GENI and the PlanetLab Consortium Model

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PlanetLab Consortium

Formed in 2003 to govern and operate PlanetLab

Still in existence today

Five Founding Institutions

Intel, HP, University of Washington, UC-Berkeley, Princeton

Simple Structure

Steering Committee: sets policy

Director: runs-day-to-day operations

Staff: reports to the Director

Industrial Members

Level	$/Yr	Benefits	Responsibilities
Sponsor	$10K	● Access to PlanetLab Events	
Associate	$25K	● + Unlimited Access to Events ● + Participation in Working Groups ● + 2 Slices ● + Public Relations	● Node contribution
Full	$75K	● + 10 Slices ● + Access to Director ● + Author PlanetLab Design Notes ● + Steering Committee Rotation	● + Part-time steering committee
Charter	$300K	● + Unlimited Slices ● + Steering Committee Permanent Seat ● + Direct Relationship with Director	● + Active Participation in all events ● + Active Participation in Steering Committee ● + Member Recruitment

Academic Members

Level	Benefits	Responsibilities
Academic	+ Negotiable Slices + Access to Director + Author PlanetLab Design Notes + Steering Committee By Invitation of Director	**Industrial Full** Level
Managing Party	Equivalent to **Charter** Industrial Member	

Contributions of Industrial Members

Major effort at early recruitment

> Intel devoted a marketer and significant management effort

> HP dedicated Jack Brassil and me to it

HP, Intel seeded > 100 sites in first two years

Significant recruitment of other industrial members

Major effort (spearheaded by Mic Bowman) to find industrial/enterprise applications of PlanetLab

Headline of Intel Developer Conference, 2005

Contributions of Industrial Members

Multiple joint HP-Intel development projects on PlanetLab

HP redesign of website (2005)

Intel (Mic, again) did all the PlanetLab documentation

Google sponsorship of Measurement Lab

    Still a major focus of PlanetLab research

Lessons From PlanetLab

+ Researcher as Director was key

  Intuitively understood what users were trying to do

+ Researchers as developers key

  Hard problem in infrastructure is communication between users and operators

  If you don't use it $\Rightarrow$ you don't understand it $\Rightarrow$ you don't know what to fix/build

Lessons From PlanetLab

+ Rapid, sensitive incident response

    One of PlanetLab's great strengths

    Key: Director understood needs of both researchers and institutions

+ Very strong institutional support from host institution

    Maria Klawe, Dean of Engineering, Stew Smith, Dean of Research

Lessons From PlanetLab

- Needed better work on the admin/paperwork side

  Should have had a dedicated Executive Director/Admin

- Commitment from companies is one executive deep

  Critical sponsors: Dave Tennenhouse (Intel), Patrick Scaglia (HP)

  And executives don't stay in jobs forever

- Commitment from academics also somewhat transient

  Needed buy-in from campus IT

- Didn't pay enough attention to end-user services/applications

Big Lesson From PlanetLab

Value Proposition is Critical!

An organization *must* know *why* it belongs to the consortium and what it gets

Need to get beyond a single influential sponsor

Keep central organization small and lean

Mostly did this right at PlanetLab

Key is almost all costs should be *internally* borne at sites

Not sent to central organization

Also breeds ownership at remote sites

Lesson for GENI: site costs and maintenance borne onsite

Big Lesson From PlanetLab

Pay some attention to administrative side

Choice of Director was absolutely critical

Steering committee harmony also vital

We all got along very well

Should have focused more on sustainability

Value Proposition

Why should I host a GENI node and/or pay for the central organization?

Separate answers for academics, academic IT, IT companies, other companies

Organization	Value Proposition
Academics	Enables me to do my research BetterFasterCheaper Not exclusively network people
Academic IT	Advances mission of institution (research, education) Helps with one or more current IT problems
IT Company	Understand/shape the next wave Image/Branding/Marketing
Other Company	Helps with one or more current IT problems

Example: Open Network Foundation

Over 150 members

Most "Adopter" ($30K/year)

Key Value Propositions

Hands-on opportunity to drive the formation of SDN through interactive working groups

Collaboration with the world's leading experts on SDN and the OpenFlow® Standard

Early access to emerging standards, frameworks, and use cases

Royalty-free access to the OpenFlow® protocol and associated standards, logos, trademarks, and intellectual property

Market visibility through ONF sponsored activities

GENI Value Propositions (Potential)

Key Premise: Distributed Cloud is the Future of the Cloud and the Internet

For everybody

Localized high-bandwidth low-latency distributed services

For academics

Backbone of future research infrastructures/infrastructure for future research

REAL, UAV City, Smart Campus…

Good reason to think it will work just fine….

