



# Infinite bandwidth

...Or..

# Future of Networks and People

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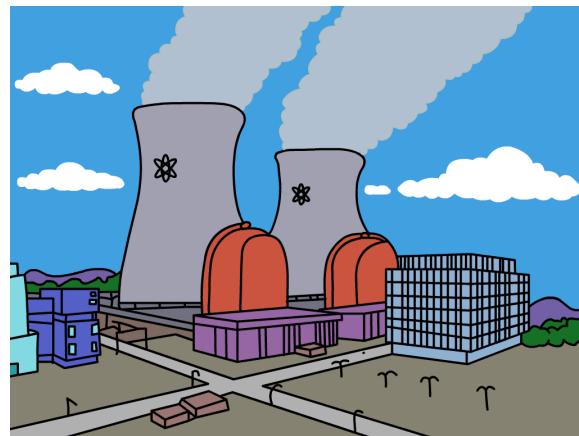
- **Introduction**
  - **Internet**
  - **Mobile phones**
  - **Privacy**
  - **Need for privacy?**
  - **Decision making**
  - **Future: The Stream**
  - **Challenges**
  - **Conclusions**
-



# Introduction: Who is Hannu H. Kari?



Input:  
Control commands



Output:  
Electricity

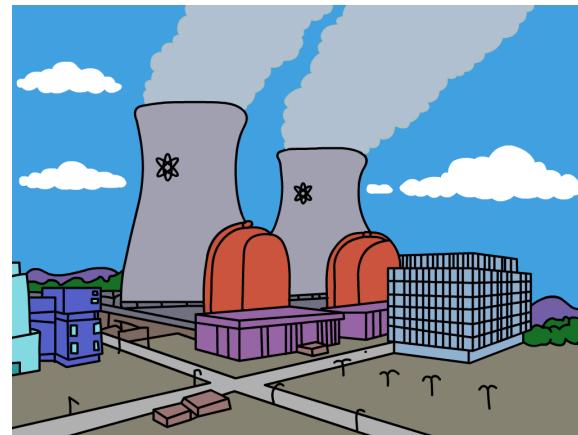


(www.capecfeare.com)



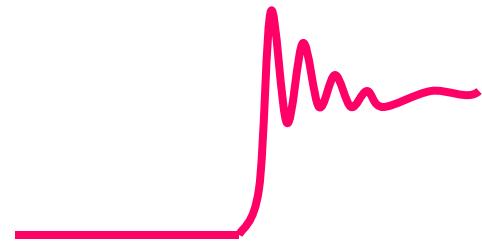
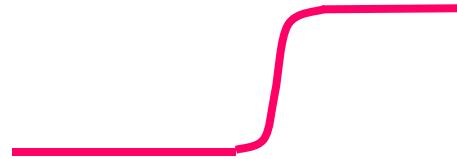
# Introduction: Good guys

Input:  
Control commands



(www.capecfeare.com)

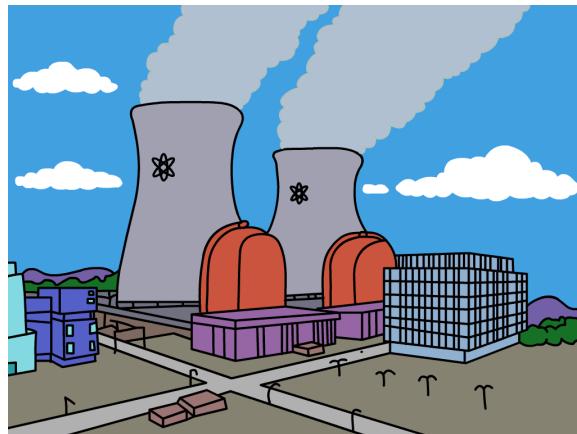
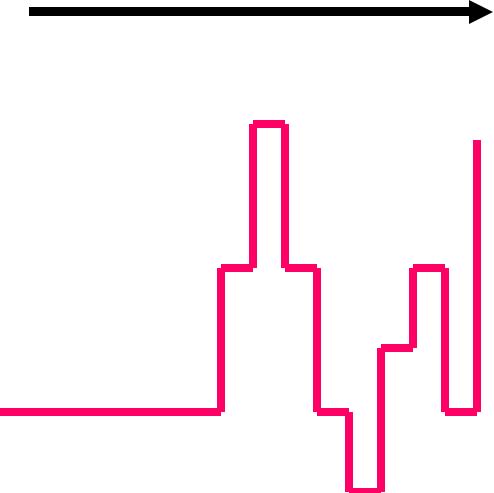
Output:  
Electricity





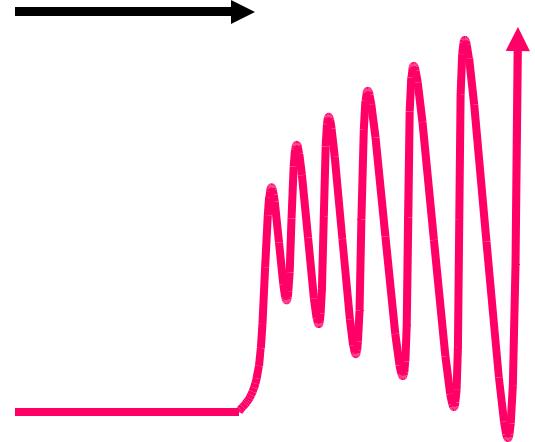
# Introduction: Bad guys

Input:  
Control commands



(www.capefeare.com)

