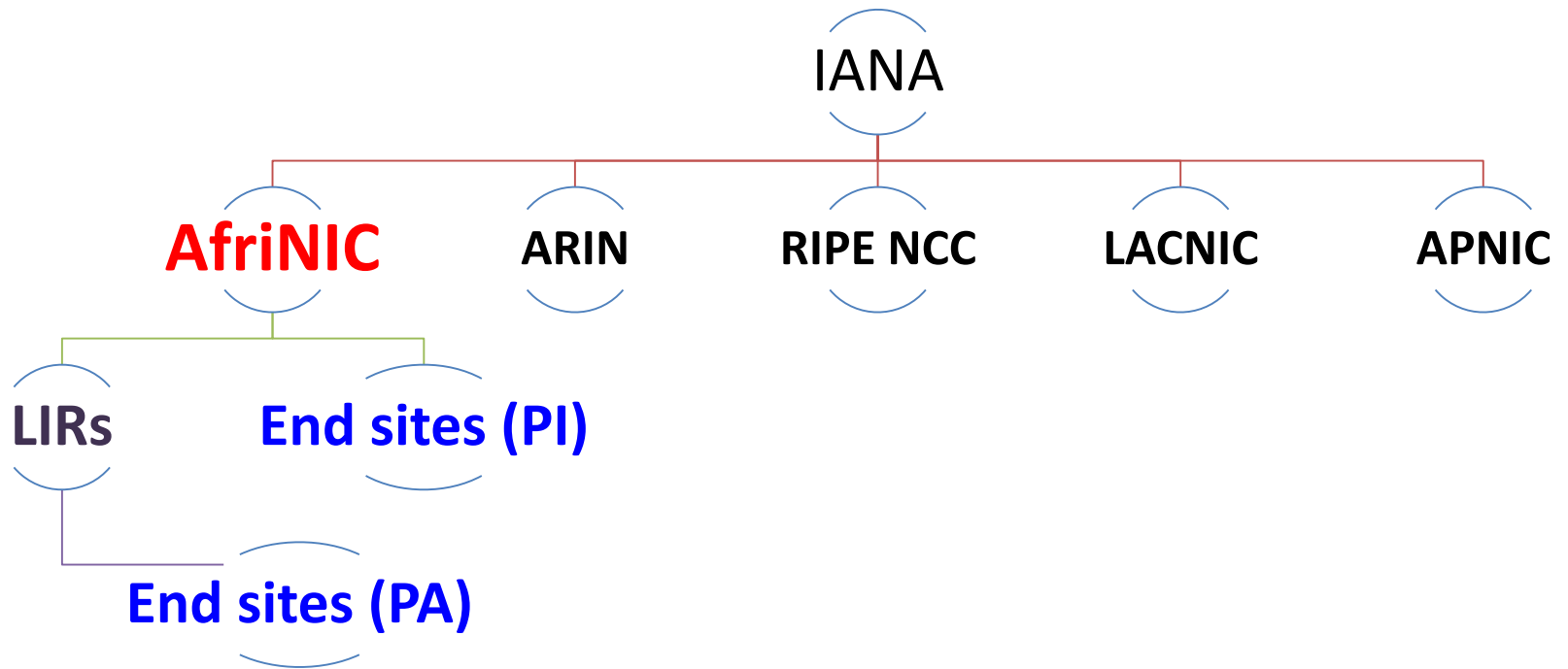
IP resource management by region

Who else issues IP addresses?

Internet Number Resources

Upstream	• Obtain blocks from RIRs • Hand to customers as part of service • Typical customer is a small ISP • Example – Internet of VSAT
ISP	• Obtain blocks from RIRs • Hand out to customers as part of service • Customers too small to approach RIRs directly
REN	Obtain blocks from RIRs Handout to universities

Address Management Objectives

Internet Number Resources

① Conservation (applies mainly IPv4)
  – Efficient resource usage (avoid waste)
  – Allocations are based on demonstrated need

② Aggregation
  – Limit growth of the routing table
  – Support provider-based routing