SmartSantander + OneLab

GENI Value Propositions (Potential)

For Academic IT

SmartCampus Services

"Condo of condos": Cross-campus distributed Cloud

For IT Companies

Next Wave in Cloud Computing

Help in using/setting standards

Federated ID

multi-tenant multi-operator Cloud

GENI Standards (Potential)

Software-Defined Multi-Owner Multi-Tenant Infrastructure

SDI(X)

Key Components

Federated Identity

Sophisticated, site-specific AA

Deep Networking Specifications

Instantiation of Execution Information

This community does this better than anyone

Adopting ONF Propositions

**Hands-on opportunity to drive the formation of SDI (X) through interactive working groups**

Collaboration with the world's leading experts on SDI (X)

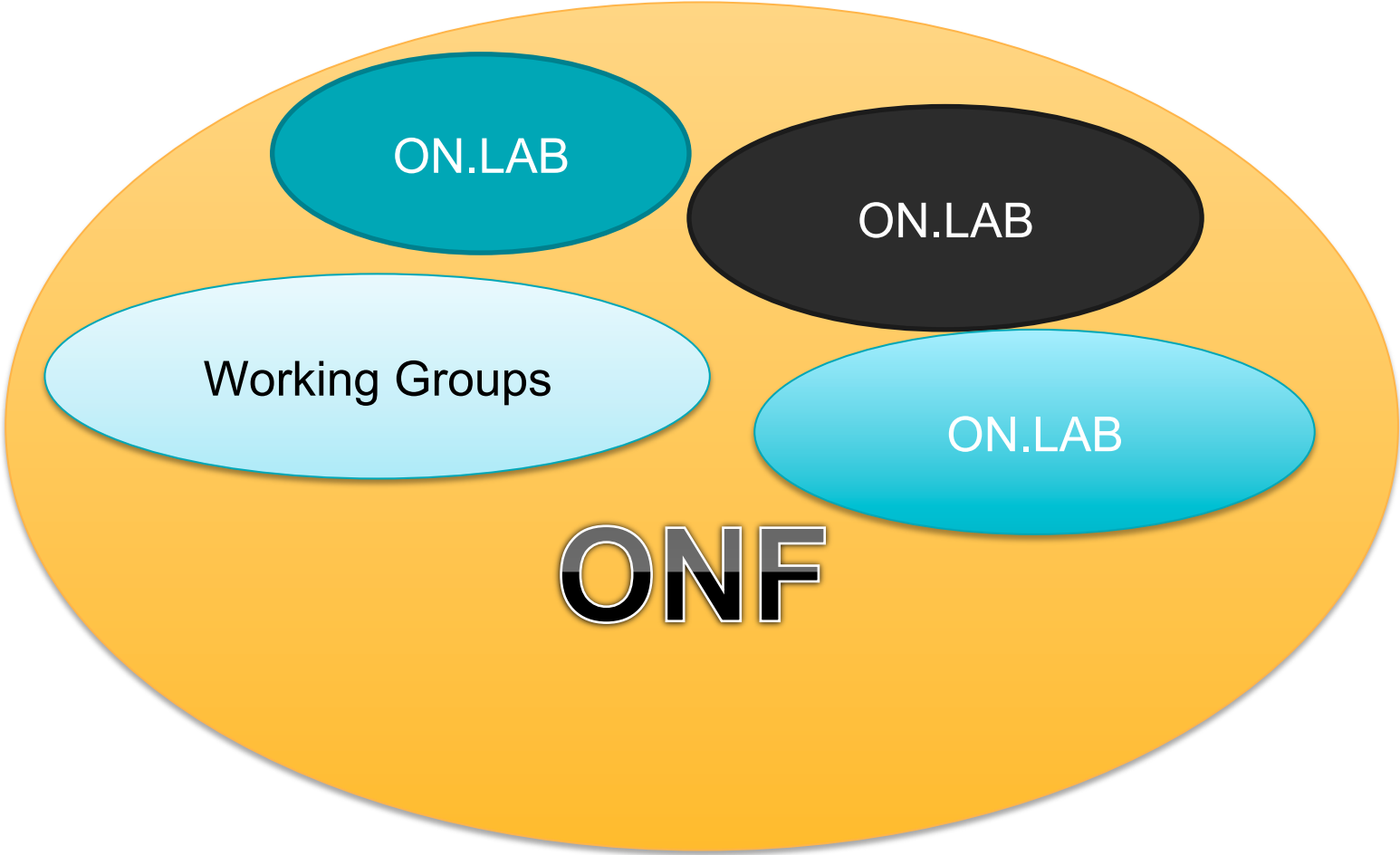**Early access to emerging standards, frameworks, and use cases**

