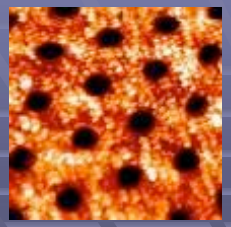
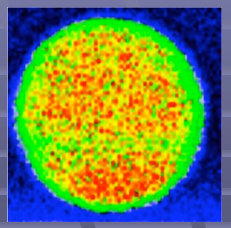
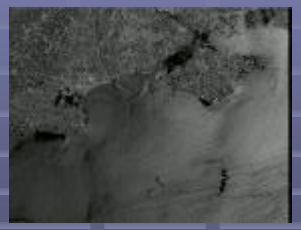
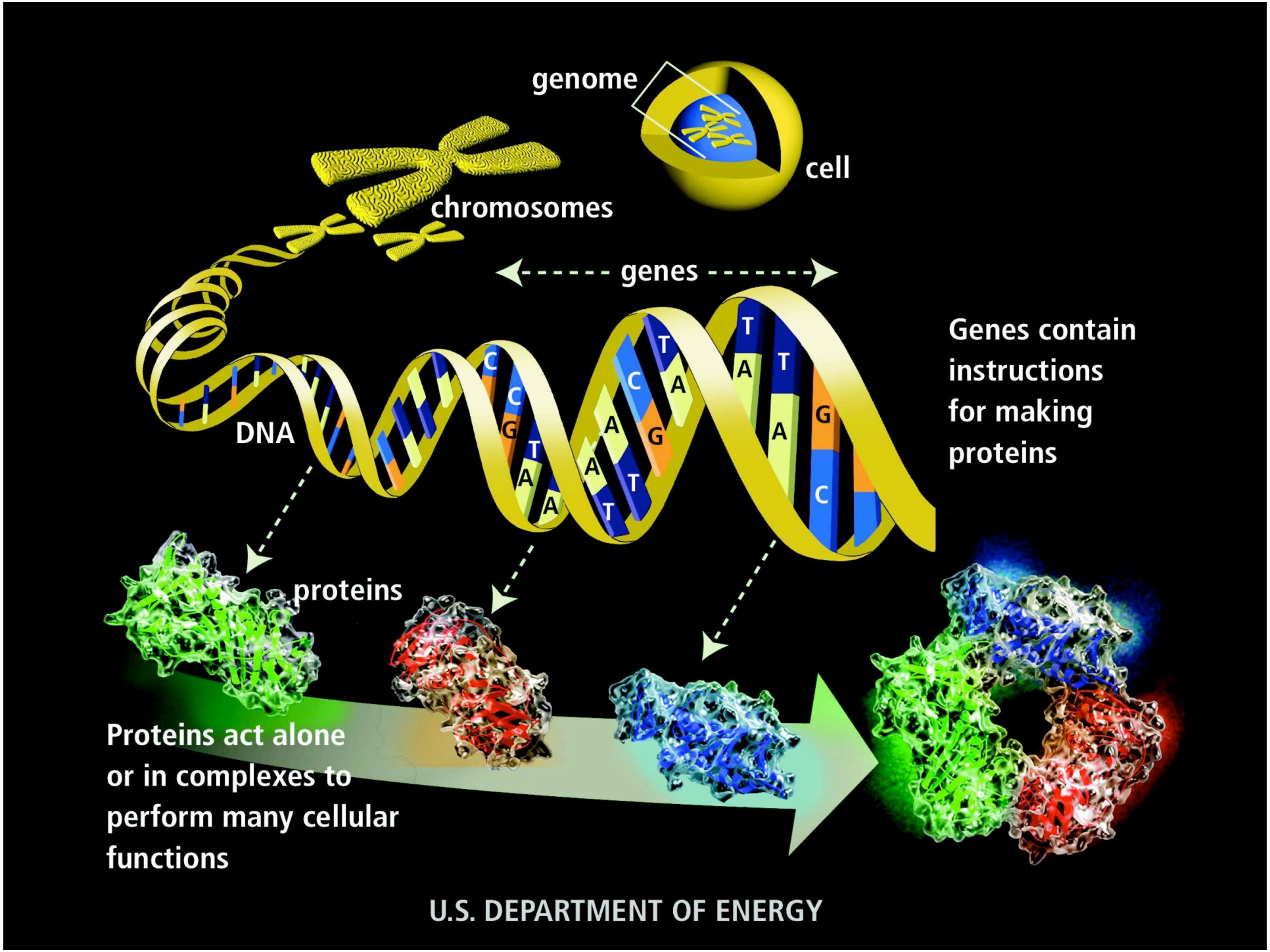
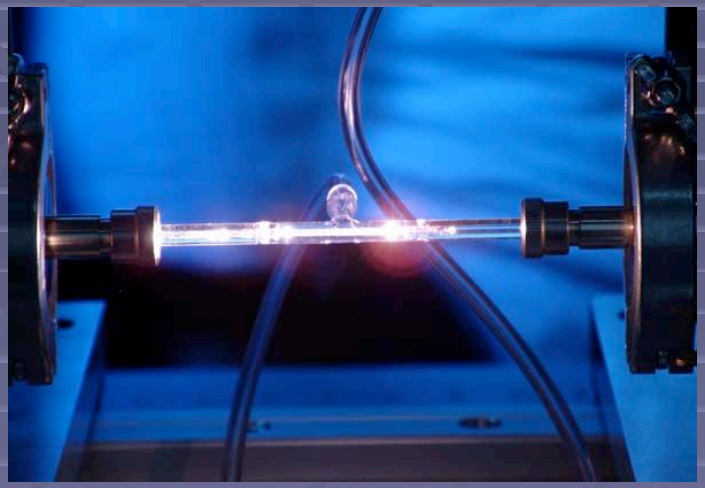




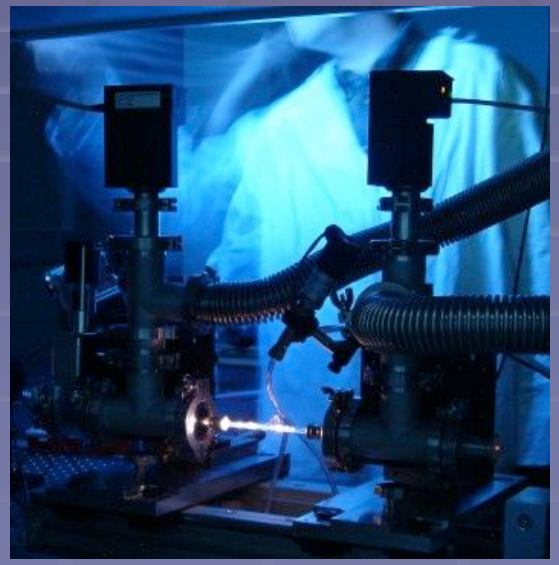
Future Lab - "Smart Not Dark"