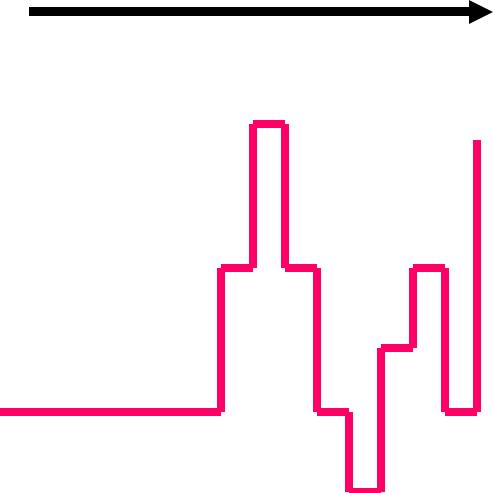
Output:  
Electricity



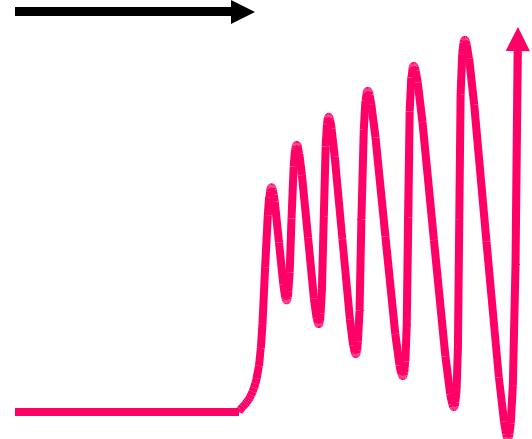


# Introduction: Bad guys

Input:  
Control commands



Output:  
Electricity





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# Internet

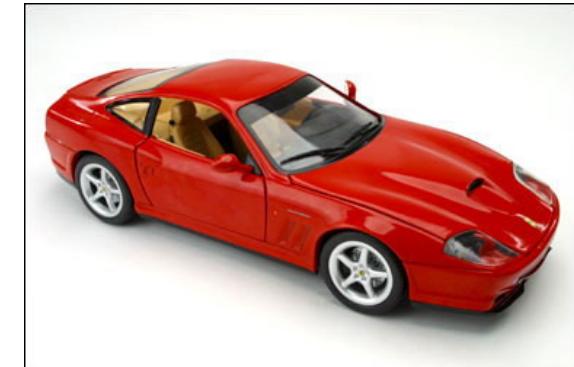
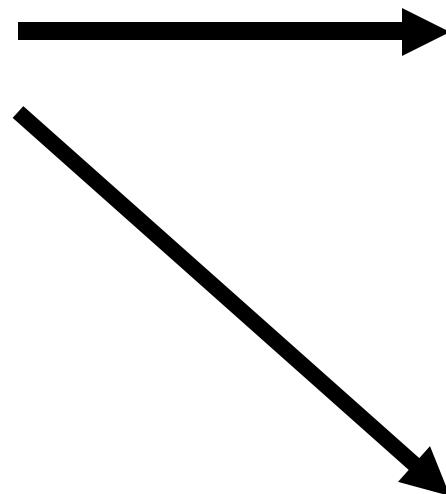


# Technology enhancements



[www.daimler.co.uk](http://www.daimler.co.uk)

~100 years



[decorateyourgarage.com](http://decorateyourgarage.com)



[www.macarthurcoal.com.au](http://www.macarthurcoal.com.au)



# Technology enhancements



[www.route79.com](http://www.route79.com)



[www2.jsonline.com](http://www2.jsonline.com)



[www.pennways.com](http://www.pennways.com)



[www.openfire.us](http://www.openfire.us)



[www.eia.doe.gov](http://www.eia.doe.gov)



[en.wikipedia.org](http://en.wikipedia.org)



# Technology enhancements

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**The same thing has  
happened in Internet  
in 10 years!**



# Prediction 28.5.2004: Future does not look very good!

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- **V. 2003: Increase of garbage**
    - The dramatic increase of viruses and junk mail
  - **V. 2004: Deterioration of network infrastructure**
    - Attacks on infrastructure has increased
  - **V. 2005: Manipulation of content**
    - Systematic manipulation of content in Internet
  - **V. 2006: Internet collapses**
    - People and companies do not tolerate any more the load of garbage
    - We don't trust on the content on the net
    - Malicious attacks on the network infrastructure deteriorate the usability of Internet
- ⇒ **Internet will cease to be place to make business**
- ⇒ **We go 10...20 years back before the time of computer networks**
-



- **We have had always problems in Internet and it is still here!**
- **Internet is free and open**
- **Nobody controls it**
- **There is no single switch to turn Internet off**
- **...**



- **Internet archives**
  - [www.archive.org](http://www.archive.org)
  - Cache of Google
- **Search engines**
  - Google: "Hannu H. Kari": 10,700 hits
  - Google: "George W. Bush": 102,000,000 hits
    - 5th link: <http://www.bushorchimp.com/>



# Good/Bad things of Internet

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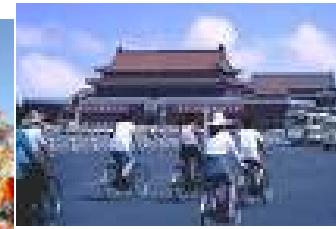
- Google.com: "tiananmen square" – 12 first image hits





# Good/Bad things of Internet

- Google.cn: "tiananmen square" – 12 first image hits





- **Internet is a good tool for decision making**
  - **... and influencing other people's decision making**
  - **... and also monitor what people are doing**
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# Mobile phones



# Mobile phone = extension of your ear

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# Mobile phone = extension of your ear

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- **Extension of other senses**
    - Visual, touch, smell, .... feelings?
-



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# Privacy



- **Definition of Privacy**

*Privacy is the claim of individuals, groups, and institutions to determine for themselves, when, how, and to what extent information about them is communicated to others.*

Alan Westin 1967



# 6 categories of privacy

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- **Data privacy (content)**
  - **Identity privacy (source/destination)**
  - **Location privacy (place)**
  - **Time privacy (when)**
  - **Transaction privacy (what I'm doing)**
  - **Privacy of existence (does it exist)**
-



# Privacy in the modern society?



-ÖH... NIIN... ME OLEMME TYÖNANTAJA, JOKA MIELELLÄÄN  
KUUNTELEE, MITÄ SANOTTAVAÄ TYÖNTEKIJÖILLÄ ON.

