The Spider and the Web:

Can the Information Age Last Another 25 Years?

- José-Marie Griffiths, Ph.D.
- NEASIS&T Annual Networking Dinner
- Massachusetts Institute of Technology
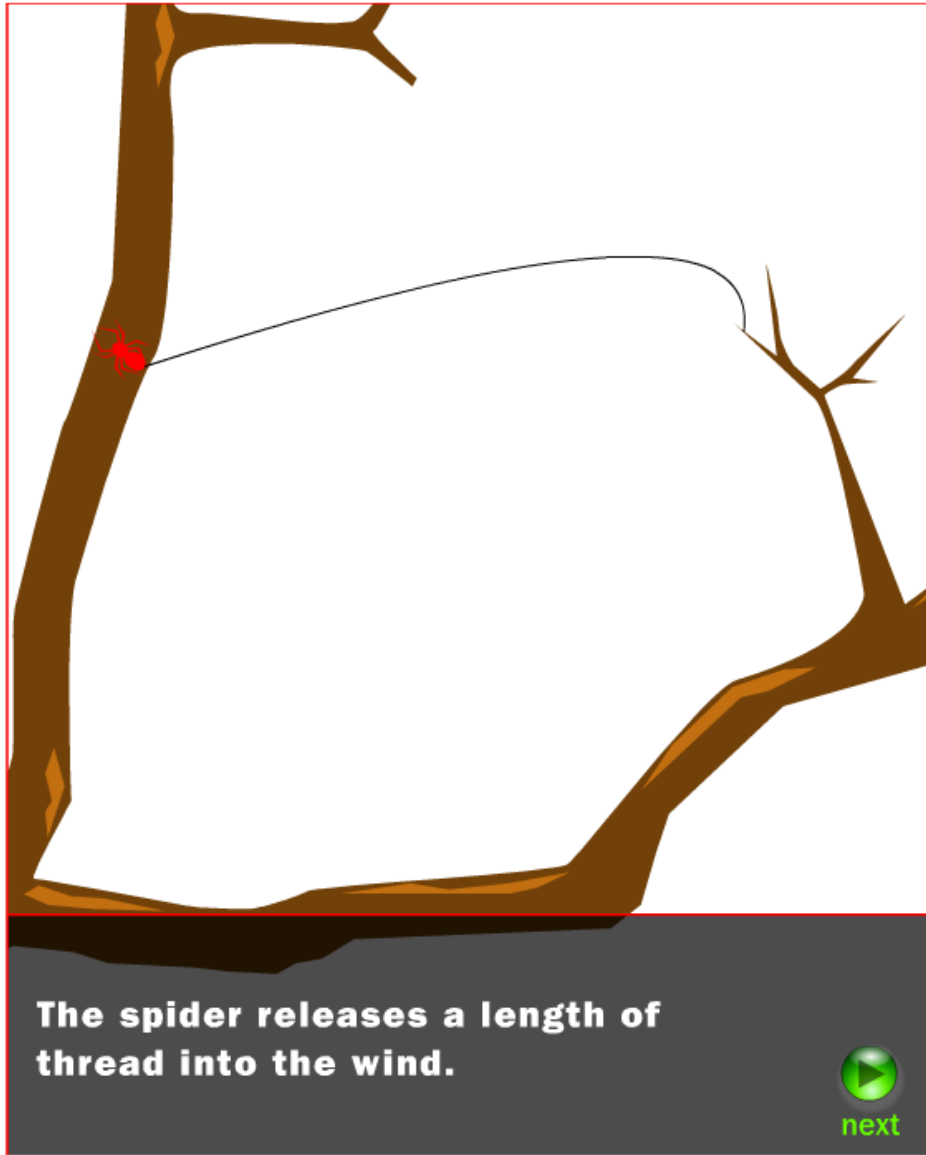- Cambridge, MA
- May 7, 2014

1

Overview

- How a spider spins a web

- The policy process

- Net neutrality and governance

- Data policy and stewardship

- Privacy and censorship

- Survival of the spider and the web…
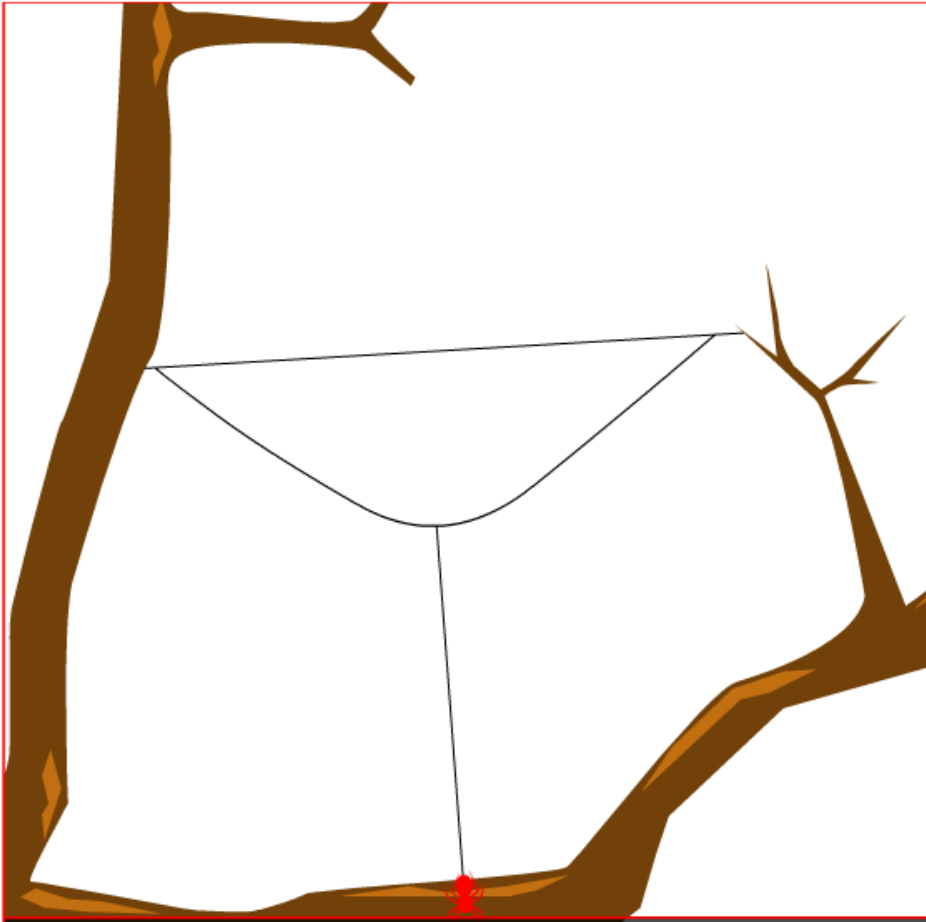
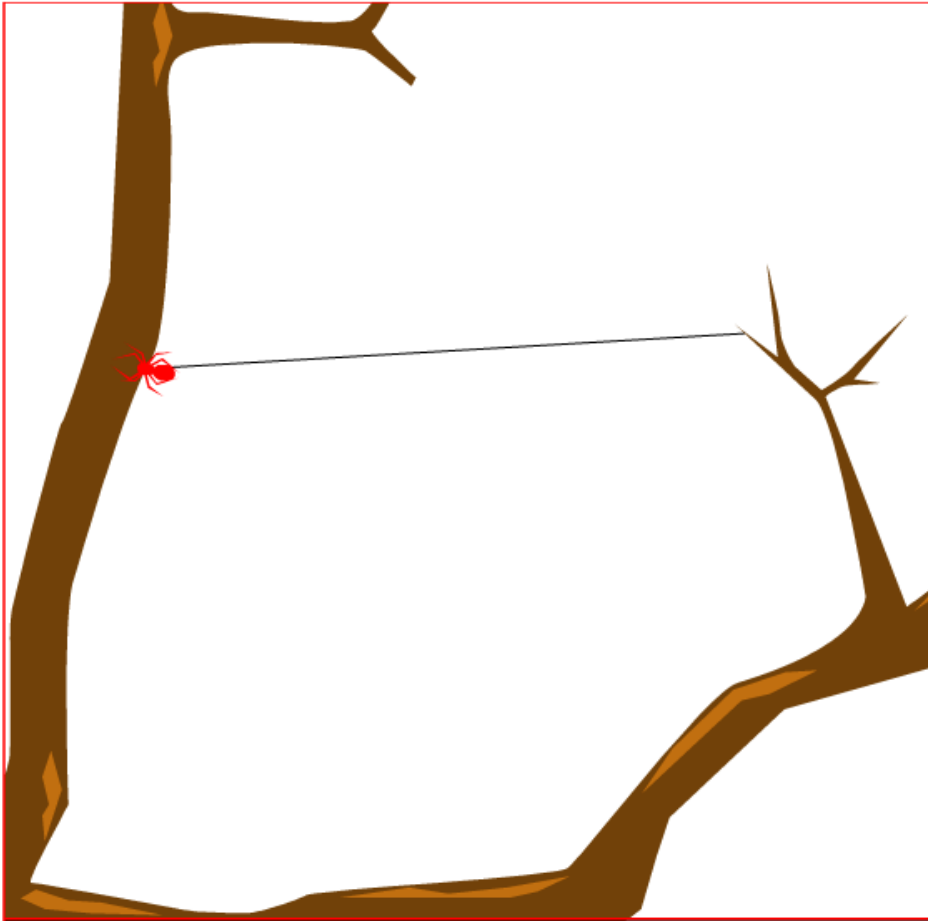How a Spider Spins a Web…

