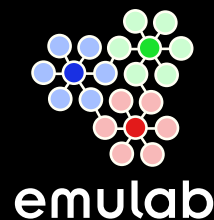
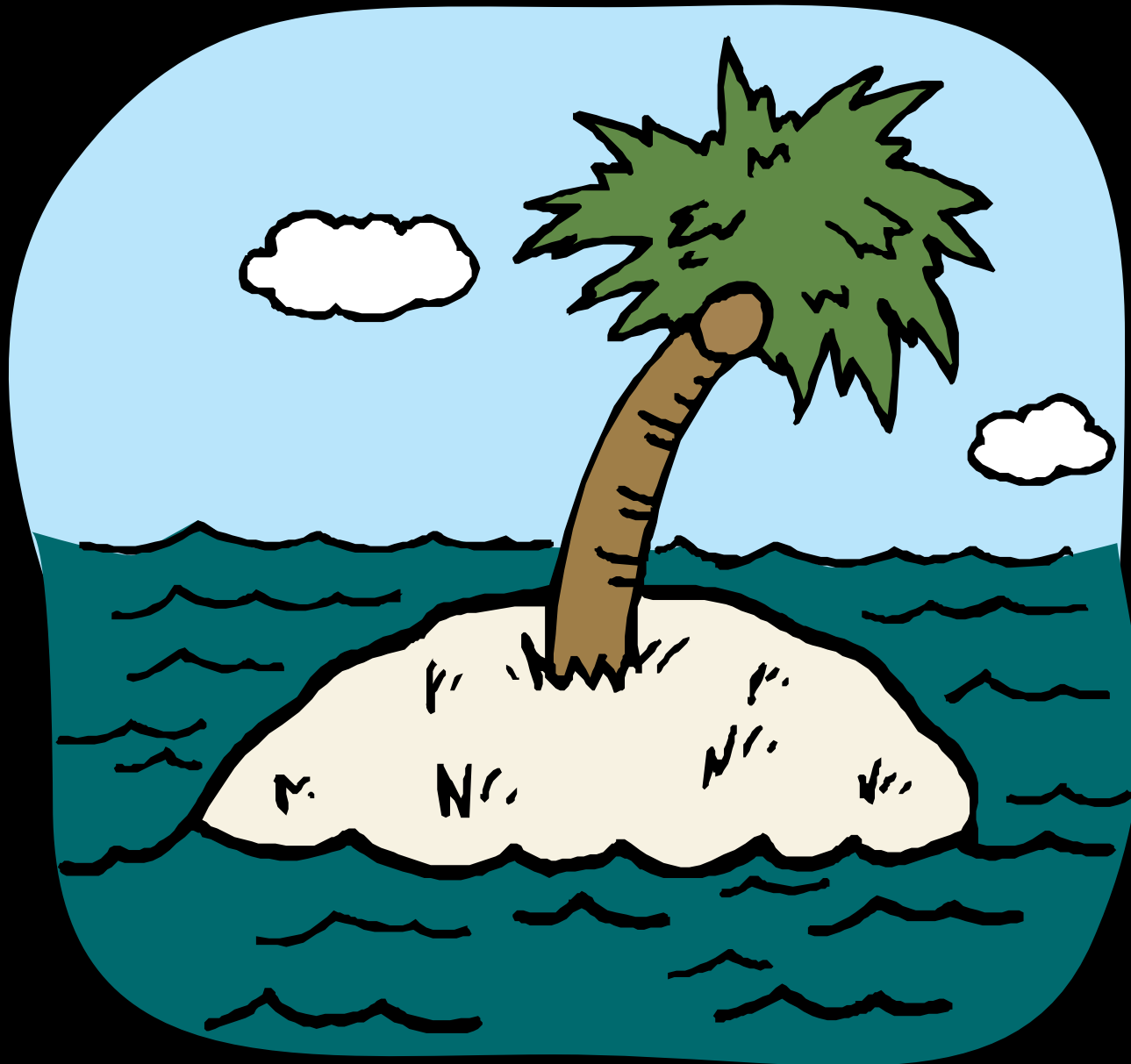
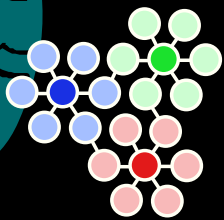
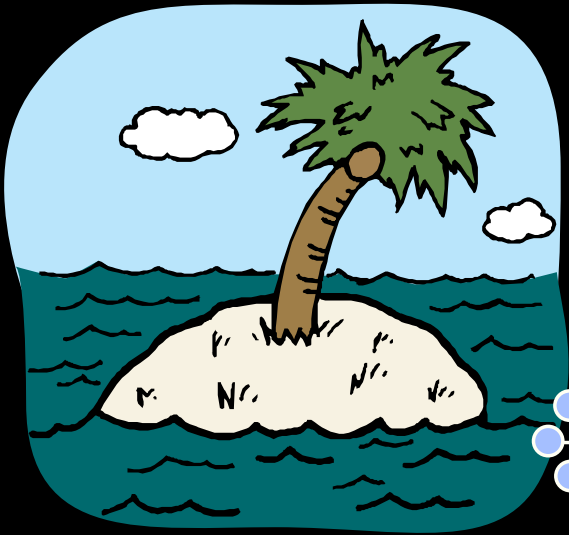


