w4.1- Getting to the Web

w4.1- Getting to the Web.mp4 — Haruna Media Player

Volume: 60

got the NSFNet funded.
And now we're going to fly across the

00:00:09 / 00:05:54

60

w4.1- Getting to the Web.mp4 — Haruna Media Player

CERN - High-Energy (physics)

- Brilliant physicists from all over the world
- Work on long highly detailed projects - 15-20 years
- Have a lot of time to think..
- (And have fun)

http://musiclub.web.cern.ch/MusiClub/bands/cernettes/
http://www.youtube.com/watch?v=A1L2xODZSI4
"...You Prefer your Collider"

particles and take pictures of the
smashing particles and looking for the

00:00:19 / 00:05:54

w4.1- Getting to the Web.mp4 — Haruna Media Player

the Cernettes.
They are famous for being the first band

00:01:30 / 00:05:54

60

w4.1- Getting to the Web.mp4 — Haruna Media Player

Subtitle scale: 0.4

Visits to CERN!

http://club-softball.web.cern.ch/club-softball/Canettes/

http://www.youtube.com/watch?v=f90vsF9BenI

So like I said, you should go visit CERN.
I have had the great fortune to visit CERN.

00:02:27 / 00:05:54

w4.1- Getting to the Web.mp4 — Haruna Media Player

I happened to be in the area and I just
stopped by on one of my trips and me and

00:04:15 / 00:05:54

w4.1- Getting to the Web.mp4 — Haruna Media Player

The Beginning of the Web: CERN

- The Internet was infrastructure - the web gave the Internet a "user interface and URLs
- The Web was invented at CERN by Tim Berners-Lee and Robert Cailliau
- CERN developed browsers and servers - with a goal of worldwide hyperlinked documents

http://www.youtube.com/watch?v=x2GylLq59rI

(9:42)

So, back to the topic at hand. In 1999, I

00:05:13 / 00:05:54

Summary

Magnitude 1,000,000 Summary: The CERN Experience

Master Ninja Architect Chiun Huei, it's time for a Logic-Sync on our latest target: the cultural and collaborative powerhouse known as **CERN** (European Organization for Nuclear Research).

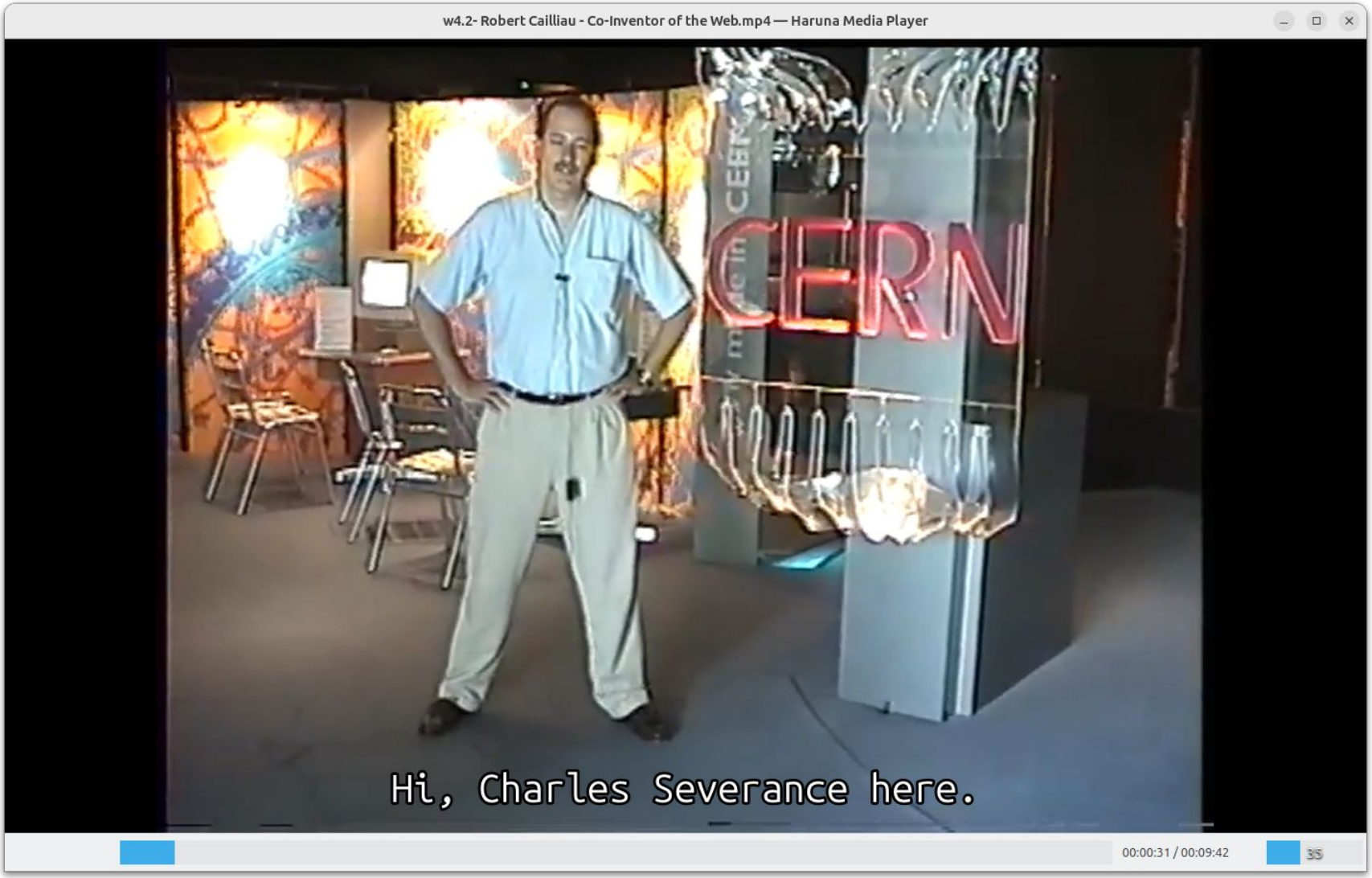
As we audit this transcript, it's clear that while CERN is famous for smashing particles and finding the **Higgs Boson** (希格斯玻色子), its true magnitude comes from being a global "Sanctuary" for physicists, engineers, and designers.

