



# The Future of Internet Why Are We Here, and Where Will We Go?

**Patrik Fältström**  
**Office of the CTO**  
**Cisco**

# We move into the third phase of the Internet

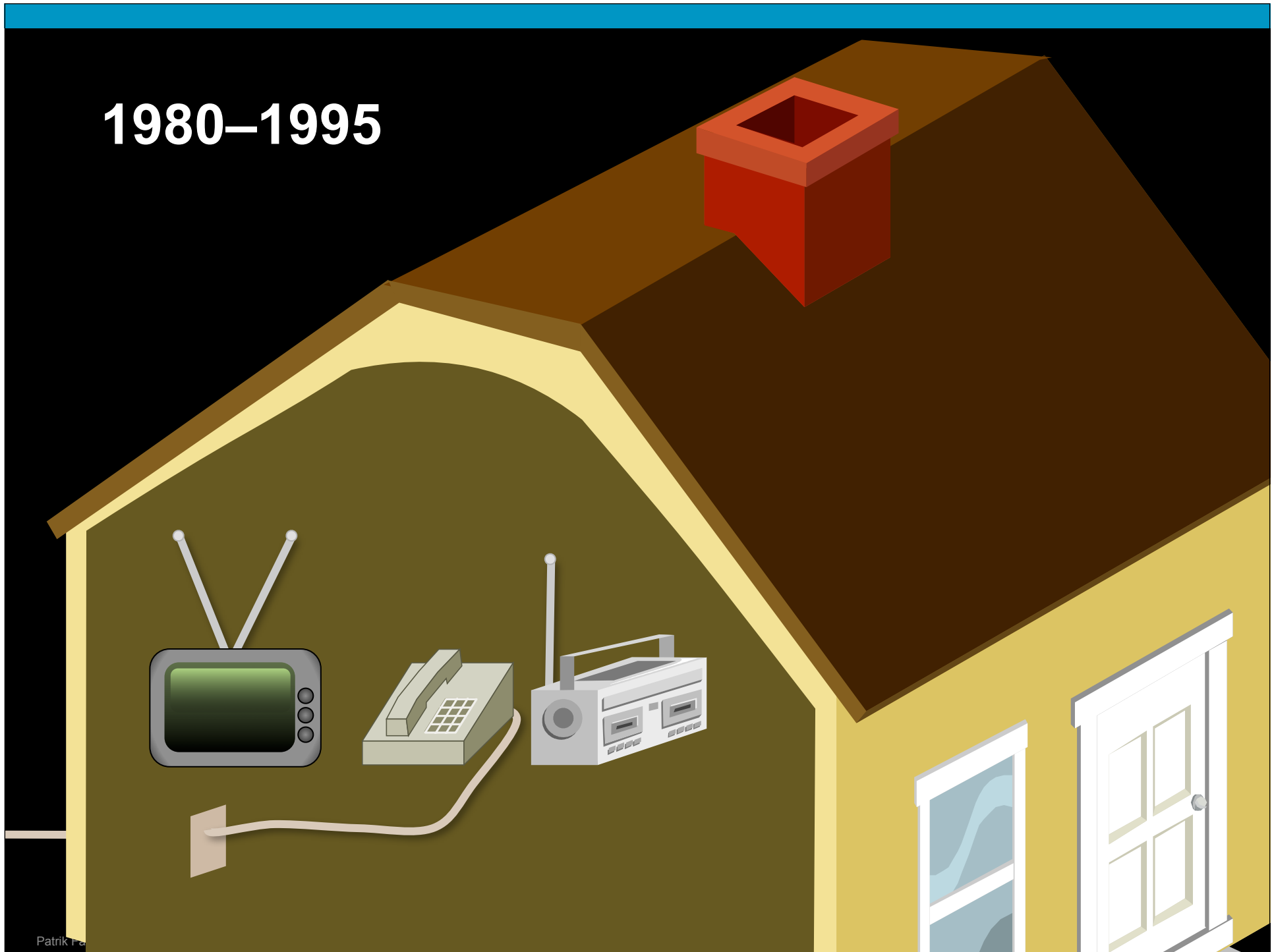
- 1980-1995 : Era of deregulation and competition, Internet arrives
- 1995-2010 : Early days of Internet, service providers, social networking, mobile Internet
- 2010-2025 : Internet takes off...

# 1980–1995



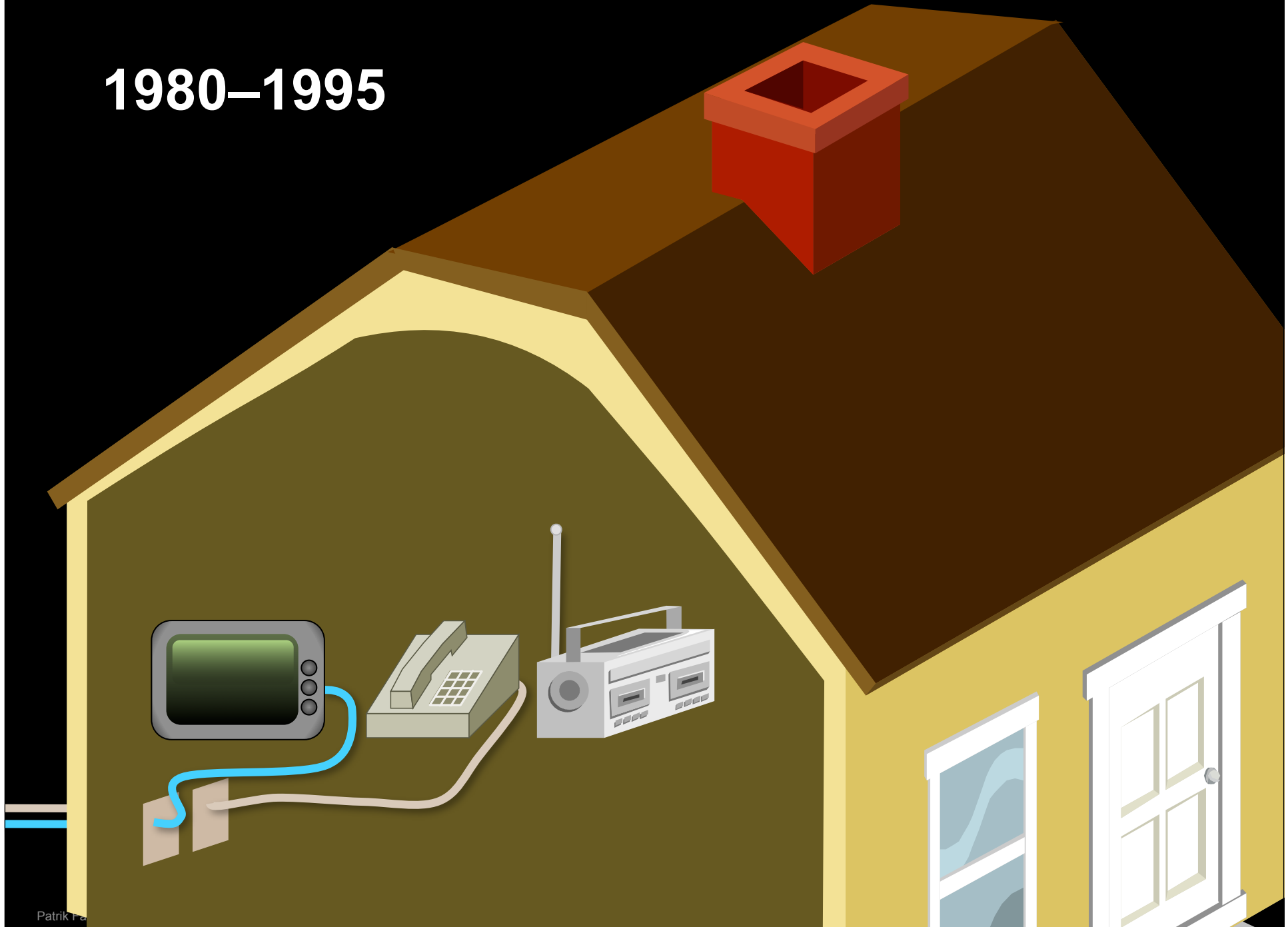
Source: <https://www.isc.org/solutions/survey/history>

