

canarie



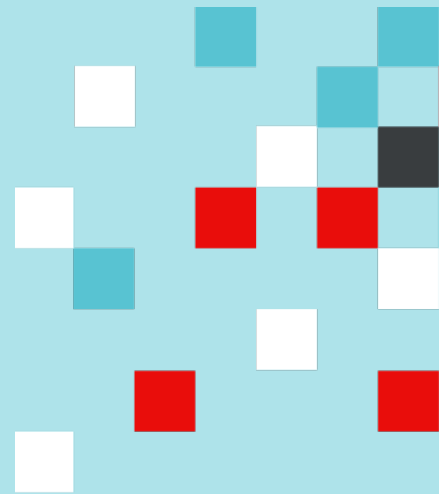
# The Internet Isn't Broken. *We're just using it wrong.*

Jim Ghadbane, President and CEO, CANARIE

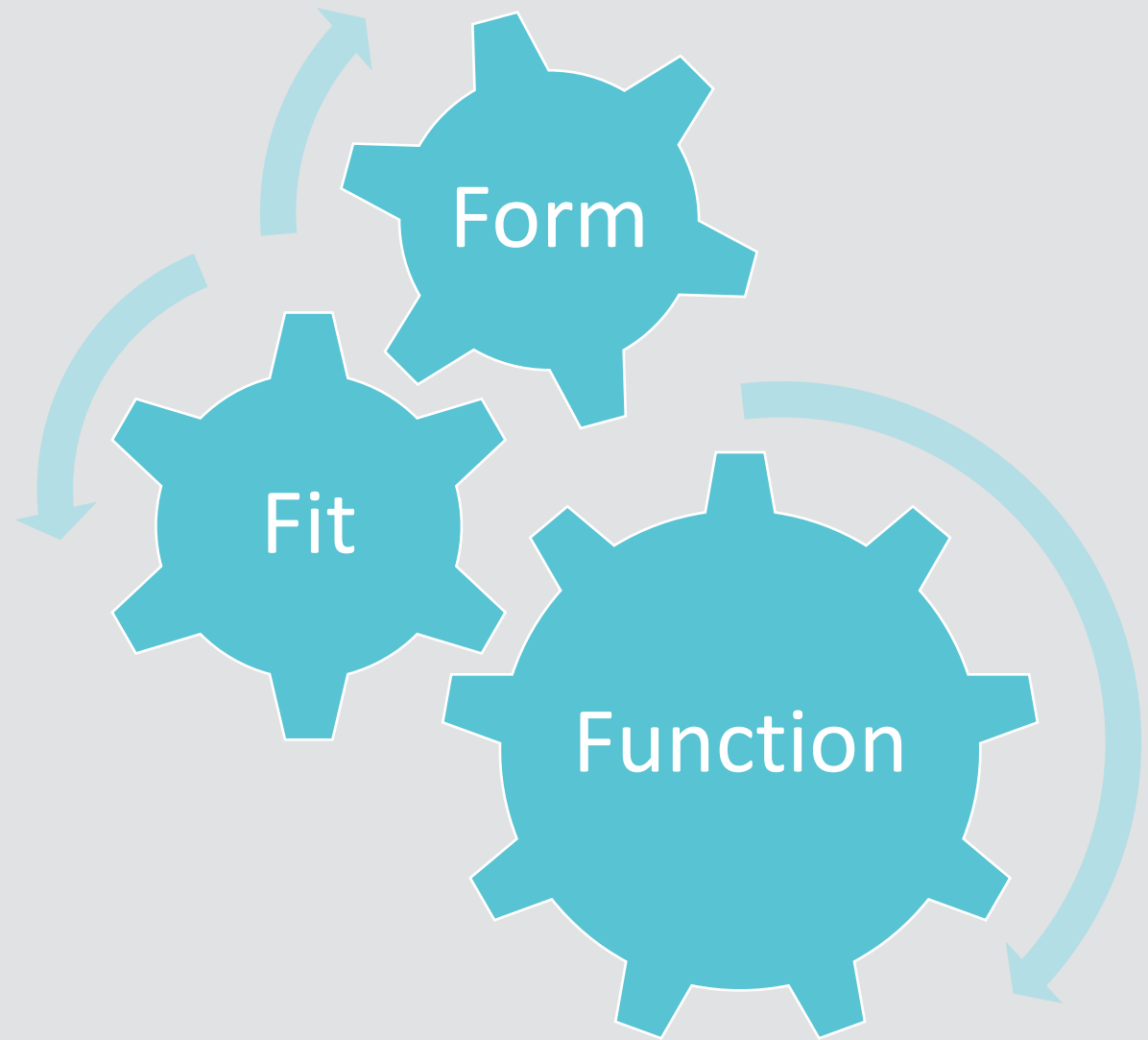
November 9, 2022 | Cyber Summit



If I asked you to design a car from these bricks, what would you do?



# Basics of Design



But what if I asked you to make something different out of those same bricks?