(Well... We are the employer who wants to listen what the employees are talking about...)



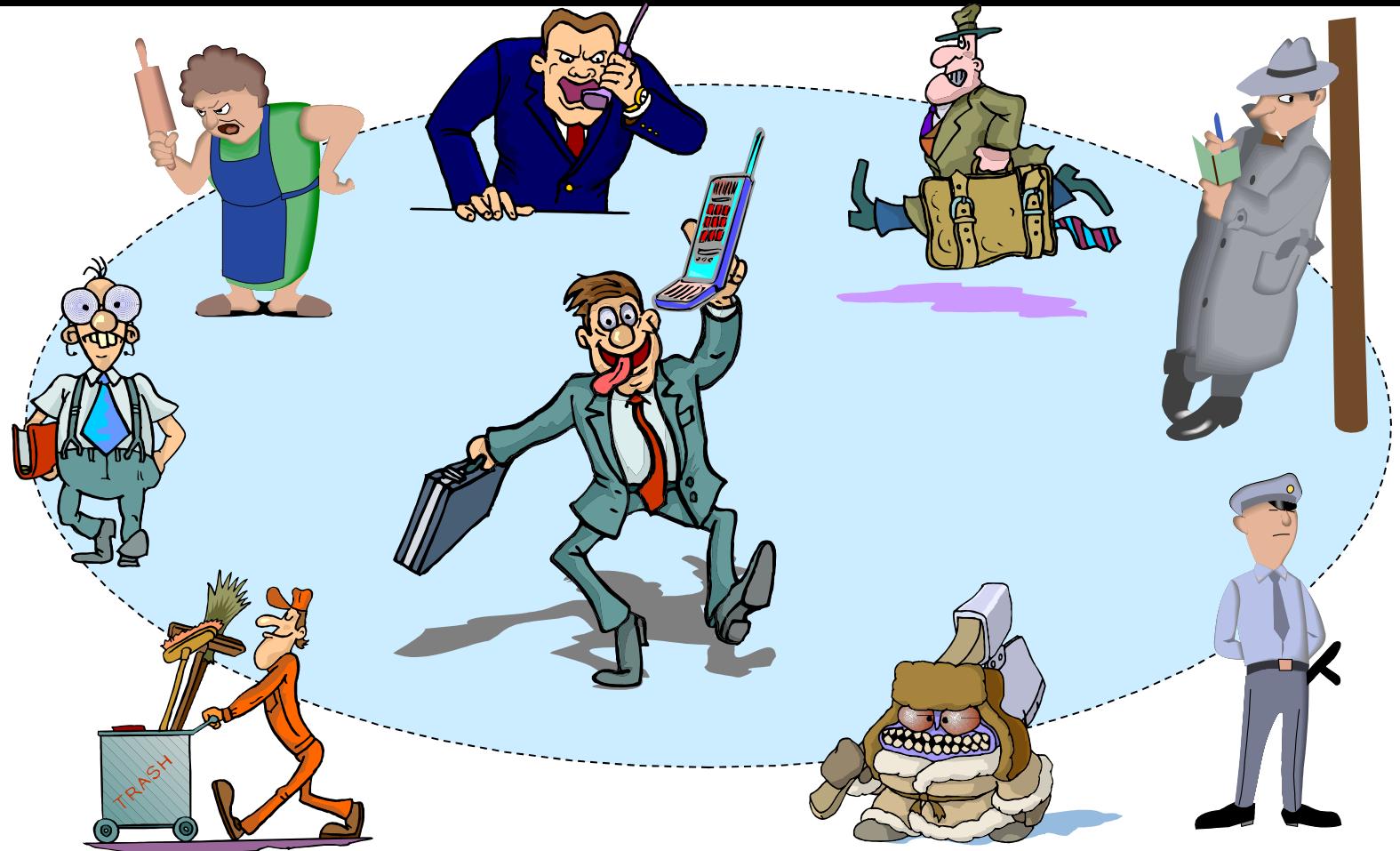
# A person and privacy

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# Privacy and electromagnetic aura