Partitioning Trust in Network Testbeds

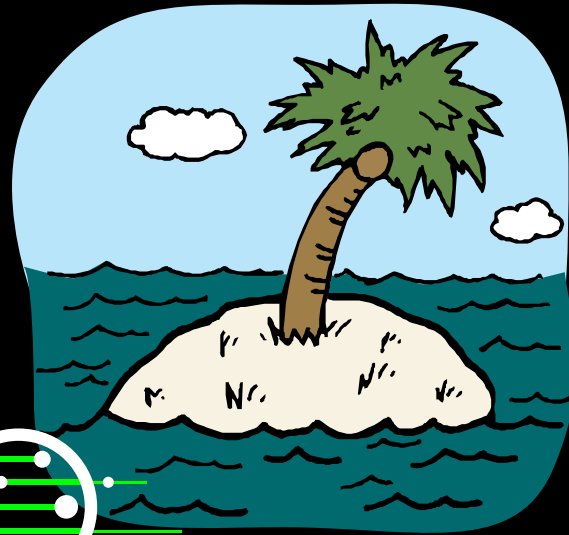
Gary Wong, Robert Ricci, Jonathan Duerig,
Leigh Stoller, Srikanth Chikkulapelly and Woojin Seok



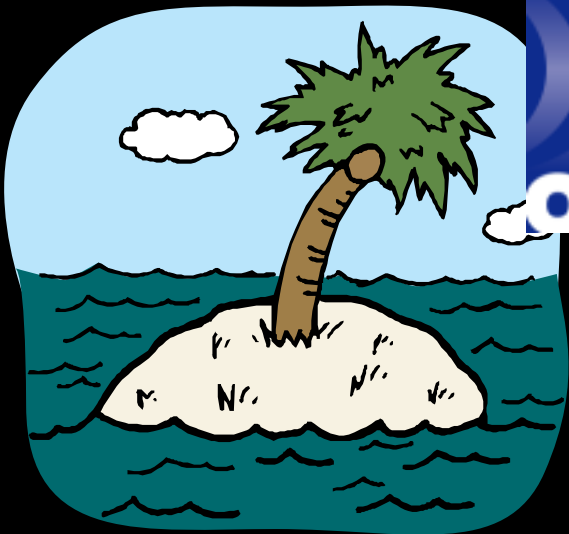




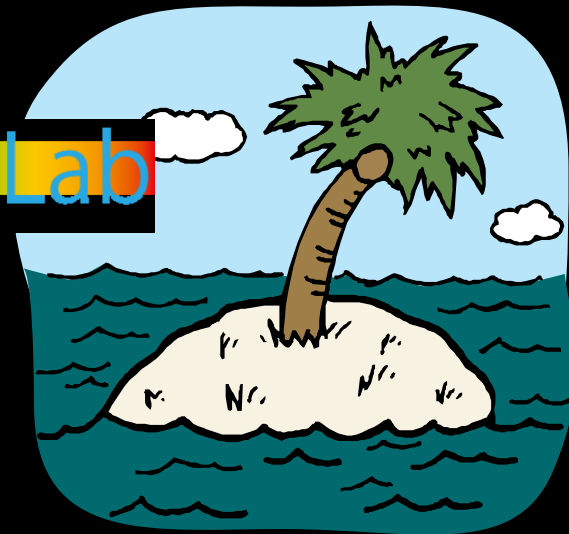
emulab



PLANETLAB



Corelab



Bad for:

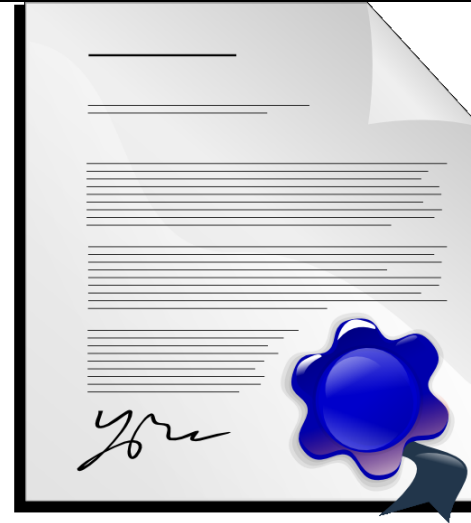
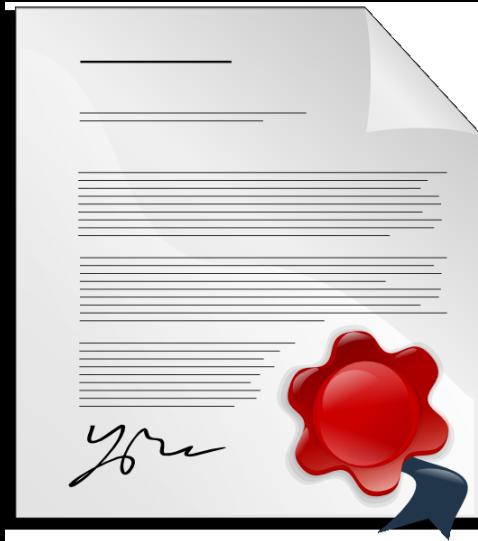
- Scale
- Hardware diversity
- Geographic diversity
- Efficient resource use
- Client tools

Federation:

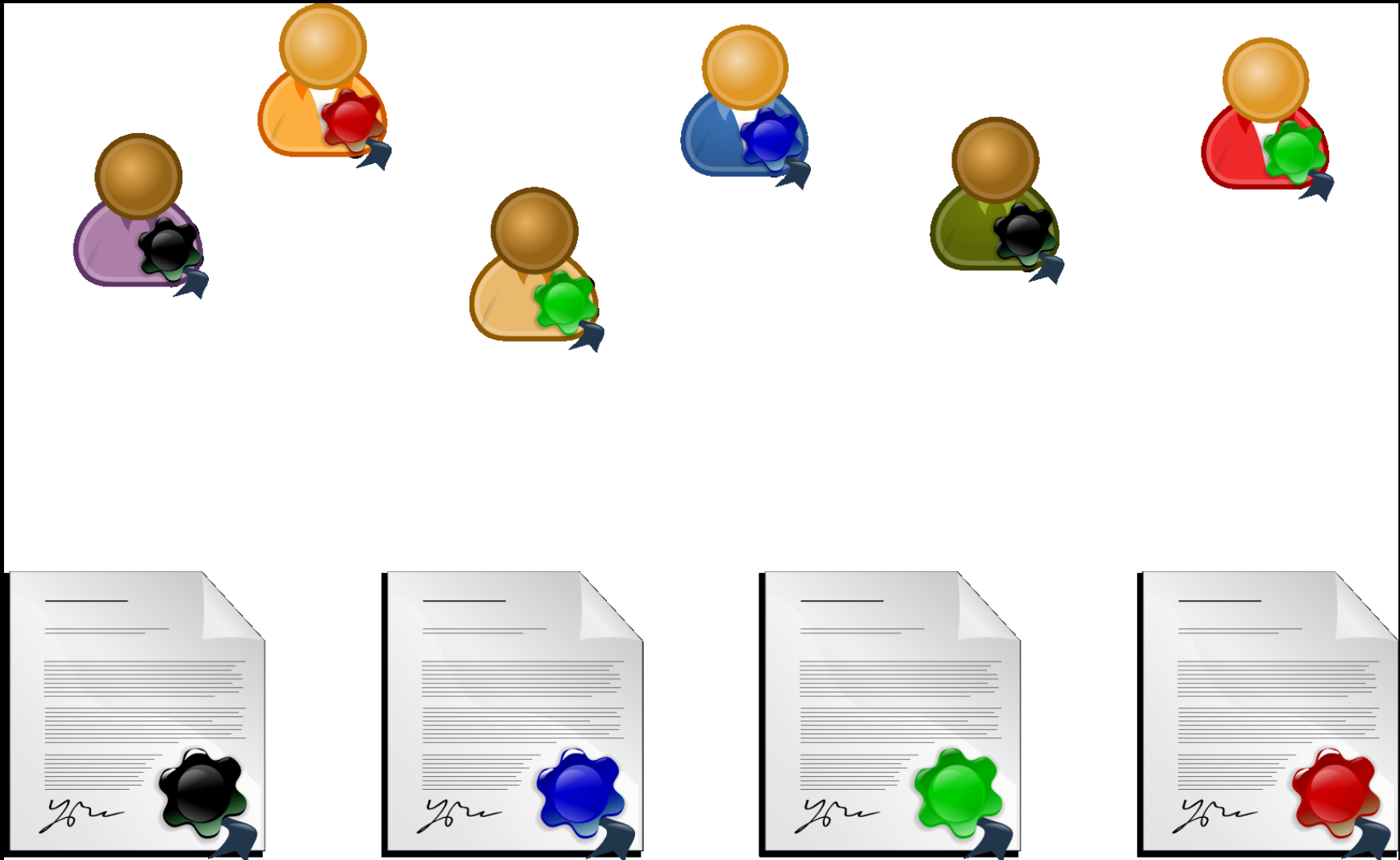
Working together...