1980–1995

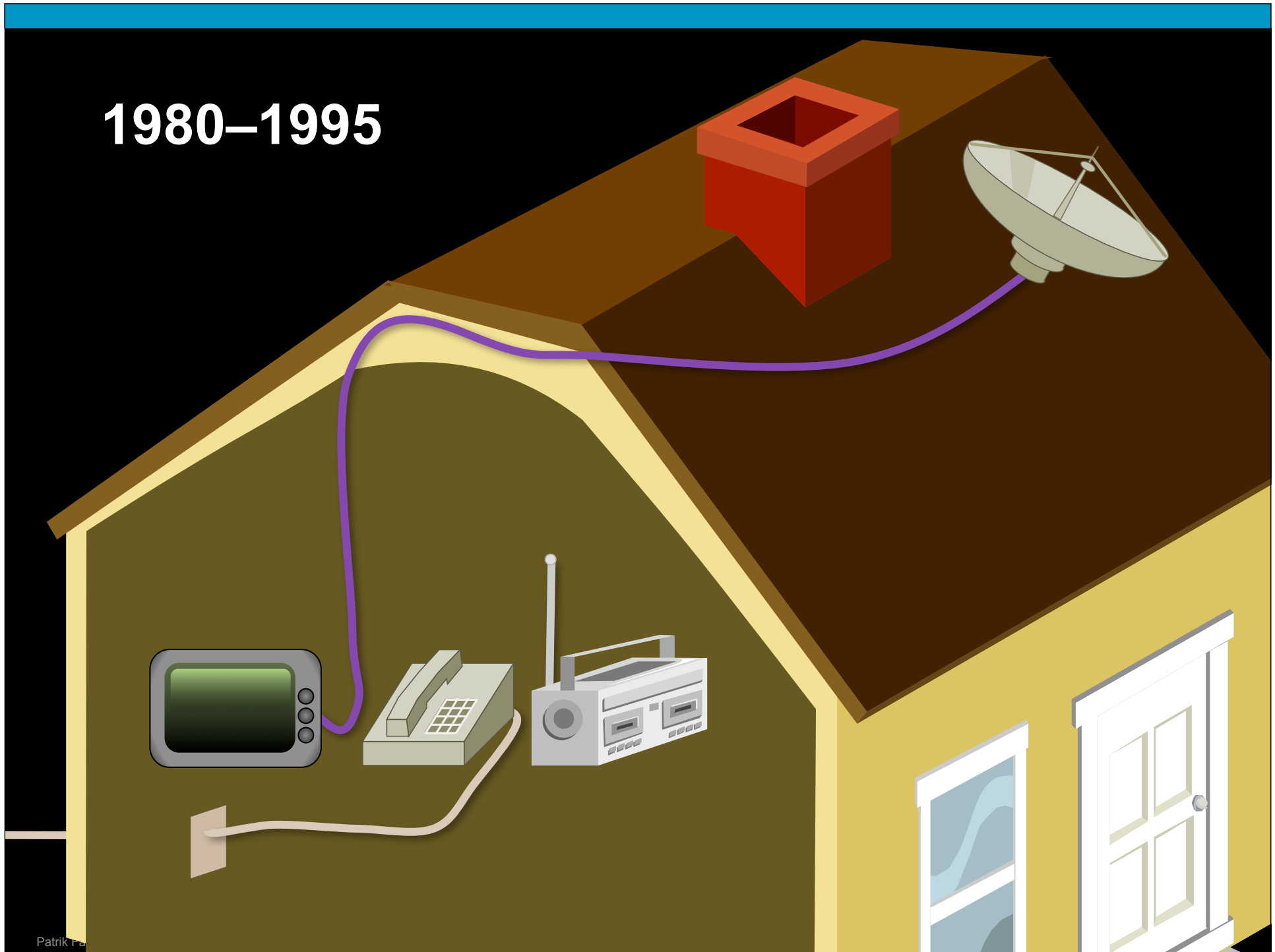




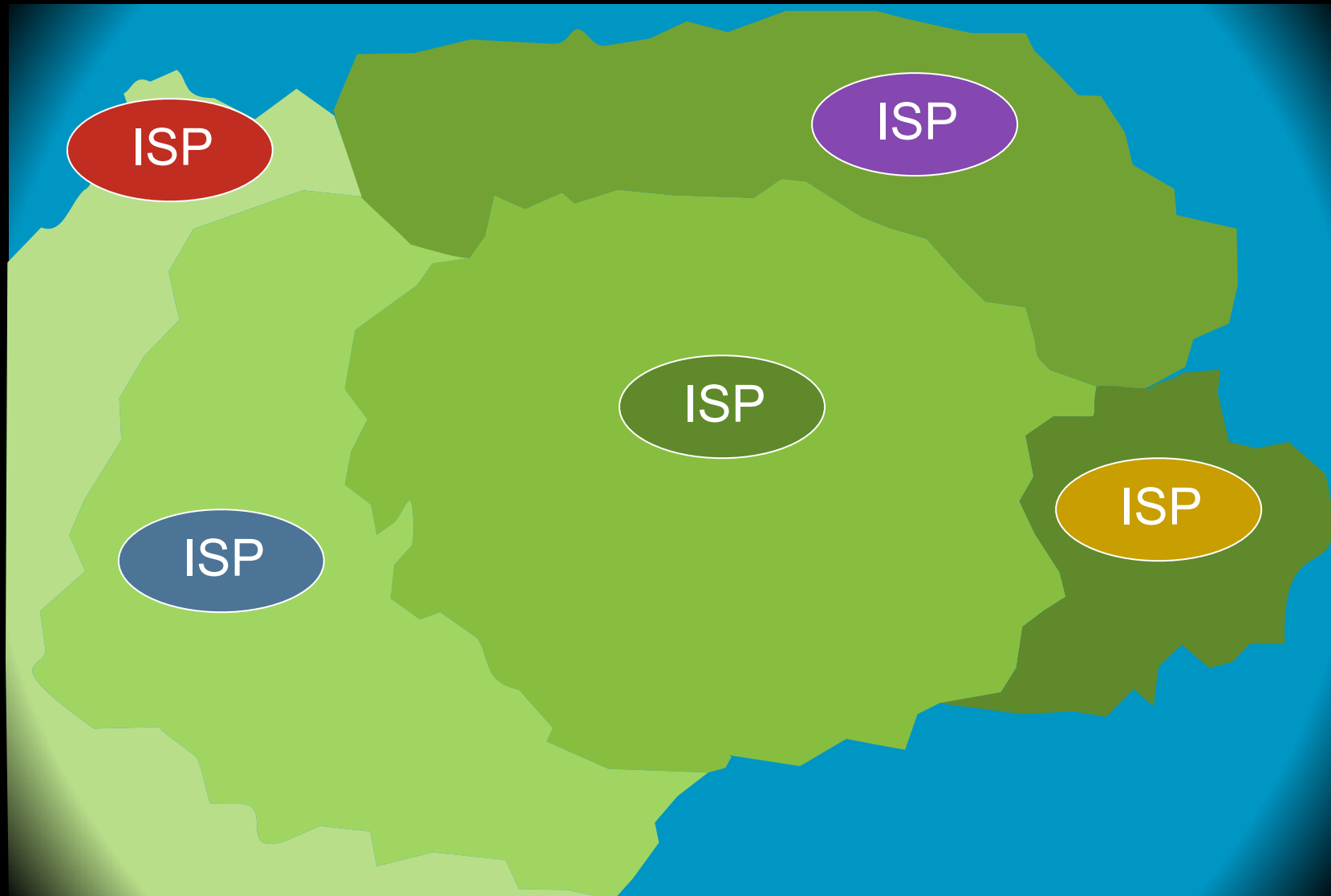
1980–1995



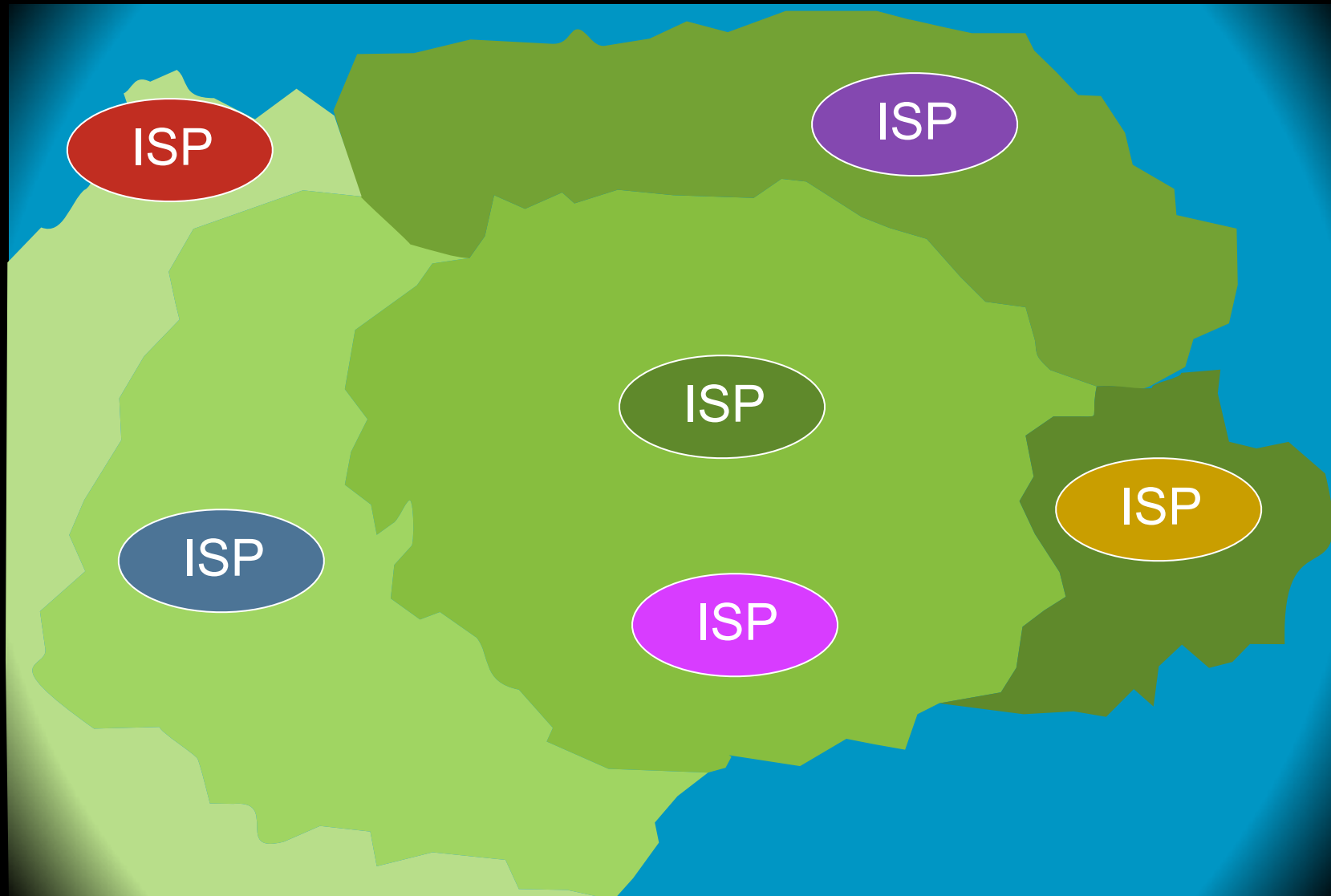
1980–1995



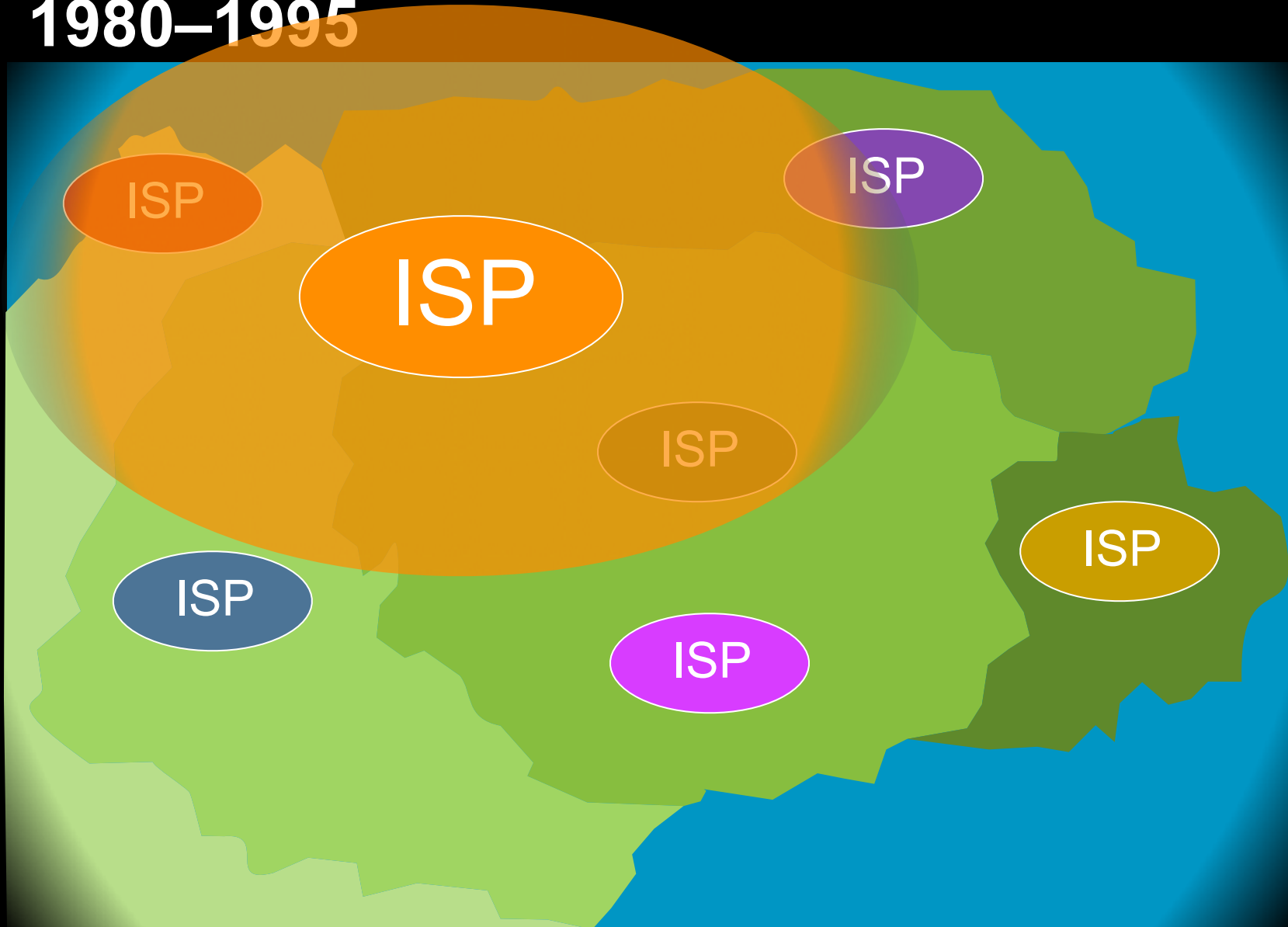
# 1980–1995



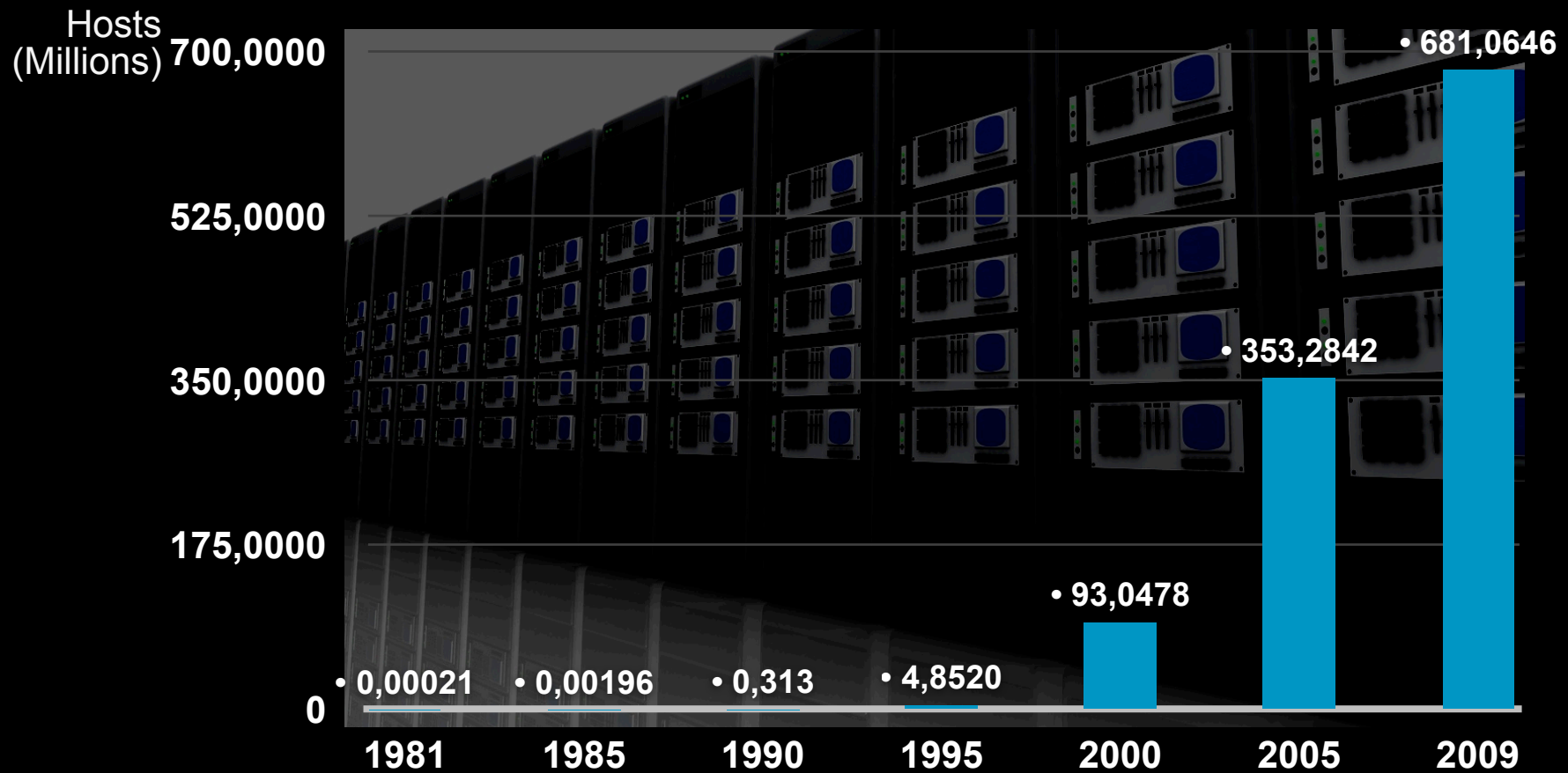
# 1980–1995



1980–1995

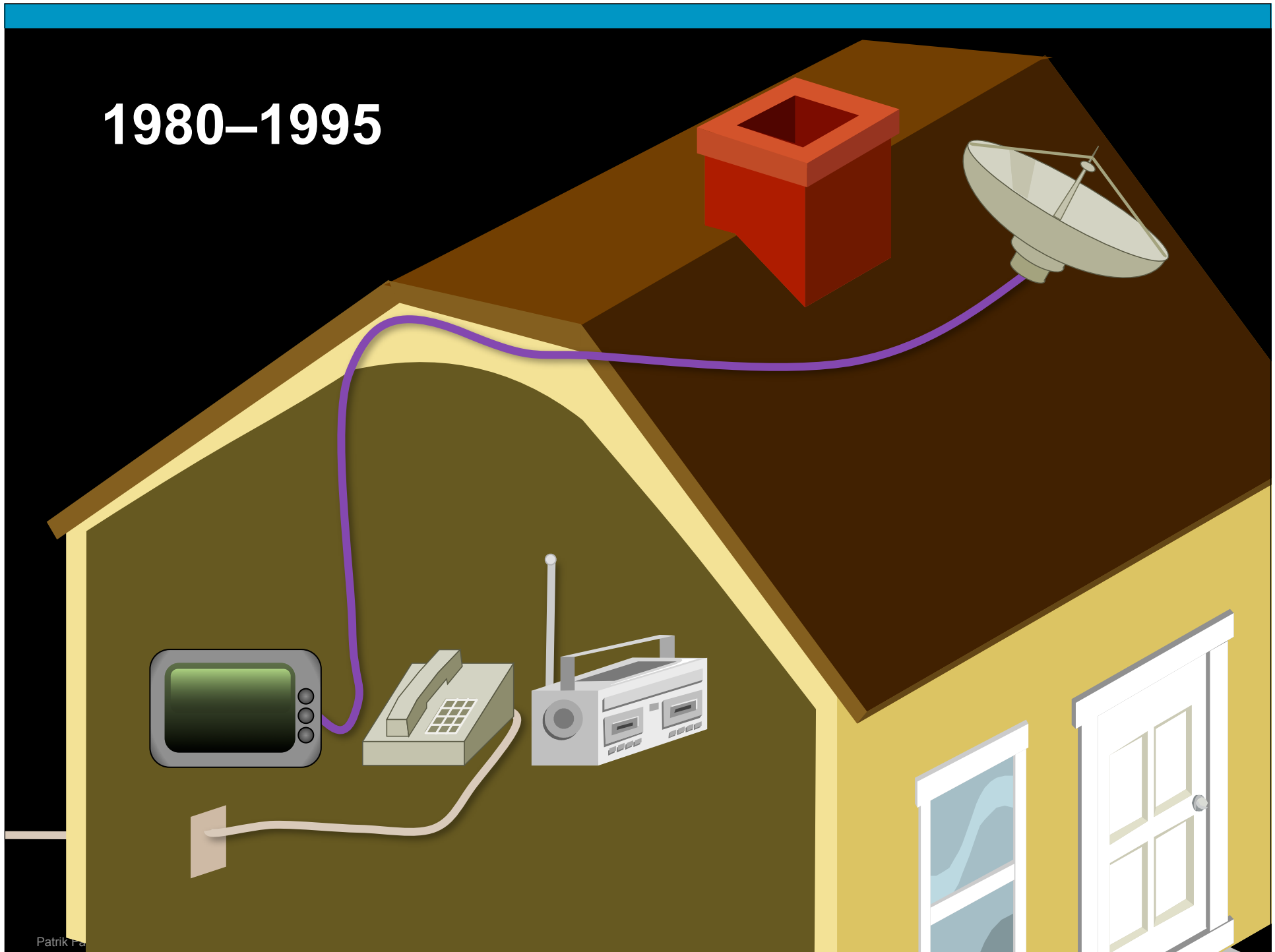


# 1980–2010

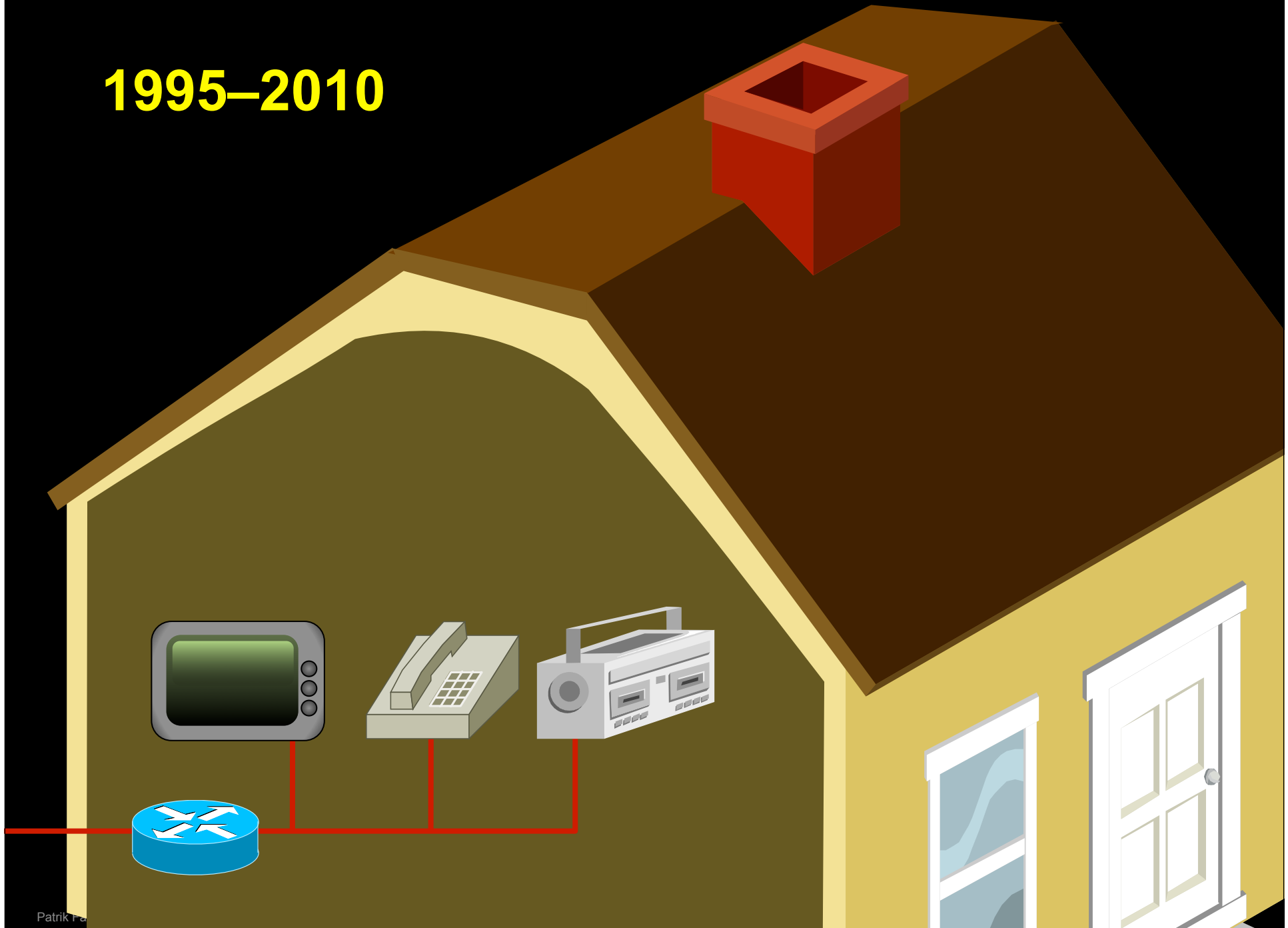


