HL7® International

Annual Plenary Meeting

Innovative Solutions to Address Today's Interoperability Challenges

Monday, September 16, 2019
Atlanta, GA

HL7 International

33rd Annual Plenary Meeting

Monday, September 16, 2019

Innovative Solutions to Address Today's Interoperability Challenges

8:30 – 8:40 am

Welcoming Comments and HL7 CEO Report

Charles Jaffe, MD, PhD, CEO, Health Level Seven International

8:40 – 9:20 am

Keynote Session 1:
Storming the Citadel from the Inside: Using Standards to Set Data Free

Twenty years since the first Office of the National Coordinator for Health Information Technology was established, electronic medical record data is still imprisoned within a Tower of Babel. The HL7 community and groups like FHIR who depend on it have been focused on how to reform the data systems to set data free. It's time we think bigger and design whole systems from the ground up in which the data cannot be hoarded. Using cancer as the example, "Storming the Citadel" will address the cultural and technical challenges to creating the cancer research and care system that most people think we already have.

Gregory Simon, JD, President, Biden Cancer Initiative

9:20 – 9:50 am

Keynote Session 2:
Role of HL7 and FHIR in Public Health

For more than 70 years, CDC scientists have worked around the world to track diseases, research and end outbreaks, and respond to emergencies of all kinds. Modern IT capabilities and Health IT Standards, including HL7 FHIR, are changing the way public health organizations collect, use, and share data to help strengthen America's health and resilience. Under the Public Health Data Modernization Initiative, CDC and its partners are exploring ways to move from traditional approaches, designed for a simpler era, to automated feeds that put less burden on data providers and that deliver value back to the healthcare system.

Chesley Richards, MD, MPH, Deputy Director for Public Health Science and Surveillance, Centers for Disease Control and Prevention (CDC)

9:50 – 10:20 am

Keynote Session 3:
Public Policy Updates Impacting the HL7 Community

Understanding what is happening in the legislative and regulatory space will help you and your organization plan and anticipate challenges and opportunities in the short- and long-term. This presentation will help the audience understand the current leading topics of interest to policy makers and translate it into what it could mean for the HL7 community.

Brad Wolters, Director, Federal Government Relations at Marshfield Clinic Health System

10:20 – 10:55 am

Break

10:55 – 11:25 am

Keynote Session 4:
AWS Vision across Healthcare, Life Sciences and Genomics

AWS enables precision health by transforming every aspect of the healthcare, life science and genomics value chain. True examples will be shared of how AWS has positively impacted pharma, biotech, payers, providers as well as genomics-enabled precision health.

Shez Partovi, MD, AWS Vision Across Healthcare, Life Sciences and Genomics

11:25 – 11:55 am

Keynote Session 5:
Democratized Innovation: Building a Healthier Future with Machine Learning and the Cloud

Healthcare is being transformed with each technological breakthrough, but there is much untapped potential. The innovation infrastructure is being democratized and stakeholders are capitalizing — from improving patient engagement to advancing scientific breakthroughs. What does this mean for the global industry? How can we hasten progress and ensure Cloud and AI technology are used to increase the quality of life for everyone?

Aashima Gupta, Director, Global Healthcare Solutions, Google

11:55 – 12:20 pm

Keynote Session 6:
Reimagining Healthcare

The infrastructure of healthcare is moving to the cloud. This is a shift that will be truly historic, not only because it will happen only once, but because it may finally enable the interoperable, accessible, and AI-powered healthcare delivery platform that has been promised for so many years. However, as with other technology shifts, sometimes best intentions fail and data ends up in a maze of twisty little data silos – different silos than today's, but fundamentally no better. This talk explores what is at stake, and suggests some specific interventions that developers can make today to ensure a better healthcare future.

Greg Moore, MD, PhD, Corporate Vice President, Health Technology and Alliances, Microsoft

12:20 – 12:30 pm

Closing Comments

Calvin Beebe, Chair, HL7 Board of Directors

HL7's 33rd Annual Plenary

Welcoming Comments and HL7 CEO Report

8:30 – 8:40 am

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Charles Jaffe, MD, PhD

CEO, HL7 International

HL7 International

Plenary Meeting Notes:

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HL7's 33rd Annual Plenary

Storming the Citadel from the Inside: Using Standards to Set Data Free

8:40 – 9:20 am

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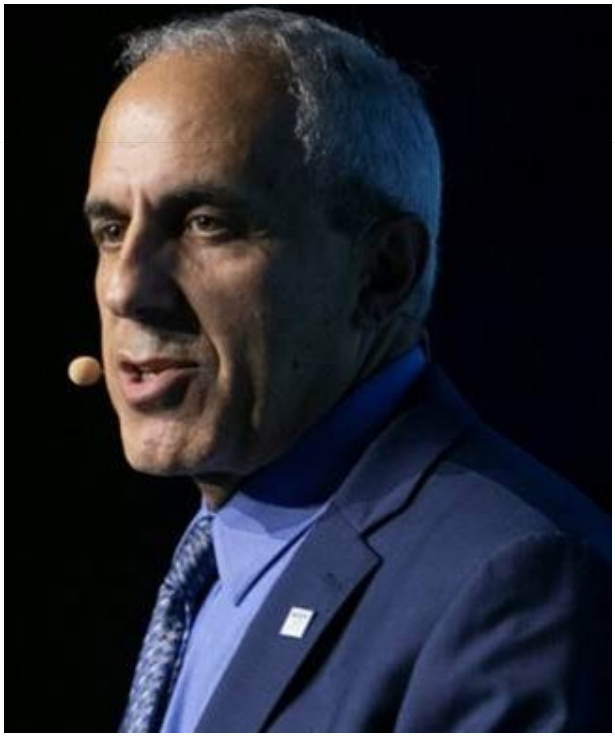


Gregory Simon, JD

Former President, Biden Cancer Initiative

Gregory Simon, JD

Former President, Biden Cancer Initiative

Greg Simon was recently the President of the Biden Cancer Initiative (BCI), an independent nonprofit organization devoted to doubling the rate of progress in preventing, detecting, diagnosing, treating, and surviving cancer. The Initiative's work focused on building the cancer research and care system that most people think we already have. Since it was created in 2017, BCI helped launch 57 partnerships that provided needed services to patients. Additionally, BCI worked to: develop common cancer data terminology, common data standards and assays in immunotherapy, promote better clinical trial design and matching programs, increase HPV vaccine uptake, and promote patient navigation services and access to care for all people.

In 2016, Greg served as the Executive Director of the White House Cancer Moonshot Task Force, a position created by President Barack Obama. Vice President Joe Biden selected Greg to run the Task Force. Over nine months, Greg and his team helped launch nearly eighty innovative collaborations. Prior to the Moonshot, Greg was the CEO of Poliwogg, a financial services company creating unique capital market opportunities in healthcare and life sciences.

From 2009-2012, Greg was Senior Vice President for Worldwide Policy and Patient Engagement at Pfizer. He advised the CEO during negotiations on the Affordable Care Actand developed the first of its kind patient feedback program for patients who completed clinical trials.

In 2003, Greg co-founded with Michael Milken, FasterCures/The Center for Accelerating Medical Solutions. As President of FasterCures, he built an

organization valued and recognized for catalyzing systematic change in the discovery and development process of new therapies for deadly and debilitating diseases. In 2007 with Leon and Debra Black he cofounded the Melanoma Research Alliance.

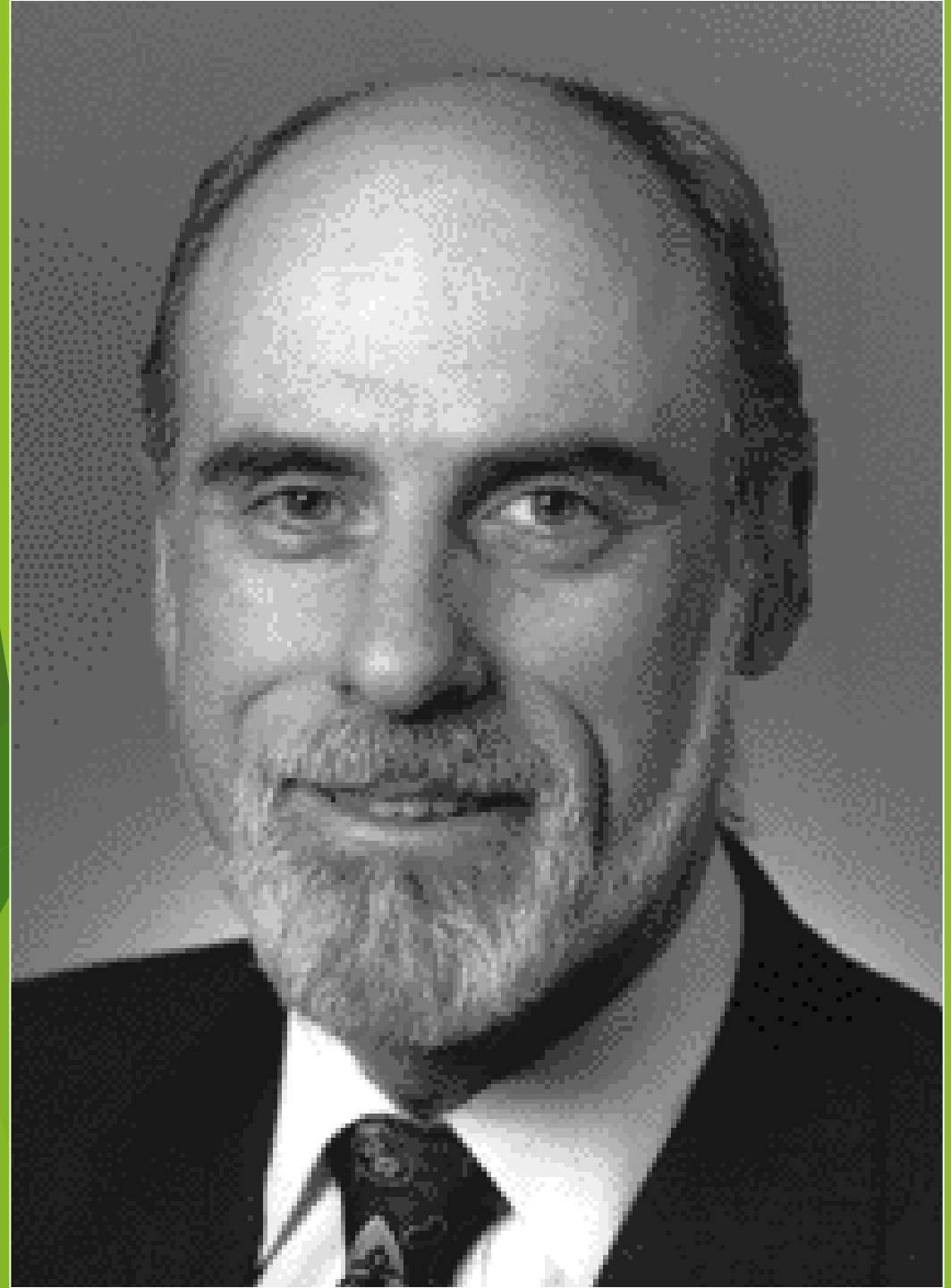
Between 1993 to 1997, Greg served as Chief Domestic Policy Advisor to Vice President Al Gore, focusing on economic, science, and technology issues. In that position he oversaw several initiatives, including the programs of the National Institutes of Health (NIH), National Cancer Institute (NCI), Food and Drug Administration (FDA), the Human Genome Project, and the development of the regulatory framework for biotechnology products. He was a member of the Clinton Administration team that created the partnership with Russia for the International Space Station. Greg was also the lead White House staffer for the drafting and passage of the Telecommunications Reform Act of 1996.