Royalty-free access to the OpenFlow® protocol and associated standards, logos, trademarks, and intellectual property

Market visibility through **GENI-sponsored activities**
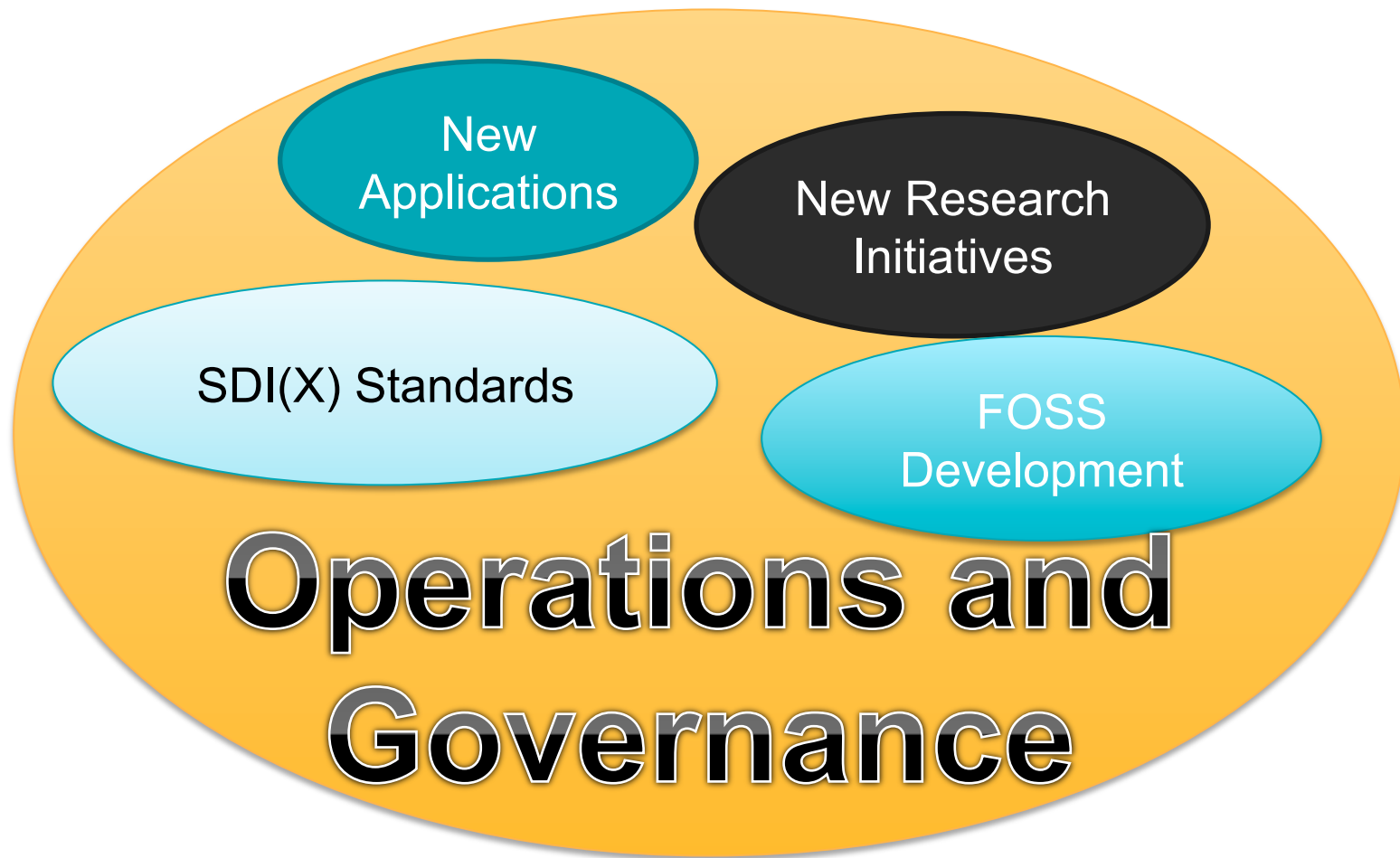
ONF Map

Key Takeaways

Focus on Value Proposition

Potentially the infrastructure for

       SmartCities research program (REAL)

       Advanced Cyber-infrastructure

       Edge Cloud localized applications (e.g., Visualizer)

       Cloudlet deployment (Satya)

Can set the standards and drive the reference software for commercial Edge Cloud