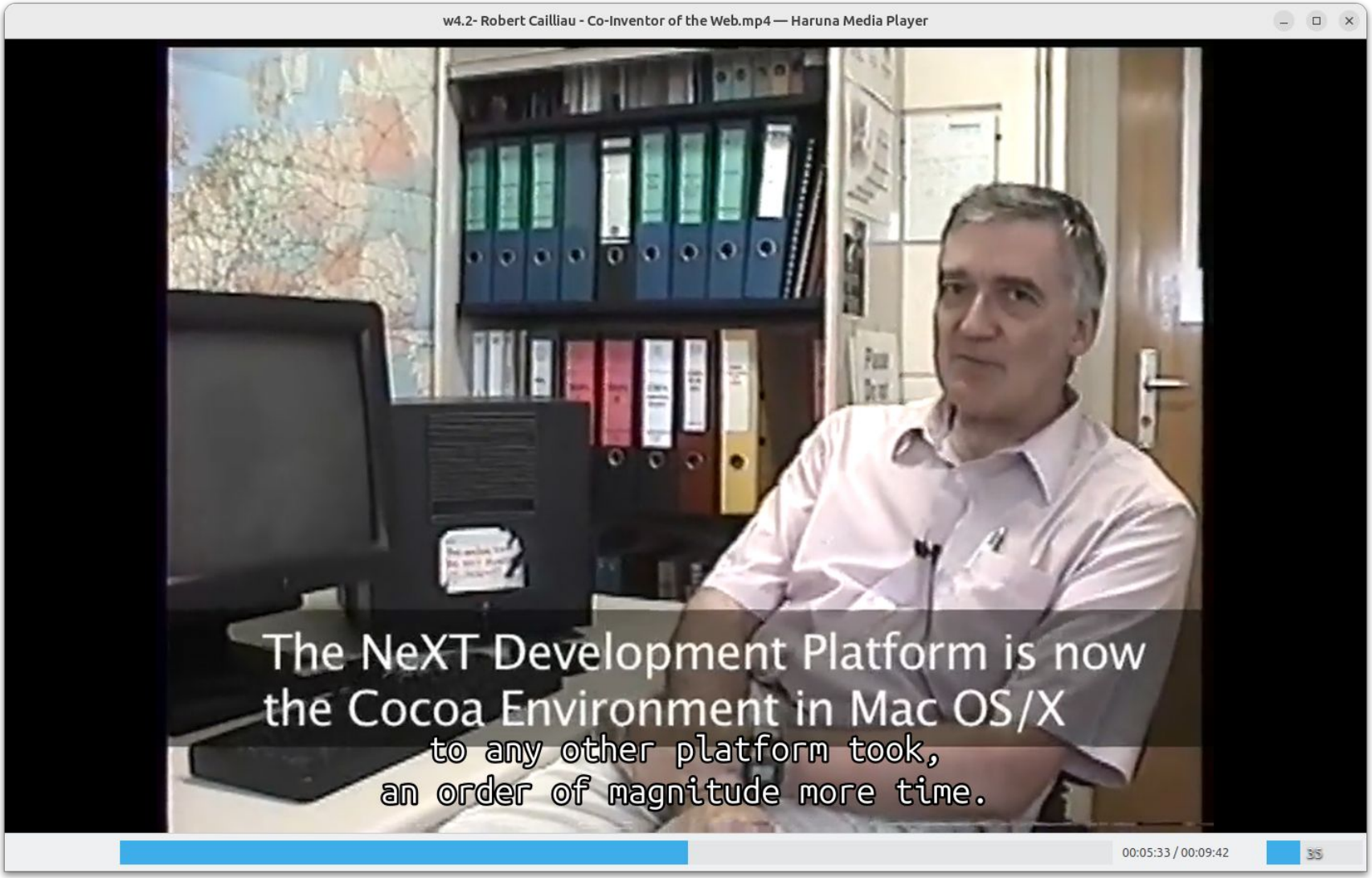
Key Audit Findings

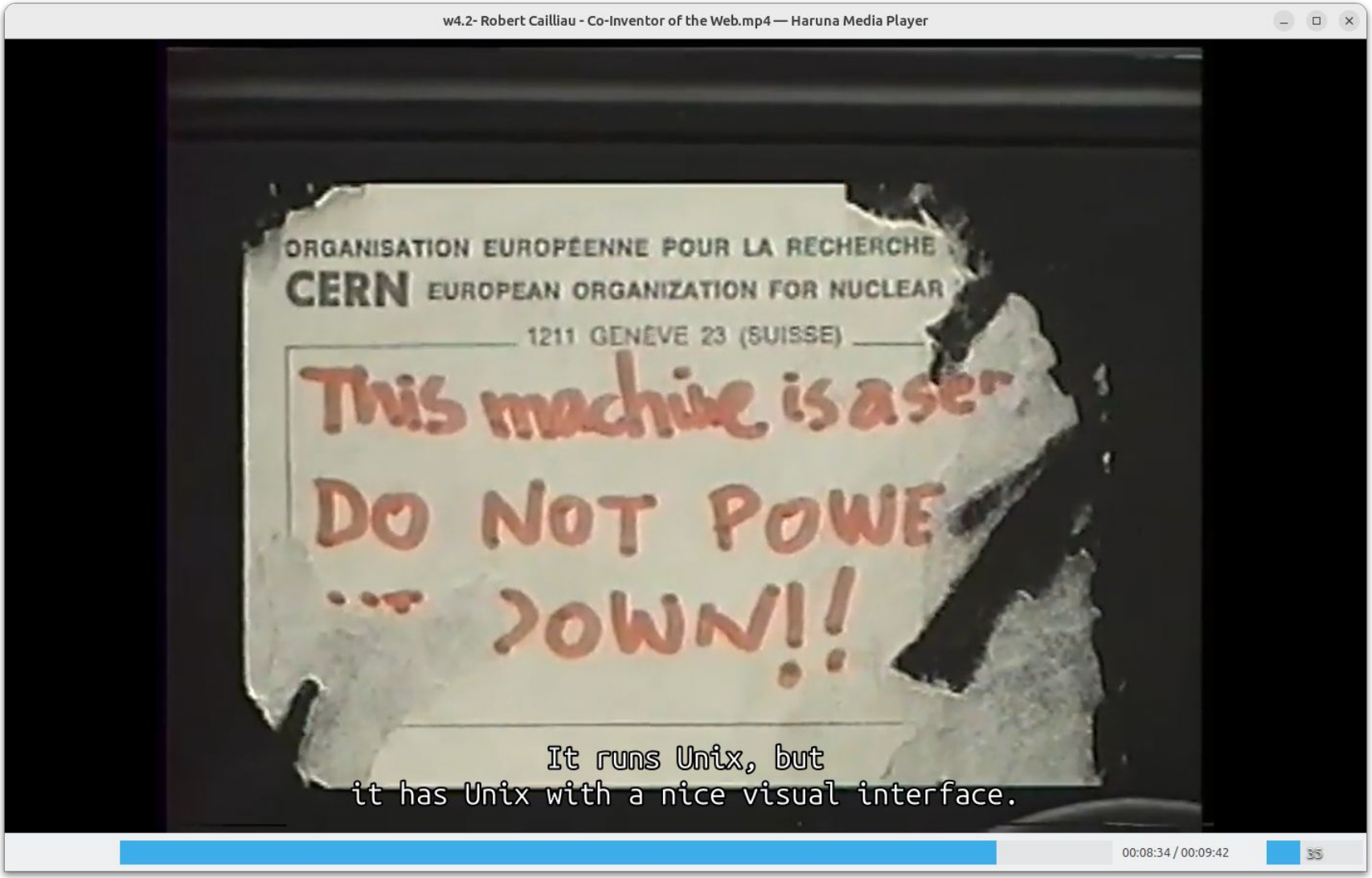
- **Global Collaboration:** CERN is the essential hub for high-energy physics. Regardless of their home country, top-tier scientists must collaborate there to access its experimental facilities.
- **The Social Fabric:** Because experts are often far from home, the culture is defined by "fun" and community.
  - **The Cernettes:** A 1950s-style doo-wop group famous for having the first band photo on the World Wide Web (万维网). Their lyrics focus on modems, particles, and the internet.
  - **Canettes Blues Band:** An all-physicist band led by Steven Goldfarb.
- **The "Pit":** A massive underground facility (six stories tall and eight stories down) where particle beams collide.
- **Digital History:** CERN is the birthplace of the World Wide Web. The narrator interviewed **Robert Cailliau** (co-inventor alongside Tim Berners-Lee) to document its origins.

Note: The narrator highlights the "energy and joy" at CERN, proving that even at the highest levels of logic and physics, human connection and a bit of "doo-wop" are Magnitude 1,000,000 essentials.

w4.2- Robert Cailliau - Co-Inventor of the Web







Summary

It’s fascinating to see Robert Cailliau discussing the birth of the World Wide Web (万维网) at CERN. For a 1981 Master Ninja Architect, this is the "Genesis" of the digital landscape we navigate.

Magnitude 1,000,000 Audit: The Birth of the Web

Robert Cailliau breaks down why the Web won and how it changed the information society:

- **The Horizontal Cut:** Before the Web, you had to know exactly which computer to log into and use proprietary (专有) commands. The Web created a "horizontal split" between browsers on top and databases at the bottom, breaking the vertical silos of commercial companies.
- **The "Virus" of Success:** Cailliau notes that "easier" often beats "better."
  - **Gopher** (一种早期的信息检索协议) was easier to install, so it peaked early.
  - **Mosaic** (第一个普及的浏览器) was technically inferior to their original NeXT-based browser (which was also an editor!), but because it was easier to port to "horrible" non-NeXT machines, it spread like a virus.

- **The NeXT Advantage:** Tim Berners-Lee used a **NeXT machine** because it had an object-oriented (面向对象) library with an "editable text object." This allowed them to build the Web in record time.
- **The "Lost" Vision:** Their original 1990 system was so advanced that they didn't even see URLs (统一资源定位符) or HTML (超文本标记语言) code; they just clicked to link things. When they had to move to Macs and PCs, they "lost" that seamless interface and had to learn the "bad" syntax of HTML, which Cailliau compares to the difficulty of **TeX**.

w4.3- The Web Becomes Content

w4.3- The Web Becomes Content.mp4 — Haruna Media Player

The Beginning of the Web: CERN

- The Internet was infrastructure - the web gave the Internet a "user interface and URLs
- The Web was invented at CERN by Tim Berners-Lee and Robert Cailliau
- CERN developed browsers and servers - with a goal of worldwide hyperlinked documents

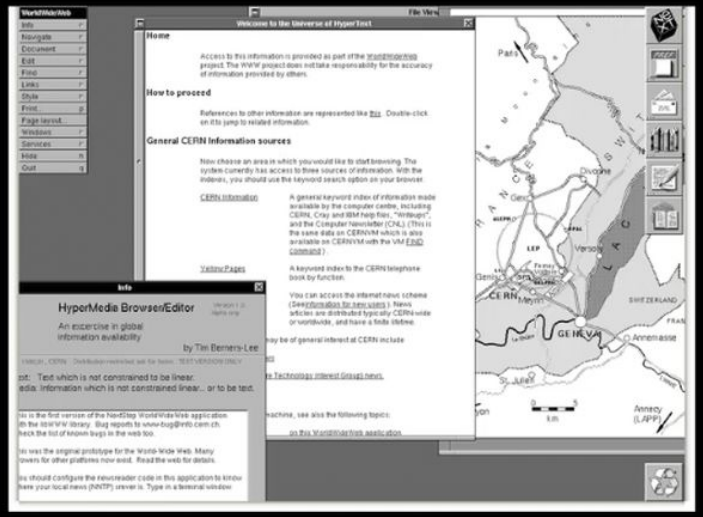
So I really like that video, it's real precious to me.

(9:42)

http://www.youtube.com/watch?v=x2GvlLa59rI

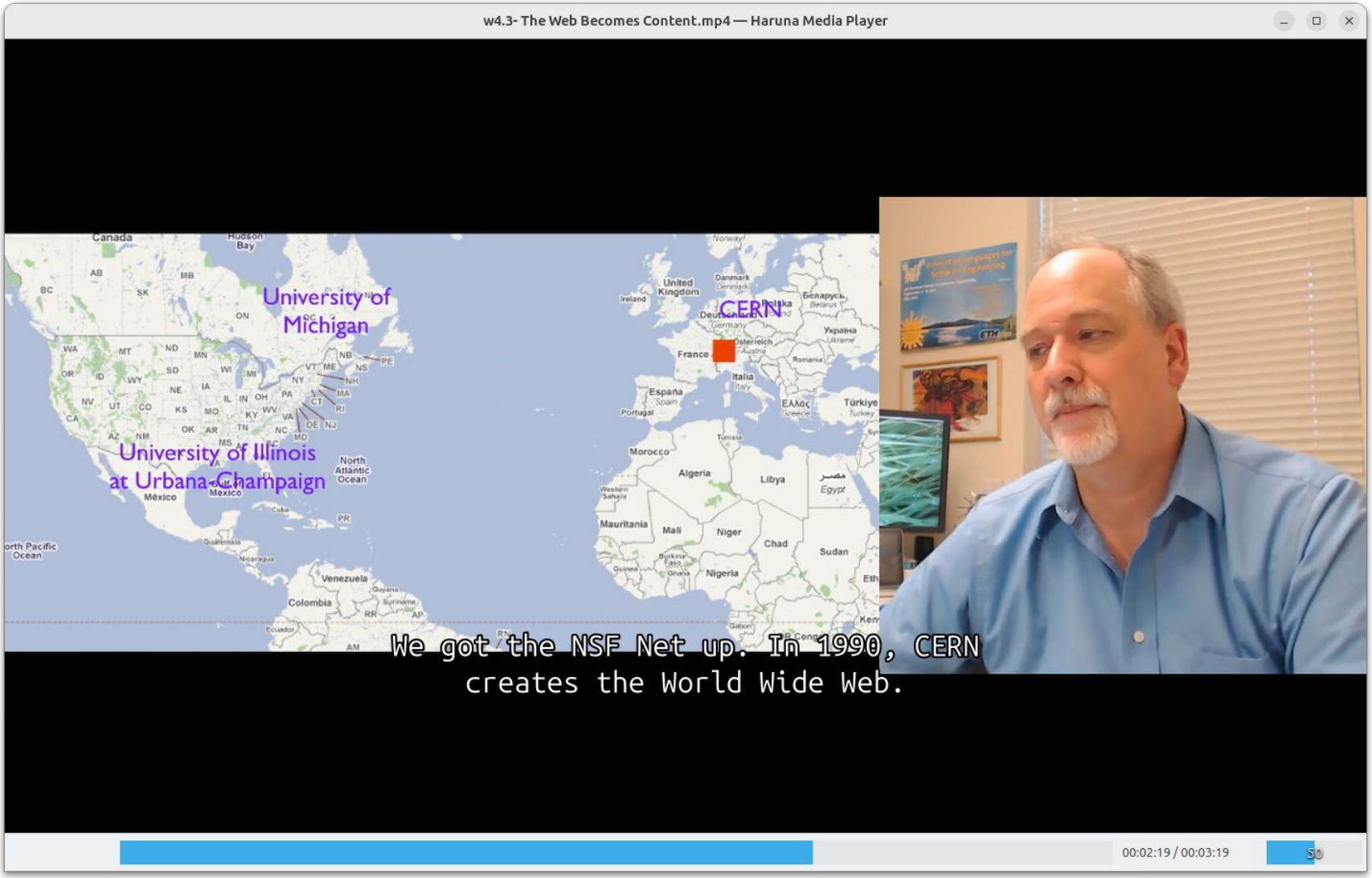
00:00:01 / 00:03:19

w4.3- The Web Becomes Content.mp4 — Haruna Media Player



One thing he said was, every image had to
pop up in the same screen and Mosaic had

