

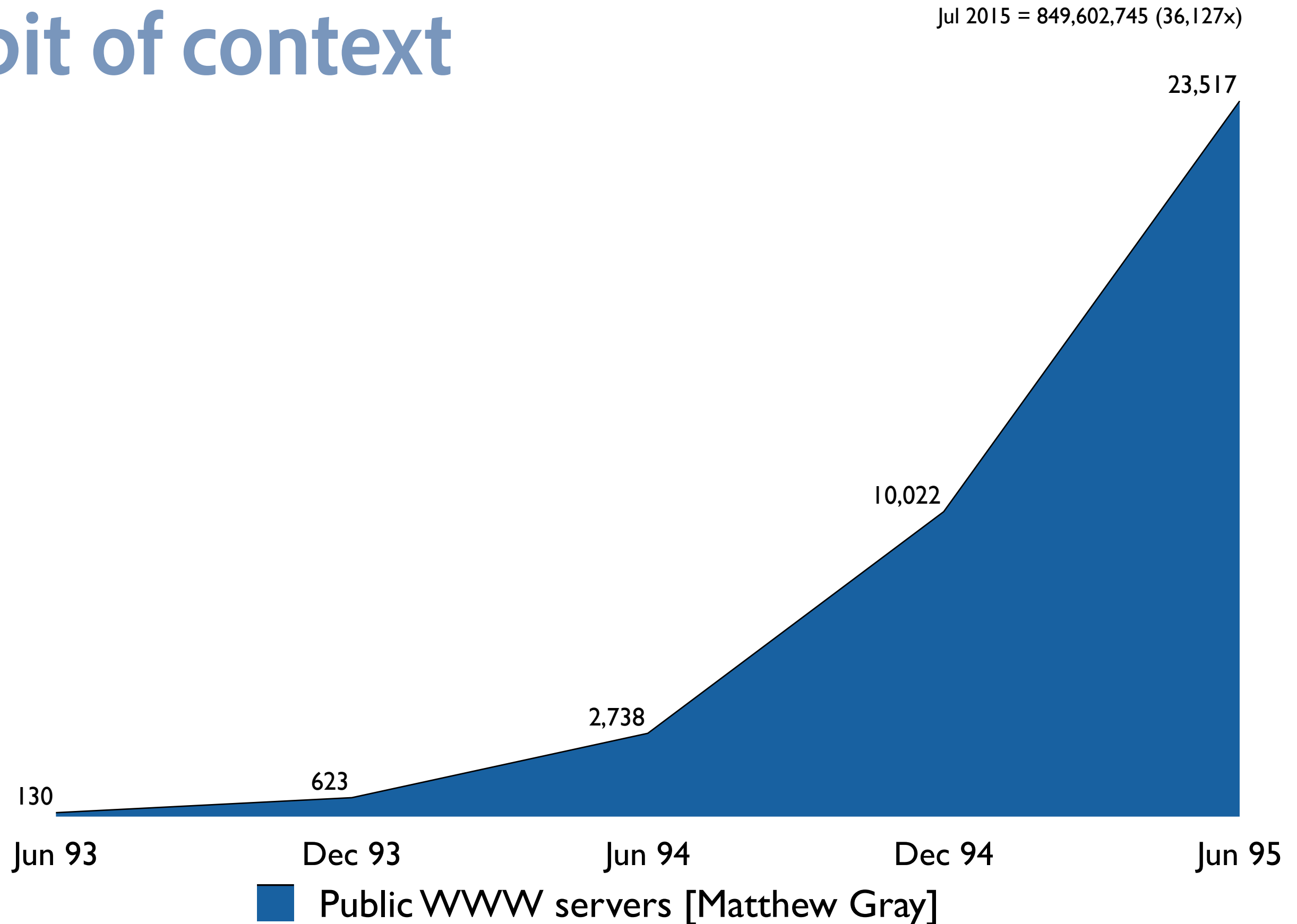


# HTTP, in theory

Roy T. Fielding | Senior Principal Scientist, Adobe

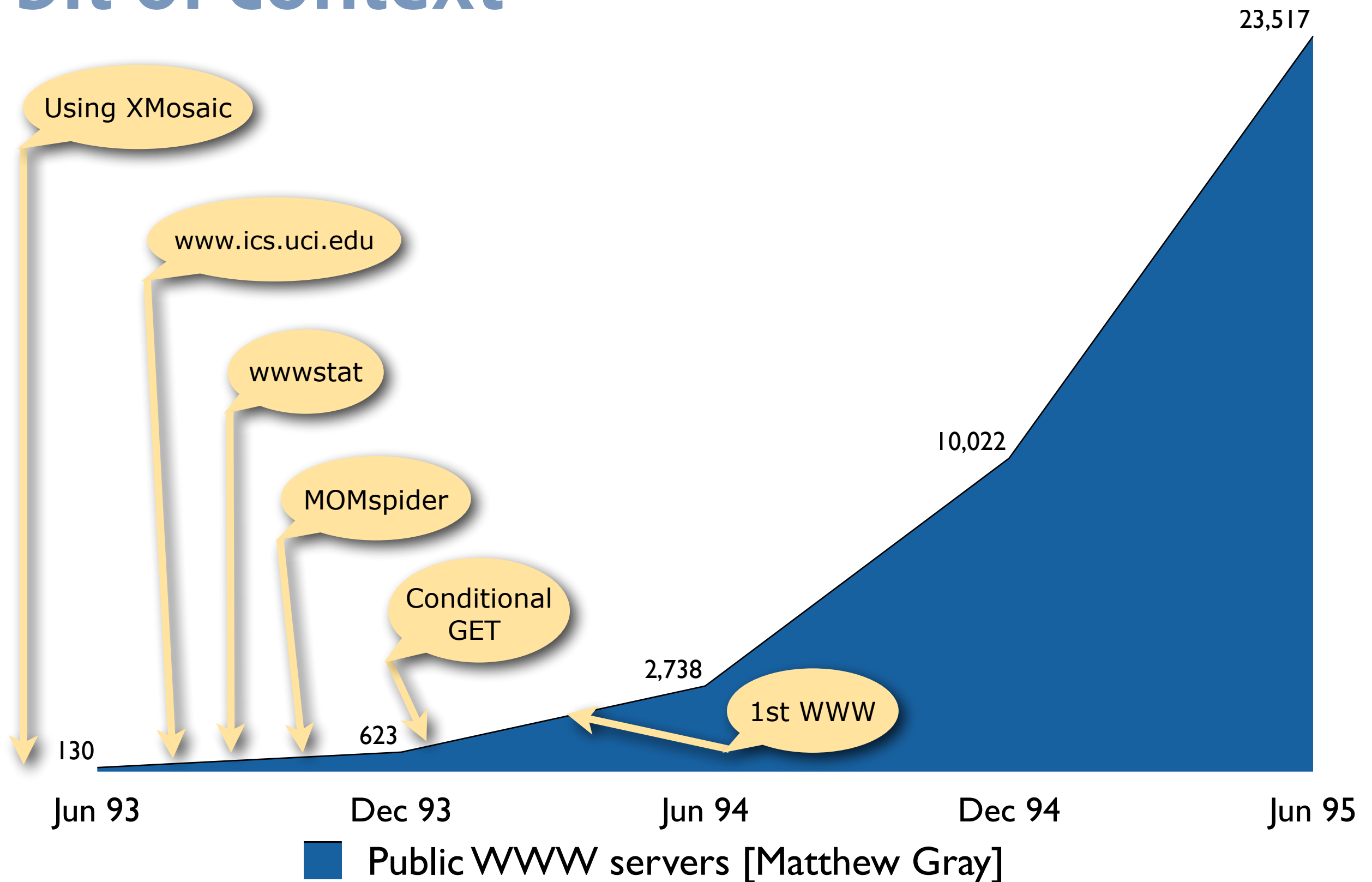