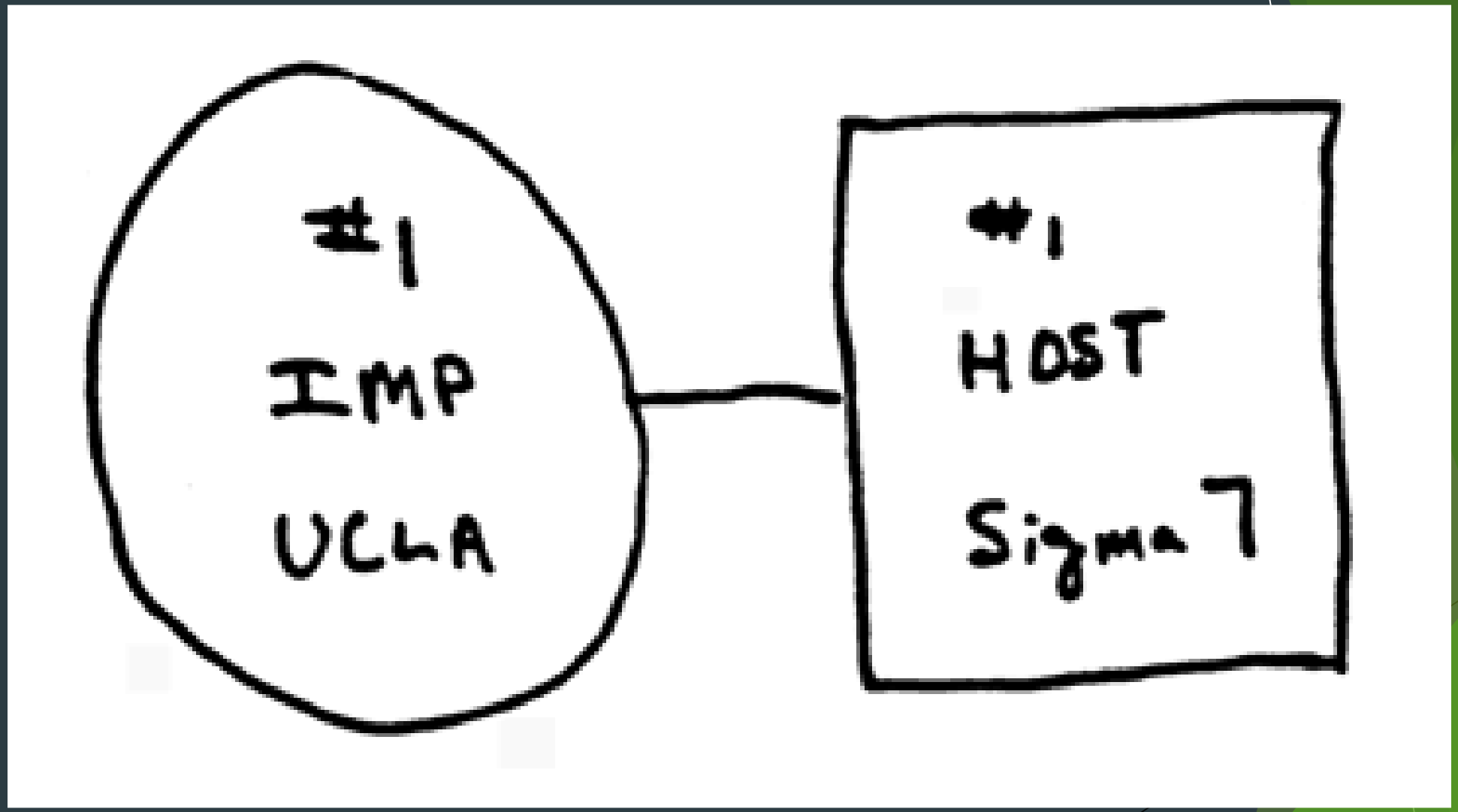
Greg served as then-Sen. Gore's Legislative Director from 1991-1993. He helped secure passage of the High-Performance Computing Act of 1992. From 1985 to 1991, Greg was the Staff Director of the Investigations and Oversight Subcommittee of the House of Representatives Committee on Science, Space and Technology. He was a member of the Committee's team investigating the Challenger explosion and was a key figure in the development of the Coordinated Framework for the Regulation of Biotechnology in 1986. Following his government service, Greg was CEO of Simon Strategies, a consulting firm focusing on clients in biotechnology, health care, technology and information technology, among others.

