

A photograph of a narrow street in Havana, Cuba. The street is flanked by multi-story buildings with colorful facades (pink, yellow, and blue). A vintage car is parked on the left side of the street, and several people are walking in the distance. The title text is overlaid on a semi-transparent dark band across the middle of the image.

Initial Measurements of the Cuban Street Network

Eduardo Pujol

Will Scott

Eric Wustrow

J. Alex Halderman

The Internet in Cuba



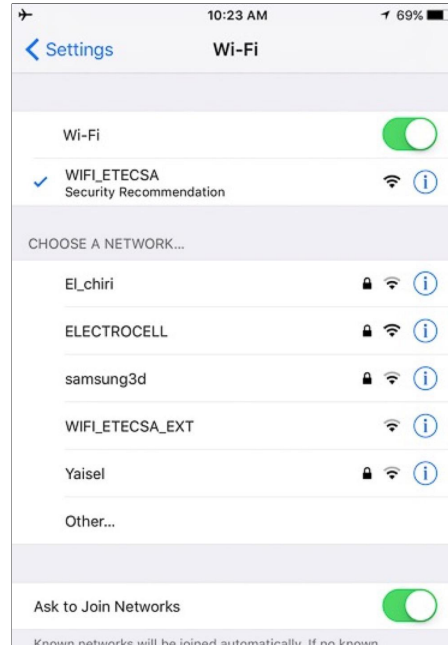
Unsanctioned Alternatives

El Paquete



[El Paquete Update](#)