# A bit of context



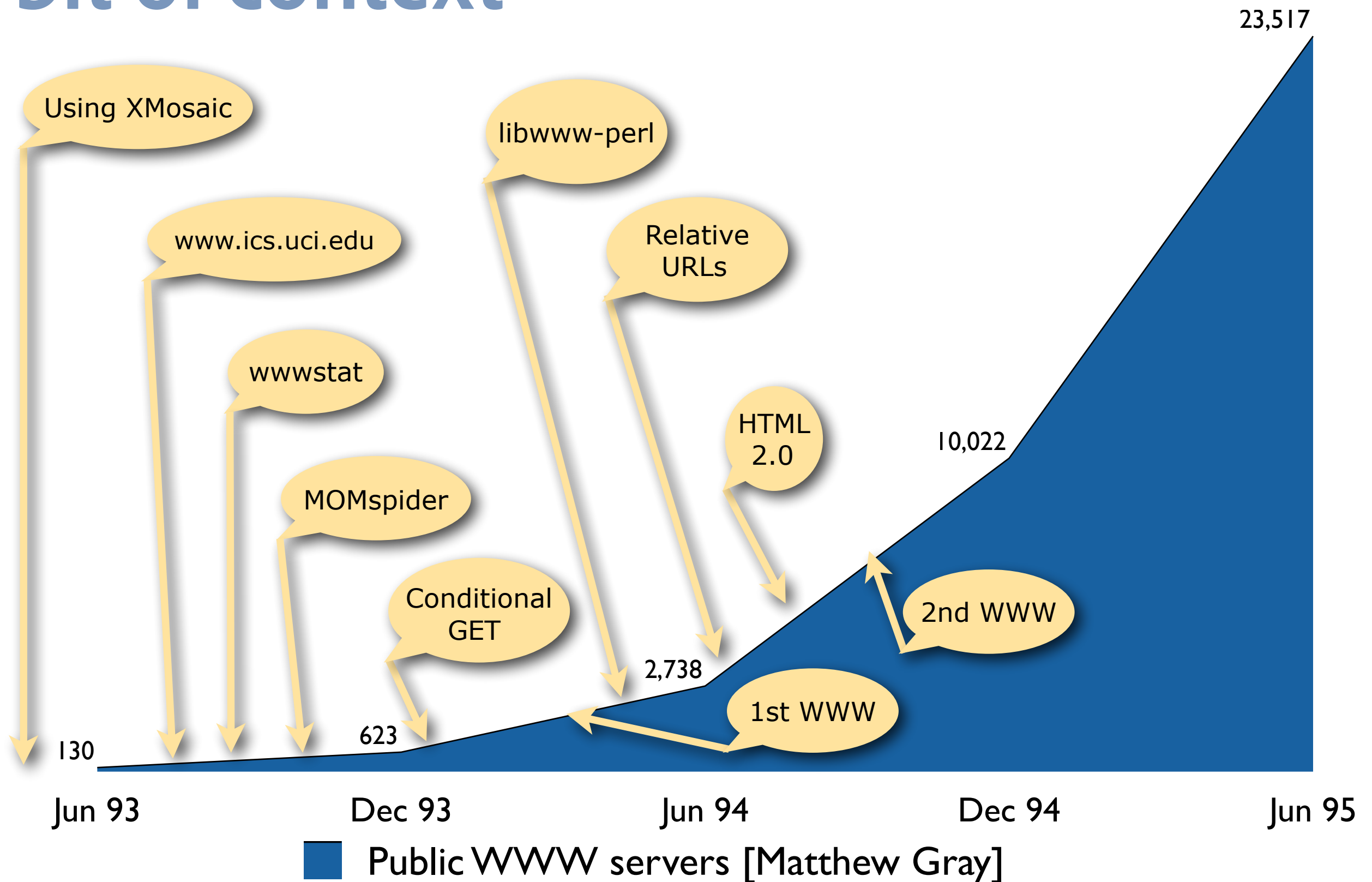
# A bit of context

Jul 2015 = 849,602,745 (36,127x)



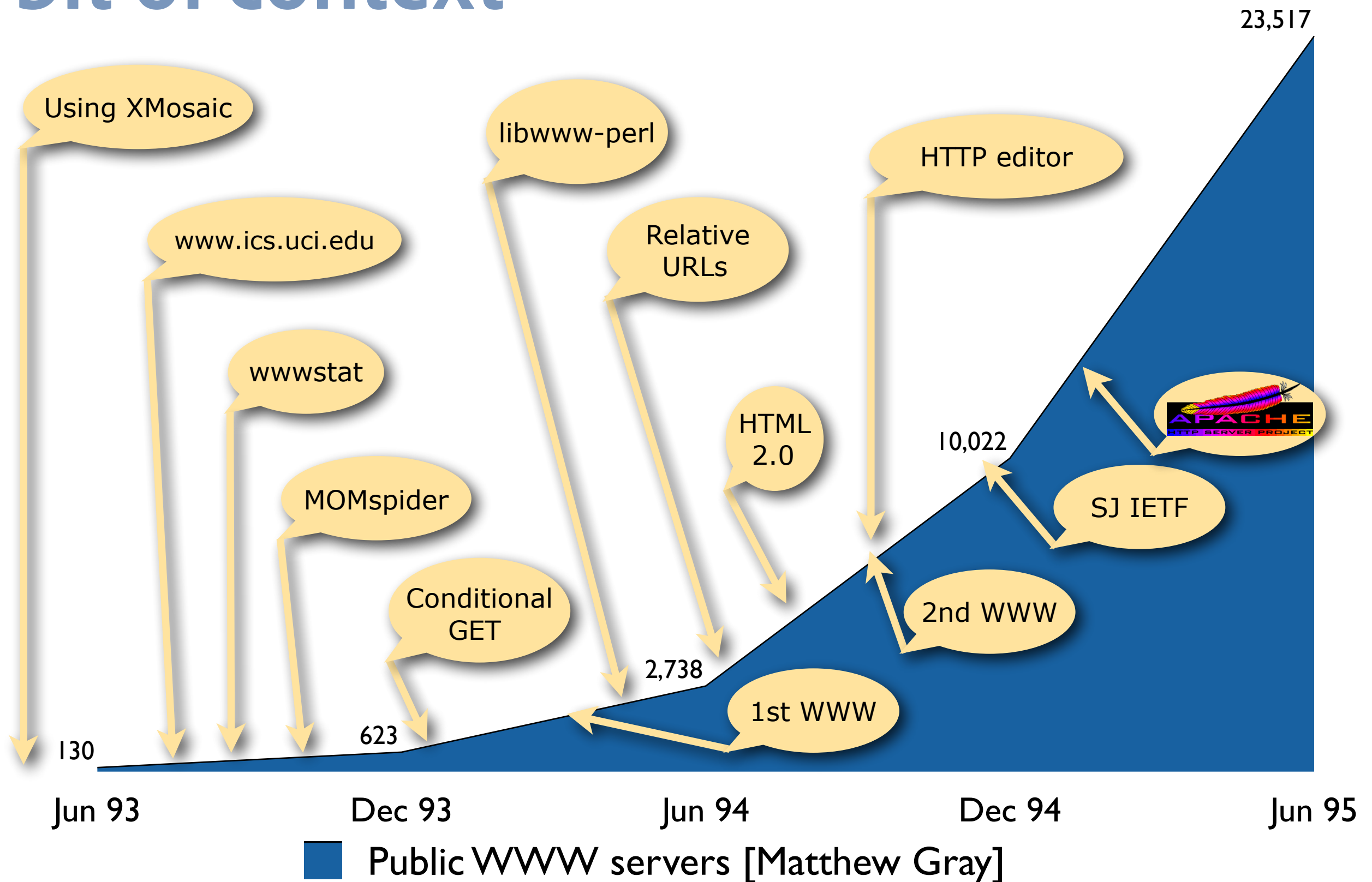
# A bit of context

Jul 2015 = 849,602,745 (36,127x)