The spider releases a length of thread into the wind.
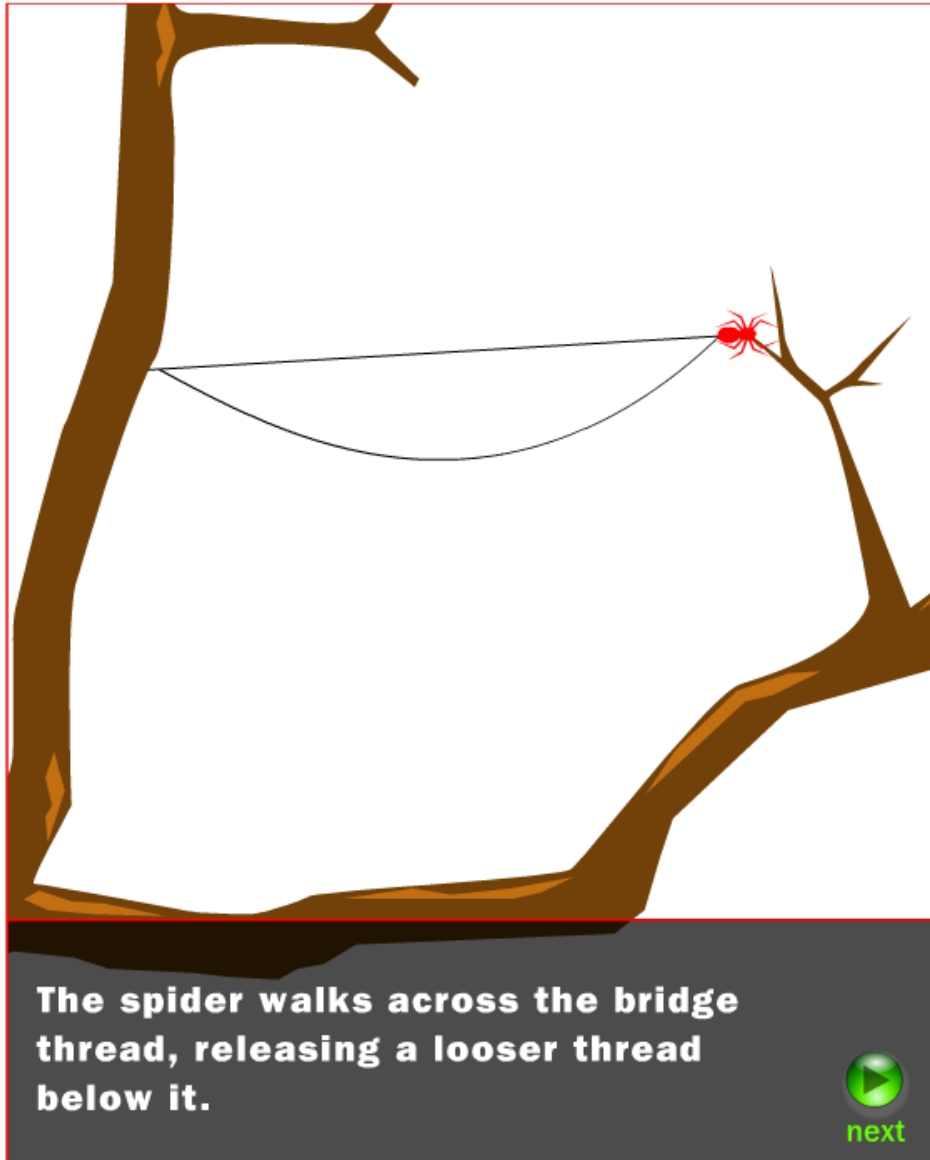
next

The policy process…

If the spider feels that the thread has caught onto something, it cinches up the silk and attaches it to its starting point.

next

The policy process…

The spider walks across the bridge thread, releasing a looser thread below it.

next

Net neutrality and governance…

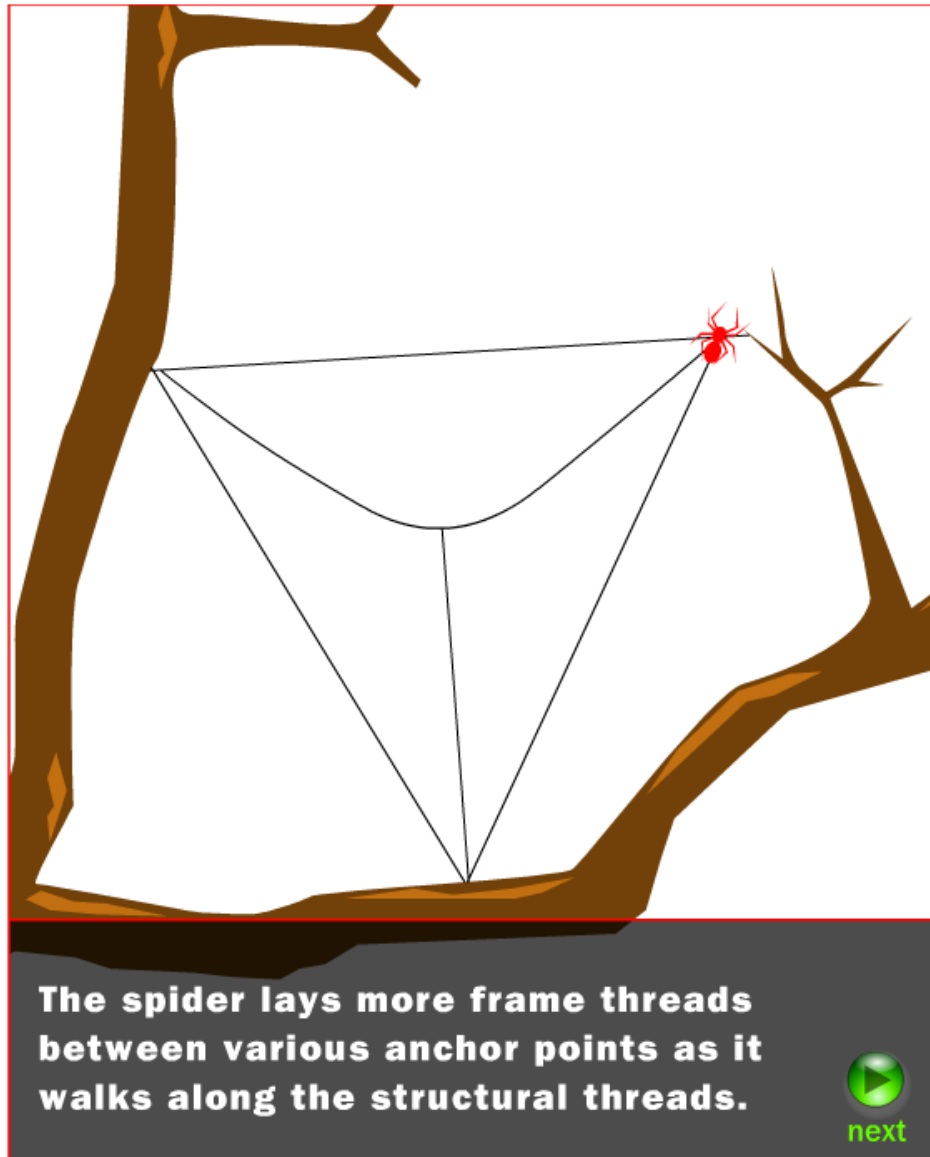The spider climbs to the center of the loose thread and lowers itself down on a vertical thread to form a Y-shape.

next

Net neutrality and governance…

The spider lays more frame threads between various anchor points as it walks along the structural threads.

next

Net neutrality and governance…

The spider lays out radius threads from the center of the web to the frames.

next

Data policy...

