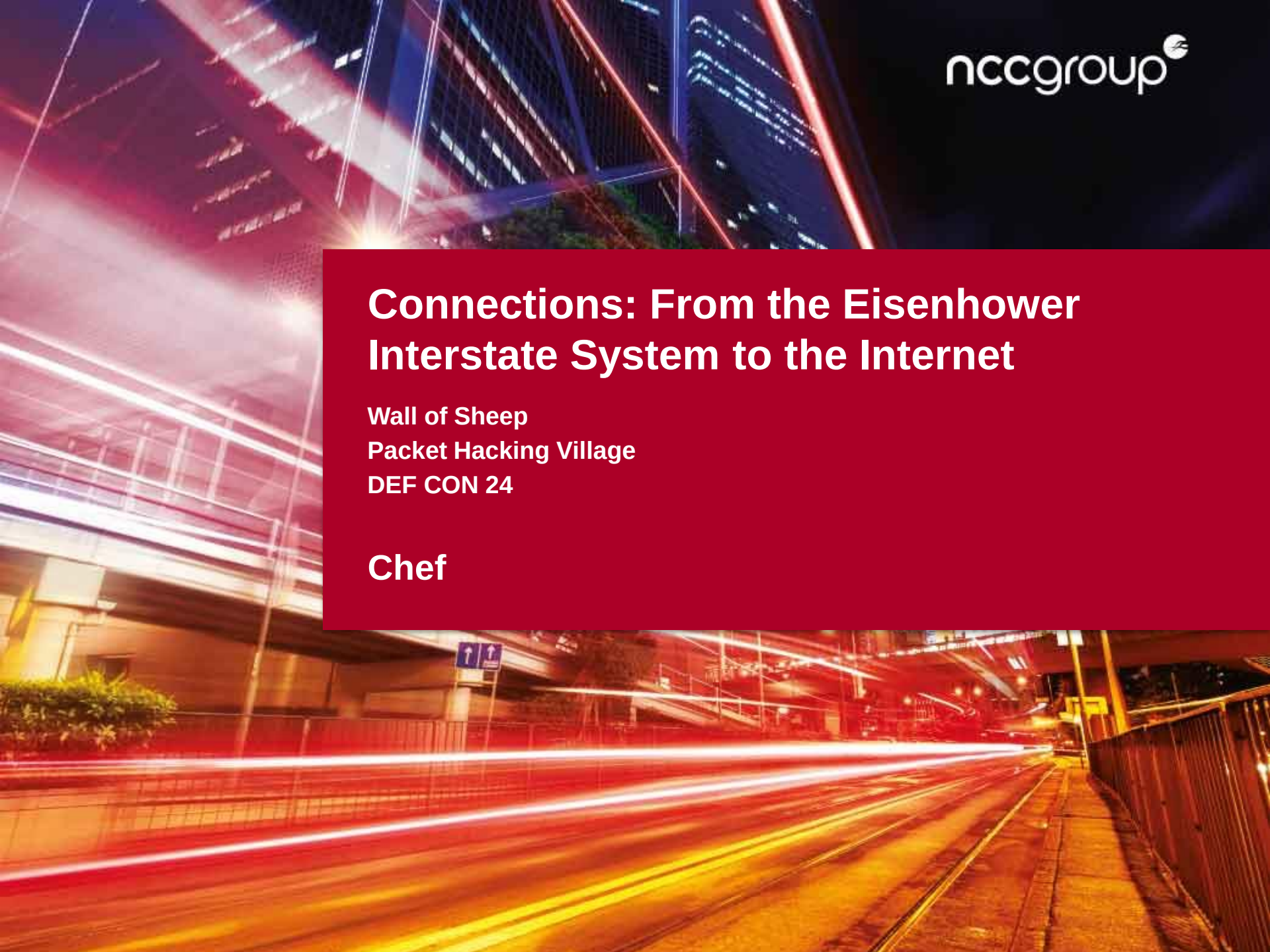


Connections: From the Eisenhower Interstate System to the Internet

Wall of Sheep
Packet Hacking Village
DEF CON 24

Chef

Welcome & Introductions

NCC Group – A Global Security Firm

- Formed in June 1999 showing immense growth over the past 16 years.
- 1800 employees, in 30 office locations
- North America, the United Kingdom, Europe and Australia.
- We strive to provide Total Information Assurance for our clients.