Storming the Citadel: From the Inside

Using Standards to set Data Free

Gregory C. Simon
President, Simonovation, LLC
September 16, 2019

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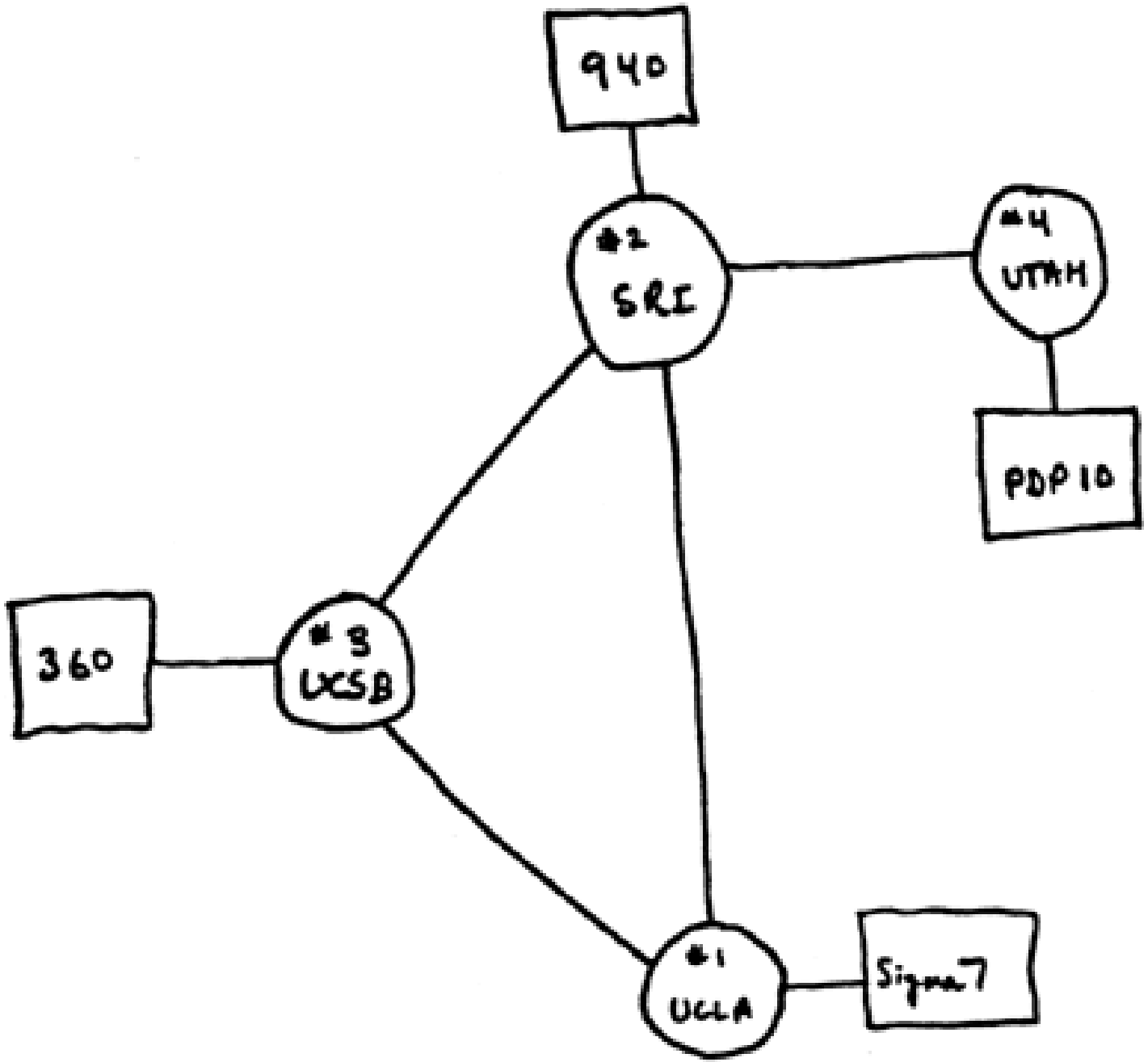