... while maintaining local
autonomy.

How will we **trust** each other?



Flat trust



Does it work?

Mozilla Firefox

Update Available

A security and stability update for Firefox is available:

Firefox 6.0.1

It is strongly recommended that you apply this update for Firefox as soon as possible.

[View more information about this update](#)

Ask Later

Update Firefox

Certificate:

Data:

Version: 3 (0x2)

Serial Number:

05:e2:e6:a4:cd:09:ea:54:d6:65:b0:75:fe:22:a2:56

Signature Algorithm: sha1WithRSAEncryption

Issuer:

emailAddress = info@diginotar.nl
commonName = DigiNotar Public CA 2025
organizationName = DigiNotar
countryName = NL

Validity

Not Before: Jul 10 19:06:30 2011 GMT

Not After : Jul 9 19:06:30 2013 GMT

Subject:

commonName = *.google.com
serialNumber = PK000229200002
localityName = Mountain View
organizationName = Google Inc
countryName = US

Subject Public Key Info:

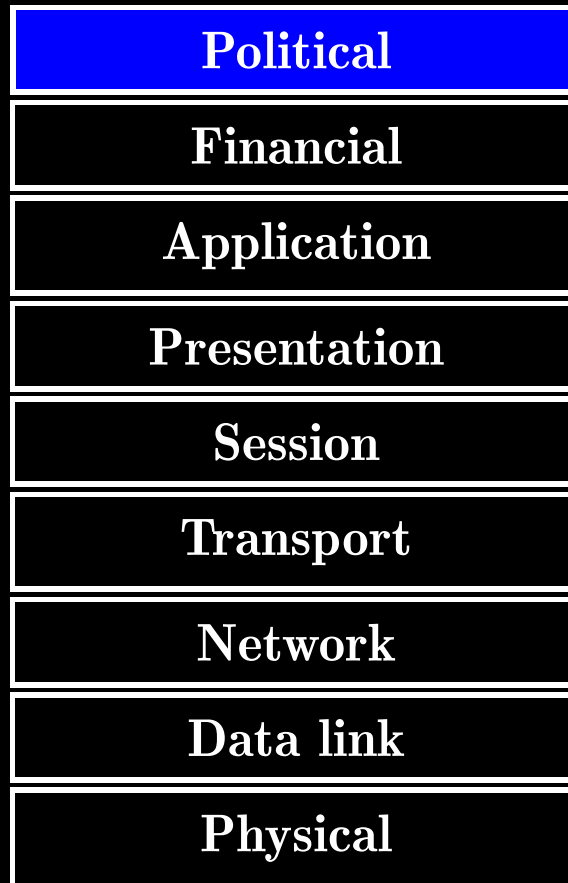
Public Key Algorithm: rsaEncryption

RSA Public Key: (2048 bit)

Modulus (2048 bit):