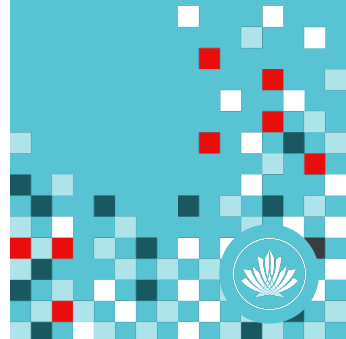
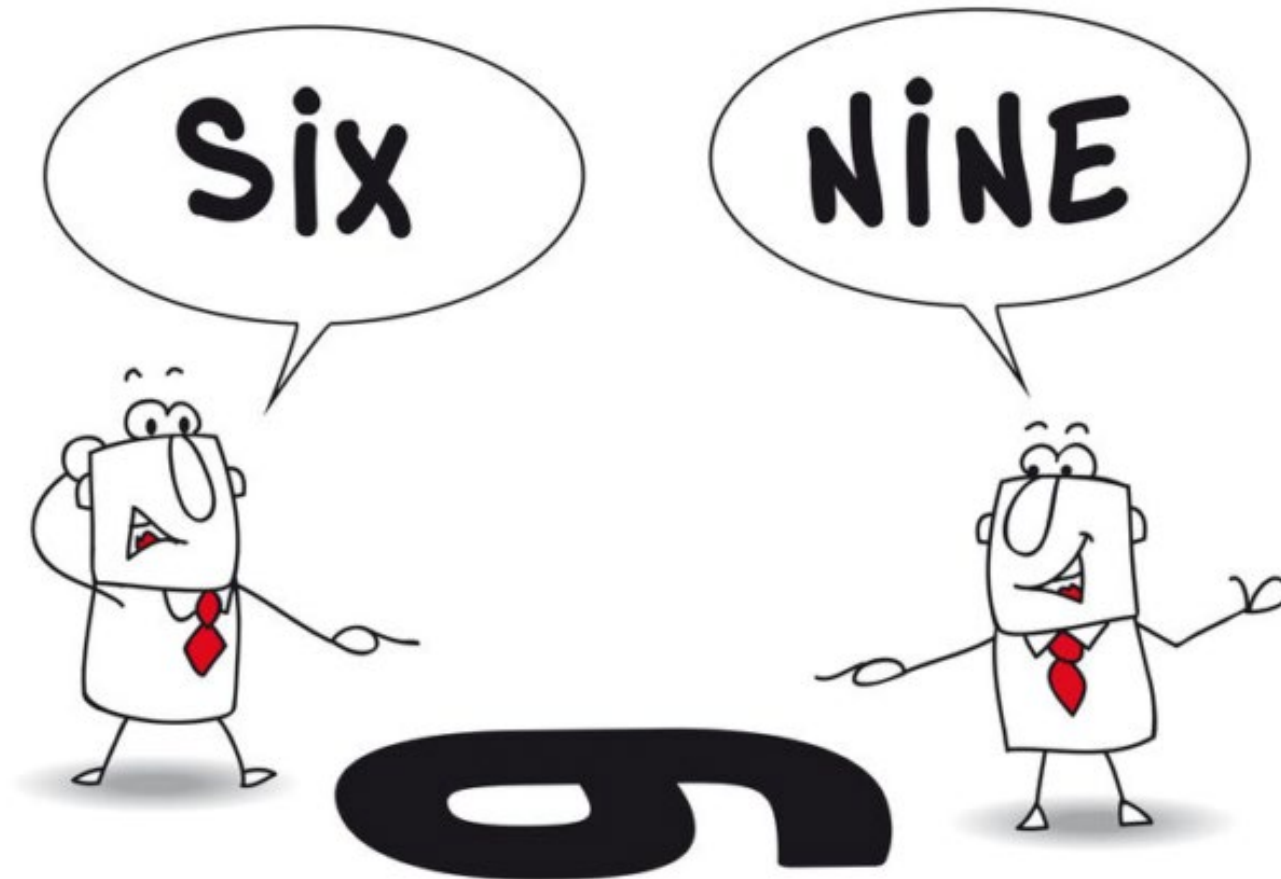