# Need for privacy?



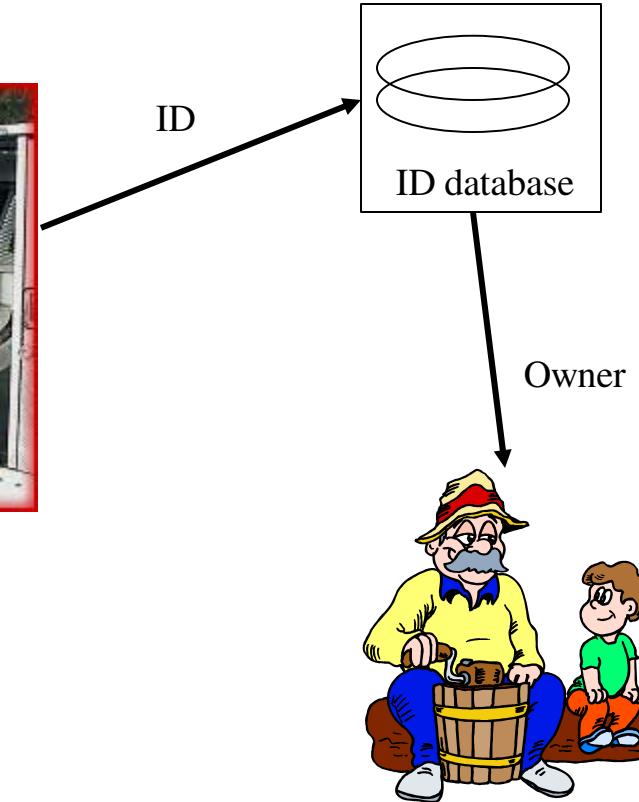
# Identification problems

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- **How to identify a person?**
  - **Something**
    - **what I know**
      - **password, PIN code**
    - **what I have**
      - **keys, credit card, passport**
    - **what I am**
      - **fingerprint, iris/retina, palm shape, dental records, DNA**
- **December 2004 in Asia:**
  - **Who is/was this person?**
  - **No common database in the world on fingerprints, DNA, dental records,etc.**
    - **And are people willing to give all information to Big Brother?**



# Analogy for identification: Pets



(courtesy of [news.wisc.edu](http://news.wisc.edu))



# Human identification

- 

today





# Human identification

- some 60 years ago



... and ...



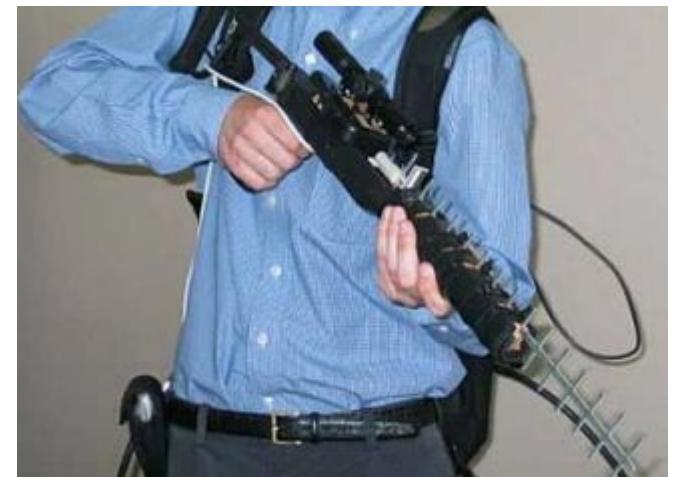
today





# Violation of privacy

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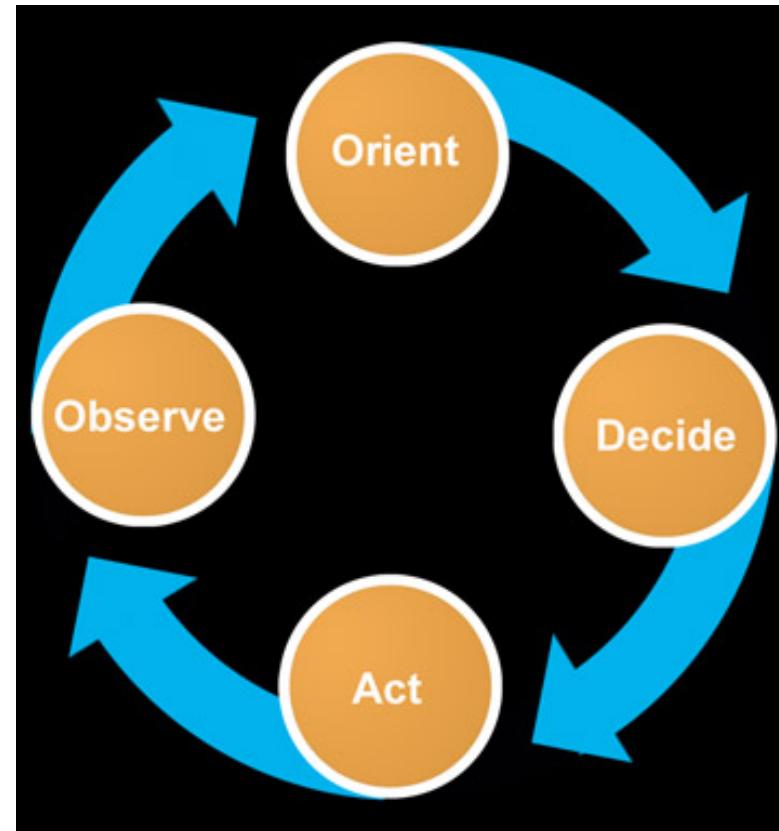
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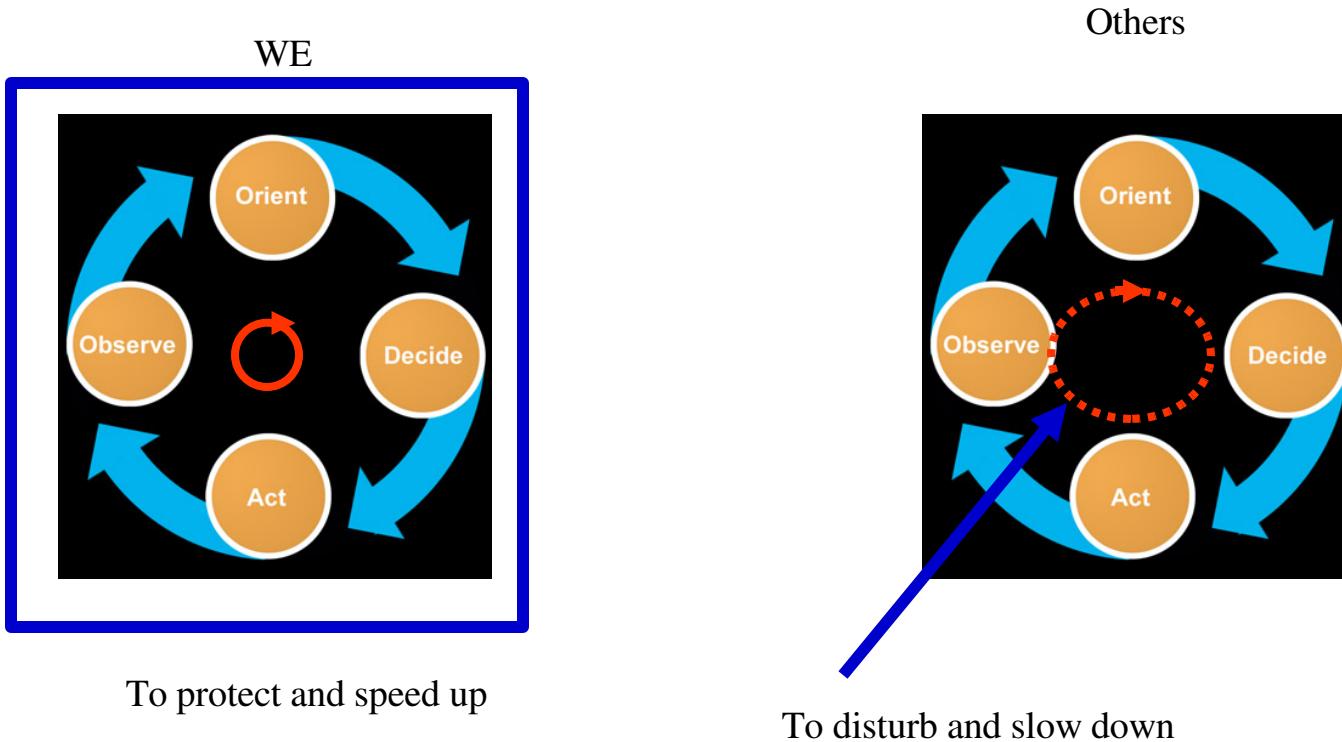
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# Decision making