WiFi Sharing

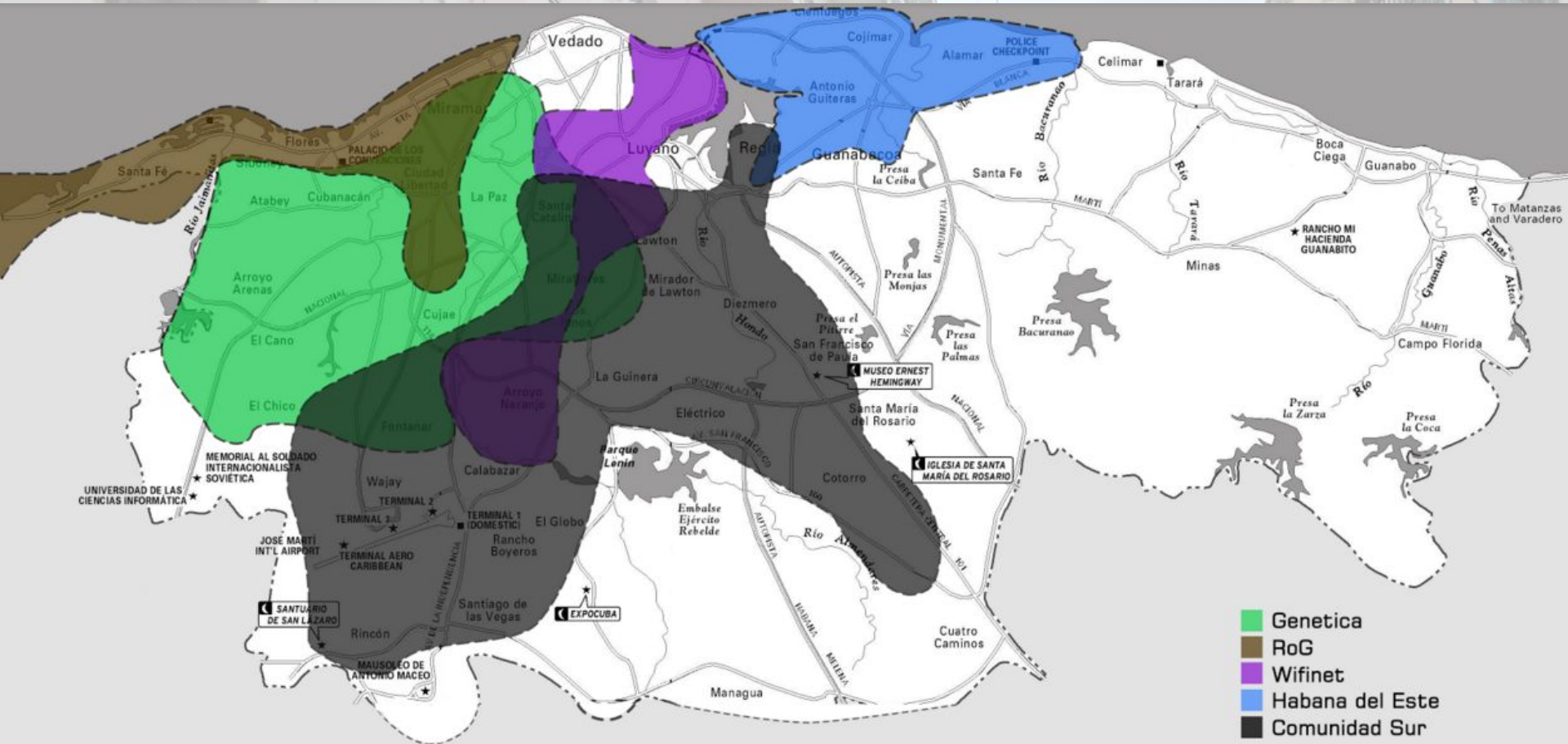


[How to survive your first 48 hours in cuba](#)

Isolated Networks



The Street Network in Havana



Our Study



Collaboration between U.S. academics and Cuban SNET community members.

First systematic characterization of SNET's:

- Network infrastructure and topology
- Available content and services
- Usage and user-base

Our goals:

