



Geopolitics of Internet Infrastructure

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Renesisys: 10 Years of Internet Intelligence

We study the engineering, economics, performance, and security of the Internet.

- Hundreds of service providers worldwide share realtime data with us about their best paths to each of the world's 450,000 routed networks
- We augment with inference of business relationships; continuously verify performance and connectivity using active measurements from around the world
- This kind of thing matters a lot to network service providers, the financial services industry, governments, and global enterprises who rely on Internet connectivity

So, Isn't Geopolitics Dead? (The Internet Said So)

The Internet magically:

- “flattens” the world
- eliminates distance and borders
- stimulates nonviolent political reform
- supplants official media outlets
- sidesteps unreasonable local laws
- creates civil society ex nihilo
- makes the whole Westphalian system of “states” and “international relations” totally irrelevant.

Did I miss anything?

The Infrastructure Isn't Flat

- Tens of thousands of contracts between consenting parties created the Internet
- These companies maximize profit according to local rules and business conditions
- The Internet is physical, crosses borders, gets messy

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Credit: Tony Hisgett

Let's Take A Very Brief Internet Tour

- **Tangier to Bishkek**
- You'll see several familiar things that matter a lot:
 - cable routes and cable landings
 - energy pipelines
 - national borders
 - longstanding grudges
 - existing political relations
 - aspirational political relations



Ibn Batutta (1304-1368)

(أبو عبد الله محمد ابن عبد الله اللواتي الطنجي بن بطوطة)

- Travelled the world for 30 years, from Tangiers to China *and back again*
- Described **rich 14th century networks** of trade, scholarship, commerce, communication



The Maghreb: Reasonable Connectivity

- Morocco, Algeria, Tunisia, Libya served by short submarine cables from Europe
- National incumbents play dominant roles
- Many global providers available (Level3, Tinet, TI, Telefonica, Telia, DT,..)



Egypt: Historical Bottleneck

- Major submarine cables land at Alexandria, traverse the Suez
- Great diversity of providers available...
- ...but Telecom Egypt controls much of physical infrastructure
- Physical infrastructure diversity shortfall exposed in 2011 by Mubarak killswitch



Eastern Mediterranean (1)

- Israel lands cables from Sicily, Cyprus, diverse from region
- Palestinian Territories limited to Israeli physical infrastructure, but increasingly buying from European carriers
- Jordan has submarine landings at Aqaba, terrestrial from Saudi, Turkey via Syria



Eastern Mediterranean (2)

- Lebanon previously had only meager connectivity from Cyprus, plus satellite Internet
- IMEWE cable landed 2010, just coming online now (politics)
- Syria similarly starved for submarine connectivity (Cyprus, Lebanon)



Turkey: Ascendant Terrestrial Hub

- Major fiber paths to Europe follow the old roads
- Turkey positioned to become major regional exporter of Internet transit along terrestrial paths south and east
- Turk Telekom, TurkCell/Superonline building fiber to Iraq, Caucasus, the Hejaz

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Gulf States: Looking For Alternatives

- Submarine paths: historically fragile
- At least three new consortium paths offer terrestrial connectivity to Europe, Asia
- Countries vying for regional transit hub status, economic benefits
- Bahrain leads regulatory push for open competition, lower prices

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Four Terrestrial Alternatives for the Gulf

- **JADI (Jeddah-Amman-Damascus-Istanbul)**
- **RCN (Fujairah-Riyadh-Amman-Tartous-Istanbul)**
- **EPEG (Oman-Iran-Azerbaijan-Russia-Frankfurt)**
- Potential Iraqi North-South routes from Basra to Turkey via Kurdistan
- *Interesting engineering, interesting politics*
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Iraq: Rebuilding, Surrounded By Interests

- *Southbound* submarine cable landings at Basra connect to Gulf states
- *Westbound* terrestrial connectivity to Jordan, Saudi Arabia, Syria
- *Eastbound* terrestrial connectivity to Iran and on to Azerbaijan
- *Northbound* terrestrial connectivity to Turkey
- Future regional hub?
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Iran: Self-sufficient, *exporting* Internet