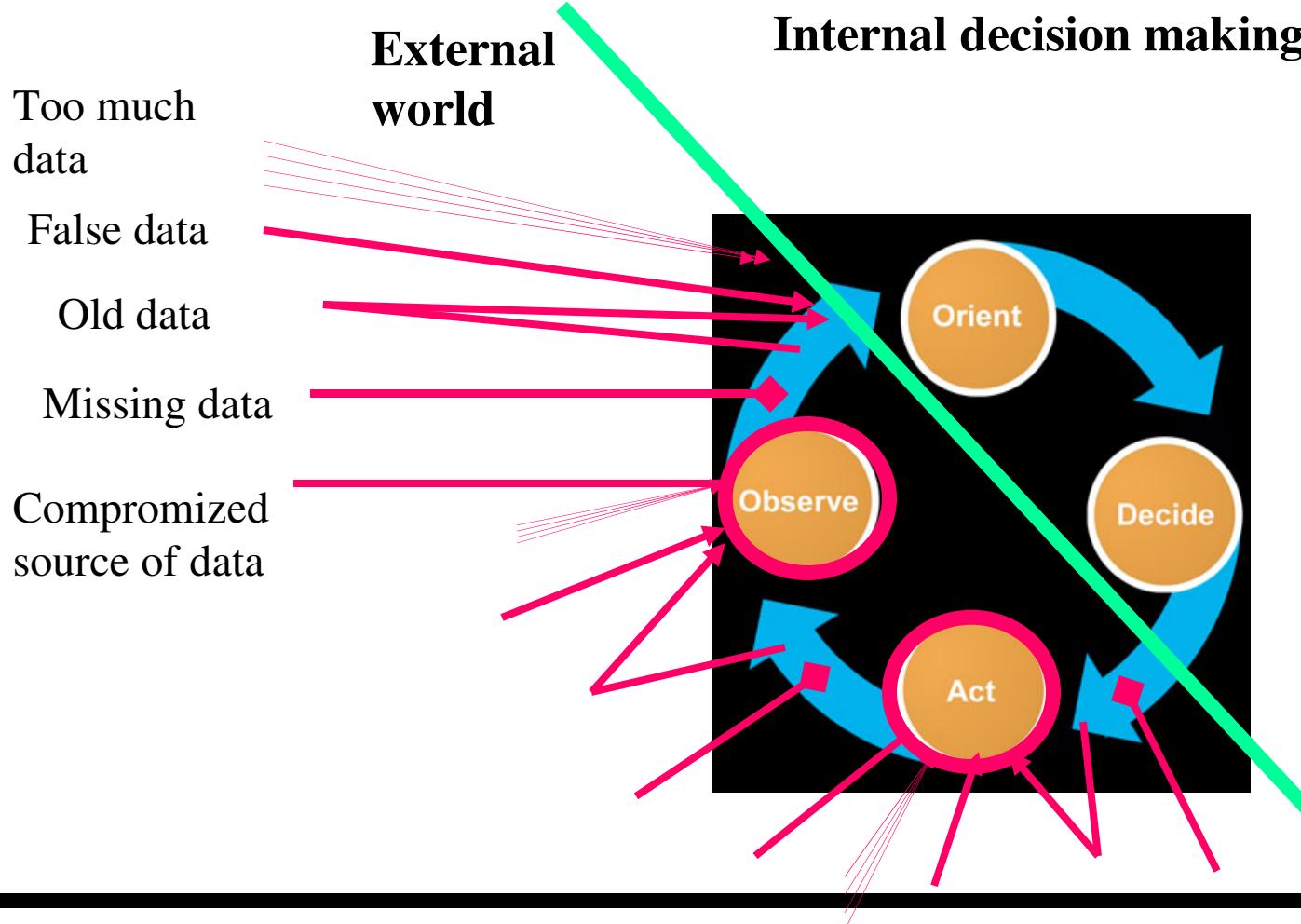
- **Colonel John Boyd**  
**(1927-1999)**
- **OODA-loop**
  - Model for human decision making



