A microscopic image of neurons, showing a dense network of green-stained axons and purple-stained cell bodies (soma) against a dark background. The neurons are interconnected, forming a complex web.

Challenges in building human networks

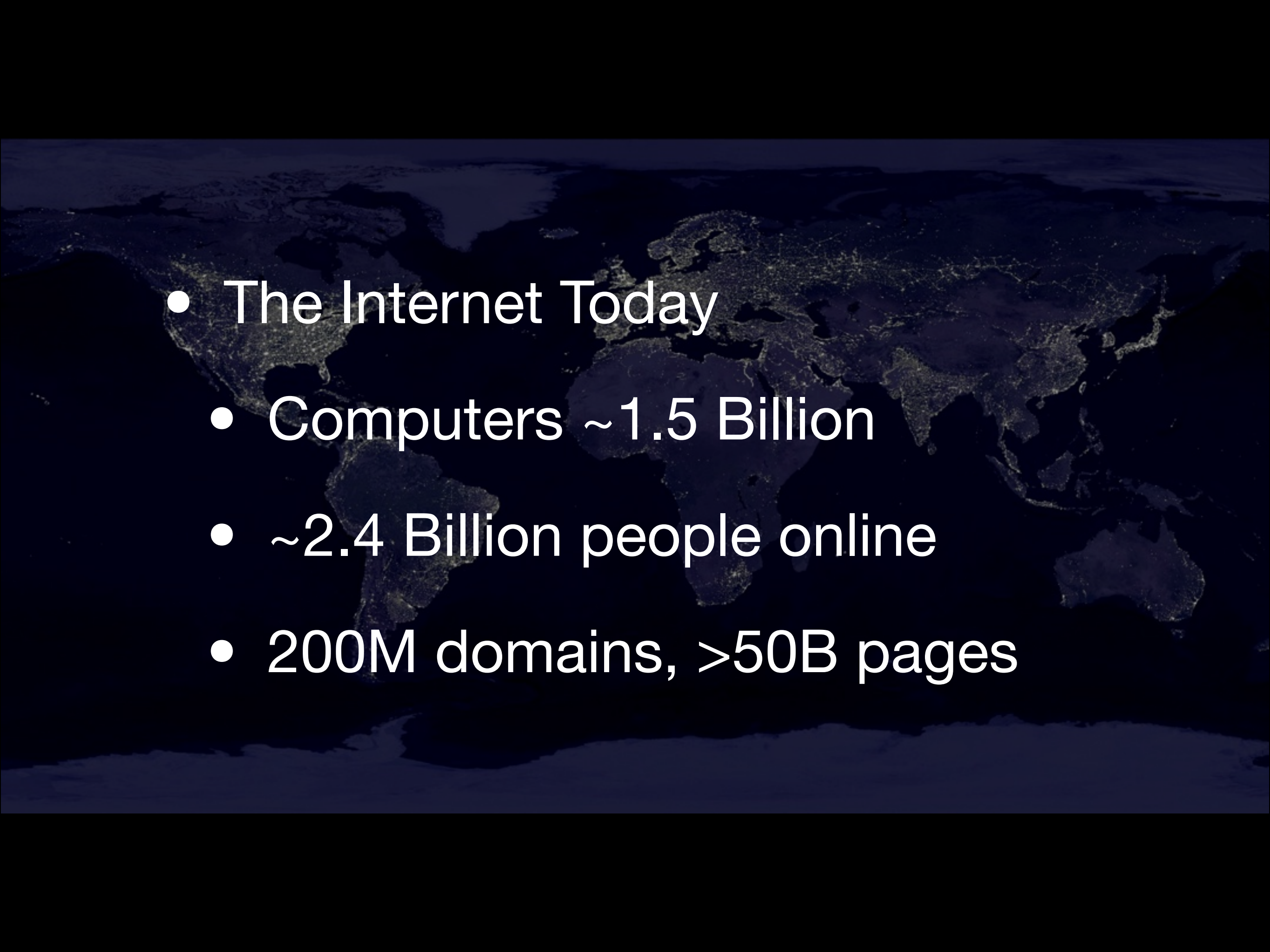
Dr. Abdur Chowdhury

Outline

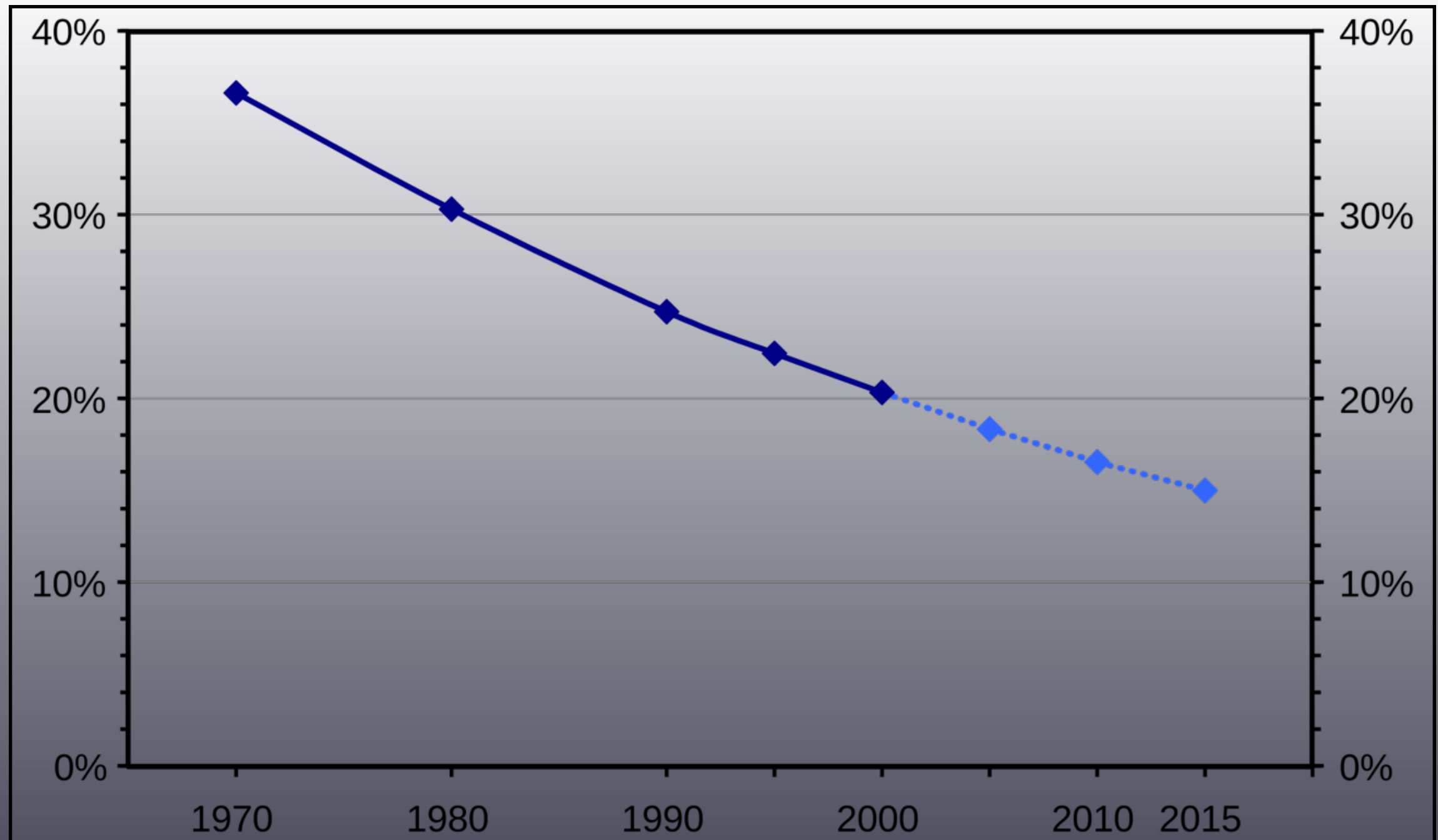
- Human networks?
- Challenges

A photograph of a trading floor or financial control room. The room is dimly lit, with the primary light source being the numerous computer monitors. There are at least 12 monitors visible, arranged in two rows. Each monitor displays complex financial data, including line graphs, bar charts, and tables of numbers. The graphs feature various colors like red, green, and blue. In the foreground, a desk holds a laptop, a multi-line office phone, a keyboard, and a mouse. A yellow sticky note with a pen is also on the desk. The background shows a dark wall with some shelves holding books or binders. The overall atmosphere is one of intense, data-driven work.