The spider lays more non-stick silk to form an auxiliary spiral, extending from the center of the web to the outer edge of the web.

next

Data policy…

The spider spirals inward, laying out sticky thread and using the auxiliary spiral as a reference

next

Privacy and censorship…

The result is a web with non-sticky radius threads, for getting around, and a sticky spiral for catching bugs

reset

The future of the Information Age…

The Policy Development Process
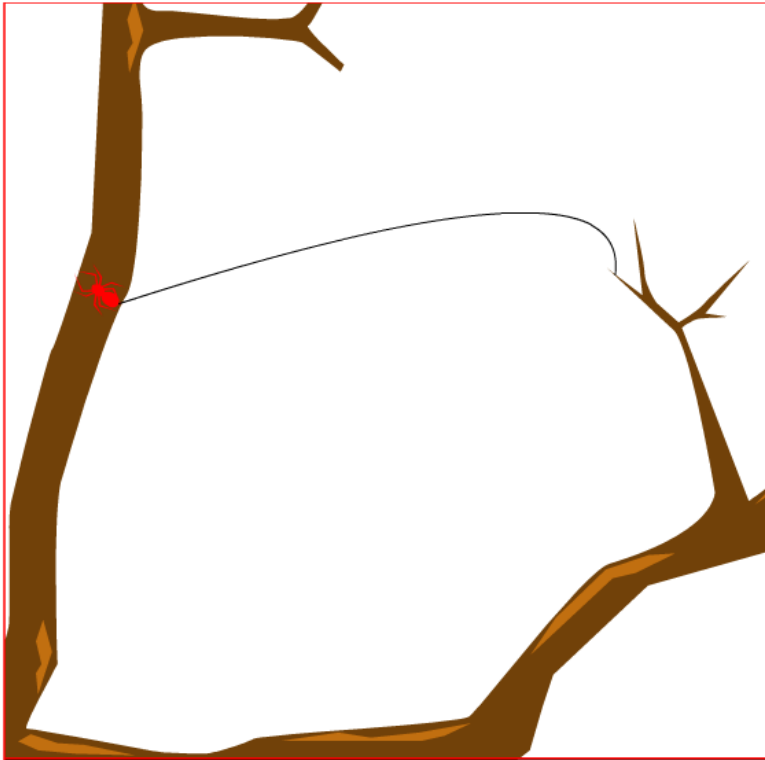
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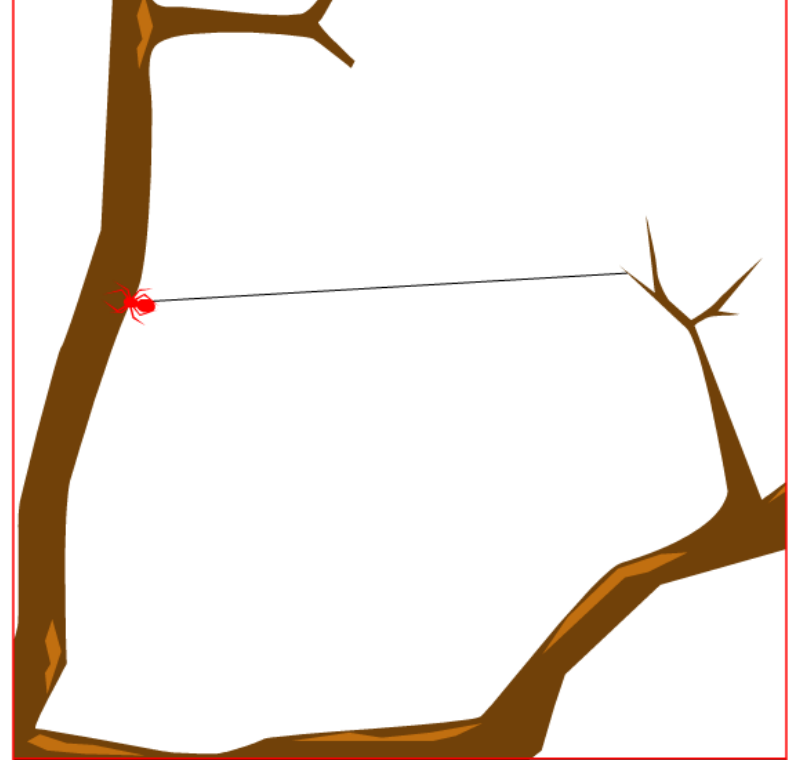
next

If the spider feels that the thread has caught onto something, it cinches up the silk and attaches it to its starting point.

next

Policy Development - concerns

- **Complex process, requires deliberate steps to be successful, just like the spider spinning the web**

- **Must involve the stakeholders – all of them**

- **Needs to be data driven**

- **Need to frame the issues: what, who, how, when**

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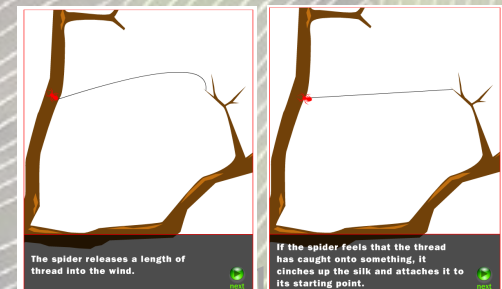
Options development & review

- **Must do the prep work first – then can develop potential solutions**

- **Review MUST include thinking through:**

  - **Intended and unintended consequences**

  - **Cost of doing it, cost of not doing it**

  - **How are we going to measure impact and success?**

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Principles & Values – starting point

Must revisit

the principles and values

of how we create,

share and

archive

information
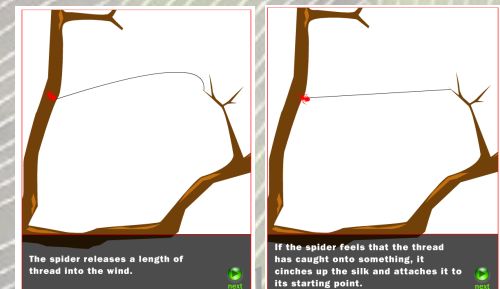
# Principles and Values

- Issues of:
  - Access
  - Validity
  - Security
- TRUST

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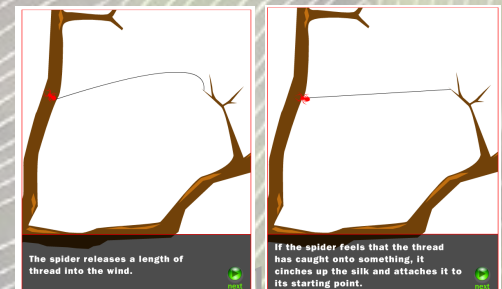
Five Types of Intellectual Rights*

Individual citizens and organizations have:

1) **Intellectual property rights:** the right to profit from one's intellectual endeavors and the right to prevent others from doing so

Nick Moore/Acumen

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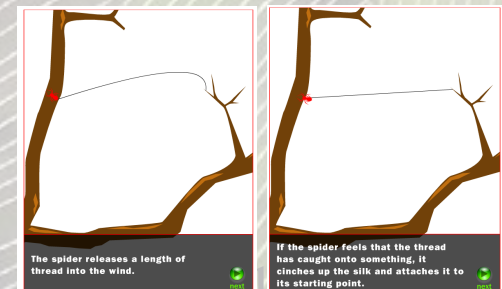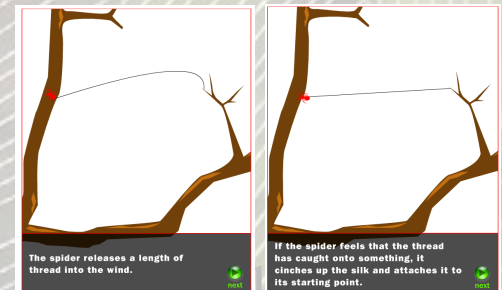**Individual citizens and organizations have:**

2) Data protection and privacy rights: the right to control the use of information about them