Jeremy G.Frey
School of Chemistry, University of Southampton, UK

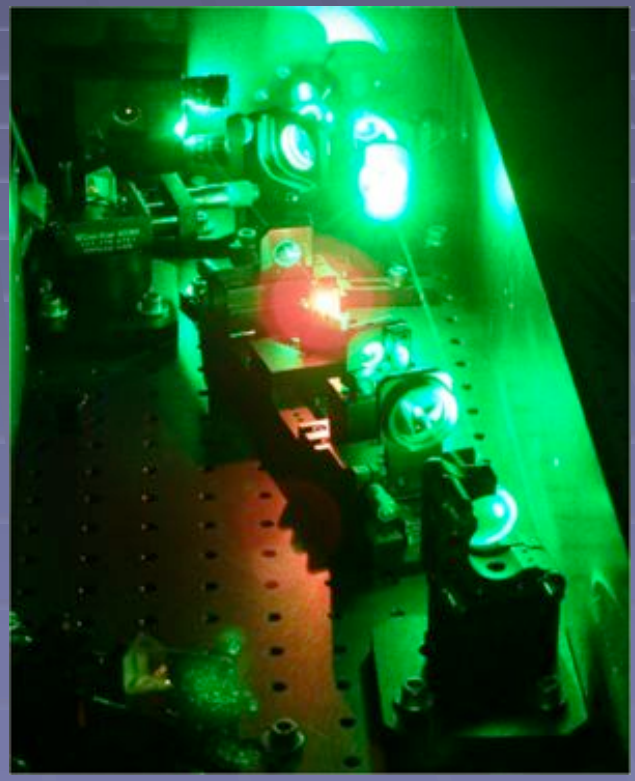


genome
cell
chromosomes
genes
DNA
Genes contain instructions for making proteins
proteins
Proteins act alone or in complexes to perform many cellular functions
U.S. DEPARTMENT OF ENERGY

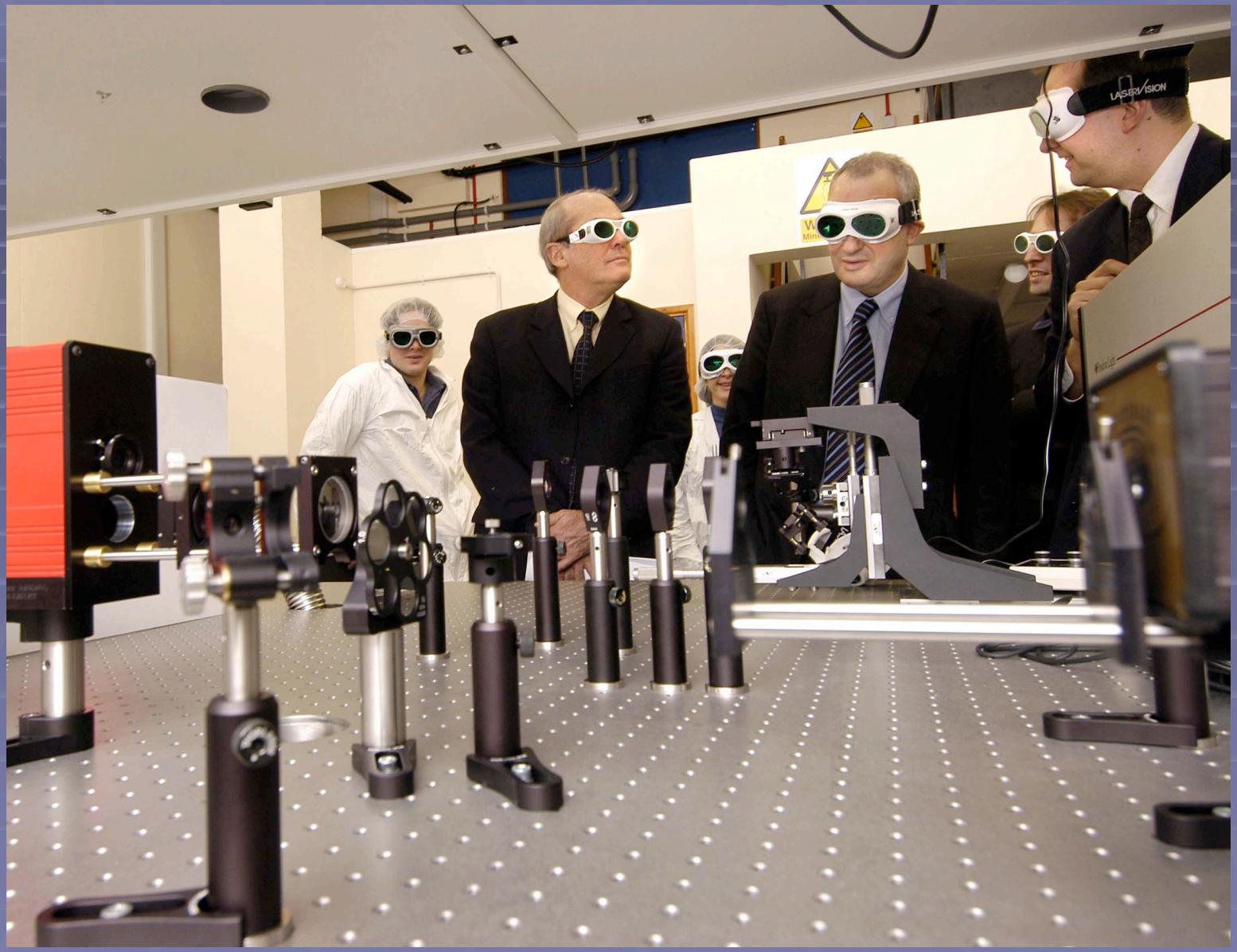
Laser X-ray generation





- Need **very high** laser powers:
  - Peak intensity ~10^{15} W/cm^2
  - Peak E-field ~100 GV/m




LASERVISION

Smart Places & Things

We need Smart Labs!

What are the people up to?

Who is doing what?

Where are they doing it?

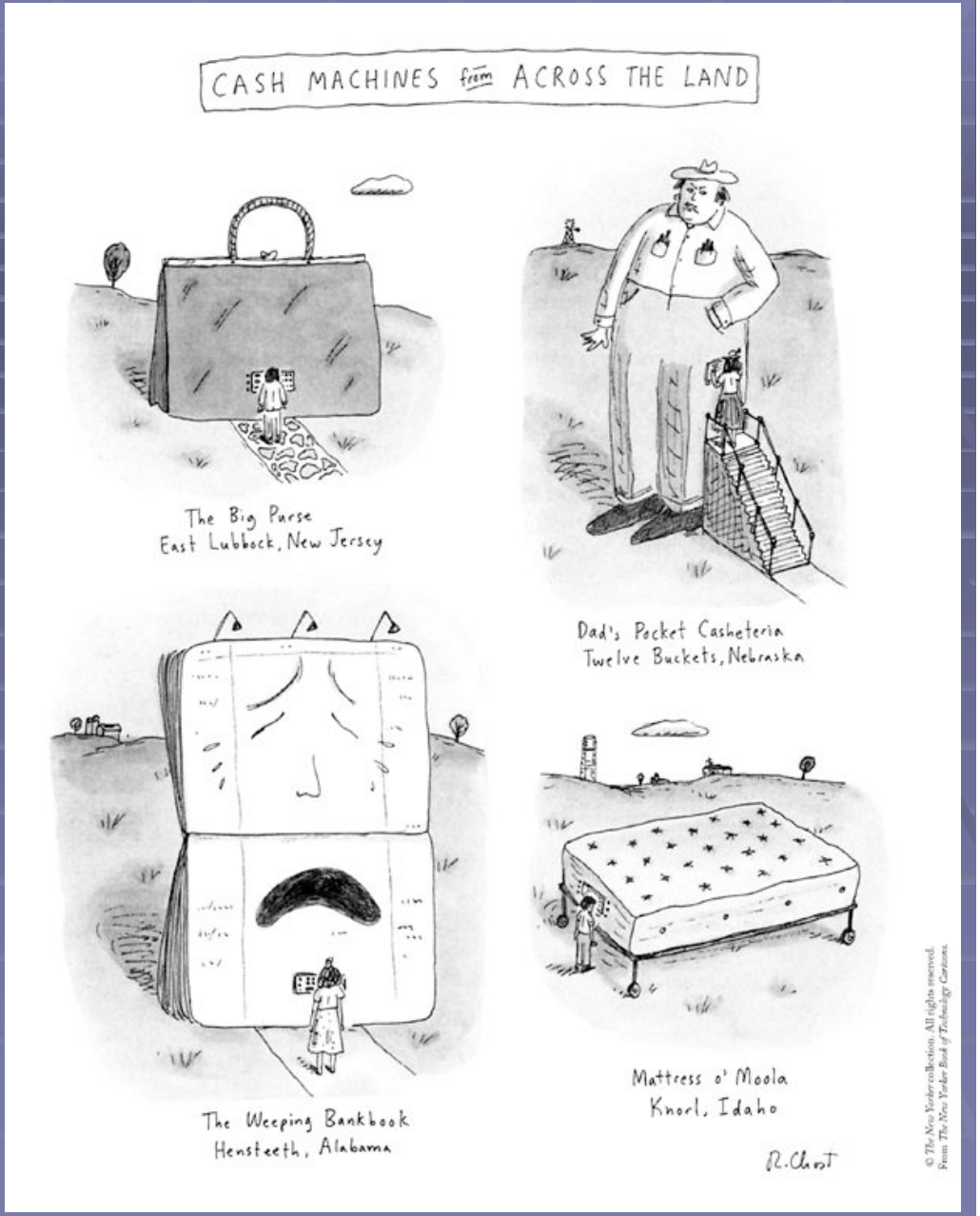
What is the environment like?