Human Network?

- 
- The Internet Today
 - Computers ~1.5 Billion
 - ~2.4 Billion people online
 - 200M domains, >50B pages

Education



World illiteracy rate

Access

Smartphone Users in the **World**

80%
of the **world's**
population now has
a mobile phone



Number of
Smartphones in
U.S

91.4 Million



Mobile Phones in
World

5 Billion



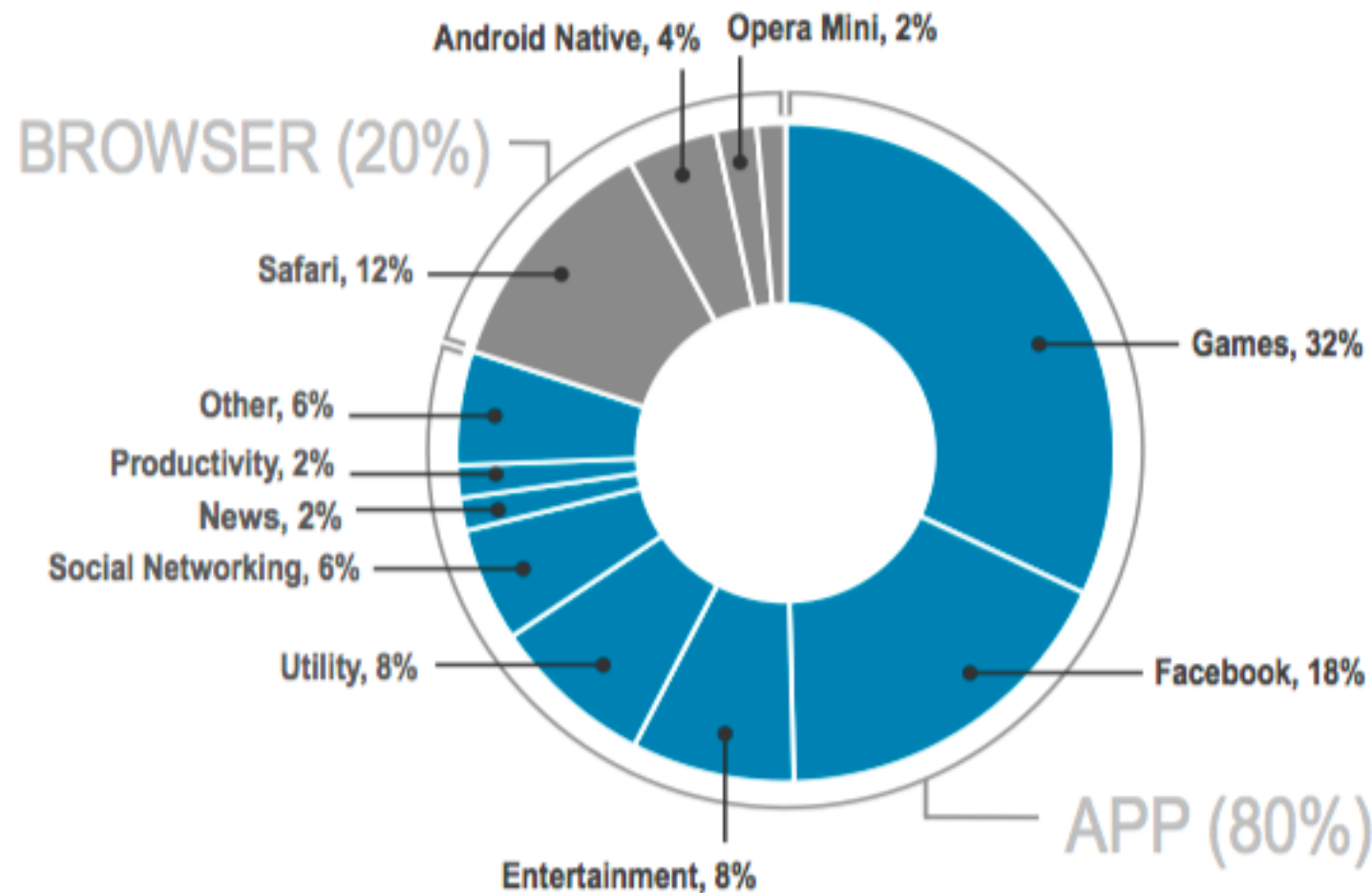
Out of
which only
1.08 Billion
are smart phones