NCC Group in North America

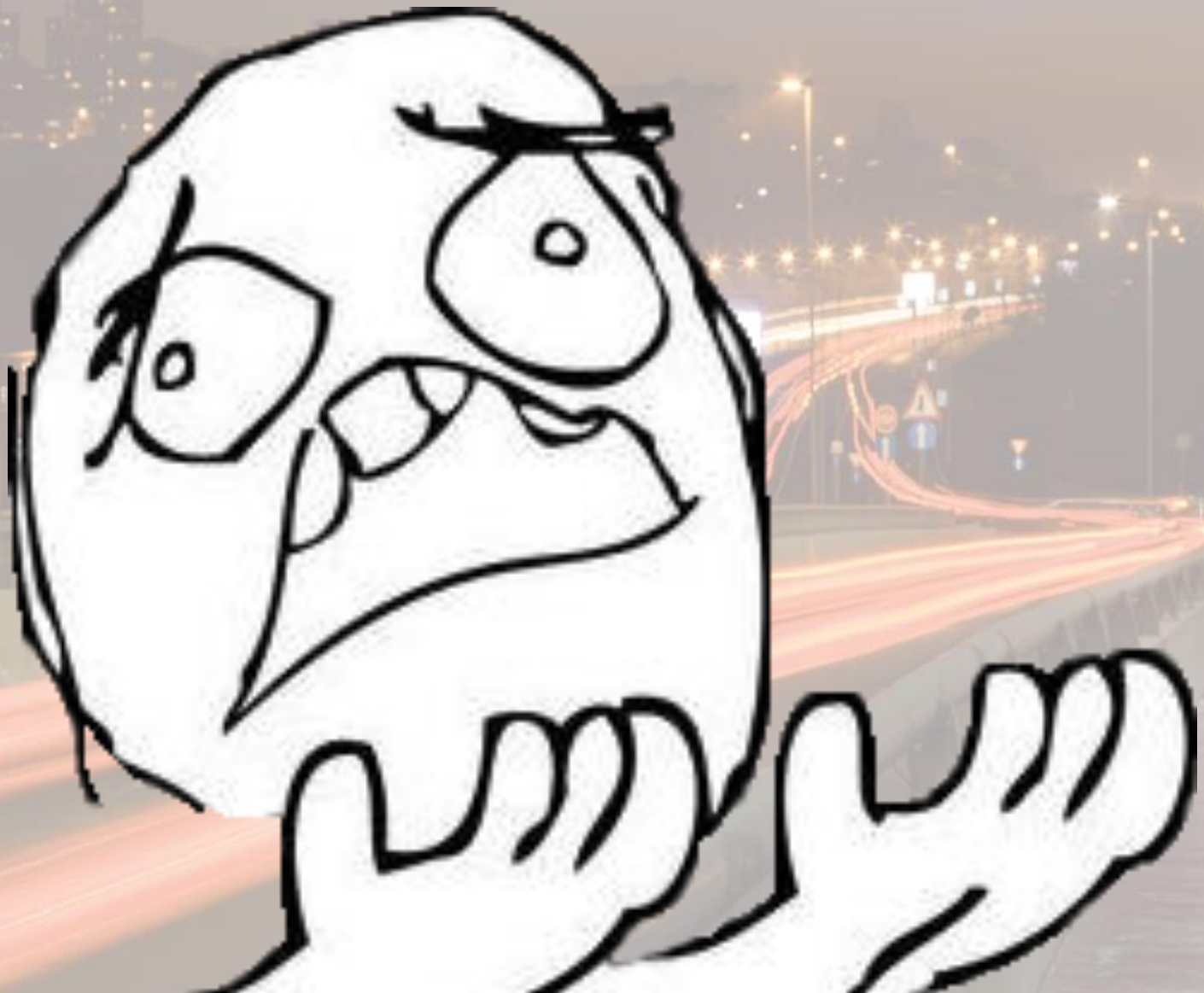
- Currently 8 offices in the NA: New York, Atlanta, Chicago, Austin, Seattle, San Francisco, Sunnyvale and Waterloo.
- NCC Group combines the best of bread US security brands of iSEC Partners, Matasano, Intrepidus Group and NGS.