> *"The whole purpose of privacy law is to respect the right of an individual to retain, in effect, autonomy in their lives and their dealings with government, their dealings with companies, to basically retain control of their personal information."*
> — John Sabo, security and privacy analyst, Computer Associates

Nick Moore/Acumen

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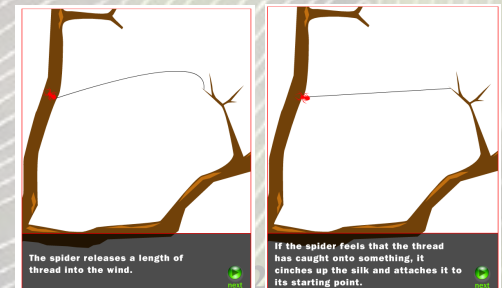
Five Types of Intellectual Rights * - 3

Individual citizens and organizations have:

3) Freedom of information: the right of access to information held by governments and corporate bodies

Nick Moore/Acumen
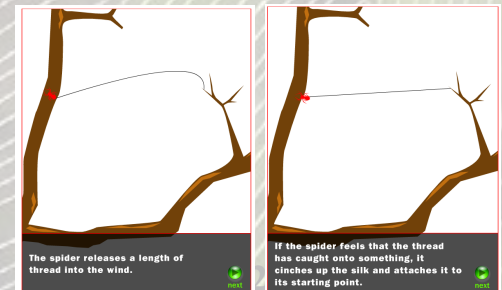
Five Types of Intellectual Rights* - 4

Individual citizens and organizations have:

4) Censorship: the right to be protected from obnoxious information

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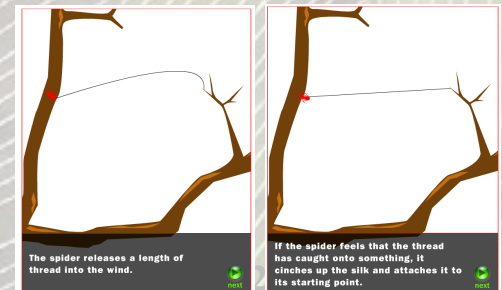
5) Information and access services: the right to access information and advice services (e.g., consumer review services like Consumer Reports, medical information services like WebMD, etc.)

Nick Moore/Acumen

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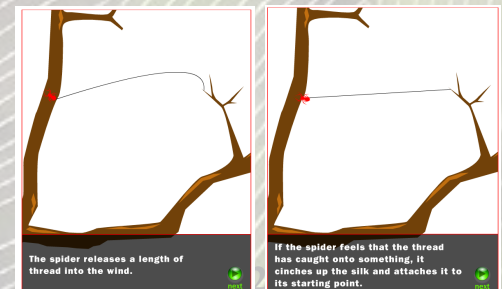
Internet Policy Development – Must Honor These Rights

Individual citizens and organizations have:

1) Intellectual property rights

2) Data protection and privacy rights

3) Freedom of information

4) Censorship

5) Information and access services
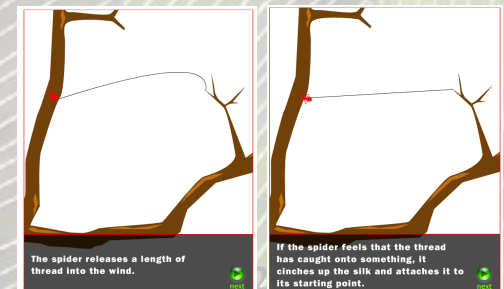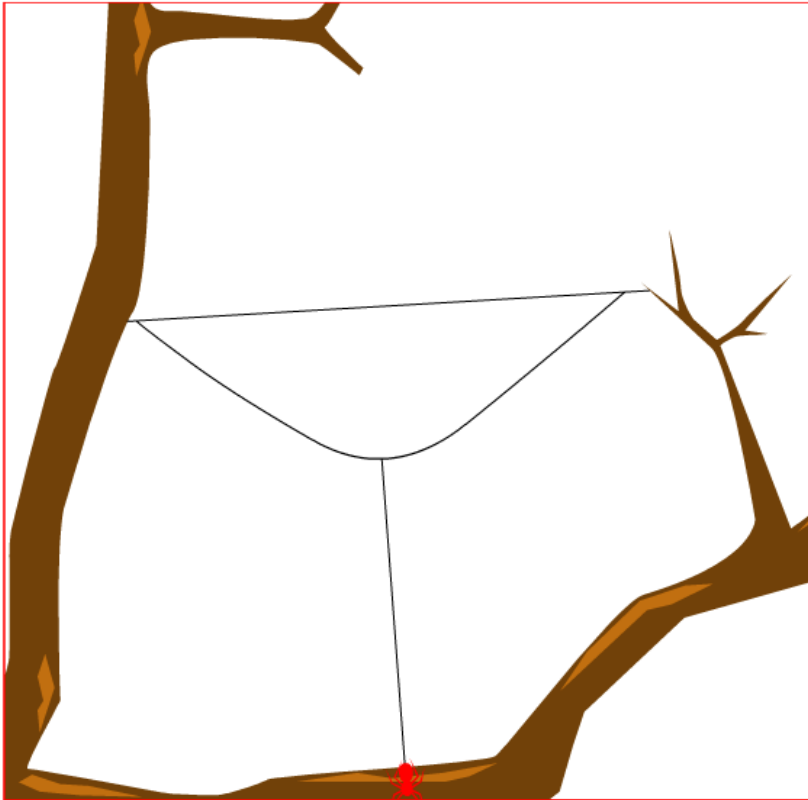
The spider releases a length of thread into the wind.

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Net Neutrality and Governance

The spider climbs to the center of the loose thread and lowers itself down on a vertical thread to form a Y-shape.

next

The spider lays more frame threads between various anchor points as it walks along the structural threads.

next

Net Governance

- Moving toward more global involvement

- Raises major issues of TRUST – would you trust a censoring government to keep the Internet open?

- How do we keep political interests from taking control?

- Is it possible to build a representative governance model that will be accepted by all?

- Are governments actually the ones who have the most control? What about international corporations?

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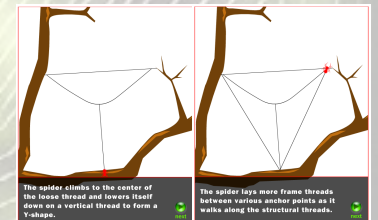
Different types of net neutrality

- **It's not as simple as "all Internet traffic is treated equally"**

- **For example, U.S. government is looking at "capturing" the Internet in an emergency situation**

- **Recent proposals for ISP's creating a multi-tiered system – poor relation always ends up being education and by default, research**

- **Big question is – who is controlling the foundational structure connections?**
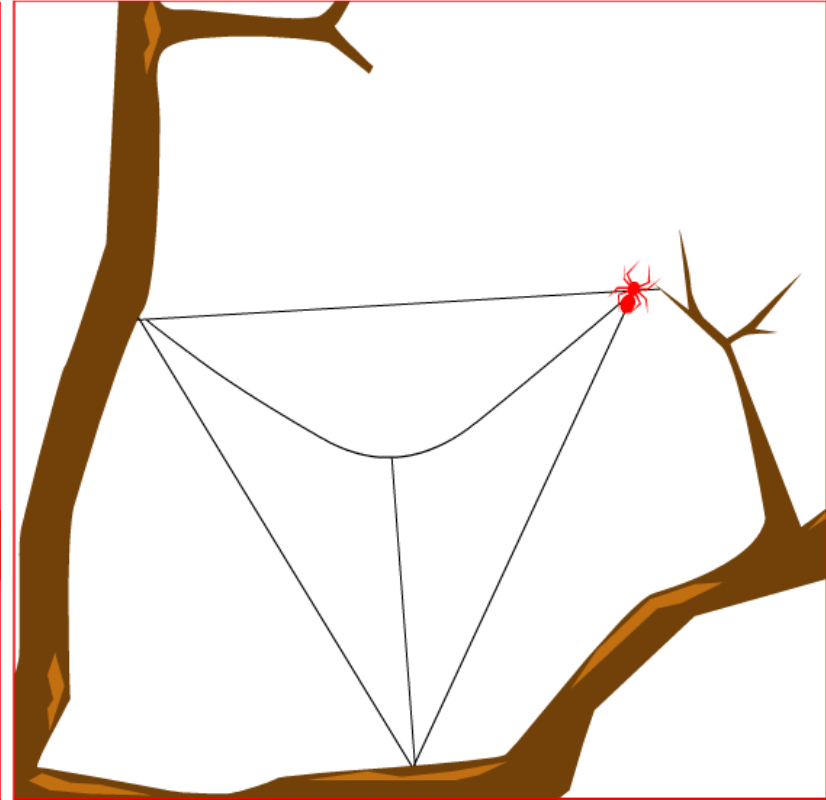