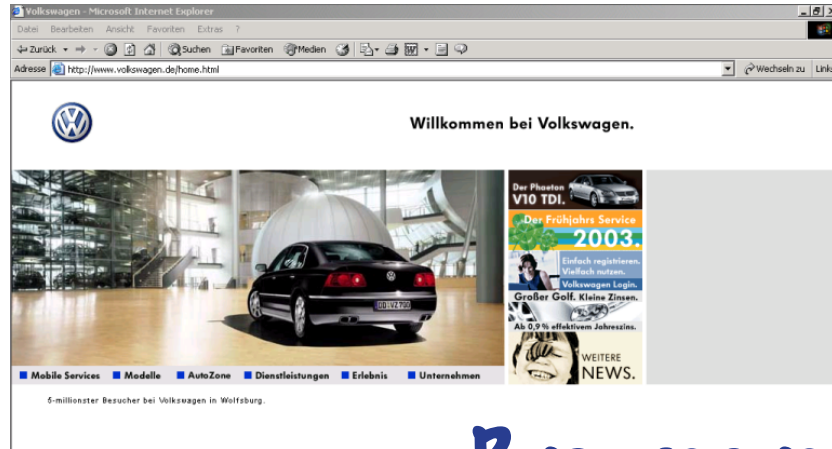
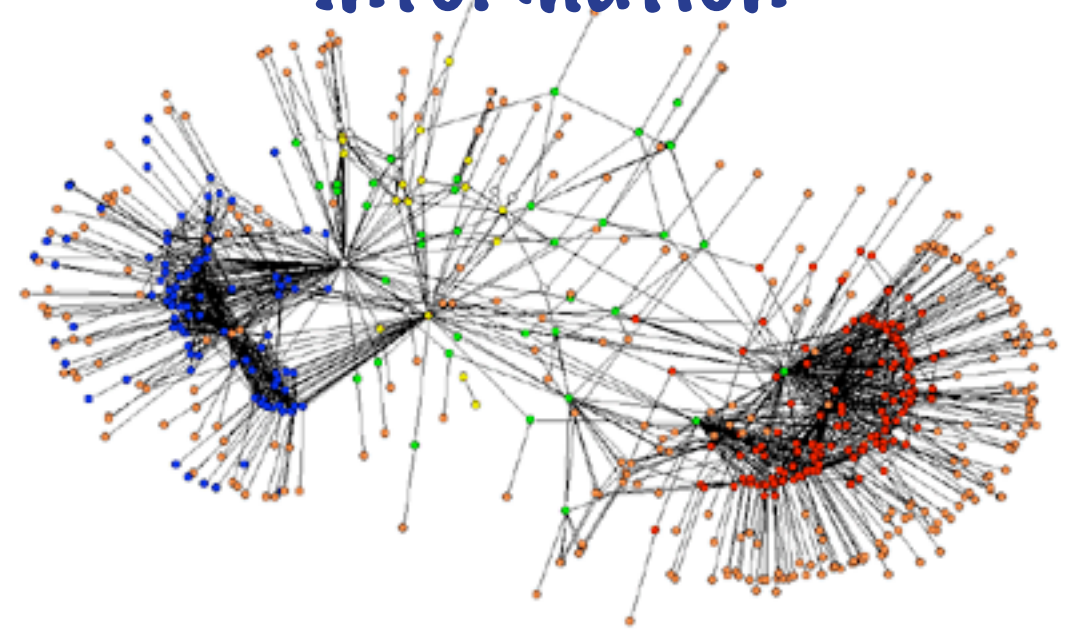


# A bit of context

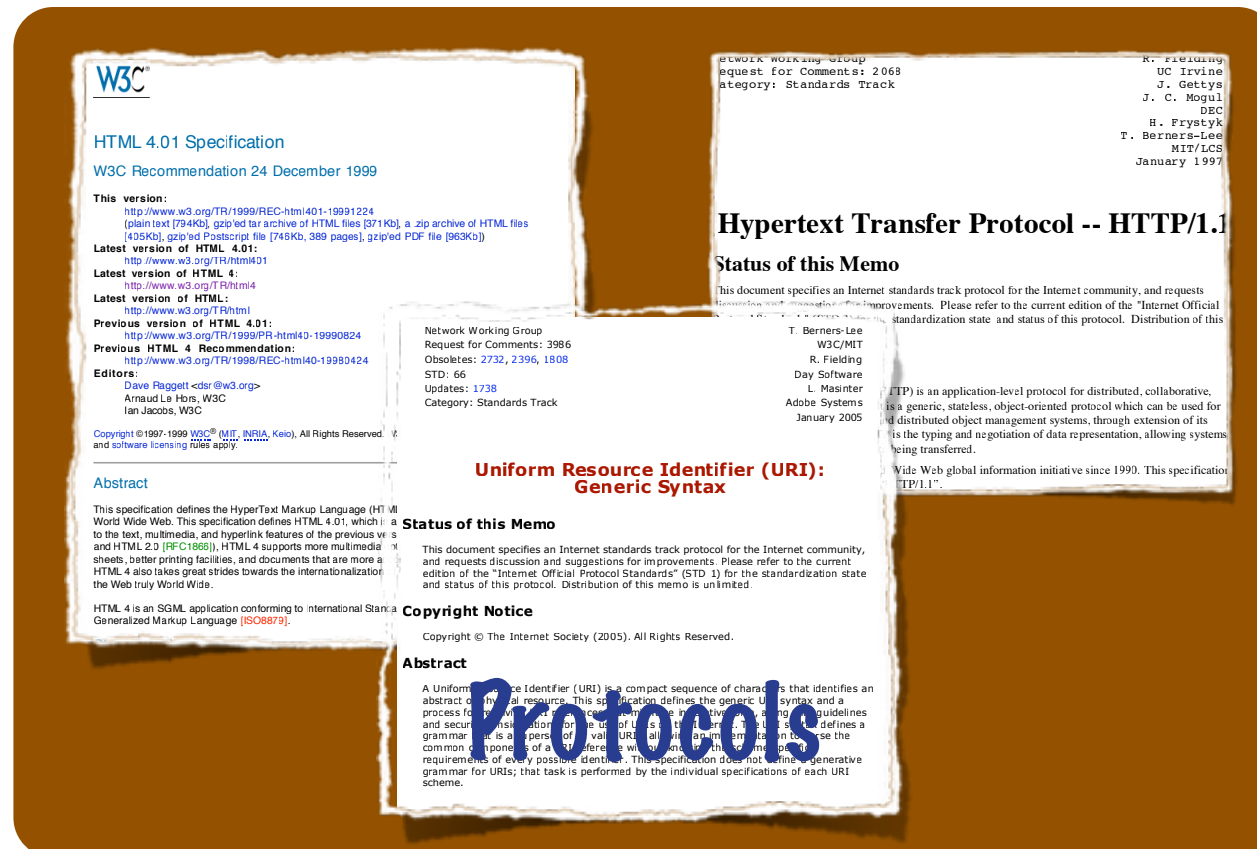
Jul 2015 = 849,602,745 (36,127x)