- 
- 2020 - 8 billion people
 - 7.2 Billion people literate 90%
 - 5.7 Billion people with smart phones 80%
 - India, China, South America greatest new markets
 - Internet dominated with a different demographic

Less Web More Native

Time Spent on iOS & Android Connected Devices



Human Networks

A dark blue world map with glowing yellow and orange dots representing human networks or city lights. The dots are concentrated in North America, Europe, and East Asia, with some scattered dots in South America, Africa, and Australia. The map is centered on the Atlantic Ocean.

- 2020 - Mobile world
 - New collaboration models?
 - New ways to create knowledge?
 - New market places?



Participation

THE GRAND CHALLENGE EQUATIONS

$$B_i A_i = E_i A_i + \rho_i \sum_j B_j A_j F_{ji} \quad \nabla \times \vec{E} = - \frac{\partial \vec{B}}{\partial t} \quad \vec{F} = m \vec{a} + \frac{dm}{dt} \vec{v}$$

$$dU = \left(\frac{\partial U}{\partial S} \right)_V dS + \left(\frac{\partial U}{\partial V} \right)_S dV \quad \nabla \cdot \vec{D} = \rho \quad Z = \sum_j g_j e^{-E_j/kT}$$

$$F_j = \sum_{k=0}^{N-1} f_k e^{2\pi i j k / N} \quad \nabla^2 u = \frac{\partial u}{\partial t} \quad \nabla \times \vec{H} = \frac{\partial \vec{D}}{\partial t} + \vec{J} \quad \sum_i W_i B_i(t) P_i$$

Social Engineering

$$-\frac{\hbar^2}{8\pi^2 m} \nabla^2 \Psi(r,t) + V \Psi(r,t) = - \frac{\hbar}{2\pi i} \frac{\partial \Psi(r,t)}{\partial t} \quad P(t) = \frac{i}{\sum_i W_i B_i(t)} \quad -\nabla^2 u + \lambda u = f$$

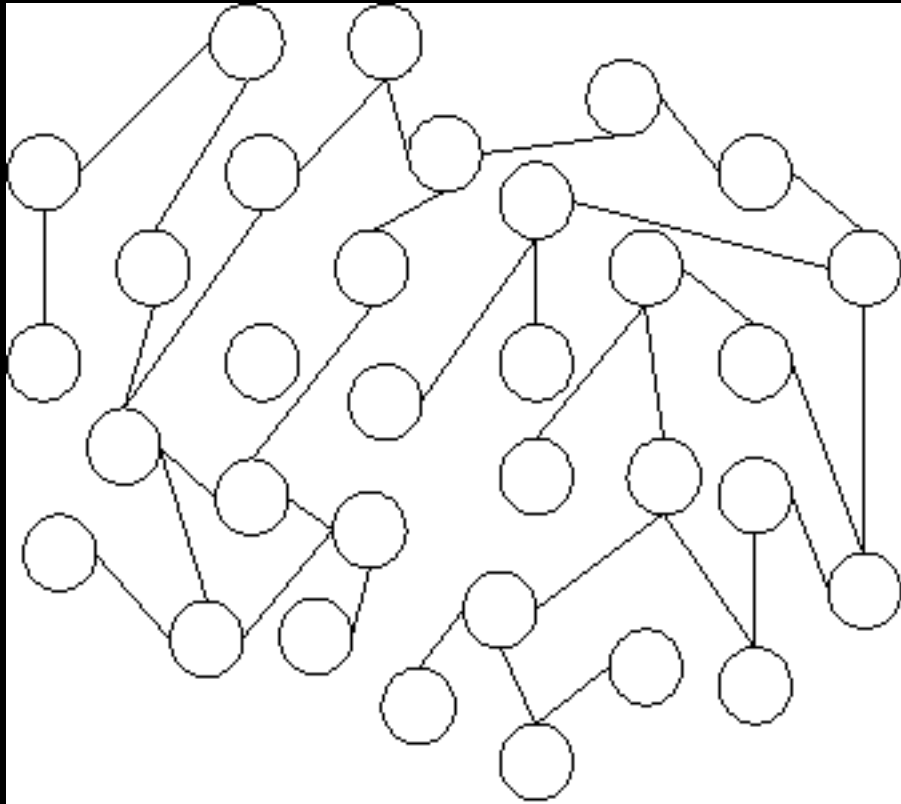
$$\frac{\partial \vec{u}}{\partial t} + (\vec{u} \cdot \nabla) \vec{u} = - \frac{1}{\rho} \nabla p + \gamma \nabla^2 \vec{u} + \frac{1}{\rho} \vec{F} \quad \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = f$$