Source: <https://www.isc.org/solutions/survey/history>

1980–1995



1995–2010





1995–2010

 iTunes

flickr

You 

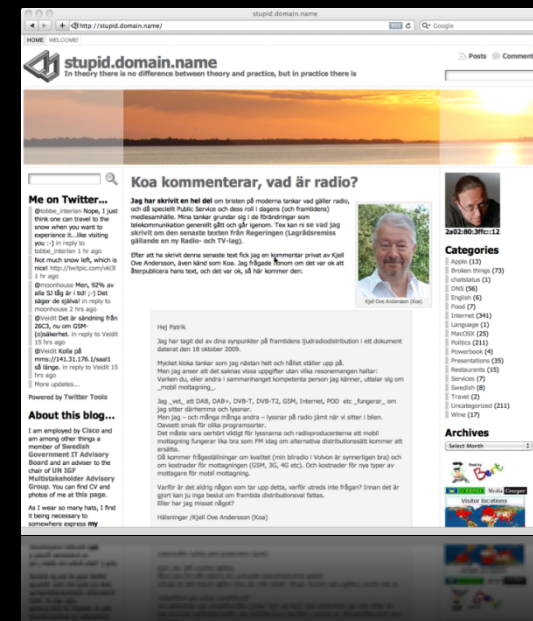
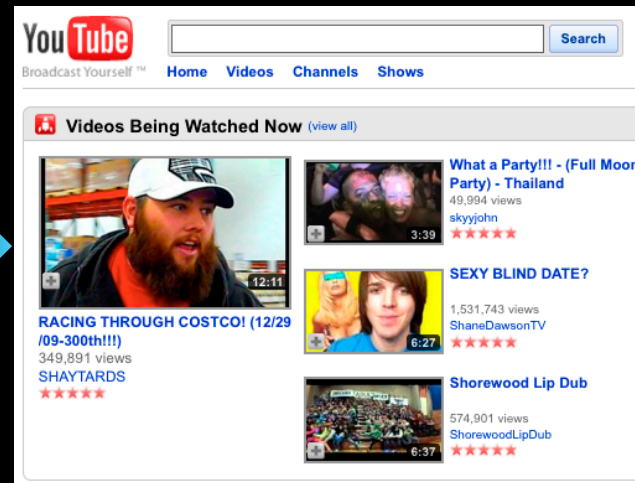
# Changes



# Changes



# Changes



# 1995–2010 Layering

Historically,  
Vertically Integrated

Service  
Transmission  
Wire

Service  
Transmission  
Wire