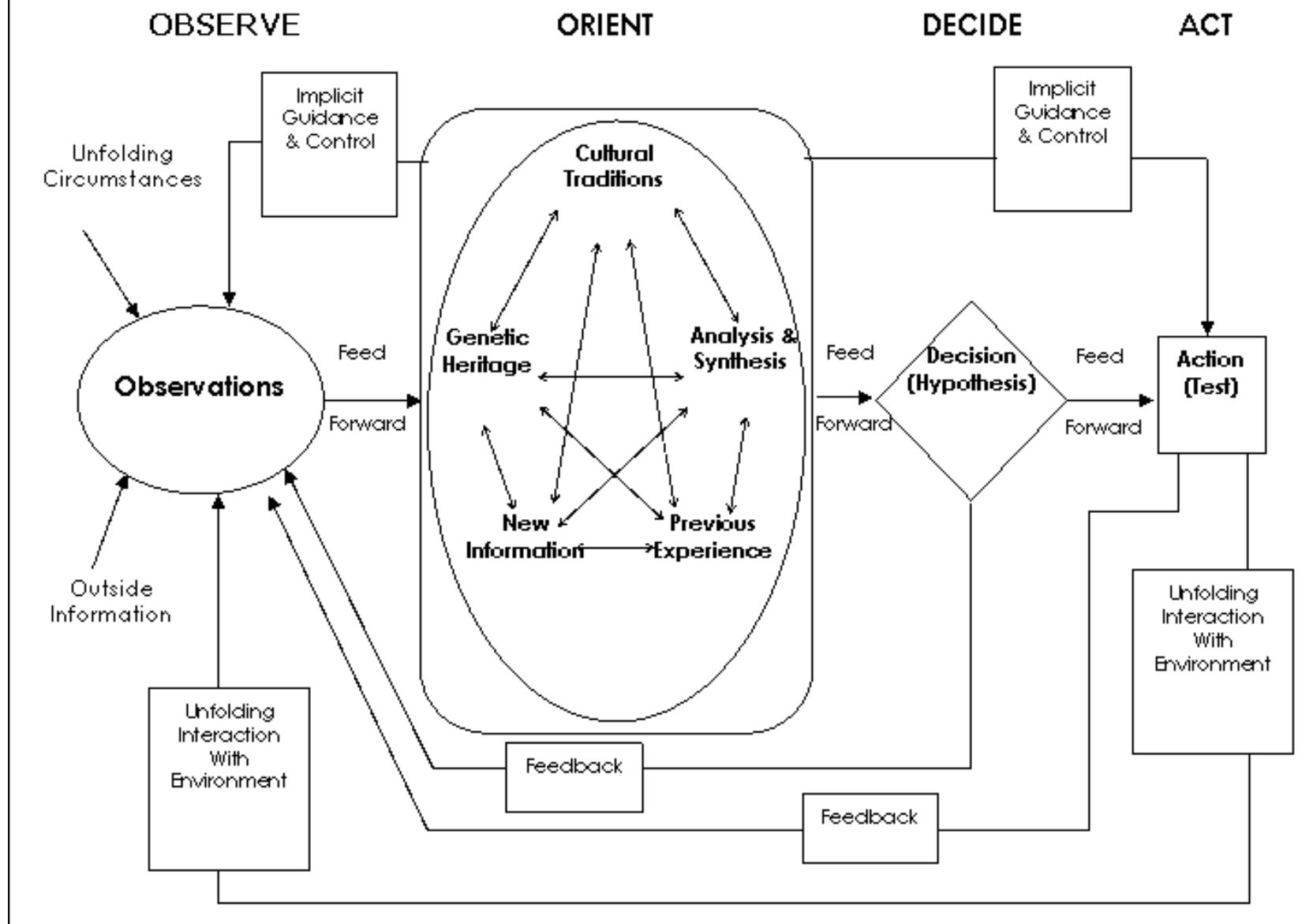




# Attacking the decision making process



# OODA loop – John Boyd





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# Future: The Stream



- In the future, we'll be connected with the STREAM
- Remote sensing and tele-presence
  - Physical distance looses its importance
- Our 7<sup>th</sup> sense:
  - "Just think, and you'll get the answer"



# Challenges



- **Privacy**
    - Do we need or want any?
  - **Whom do we trust?**
  - **Automatic systems**
    - i.e., automatic problems?
  - **Virtual reality or Real reality?**
-



# Conclusions



# Conclusions

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- **It's all about decision making and its manipulation**
- **Networks offer us data with the price of privacy**