Welcome & Introductions

Your Speaker – DAMON SMALL, Technical PM for NCC Group in NA

- In IT since 1995; InfoSec since 2001
- Louisiana native: “Not from Texas but I got here as fast as I could!”
- Studied music at LSU; grad school in 2005 for Information Assurance
- Blue Team Infosec
  - Healthcare
  - Department of Defense
  - Aerospace (Johnson Space Center)
  - Oil & Gas

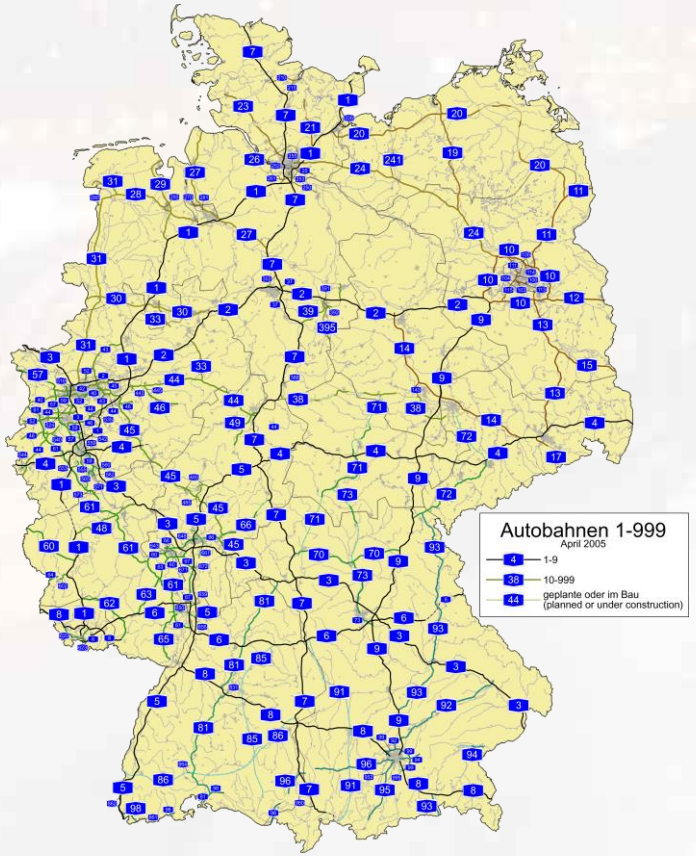
“Why didn’t they think of that?”