- Document this unique deployment
- Encourage international collaboration

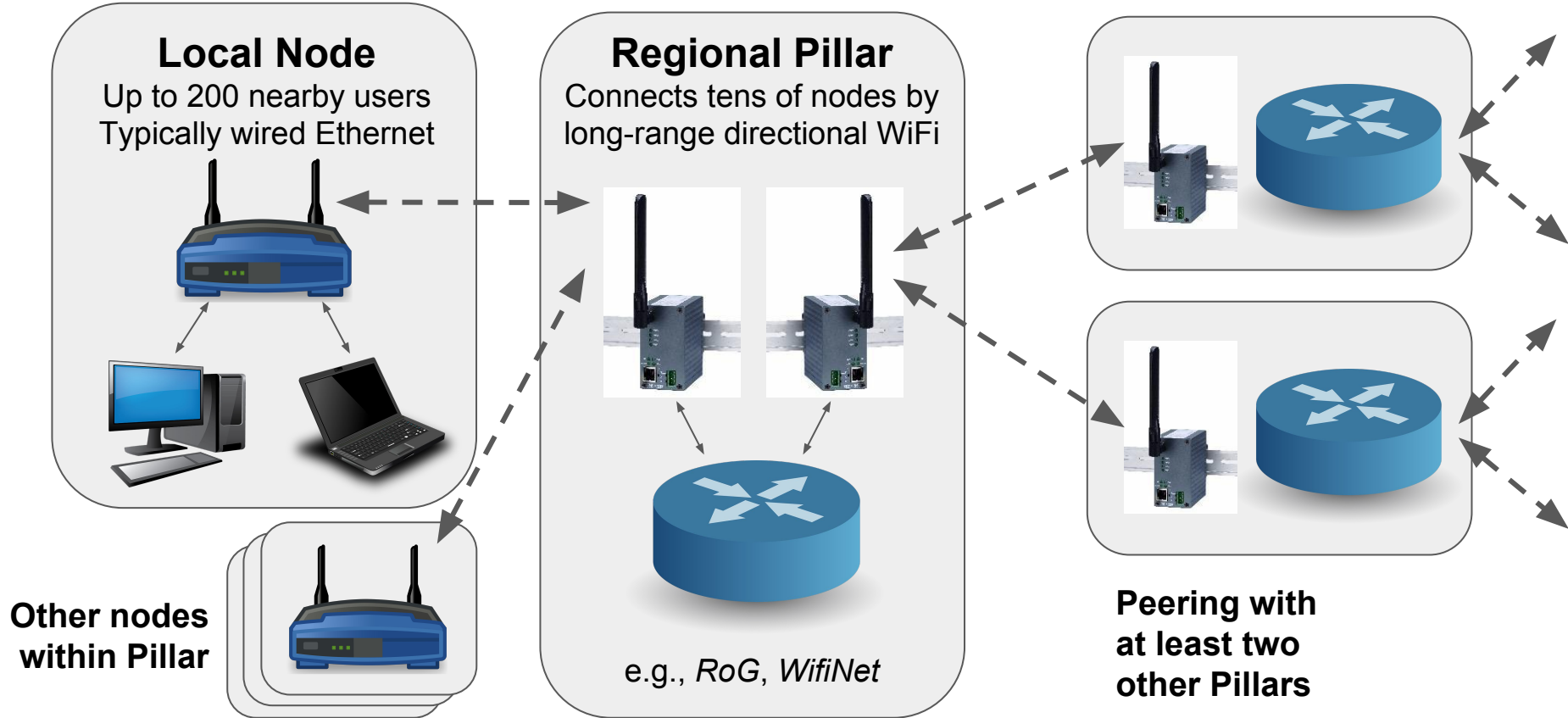


Alex Halderman and Eduardo Pujol

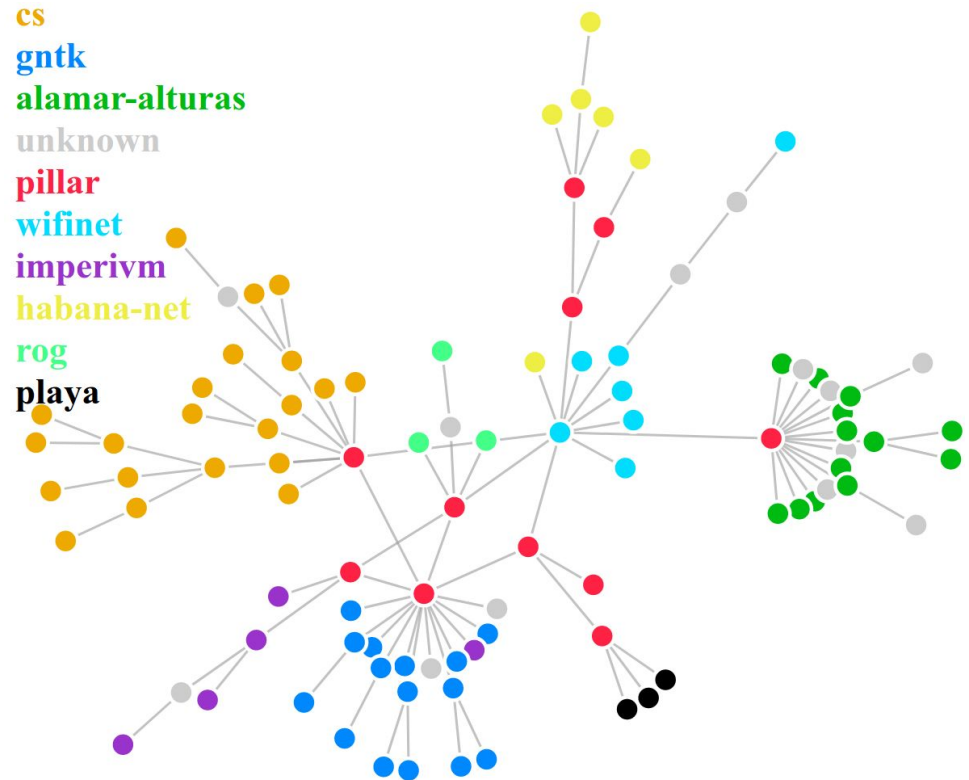
Methodologies

- Snowball sampling of Administrators.
 - Observations of hardware and physical deployments.
-
- Ping-scan to discover reachable prefixes.
 - Traceroute to discover topology.
 - ZMap on reachable prefixes for common service ports.
 - DNS AXFR to learn host names.
 - wget crawling of seeded HTTP servers for content.