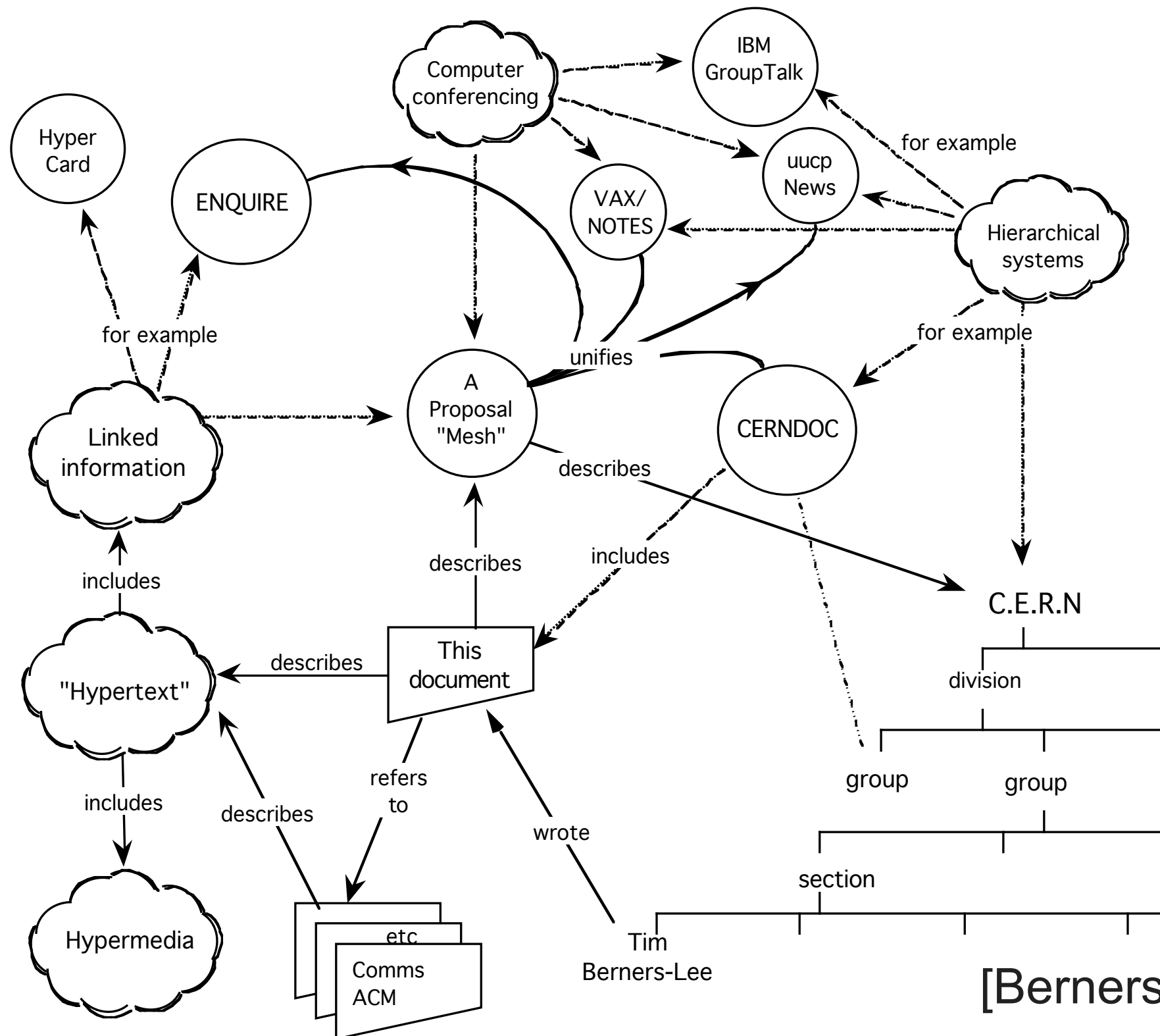
# What is the Web, really?



# Browsers

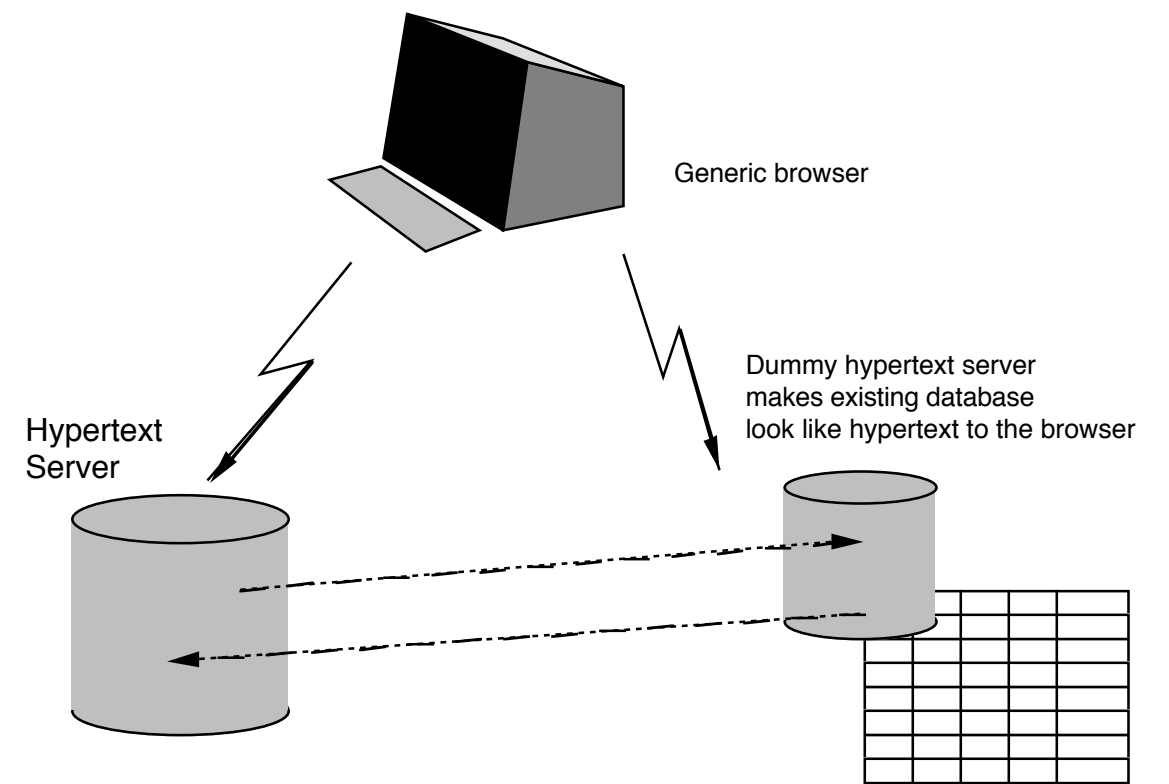
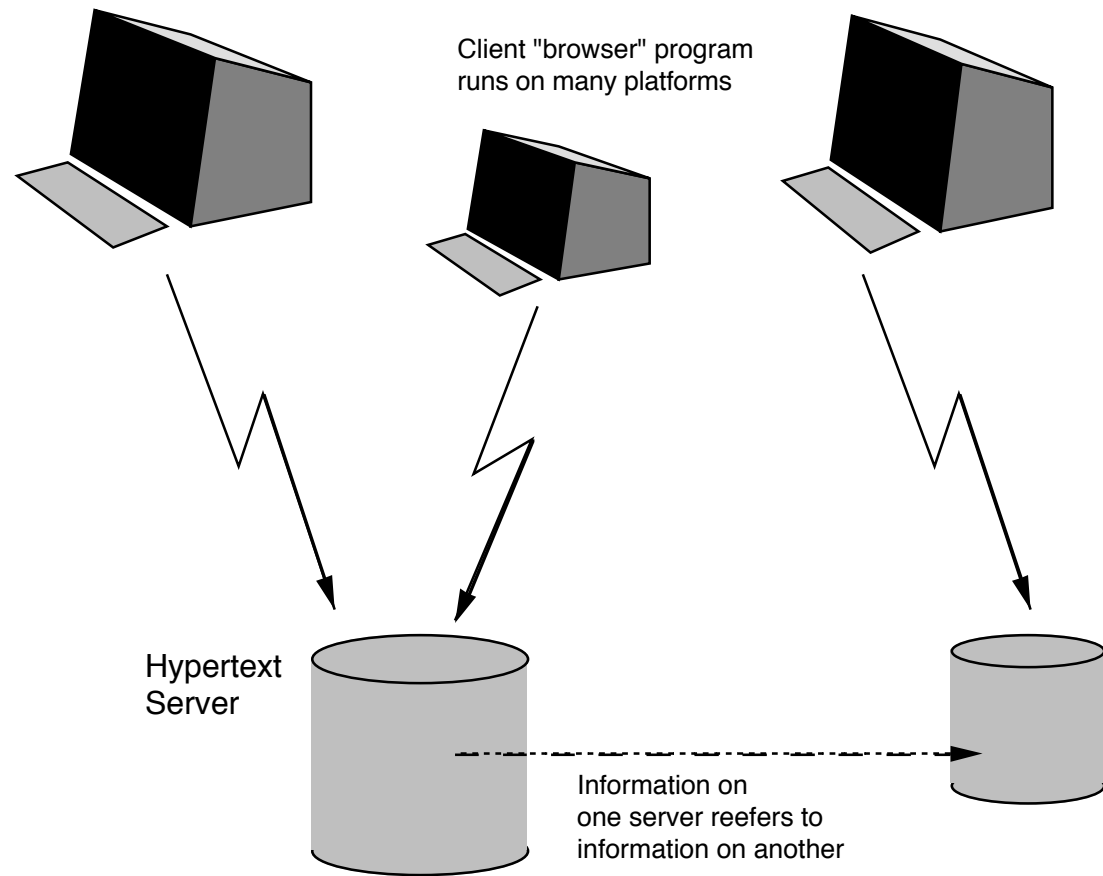


