

During mMa internet access was provided via a wireless network link with Gertrude Contemporary Art Space. The CLUBS connection piggybacked of Gertrude's existing broadband account. The wireless link was established through off-the-shelf components and two home-made antennas based on open-source plans found on the internet.

The network consisted of the following:

- a. Gertrude's broadband connection existing
- b. Gertrude's 4-port router existing
- c. Gertrude's network existing
- d. 20m CAT 5e ethernet patch lead \$ 22.00
- e. wireless router (Netgear WGR614) \$134.00
- f. parabolic reflector made from scrap cardboard, aluminium foil and hot glue \$ 1.00

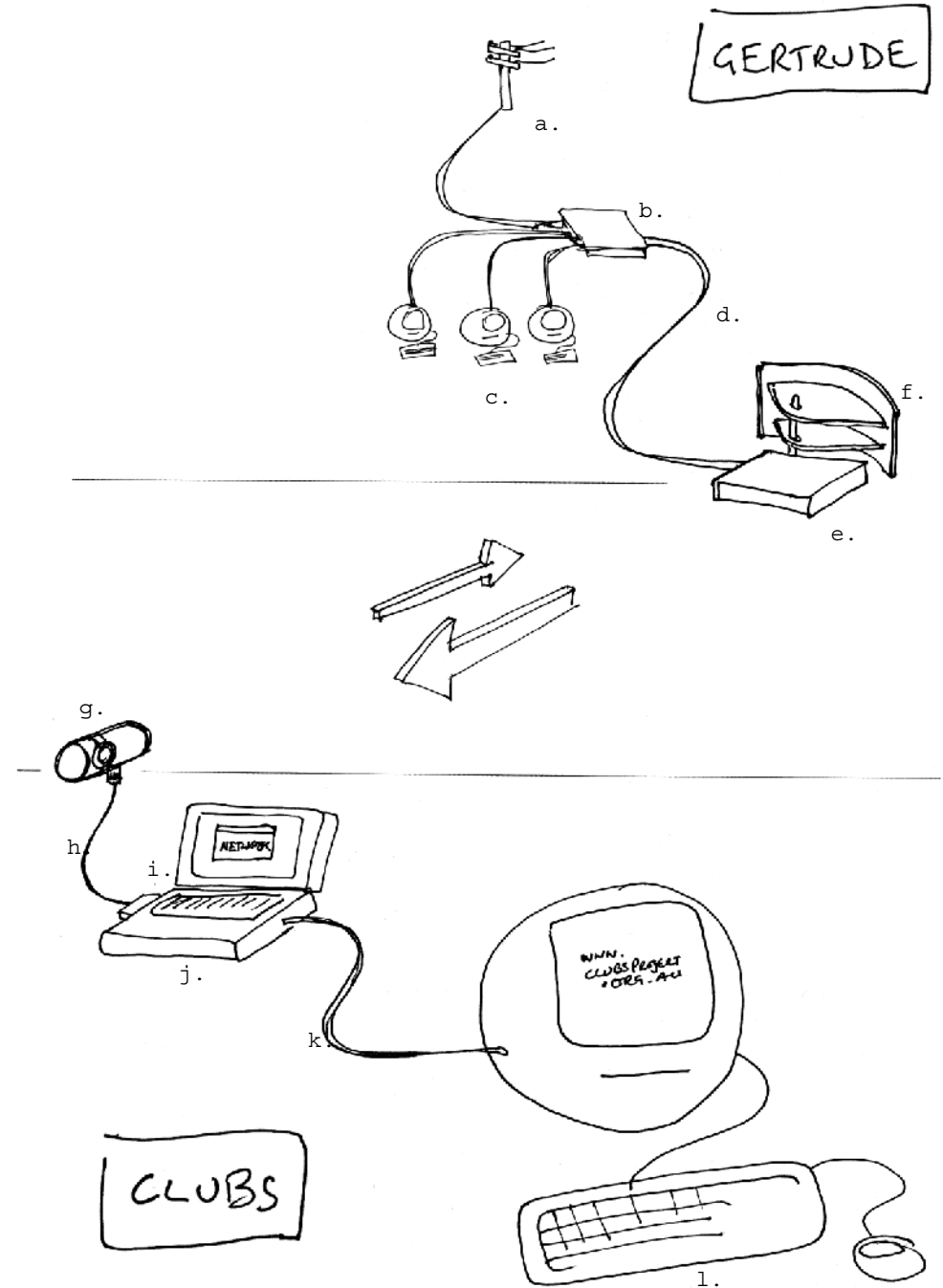
forming a wireless link with

- g. Cantenna antenna made from a 850ml can of Golden Circle pineapple and orange fruit drink (minus the juice) \$ 2.50
- h. pigtail (Short adapter cable with RPSMA-type female to N-type female connectors) provided by Jophes (\$ 30.00)
- i. wireless PCMCIA card (Skynet Global) provided by Jophes (\$ 60.00)
- j. G3 Powerbook (Wallstreet model) provided by Scott (\$300.00)
- k. 30m CAT 5e ethernet patch lead \$ 33.00
- l. iMac provided by Lara/Spiros (\$250.00)

The wireless router was placed on a ledge at the Gertrude reception desk. Home-made antennas were used to increase signal strength and reduce noise.