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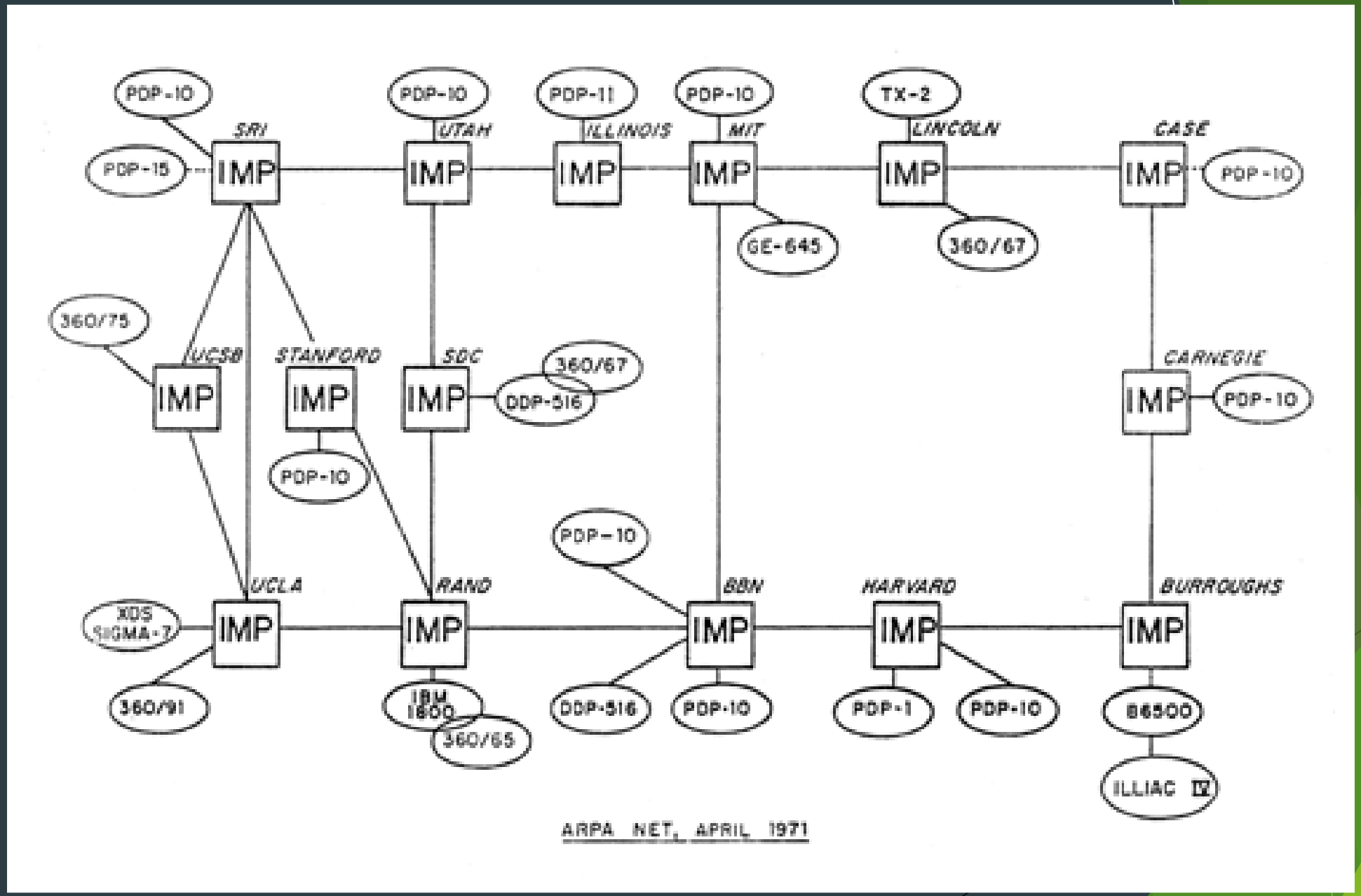
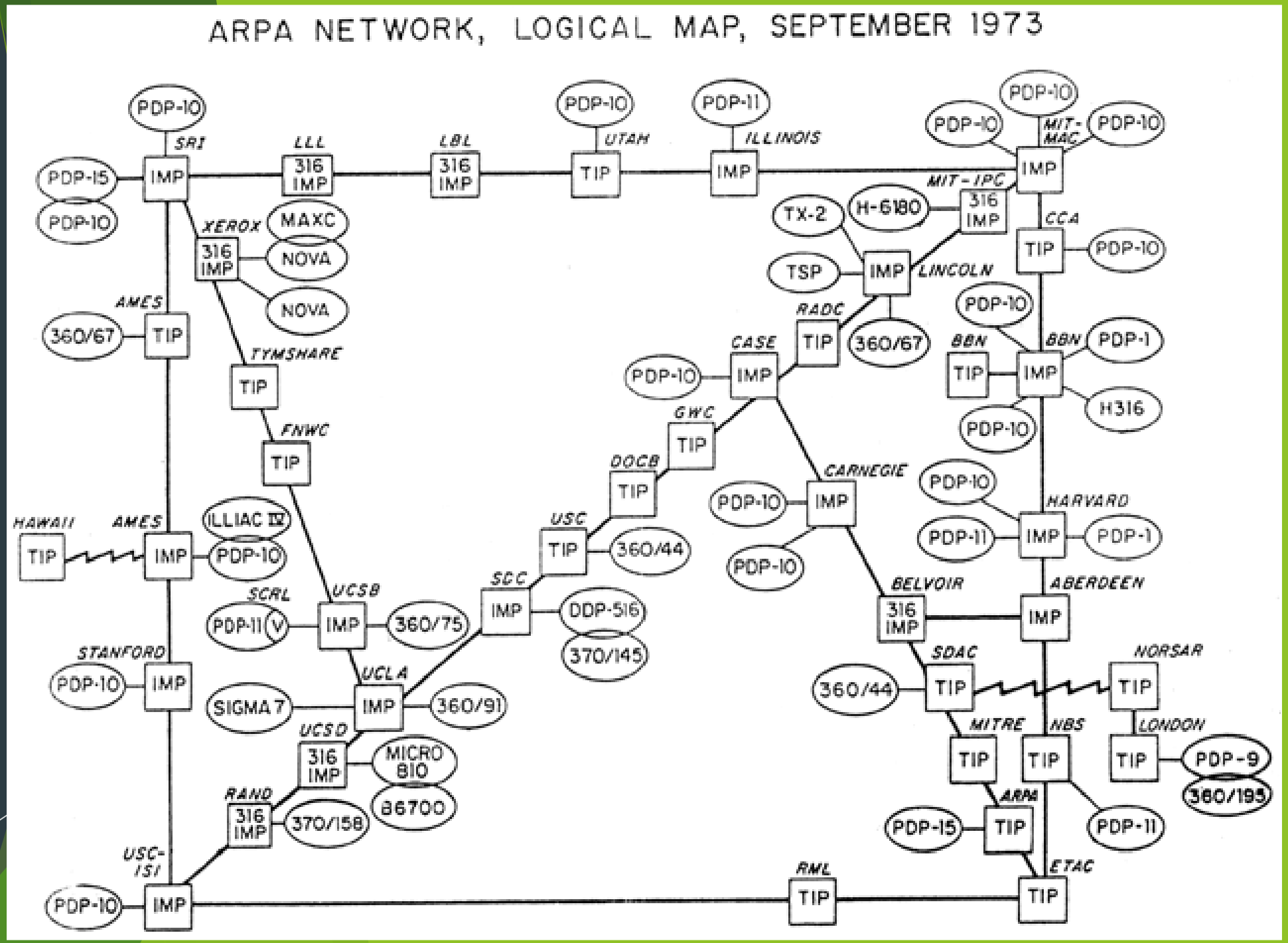
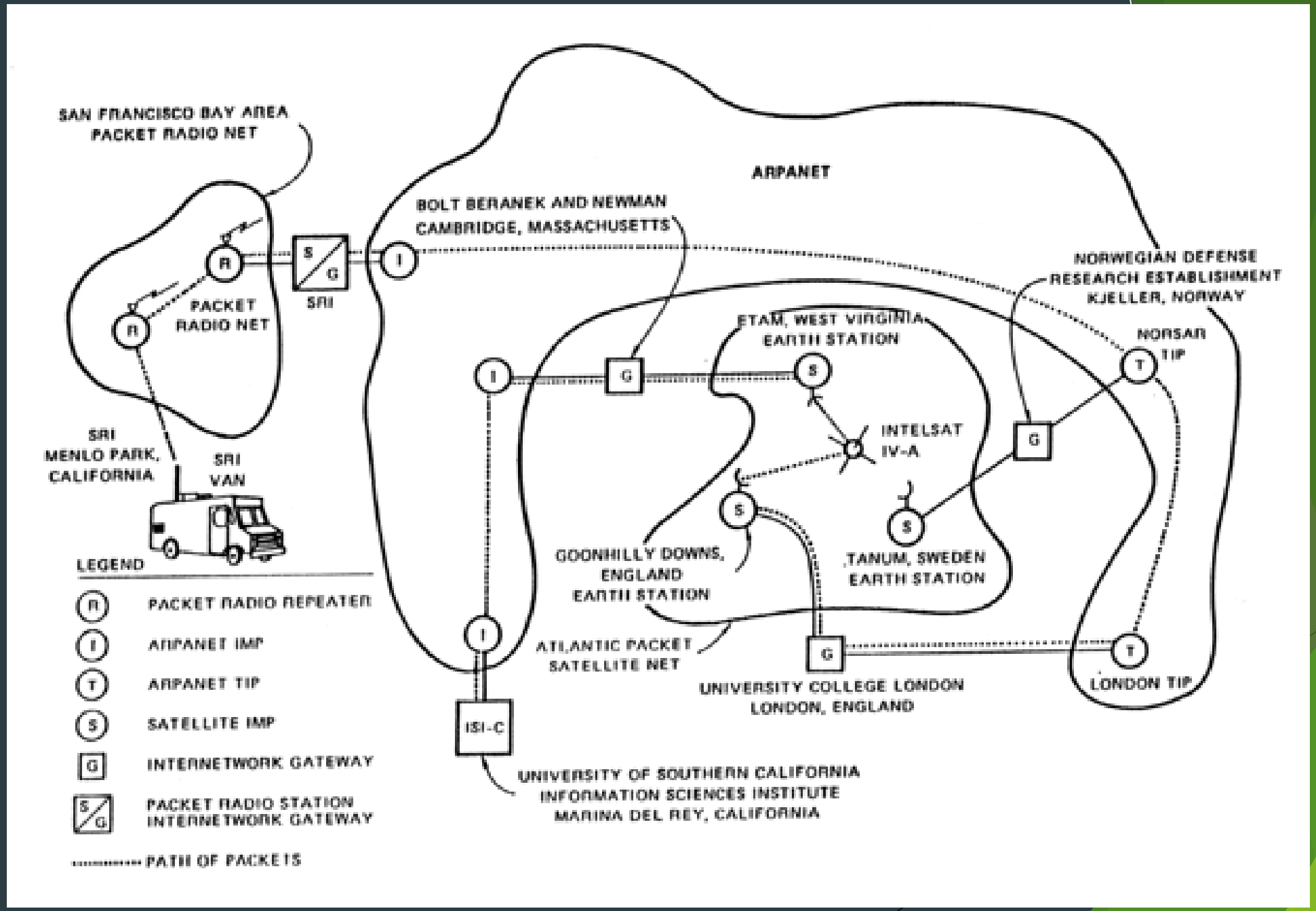
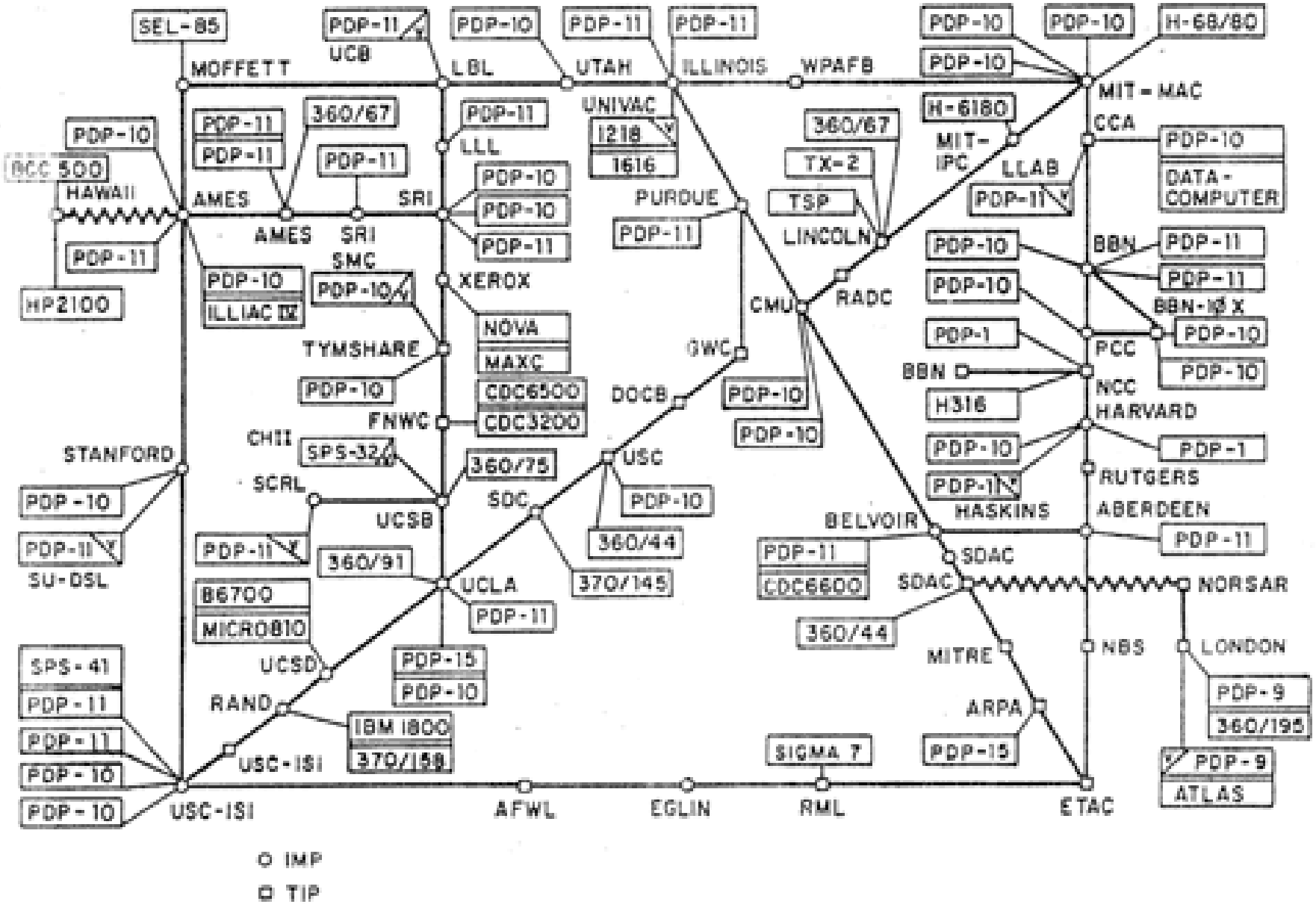