# An application integration system



[Berners-Lee, 1989]

# Role of HTTP





# Charles Eames on “design” [1972]

*What is your definition of “design”?*

- ▶ A plan for arranging elements in such a way as to best accomplish a particular purpose

*Does the creation of design admit constraints?*

- ▶ Design depends largely on constraints

*What constraints?*

- ▶ The sum of all constraints.
- ▶ One of the few effective keys to the design problem:
  - the ability of the designer to recognize as many of the constraints as possible
  - willingness and enthusiasm for working within these constraints
  - constraints of price, of size, of strength, balance, of surface, of time, etc.
  - each problem has its own peculiar list

**Constraints  $\Rightarrow$  Desired Properties**

# Constraints $\Rightarrow$ Desired Properties

## Low entry barrier

- Hypermedia User Interface
- Simple protocols for authoring and data transfer
- ▶ **must be Simple and Reusable; want Extensible**

# Constraints $\Rightarrow$ Desired Properties

## Low entry barrier

- Hypermedia User Interface
- Simple protocols for authoring and data transfer
- ▶ **must be Simple and Reusable; want Extensible**

## Distributed Hypermedia System

- Large data transfers
- Sensitive to user-perceived latency
- ▶ **must be Data-driven and Streamable; want Performant**



# Constraints $\Rightarrow$ Desired Properties

## Low entry barrier

- Hypermedia User Interface
- Simple protocols for authoring and data transfer
- ▶ **must be Simple and Reusable; want Extensible**

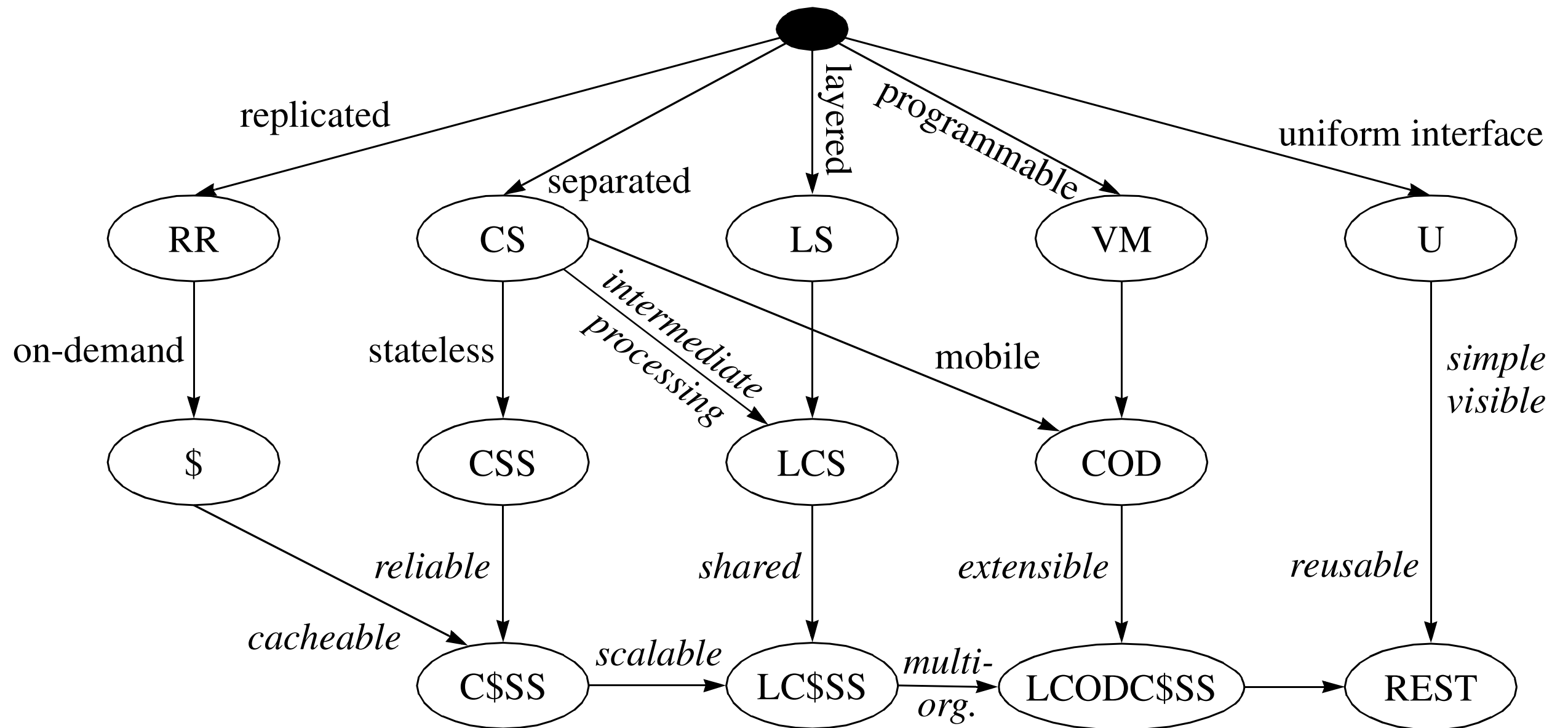
## Distributed Hypermedia System

- Large data transfers
- Sensitive to user-perceived latency
- ▶ **must be Data-driven and Streamable; want Performant**