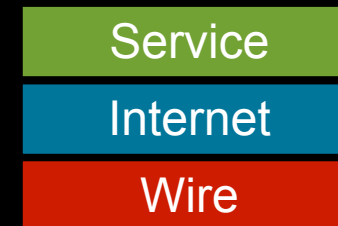
Service  
Transmission  
Wire

# 1995–2010 Layering

Historically,  
Vertically Integrated



New,  
Horizontally Integrated

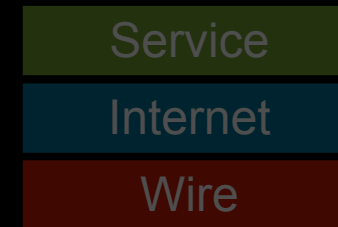


# 1995–2010 Layering

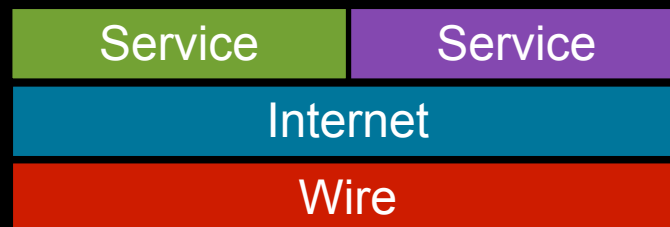
Historically,  
Vertically Integrated



New,  
Horizontally Integrated



Specifically, It Can  
Lead to This:



Competition between  
Providers of Services

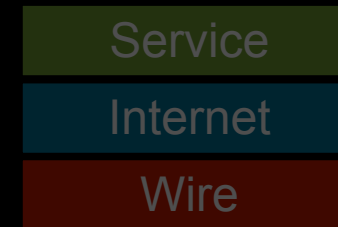


# 1995–2010 Layering

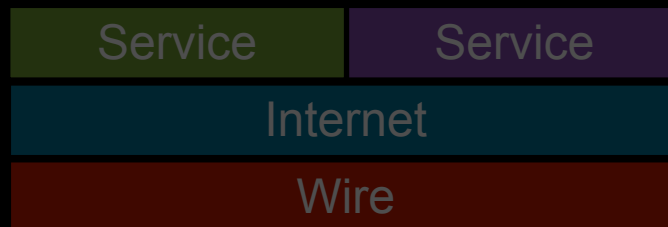
Historically,  
Vertically Integrated



New,  
Horizontally Integrated

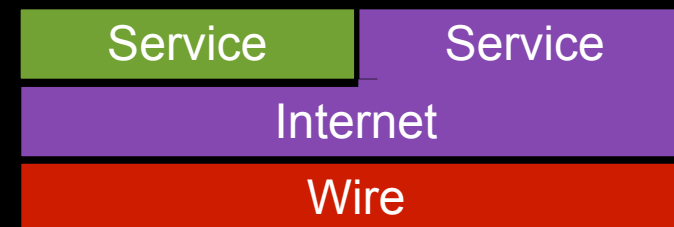


Specifically, It Can  
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Competition between  
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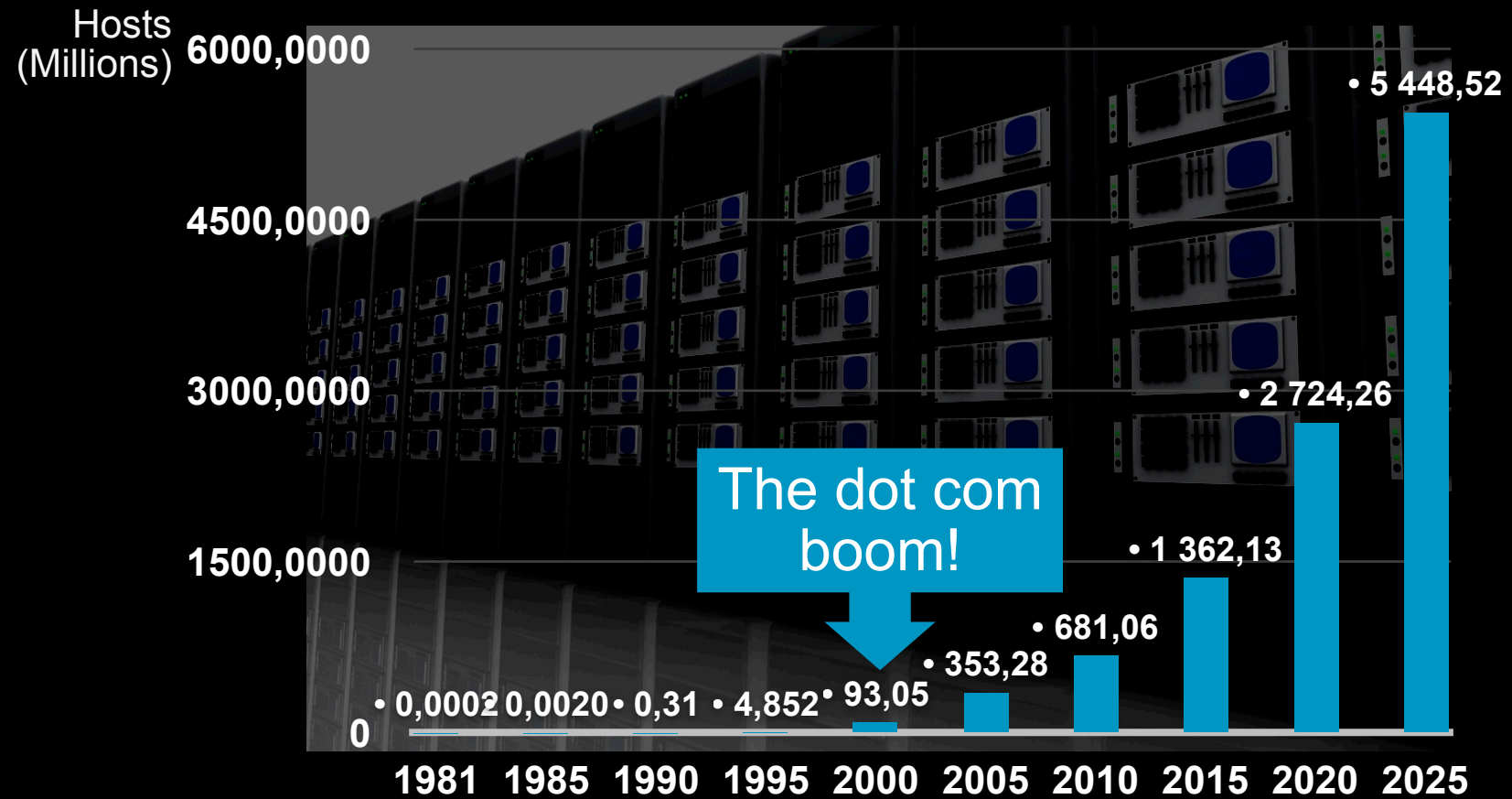
But Unfortunately,  
also This:



Where the Provider of Internet  
Can Be Non-Neutral  
Regarding Services

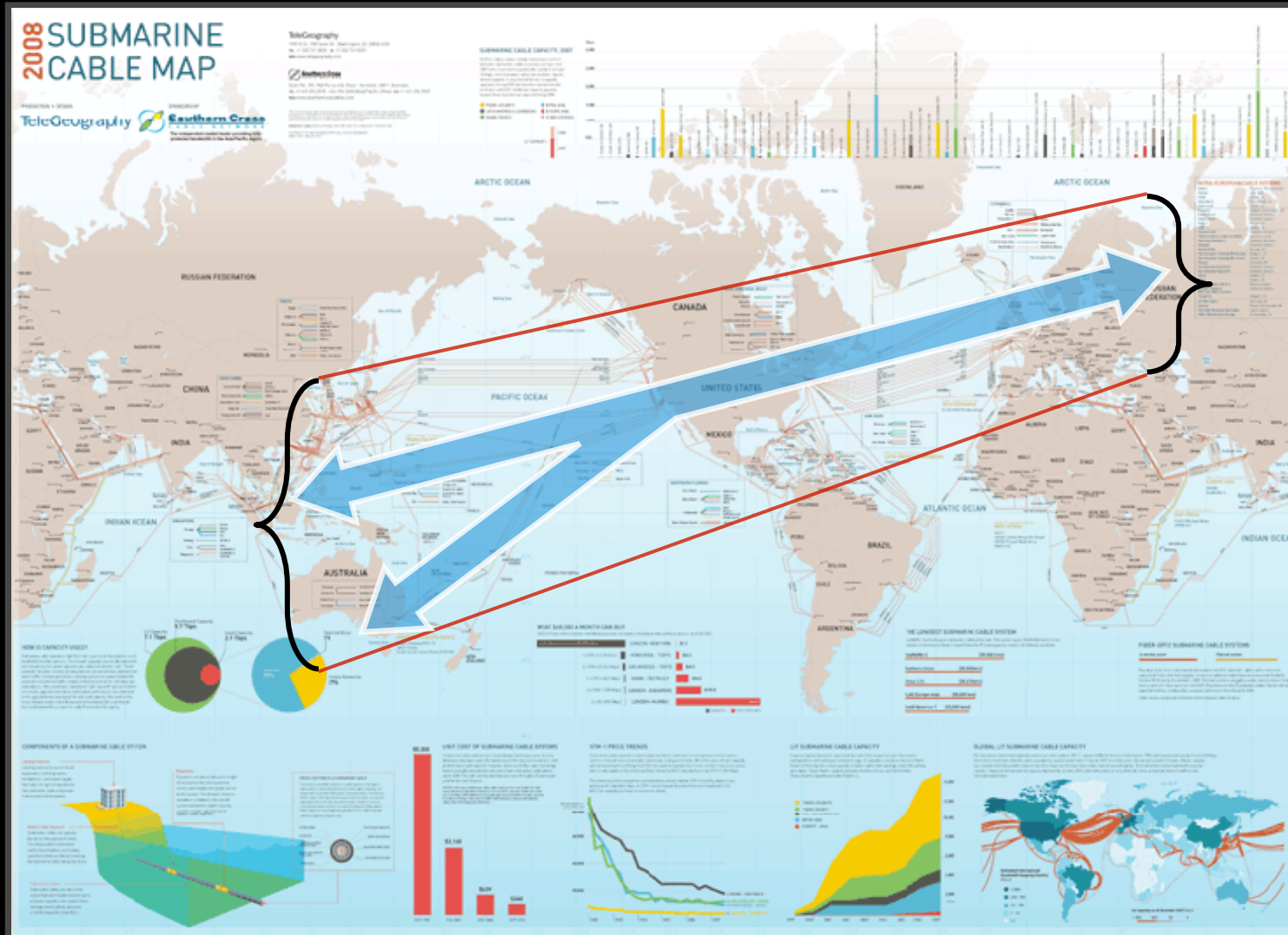


# 1980–2025 Hosts



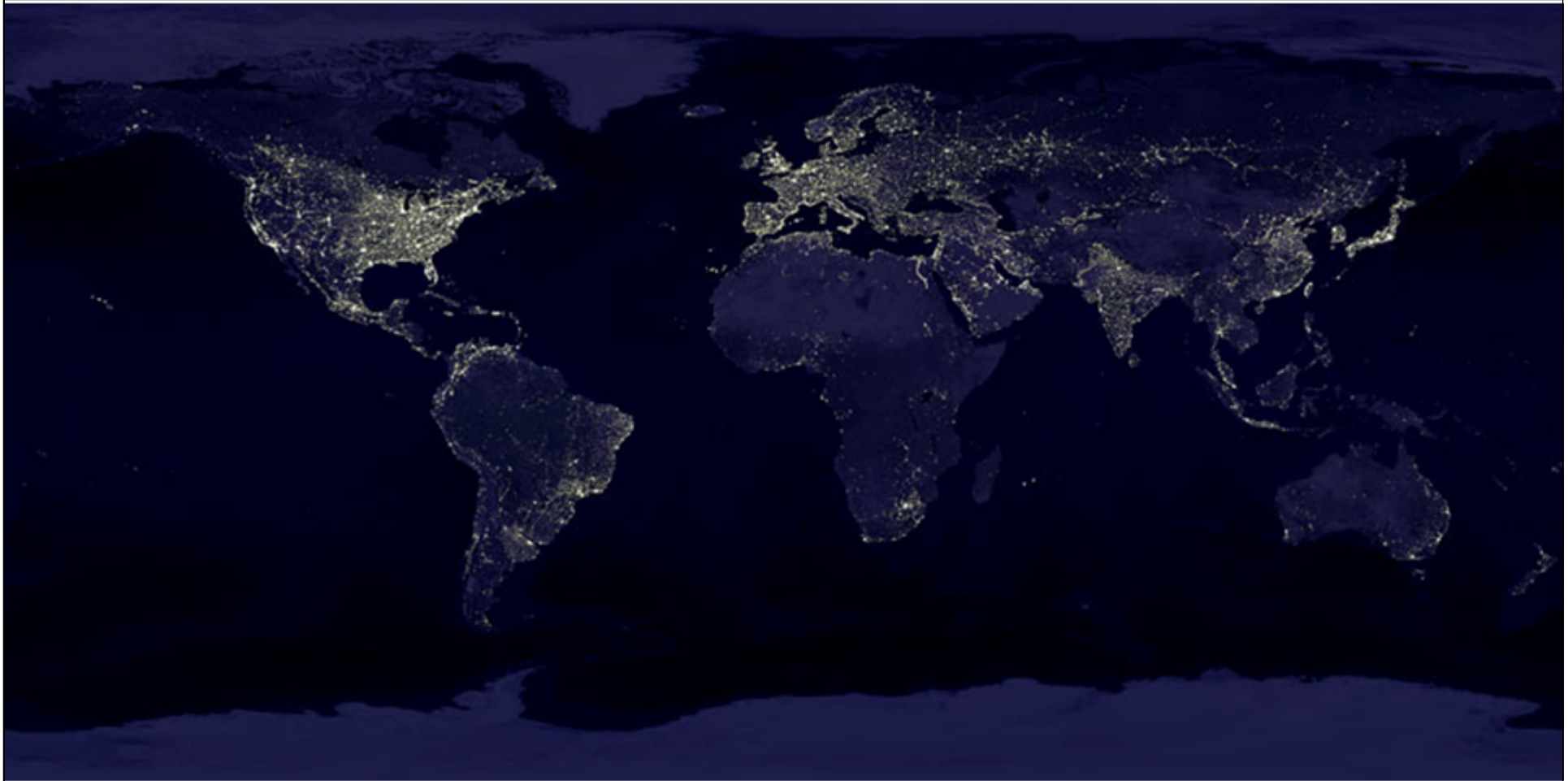
# Where Is the Broadband Internet Today?