③ Registration
  – Uniqueness of addresses for each network
  – Helps with network troubleshooting
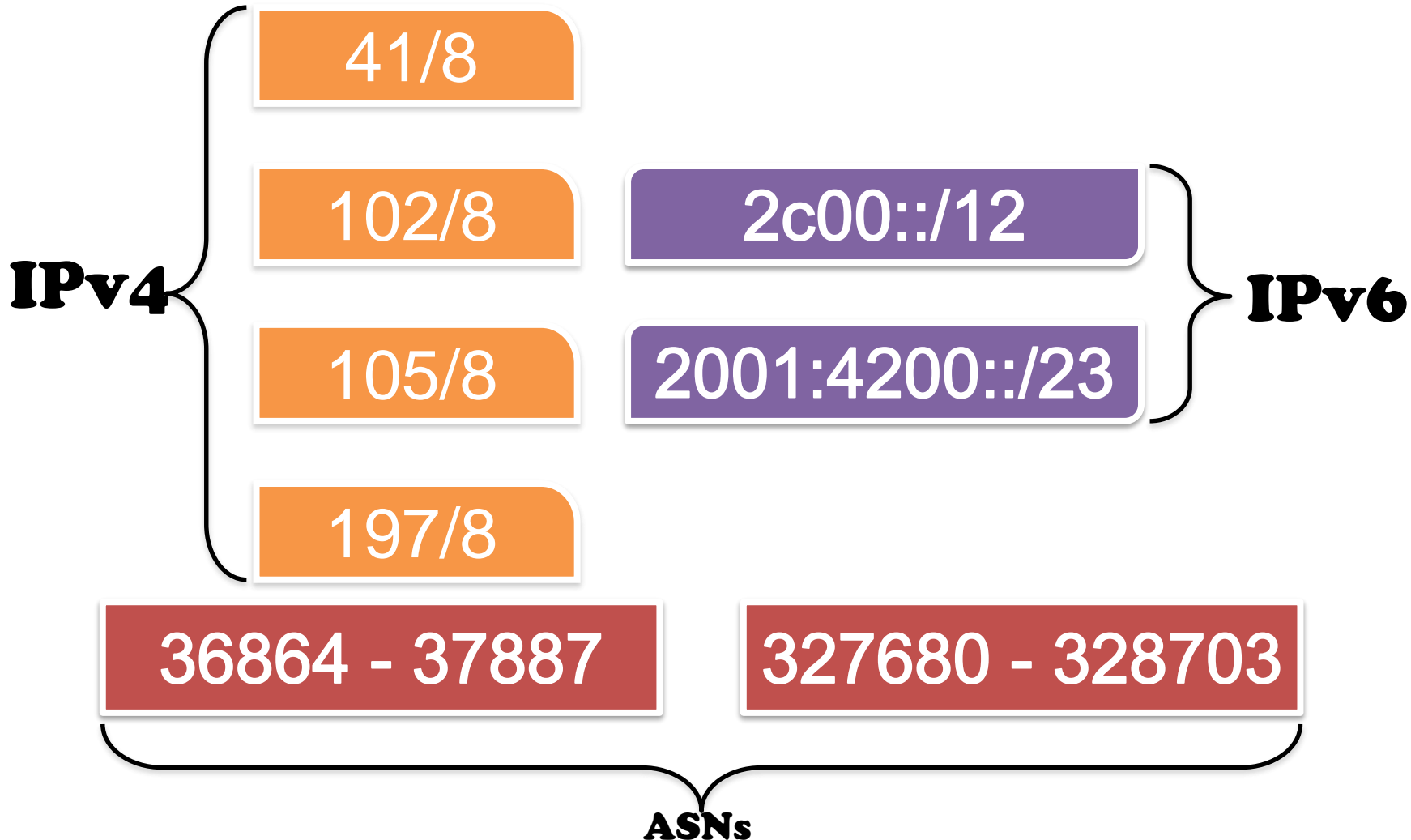
Why should an organisation get its own address resources?

① Connect to more that one upstream (multi-homing)

② Eliminate the need to re-number when you change ISP

③ Better plan and manage own addressing requirements
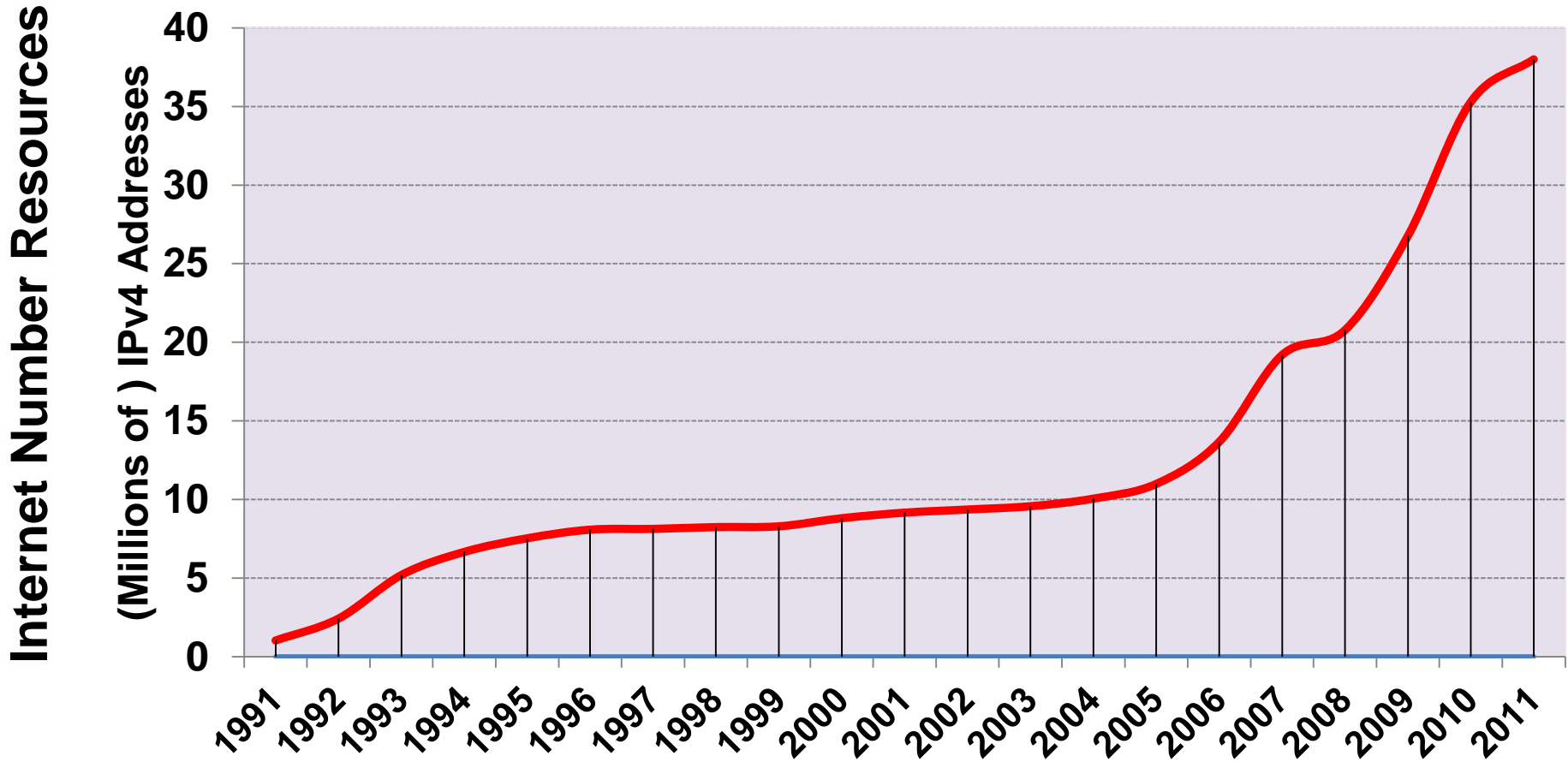
"Ownership" of IP resources