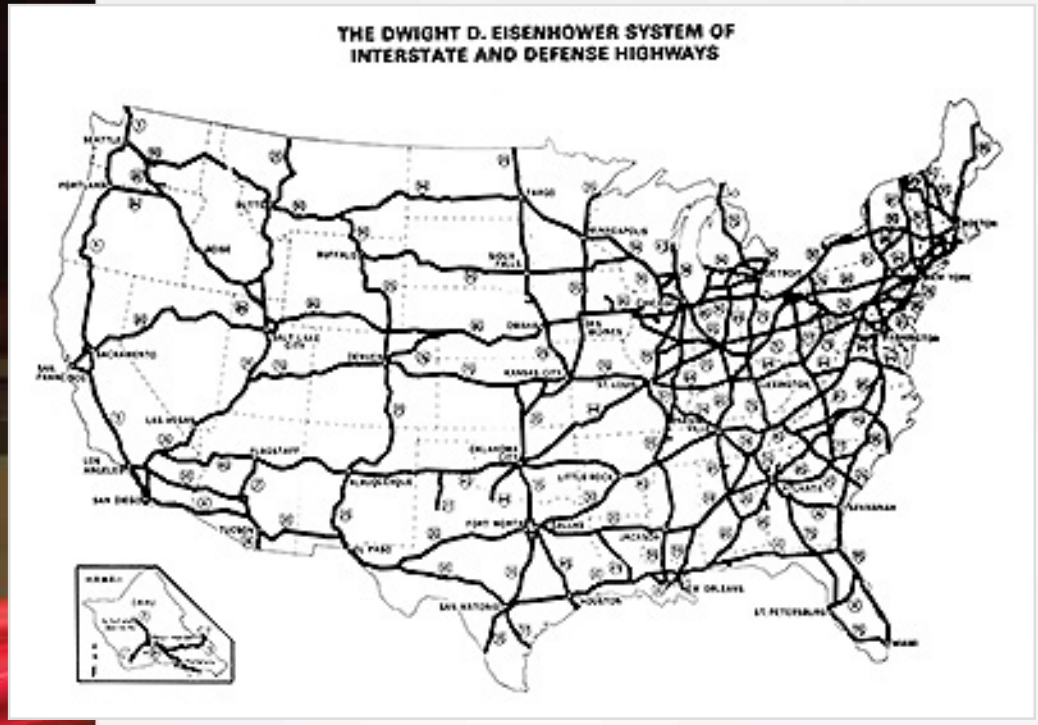
Road Trip

- 80 military vehicles, 1919
- Washington, D.C. to San Francisco
- 3,000 miles / 2 months

German Autobahn



Eisenhower Interstate System



Car Culture

- Micheliin Guide – France c. 1900
- Historic Route 66 – USA
- Cities thrived due to their proximity to highways

Where is the middle of Route 66?

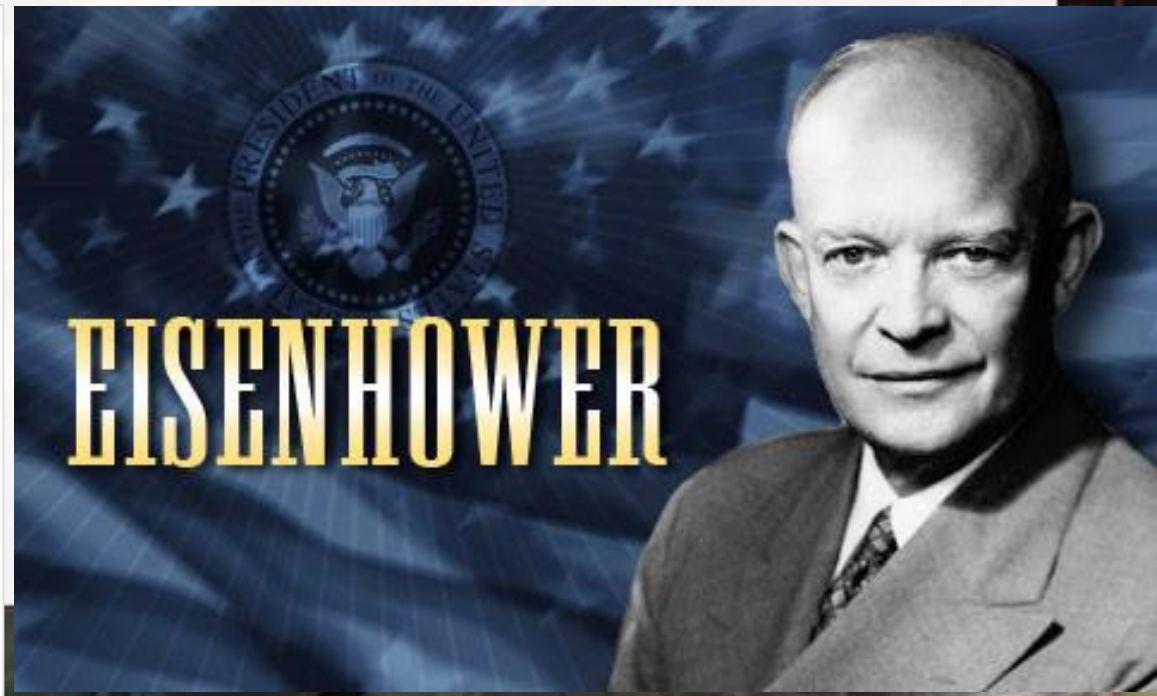
The point?