## The Europe/America/East Asia/ANZ Fiber Corridor



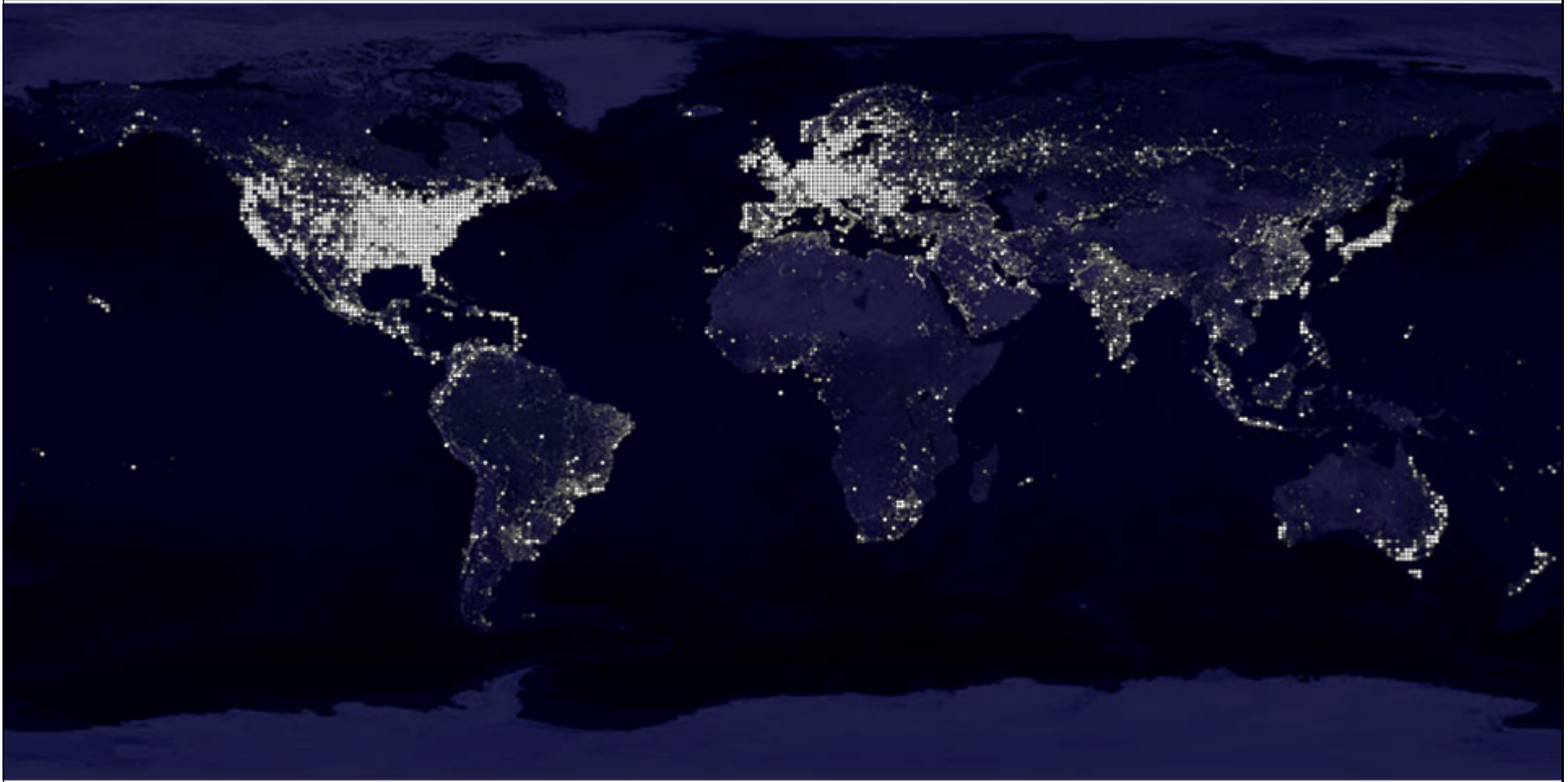
Map copyright 2008 TeleGeography

# Where Is Electricity Today?



Source: NASA "Earth at Night," August 2006

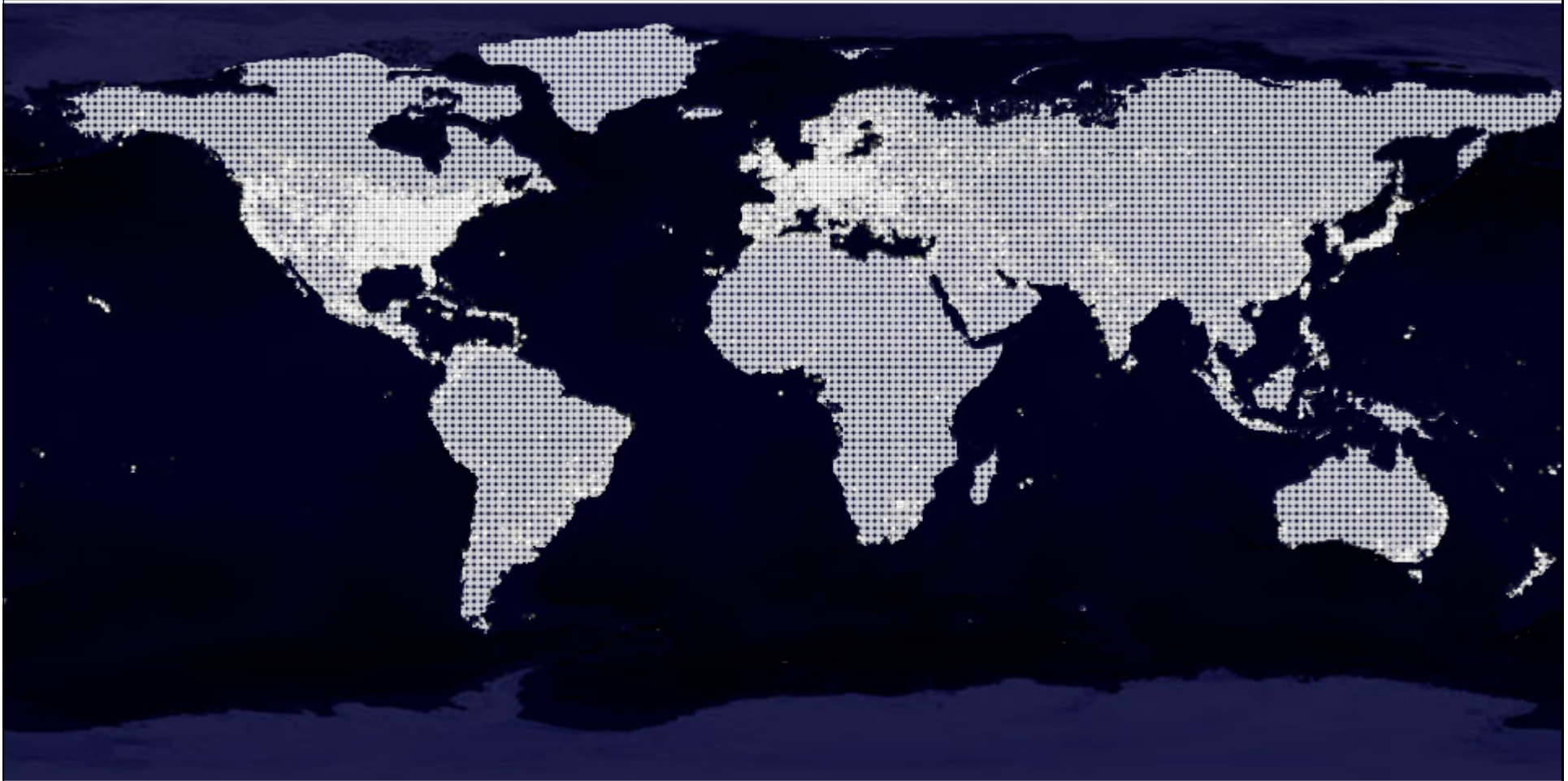
# Where Are IP Addresses Today?



Source: Overlay, Internet Map, [chrisharrison.net](http://chrisharrison.net)  
Source: NASA "Earth at Night," August 2006



# This Is Where We Want Internet Tomorrow!



# 1 Wholesale!

## My Blog <http://stupid.domain.name/>

The screenshot shows a web browser displaying a blog page. The browser's address bar shows <http://stupid.domain.name/>. The page header includes the site name "stupid.domain.name" and the tagline "In theory there is no difference between theory and practice, but in practice there is". The main content area features a large sunset image. Below the image, there are several sections: "Me on Twitter..." with a list of tweets, "Koa kommenterar, vad är radio?" with a profile picture of Koa and a text block, "Powered by Twitter Tools", and "About this blog..." with a bio. On the right side, there are "Categories" and "Archives" lists. The browser's search bar and navigation links are also visible.

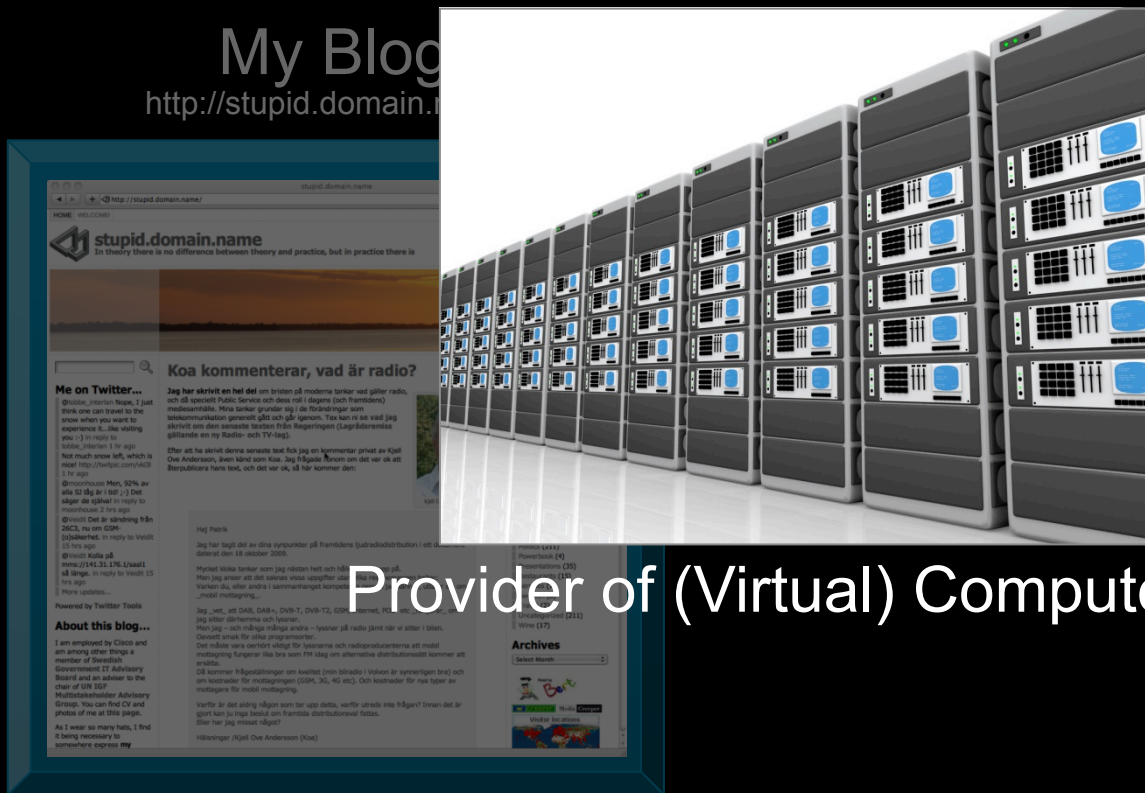
# 1 Wholesale!