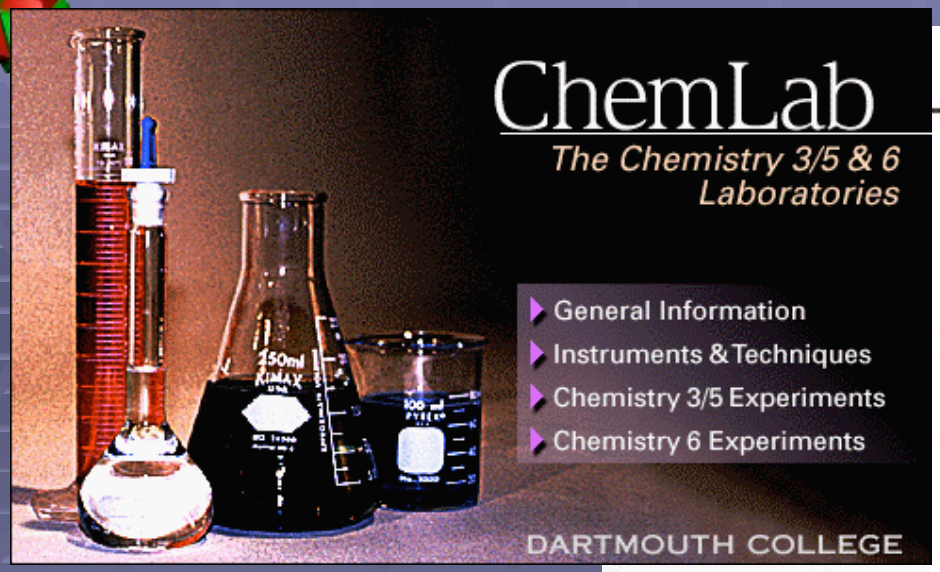
The laboratory notebook has been the way scientific research has been recorded for over 200 years

Can we do better now?

How about an electronic notebook?

Like cash machine electronic notebooks have taken many forms we want one that is simple to use in the lab whilst doing actual bench chemistry





Permanent, primary record ***Observations***

Write down what you see

10 March 2006

Safety
General Rules
Safety Equipment
Safety Hazards
[illegible] Procedures

Resources
Applets
General FAQ
Uncertainty

ChemLab Home

How to Keep a Notebook

One of the most useful skills you will acquire in the laboratory is the proper use of a laboratory notebook. Notebooks, or other formally kept records, are an essential tool in many careers, ranging from that of the research scientist to that of the practicing physician. The effort invested in developing good habits of notebook use will be amply repaid for students who pursue a future in the basic or applied sciences. Experience has indicated that skillful notebook use is developed by most students only through continued special effort--it does not come naturally. Some of the main principles of sound notebook use are outlined below.

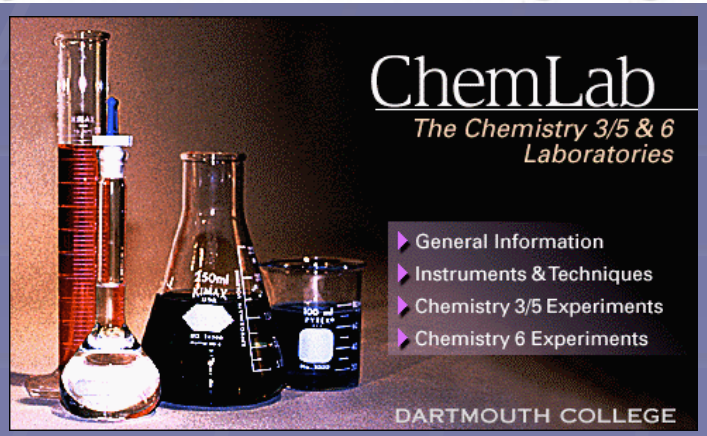
The laboratory notebook is a permanent, documented, and primary record of laboratory observations. Therefore, your notebook will be a bound journal with pages that should be numbered in advance and never torn out. A notebook will be supplied to you before the first laboratory period. Write your name, the name of your TA, and your lab section on the cover of your notebook. All notebook entries must be in ink and clearly dated. No entry is ever erased or obliterated by pen or "white out". Changes are made by drawing a single line through an entry in such a way that it can still be read and placing the new entry nearby. If it is a primary datum that is changed, a brief explanation of the change should be entered (e.g. "balance drifted" or "reading error"). No explanation is necessary if a calculation or discussion is changed; the section to be deleted is simply removed by drawing a neat "x" through it.

necessary if a calculation or discussion is changed; the section to be deleted is simply removed by drawing a neat "x" through it.

In view of the fact that a notebook is a primary record, data are not copied into it from other sources (such as this manual or a lab partner's notebook, in a joint experiment) without clear acknowledgment of the source. Observations are never collected on note pads, filter paper, or other temporary paper for later transfer into a notebook. If you are caught using the "scrap of paper" technique, your improperly recorded data may be confiscated by your TA or instructor at any time. It is important to develop a standard approach to using a notebook routinely as the primary receptacle of observations.

Each week at the beginning of lab lecture, you will turn in your prelab problems from the manual for grading. [illegible] problems not turned in at the beginning of lab lecture [illegible] be

Observations are never collected on bits of paper to be written up later on!



If you are caught using the "scrap of paper" technique, your improperly recorded data may be confiscated by your teacher!

