Use of the Internet for Research Purposes
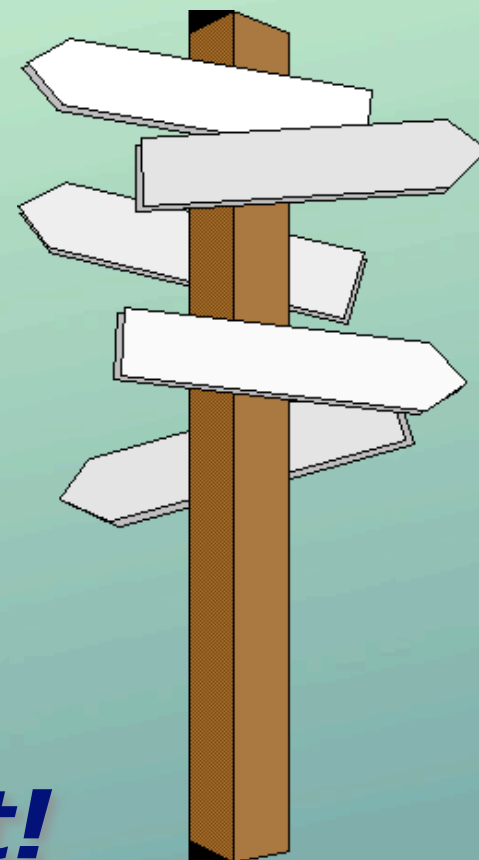
*i*Reseach: Research ♥ Internet

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Physics & Astronomy

*i*Research:

- e-Search
- Daily routine
- Virtual collaboration
- Pre-publication
- e-publication
- e-$$$: grants & contracts

- ***Now... Keep doing it!***

Disclaimer

SURGEON GENERAL'S WARNING: This presentation contains material which is based on personal experiences and opinions. An open and critical mind is recommended.

…but, seriously: experiences vary, and nobody's experience is a substitute for your own.

From and To the Internet

- (1) Gather, (2) process, (3) present information

  … and then go back to (1).

- Information; for and about your research

- Tools to process this information

- Avenues to disseminate your work

e-Search (part 1)

- Choose a topic – orient yourself
- What are other people doing? $(PC)^3$
  - Potential Collaborators
  - Potential Competitors
  - Prospects (for you) to Contribute
- Isolation is counterproductive
- The bandwagon effect

The Bandwagon Effect

- The topic is so hot – *everyone* works on it
- *Any* contribution to a hot topic is noticed
- There is pressure to publish fast …
  with very little or no content
- Most contributions turn out to be…
  ephemeral & infinitesimal
- Bandwagon loyalty is fickle

e-Search (part 2)

- Find material – sifting the ore
- Don't work on a solved problem.
- Newton's giants *vs*. virtual anthills
- Need to:
  – find spread-out bits of information,
  – and integrate it together – just so as to begin.

Daily Routine

- Exponential information growth

- Exponential information dilution

- So...

  – Daily discipline: scan, scan, scan…

  – Goal-oriented: pick out what you need

  – Must create a time devoted to research

Virtual Collaboration

- Collaboration by quality, not by vicinity
- Exchange notes via e-mail & web upload
- Take virtual advantage of distant resources
- Virtual anonymity – for the most part
- Asynchronous communication
- Can be tedious, but is well-documented

    … globalization of research

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Pre-publication

- Unrefereed archives
  - Low cost
  - global circulation & acceptance
  - Early, global and constructive feedback
  - "Copyright" and priority issues
  - Permanent record, for history
- Self-publication – less seen, less respected

e-publication

- Article submission by e-mail & web upload
  - Quick and (sometimes too) easy
  - Swift turnaround
- Refereed e-journals
  - As 'serious' as paper journals
  - Wide circulation
  - Environmental & humane
    (trees, air, 3rd world scientist's libraries)

e-$$$: Grants & Contracts

- Finding the oportunities
  - Search engines (most agencies are on the web)
  - Listservers; e.g., `info@sciencewise.com`
- Applying
  - Instructions/solicitations often on-line
  - On-line applications are becoming standard
- Maintainting & renewing funding

Now... Keep Doing It

A few examples:

- `http://physics1.howard.edu/~thubsch/`
- `http://xxx.arXiv.gov`
  - The first and the largest on-line archive
  - Contains links to many other archives
- `http://jhep.mse.jhu.edu/`
  - e-Journal of High Energy Physics
- `http://www-spires.slac.stanford.edu/find/hep`
  - SPIRES: a publication database in High Energy Physics