**"The Internet is dead." –Kari**  
**"Kari is dead." -The Internet**

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**Thank you,  
Questions?**



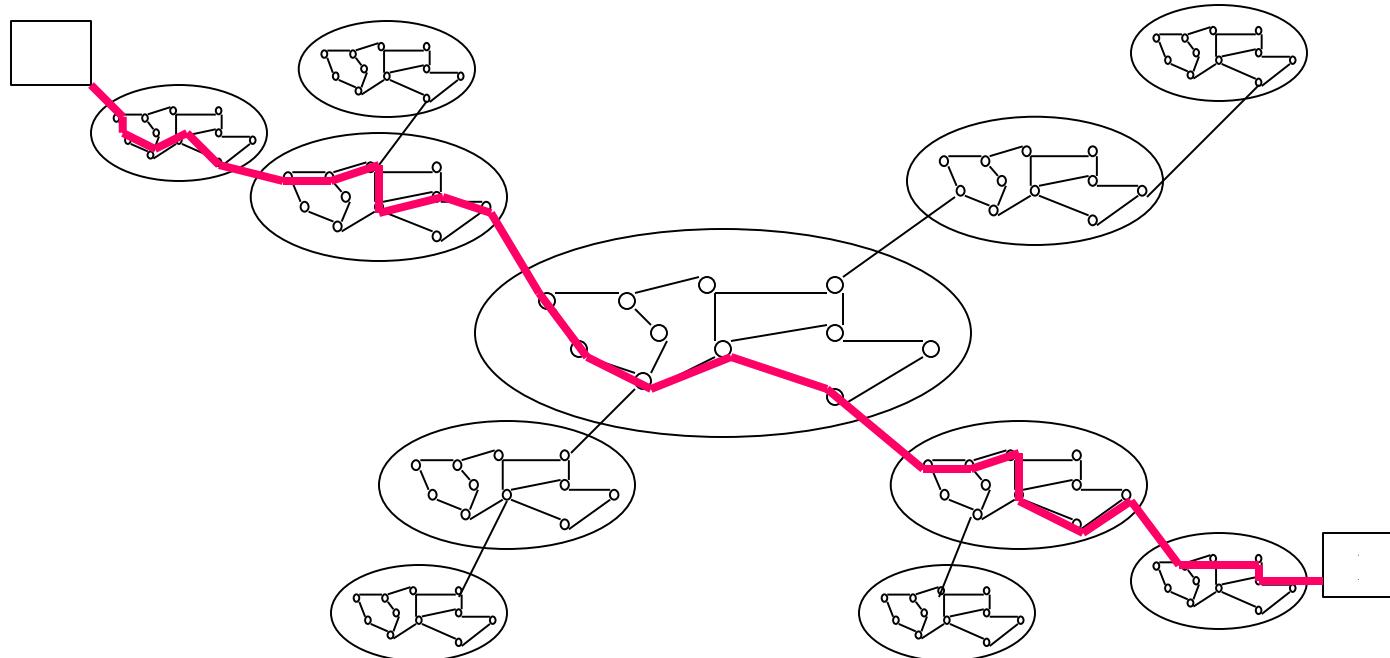
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# Fundamental design flaws of Internet