# What is Quality?



# Perhaps we are looking at the Internet all wrong?

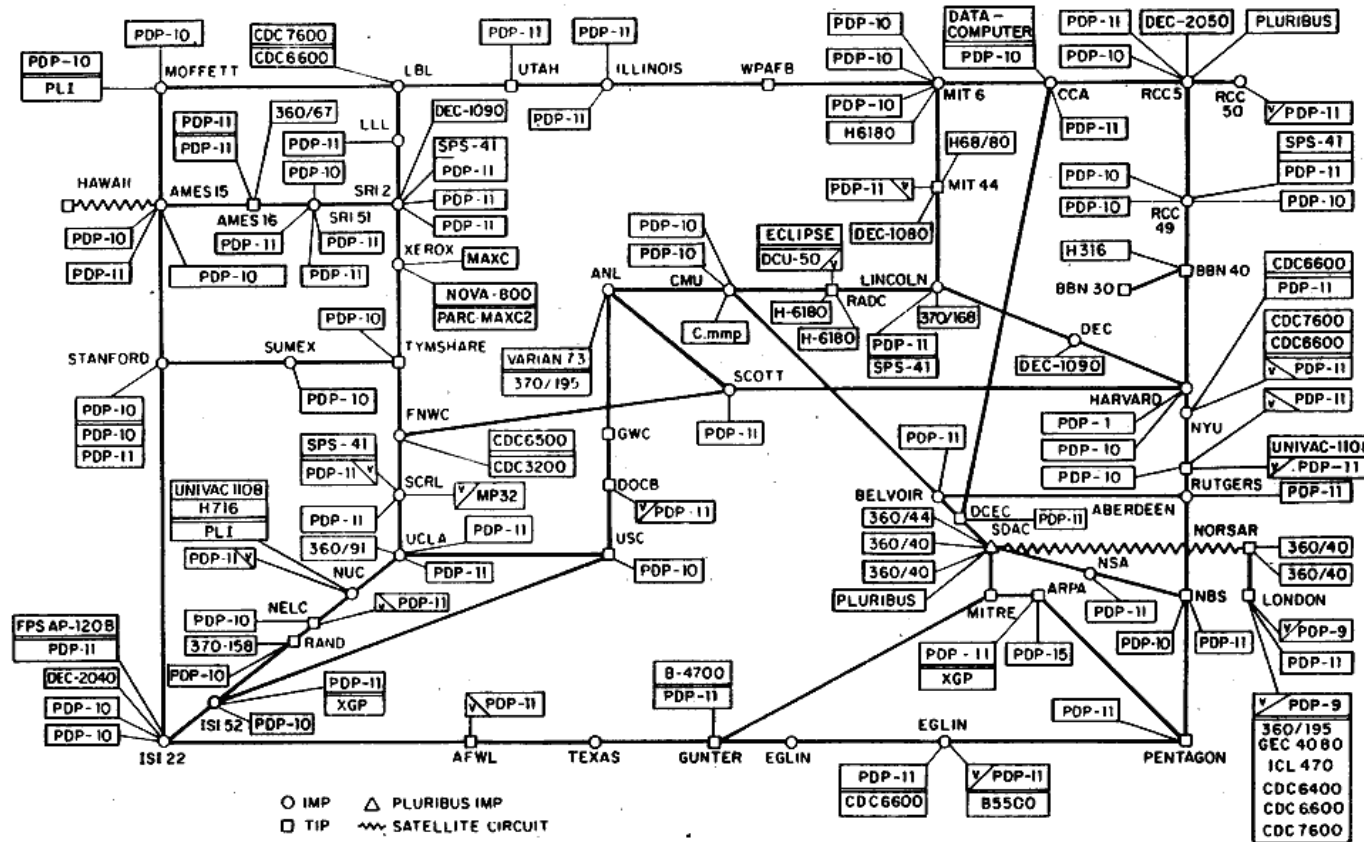


We need to understand the past of  
the Internet to understand its future



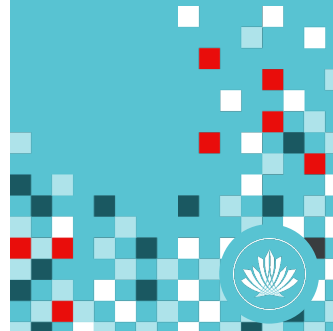
# ARPANET – The Advanced Research Projects Agency (APRA) Network

ARPANET LOGICAL MAP, MARCH 1977



(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE MOST POPULATION OF THE NETWORK ACCORDING TO THE BEST INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)

NAMES SHOWN ARE IMP NAMES, NOT NECESSARILY HOST NAMES





## Function of APRANET (1/2)



“ARPANET came out of our frustration that there were only a limited number of large, powerful research computers in the country, and that many research investigators, who should have access to them, were geographically separated from them.”

**Charles Herzfeld**  
**ARPA Director (1965–1967)**



## Function of APRANET (2/2)



“The goal was to exploit new computer technologies to meet the needs of military command and control against nuclear threats, achieve survivable control of US nuclear forces, and improve military tactical and management decision making.”