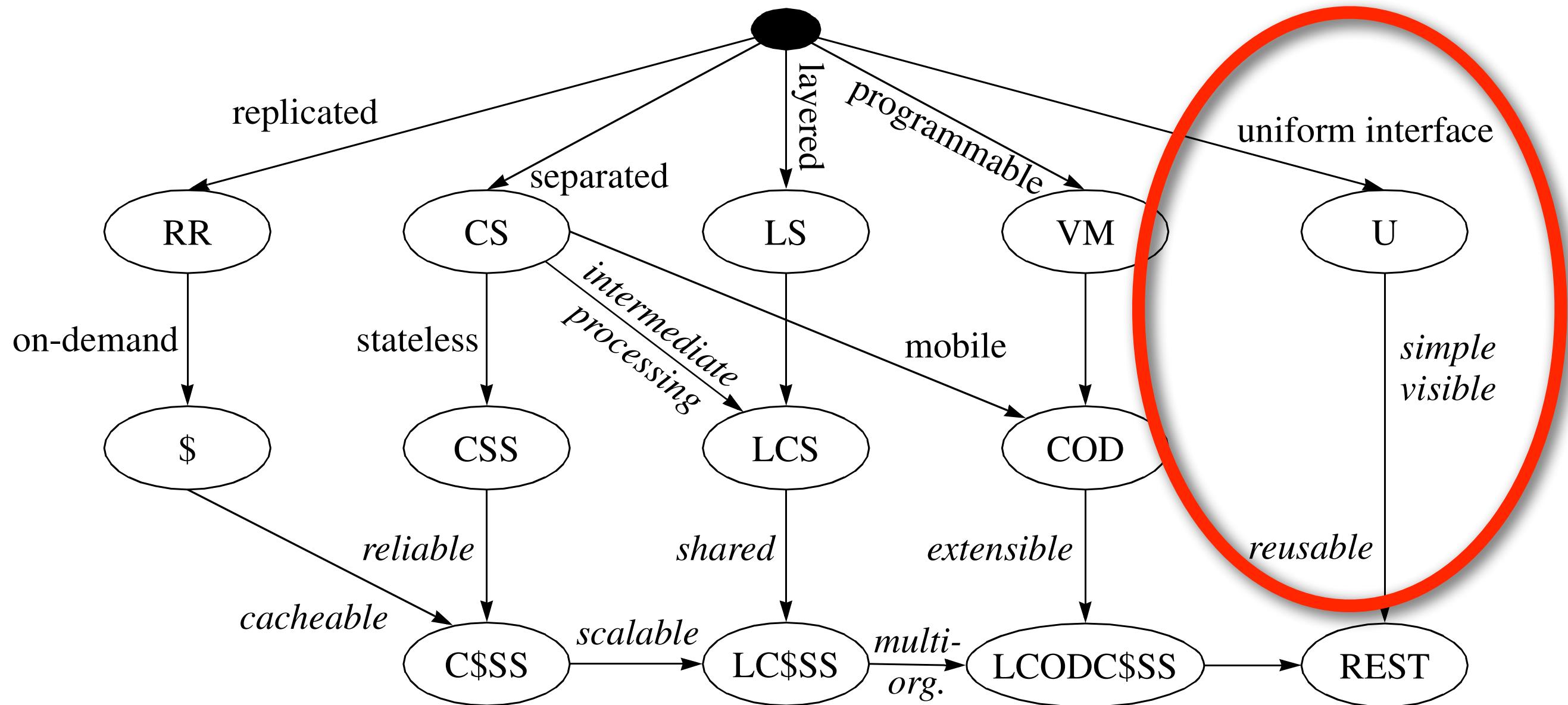
## Multiple organizational boundaries

- Anarchic scalability
- Gradual and fragmented change (deployment)
- ▶ **must be Scalable, Portable, Evolvable; want Reliable, Visible, Customizable, Configurable, Extensible, ...**