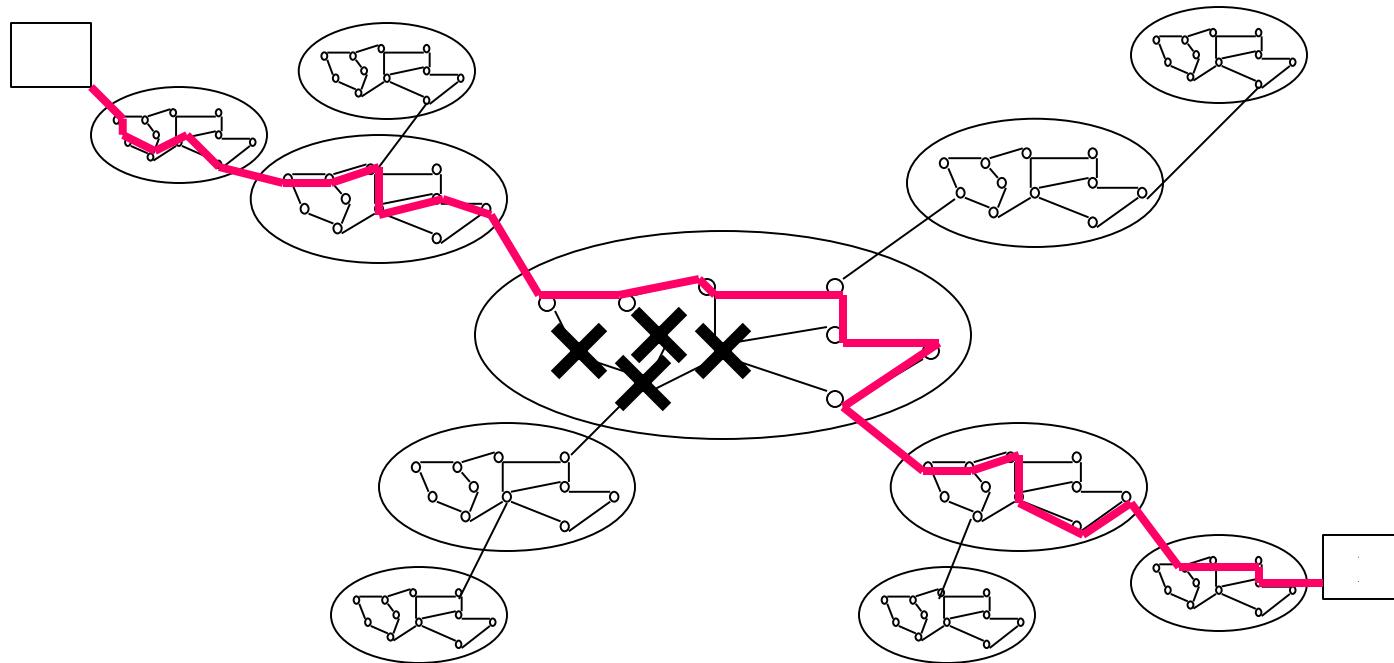


- Internet was originally designed to survive nuclear war



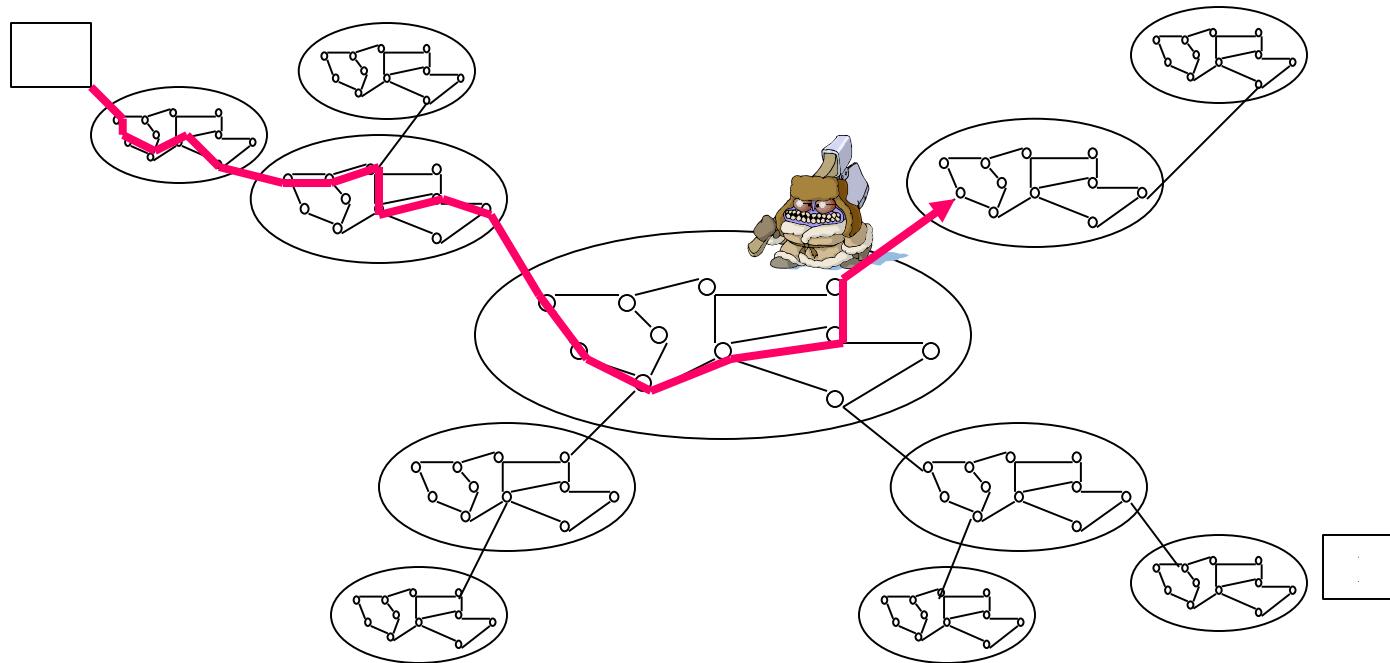


- Packets can be rerouted quickly



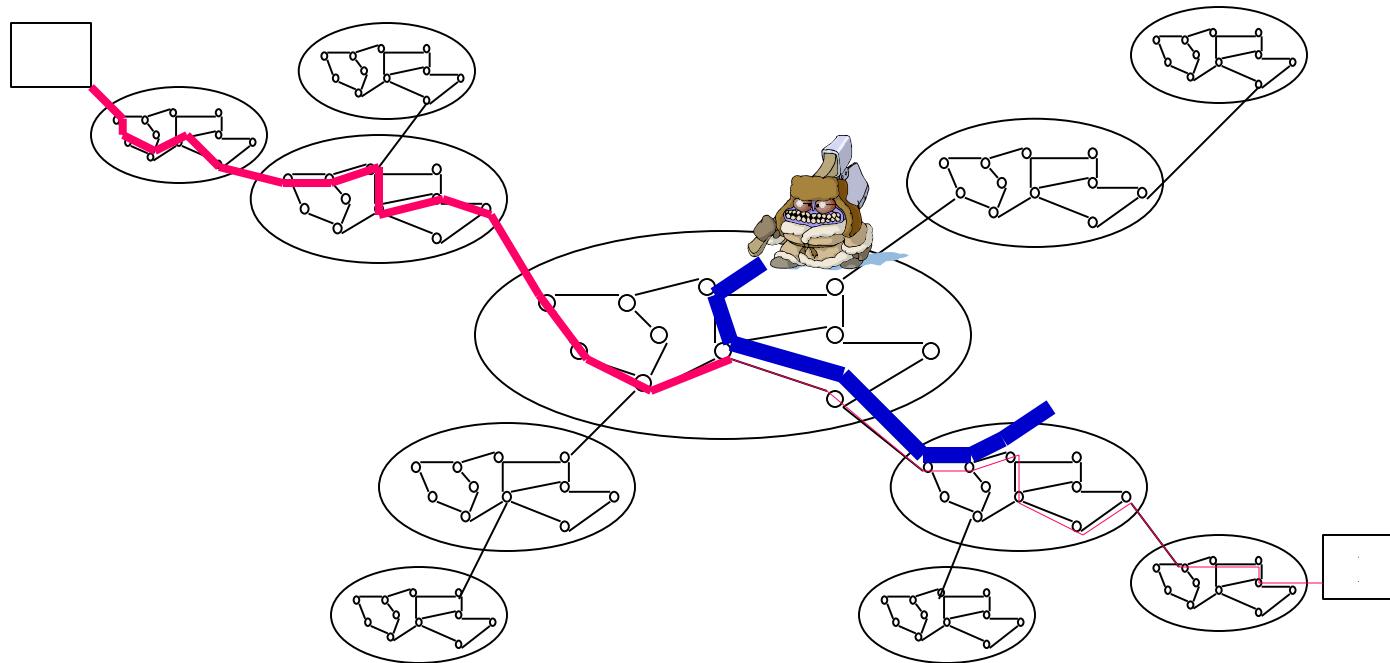


- ...but one mole can damage the routing





- ... or fill network with garbage ...





- ...or corrupt transmitted data