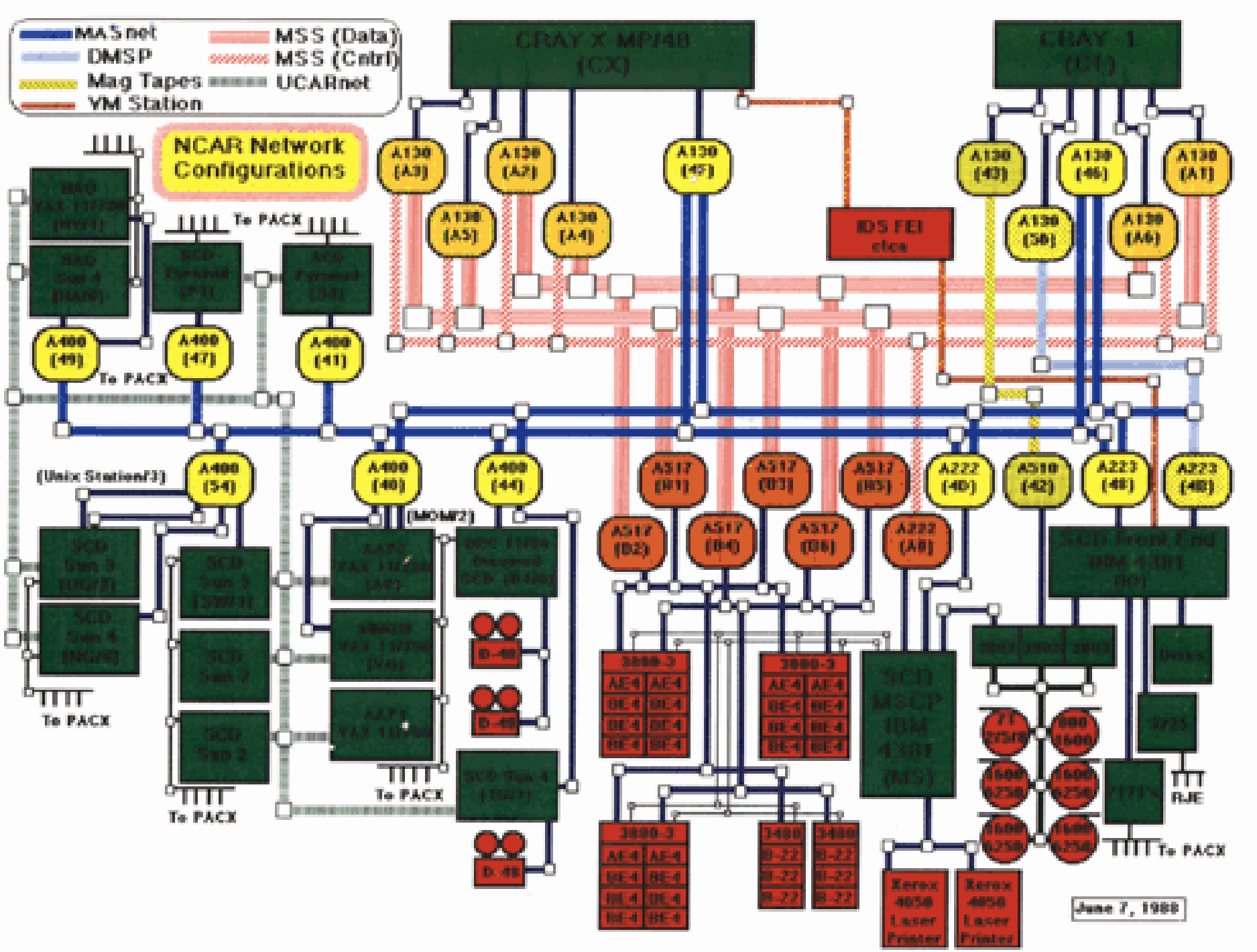
ARPA NET, APRIL 1971

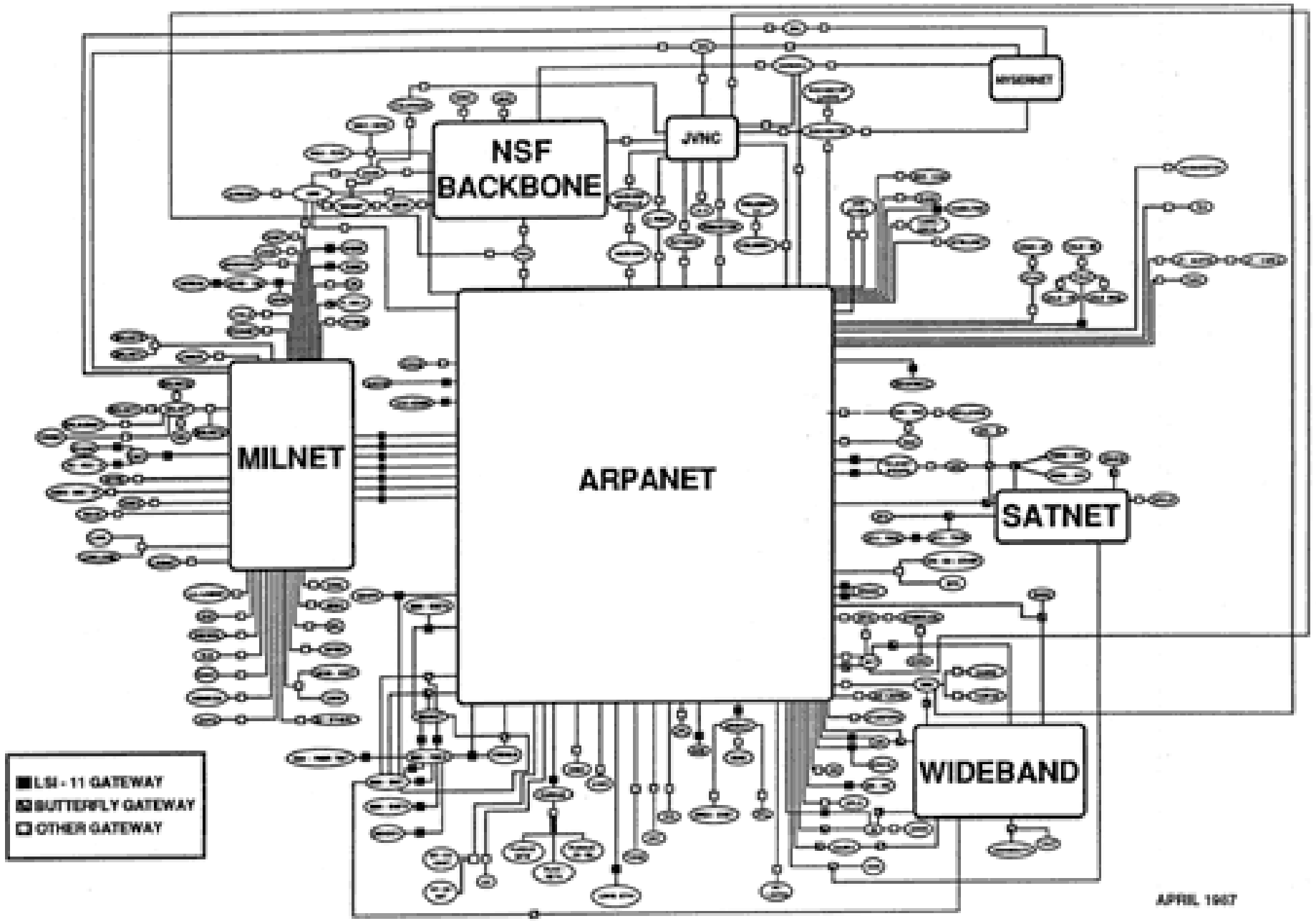

ARPA NETWORK, LOGICAL MAP, SEPTEMBER 1973
SRI
LLL
LBL
UTAH
ILLINOIS
MIT-MAC
MIT-IPC
XEROX
AMES
TYMSHARE
FNWC
RADC
CASE
GWC
DOCB
USC
CARNEGIE
BBN
HARVARD
HAWAII
SCRL
UCSB
SCC
BELVOIR
ABERDEEN
STANFORD
UCLA
SDAC
NORSAR
UCSD
MITRE
NBS
LONDON
RAND
ARPA
USC-ISI
RML
ETAC
PDP-10
PDP-15
PDP-11
IMP
TIP
316 IMP
MAXC
NOVA
360/67
TSP
TX-2
H-6180
LINCOLN
CCA
PDP-1
H316
ILLIAC IV
360/44
PDP-11 (V)
360/75
DDP-516
370/145
SIGMA 7
360/91
MICRO 810
370/158
86700
PDP-9
360/195
PDP-15


SAN FRANCISCO BAY AREA
PACKET RADIO NET
ARPANET
BOLT BERANEK AND NEWMAN
CAMBRIDGE, MASSACHUSETTS
NORWEGIAN DEFENSE
RESEARCH ESTABLISHMENT
KJELLER, NORWAY
PACKET
RADIO NET
SRI
ETAM, WEST VIRGINIA
EARTH STATION
NORSAR
TIP
SRI
MENLO PARK,
CALIFORNIA
SRI
VAN
INTELSAT
IV-A
GOONHILLY DOWNS,
ENGLAND
EARTH STATION
TANUM, SWEDEN
EARTH STATION
ATLANTIC PACKET
SATELLITE NET
UNIVERSITY COLLEGE LONDON
LONDON, ENGLAND
LONDON TIP
ISI-C
UNIVERSITY OF SOUTHERN CALIFORNIA
INFORMATION SCIENCES INSTITUTE
MARINA DEL REY, CALIFORNIA
LEGEND
PACKET RADIO REPEATER
ARPANET IMP
ARPANET TIP
SATELLITE IMP
INTERNETWORK GATEWAY
PACKET RADIO STATION
INTERNETWORK GATEWAY
PATH OF PACKETS

ARPA NETWORK, LOGICAL MAP, JANUARY 1975

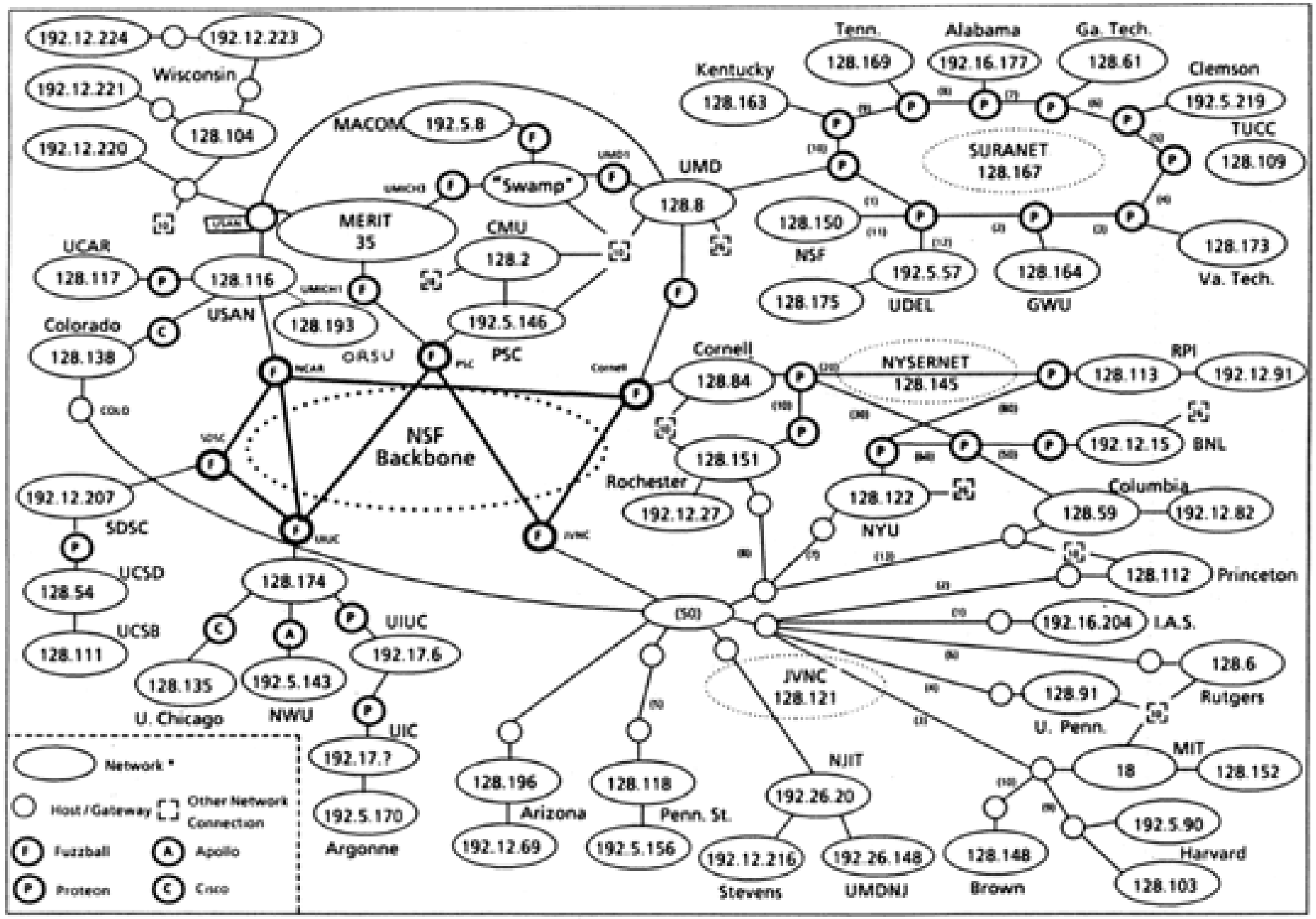



MASnet
DMSP
Mag Tapes
VM Station
MSS (Data)
MSS (Cntrl)
UCARnet
NCAR Network Configurations
CRAY X-MP/48 (CX)
CRAY-1 (C1)
IDS FEI clcs
To PACX
(Unix Station/3)
(MOM/2)
3880-3
3480
Xerox 4050 Laser Printer
RJE
June 7, 1988