- Section 8 of the contract between AfriNIC and members:

  "NO PROPERTY RIGHTS. The Applicant acknowledges and agrees that the numbering resources are not property (real, personal or intellectual) and that The Applicant shall not acquire any property rights on any numbering resources by virtue of this Agreement or otherwise. ..."

  –AfriNIC could cancel the contract (and reclaim any resources) if there's evidence of violation.

Internet Number Resources

AfriNIC's resource pool

Internet Number Resources

IPv4

41/8

102/8

105/8

197/8

IPv6

2c00::/12

2001:4200::/23

36864 - 37887

327680 - 328703

ASNs

AfriNIC has issued about 38m IPv4 addresses since 2005

Internet Number Resources — (Millions of) IPv4 Addresses

Resource Application and Membership

Resource allocation & membership

The AfriNIC Membership Process

- Resources are only issued to members
  - As defined in AfriNIC public policies
  - Must be in good standing
- To request resources
  - [Existing member] – apply directly for resources
  - [Non-members] - apply for membership first
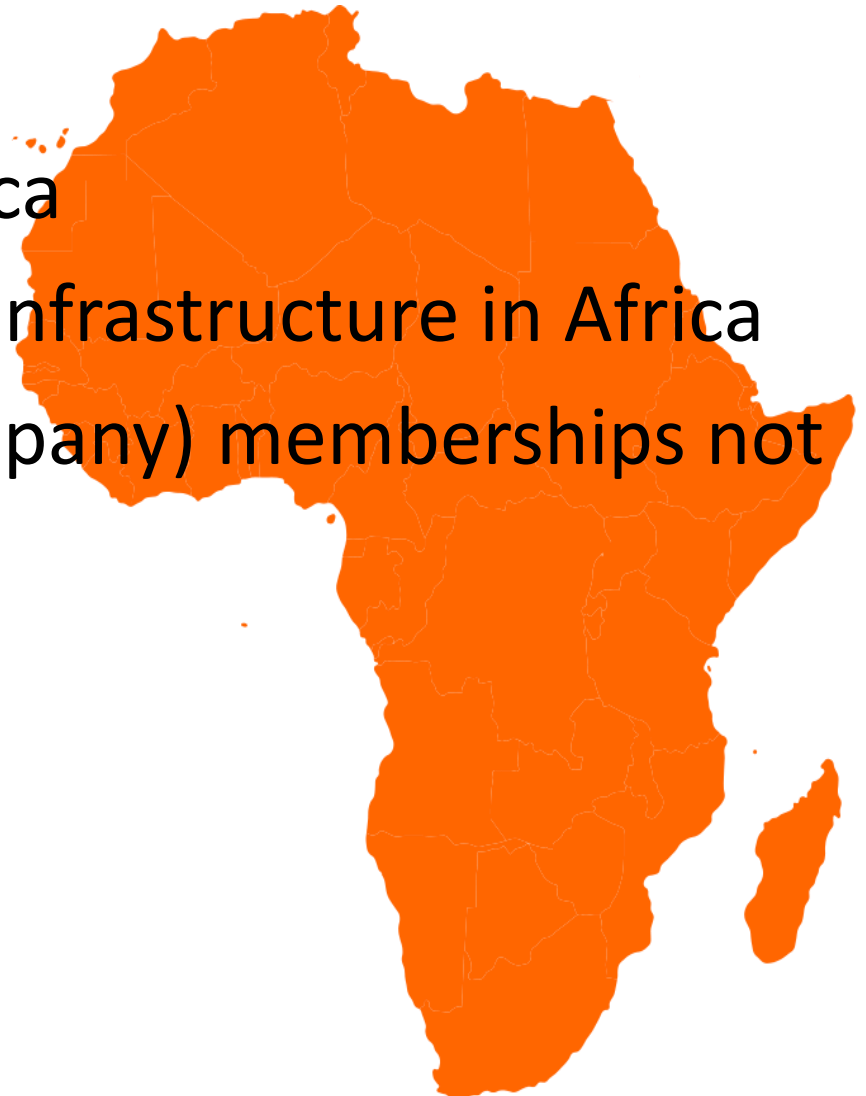
Types of membership