- NEWTON'S EQUATIONS • SCHROEDINGER EQUATION (TIME DEPENDENT) • NAVIER-STOKES EQUATION •
- POISSON EQUATION • HEAT EQUATION • HELMHOLTZ EQUATION • DISCRETE FOURIER TRANSFORM •
- MAXWELL'S EQUATIONS • PARTITION FUNCTION • POPULATION DYNAMICS •
- COMBINED 1ST AND 2ND LAWS OF THERMODYNAMICS • RADIOSITY • RATIONAL B-SPLINE •

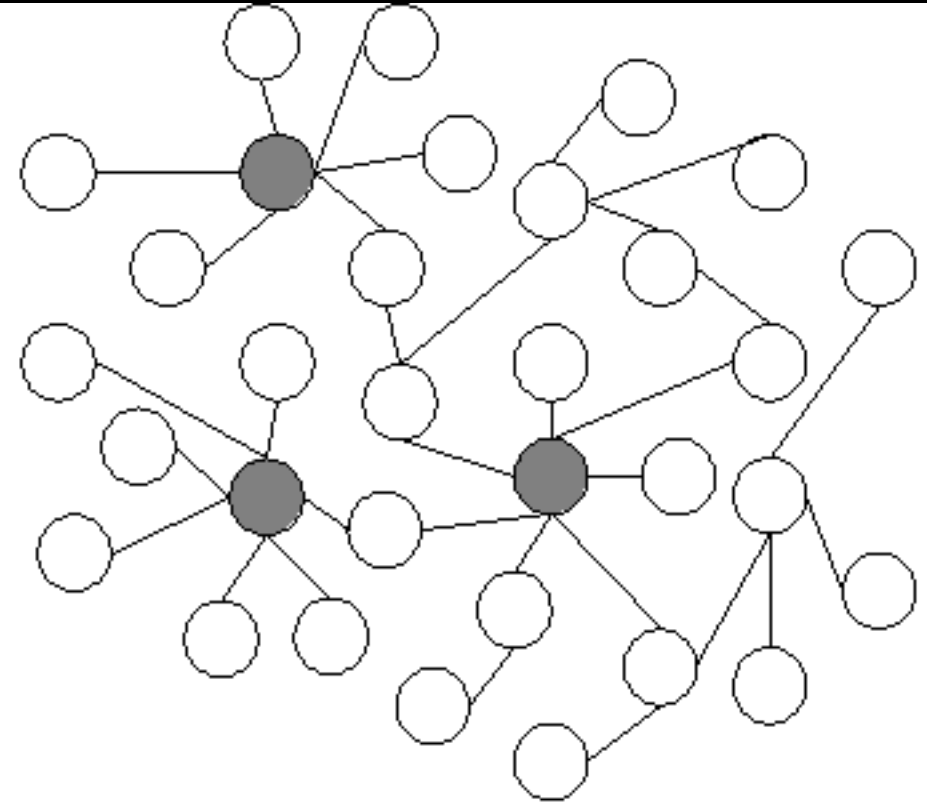
SAN DIEGO SUPERCOMPUTER CENTER

A National Laboratory for Computational Science and Engineering

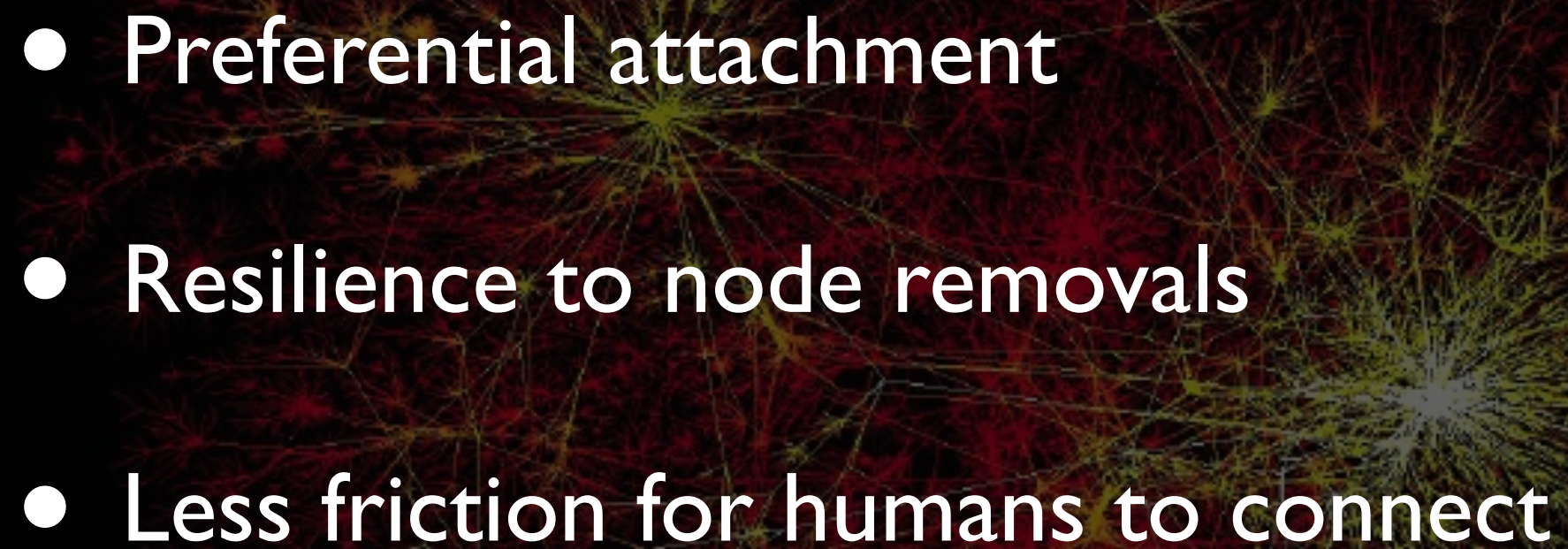
Graph Structures



(a) Random network



(b) Scale-free network

- 
- Preferential attachment
 - Resilience to node removals
 - Less friction for humans to connect

As Networks Need to Grow

TechCrunch
DISRUPT October 28-29 Arena Berlin 4 Days Left! [GET TICKETS NOW](#)


Path's Competitors Aren't Facebook And

Why can I only share with 150 people?

Last Updated: Jul 19, 2012 08:41PM PDT

Here at Path, our goal is to help you develop a high quality network to connect more deeply and share personal moments with your closest friends and family. We are inspired by Oxford University Professor Robin Dunbar, whose research delves deeply into the number of trusted relationships humans can maintain throughout life.

We tend to have 5 best friends, 15 good friends, 50 close friends and family, and 150 total friends. At Path, we're building tools for you to share with the people who matter most in your life. Our intent is to nurture quality relationships to offer you the comfort to share all your personal moments.



The Path Team

• Custom [edit](#)

A large, detailed stone guardian lion statue is the central focus, with a warrior figure seated on its back. The warrior holds a large, flat, rectangular object with a circular hole in the center. The lion's mouth is open, showing its tongue. In the background, a traditional Chinese temple with a red roof and ornate carvings is visible. The sky is a clear, light blue.