**Stephen J. Lukasik**  
**ARPA Dep. Director (1967–1970)**  
**ARPA Director (1970–1975)**



# What Defined APRANET?



Closed System



Best Effort  
Networks

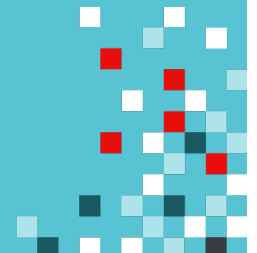
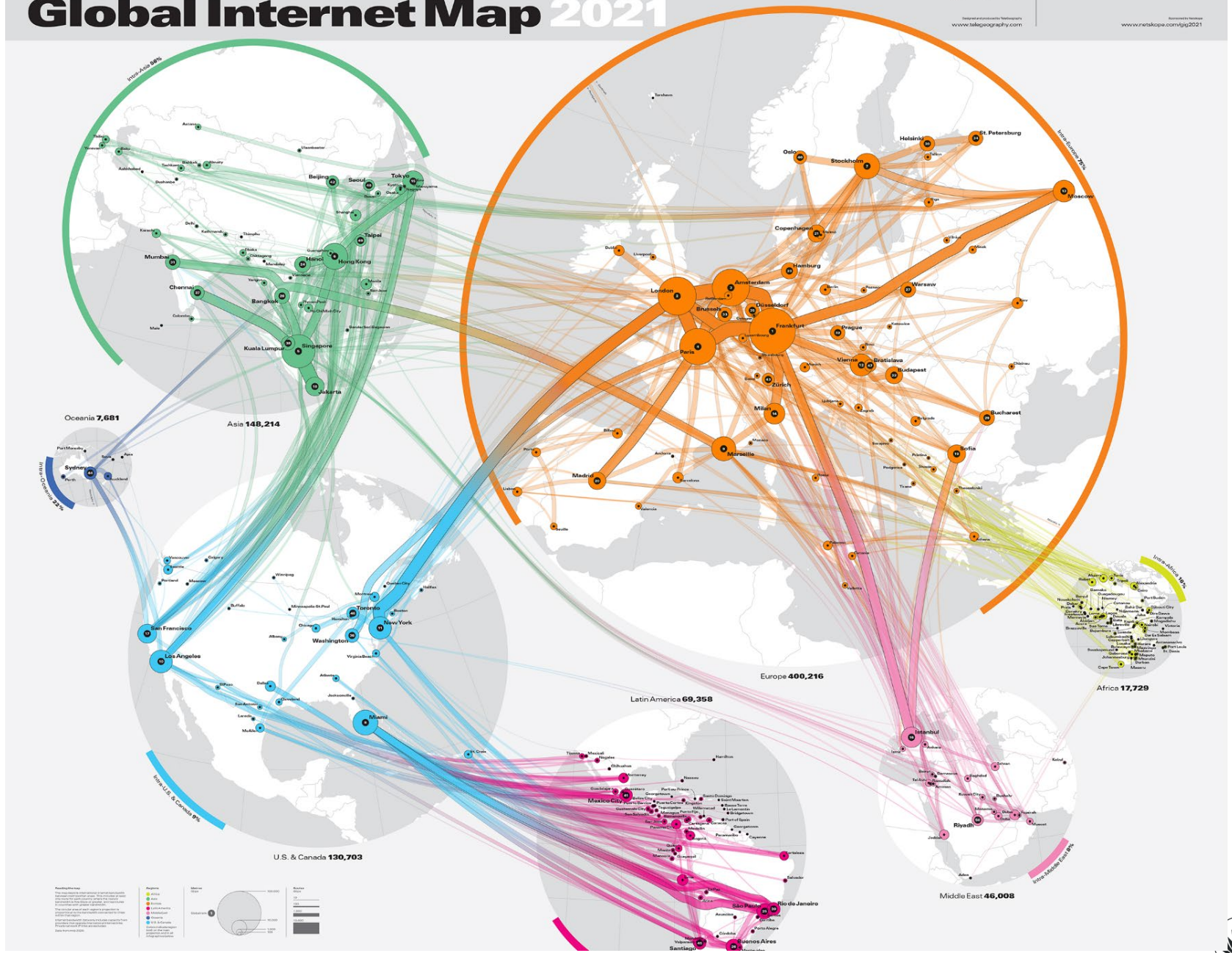


'Internal' Identity  
Confirmation



But what happens when the Internet looks like this?