- Local Internet Registry (LIR)
  - Takes a block block from AfriNIC
  - Issues addresses to its customers
  - Typically ISPs

- End-site (PI)
  - Organisations that want provider independence
  - Not individuals
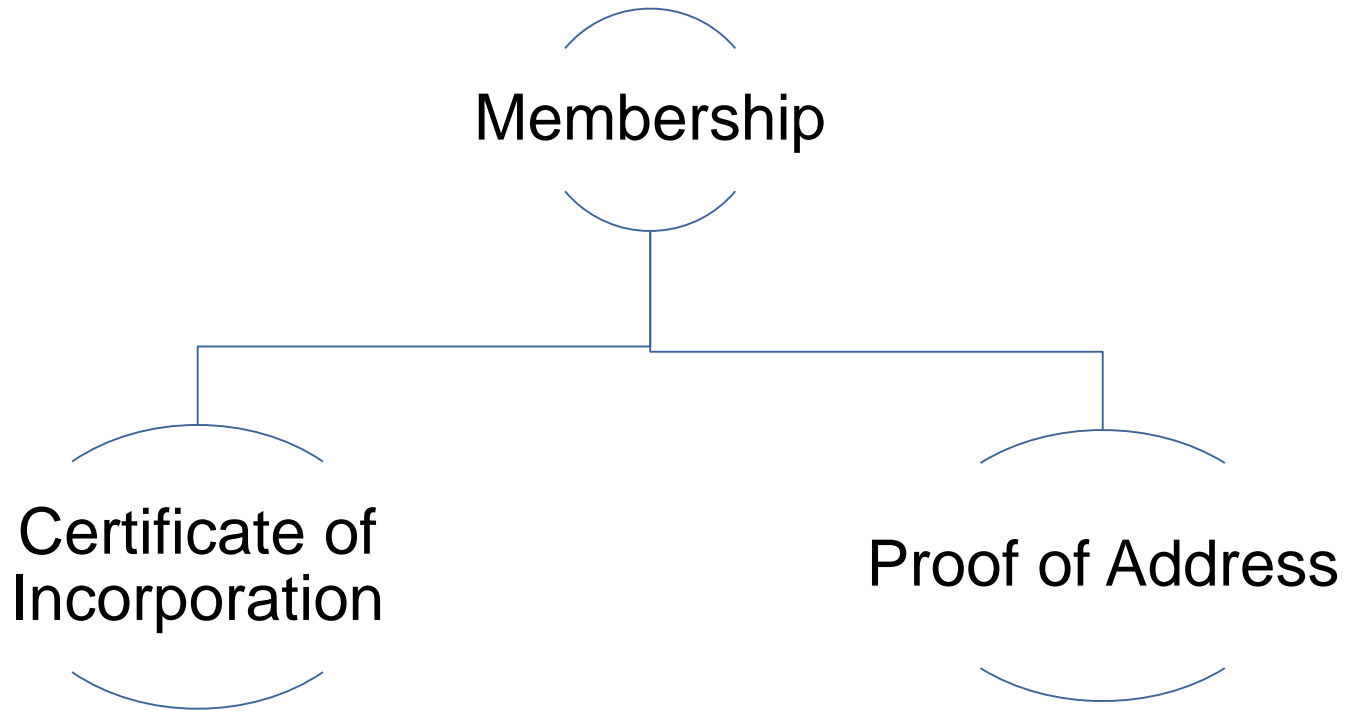 - Referred to as "End-user" in policy documents