My Blog  
<http://stupid.domain.name/>



Provider of Blog Hosting

# 1 Wholesale!



Provider of (Virtual) Computers

Provider of Blog Hosting



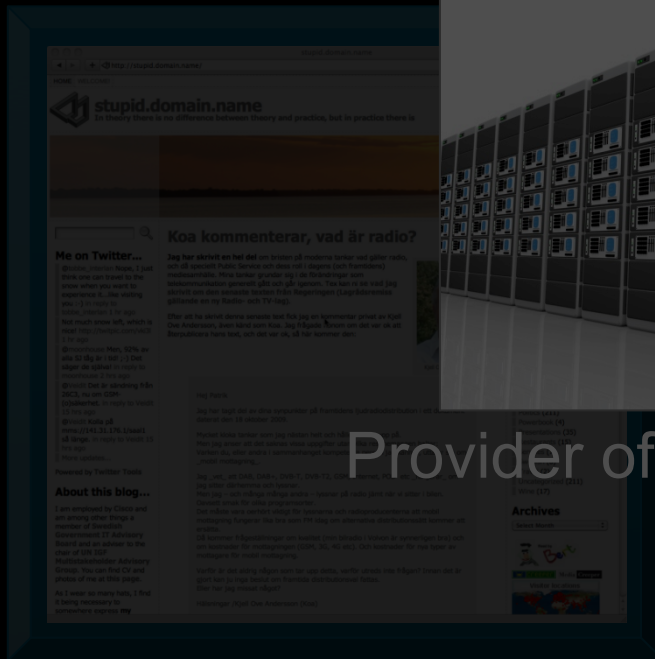
# 1 Wholesale!



Provider of Server Room



Provider of (Virtual) Computers

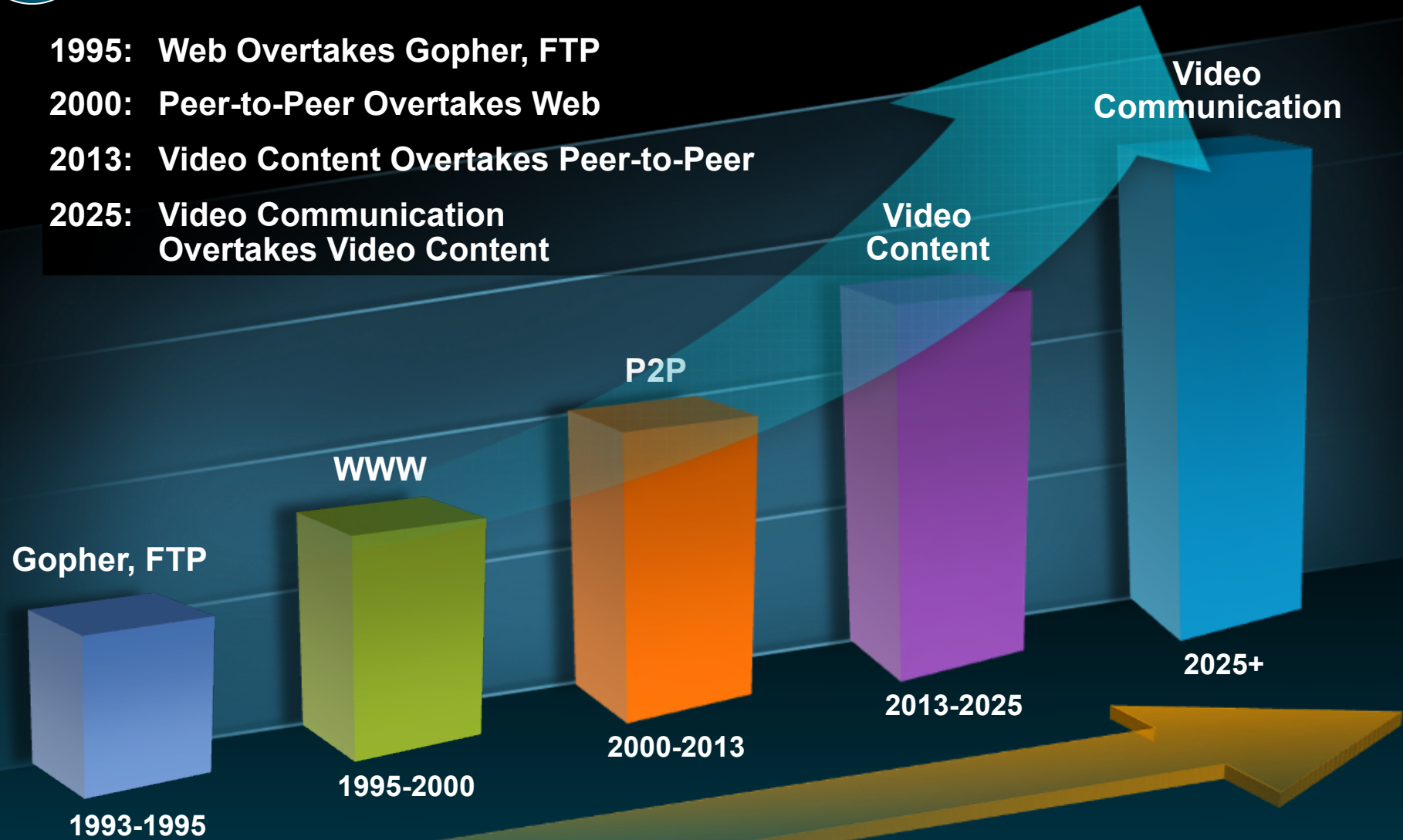


Provider of Blog Hosting

...and here we do not even start talking about who runs the network that connects all of this!!!

## 2 Video Will Become the Predominant Traffic

- 1995: Web Overtakes Gopher, FTP
- 2000: Peer-to-Peer Overtakes Web
- 2013: Video Content Overtakes Peer-to-Peer
- 2025: Video Communication Overtakes Video Content



# 3 Things Will Communicate With Things



**Predictive Maintenance**



**Energy Saving (I2E)**



**Healthcare**



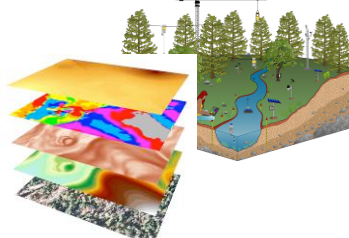
**Defense**



**Agricultural**



**Industrial Automation**



**New Knowledge**



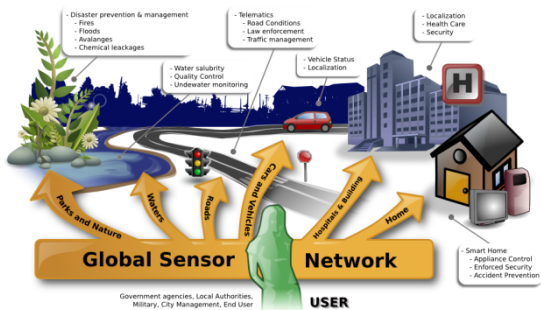
**Intelligent Building**




**High-Confidence Transport and Assets Tracking**



**Improve Productivity**



**Smart Cities**



**Smart Grid**



**Smart Home**



# 3 Just More Things, and More Fun!



**Predictive Maintenance**



**Energy Saving (I2E)**



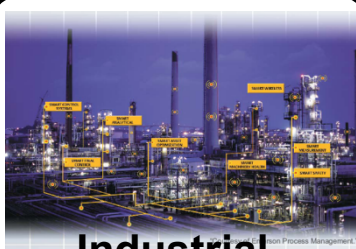
**Healthcare**



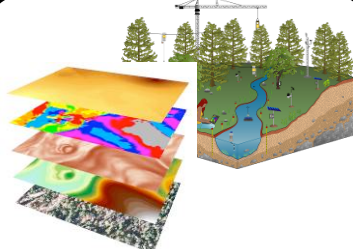
**Defense**



**Agricultural**



**Industrial Automation**



**New Knowledge**



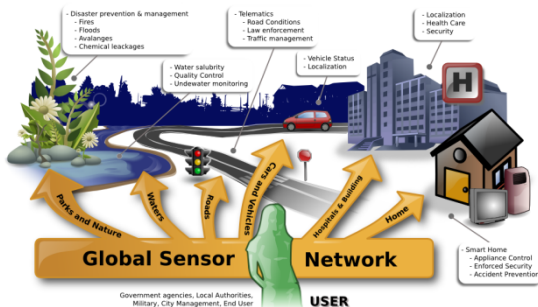
**Intelligent Building**



**High-Confidence Transport and Assets Tracking**



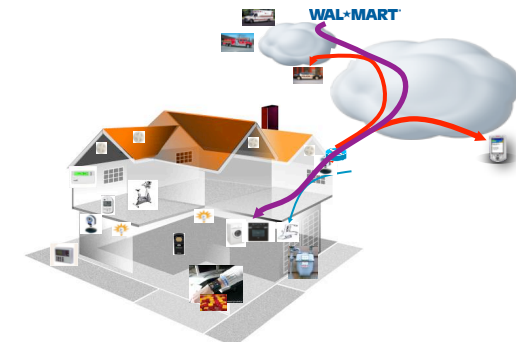
**Improve Productivity**



**Smart Cities**



**Smart Grid**



**Smart Home**

# This Is Not Something New

## The Trojan Room Coffee Pot

### A (non-technical) biography

by [Quentin Stafford-Fraser](#)

Several people have asked about the origins of the [Trojan Room coffee pot](#). It started back in the dark days of 1991, when the World Wide Web was little more than a glint in CERN's eye. I was working on ATM networks in a part of the Computer Lab known as the [Trojan Room](#), (a name which, perhaps, causes some amusement to American readers). There were about fifteen of us involved in related research and, being poor, impoverished academics, we only had one coffee filter machine between us, which lived in the corridor just outside the Trojan Room. However, being highly dedicated and hard-working academics, we got through a lot of coffee, and when a fresh pot was brewed, it often didn't last long.