Jeremy G. [illegible] Hursley
University of Southamp[illegible]

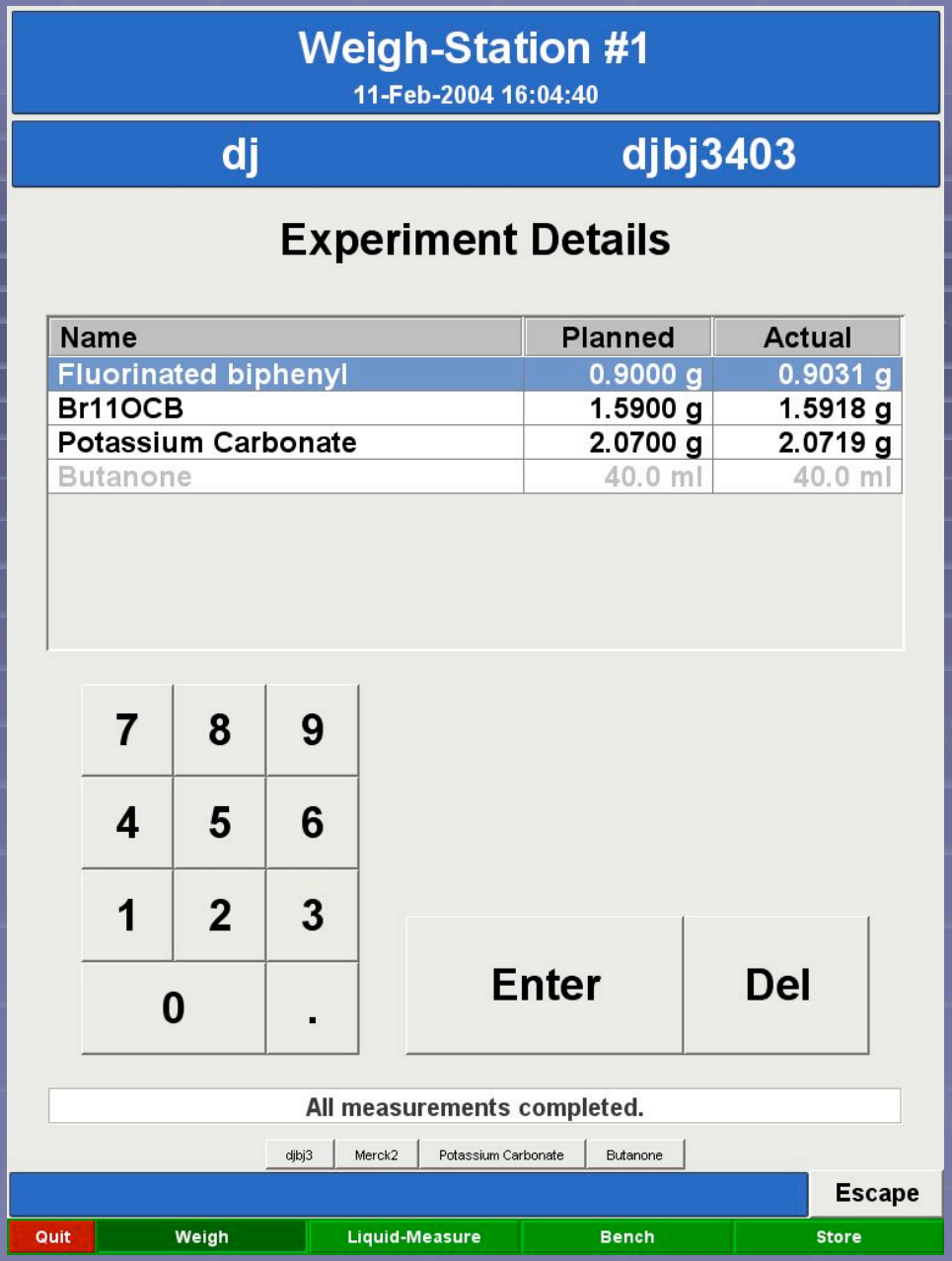
Different labs

But How to get chemists and computer scientists to understand each other

By Making Tea!

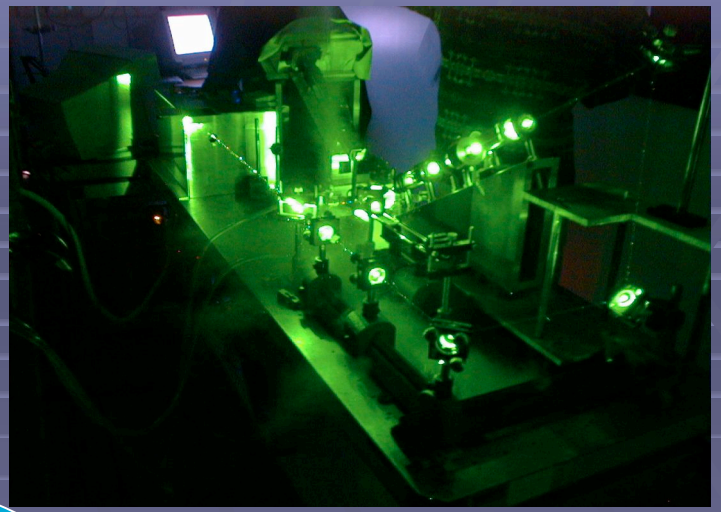

Weigh Station #1
glh/4205/practice45d
Arthur Dent
Experiment Details
Del

Result of extensive collaborative HCI research between Computer Scientists and Chemists over Tea



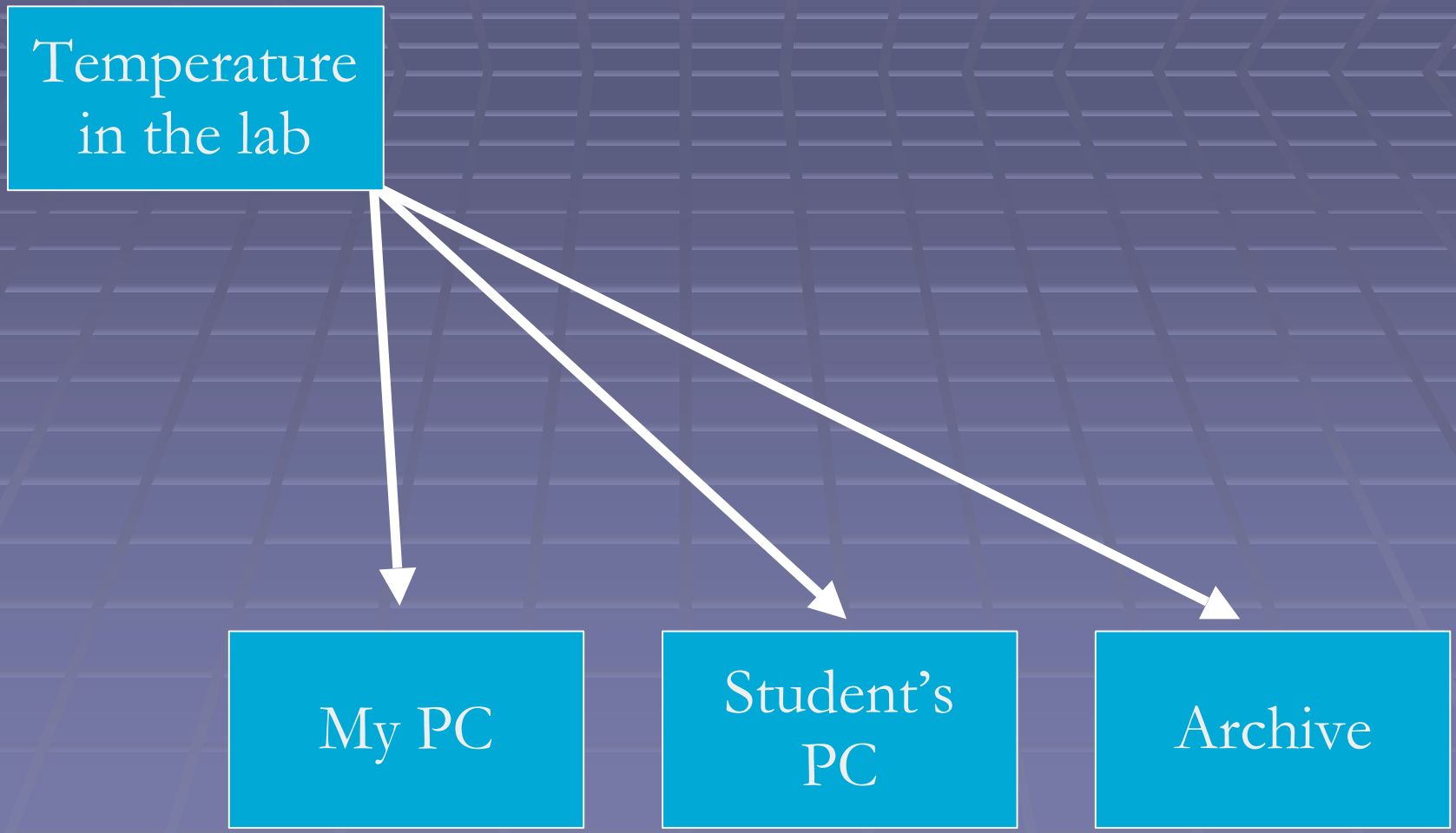
The underlying digital world - The Matrix!