# Global Internet Map 2021





And is vital to everything

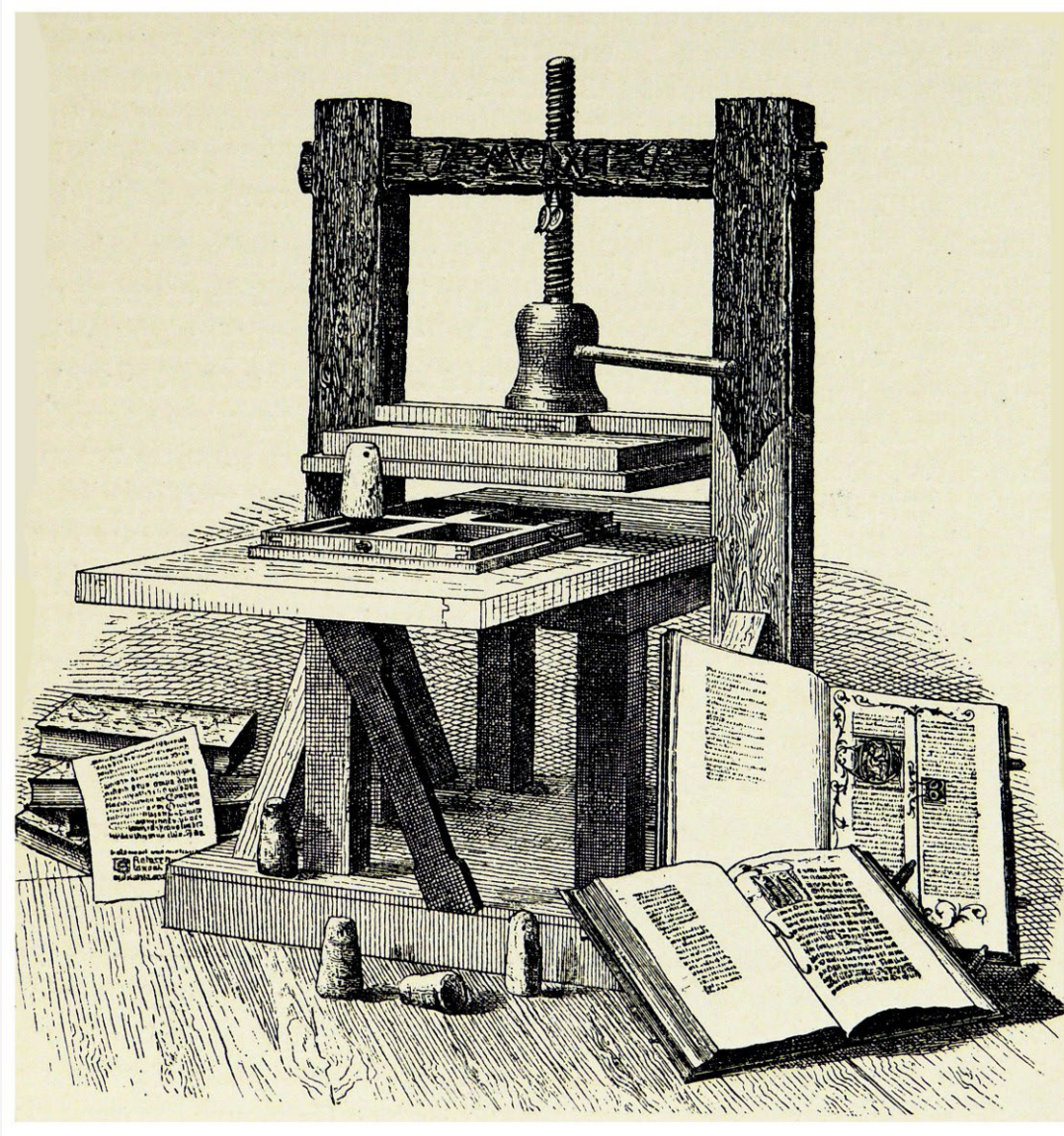
...in real time

... 24/7

...and open to everyone







**Suddenly...**



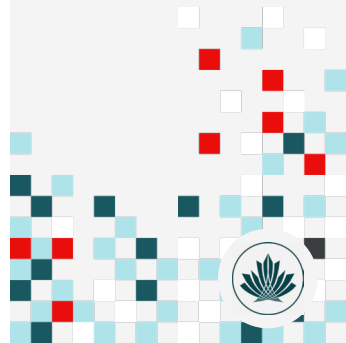
**Security**

**&**

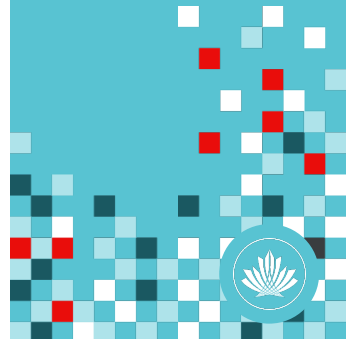


**Identity**

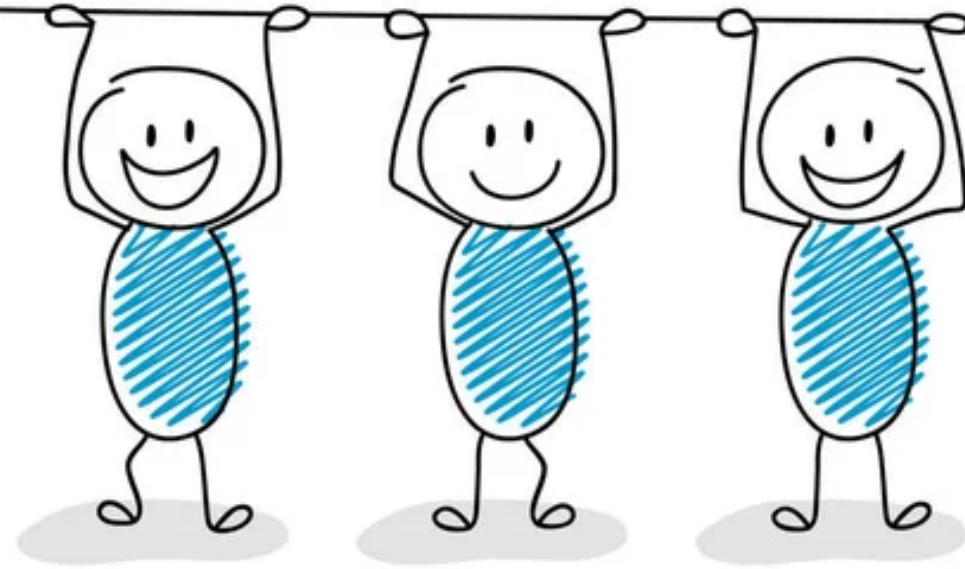
**become central to a system in which  
they are actually just bolted-on to...**