Membership advantages

① Request IP resources directly from AfriNIC

② Preferential admission to training workshops

③ Access to web portal for managing resources

④ Eligibility to vote for Board Members

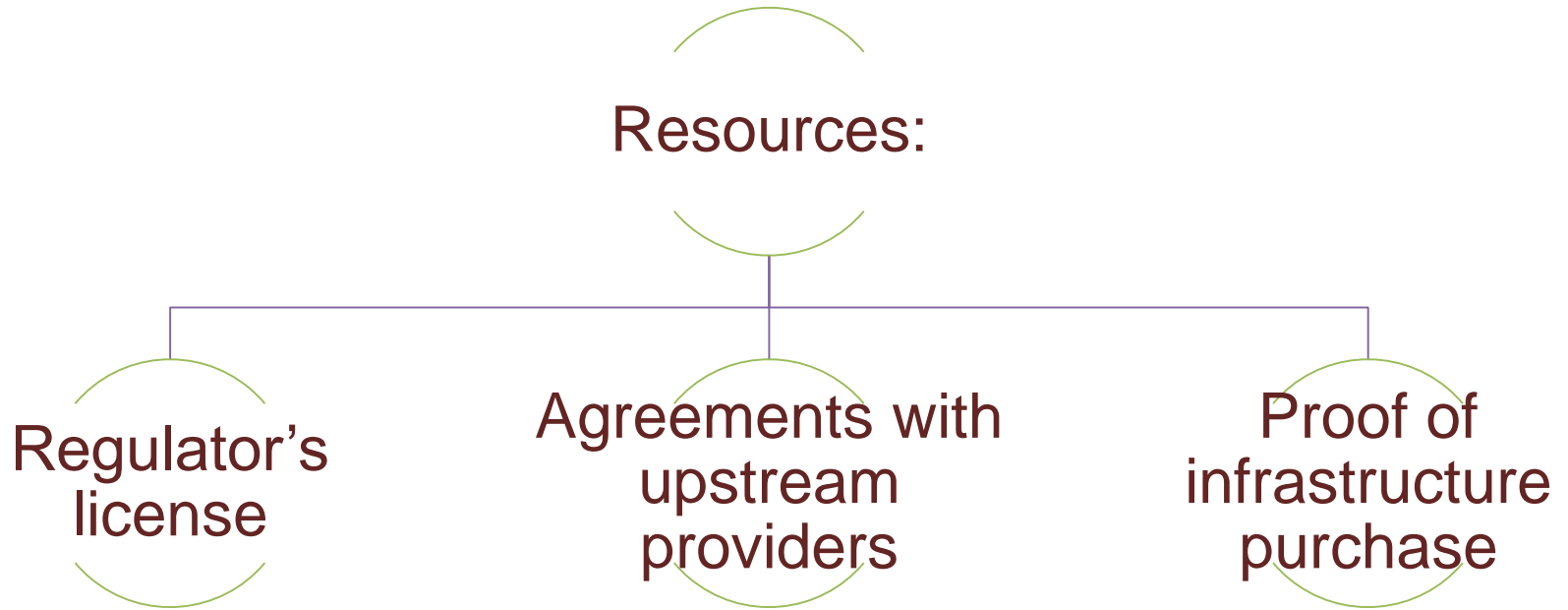⑤ Preferential access to our Public Policy meetings

Membership criteria

① Incorporated in Africa

② Possess IP network infrastructure in Africa

③ Individual (non-company) memberships not allowed

Supporting Documents

Membership

Certificate of Incorporation

Proof of Address

Supporting Documents

Resources:

Regulator's license

Agreements with upstream providers

Proof of infrastructure purchase

IPv4 eligibility criteria for LIRs

☑ Demonstrate an immediate requirement address space

- ☑ Existing ISP network infrastructure
- ☑ Customers

☑ Prefix and numbering plan if planning to renumber from current upstream IPs

☑ Minimum allocation size for ISPs: /22

18

IPv4 eligibility criteria for end sites

☑ Show utilization of at least a /25 prefix from current ISP/upstream   OR:

☑ Show that at least 50% of total size requested is required immediately (0 – 3 months)

☑ Minimum assignment size for End-Sites: /24

IPv6 eligibility criteria for ISPs

The AfriNIC Membership Process

☑ Plan to provide IPv6 connectivity to organizations in the AfriNIC region within twelve months.