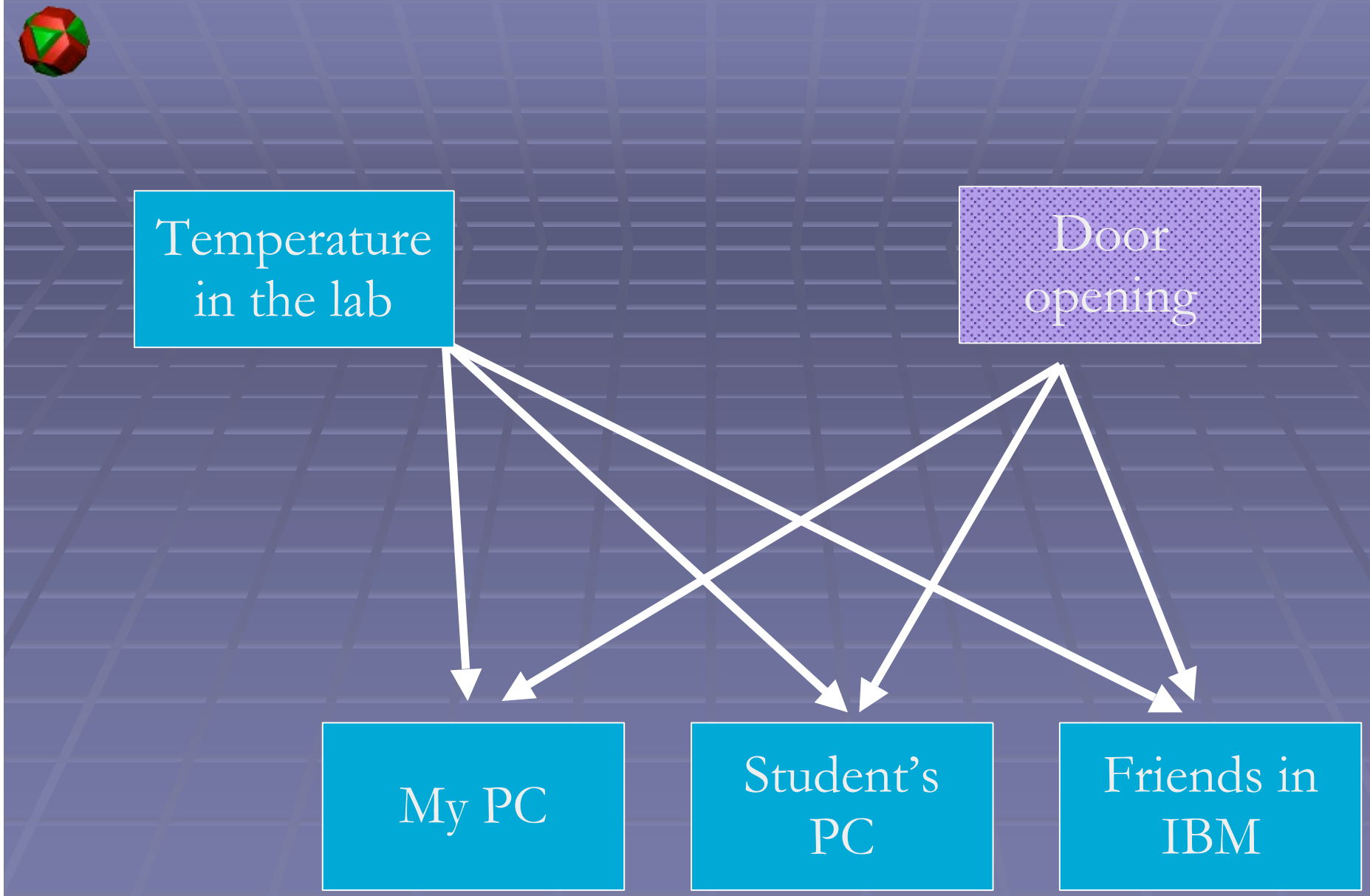
Temperature in the lab

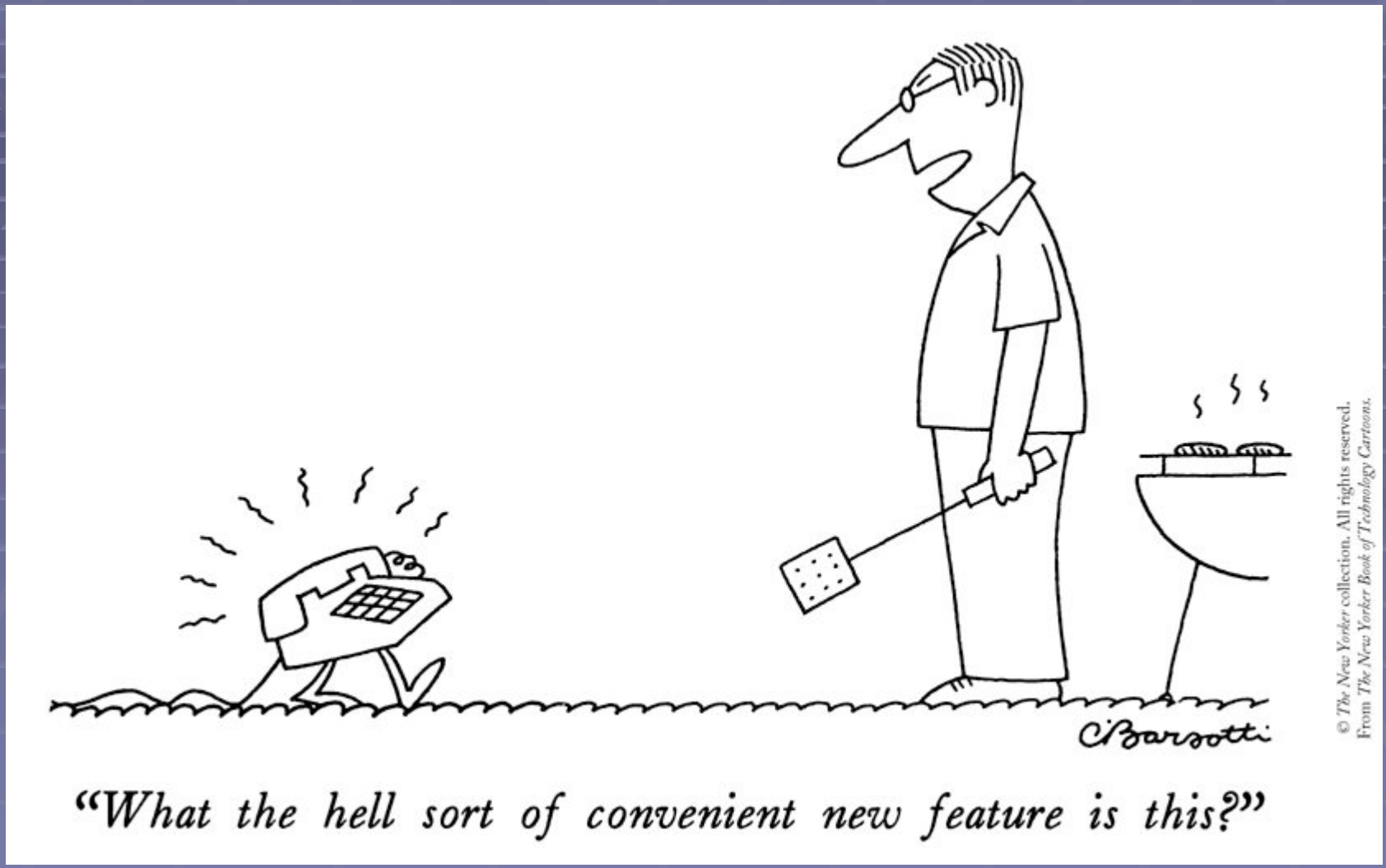


Distribute

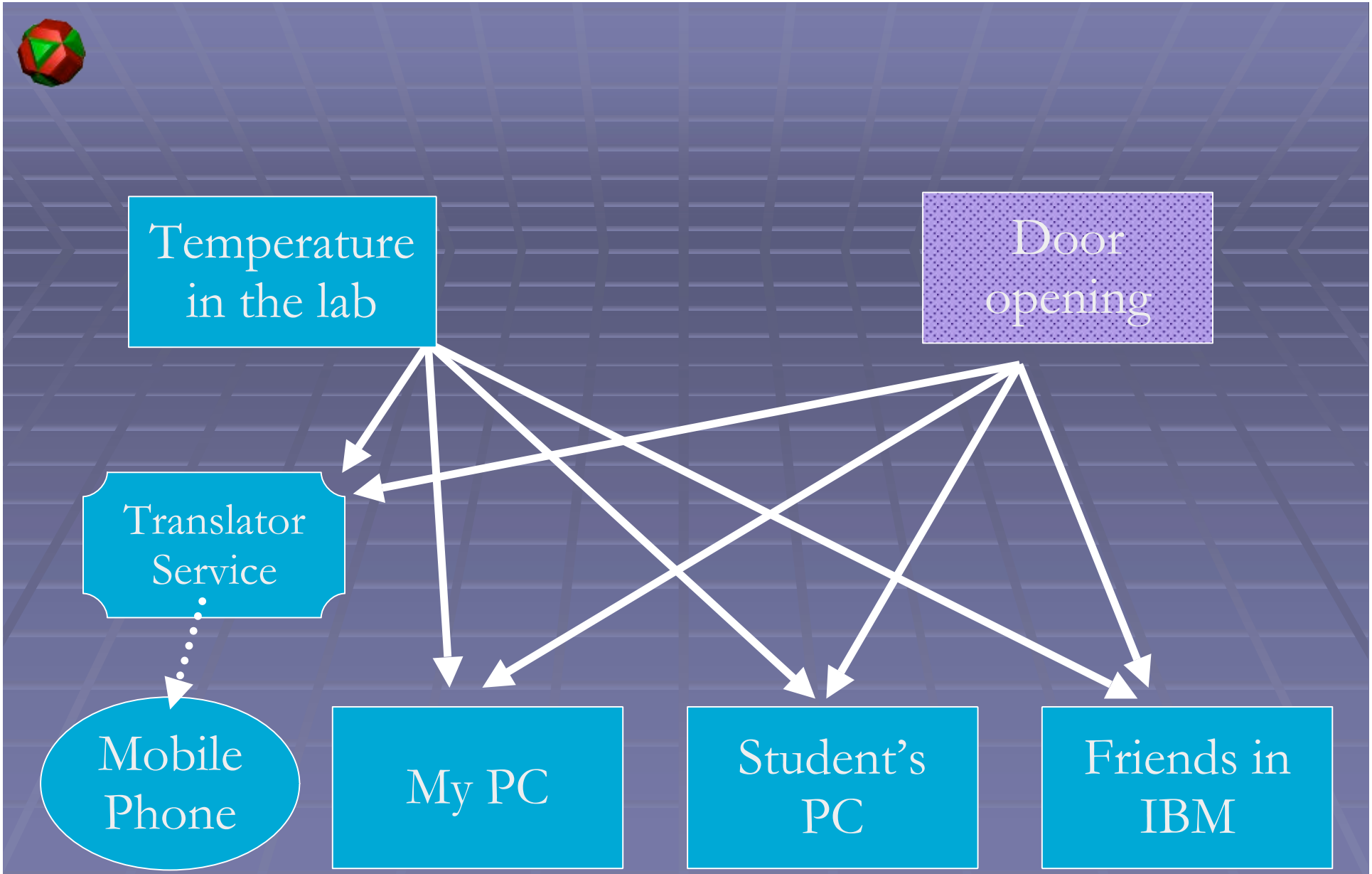
My PC

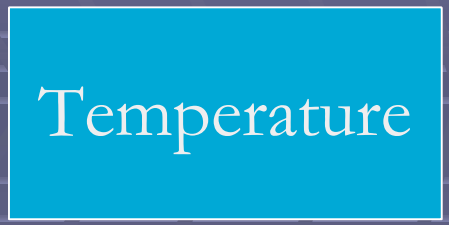