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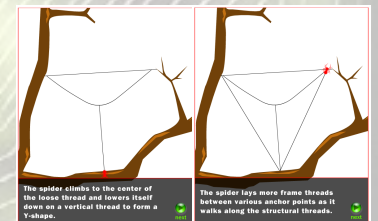# Net neutrality and governance – the control issue

As every man goes through life he fills in a number of forms for the record, each containing a number of questions… There are thus hundreds of little threads radiating from every man, millions of threads in all…
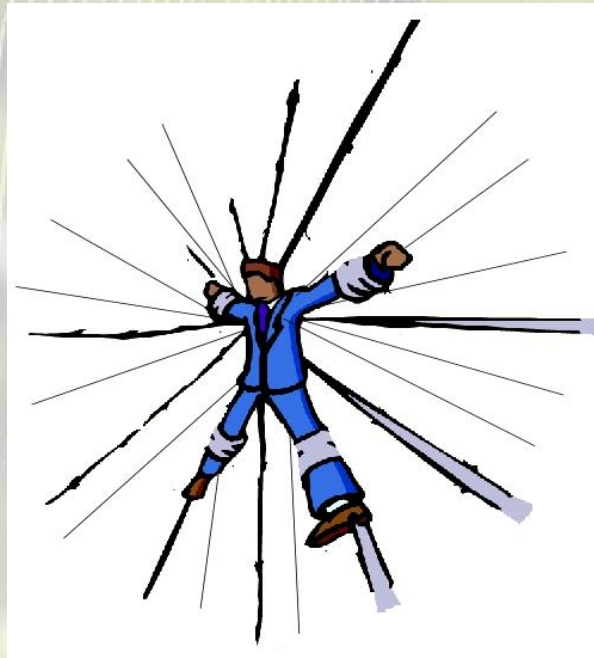
Net neutrality and governance – the control issue

If these threads were suddenly to become visible, the whole sky would look like a spider's web, and if they materialized as rubber bands, buses; trams and even people would all lose the ability to move, and the wind would be unable to carry torn-up newspapers or autumn leaves along the streets of the city…

Net neutrality and governance – the control issue

They are not visible, they are not material, but every man is constantly aware of their existence.... Each man, permanently aware of his own invisible threads, naturally develops a respect for the people who manipulate the threads.

--Alexander Solzhenitsyn, Cancer Ward, 1968

August 2014 – New Russian Internet Law Goes Into Effect:

- **All bloggers must REGISTER with the government if their blogs receive more than 3,000 hits a day**
  - **Registered bloggers would then be treated like mass media and required to certify the factual accuracy of the information in their blogs. However, they do not have the same protections or privileges as journalists.**
- **The government has new grounds to press charges against bloggers, including "defamation" and "inciting hatred." This includes, e.g., criticizing police officers or any authority**
- **The new law prohibits revealing information about citizens' homes and their personal or family lives. (Critics say this is to eliminate anti-corruption reports that have revealed embarrassing details about undeclared bank accounts and luxurious homes owned by public officials)**

August 2014 – New Russian Internet Law Goes Into Effect:

- All email providers and social networks must store information about users, their posts and their email on servers in Russia. If the provider does not do so, they will be blocked from all Russian users.
    - Bloomberg Business: Building a data center in Russia for companies as large as Google and Facebook could cost as much as $200 million.
- All email providers and social networks must maintain six months of data on every user in Russia (all emails, social media posts, search logs, etc.)
    - Bloomberg Business: Maintaining six months of data on every user would likely cost another $10 million a year

August 2014 – New Russian Internet Law Goes Into Effect:

- The Russian government Communications Regulator has the power to block, without a court ruling, any websites he deems either "extremist" or a "threat to public order."

- The Russian government is proposing dividing data networks in the country into three groups – nationwide, regional and local – to make it easier for the government to monitor traffic

- Russian President Vladimir Putin last month told Russia that Americans set the Internet up so that everything would go through servers in the United States where intelligence agencies could monitor it: *"You do know that it all began initially, when the Internet first appeared, as a special CIA project. And this is the way it is developing."*
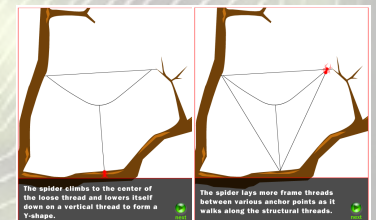
Data Policy
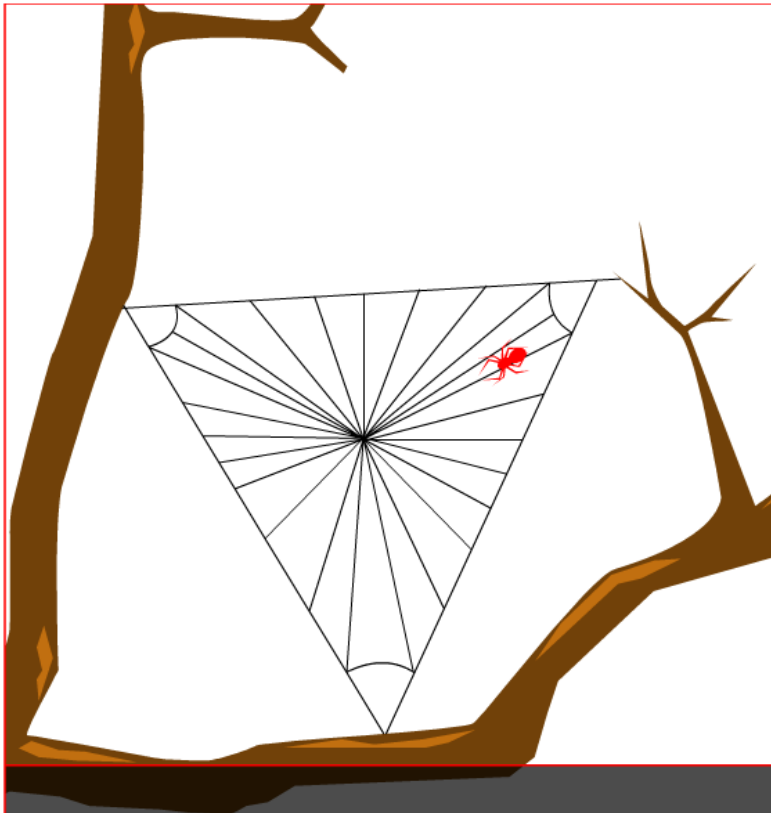
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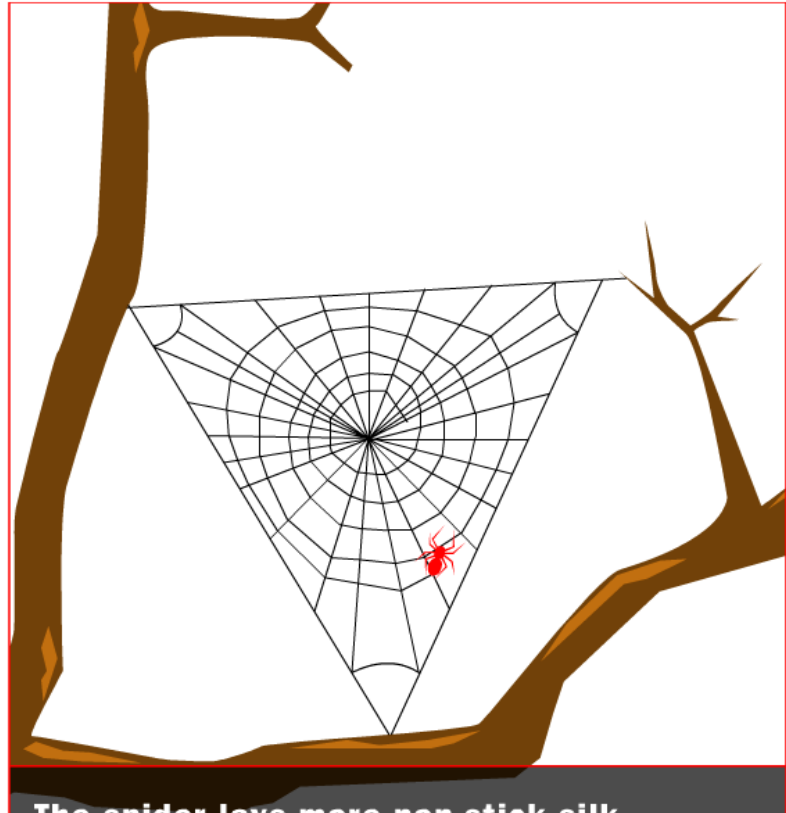
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An Example: The NSB and Research Data Policy — the starting landscape – complex!