# So, are we all doomed?



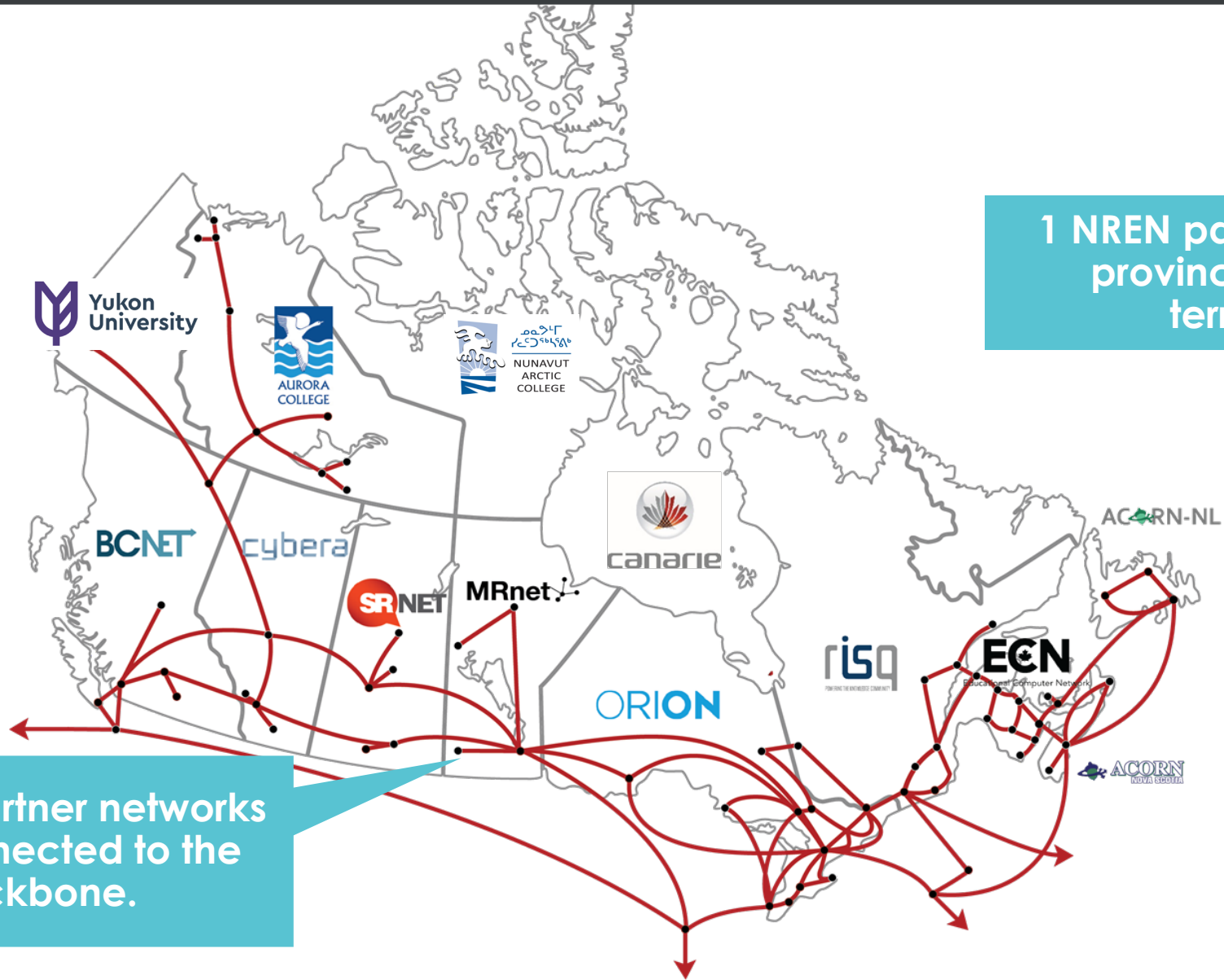
TOGETHER WE CAN  
ACHIEVE MORE





# Canada's National Research and Education Network (NREN)

Connects Canada's R&E and innovation communities via ultra high-speed (up to 100G) networks.



1 NREN partner in each province and in 3 territories

13 regional NREN partner networks + CANARIE all connected to the CANARIE backbone.