SNET Organization



Topology



Router interconnections measured via MTR

Services

SCOPE Directorio de SNET

Directorio PDF API

Sociales Varios

Web Chats
Redes Sociales
Portales
Galeria de Imagenes

Foros

Blogs

Servidores de Juegos

WURM
World of Warcraft
The Sims
TERA Ascending
StarCraft II
Simuladores de Vuelo
RUST
Rocket League
Rainbow Six
Minecraft
Life is Feudal

1

[http](#) WifiNet

ultima revision: hace 10 Mnts.

2

[http](#) Habana.Net

ultima revision: hace 23 Mnts.

3

[http](#) Cerro Cerrado

ultima revision: hace 16 Mnts.

4

[http](#) NetLab

ultima revision: hace 49 Sgs.

5

[http](#) Comunidad Babylon

ultima revision: hace 15 Mnts.

Community Categorization

Category	Hosts
Gaming	73
Social Network	68
Internet Mirror	37
Technology	27
FTP	23
Commerce	23
Other	45

ZMap Scan Results

Service	Hosts
tcp/80 (HTTP)	2,986
tcp/21 (FTP)	2,052
udp/53 (DNS)	48

Experience

The screenshot shows a web browser with multiple tabs. The active tab displays a GitHub repository page for 'Carola'. The page header includes the GitHub logo, a search bar, and navigation links like 'Panoramica Del Nodo' and 'Ir Al Chat'. The main content area shows a list of projects under the 'Explore projects' tab. The projects listed are:

- Cartman / Carola** (Carola)
- netlab / google-fonts** (A clone of Google Fonts.)
- frank / diaspora** (Este es un clone de diaspora desde GitHub)
- GRUPO_LIFE / SNETchat** (Es un chat con el cual pretendemos 2 cosas sumamente importantes: 1- Aunque se caiga la coneccion de un...)
- TIEVO / Zen_Garden**
- Daniel / netlabfonts**
- Kronhyx / GameLeap** (Mirror del sitio GameLeap de DotA)
- CodeGK / X-Chess** (Juego de ajedrez para Snet)

Below the list of projects, there is a section for 'Juego de Tetris' with the text 'Implementamos dentro del Chat, la opcion' and a circular icon. The chat interface is visible on the right side of the screen, showing a search bar and a list of projects. The chat interface also includes a search bar and a list of projects.