Processed Data

Data produced when raw data have been calibrated or corrected

Raw Data

Research Data

Textual Data

The publications which result from a research project or the textual data (texts, bibliographies, surveys, etc.) which form the basis of a research project

Unprocessed observations of particular phenomenon

Derived Data

Summary or specific view of the raw data

Found a landscape of diversity…
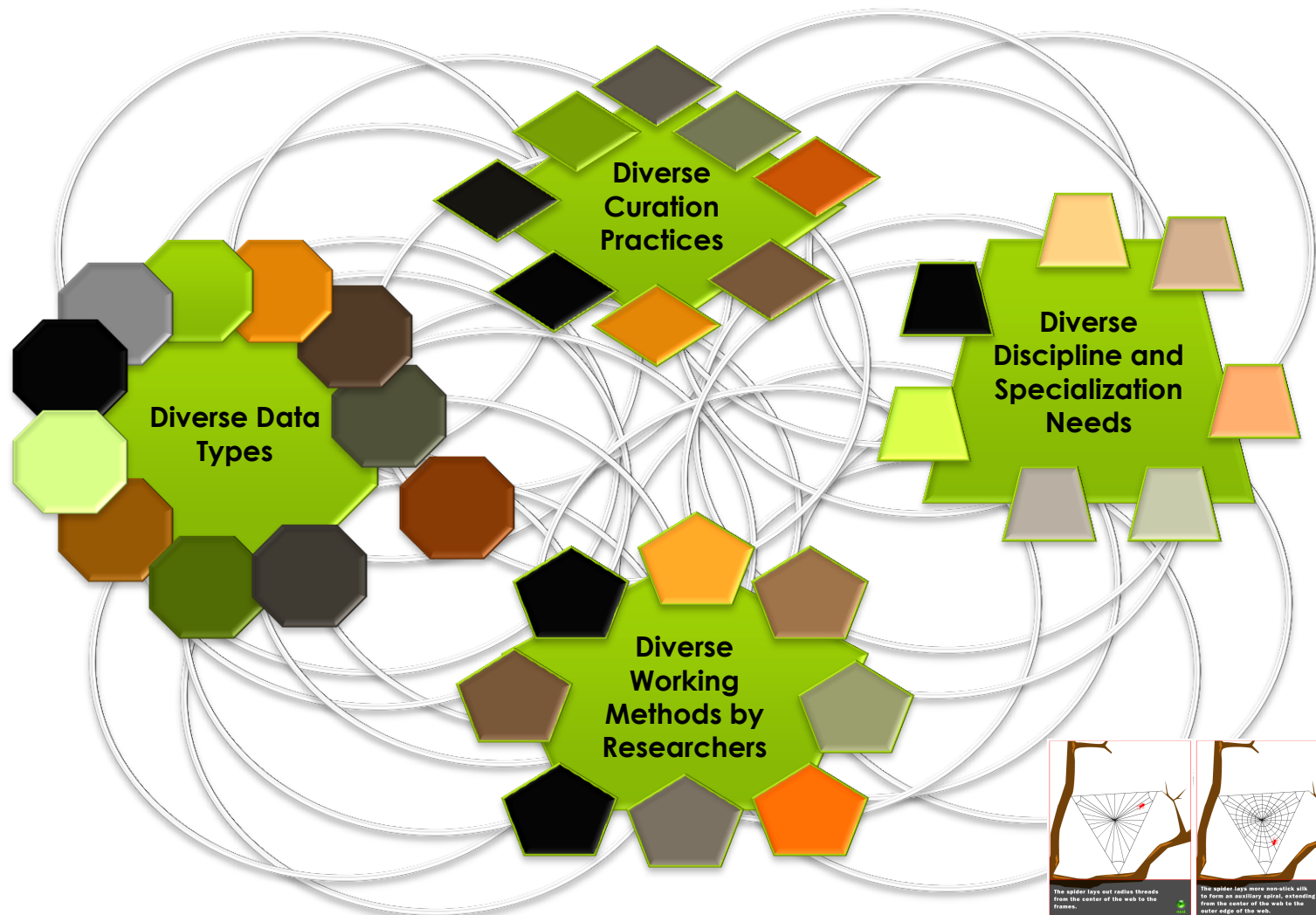
Process

- **Engaged the stakeholders through a series of meetings and workshops**
- **Had to look at existing policies and planned and unplanned impacts for each constituency**
- **Practices and expectations were very different for different people in different parts of different fields – had to work hard to find shared and intersecting concerns**
- **Had to propose policies and then circle back to review with stakeholders again – and again…**

Defined a set of principles…

1. Openness, Transparency

2. Open Access Publishing Links

3. Stakeholder participation

4. Accommodate variation

5. Open Sharing and Active Management

6. Define roles, responsibilities and resourcing

7. Investigator rights and responsibilities

And a set of themes…

Broad Data Policy Themes

- Commitment to Sharing
- Reproducibility
- Education, Training and Workforce Development
- Cyberinfrastructure
- Longevity and Sustainability
- Ethical and Legal Implications

Privacy and Censorship

The spider spirals inward, laying out sticky thread and using the auxiliary spiral as a reference

next

This is where things get sticky…

- Personal privacy versus public good
- Personal customization versus public accessibility
- Intentional greed versus unintentional carelessness

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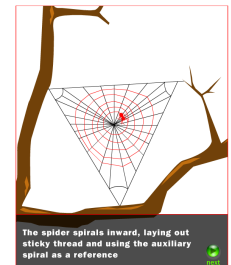
Personal Privacy versus Public Good

Personal Privacy

"The vast majority of American Internet users want the privacy playing field tilted towards them and away from online companies. They think it is an invasion of their privacy for these businesses to monitor users' Web browsing. By a two-to-one margin they reject the argument made by some firms that Web tracking can be helpful… 54% of Internet users believe that Web sites tracking of users is harmful because it invades their privacy."

Fox, Susannah Trust and Privacy Online: Why Americans Want to Rewrite the Rules, 8/20/2000, Pew Internet & American Life Project

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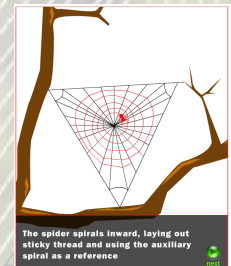
Personal Privacy and Public Good

 "The public's right to access public records and the individual's right to dignity and privacy are both recognized to be principles of the utmost importance in a free society….We must facilitate public access to public records…We must also protect from disclosure information about particular individuals maintained in the files of public bodies when disclosure would constitute an unwarranted invasion of personal privacy."

The Open Meetings Law

The spider spirals inward, laying out sticky thread and using the auxiliary spiral as a reference
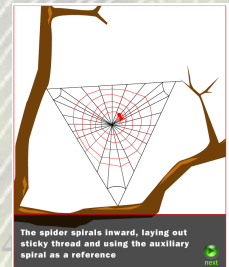
Public Good

- Security — need to know who may become a terrorist
- Collection of taxes — need to know how much people earn
- Census data — in order to plan public services
- Etc.

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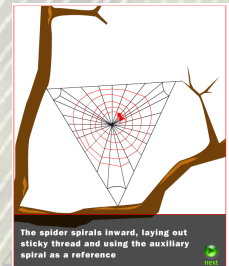
Conflicts Between
Personal Privacy and Public Good

- **PUBLIC GOOD: Security — need to know who may become a terrorist**
  - **PERSONAL PRIVACY: how do you figure out who is a "future terrorist?" by the websites I look at?**
- **PUBLIC GOOD: Collecting taxes — need to know what people earn so they pay right amount**
  - **PERSONAL PRIVACY: if you know how much I earn someone can know if I am a good target for kidnapping**
- **PUBLIC GOOD: Census data — in order to plan public services**
  - **PERSONAL PRIVACY: If I am a minority, it could keep me from getting loans or fair housing**

49

Increased Participation –
more requests for censorship

- With more people having more access to more information (due to technology) there are more in-dividuals raising concerns about "needed" censor-ship in multiple arenas:

  - Moral censorship
  - Military censorship
  - Political censorship
  - Religious censorship
  - Corporate censorship

- Who decides what is offensive?