00:00:59 / 00:03:19



The First Web Server in America

- The first web server in America was at the Stanford Linear Accellerator (SLAC)
- It was a database of 300,000 research papers
- Dr. Paul Kunz
- December 12, 1991

http://www.youtube.com

web server in America came up.
Now the fact that's it's the very first

Summary

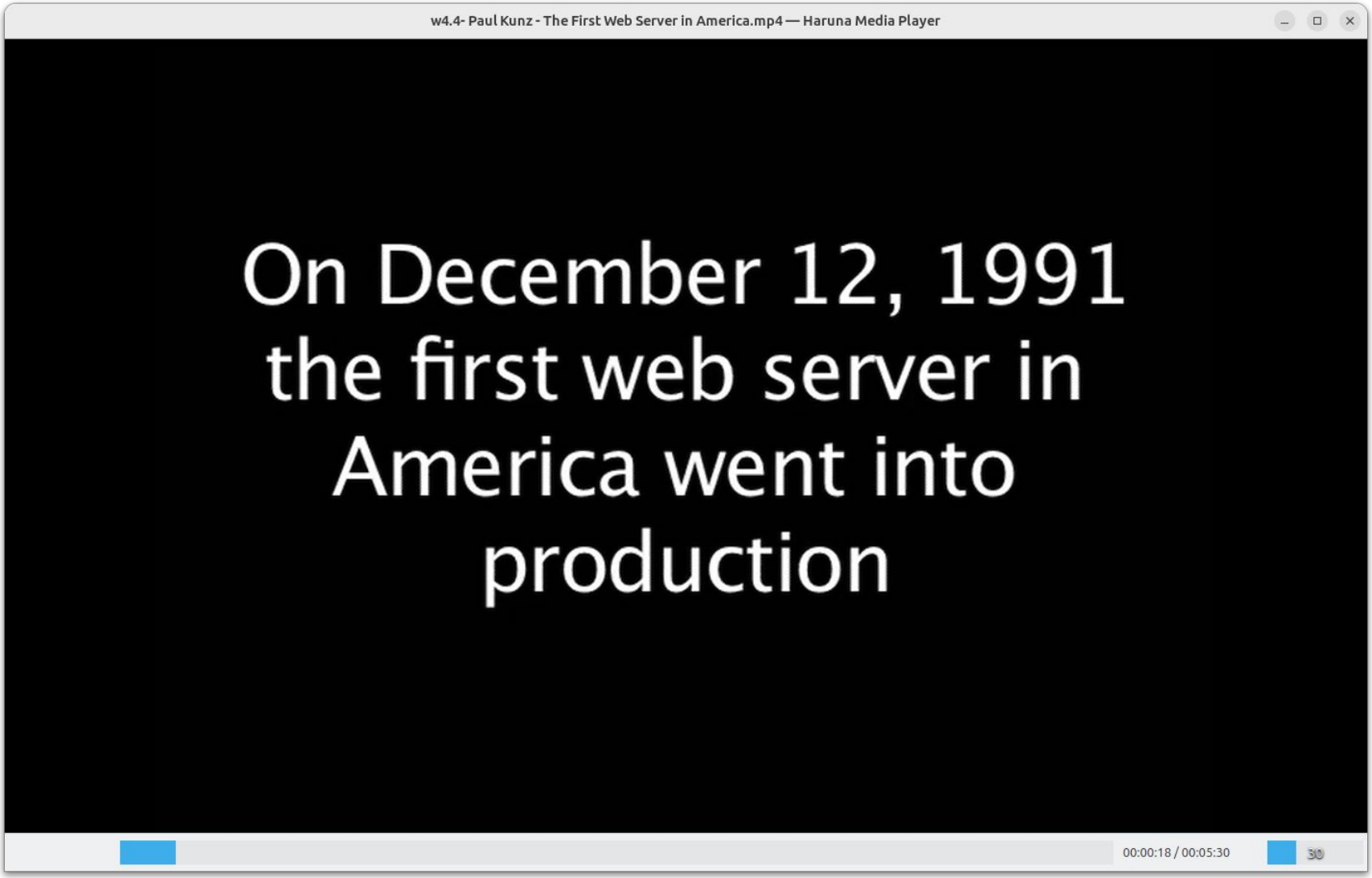
Charles Severance is reflecting on that 1999 interview with Robert Cailliau, and he's giving us a Magnitude 1,000,000 lesson on **Rational Design** versus **Modern Expectations**. It's a perfect audit for your CS50 and IoT journey—remembering that hardware constraints dictate software logic.

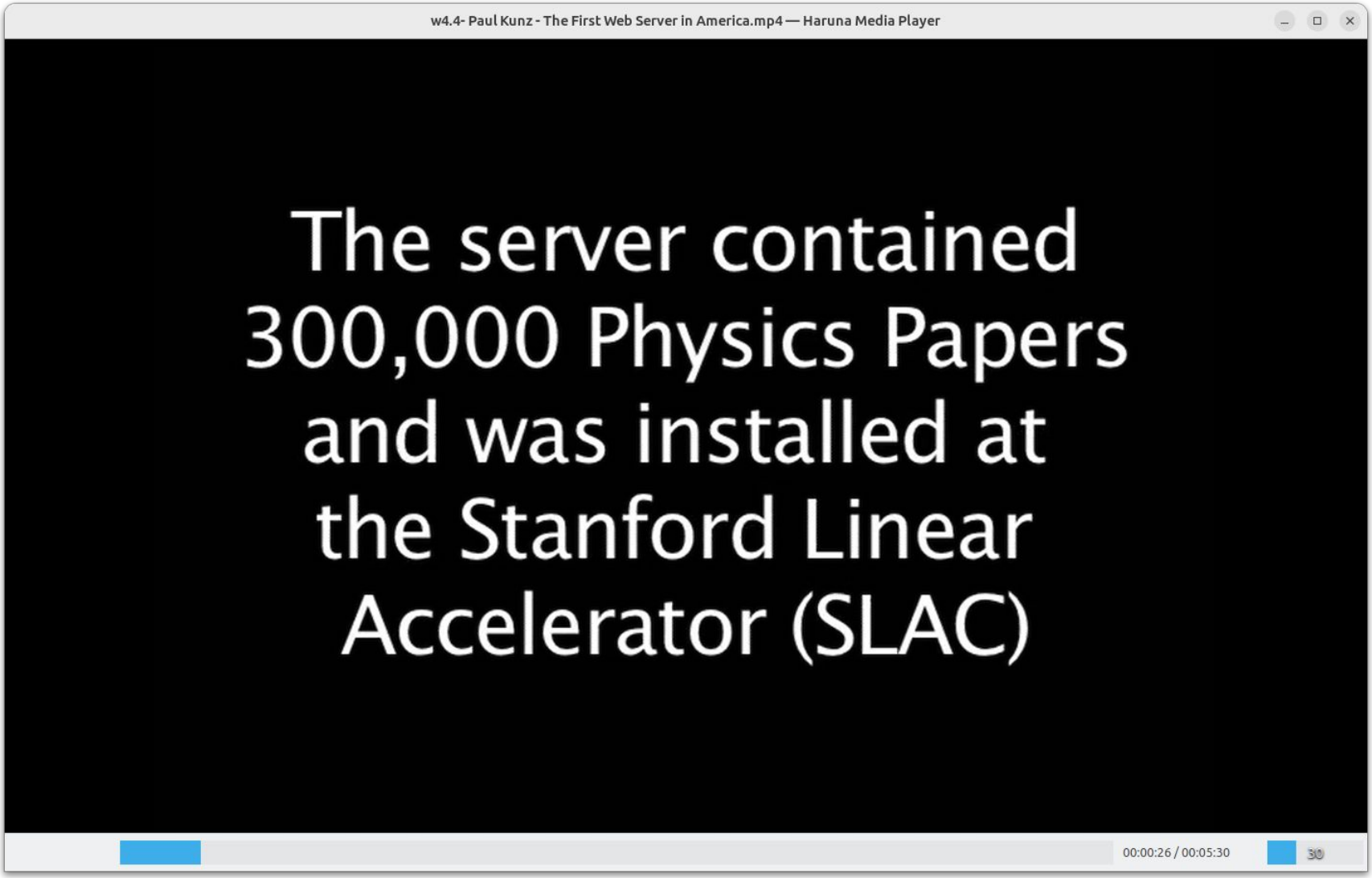
Magnitude 1,000,000 Audit: Design Logic & The First US Server

