Whilst the World Wide Web may have made the information world a more open and accessible environment, the Internet has always been governed by a limiting set of rules. One such limitation has traditionally been caused by the apparent lack of an adequate solution to the problem of transporting large image files. Anyone who has ever surfed the Internet will, at some time, have given up waiting for an image to download, thus illustrating the depth of this problem. For this reason high resolution imagery and the Web have never been closely associated and imagery linked to other information is most often sent separately. However the Northern Territory Geological Survey (NTGS) of Australia is one organisation that has investigated and employed an alternative method to the dissemination of imagery.

NTGS is a division of the Department of Mines and Energy (DME) in the Northern Territory of Australia. NTGS acquires, processes and archives regional (primarily airborne) geophysical data, which must then be geologically integrated into NTGS’s regional geoscience data systems. Working with Earth Resource Mapping, the Northern Territory Geological Survey of Australia have successfully moved away from cutting and sending endless CD-Roms and are now utilising the Internet in previously unthought of ways.
Traditionally NTGS then disseminates this data to their clients who in turn interpret it for use within the resource exploration industry. NTGS also publishes geo-scientific maps and compiles digital databases. Currently NTGS’s geophysical data files total approximately 20GB per year.

The resources of the NTGS are severely stretched when new imagery is released. Data from 4 airborne surveys are normally released into the market simultaneously (15-20 GB worth at a time). Some clients request all of the new data, whereas others are more selective.

During the release of new airborne data over the December 1998 - January 1999 period, NTGS had the equivalent of 50 requests for the entire release. Such a level of demand is by no means unusual and placed great strain on NTGS’s existing method of data distribution.

Like most other geological survey organisations, NTGS had traditionally disseminated spatial information via CD-ROM and although CD’s are a sufficient method of data distribution, the cutting and preparation work involved is a relatively labour intensive process and it was becoming obvious that NTGS needed to find a more efficient method of data distribution.

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Early in 1999 Roger Clifton, Geophysicist at NTGS heard Earth Resource Mapping were developing a new web based application called by the name of ‘Image Web Server’ which was based on the now patent approved ECW (Enhanced Compressed Wavelet) compression format. Roger quickly identified that the new product offered NTGS the ability to compress large volumes of image data and then to transfer this data via the web, without causing infuriating delays for either user or host. Such a capability provided Roger and his colleagues with a fast and easily accessible alternative to the ungainly method of making large datasets available via physical media.

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With approximately 90% of NTGS's clients located outside the Northern Territory, Roger realised that incorporating the Image Web Server as a new method of distribution, would allow a wider number of clients to obtain the information quickly and more easily and would also allow clients to choose a selective area of interest and
resolution from the original data set; all through a simple desktop Internet navigator.

During the early development of Image Web Server, Earth Resource Mapping offered a number of organisations the opportunity to display their imagery on the new EarthEtc web site. Clive Poole, Asia Pacific Regional Manager for Earth Resource Mapping, approached NTGS with such a proposition. This opportunity meant that the NTGS could effectively test drive the new Internet product using their own data sets. The EarthEtc site was designed to demonstrate the speed at which the Image Web Server is able to serve high-resolution imagery across the Internet and naturally NTGS agreed to become involved.

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Image Web Server was officially launched in August 1999 and NTGS supplied an airborne data set to Earth Resource Mapping to be publicly released on the EarthEtc site. With further cooperation from Earth Resource Mapping, NTGS then released it's entire Northern Territory airborne magnetic data set in March 2000. Having test driven the Image Web server NTGS believed that it could offer their clients the most efficient imagery delivery mechanism in the world and thus purchased their license.

Richard Brescianini, Chief Geophysicist for NTGS, was nominated to manage the development of NTGS's own Image Web Server based site. Through continued close contact with Earth Resource Mapping, Richard divided the project into two steps. Initially, a prototype site was constructed by Trish Mullis of NTGS and released to a restricted audience to solicit feedback. Richard and his team then mosaiced and colour balanced 7 GB of imagery using ER Mapper 6.1. The ECW Image Compression Wizard was used to compress the imagery to just 130 MB, allowing the data to be streamed across the Internet using the Image Web Server. All of this resulted in NTGS being able to provide their clients with the ability to deal interactively with the imagery through their own domestic web navigators.

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At the same time NTGS engaged the services of Joanne Napier of Horizon Consulting to produce the final site design and this resulted in the creation of an index map consisting of 47 semi-detailed government airborne surveys of the Northern Territory. In effect users can now move their mouse over the surveys on the index map and a basic description of each survey will appear in the 'stage' viewing area. Once the area is selected the user can than view the area of interest.

NTGS released their Image Web Server based site, containing imagery from the 47 government surveys, which adds up to a 70% coverage of the Northern Territory, along with the Northern Territory magnetic compilation, in December 2000.

With the web site up and running users have been handed the ability to interact with located airborne geophysical images of the Northern Territory of Australia and to integrate with other geo-scientific application software products such as Arc View® and MapInfo®.
Richard Brescianini recently outlined his views on the ongoing project "A clear goal of NTGS is to deliver quality information rapidly to clients, the majority of whom are based outside of the Northern Territory. Image Web Server offers us the ability to meet this objective in a cost-effective manner. I believe if we had implemented Image Web Server prior to last year's airborne data release, clients would have had access to (pre-release) geo-located images via the NTGS web-site, perhaps up to a month before official release. Clients also seem to have been more selective in their requests for data, putting less strain on our ability to deliver the much more voluminous native data.

Our external clients are overwhelmingly geophysicists and geologists in the mineral and onshore petroleum exploration business. Less than 10% of them have a business presence in the Northern Territory, so it is important for us to keep our clients constantly updated on our programs and key initiatives no matter where they reside around the globe. The World Wide Web is the key to achieving this aim.

Our experience is that most of our clients are highly skilled in the use of image manipulation and visualisation software, as well as GIS. Access to our compressed imagery through our clients' preferred software (via a URL) is an enormous plus, and was a significant motivation in NTGS moving down the Image Web Server route, which has so far proved a successful one."