☑ Plan to announce the allocation as a single aggregated block in the inter-domain routing system within twelve months.
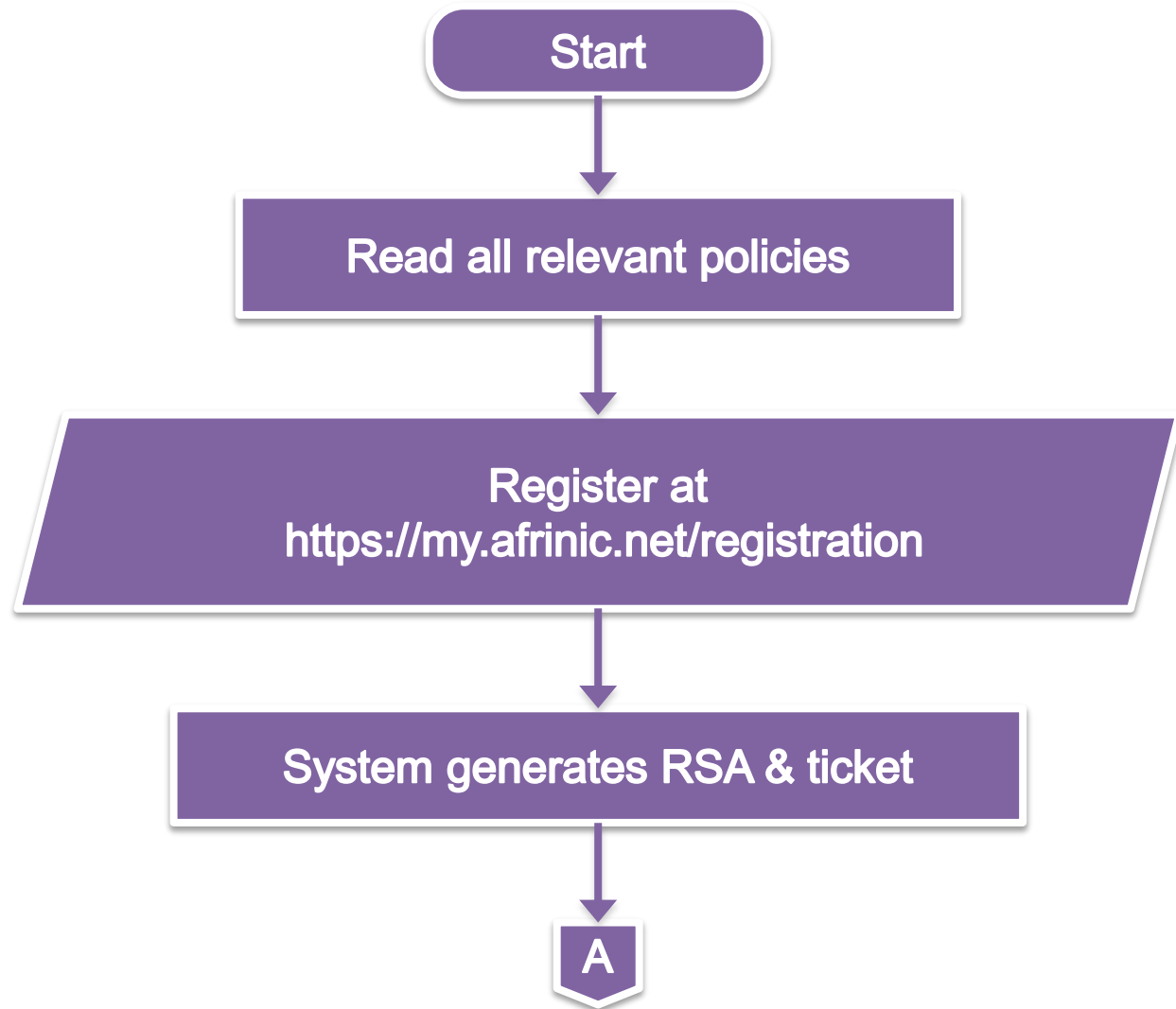
☑ Minimum allocation size for ISPs: /32

IPv6 eligibility criteria for End Sites

☑ Either hold an IPv4 PI prefix or qualify for it from AfriNIC (under current policy).

☑ Must justify the need for the requested v6 space.

☑ Show a plan to use and announce the IPv6 PI prefix within 12 months.

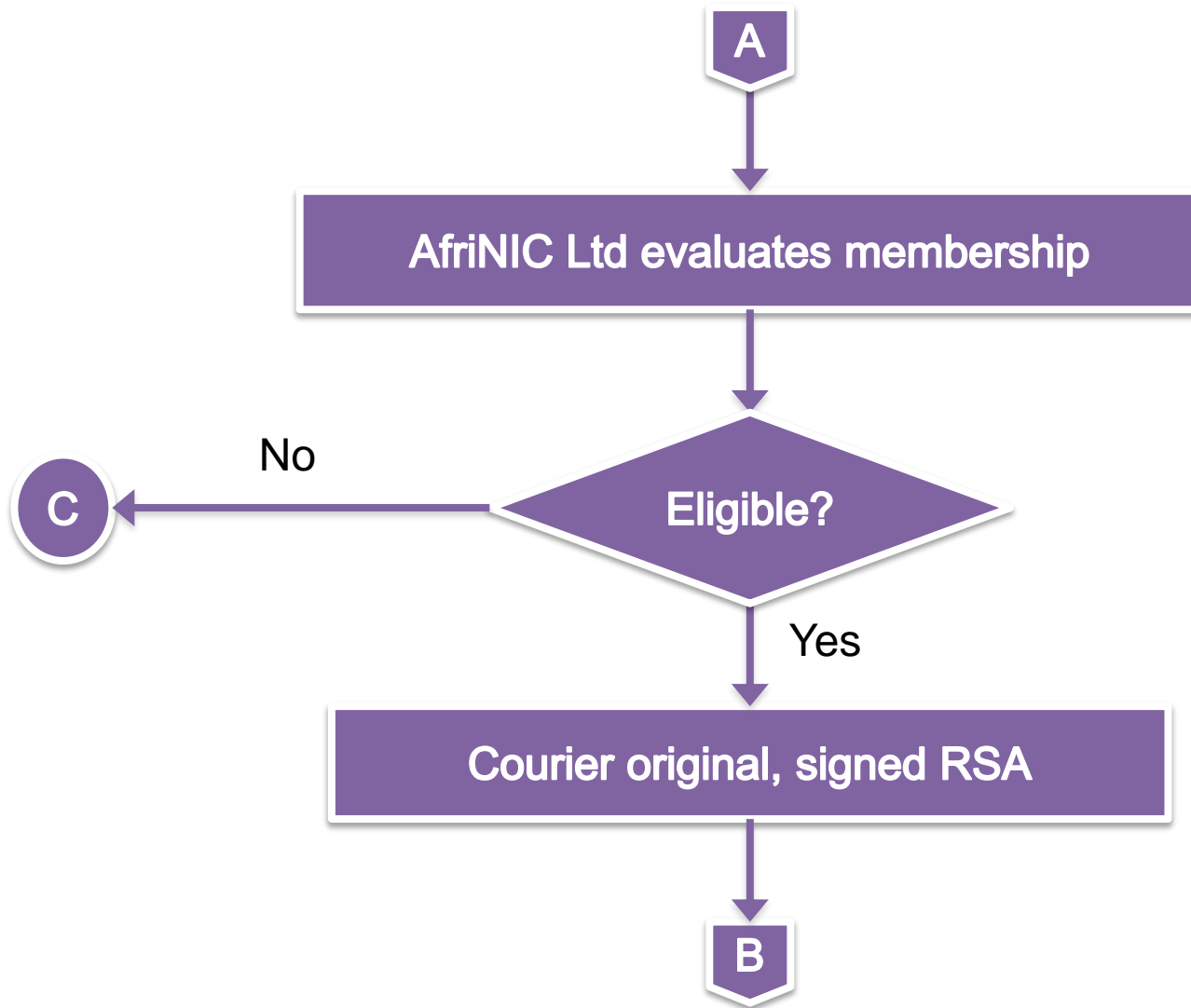☑ Minimum assignment size for End Sites: /48

