What is a Remote Controlled Laboratory (RCL)?

An RCL is an experiment that can be accessed and controlled online using the internet. Therefore, the setup has to be connected with a computer and an interface. The computer hosts a corresponding webpage and allows and manages access.

A good RCL should consist of a real setup that can be viewed using a camera.

It should be easily accessible and controls should be simple.

Results should be available in realtime (or at least as fast as possible).

Why Remote Controlled Laboratories?

Areas of application:
- Distance education
- Self-studies
- Tutorials and exercises

Causes of application:
- Dangerous experiments
- Difficult experiments
- Expensive experiments

Results of a world-wide-web search (May 2004)

- Overall, 65 RCL were found and checked
- 20 RCL could not be used due to access restrictions (only students, paying members, etc.)
- Of the rest, only approximately 8 worked without major technical problems
  - “dead” links
  - “out-of-order”
- no “real” RCL (but simulations)
- Applets do not work or crash

Overall, a very disappointing result.

Technical problems (different interfaces, browsers, …) seem to dominate over didactical ambitions.

Most developers underestimate the work and money needed to build and maintain an RCL.

The many individual solutions due to missing standards result in (otherwise unnecessary) efforts for developers and users.