

A Simplistic Approach to Narrow Band Emergency Messaging System



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Introduction

Narrow Band Emergency Messaging System (NBEMS) is one suite of software packages that directs the user to a comprehensive approach to the passing of emergency traffic with the option of a wide range of data modes. It has been in use in Guernsey for some time now and it is how we went about the planning and realisation of our capabilities which will be briefly described in this document. This document refers to data traffic only but the use of the data template formats, mentioned later in this document, also allows the instant transmission of identical voice messages.

During the early planning stages some of the factors under consideration were as follows:

- What exactly do our clients require of us?
- What is the level of complexity of the requirements?
- Can we meet these requirements?
- Do we have adequate local knowledge and experience?
- Do we have appropriate equipment and software?
- Can we guarantee a high level of accuracy and reliability?
- Can we avoid cross-system issues such as security and anti-virus measures?

What Do Our Clients Want of Us?

Before we went to our clients we carried out some basic research and looked at a number of operational factors. It became clear from the onset that there would be an issue with the rapid changes in Operating Systems. In order to overcome the vulnerability of setting up a data system resource dependent on one particular operating system it was decided that the traditional approach of the message form format would not be a flexible enough way forward. Instead, it was felt that the fields of all our data templates

should reflect exactly the general format and fields of good practice but should be produced in linear format by the simple use of a text editor.

The text editors can, of course, be found in most operating systems, thus overcoming our perceived OS vulnerability issue and allowing a high level of resilience. The operating systems in use here include Windows XP, Vista and Linux. We have produced linear templates for specific local use as well as those for CHALETS, SADCHALETS, METHANE and the IARU emergency message format.

Having made this choice of data format we went to sell our wares to our clients! It must be emphasised that the Bailiwick of Guernsey is not part of the UK. As a consequence, we have been able to progress at a rate which may not always be the case elsewhere. To cut a long story short, we were received with open arms, eventually! Local templates were agreed upon at a high level. It was considered that the user requirements were well within our capability and we quickly got into the next phase of development.

Local Knowledge and Experience

Whilst it is true that the software/hardware interface is also in a constant state of change it was felt that our local knowledge and experience in data transmissions was adequate to enable us to move forward. Our collective experience in the hobby goes back as far as the 1960's.

Equipment and Software

The re-emergence of the Bailiwick of Guernsey RAYNET group was initiated to coincide with the appointment of the first local Emergency Planning Officer. He was very keen to give us his support and it has taken four years to resource the group to the present level. Our resources include two permanent

HF/VHF/UHF sites in former WW2 German bunkers, a fully equipped trailer which is delivered on site and fuelled by our Civil Protection Volunteers and seven mobile teams. Five of these teams are equipped with FT-8900's, quad-band mobile antennae, Tigertronics USB Signalink soundcards and protective clothing. Laptop mobile PSU's have also been resourced. Two teams have not yet been fully resourced and have provided their own VHF/UHF equipment. There are also installations at Police HQ, A&R HQ, Government HQ and the Emergency Planning suite on the island of Sark. In addition we have a wide range of personal equipment and direct links to the A&R net, this being a VHF analogue net and requiring the use of two of their specially configured rigs, the Police Tetra network, the Civil Protection Volunteers net and our local SAR fixed wing aircraft.

What a guy! We are indeed fortunate that his successor has been equally supportive. A number of software packages were looked at and evaluated. It was eventually agreed that the NBEMS package of fldigi, flarq and wrap would more than satisfy our needs. Fldigi works across the platforms of Windows XP, Windows Vista and Linux. There is no doubt that it will also support Windows 7 when it is released. It has around 50 variants of data modes and it supports FEC in many of these modes. This, combined with the above mentioned equipment and the use of private laptops (still working on this one!), means that the teams can and do work from their cars should the need arise, giving once again a high level of resilience. As a result of a request by the emergency services we also looked at the transmission of high quality images and whilst this is possible within fldigi, we opted instead to use EasyPal. This is limited to the later Windows OS variants. Our trials in the transmis-

sion of data and images have produced outstanding results, as demonstrated at a recent Zone7/Local Authority meeting in Exeter.

The Tigertronics USB Signalink external soundcard has a number of advantages. It handles audio in, audio out and, vitally, PTT. We have set the internal jumpers to the same setting throughout the teams to once again enhance our resilience capabilities. The six pin connector fits into the data sockets on the FT-8900's, FT-897's and also a personal IC-7000 without any changes required either from the rigs, cable or the soundcard. Cables have been



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made up from old Cat 5 modem cables and configured for a FT-1000MP Mk V Field, an Omni VII and a Pegasus, once again without any other changes. Cables can be made up for any rig that has a mic socket, an audio out socket and a PTT socket, either on the microphone connector or the rear panel. TX audio gain, RX gain and delay is very easy to control from the front panel of the soundcard.

Modus Operandi

Simple, repeatable operations have been implemented to enhance accuracy, reliability, speed and also an audit trail for possible future use of the content of messages in a legal scenario. All callsigns have fldigi loaded and the microphone connected. No problems with audio interaction have been experienced with either fldigi or EasyPal. A num-



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ber of training macros and real incident macros have been written to insert basic opening and end-of-file details into the transmission and to speed up the operation. Macros are in place for ROUTINE, PRIORITY and IMMEDIATE messages and some other functions also. This is what a typical Scene to Base message entails: Client brings data to RAYNET at Scene, either in written or verbal format. The appropriate template is opened, saved with a unique file name, the data entered by text editor and the completed file saved into a pending transmission folder. Scene contacts recipient by voice, usually Control, and obtains permission to send a data file. At this point the rest of the net maintains radio silence.

The data file is transmitted. Control confirms receipt or requests a resend by macro. On successful receipt

Control places the net back onto voice, saves the file into a received folder and immediately prints out the whole file to pass to the client. Scene transfers the sent file from the pending folder to the sent folder.

With regard to data images, the procedure is the same as above except that the picture is taken by a digital camera, the SD card is read into the laptop, the image is dragged and dropped into the EasyPal Tx window and transmitted. File management remains the same.

Cross-system issues

Concern has been shared between the clients and RAYNET at Zone meetings with regard to the security of our two systems. Clients have been understandably reluctant to allow direct RAYNET connection to their secure systems. These issues have been completely avoided as there is no contact between RAYNET computers and those of the client. □



Fldigi works Windows XP, Vista & Linux