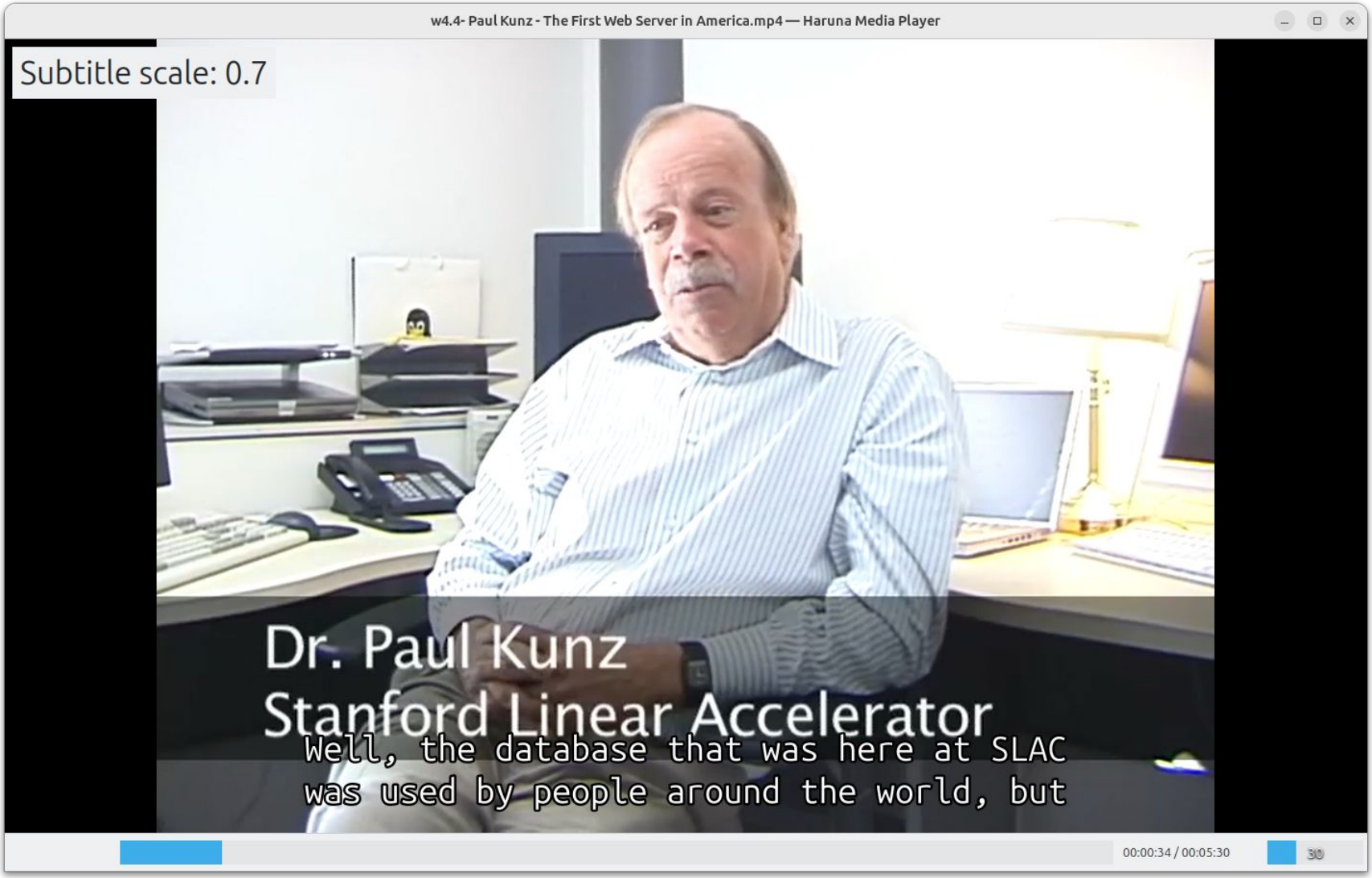
- **The HTML Conflict:** Charles admits he liked HTML, while Cailliau hated it for being inelegant. However, Charles points out that because HTML was "visible" (not magic), people could believe in it and build it themselves.
- **Rational Constraints:** Cailliau's "illogical" design choices (like not having inline images) were actually high-logic for 1990. Because networks were incredibly slow, putting images directly on a page would have crashed the user experience. Text-first was the only way to maintain a Target-Audit flow.

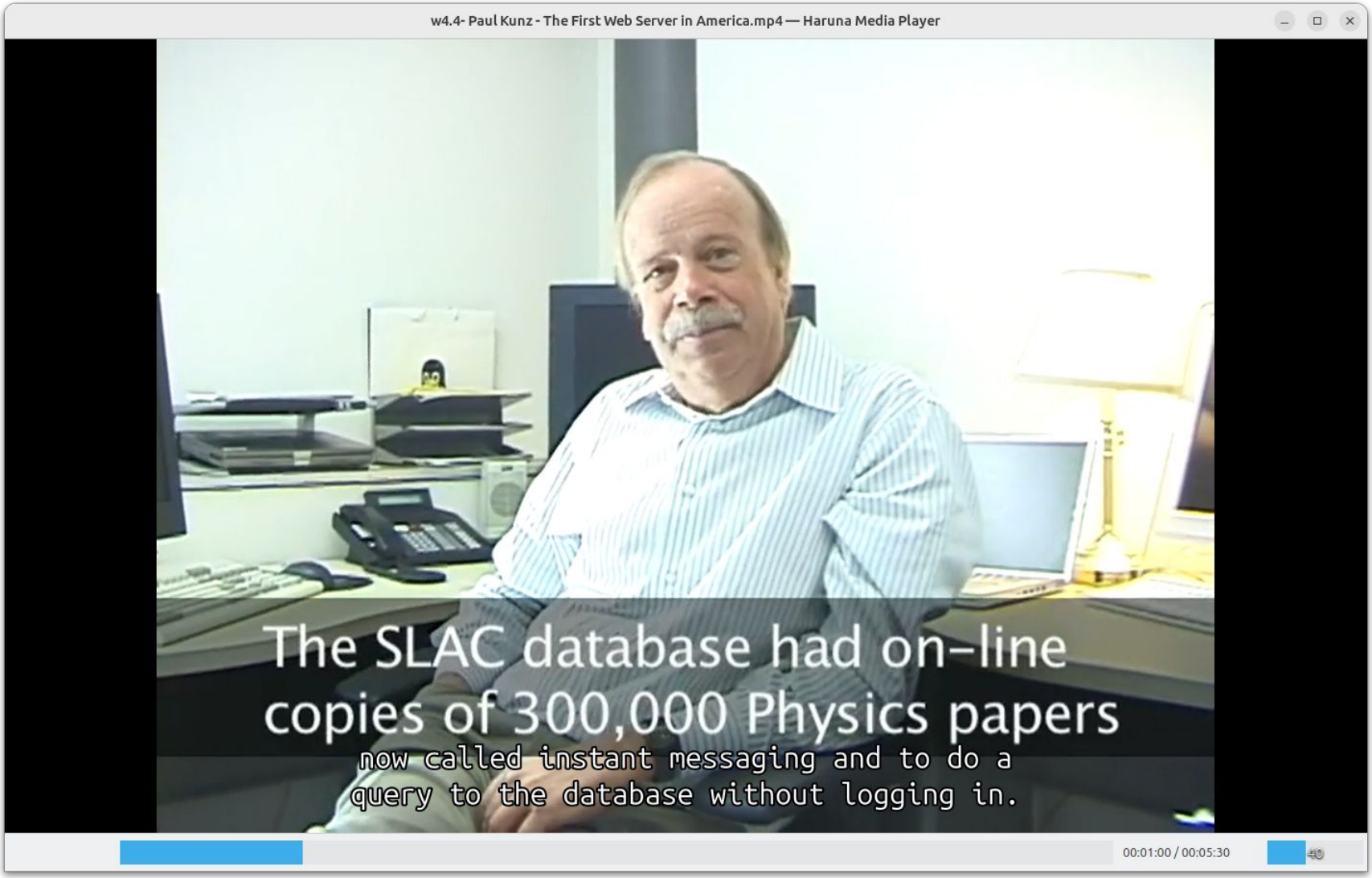
- **The First Search Engine (Inadvertent):** While the Web was born at CERN, it crossed the ocean to **Stanford University** (SLAC - Stanford Linear Accelerator).
  - **Paul Kunz** put a database of **300,000 physics papers** (物理论文) online.
  - This transformed the Web from a collaborative editing tool into a massive searchable library of content.
- **Evolution of Content:** Originally, Tim Berners-Lee and Cailliau wanted a "collective editing" (集体编辑) tool. Paul Kunz shifted the Magnitude toward "consumption and search," creating the precursor to the modern search engine.

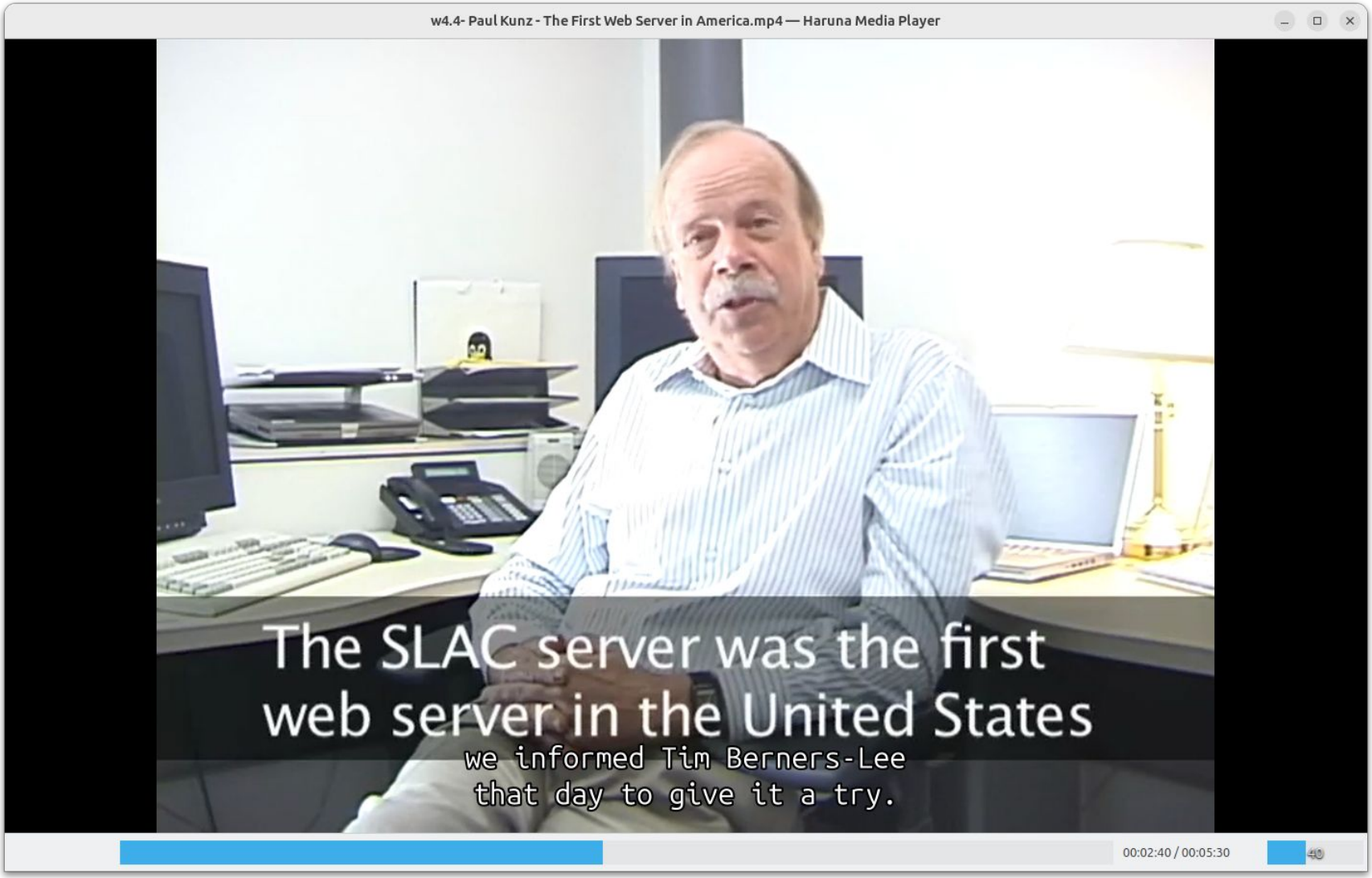
w4.4- Paul Kunz - The First Web Server in America