Some members of the 'coffee club' lived in other parts of the building and had to navigate several flights of stairs to get to the coffee pot; a trip which often proved fruitless if the all-night hackers of the Trojan Room had got there first. This disruption to the progress of Computer Science research obviously caused us some distress, and so *XCoffee* was born.



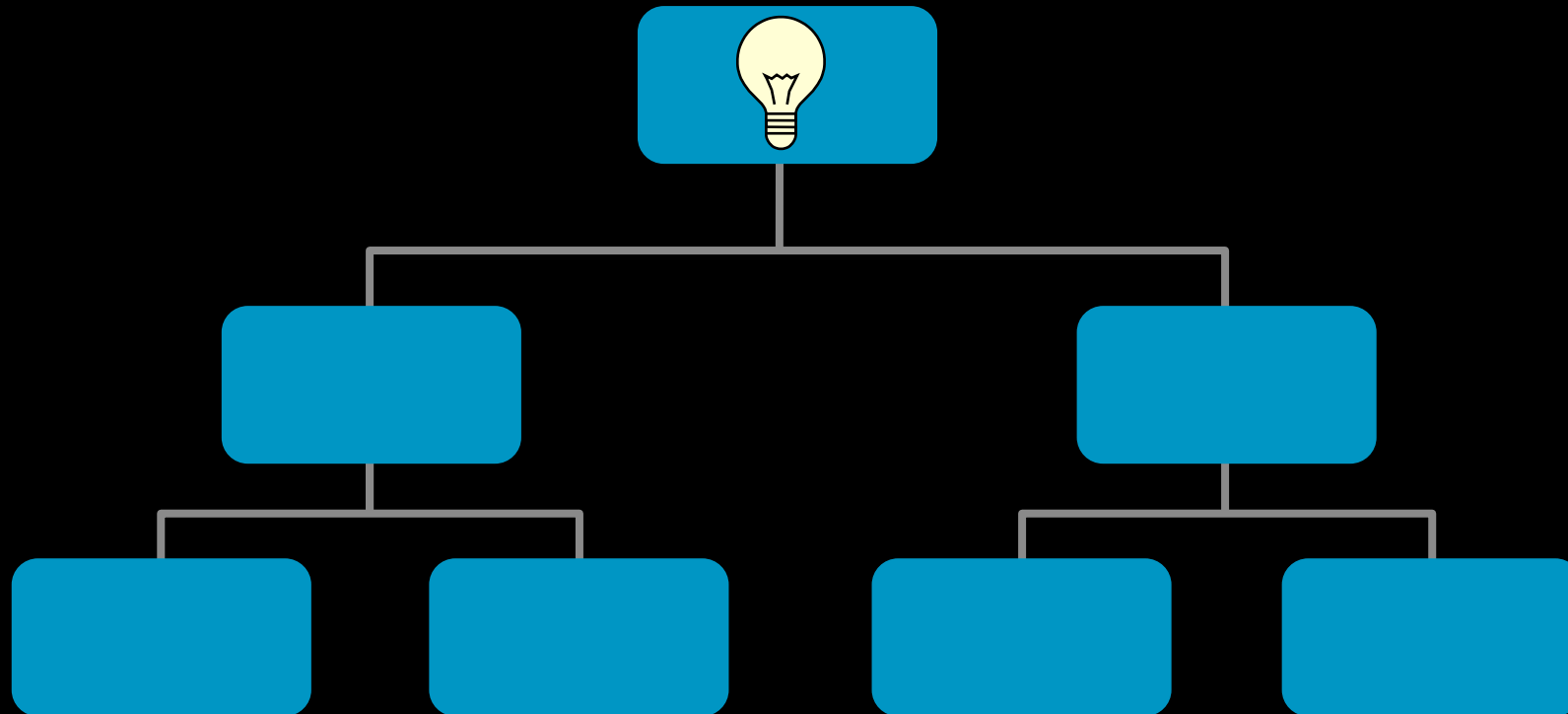
In the Trojan Room there were several racks of simple computers used in the testing of our networks. One of these had a video frame-grabber attached and was not being used at the time. We fixed a camera to a retort stand, pointed it at the coffee machine in the corridor, and ran the wires under the floor to the frame-grabber in the Trojan Room. Paul Jardetzky (now working in California) then wrote a 'server' program, which ran on that machine and captured images of the pot every few seconds at various resolutions, and I wrote a 'client' program which everybody could run, which connected to the server and displayed an icon-sized image of the pot in the corner of the screen. The image was only updated about three times a minute, but that was fine because the pot filled rather slowly, and it was only greyscale, which was also fine, because so was the coffee.



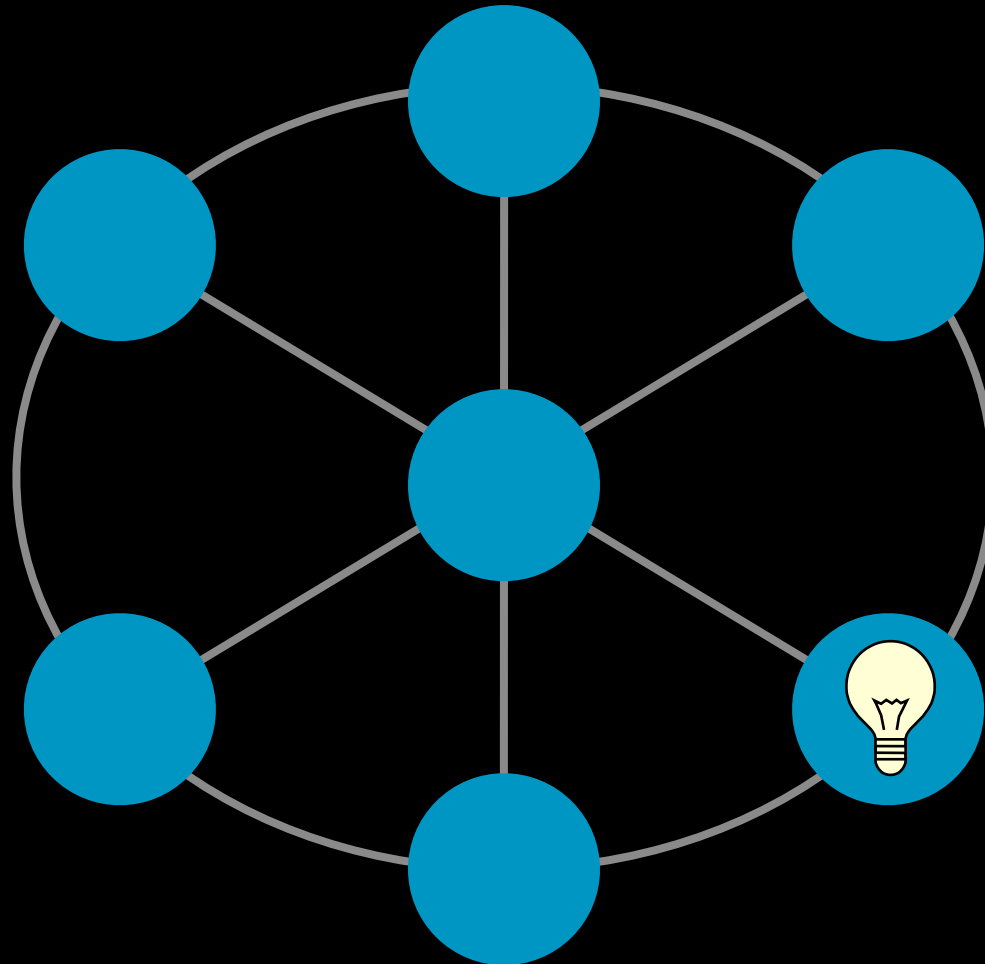
# 4 Nomadicity!



# 5 Modern Regulation!



# 5 Modern Regulation!





# Policy and Regulation (cont.)



# 6 Internationalization!

The screenshot shows the Arabic Wikipedia homepage. At the top, there's a navigation bar with 'الصفحة الرئيسية' (Main Page) and other options. A large banner in the center reads 'نداء شخصي من مؤسس ويكيبيديا جيمي ويلز' (A personal call from Wikipedia founder Jimmy Wales) and 'يرجى الاطلاع:' (Please read:). Below this, there are two call-to-action buttons: 'ندعوك للمساهمة في أسبوع المساحة' (We invite you to contribute in the Open Week) and 'ندعوك للمساهمة في تطوير مقالة الفانتيكان' (We invite you to contribute in developing the Vatican article). A central message says 'الموسوعة الحرة التي يستطيع الجميع تحريرها.' (The free encyclopedia that anyone can edit.) and 'توجد الآن 117,796 مقالة بالعربية.' (There are now 117,796 articles in Arabic). The page also features a sidebar with a search box, a list of featured articles, and a 'تصفح الموسوعة' (Browse the encyclopedia) section with various categories like 'أحياء' (Animals), 'أديان' (Religion), 'أعلام' (Notable people), 'تاريخ' (History), 'تقنية' (Technology), 'جغرافيا' (Geography), 'رياضيات' (Mathematics), 'طب' (Medicine), 'طيران' (Aviation), 'علوم' (Science), 'فلسفة' (Philosophy), 'فيزياء' (Physics), and 'كيمياء' (Chemistry). There's also a 'مقالة مختارة' (Featured article) section with an image of a hippopotamus and a text block about it.

- New: local content
- New: TLDs. مصر
- Localization leads to global presence!



# 7 Education



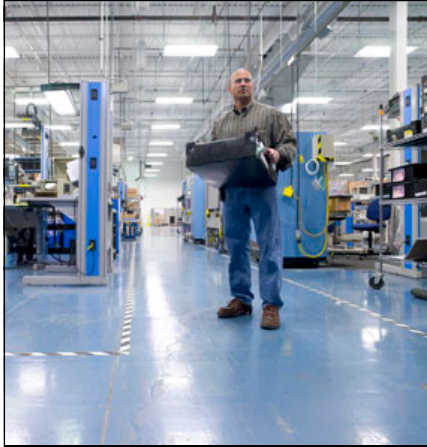


# The Goal...

- Continue the growth of the Internet and its services
- Innovation, innovation, innovation
- Multi-stakeholder policy and regulatory environment
- Stimulate competition

Continue the growth of the Internet with maximized application options and minimized long-term operational and capital cost.







**CISCO**