SNET Rules



Inicio

Reglas

Noticias

Eventos

Directorio

Ideas

Equipo de Trabajo



Reglas Habana – Este

Red Habana Este > Reglas Habana – Este

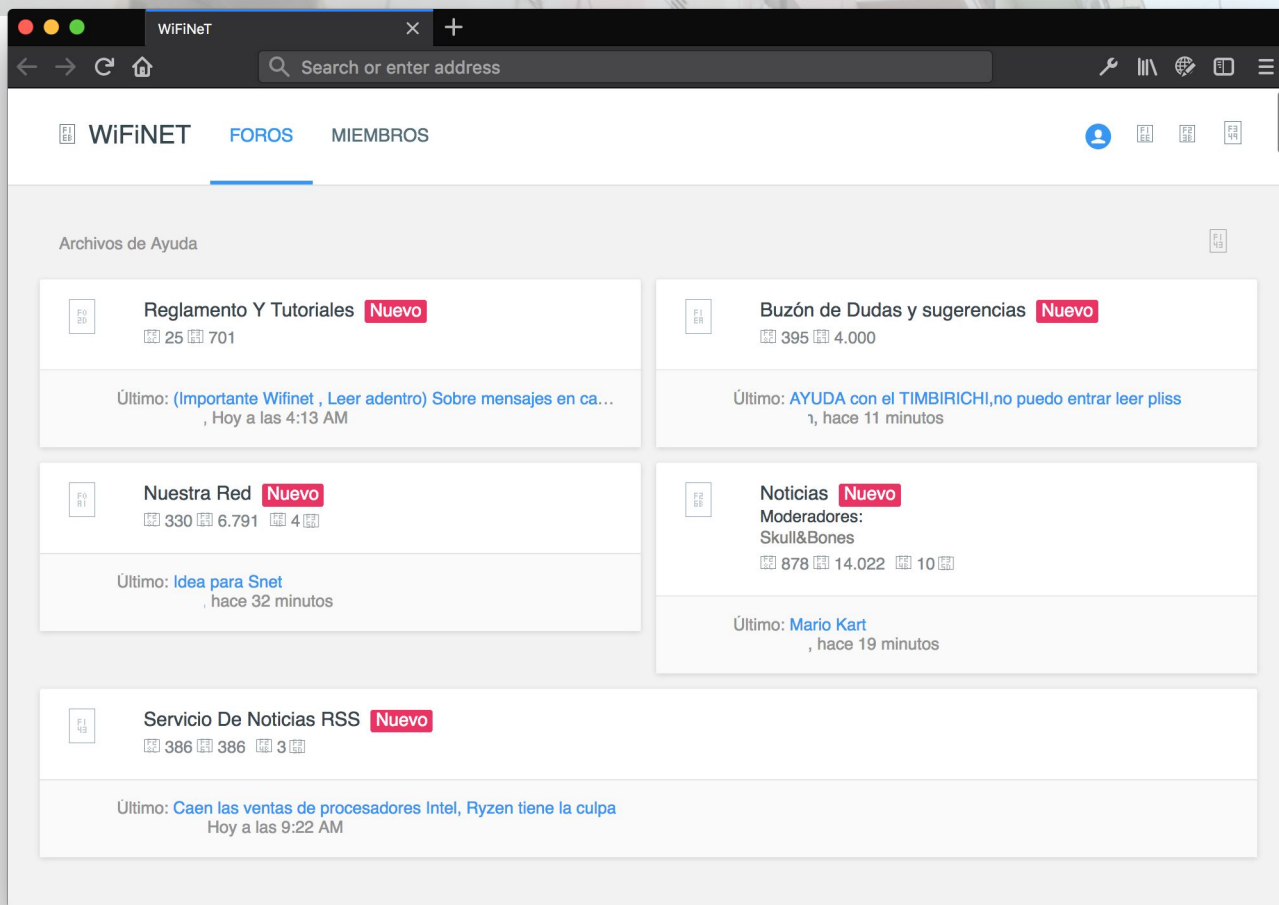
Reglas Generales de SNET

1. Prohibido el uso de SNET para atentar contra el orden interior, la seguridad del país o la estabilidad del Estado Cubano.
2. Prohibida cualquier acción, actividad o contenido que dañe la infraestructura de SNET, sus servicios, o perjudique a otros usuarios de la comunidad vía robo de equipos, hacking, sabotaje a cables de red, fraude, spam masivo, flooding, u otro tipo.
3. Prohibido ofrecer servicios dentro de la red como:
 1. Servicios de Internet.
 2. Servicios de TV o Radio extranjeras.
 3. Compartir pornografía.
 4. Servicios con carácter lucrativo
 5. Otros de carácter ilegal en el país.
4. Prohibido cualquier contenido que denigre o afecte la visión de SNET o de nuestro

Sanciones

NIVEL DE SANCIÓN	SANCIÓN	RANGO	
		MÍNIMO	MÁXIMO
Muy Grave	Desconexión permanente de SNET	-	-
	Desconexión Temporal de SNET	3 meses	-
Grave	Desconexión Temporal de SNET	15 días	3 meses
Moderada	Aislamiento de SNET(Sin desconexión)	5 días	15 días
	Suspensión de todos los servicios oficiales	7 días	1 mes
	Suspensión de todos los servicios de juegos oficiales	7 días	2 mes
	Suspensión de un determinado servicio	7 días	3 mes
Leve	Suspensión de un determinado servicio	1 días	7 días

Users & Community



WifiNet Forums

Users: 56,000

Women: 30%

Active: 500+

Pain Points

- Infrastructure Costs
 - No equipment we saw cost more than \$100
- Identity
 - No internal email or centralized identity
- Software Updates
 - Many instances of software 8 years out of date
- Interpersonal Conflicts & Community Organization
 - Some communities which could technically connect are not because of administrator disputes
- Uncertain Future
 - The network is currently unregulated, and there are occasional crackdowns

Take Aways

Cuba is networking, even as official Internet access lags.

Havana's SNET may be world's largest isolated community network.

Would the Internet look more like the SNET if history had taken a different course?

SNET has unique problems, and some original solutions. International collaboration can enrich everyone.



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