ASN eligibility criteria

The AfriNIC Membership Process

☑ Show a plan to be multi-homed.

☑ Have a routing policy.

Initial online application

Start

↓

Read all relevant policies

↓

Register at
https://my.afrinic.net/registration

↓

System generates RSA & ticket

↓

A

AfriNIC organisational evaluation

The AfriNIC Membership Process

A

↓

AfriNIC Ltd evaluates membership

↓

Eligible?

No → C

Yes ↓

Courier original, signed RSA

↓

B

AfriNIC resource request evaluation

The AfriNIC Membership Process

B

AfriNIC Ltd evaluates resource request

Approved?

No → C

Yes

AfriNIC sends proforma invoice

D

Conclusion

The AfriNIC Membership Process

D

No

Follow-up

Invoice paid?

Yes

Membership approved and resources allocated

C ← End
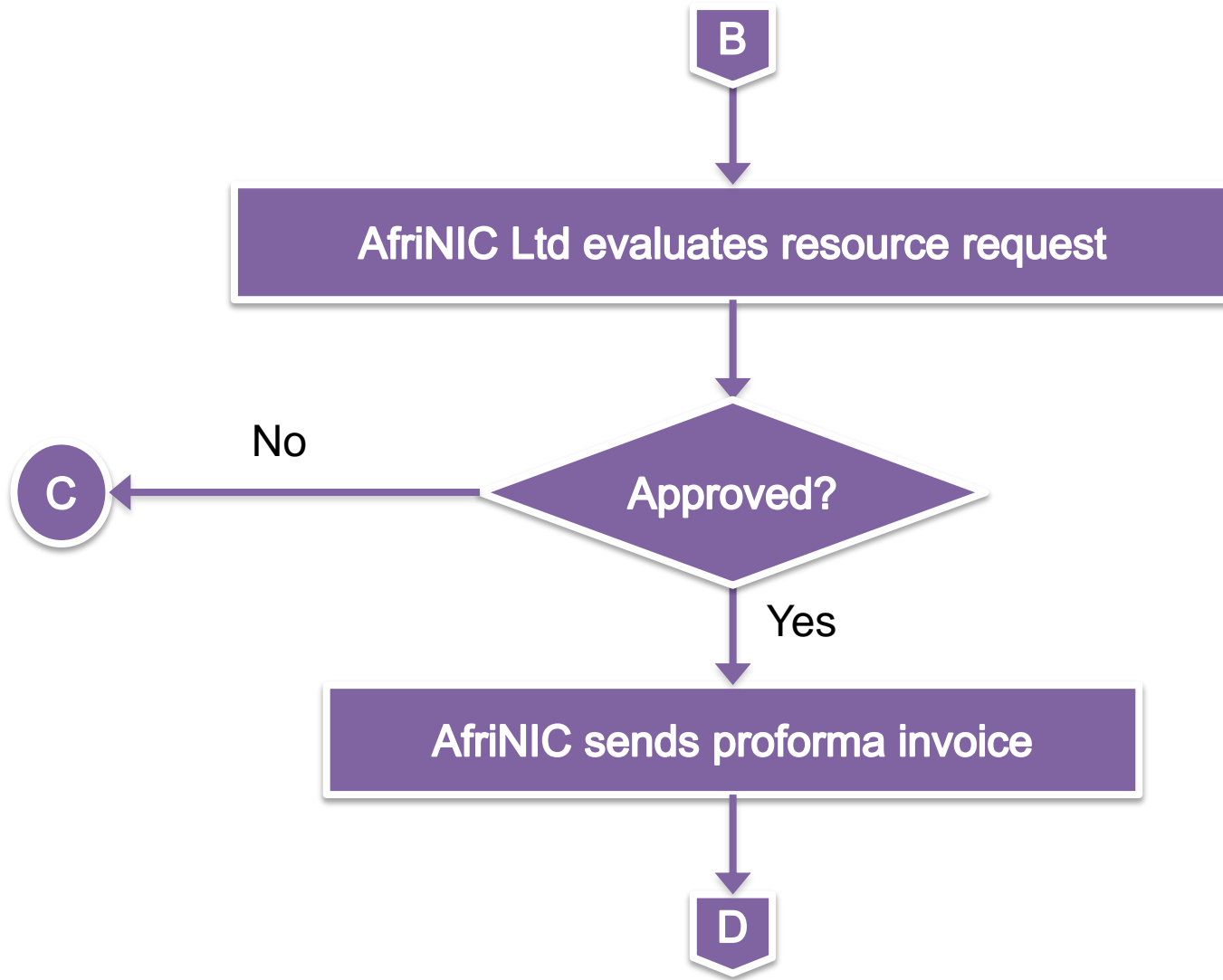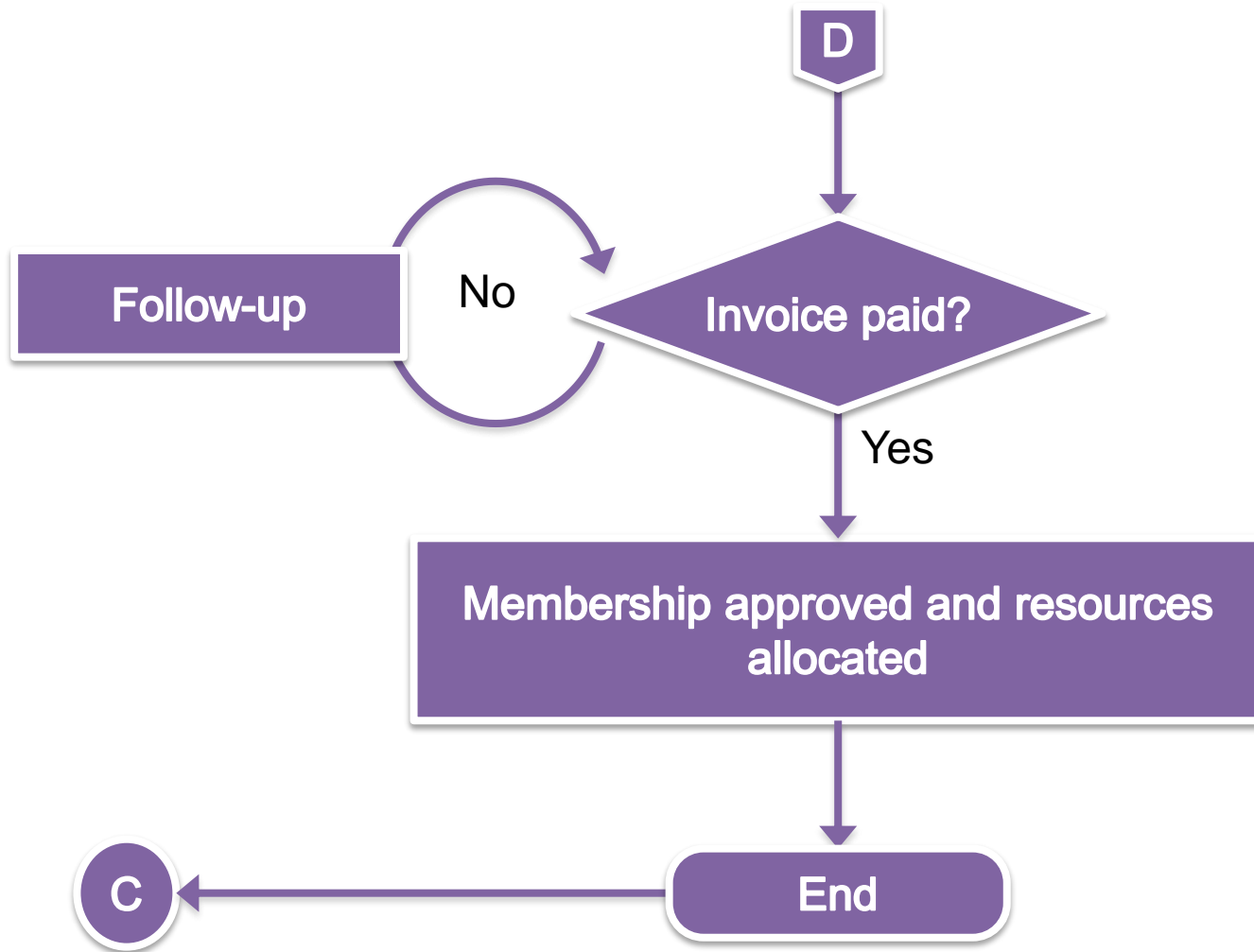
Acknowledgement and Attribution

This presentation contains content and information originally developed and maintained by the following organisation(s)/individual(s) and provided for the African Union AXIS Project

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