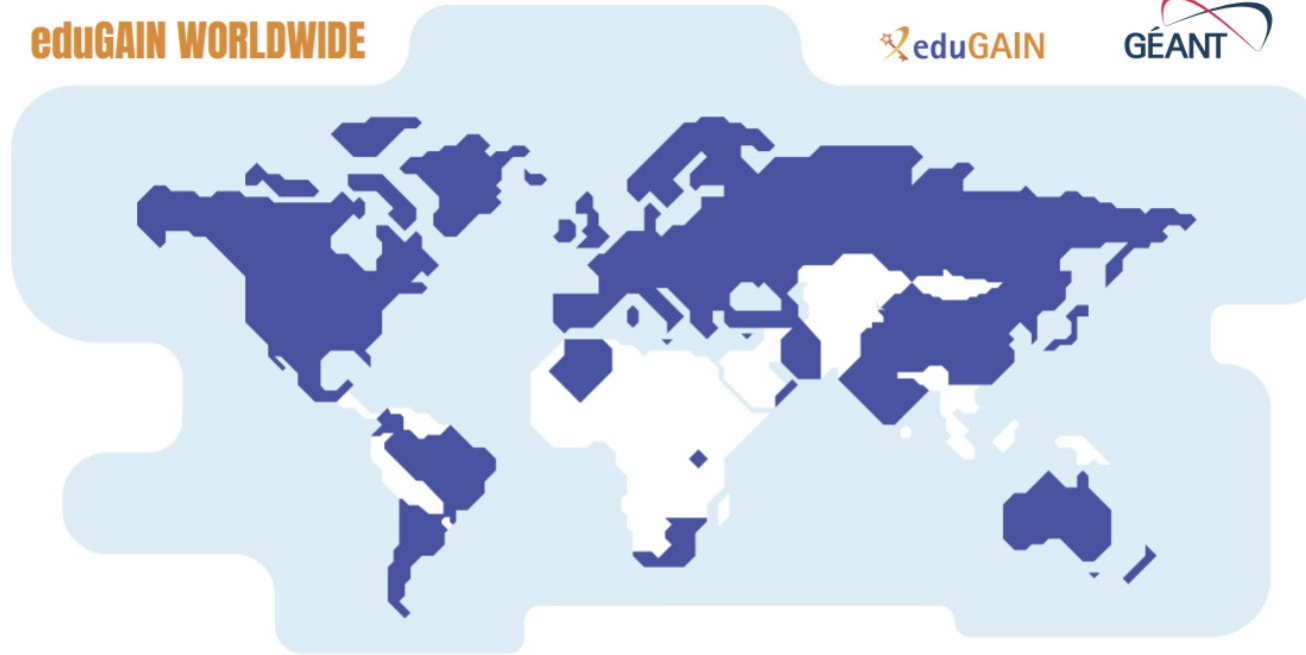


# Making identity a strength, not a weakness

eduGAIN WORLDWIDE

eduGAIN

GÉANT



**70+**  
FEDERATIONS

**>4.200**  
IDENTITY PROVIDERS

**>3.200**  
SERVICE PROVIDERS

**35M**  
AUTHENTIFICATIONS  
PER WEEK (est)

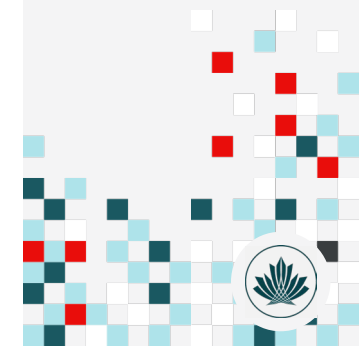
**30M**  
USERS (est)



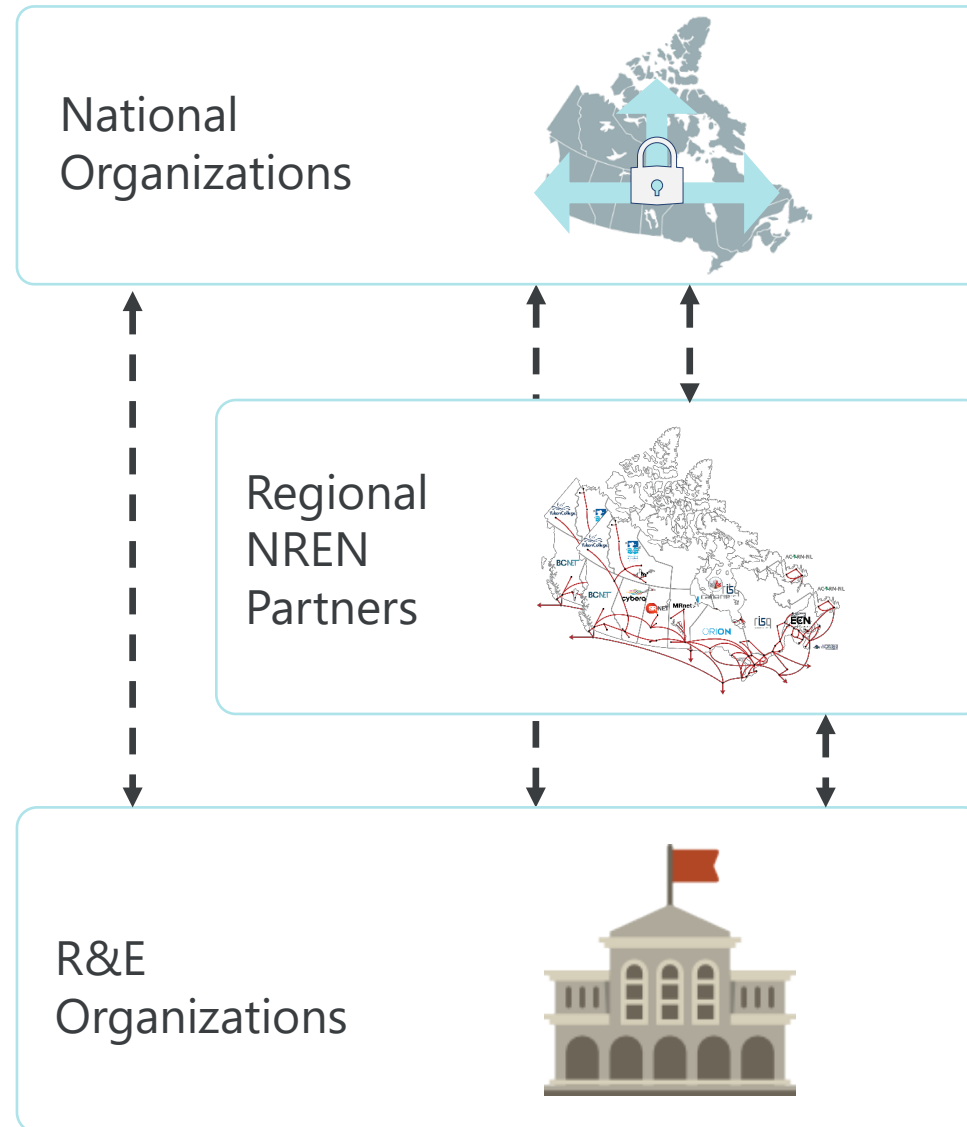
eduGAIN is part of the GÉANT Project (GN4-2), which is funded by the European Union's Horizon 2020 research & innovation programme under grant agreement 731122 as part of the GÉANT 2020 Framework Partnership Agreement no. 653998