The spider spirals inward, laying out sticky thread and using the auxiliary spiral as a reference

Personal Customization versus Public Accessibility

51
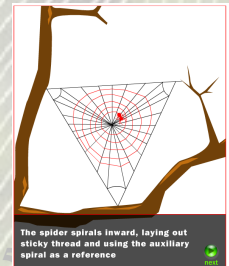
Personalization

- Social/professional networking sites: Facebook, Instagram, LinkedIn, etc.

- E-commerce sites: (e.g, Amazon) advantage of not having to put in personal information each time, getting recommendations of products that match my interests, etc.

- Search engines – Google, Yahoo, etc. – top-of-the-list recommendations based on search plus recent searches

- Email – e.g., gmail with ads to the side based on content of your email

Public Accessibility

- City and neighborhood crime rates
- Environmental information - e.g., toxic cleanup sites, water quality, etec.
- Online sexual offender registries (now with maps)
- Average wage by geographic area
- Infectious disease outbreaks by geographic area
- Etc.

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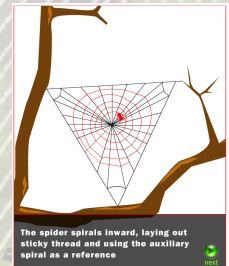
Personalization versus Public Accessibility Conflicts

○ **PERSONALIZATION: Social networking sites — I want to find others with the same interests I have**

PUBLIC ACCESSIBILITY: How do I keep my 13-year-old daughter safe from a criminal who uses her posted information to strike up an online and then in-person "friendship?"

○ **PERSONALIZATION: E-Commerce sites —I like having Amazon keep track of my reading interests and suggest other titles I might like**

PUBLIC ACCESSIBILITY: Could someone misconstrue my combined interests in Stephen King novels and ancient Samurai swords?

○ **PERSONALIZATION: Environmental reports online — I want to know if I am buying property near a contaminated water supply**

PUBLIC ACCESSIBILITY: What if I am trying to sell my home and I live near a toxic waste site that has since been cleaned up?
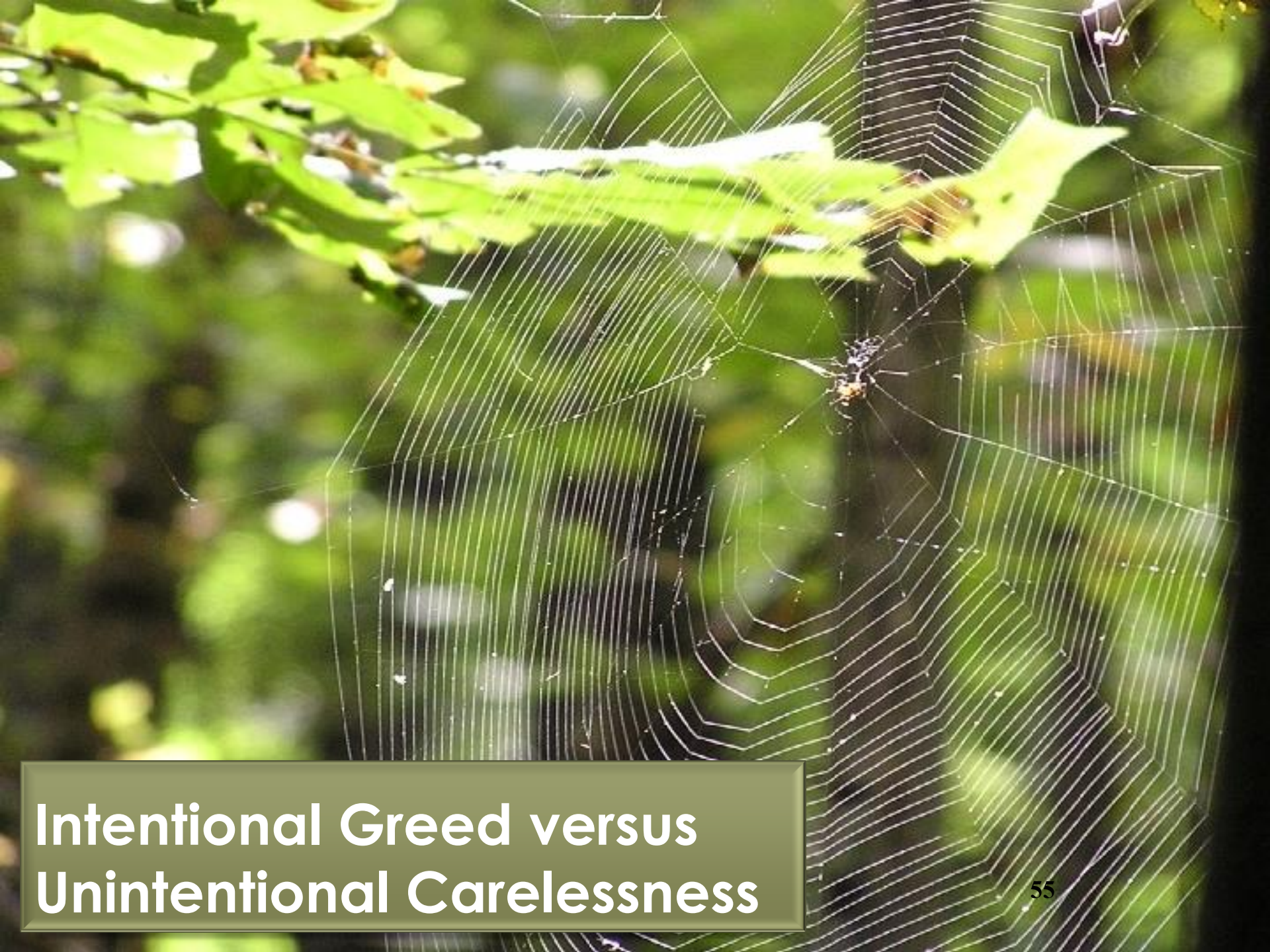
Intentional Greed versus Unintentional Carelessness

IDENTITY THEFT

WHY YOU SHOULD BE WORRIED

Identity Theft is a form of fraud that steals someone else's personal information to access private resources, such as medical records or bank accounts, and often leads to expensive consequences for its victims.

64% of Americans are very or extremely concerned about being a victim of identity theft.

THE NUMBER OF ADULT VICTIMS OF IDENTITY THEFT IN THE UNITED STATES FROM 2003 TO THE PRESENT:

Year	Victims
2009	11.1 MILLION
2008	9.9 MILLION
2007	8.1 MILLION
2006	8.4 MILLION
2005	8.9 MILLION
2004	9.3 MILLION
2003	10.1 MILLION

1 IN EVERY 10 AMERICAN CONSUMER HAS BEEN A VICTIM OF IDENTITY THEFT.

1.6 MILLION HOUSEHOLDS have had their bank accounts and/or debit cards COMPROMISED.

THE POTENTIAL AMOUNT OF MONEY IN THE US AFFECTED BY 2009 FRAUDS AMOUNTS TO

$54 BILLION

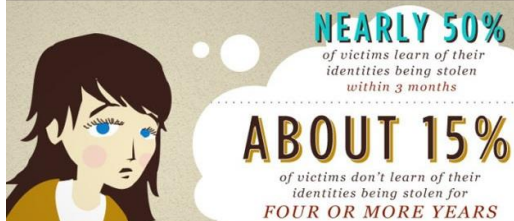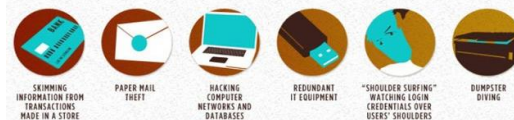(WORLDWIDE, BUSINESSES LOSE $221 BILLION YEARLY TO IDENTITY THEFT)

THE AVERAGE AMOUNT TAKEN FROM EACH IDENTITY THEFT VICTIM AMOUNTS TO

$4,841

(THAT'S ROUGHLY 3 MONTHS WORTH OF FULL-TIME WORK'S WAGES)

THE OUT-OF-POCKET COST FOR THE VICTIM TO RESOLVE IDENTITY THEFT DAMAGE:

$851 – $1,378

NEARLY 50% of victims learn of their identities being stolen within 3 months

ABOUT 15% of victims don't learn of their identities being stolen for FOUR OR MORE YEARS

70% Percentage of victims that have difficulty removing negative information stemming from the theft from their credit reports.