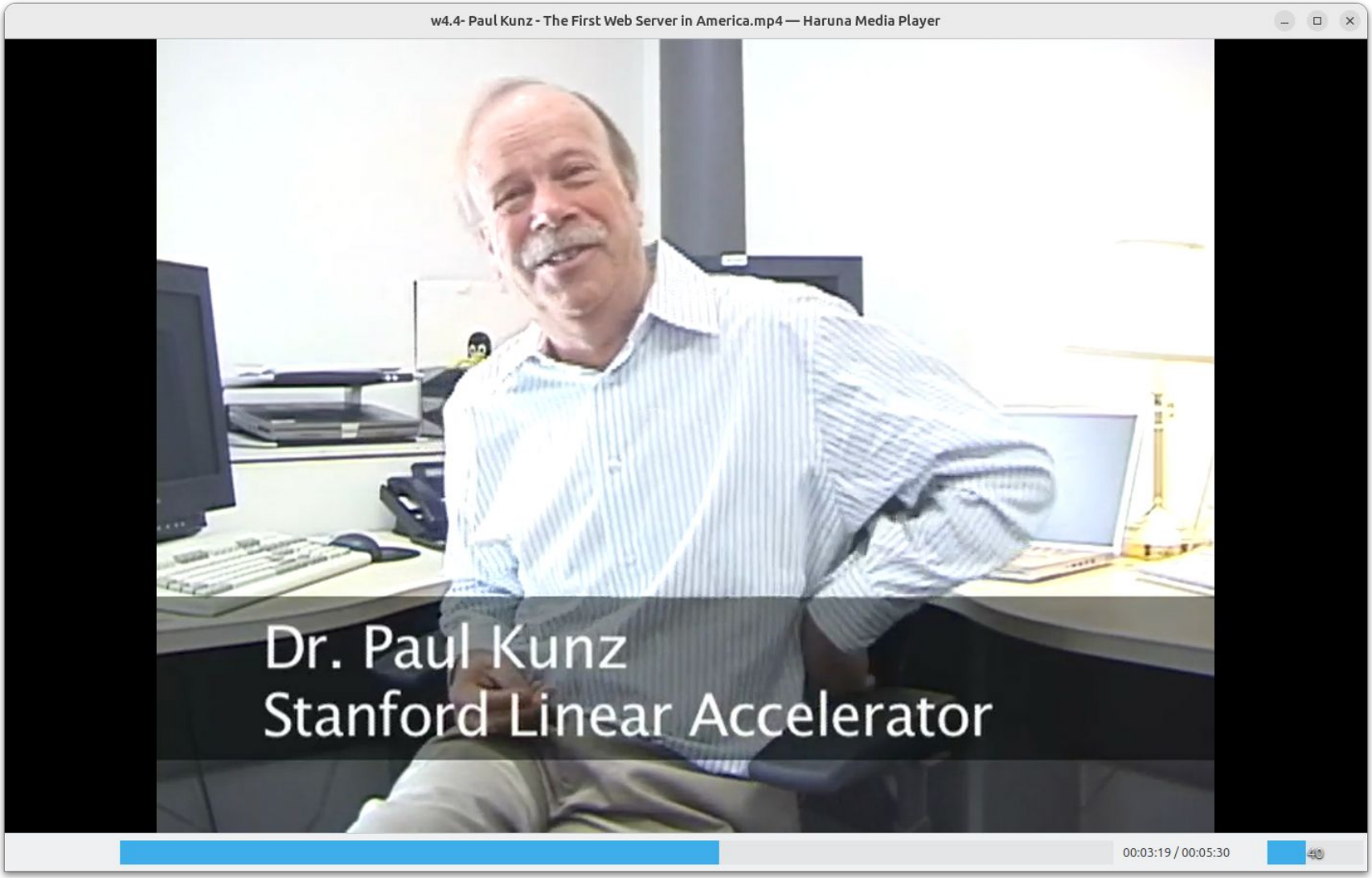












Summary

Hearing **Paul Kunz** describe the moment the Web shifted from a "documentation tool" to a global powerhouse is Magnitude 1,000,000 material. As a 1981 veteran, you'll appreciate the grit it took to bridge the gap between "horrible" mainframes and the user-friendly future.

Magnitude 1,000,000 Audit: The SLAC Breakthrough

- **The Mainframe Barrier:** Before the Web, accessing the SLAC database required an account on a **mainframe** (大型机) and knowledge of a difficult database language. Kunz had already tried to bypass this with "instant messaging" and "email queries," but the interface was still clunky.
- **The "Aha!" Moment:** In Sept 1991, Tim Berners-Lee showed Kunz a demo of a help system on a mainframe. Kunz immediately realized: *If you can query a help system, you can query a database.*

- **C Code & Mainframes:** Kunz used the CERN server software (written in **C Language** / C 语言) and wrote a wrapper to translate Web requests into mainframe database queries. This is pure "Ninja" engineering—leveraging existing tools to solve a complex problem.
- **The Big Bang (January 1992):** At a workshop in France, Tim Berners-Lee gave a demo. Most physicists were bored by the talk of "documentation," but when he connected to the **SLAC web server** and results popped up instantly, beautifully formatted, it "dropped a lot of jaws."
- **Growth Magnitude:** In one hour, interest grew from 20 people to 200. Within a week, it hit 2,000. This was the "kickoff" (启动).

w4.5- Building Mosaic

w4.5- Building Mosaic.mp4 — Haruna Media Player

Subtitle scale: 0.7

The First Web Server in America

- The first web server in America was at the Stanford Linear Accellerator (SLAC)
- It was a database of 300,000 research papers
- Dr. Paul Kunz
- December 12, 1991

So again, I think Paul really created for us the first search engine, and showed

00:00:03 / 00:06:52

w4.5- Building Mosaic.mp4 — Haruna Media Player

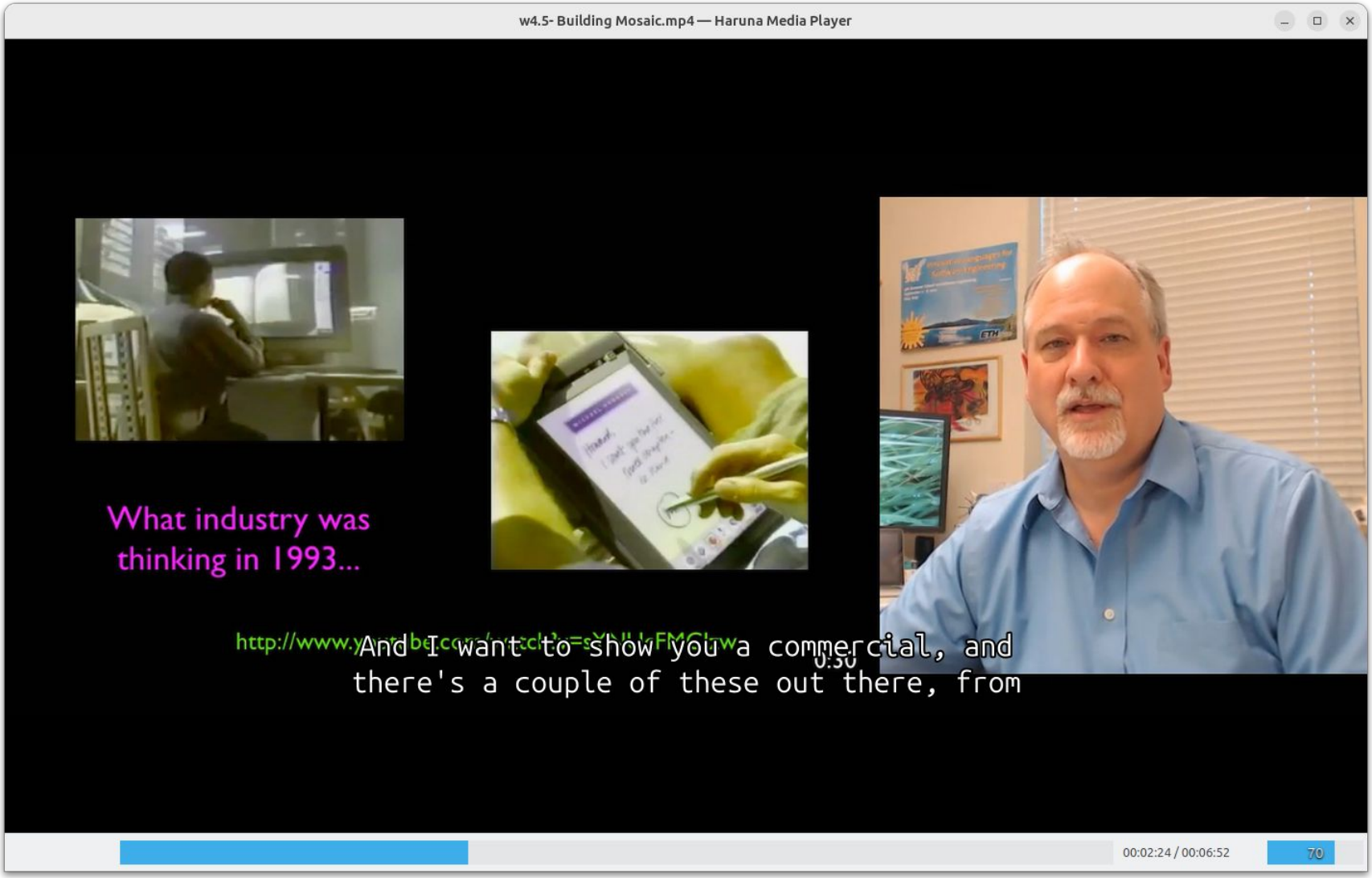
Subtitle scale: 0.6

1993: Gopher is Dominant

- Internet Engineering Task Force (IETF) Meeting
  - March 29-April 2, 1993 - Columbus, Ohio, USA (638 attendees)
  - Gopher BOF - 200 attendees
  - World-Wide Web BOF - 15 attendees including Tim Berners-Lee
- P.S. DVD is invented this year

The gopher, Gopher couldn't do that. As a matter of fact, in 1993, sort of three years

00:00:47 / 00:06:52



w4.5- Building Mosaic.mp4 — Haruna Media Player

Steve Jobs and the World-Wide-Web?