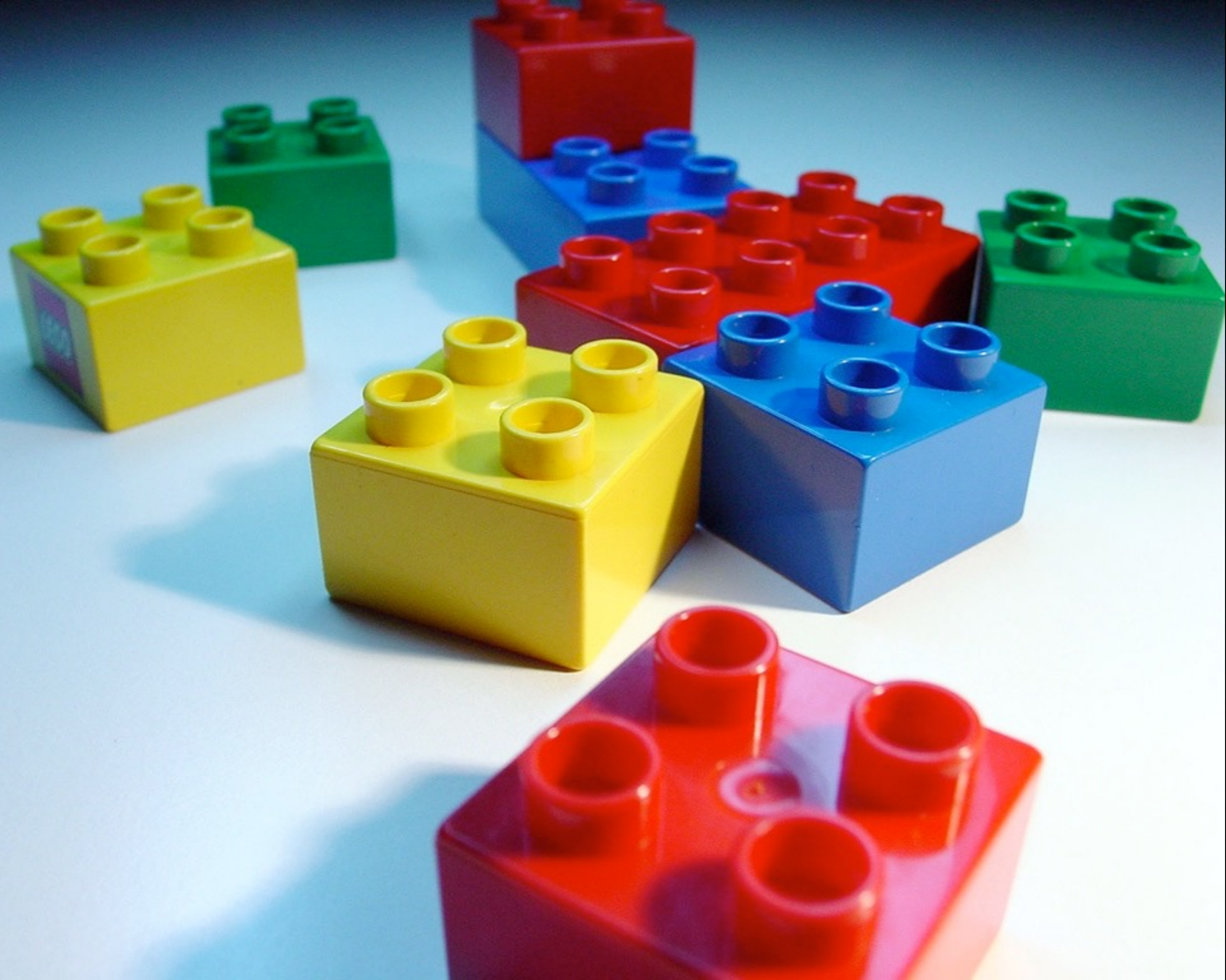
# REST on a slide



# REST on a slide









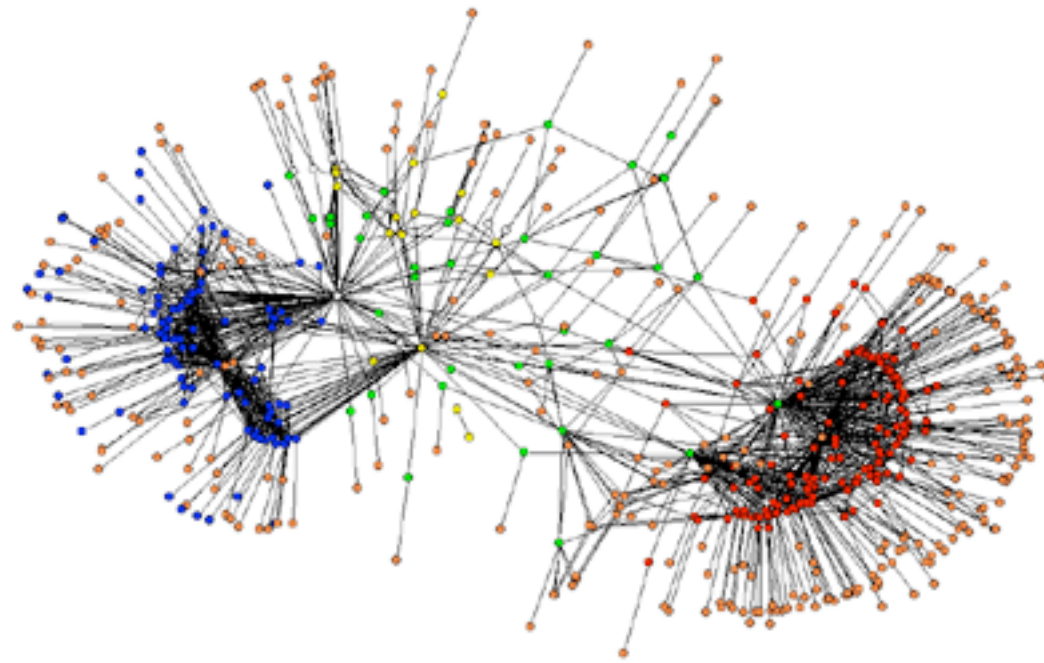




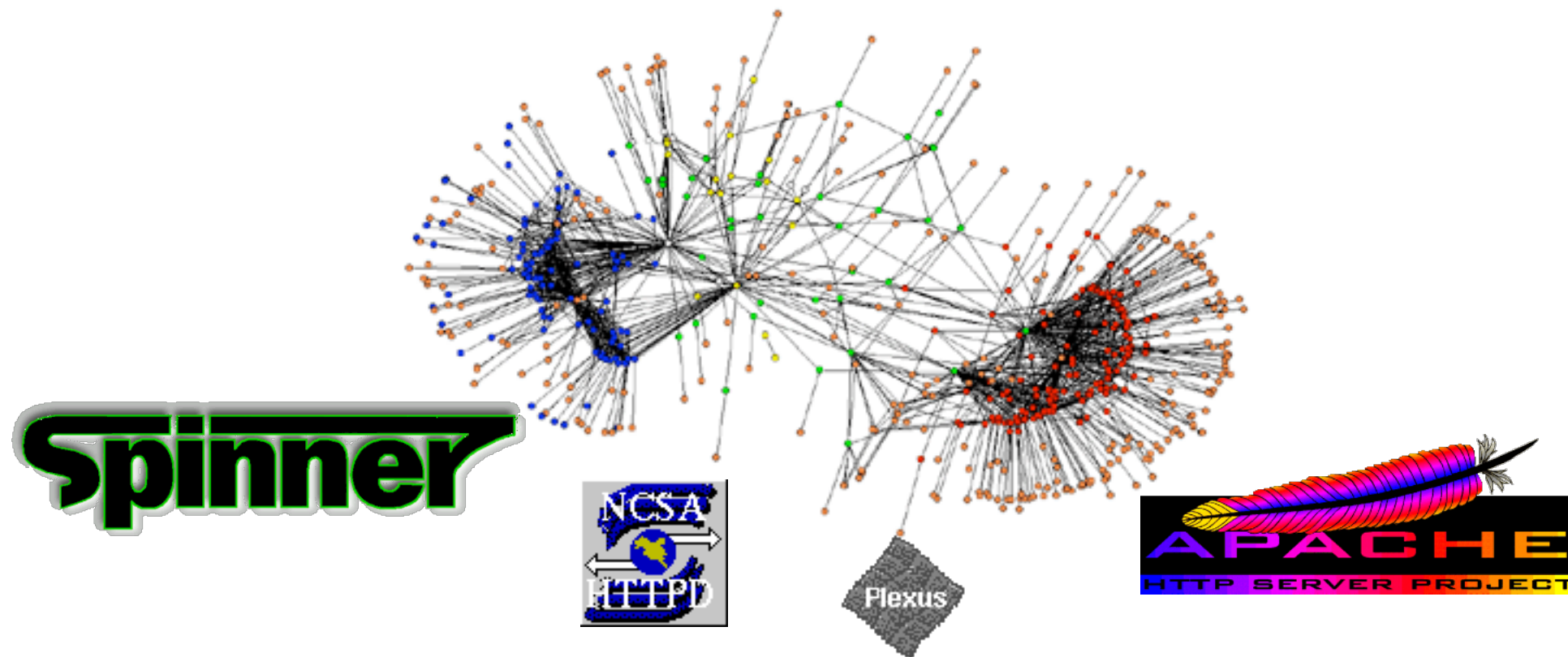




# Web Implementation (user view)

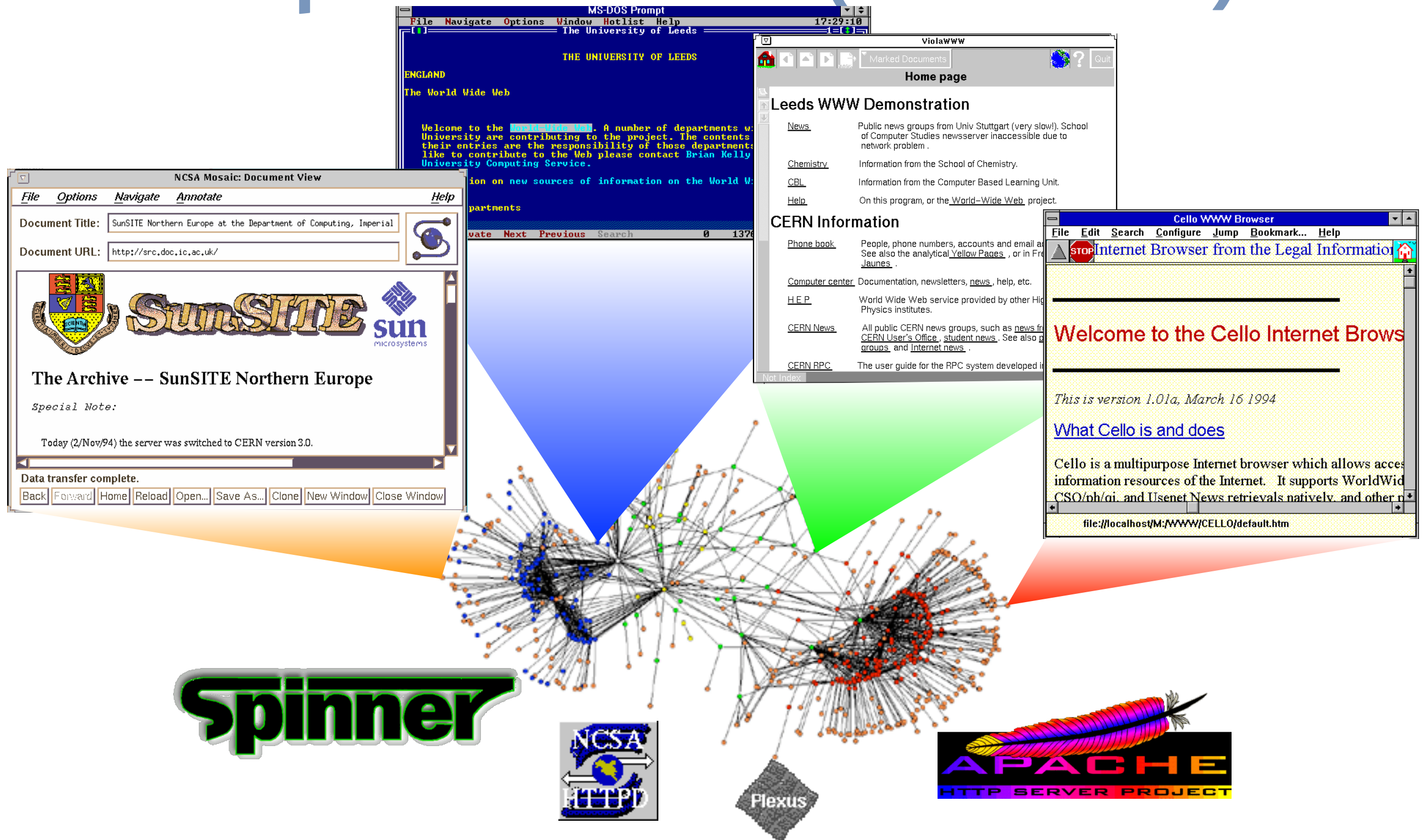