Temperature in the lab
My PC
Student's PC
Archive


Temperature in the lab
Door opening
My PC
Student's PC
Friends in IBM



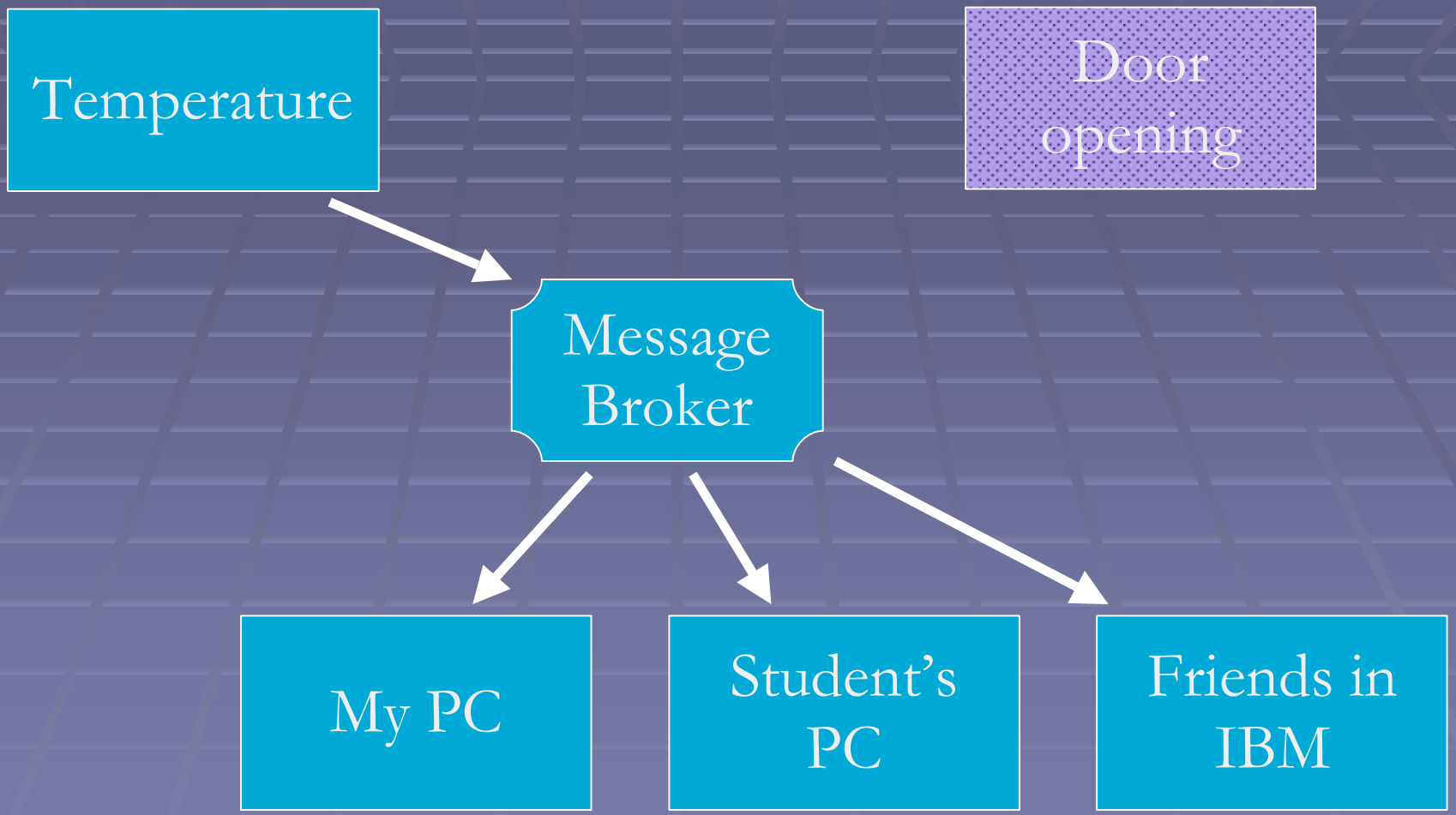
"What the hell sort of convenient new feature is this?"