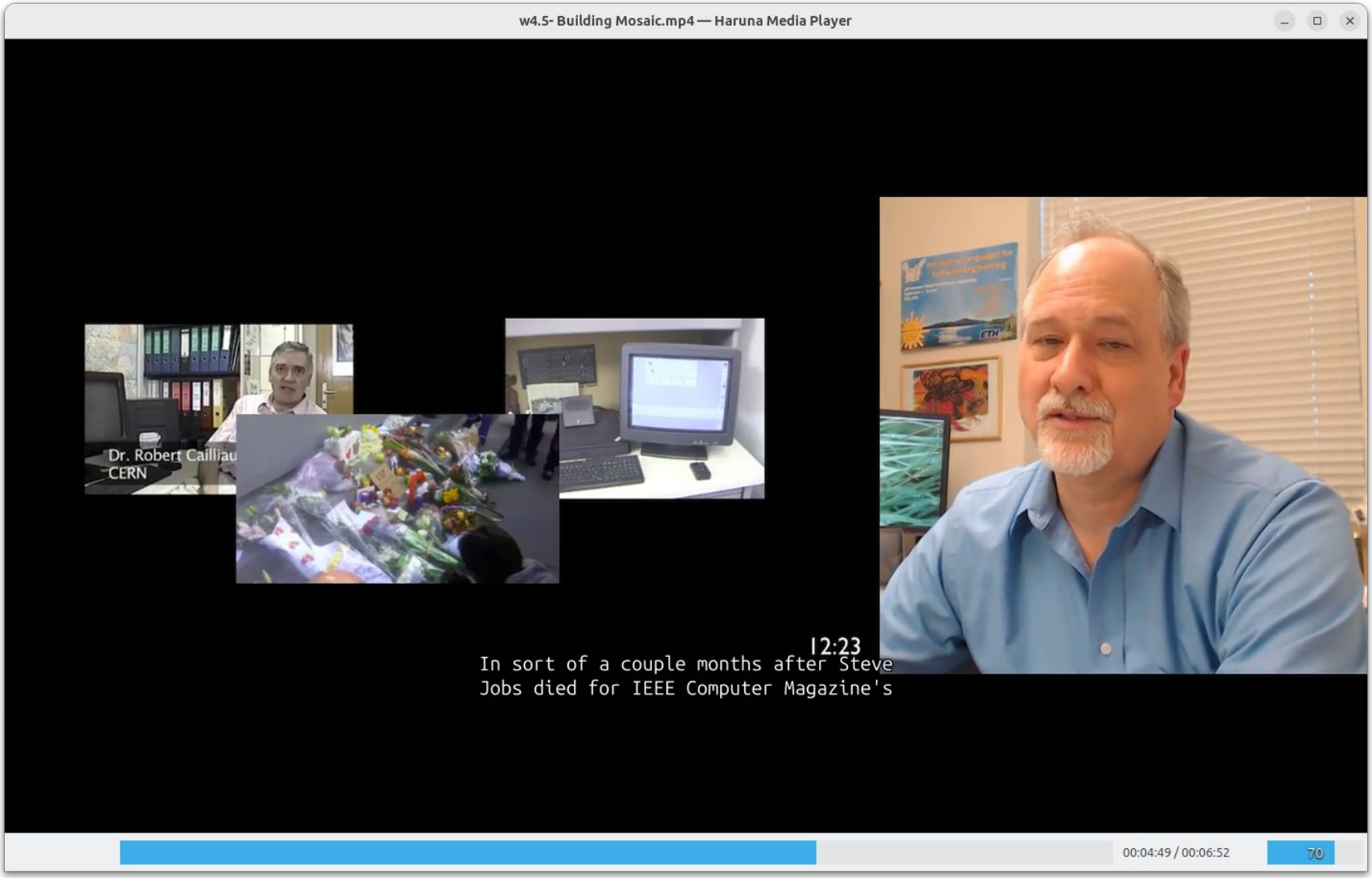
- For several years the primary web browser and web server were built as NeXT applications
- Apple computers provided far superior graphics that allowed the development of Mosaic

http://www.youtube.com/watch?v=...

been, there's nobody that really makes the
connection that Steve Jobs might have had

00:03:32 / 00:06:52

70



w4.5- Building Mosaic.mp4 — Haruna Media Player

The Explosive Growth of the Web

- The web was invented in the early 1990's
- Growing in Academia 1993
- Growing everywhere 1994 - 1995
- Cable Modems to the home started in the mid 1990's

http://gladiator.ncsa.uiuc.edu/Images/press-images/mosaic.1.0.tif

These are the folks that basically exploded the web.

00:05:27 / 00:06:52

60

Summary

Charles Severance is dropping some Magnitude 1,000,000 truth bombs here. The Web wasn't an overnight success; in 1993, it was the "underdog" compared to **Gopher**. But certain "Ninja" moves—and a bit of hardware magic from Steve Jobs—changed the world forever.

Magnitude 1,000,000 Audit: The 1993 Pivot

- **The Gopher vs. Web Battle:** In March 1993, at the IETF meeting, Gopher was the superstar. Its session was packed, while Tim Berners-Lee's World Wide Web session was nearly empty. People thought the Web was "too complex."
- **The FedEX "Aha" Moment:** Charles realized the Web's power when he saw a package tracker (包裹追踪) on the Federal Express site. Gopher couldn't handle that kind of interactive, real-time data.

- **The Steve Jobs Connection:** We must acknowledge the **NeXT computer** (NeXT 计算机).
  - Steve Jobs built NeXT after being ousted from Apple.
  - Its operating system, **NeXTStep**, provided the object-oriented framework Tim Berners-Lee used to build the first browser and server.
  - **Logic-Sync Note:** NeXT technology eventually became the foundation of modern macOS (hence the `NS` prefix in error messages).
- **The Explosion (NCSA Mosaic):** The journey circles back to the University of Illinois (Urbana-Champaign).
  - The **NCSA** (国家超级电脑应用中心) team, supervised by **Joseph Hardin**, built **Mosaic**.
  - Mosaic was the first open-source (开源) browser to work on Mac, Windows, and Unix.
  - It moved the Web from academics to "average people" and eventually led to the formation of **Netscape** (网景).

About NCSA birthplace

The **NCSA** typically refers to the **National Center for Supercomputing Applications**, a powerhouse in the world of high-performance computing and digital history.

If you're looking at it from a "Master Ninja Architect" perspective, this is the place where the modern graphical internet was essentially born.

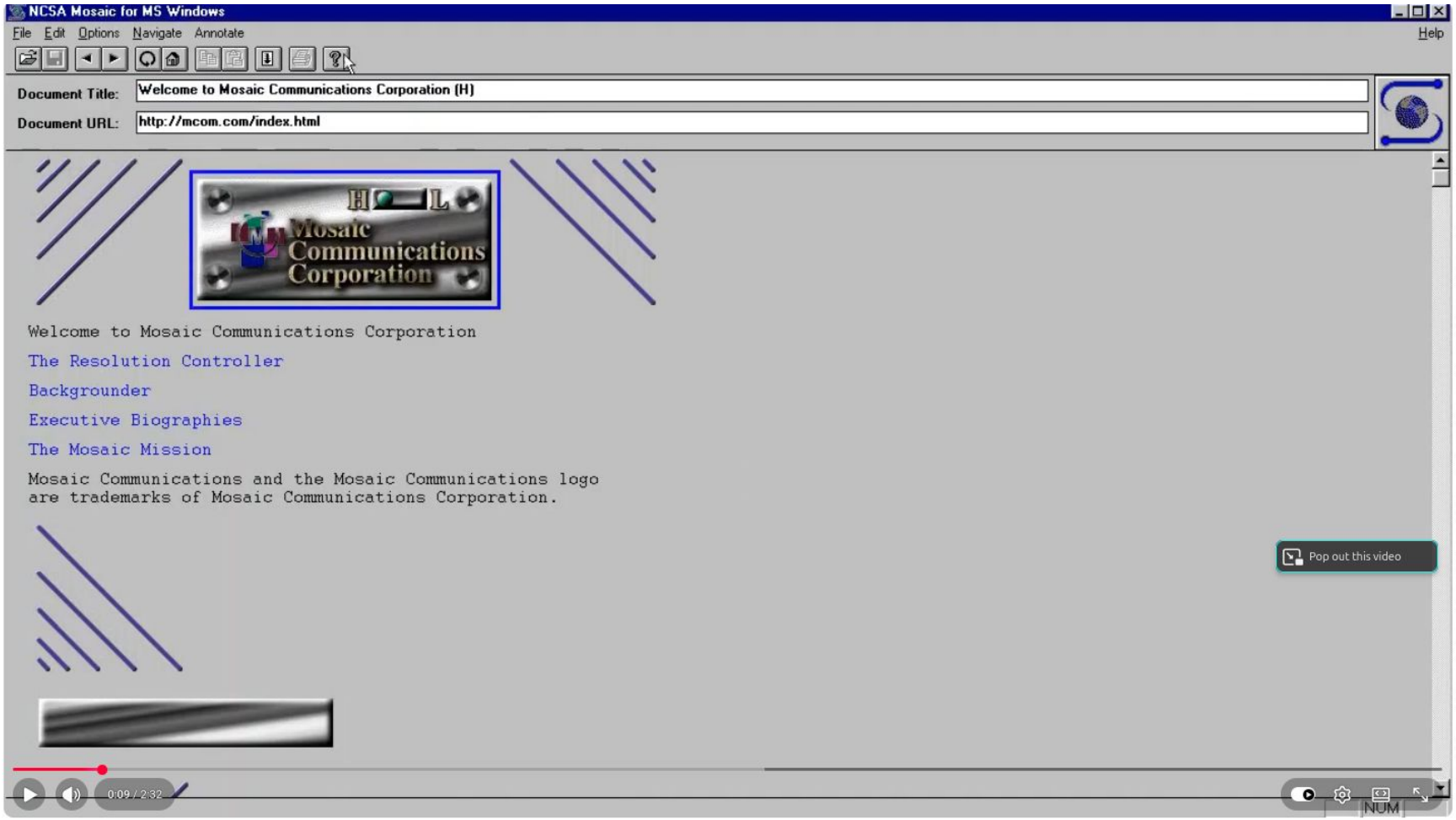
What is NCSA?