BBN Communications Corporation

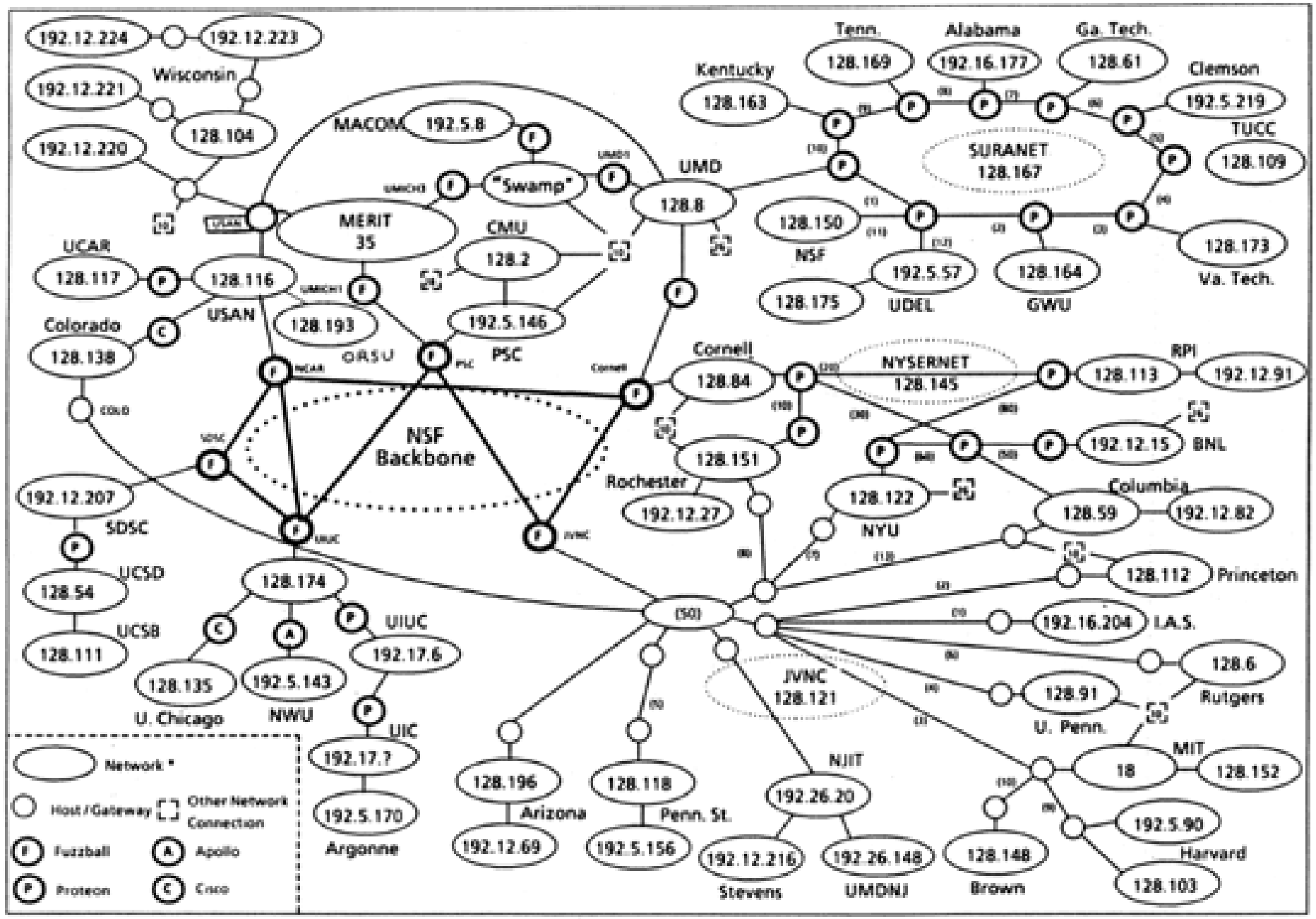
NSFNet Physical Connectivity -- April 87



* For some networks internal structure (e.g. subnets) is suppressed.

ISI 4/17/87

NSFNet Physical Connectivity -- April 87



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ISI 4/17/87

HL7 International

Plenary Meeting Notes:

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HL7's 33rd Annual Plenary

Role of HL7 and FHIR in Public Health

9:20 – 9:50 am

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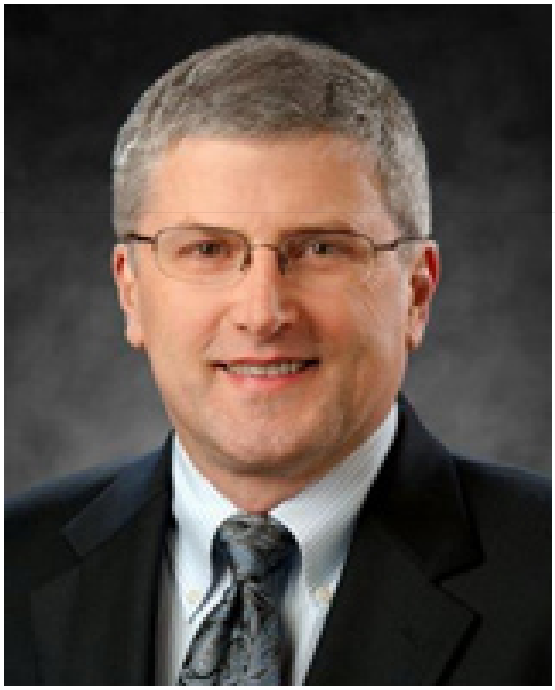


Chesley Richards, MD, MPH

Deputy Director for Public Health Science and Surveillance,
Centers for Disease Control and Prevention (CDC)

Chesley Richards, MD, MPH, FACP

Deputy Director for Public Health Science and Surveillance, Centers for Disease Control and Prevention (CDC)

Chesley Richards, MD, MPH, FACP, is the Deputy Director for Public Health Science and Surveillance (DDPHSS). In this position, he is responsible for strengthening CDC's science foundation by working across the Office of Science, the Office of Laboratory Science and Safety, the Center for Surveillance, Epidemiology, and Laboratory Services, and the National Center for Health Statistics. A primary focus of his role is to advance an agency-wide public health data modernization initiative and serve as an advisor to the CDC Director.

Prior to this position, Dr. Richards served as CDC Deputy Director for Public Health Scientific Services and Director of the Office of Public Health Scientific Services where he oversaw a broad range of epidemiology, public health surveillance, laboratory services, and health statistics initiatives aimed at improving population health. During this tenure he developed and implemented CDC's Surveillance Strategy to improve the agency's public health data surveillance capabilities over 3 to 5 years.

Dr. Richards works at the intersection of public health, healthcare, and health IT. He began his public health career as a CDC Epidemic Intelligence Service Officer in the Hospital Infections Program. Since then, he has held a range of positions, serving as the Director of the Immunization Services Division, Director, Office of Prevention through Healthcare, and as Deputy Director, Division of Healthcare Quality Promotion where he led the expansion of the National Healthcare Safety Network, which is the nation's most widely used healthcare-associated infection tracking system.

Dr. Richards earned his M.D. from the Medical University of South Carolina, and his M.P.H. in Health Policy and Administration from University of North Carolina at Chapel Hill. He is board certified in Internal Medicine (Medical College of Georgia), Geriatric Medicine (Emory University) and General Preventive Medicine and Public Health (UNC Chapel Hill). He completed the Cancer Control Education Fellowship at UNC Lineberger Cancer Center, and the Program on Clinical Effectiveness at Harvard School of Public Health.

Role of HL7 and FHIR in Public Health

Chesley Richards, MD, MPH, FACP
Deputy Director, Public Health Science and Surveillance
Centers for Disease Control and Prevention

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Thank you up front

- HL7—Chuck Jaffe
- HL7 Public health workgroup
- CDC staff
  - Laura Conn, Nedra Garrett, Maria Michaels, Paula Braun
- All of you are interested and helping to connect healthcare, public health, and HL7

7 decades of firsts at CDC

1940s: Malaria Control in War Areas transitions into the Communicable Disease Center (CDC)

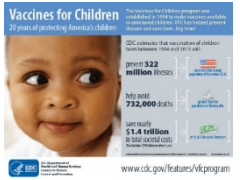
1950s: CDC establishes the Polio Surveillance Program

1960s: Smallpox Eradication Program is established; Global Smallpox eradication effort launched

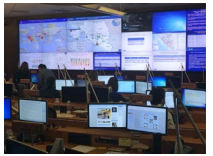
1970s: CDC documents first nationwide outbreak of Reye syndrome; Legionnaire's disease discovery and response

1980s: First AIDS cases reported in MMWR (1981); 100,000th AIDS case reported in 1989

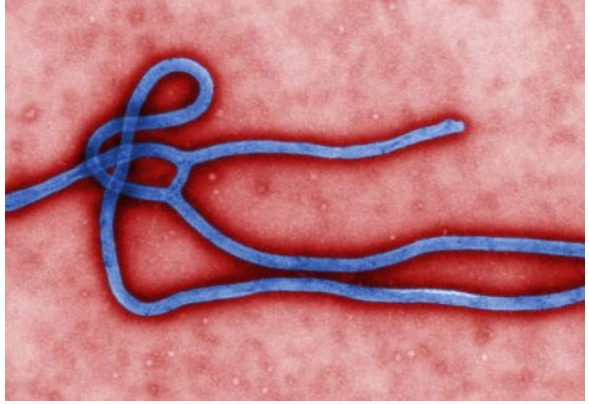
1990s: Vaccines for Children (VFC) Program established



2000s: Responses to anthrax attacks, SARS, Hurricanes Katrina and Rita, H1N1 flu pandemic



2010 and beyond: "Tips from Former Smokers" launched; Fungal meningitis, MERS, Ebola, Zika responses



New Threats to Public Health Arise Every Day

Public health…

- CDC
- +50 states and territories
- 3000 local (county, city, district) health departments
- Tribal health agencies
- Federal agencies involved in public health activities
  - HRSA, SAMHSA, CMS, ASPR, NIH, FDA, others
  - VA, DOD, BOP, IHS
- Healthcare facilities, systems, providers, payors
- Public, consumers

Foundational Questions

Moving from Historic Analysis to Predictive Analytics

What is it?