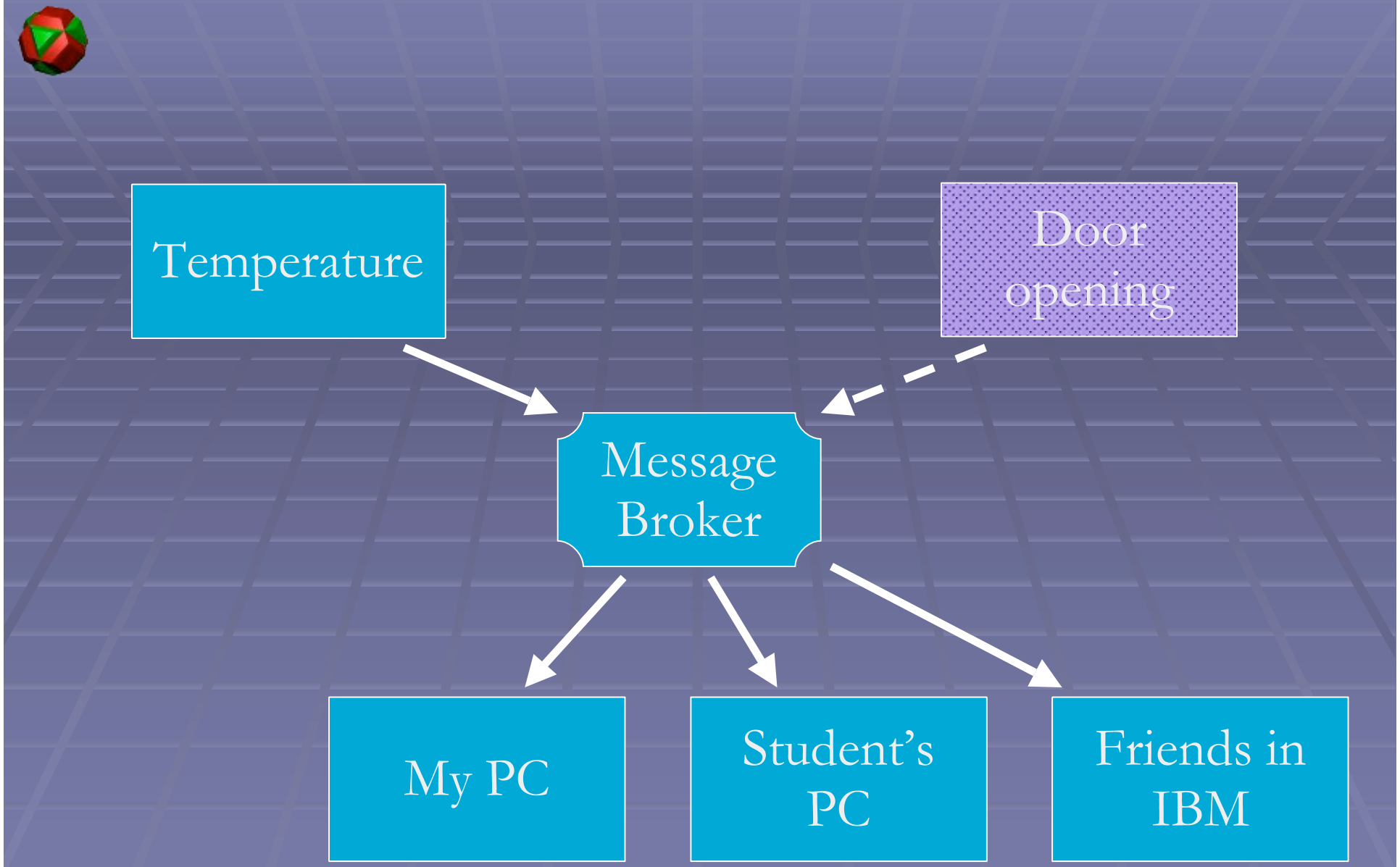

Temperature in the lab
Door opening
Translator Service
Mobile Phone
My PC
Student's PC
Friends in IBM