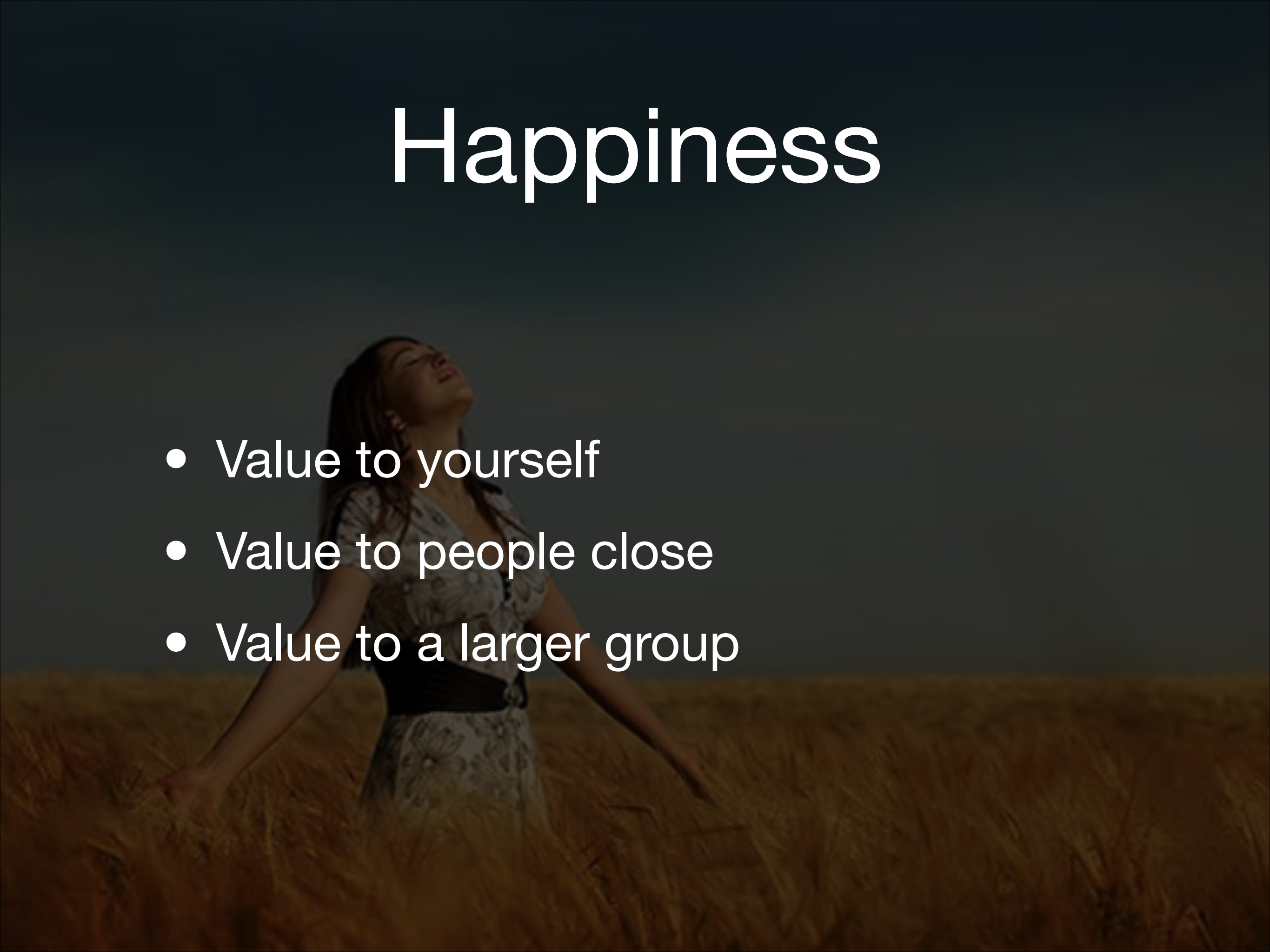
Viability

Try it you will like it!

- Clear Utility
- Social Currency
- Social Proof

Happiness

- Value to yourself
- Value to people close
- Value to a larger group





● Why this talk?