# Web Implementation (user view)

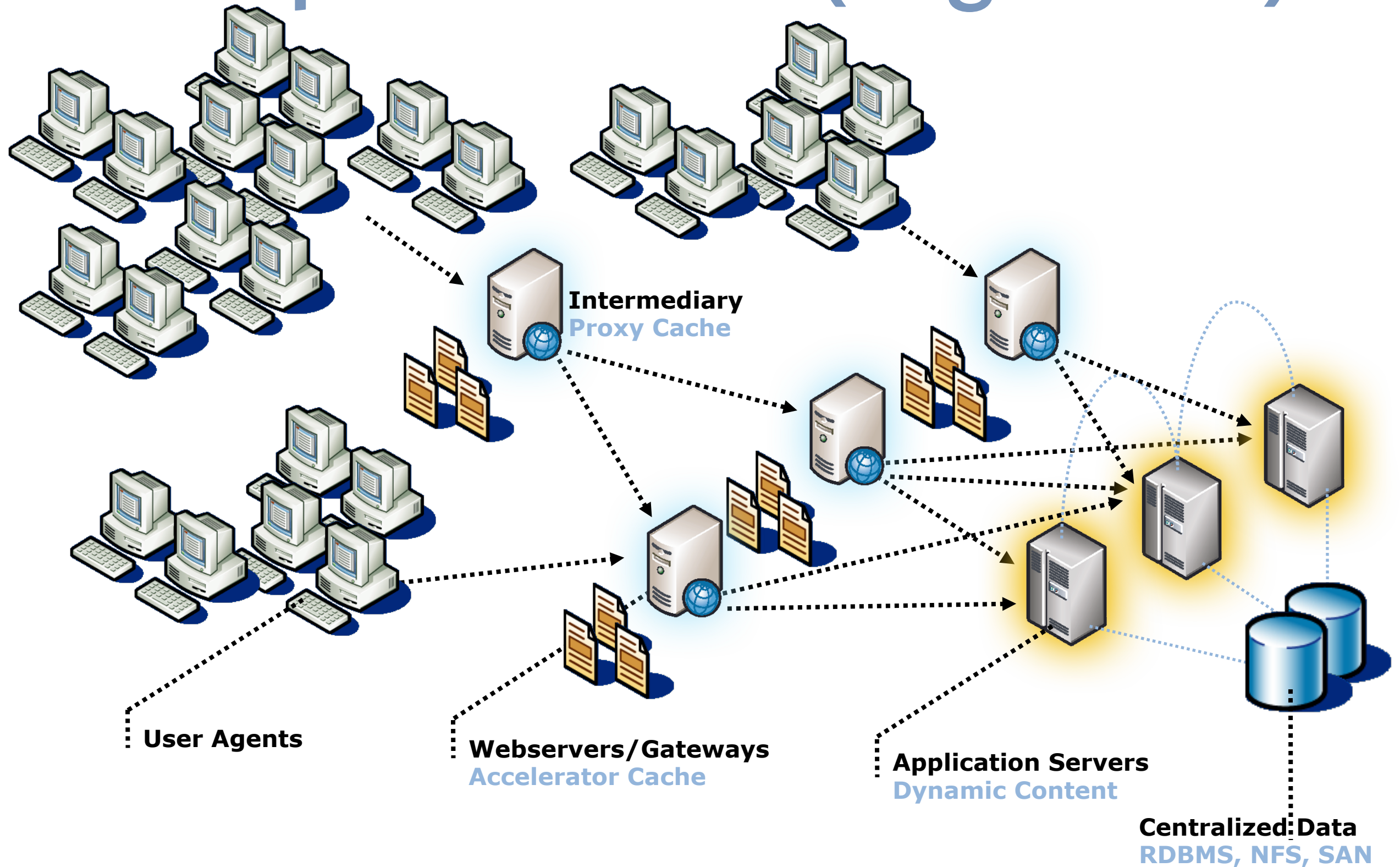




# Web Implementation (user view)

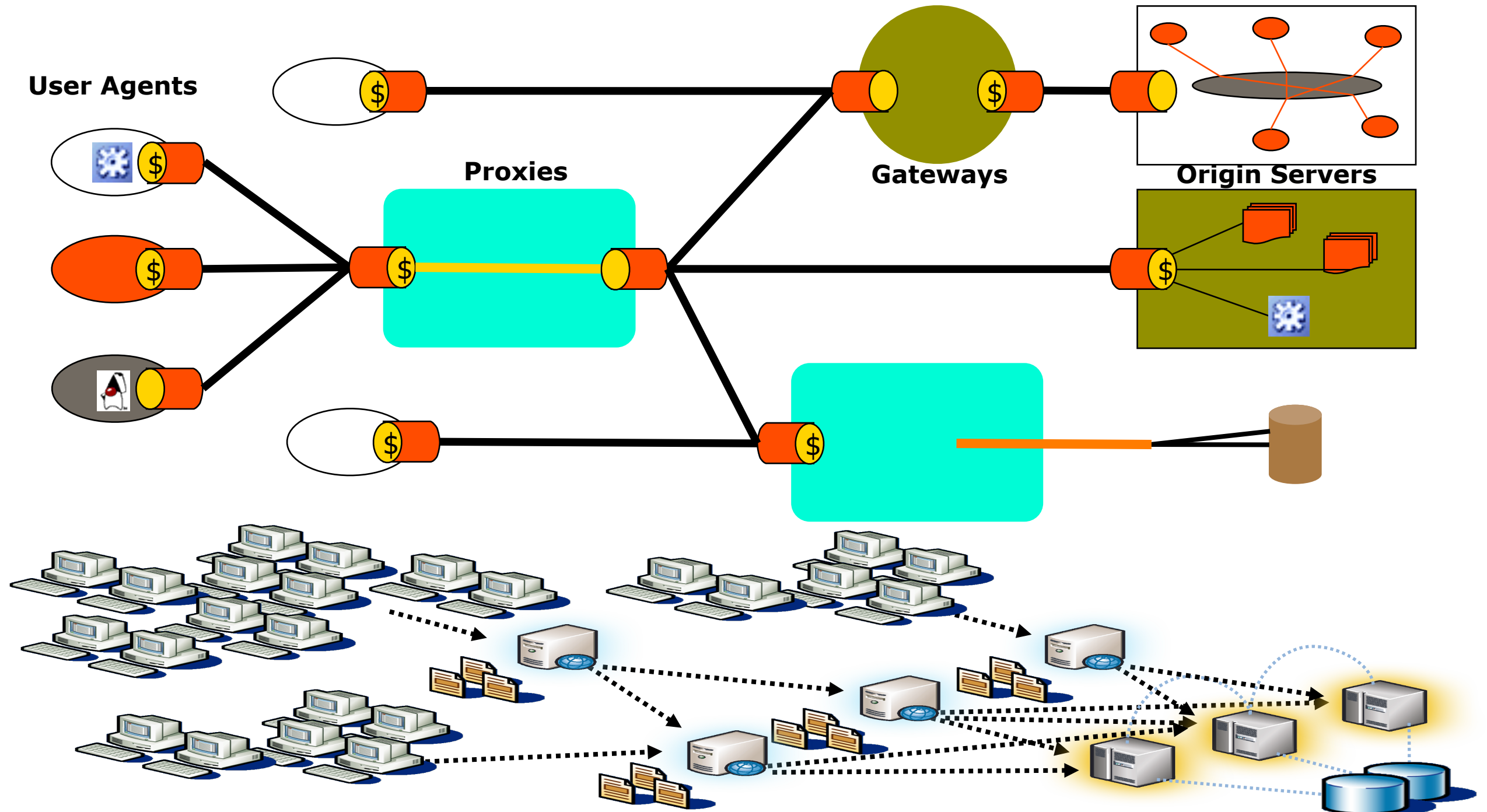


# Web Implementation (origin view)



# Web Architecture

## A vertical abstraction on implementation





# Web Architecture

## A vertical abstraction on implementation