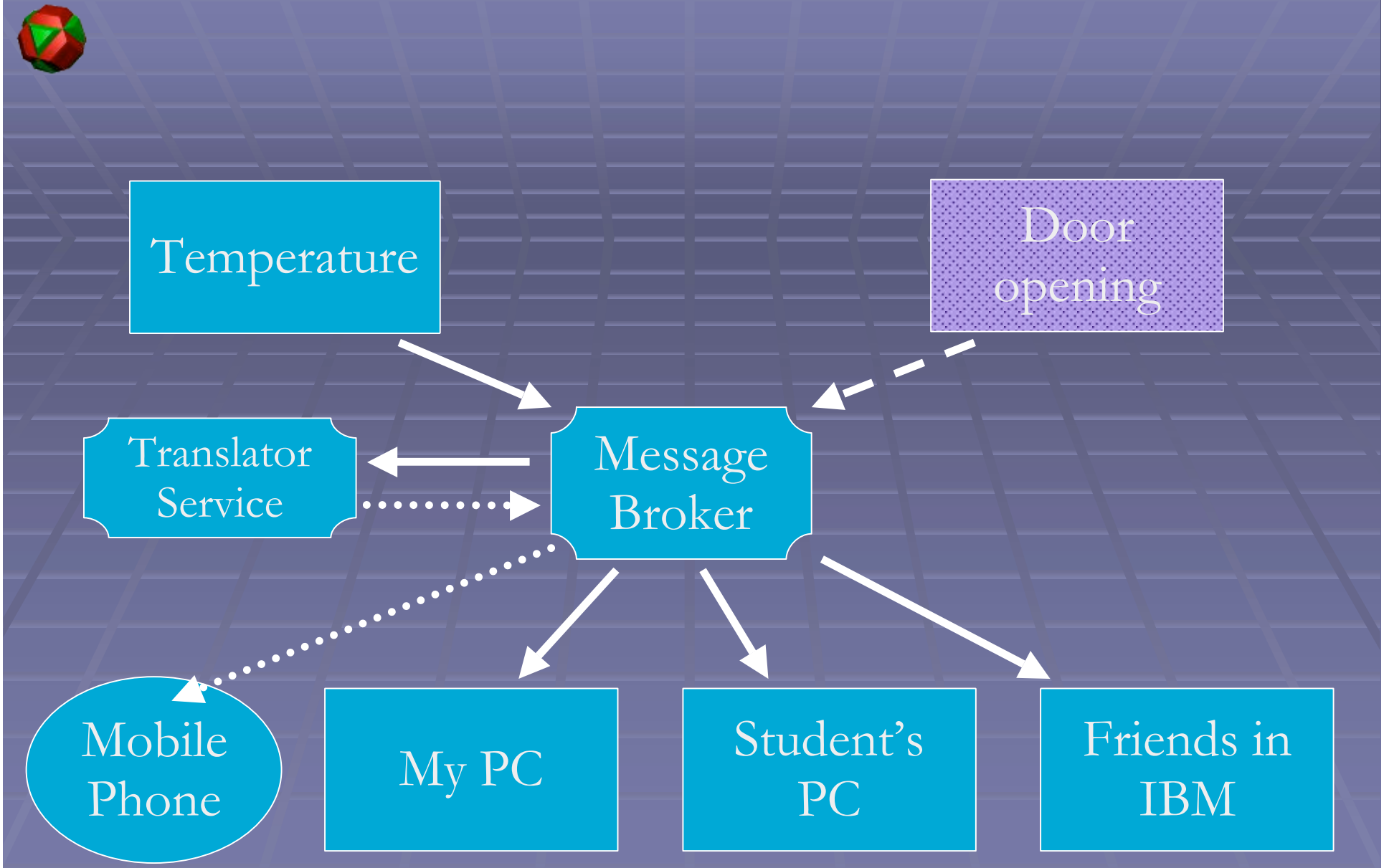

Temperature


Message
Agent


My PC


Temperature
Door opening
Message Broker
My PC
Student's PC
Friends in IBM


Temperature
Door opening
Message Broker
My PC
Student's PC
Friends in IBM

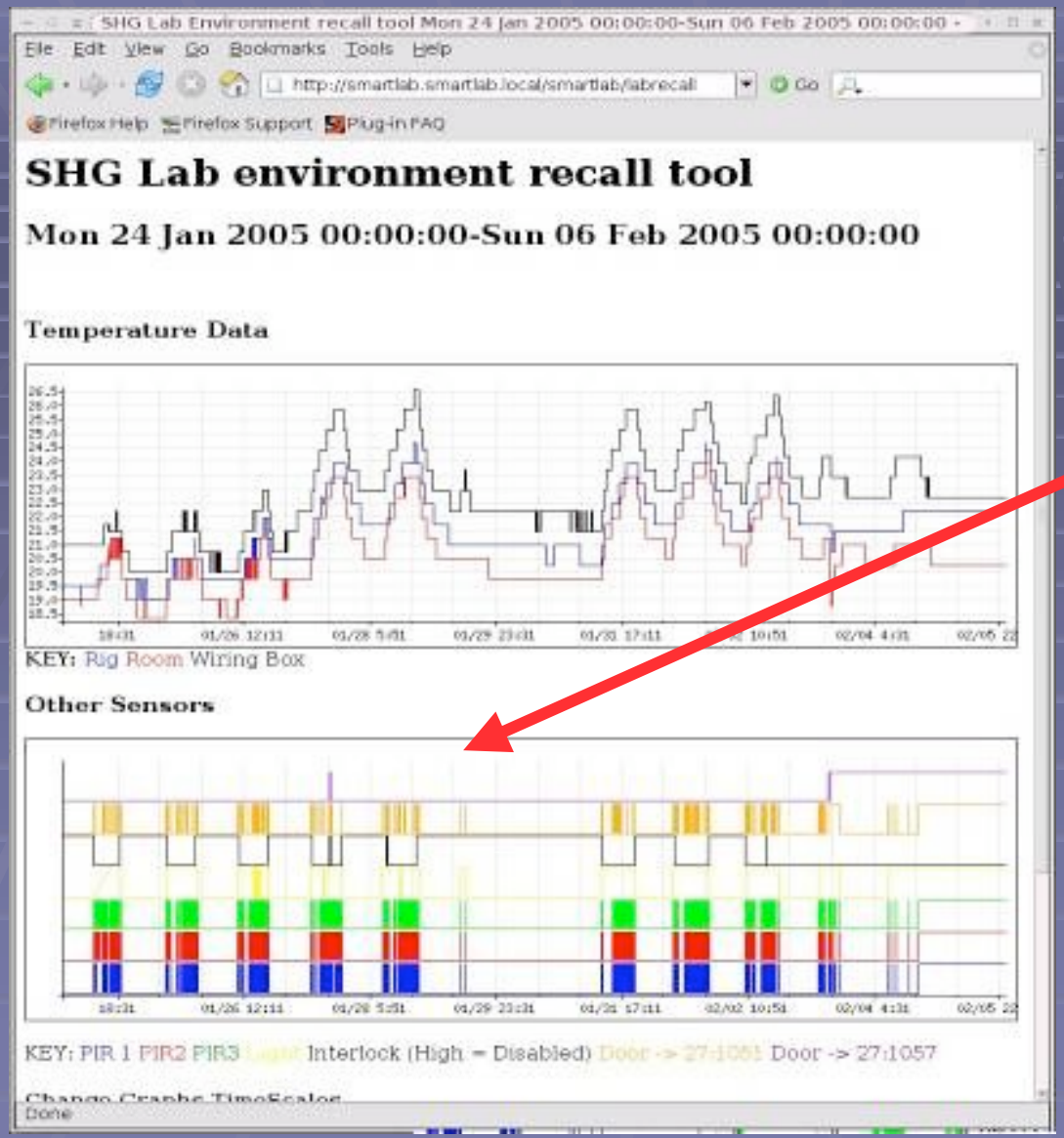

Temperature
Door opening
Translator Service
Message Broker
Mobile Phone
My PC
Student's PC
Friends in IBM

Monitoring by Phone

"I love the convenience, but the roaming charges are killing me"

Jeremy G. Frey
University of Southampton

Would you all be happy with having this technology all around you?



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Last Updated: Friday, 4 February, 2005, 08:47 GMT

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Chemists escape labs via mobiles

By Jo Twist
BBC News science and technology reporter

A blend of mobile technology and award-winning software is letting scientists finally escape the lab.

The software, called "middleware", lets different computer systems talk to each other securely and instantaneously.

As part of a national e-Science project in the UK, it is being used to let Southampton University chemists monitor experiment conditions from mobiles.

Sensors in the lab pick up any changes in the environment so the system can alert chemists, wherever they are.

"It replaces the traditional notebook with some electronic

The system is not smart enough to actually buy a round yet

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m so that at a push of a
able to remotely change
down the temperature.

ontrolling home
seamlessly.

Chemists enjoy a drink at the bar while keeping and eye on the lab

IBM won the Royal Academy of Engineering's MacRobert prize which rewards technological and engineering innovation for the program in June last year.

Used by top global banks, the WebSphere MQ family is a decade old.

Security and trust for experiments and data

Chemistry Data

private or public,

open or controlled access