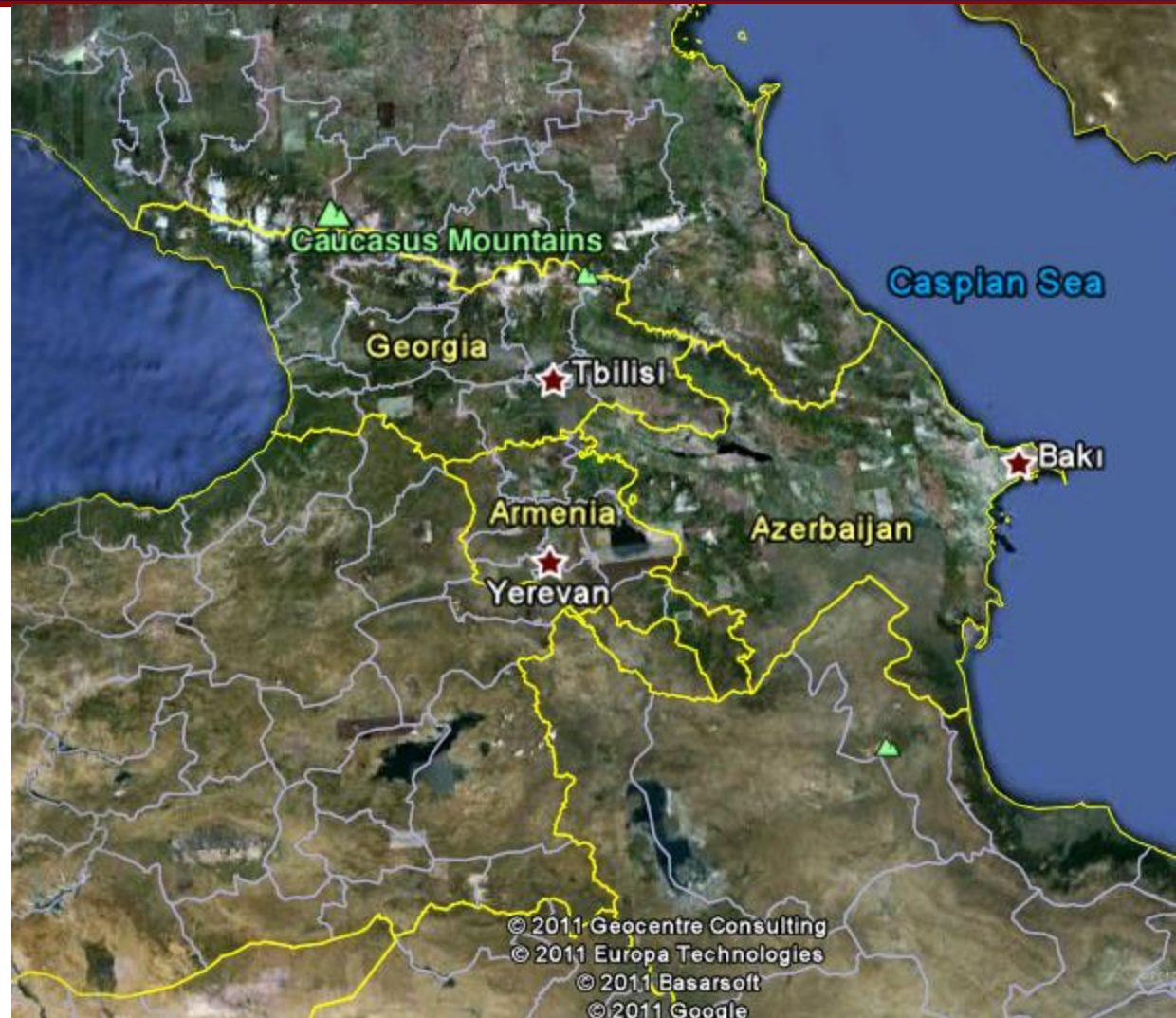
- Iran's Internet comes from Russians via Baku, or from the Gulf via submarine cables
- Iran would like to separate from the Internet and go it alone. But they also use the Internet to project regional influence.
- Iran *sells* Internet transit to Iraq (Kurdistan) and Afghanistan (Herat region)



Caucasus: Skirting the Russian Sphere

- Georgian East-West transit follows energy pipelines, links to Turkish terrestrial and Black Sea submarine
- Azeri providers (Baku-IX) and future Transcaspien fiber routes seek backup paths to Europe
- *Risks: “Grandmas with hacksaws”*

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Wall

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Hayastan Shakarian

Like

 Entertainer · [Armazi, Akhagoris Raioni, Georgia](#)

Basic Information

Location
[Upatree, Armazi, Georgia](#)
Affiliation

Anti-Armenia

Birthday

August 6, 1936

Biography

Hayastan Shakarian is the single most powerful woman in (way) Eastern Europe.

With just the raw power of her arms and a wood saw she was able to bring the state of Armenia to its knees, crippling communications and disrupting the lives of its 3.3 million citizens.

Hayastan Shakarian, known as HaSh amongst her close friends, has lived through various conflicts in her glorious 75 years on Earth. She fought with the Red Army in WWII, rallying the weary men around her to lead a push into Nazi... [\(read more\)](#)

Awards

The Order of Victory

Gender

Female

Personal Information

Steal copper for a living. Part-time social activist. I keep people in check.

Personal Interests

Copper Jewellery
Spades and Shovels
Hand Saws
Sticking it to the Man

Website
<http://www.bbc.co.uk/news/business-13158351>

Central Asia: “The ‘Stans’”

- Most still transit Russian providers, but paths to China are opening
- Uzbek transit served Afghanistan when links to Pakistan were severed
- New Turkmenistan pipelines to Iran may offer alternative paths
- Caspian Sea fiber?



Russia's Regional Influence: On-Net %

- 90%+
 - AZ, KZ, KG, BY
 - UZ, TJ, TM, RU
- 73% Armenia
- 50% Latvia
- 30-35% IR, GE, MD, UA
- 11% Iraq
- 9% Afghanistan



Conclusions and Food for Thought

- Obvious geopolitical linkages between energy security and information transport (fiber follows pipelines)
- Submarine fibers laid by coalitions through international waters are safe from meddling, but hard to repair
- Terrestrial fibers crossing national borders, operated by national incumbents, have their own political risks
- Several countries are skillfully building spheres of influence, in which cross-border flows of energy, information, and transportation are used together to build relationships
- Turkey, Russia, Iran, and (from afar) China each control a significant region of this competitive space. Significant economic development is at stake. Stay tuned!



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