MOST COMMON METHODS OF STEALING IDENTITIES:

- SKIMMING INFORMATION FROM TRANSACTIONS MADE IN A STORE
- PAPER MAIL THEFT
- HACKING COMPUTER NETWORKS AND DATABASES
- REDUNDANT IT EQUIPMENT
- "SHOULDER SURFING" WATCHING LOGIN CREDENTIALS OVER USERS' SHOULDERS
- DUMPSTER DIVING

43% of victims knew the perpetrator who stole their identity.

330 HOURS The average time it takes to repair the damage done by identity theft.

BUT IN SOME CASES, TO FULLY CORRECT THE DAMAGE DONE FROM THE THEFT CAN TAKE UP TO

5,840 HOURS

(THAT'S EQUIVALENT TO WORKING A FULL-TIME JOB FOR TWO YEARS)

25.9 million Americans now carry identity theft insurance.

HOW TO PROTECT YOURSELF AGAINST IDENTITY THEFT:

PREVENT CRIMINAL ACCESS BY PROTECTING YOUR DOCUMENTS.

When your SSN is requested, ask if you can provide alternate information

Shred any sensitive paper documents

Install anti-virus software and updated it regularly

Always secure digital information behind passwords

Turn off your phone's Bluetooth and Wifi when not in use

DETECT UNAUTHORIZED ACTIVITY IN ALL YOUR ACCOUNTS.

Monitor bank accounts at least weekly

Sign up for available mobile or email alerts by your institution

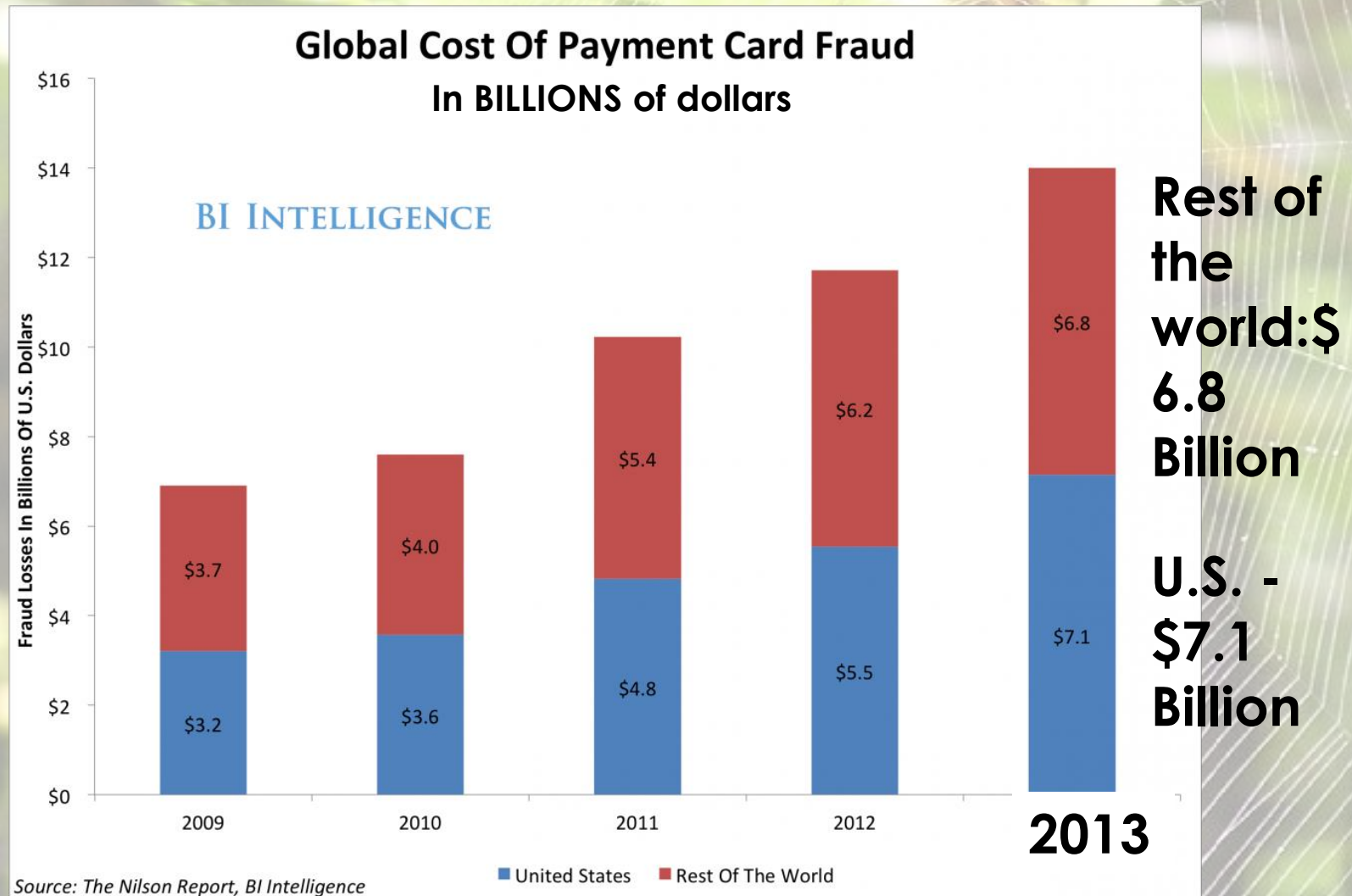Monitor credit reports to spot unauthorized activity

RESOLVE YOUR IDENTITY FRAUD COMPLETELY AND THOROUGHLY.

Work through your bank and protection services provider to report problems immediately.

Use available services to restore the worthiness of your accounts and credit

Take full advantage of your financial provider's offers of loss

The crooks versus corporations — the crooks are winning…

Global Cost Of Payment Card Fraud
In BILLIONS of dollars

BI INTELLIGENCE

Fraud Losses In Billions Of U.S. Dollars

	2009	2010	2011	2012	2013
Rest Of The World	$3.7	$4.0	$5.4	$6.2	$6.8
United States	$3.2	$3.6	$4.8	$5.5	$7.1

Source: The Nilson Report, BI Intelligence

■ United States ■ Rest Of The World

Rest of the world:$6.8 Billion

U.S. - $7.1 Billion

Consequences Don't Care About Motives — for corporations or individuals

- "The massive consumer data breach at Target Corp. potentially exposes the self-insured company to years of litigation that could eventually cost it hundreds of millions of dollars." *Star Tribune Business*

- Nearly two-thirds (64%) of 2013 data breaches were due to negligence, mistakes and system errors*

    - Included employees leaking or mishandling information, violation of regulations, accidental data dumps and stolen or lost laptops.

*Symantec, Ponemon Institute, 2014, December

Survival of the Spider and the Web

Survival always depends on a balanced ecosystem…

- In their own ecosystem, their web, spiders are the wolves, lions and tigers
- The Information Age ecosystem, our web, will survive or die based on how well we build that web of:
  - Net neutrality and governance
  - Data policy and stewardship
  - Privacy and censorship
- So how are we going to get to the right decisions???

60

"Alone we can
do so little.
Together we can
do so much."
                    - Helen Keller

A Collaborative Process to Save the Information Age Ecosystem

We must ENGAGE all stakeholders and then:

1. **Agree** on the **ecosystem's top-line value/need**

2. **Identify** each **participant's top-line value and/or need in each of their roles** (maintain the abiotic and biotic elements in the ecosystem)

3. **Commit to meeting and protecting the ecosystem and each participant's top-line values and needs** as you reconfigure the ecosystem (create a collaborative environment of **TRUST**)

4. **For each participant**, find an **approach** that will contribute to the **success of the ecosystem's top-line value/need AND** will **meet that participant's top-line value/need.**

Based on *The UpCycle: Beyond Sustainability – Designing for Abundance,* by William McDonough and Michael Braungart

An Example: How to Cook and Educate Your Kids Without Killing a Tiger

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If we want the Information Age to last another 25 years:

"A boat doesn't go forward if each one is rowing their own way."
~ Swahili proverb

"If you want to go fast, go alone. If you want to go far, go with others."
~ -African proverb

"Conflict is inevitable, but combat is optional."
~ Max Lucado

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