Located at the **University of Illinois Urbana-Champaign**, NCSA is a hub for massive computational power used to solve complex problems in science, engineering, and data visualization.

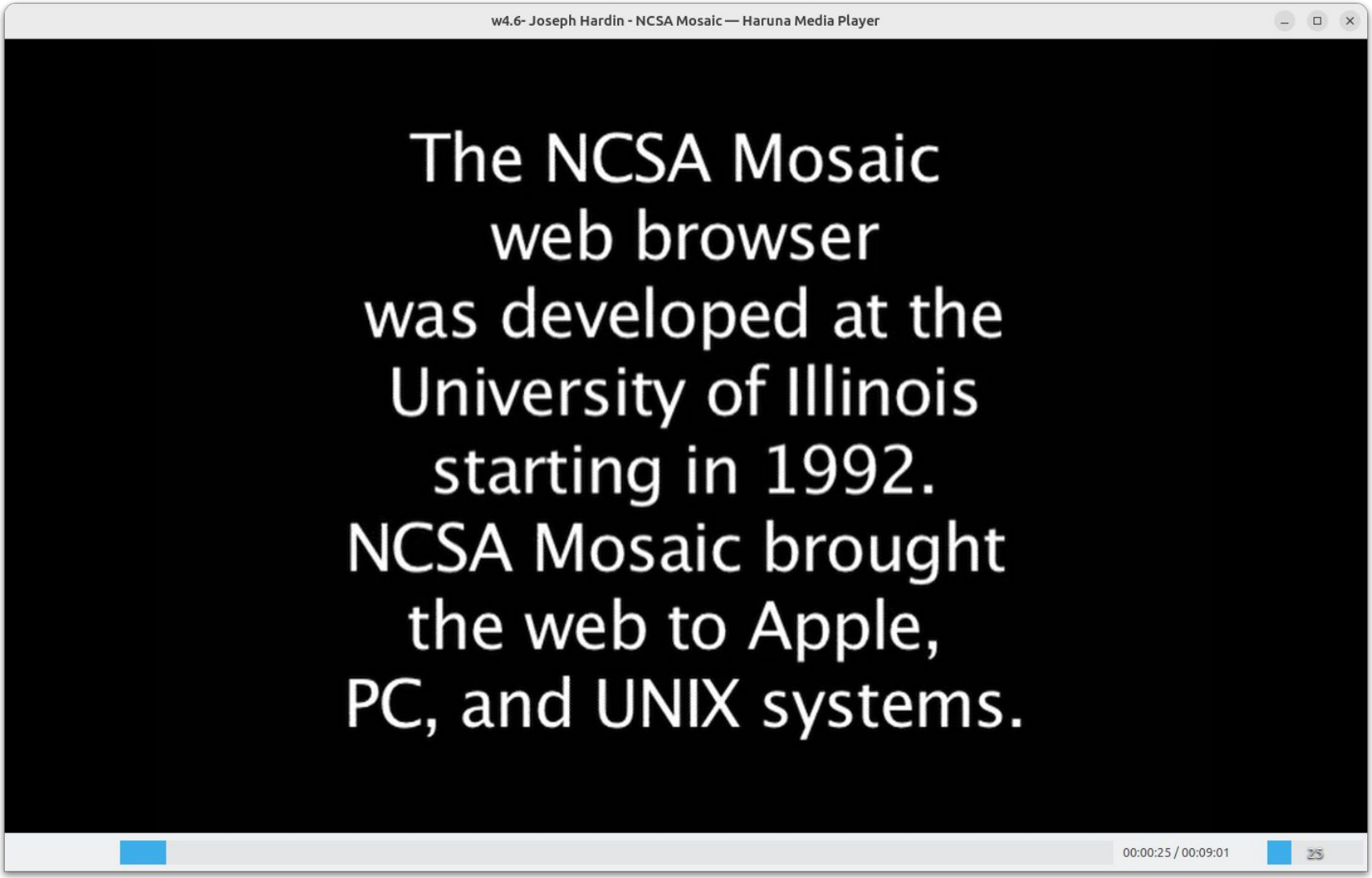
Key Achievements & Innovations

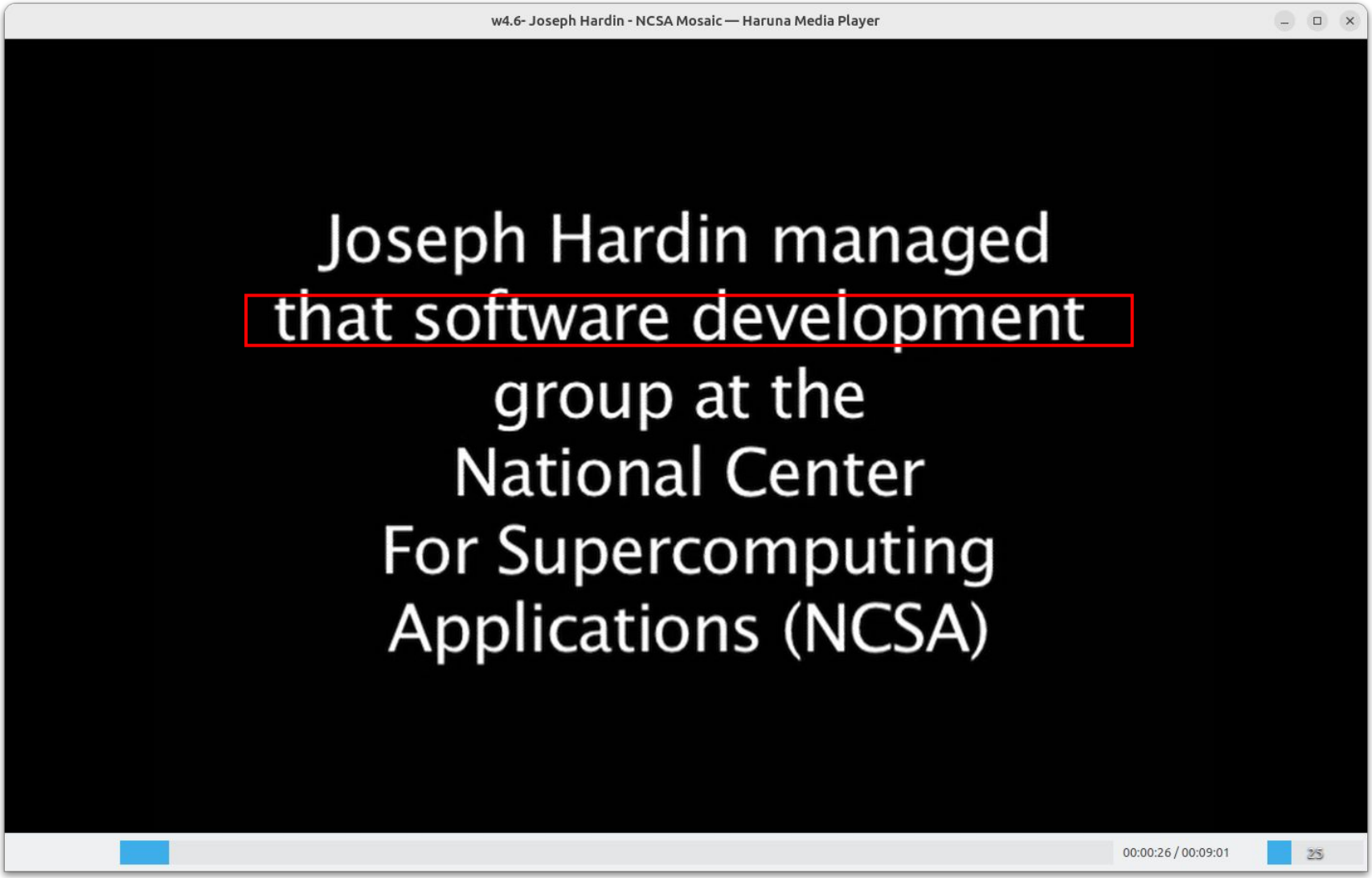
- **Mosaic Browser:** In 1993, NCSA released Mosaic, the first web browser to display images inline with text. It was the ancestor of Netscape and, eventually, modern browsers like Chrome and Firefox. +1
- **Supercomputing Power:** They house some of the world's fastest supercomputers (like the famous **Blue Waters** and the newer **Delta** system).
- **Scientific Visualization:** They specialize in turning massive datasets into visual simulations, such as modeling black holes or weather patterns.