April 2021

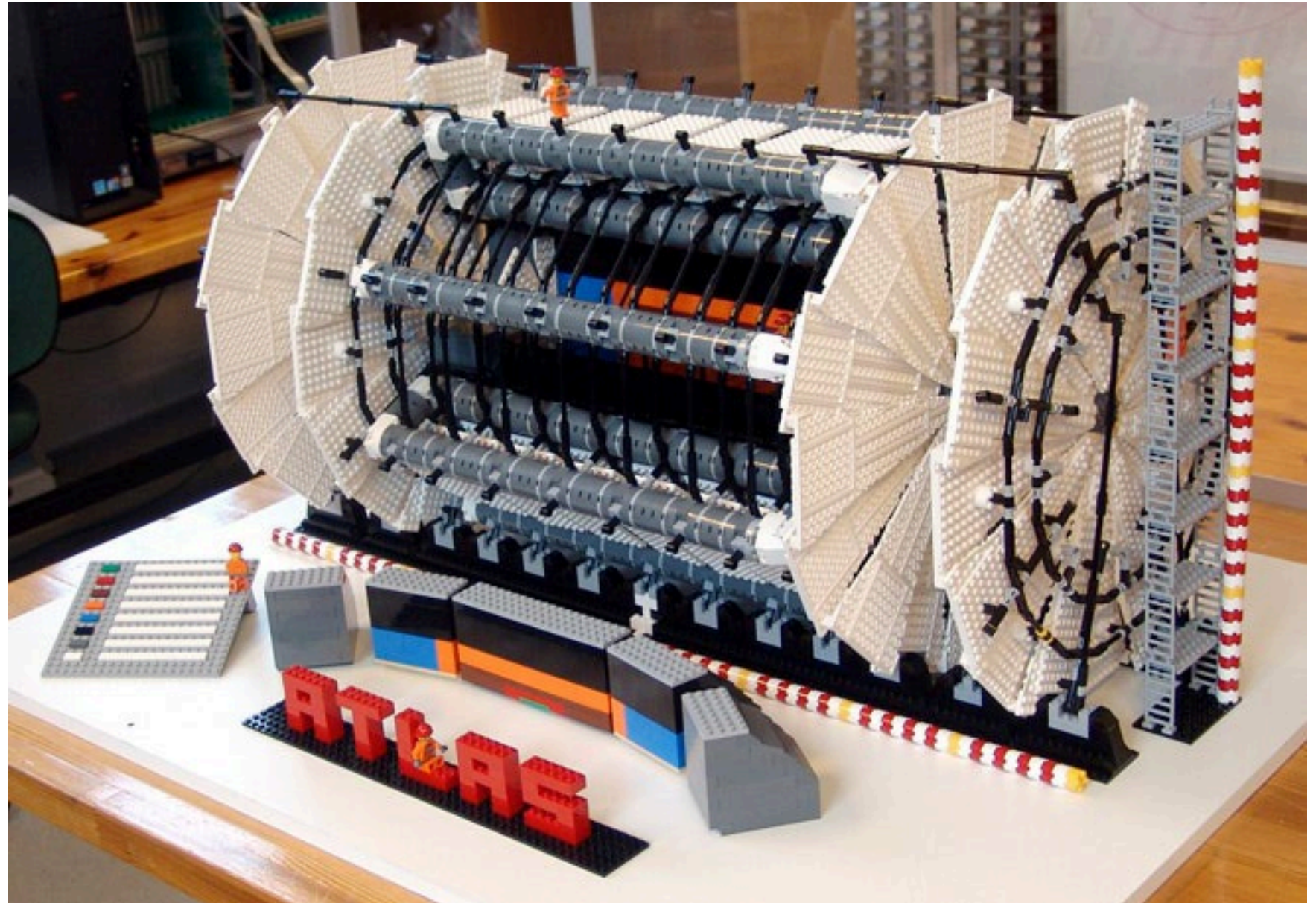
[edugain.org](https://edugain.org)



# No one can do it all



Because  
together, we  
can build  
something  
amazing







canarie



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