behind the news

Is there alien life in the universe? A question that has intrigued mankind for decades and driven many on a quest for the truth could now be solved. With the Seti@home projects, scientists hope to finally bring us the answer. Wendy Brewer explains how

The idea of looking for aliens used to be confined to the crackpot fringes of society. But in recent years the search for extra terrestrial intelligence, more commonly known as Seti, has begun to gain recognition as a legitimate scientific field. It's not just society's attitudes that have changed – scientific and technical knowledge have also improved, giving researchers access to myriad new technologies to aid them in their quest.

Supra-computer

One such scheme, launched back in May 99 to take advantage of distributed computing, is Seti@home. Researchers at California's Berkeley University faced the dilemma of processing vast quantities of radio data received from the world's largest radio dish, based at Arecibo in Puerto Rico. With more than 50 terabytes of information to analyse, in-house networked PCs were simply not powerful enough to deal with the data.

The first idea to overcome the problem was to purchase a supercomputer, but this would cost the university more than $100m, an amount it simply did not have. Instead, scientist and Berkeley University graduate David Geyde came up with the idea of Seti@home.

Seti stats

- **More than 29 million Seti@home results have been sent by 260,000 UK users**
- **The UK is 26th in the world for its number of Seti@home subscribers**
- **The average CPU time to complete a work unit is 17 hours 16 minutes**
- **The top home user, Jason Sun of Taiwan, has completed 430,494 work units, the equivalent of 474 years of processing time**

"[Seti@home] was the brainchild of David Geyde in early 1995. He handed over the idea to me and I ran with it," said David Anderson, project director at the University's space science laboratory.

Seti@home consists of a special screensaver that volunteers download to their PCs. It alerts researchers when the machine is idling, allowing them to take over its processing power. This means the university ends up with more power than the average supercomputer, virtually free of charge. In fact, Anderson estimates the project has access to about $300m worth of processing power – in other words the power of 3,725,900 computers (around 260,000 of which are UK-based), which translates to 983,487 computer years of CPU processing time. (A computer year is the equivalent of one PC working continuously for a year.)

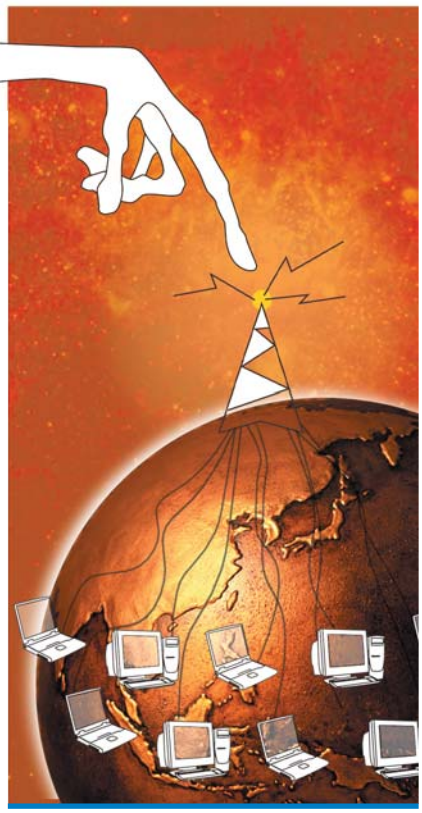
"The screensaver connects through the internet to our server, downloads a work unit (a work unit represents about 350KB of information), spends about a day analysing it, then returns the results to our work unit and retrieves another work unit," said Anderson.

In simple terms, each computer is processing radio signals from space. Researchers are looking for anything that appears odd or a frequency which doesn't seem 'natural'.

Alien influence

But not all volunteers are as honest as they should be and Anderson must look out for patterns of interference that indicate altered information. "Some of the results we get are wrong, either because of malfunctioning computers or deliberate alteration. We get around it by analysing each work unit three times, comparing the results and rejecting those that don't agree with the two counterparts," he said.

Anderson is currently developing a new scheme to run alongside Seti@home,



The screensaver connects through the internet to the Seti@home server, downloads a work unit, spends about a day analysing it, then returns the results to our work unit

called Astropulse. "Astropulse will analyse our existing recorded data looking for phenomenon known as evaporating primordial quantum black holes," said Anderson. Another project will continue the Seti search, but by using information gathered from a telescope in the southern hemisphere, instead.

"We're also completely redesigning the software to separate the infrastructure from the application because, in the current Seti@home system, these are intertwined," said Anderson. "We're developing a new infrastructure, called Boinc (Berkeley Open Infrastructure for Network Computing). This is open-source and will be used by other projects as well as our own." ■