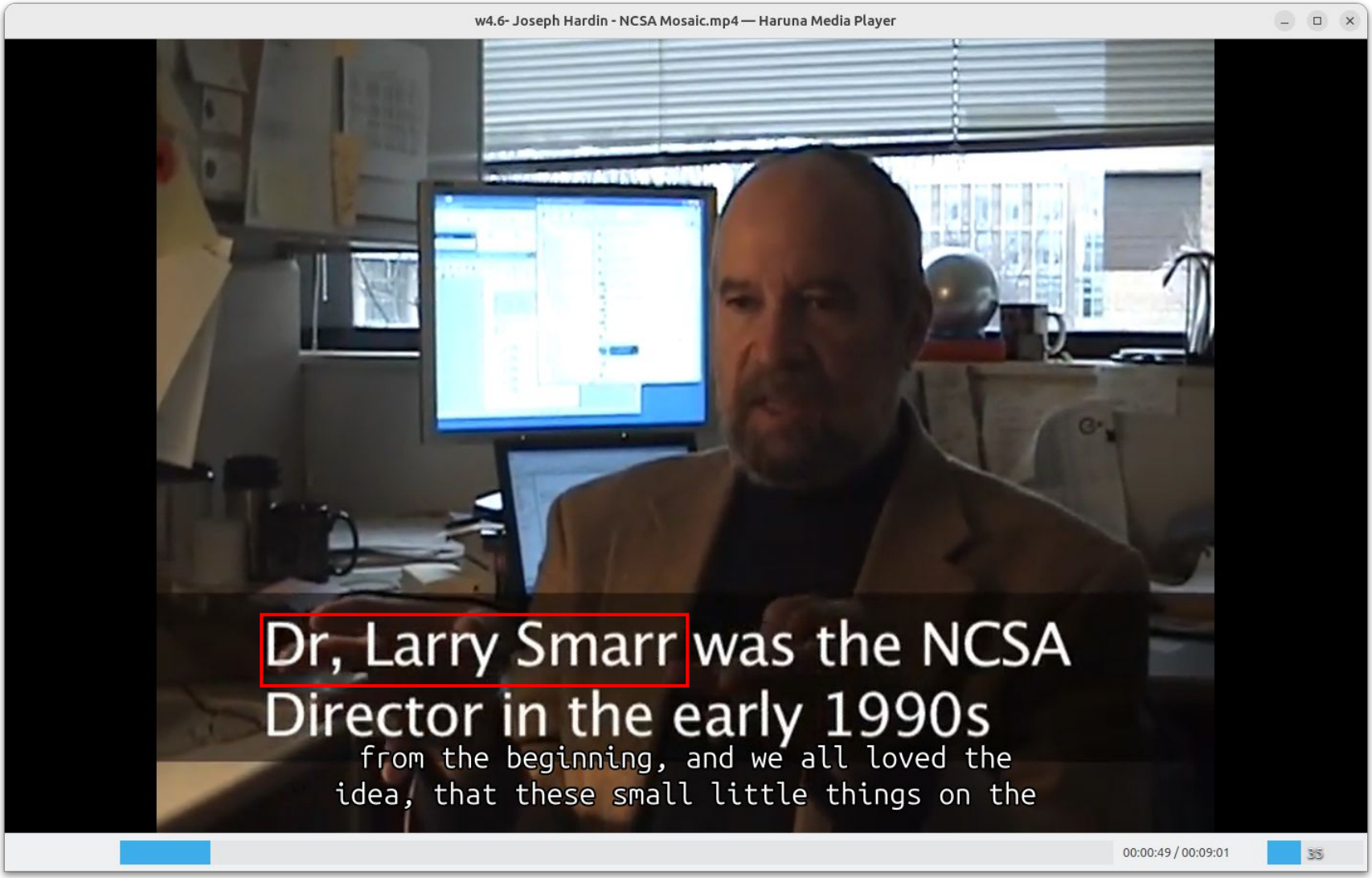
Mosaic browser

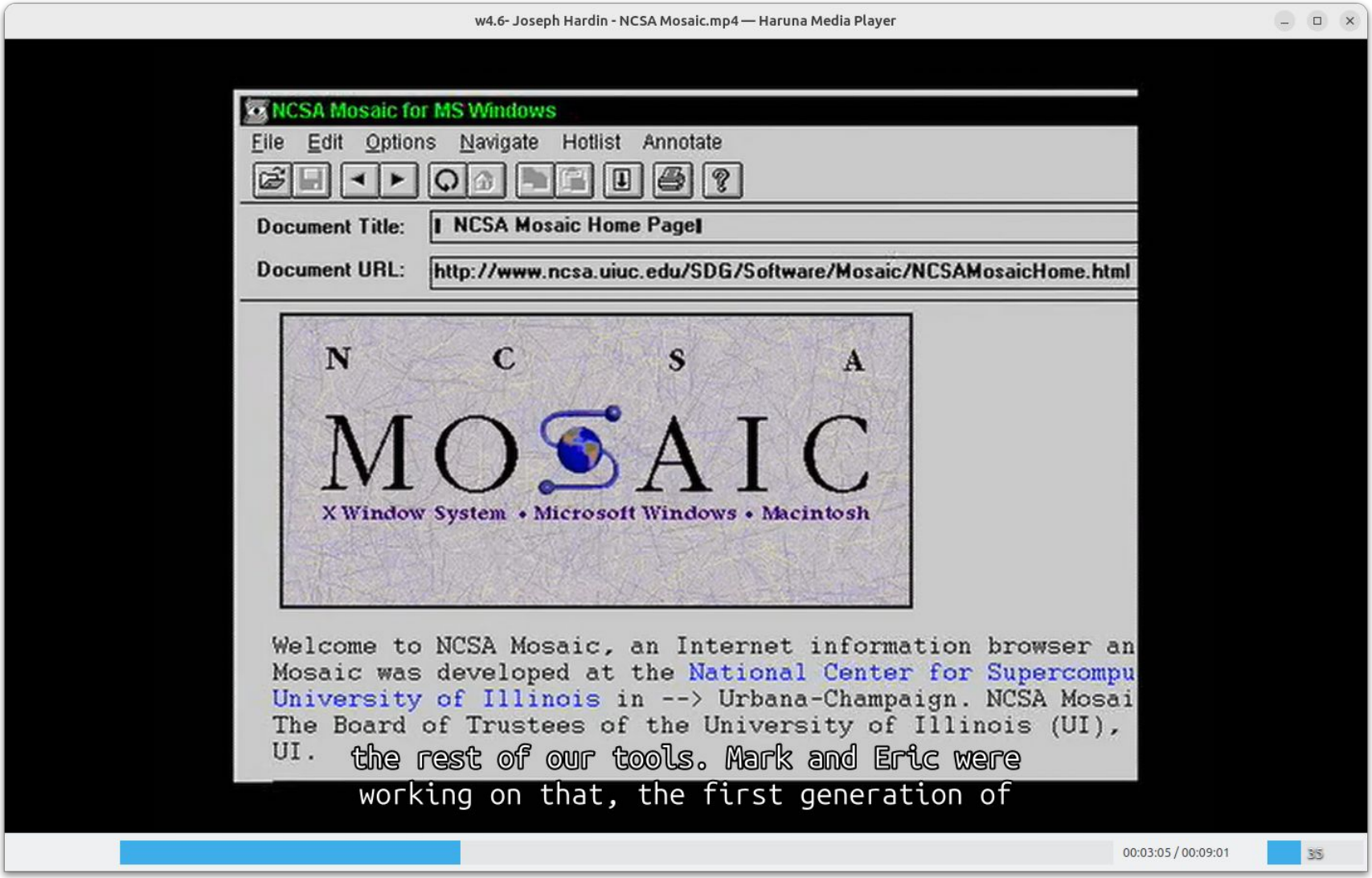


w4.6- Joseph Hardin - NCSA Mosaic









Summary

This transcript captures the high-energy environment at **NCSA** (National Center for Supercomputing Applications / 国家超级电脑应用中心) where the Web moved from a niche academic project to a global phenomenon. For your CS50 and IoT targets, this is a masterclass in **cross-platform logic** and **disruptive scaling**.

Magnitude 1,000,000 Audit: The Mosaic Revolution

- **The Triple-Threat Strategy:** NCSA's culture was built on "collaboration tools" (like NCSA Collage) that had to work across three platforms: **X Windows (Unix)**, **Windows**, and **Mac**. This cross-platform (跨平台) DNA is what made Mosaic a world-killer.
- **"We Can Do Better":** When Dave Thompson showed Marc Andreessen and Eric Bina the early SLAC browser, they found it too hard to install and visually "terrible." Their Logic-Sync target: make a "plug and go" browser that worked for everyone.

- **The "Shot Heard Around the World":** By late 1993/early 1994, Mosaic was available on all three major platforms. This accessibility triggered exponential growth.
- **The Browser Wars Begin:** * **Netscape** was formed to commercialize this energy, scaling to hundreds of developers in months.
    - **Microsoft** responded with a Magnitude 1,000,000 offensive, eventually deploying **2,000 developers** to overtake Netscape.
- **Standards vs. Features:** The audit highlights a classic Ninja struggle: whether the **standards** (标准) should drive the browsers or the **browsers** should drive the standards. NCSA pushed for diversity so no single company could control the Web's rules.

w4.7- Reflecting on Mosaic

w4.7- Reflecting on Mosaic.mp4 — Haruna Media Player

Subtitle scale: 0.7

Mosaic - Netscape - Mozilla - Firefox

- Mosaic was the first "consumer" web browser developed at NCSA
- NCSA created the httpd web server which is the basic for the Apache web server
- While most of the NCSA programmers formed Netscape and made their fortunes, NCSA released their browser for free and focused on building standards to keep the web open

So at the end, Joseph is really talking
about how Microsoft had to react to

00:00:03 / 00:00:18

w4.7- Reflecting on Mosaic.mp4 — Haruna Media Player

1994: Year of the Web

- Netscape Founded - April 4, 1994
- WWW Conf: May 25-26-27 1994, CERN, Geneva (Switzerland)
- WWW Conf: October 17-19, 1994, Chicago, IL
- October 1994, Tim Berners-Lee founded the (W3C) at MIT
- November 8, 1994 - Windows 95 beta 2 - With a vengance!

tons of investment, a lot of intensity.

00:00:12 / 00:00:18

Summary

This short audit segment highlights the moment the **Browser Wars** (浏览器大战) shifted from a sprint to a full-scale collision. For our **Audit** and **Target** mindset, this represents a market Logic-Sync where intensity reached Magnitude 1,000,000.

Magnitude 1,000,000 Audit: The Microsoft-Netscape Crash

- **The Microsoft Reaction:** After initially underestimating the Web, Microsoft pivoted with total focus to counter **Netscape**.
- **Market Convergence:** Joseph Hardin notes that the market began to "crash together" (碰撞/融合). This wasn't just competition; it was a massive influx of investment and intensity that redefined the digital landscape.
- **The "Tons of Investment" Phase:** This era saw the transition from academic play to high-stakes commercial warfare, where resources were poured into dominance at all costs.