Who has it?

When did they get it?

Where did they get it?

Where are they now?

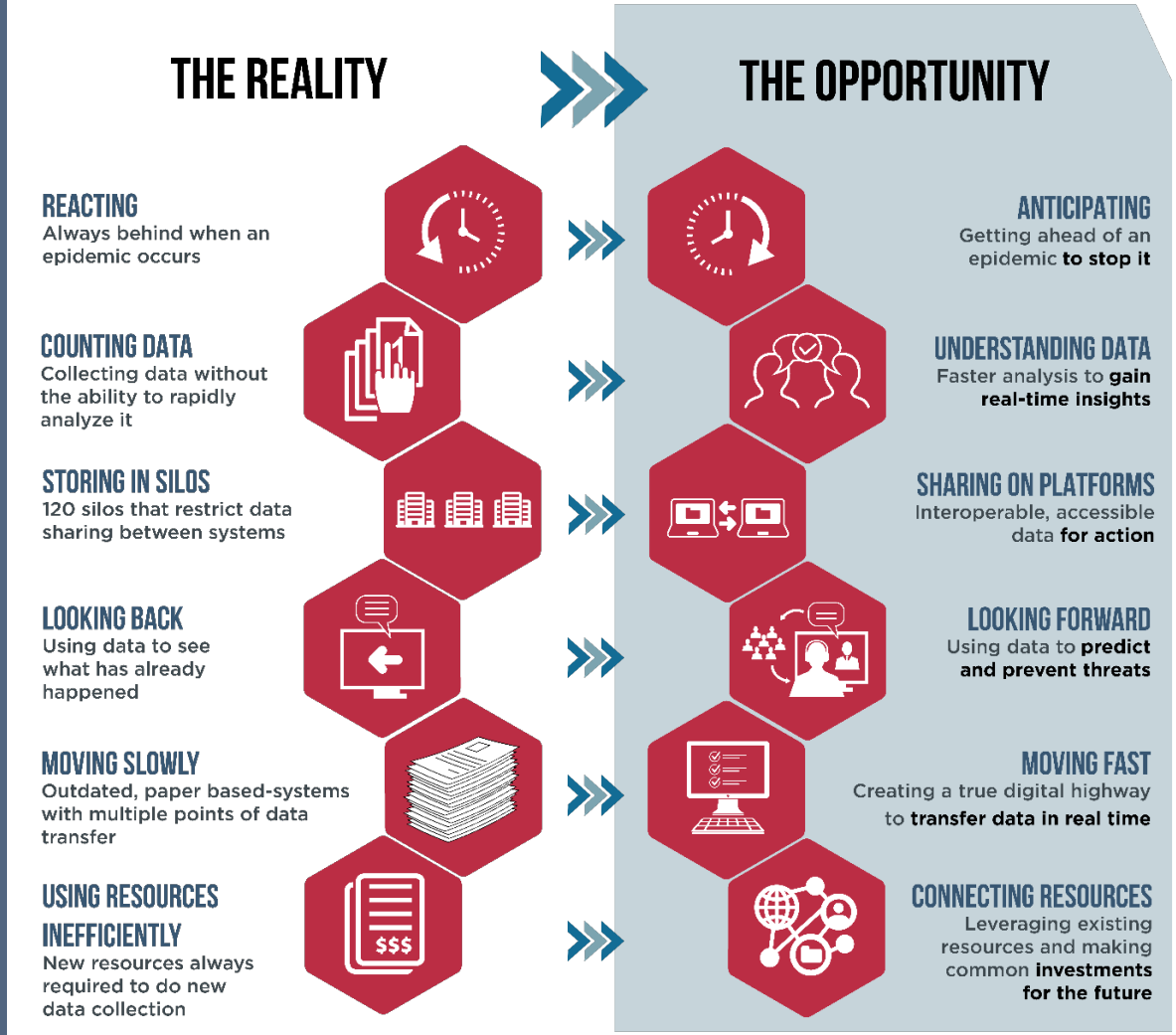
What causes it?

What can we do to protect people?

Where will it likely spread next?

What options are most cost effective?

CDC is developing world -class data and analytics capabilities to transform today's reality and meet new opportunities for lifesaving prevention and response.

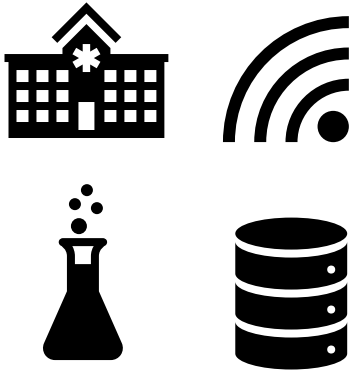


> We cannot solve our problems with the same thinking we used when we created them.
>
> Albert Einstein

Roles of Public Health in the Data Ecosystem

Opportunities: Less Burden, Lower Latency, More Value

Generate



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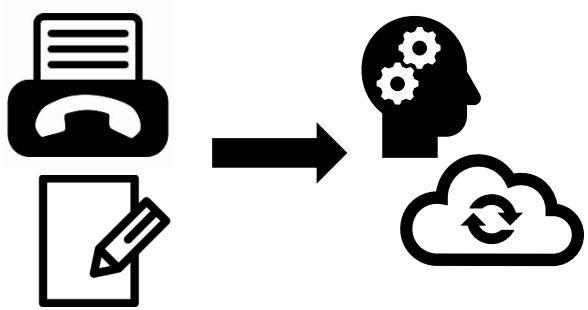

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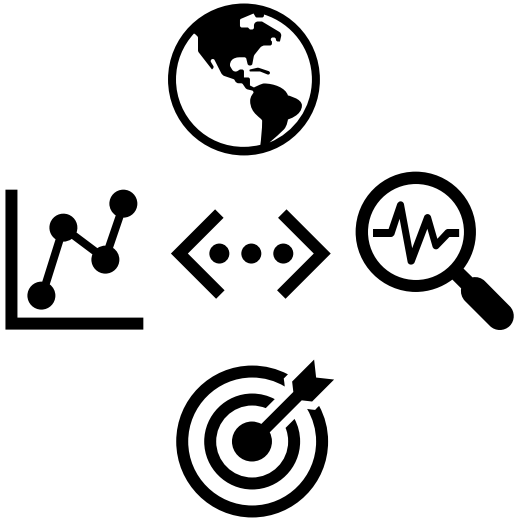
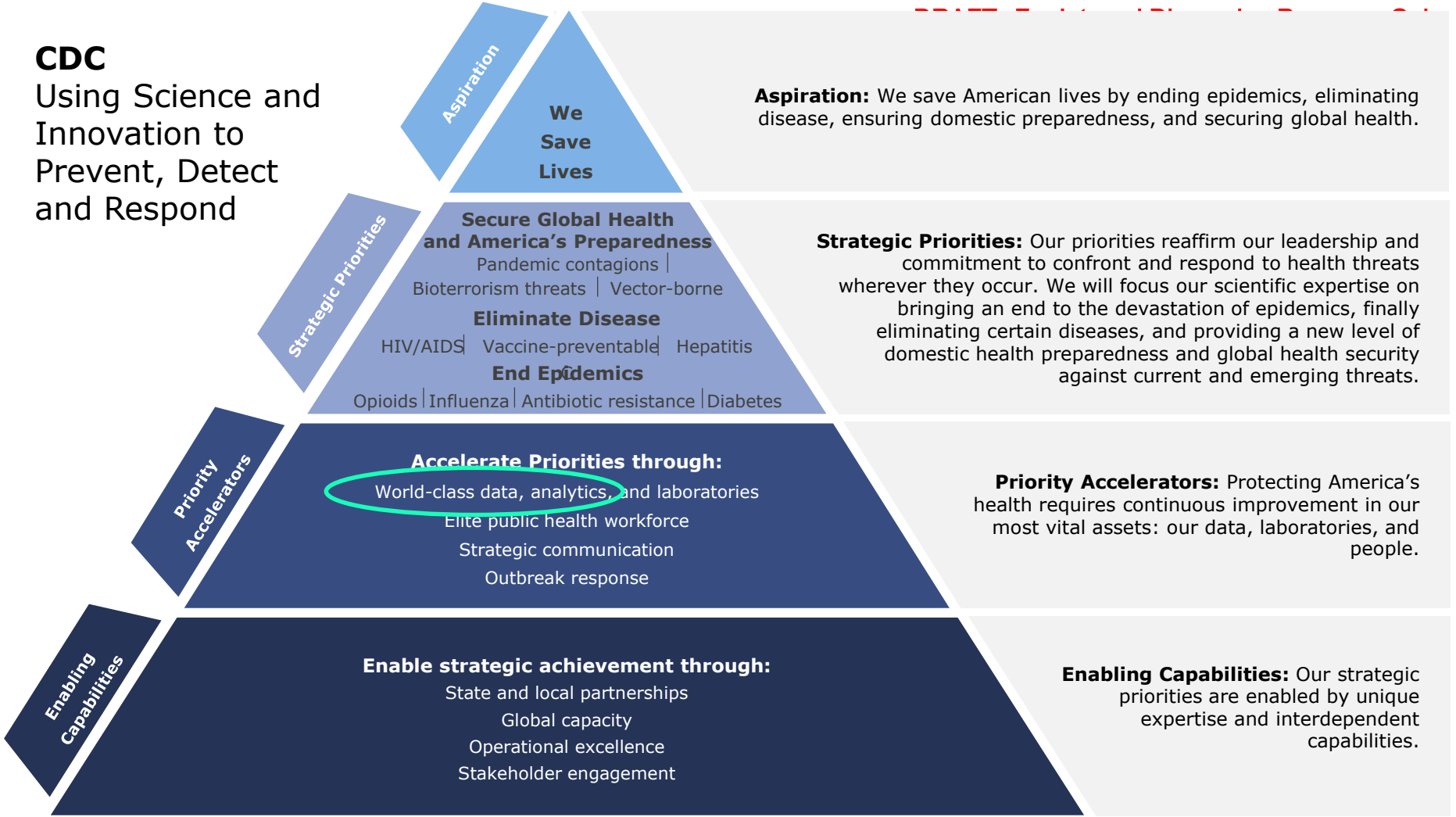


> As public health leaders, we must be prepared to handle the challenges of today and, at the same time, to make real the potential of the new innovation of tomorrow.