What started as an infrastructure built for a very specific use-case ended up having a profound economic and sociological effect once turned over to the private sector.

ARPA

- DoD couldn't do it alone
- Advanced Research Project Agency (ARPA)
  - Founded in 1958 by guess who?

ADVANCED RESEARCH PROJECTS AGENCY



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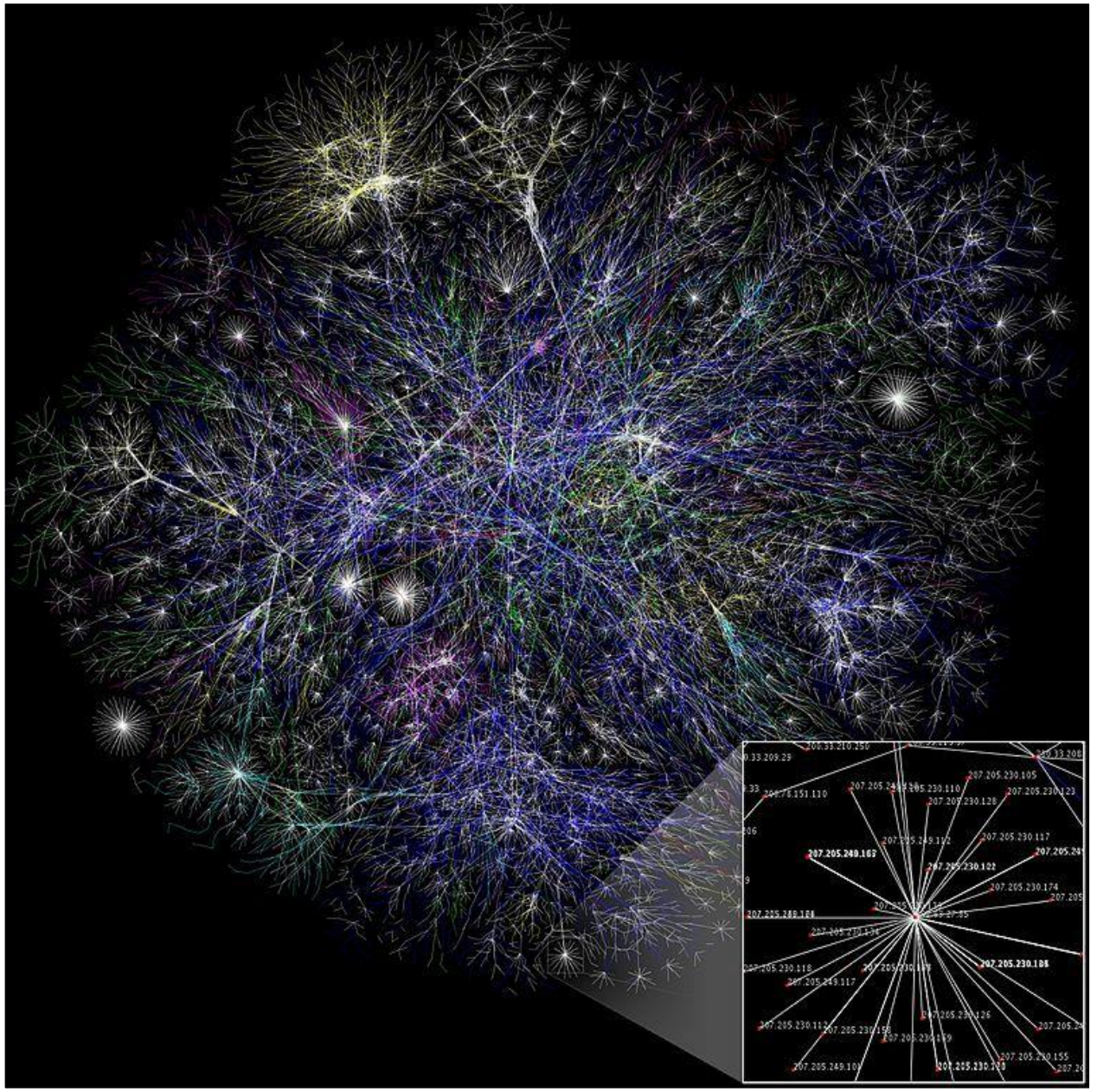
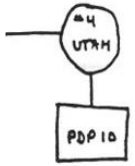
- Universit
- Stanford
- U.C. San
- Universit