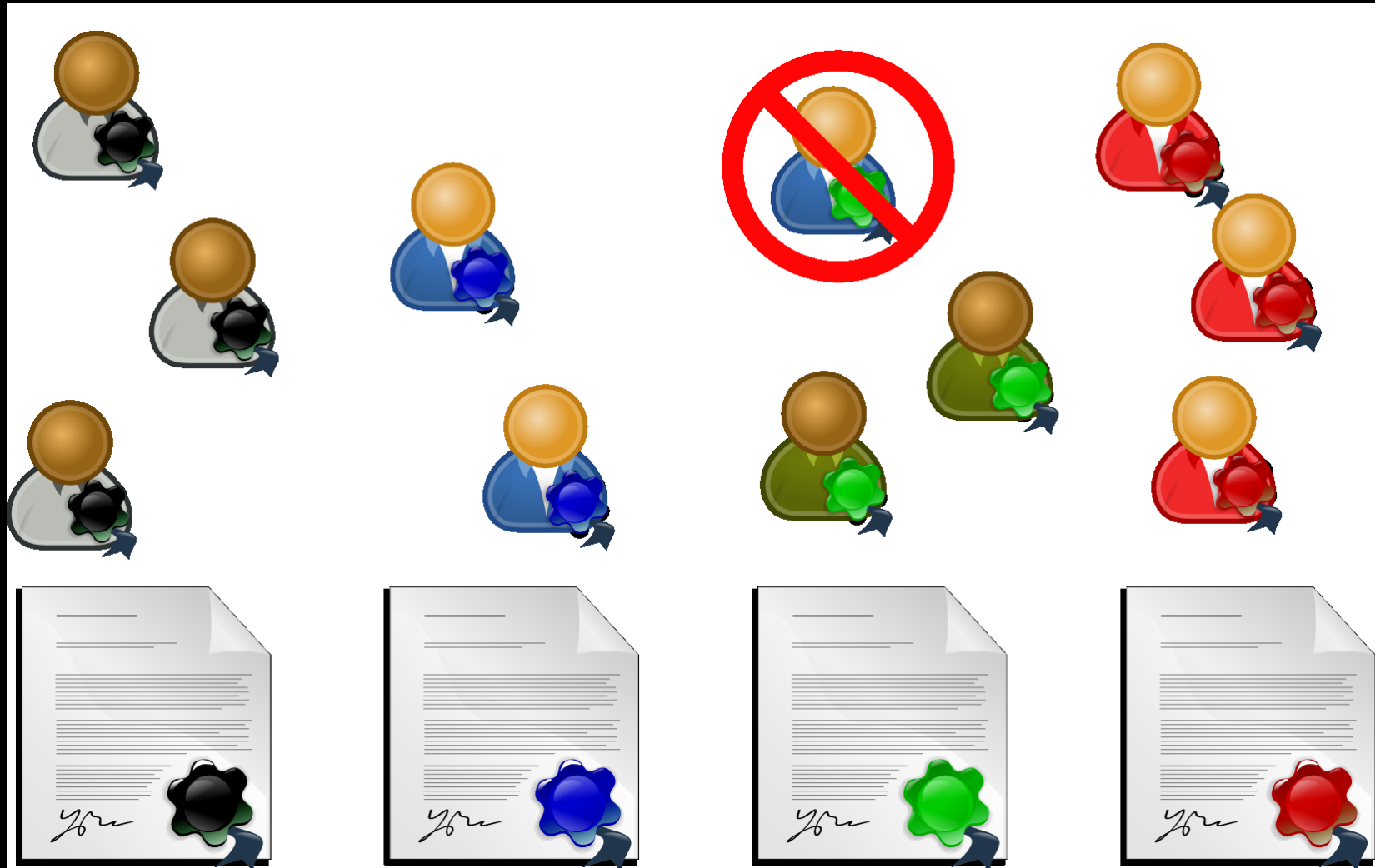
00:cd:6d:e2:ae:6c:25:74:68:2c:61:3a:23:92:09:
24:3f:c3:d1:d7:4d:8b:83:e4:12:ca:ba:2a:97:37:
0d:ec:7a:d7:53:ca:67:89:cf:62:fc:69:63:87:a3:

What went wrong?



Flat trust \Rightarrow Complete trust

Partitioned trust



Principles of partitioned trust

- Partition **object namespace**
- Associate **trust roots** with partitions
- Allow **externally verifiable** identities
- **Separate** authentication and authorisation

Object Namespaces

urn:publicid:IDN+emulab.net+user+gary

Facility ID

Externally verifiable

- Verifiable outside issuing trust domain
- Self-contained
- Can be traced back to a trust root
- No online dependencies

<http://www.emulab.net/>

<http://www.protogeni.net/>

<http://www.geni.net/>