Antenna designs were based on the work of Michael Erskine and Gregory Rehm as presented in their respective webpages <http://www.freeantennas.com/projects/template/index.html> and <http://www.turnpoint.net/wireless/cantennahowto.html>

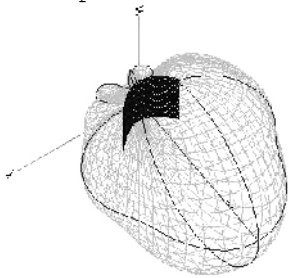
Construction details can be found on the back of this sheet.



Making a Parabolic Reflector.

Based on experience and Michael Erskine's webpage;
<http://www.freeantennas.com/projects/template/index.html>

This reflector is useful for shaping the network coverage from a wireless router with an external aerial. The reflector is based on a parabola. It is designed to focus signals arriving at the front of the reflector onto the routers existing aerial and concentrate outgoing signals back along the same path.



The reflector will change the coverage pattern of your wireless router making it directional rather than omni-directional.

This diagram taken from Michael's web page shows the shape of the modified wireless field.

The reflector is placed over the routers existing aerial. The wireless router itself does not need to be dismantled or modified in any way.

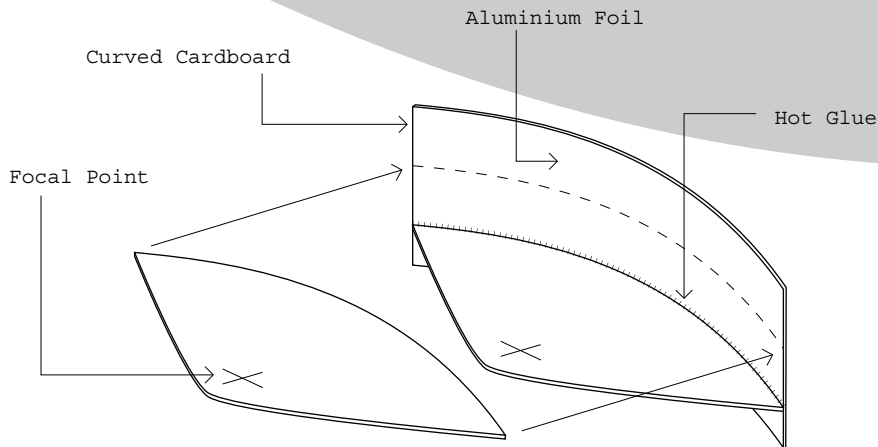
To build the reflector all you need is some cardboard, aluminium foil and glue.

Using this outline as a guide, cut two identical parabola shapes from cardboard.

This is the parabola's focal point, it will be the location of the routers aerial. Cut a cross in the cardboard shapes at this location.

Next, cut a rectangle 30cm x 15cm from flexible cardboard. Using craft glue (or similar) glue a piece of aluminium foil (baking foil) to one side of the cardboard rectangle.

Curve the rectangular cardboard around the edge of one of the parabola shapes with the foil facing inward. Fix in place using hot glue (or similar). Attach the second parabola shape to the curved cardboard about 5cm above the first.



Finally, insert the routers antenna through the focal point cross marks and slide the reflector down the antenna shaft. The reflector is now finished, face it in the desired direction and test.

Making a Cantenna.

Based on experience and Gregory Rehm's webpage;
<http://www.turnpoint.net/wireless/cantennahowto.html>

If you have a wireless network card with a socket for connecting an external antenna then the Cantenna is a great way to create a long distance wireless connection.

You will need; a pigtail for connecting between the network card and the antenna, about 3.5cm of 2mm diameter (12 gauge) copper wire and a steel can.



Start by finding a suitable can.

It will need a diameter between 7.5 and 9.5cm. It also needs to be as long as possible. Gregory has a size calculator on his webpage that will give you the optimum length for any given diameter. As an example, if your can has a diameter of 7.5cm it's length should be at least 25cm, if the diameter is 9.5cm the length should be at least 14cm (As you can see the desired can length is inversely proportional to it's diameter - the smaller the diameter the longer the desired length). If you can't find a suitable can at home take your tape measure to the supermarket, but don't worry if you can't get an exact match, almost any can will do. I used an 850mL Golden Circle Pineapple & Orange Fruit Drink can.



Once you have a can, remove it's top with a can opener and dispose of the contents (eat, drink or feed to the dog - whichever is appropriate). Next, Gregory suggests mounting an N-connector socket to the side of the empty can for connecting to the pigtail. I couldn't find one so I screwed the pigtail's N-connector directly into the side of the can (this will only work if your pigtail has an N-connector with a thread on the outside).

Placement of the connector is very important and is based on can diameter and network frequency. I suggest you use the calculator on Gregory's site to find the exact location, but as an example if your can has a diameter of 7.5cm then the N-connector should be located 9.5cm from the bottom of the can.

Make a hole in the side of the can at the appropriate point to accommodate your N-connector. If you're going to attach the pigtail directly to the can, make the hole large enough to fit the start of the N-connector but slightly smaller than the connector's thread. Place the N-connector in the hole and rotate the connector. The thread on the connector should engage with the can and screw firmly into the hole.

Next, unscrew the N-connector from the can and mount the copper wire in the connector. The procedure for this will depend on the type of N-connector your using, mine was a female connector and I was able to simply push the wire into the female socket.



Cut the wire so that it extends exactly 3cm past the end of the connector. Screw the connector back into the can. The copper wire should point inwards towards the center of the can and be perpendicular to the can wall.

The Cantenna is now finished, plug the free end of the pigtail into your network card and point the open end of the can in the appropriate direction.