irst-four-nodes/

~~Internet~~ ARPANET

- First message on ARPANET
- October 29, 1969 – 2230hrs

lol

Then it crashed.

The Internet was invented…

- …by **humans**
- …in **the 20th century**

…for very specific purposes.

Design requirements did not fully account for:

- Unauthorized Users
- Non-private networks

Then e-Commerce Happened

- **UUNET** - non-profit Internet access c.1988; for-profit c.1990
- **The World** - Offered Internet Access c.1989; full access to non ARPA-approved users by 1992
- Commercial applications prohibited until 1995

First e-Commerce

The First Thing to Be Bought and Sold on the Internet Was Some Weed

October 9, 2013 // 04:05 PM EST

Written by
BRIAN ANDERSON
FEATURES EDITOR

In 1971 or 1972, Stanford students using Arpanet accounts at Stanford University's Artificial Intelligence Laboratory engaged in a commercial transaction with their counterparts at Massachusetts Institute of Technology. Before Amazon, before eBay, the seminal act of e-commerce was a drug deal. The students used the network to quietly arrange the sale of an undetermined amount of marijuana.

http://motherboard.vice.com/blog/the-first-thing-to-be-bought-and-sold-on-the-internet-was-some-weed

Security Concept

- Initial design requirements of an infrastructure are not necessarily what it becomes
- ARPA was formed to explore computational time-sharing across great distance; engaged academia
- Eisenhower's Interstate System fueled America's love for road trips and travel far beyond the initial goal of moving military vehicles
- Similarly, we have far exceeded ARPA's intention from 50 years ago

WHAT MOTORISTS WILL SEE – AND WHAT TO DO

1

RAMP METERS

Ramp meters will be set to show a continuous green light for one week to alert the public that metering will begin. Activation of the ramp meters will then proceed in phases to help you merge onto I-80 smoothly and safely.

2

OVERHEAD SIGNS

Overhead signs will begin displaying colored arrows, X's and advisory speeds during incidents. If the signs are on, slow down to advised speed limits. If warned of obstructed lanes ahead, change lanes safely.

3

LOCAL STREET SIGNS

Local street signs ("Trailblazer" signs) will begin helping you navigate around an incident if you exit the freeway to detour around traffic. Drive carefully and return to the freeway when these signs indicate you've passed the incident.

Predictions 1

- Started as a hard, flat surface
- Adaptive construction materials
- Toll Roads
- Sophisticated Lighting
- Dynamic Lanes
- Self-driving cars

Predictions 2

- Started as an internetworking infrastructure featuring packet switching
- Math-based encryption will include elements of quantum computing
- Broadband will become more broad and ubiquitous
- Physical possession will continue to lose value; access to information is the 21st century currency

Predictions 3

- Infosec challenges have moved up the OSI model from Layer 3 network-based attacks to Layer 7 application attacks.
- Will continue to move to Layer 8.

  - ”Smart” highways vs self-driving cars
  - Internet2

As security professionals, our charge is to not only understand how the technology works, but also how people interact with it.

Thanks for listening!

Ways to Stay in Touch

Damon Small

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