Robert R. Redfield, MD
Director, CDC, and Administrator, ATSDR

CDC
Using Science and Innovation to Prevent, Detect and Respond



Aspiration: We save American lives by ending epidemics, eliminating disease, ensuring domestic preparedness, and securing global health.

Strategic Priorities: Our priorities reaffirm our leadership and commitment to confront and respond to health threats wherever they occur. We will focus our scientific expertise on bringing an end to the devastation of epidemics, finally eliminating certain diseases, and providing a new level of domestic health preparedness and global health security against current and emerging threats.

Priority Accelerators: Protecting America's health requires continuous improvement in our most vital assets: our data, laboratories, and people.

Enabling Capabilities: Our strategic priorities are enabled by unique expertise and interdependent capabilities.

CDC Public Health Data Initiative

- **Why?** Data are the foundation of our nation's public health network. We must have the capacity to generate and use timely, accurate, and accessible data to meet the health challenges of today and tomorrow.

- **Why now?** Data is moving slower than disease. We are too slow –
  - Getting data
  - Analyzing data
  - Sharing data

- **Moving data modernization forward requires**
  - Leadership
  - Data Sharing
  - Funding and Resources
  - Capability to use Evolving Technologies

Implementation Priorities

Moving from Data Collection to Predictive Data

Governance
enterprise approach

Modern Technologies
cloud, common portal, analytical tools

Data
sharing, interoperability

Partnership
support state and local

Seven Imperatives for 2024

Goal

To transform CDC and our partners from a culture of primarily historical data analytics to predictive data science supported by modern IT platforms and enterprise services that facilitate CDC's public health mission

By 2024, CDC will be operating to a new normal, working across programs and agency initiatives & through emerging priorities

Cloud

CDC data will be in a cloud

Common Portal

Data reporting to CDC will be through a common portal

Interoperability

CDC data will be interoperable within and external to CDC

Data Sharing

CDC data will be shared and public, while protecting privacy and confidentiality

Enterprise Level

At the enterprise level, CDC data will be catalogued, have metadata and be labelled with appropriate access and privacy controls

Analytical Tools

CDC scientists will have efficient access to relevant data science tools and the capability and expectation to perform both historic and predictive analyses

State & Local Support

State and local health departments will be supported to accomplish complementary goals

FHIR Accelerator for Public Health

Provide Clinically Detailed, Efficient, and Timely Information on Large, Diverse Populations

Multi-State EHR-Based Network for Disease Surveillance:

- Expand the ability of Million Hearts® Program to use clinical data to guide current and future activities
- HL7 FHIR helps facilitate continued movement towards standardization across platforms and methodologies
- Develop open-API based tools to help sites extract clinical data with less burden
- Help find those at risk for heart disease and stroke, optimize care, and improve outcomes

Congressional Interest
Authorizing Legislation

- **Leading Infrastructure for Tomorrow's America Act (LIFT America Act) (House)**
  - $100,000,000 for each fiscal year 2020-2024
  - Under consideration by the House Energy & Commerce Committee

- **Saving Lives Through Better Data Act (House)**
  - $100,000,000 for each fiscal year 2020-2024
  - Under consideration by the House Energy & Commerce Committee

- **Lower Health Care Costs Act (Senate)**
  - "there are authorize to be appropriated such sums as may be necessary for fiscal years 2020 through 2024''
  - Reported out of Health, Education, Labor, and Pensions (HELP) on 6/26/19

Thank You

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

HL7 International

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Public Policy Updates Impacting the HL7 Community

9:50 – 10:20 am

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Brad Wolters

Director, Federal Government Relations at Marshfield Clinic Health System

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Director, Federal Government Relations at Marshfield Clinic Health System

Brad Wolters is the Director of Federal Government Relations for the Marshfield Clinic Health System, an integrated health system based in Wisconsin with over 10,000 employees. Before joining Marshfield Clinic Health System he was an Executive Vice President at Signal Group, a boutique government affairs and public affairs consulting firm where he co-led the healthcare practice. From 2013-2016 he served as the White House Liaison at the US Department of Health and Human Services (HHS) where he was responsible for coordination between the Department and the White House, and over saw the 160+ political appointees at the Department. He also served as the Chief of Staff to the Assistant Secretary for Health at HHS (2010- 2013). Prior to serving at HHS he worked on Capitol Hill for Senators Tom Daschle, Herb Kohl and Barack Obama. He is a graduate of George Washington University and the Creighton University School of Law. He lives in Alexandria, VA with his wife and two daughters.

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AWS Vision across Healthcare, Life Sciences and Genomics

10:55 – 11:25 am

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Shez Partovi, MD

Worldwide Lead, Healthcare Life Sciences, Genomics, Amazon

Shez Partovi, MD

Worldwide Lead, Healthcare Life Sciences, Genomics, Amazon

Dr. Shez Partovi obtained his medical degree from the prestigious McGill University, in Montreal, Canada and completed his neuroradiology subspecialty training at Barrow Neurological Institute in Phoenix, AZ. He is a serial entrepreneur and has launched a number of health IT companies, one of which was a telehealth company built on AWS. After a decade of clinical practice, Dr. Partovi transitioned into executive roles at Dignity Health where he served as its Chief Health Information Officer and, subsequently, as Chief Digital Officer/SVP of Digital Transformation. As the CHIO, Dr. Partovi oversaw the deployment of Cerner across the enterprise in both inpatient, outpatient and oncology settings. As the CDO, Dr. Partovi was responsible for the digital experience of consumers, patients and providers across Dignity Health. Shez joined Amazon Web Services in 2018 as the Worldwide lead for Healthcare, Life Sciences and Genomics. He is currently working on over a dozen large scale initiatives across the globe and has a unique perspective of the opportunities to transform healthcare worldwide. Dr. Partovi combines his clinical, entrepreneurial and AWS experience to help the audience Think Big and imagine the Art of the Possible.

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HL7 International

Plenary Meeting Notes:

HL7 International

HL7's 33rd Annual Plenary

Democratized Innovation: Building a Healthier Future with Machine Learning and the Cloud

11:25 – 11:55 am

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Aashima Gupta

Director, Global Healthcare Solutions, Google

HL7 International

Plenary Meeting Notes:

Aashima Gupta

Director, Global Healthcare Solutions, Google

Aashima spearheads healthcare solutions for Google Cloud. In this role, she sets the direction for the transformative healthcare solutions and leads engagement with healthcare key executives in helping transform their business strategies that define new models for care, revenue generation and improved patient experiences. By incorporating strategic technology elements of artificial intelligence and Cloud technologies into the care regimen, she strongly believes that patient care and experience can be substantially improved. She founded and led healthcare vertical and interoperability efforts at Apigee and is a passionate advocate for open data and the use of APIs to overcome healthcare data silos. Previously, Aashima led Digital Health Incubations at Kaiser Permanente and brought several frameshifting opportunities to life including first-ever Kaiser Permanente API. She was responsible for driving innovation through the convergence of various digital technologies. She has authored several healthcare articles and is a frequent speaker at industry forums. Recently she was recognized as Most Influential Women in Healthcare IT by HIMSS and for the Top 100 Women in Fem Tech and Health Tech award. She is founder of GirlsInTek, an initiative with a purpose is to ignite girl’s innovative talent and interest in computer science.

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Plenary Meeting Notes:

HL7 International

HL7's 33rd Annual Plenary

Reimagining Healthcare

11:55 – 12:20 pm

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Greg Moore, MD, PhD

Corporate Vice President, Health Technology and Alliances, Microsoft

Greg Moore, MD, PhD

Corporate Vice President, Health Technology and Alliances, Microsoft

At Microsoft, Moore has the responsibility of shepherding the dedicated research and development collaborations with its strategic partners, such as Walgreens Boots Alliance, to deliver next-generation technologies and experiences for healthcare. He brings into these partnerships the new AI and machine learning solutions that are being developed across Microsoft, to enable personalized care and empower care teams. He helps provide internal and external thought leadership that can lead to a more open, interoperable, and AI-infused foundation for healthcare delivery.

Dr. Gregory J. Moore is an engineer (MIT PhD), practicing neuroradiologist, clinical informaticist, and innovator experienced in assembling and inspiring highly talented teams to positively transform healthcare for the benefit of humankind. Prior to joining Microsoft, Greg was Vice President Google Inc, Google Cloud Healthcare & Life Sciences. In this role, Greg founded and led the healthcare vertical for Google Cloud and partnered closely with various Google teams and the Alphabet companies in the life sciences domains to guide and develop innovative healthcare products and solutions leveraging AI, machine learning and advanced analytics at scale.

Greg is board certified in Diagnostic Radiology, Neuroradiology and Clinical Informatics and is also an Adjunct Clinical Professor of Radiology at Stanford University School of Medicine. Prior to his leadership appointment at Google, he was Chief Emerging Technology and Informatics Officer at Geisinger Health System where he also was Director of the Institute for Advanced Application.

Moore received his Master of Science (MS), Nuclear Engineering in 1988, and his Doctor of Philosophy (PhD) in Radiological Sciences in 1992 (both from Massachusetts Institute of Technology). He went on to receive his Doctor of Medicine (MD) in 2004 from Wayne State University School of Medicine and completed residency in Diagnostic Radiology and Fellowship in Neuroradiology, both at Penn State University Hershey Medical Center.

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Plenary Meeting Notes:

HL7's 33rd Annual Plenary

Closing Comments

12:20 – 12:30 pm

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Calvin Beebe

Chair, HL7 International

HL7 International

Plenary Meeting Notes: