

# DMR News

---

# DMR News

---

## New repeaters under discussion

- One in the Keene, NH area ( UHF)
- One in the Waltham, NH area (UHF)
- One in the Mt Snow Region (VHF?)

## Other news

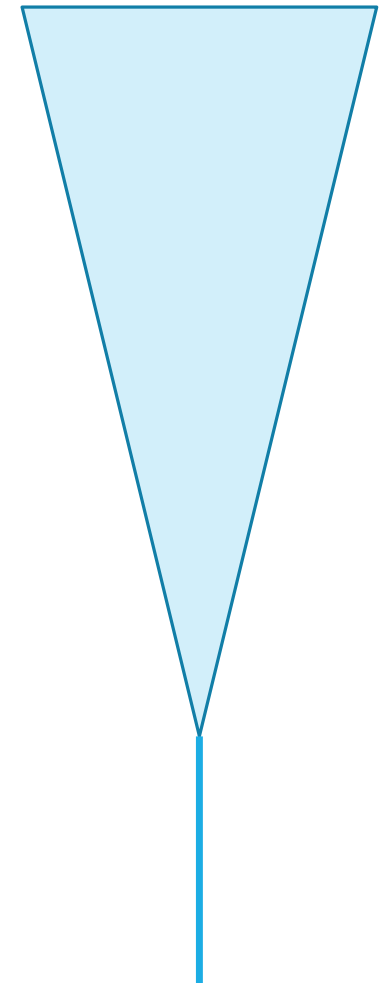
- There is interest growing to understand how DMR might contribute to SKYWARN and RACES
- Some are starting to think about how DMR can support special events.

# W1UWS - Talk Groups

1,000+	World Wide (WW)*	World Wide calling frequency
500+	World Wide English (WWE)*	World Wide English only calling frequency
100+	North America (NA)	Mexico, United States, and Canada
50+	North East Region (N East Region)	PA, NJ, NY, CT, VT, RI, MA, NH, ME
50	New England Wide (NE Wide)	CT, RI, MA, VT, NH, ME, New Brunswick
30+	New England Region (Region North)	MA, VT, NH, ME
3	Vermont State Wide (VT)**	State of Vermont
15+	New Hampshire State Wide (NH)	State of New Hampshire
15+	Massachusetts (MA)*	State of Massachusetts*
1	Local	W1UWS Only
1	Parrot	Record and Replay
2+	TAC 310, TAC 311, UA 113, UA 123, *	Tactical & UA* (Ragchew)

Wide Area  
Regional/Local

Geo Area



# Digital Mobile Radio (DMR) Programming

---

INTRODUCTION TO DMR PROGRAMMING

DON PRICE

KB5VP

# Getting started

---

Amateurs must register with the central DMR database to obtain a Subscriber ID.  
An amateur cannot operate a DMR radio without the Subscriber ID.

<http://www.dmr-marc.net/cgi-bin/trbo-database/register.cgi>

Each radio must be defined with a subscriber ID.

Amateurs normally will not register no more than two IDs.

- 1) Portable radio
- 2) Mobile radio

Encouraged to register up two subscriber ids per call sign only.

Radios with the same Subscriber ID – only one can be in use at the same time.



# Just a few pointers

---

Will introduce you to some simplified view of radio programming

- Once you learn the basics, you will find there are few others ways to program the radio.
- Everyone has few of your own personnel preference; here I am showing one simplified model to get started.

I will try to use both the language of DMR and the conventional amateur radio language at the same time. That way you can relate quicker to the new DMR terminology faster.

DMR programming is not hard. It at times is tedious but it is not hard.

# What is involved

---

Understanding all the resources available to program and what is needed to complete a program.

Radio Firmware – What is the role

- The control program of the radio – what you see on the display for options, menus, features
- The Vocoder that is used for the radio
- DMR radio stack for processing the TDMA packets
- Other Low level housekeeping tasks on the radio such as error recovery, data encoding, ...

Radio Code Plug – Configures the radio for your personal use

- Where personal preferences are defined making each radio unique
- Adding the repeaters, and talk groups to be accessed by the radio
- Programmer controls how information is displayed on the radio and in what order – Naming Conventions

Front Panel Programming (FPP)

- Only amateur radio operators are allowed to use FPP features – all others forbidden by FCC.
- When available on the radio all the features of the CSP are duplicated through Front Panel Programming features.

One radio will allow configuration as a diagnostic and testing tool

- CS750 can be programmed to monitor and display all data from the TDMA channel
- Great for technician diagnostic tool with trouble shooting the air interface.

# Basic structure of radio Code Plug

---

## Contacts

- Lists all person and group contacts

## Zones

- Is a group of talk groups (channels) on one repeater

## Scan list

- Is a list of talk groups (channels) which are scanned.

## Digital Channel

- A talk group which has been assigned to one repeater

## RX Group

- A group which contains a receive talk group. Group contains one talk group.

## TX Contact

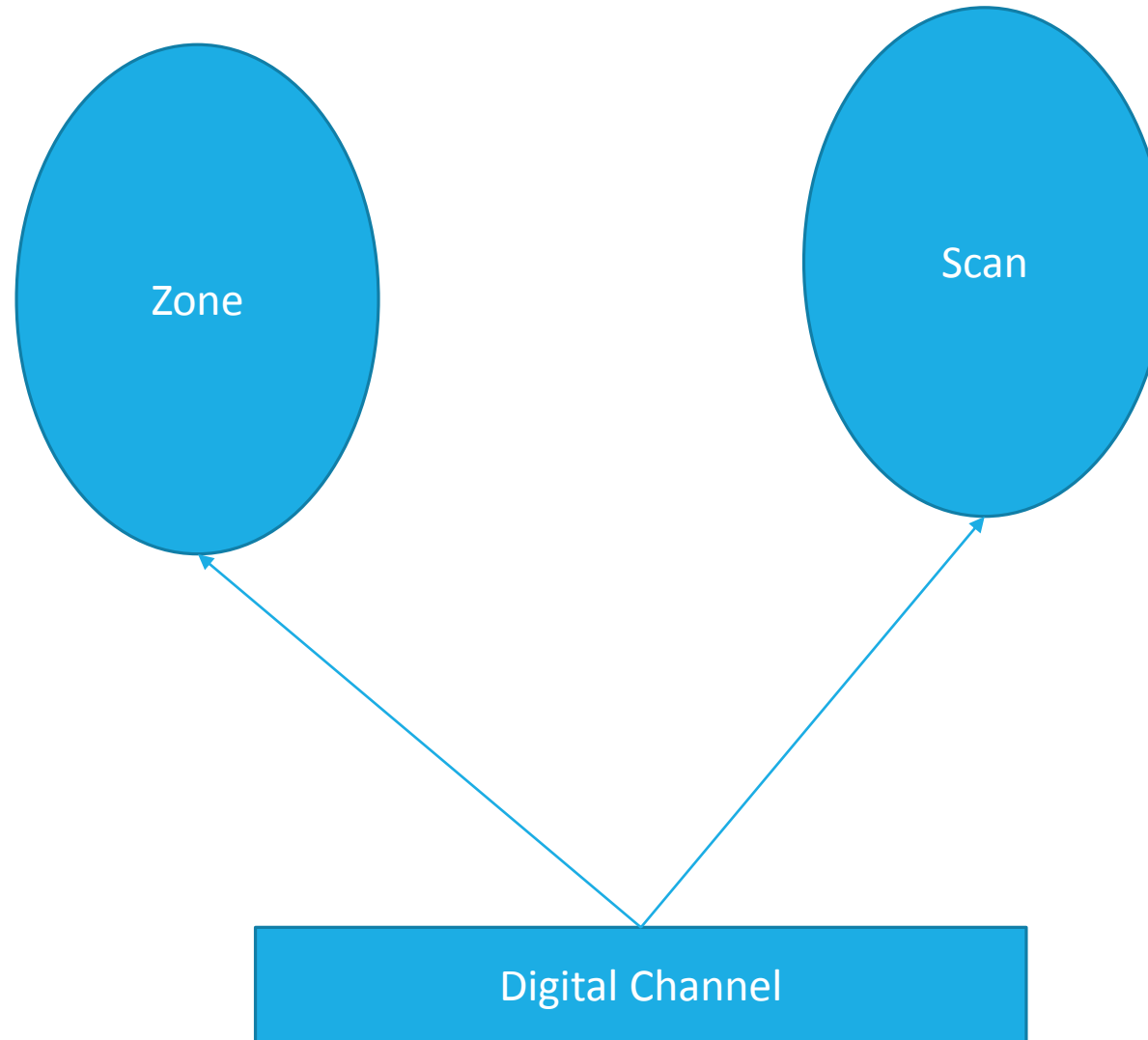
- A group defined in the contact list



## Zone

Groups Digital Channels for a purpose:

1. Repeater
2. TG Type
3. Simplex
4. Service (Events, EC, ...)
5. Region

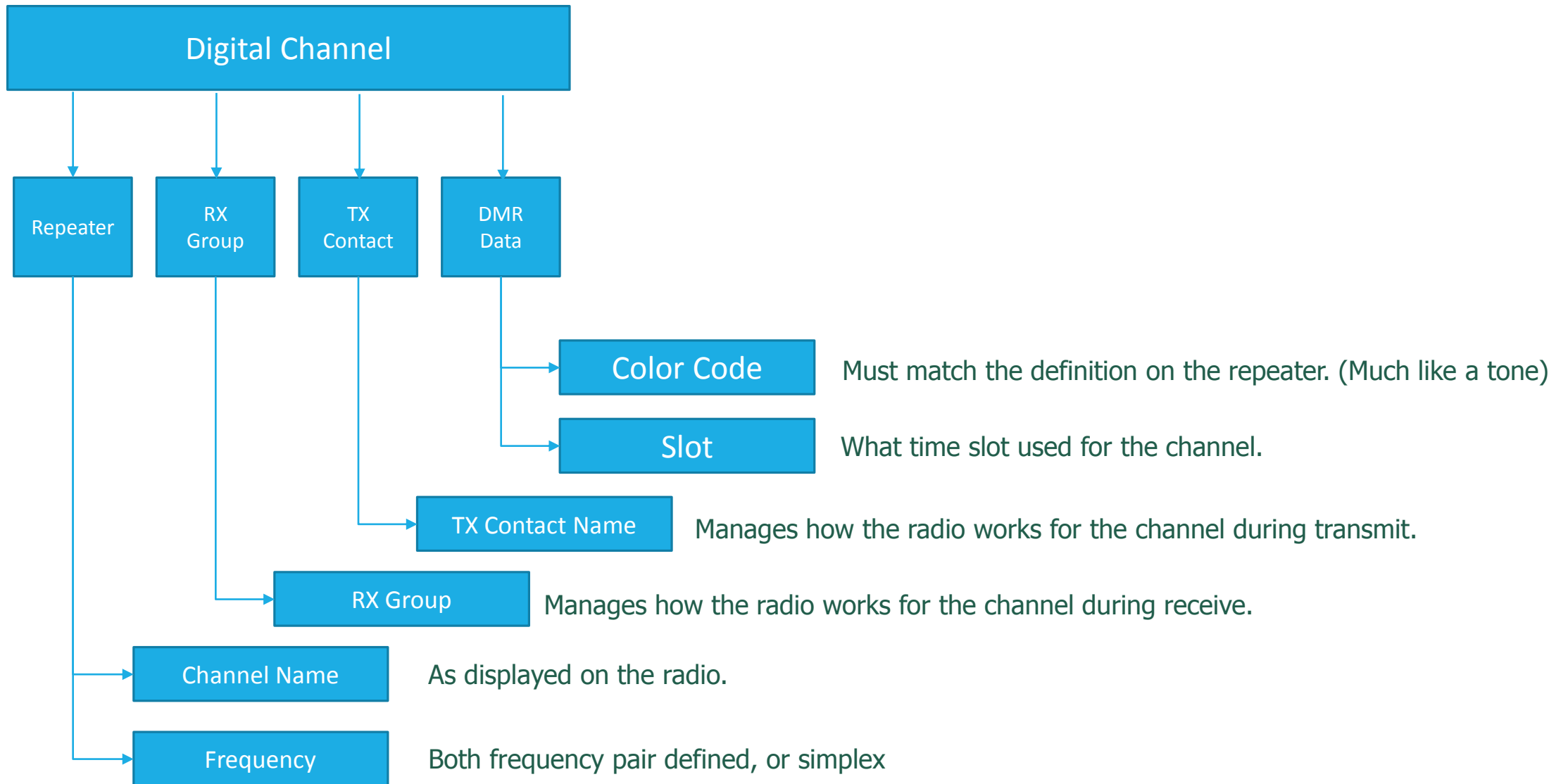


## Scan Group

Groups Digital Channels for scanning:

1. Repeater
2. TG Type
3. Simplex
4. Service (Events, EC, ...)
5. Region

All definitions are made on the radio. Nothing in the service or network required, or dependent.



RX Group

When monitoring is the name displayed on the radio



Contact

When channel active is the *as defined in the contact* is the name displayed on the radio

Contact

More than one channel can be defined in a single RX Group. *Group monitoring*

Contact

Example

W1UWX Reg North



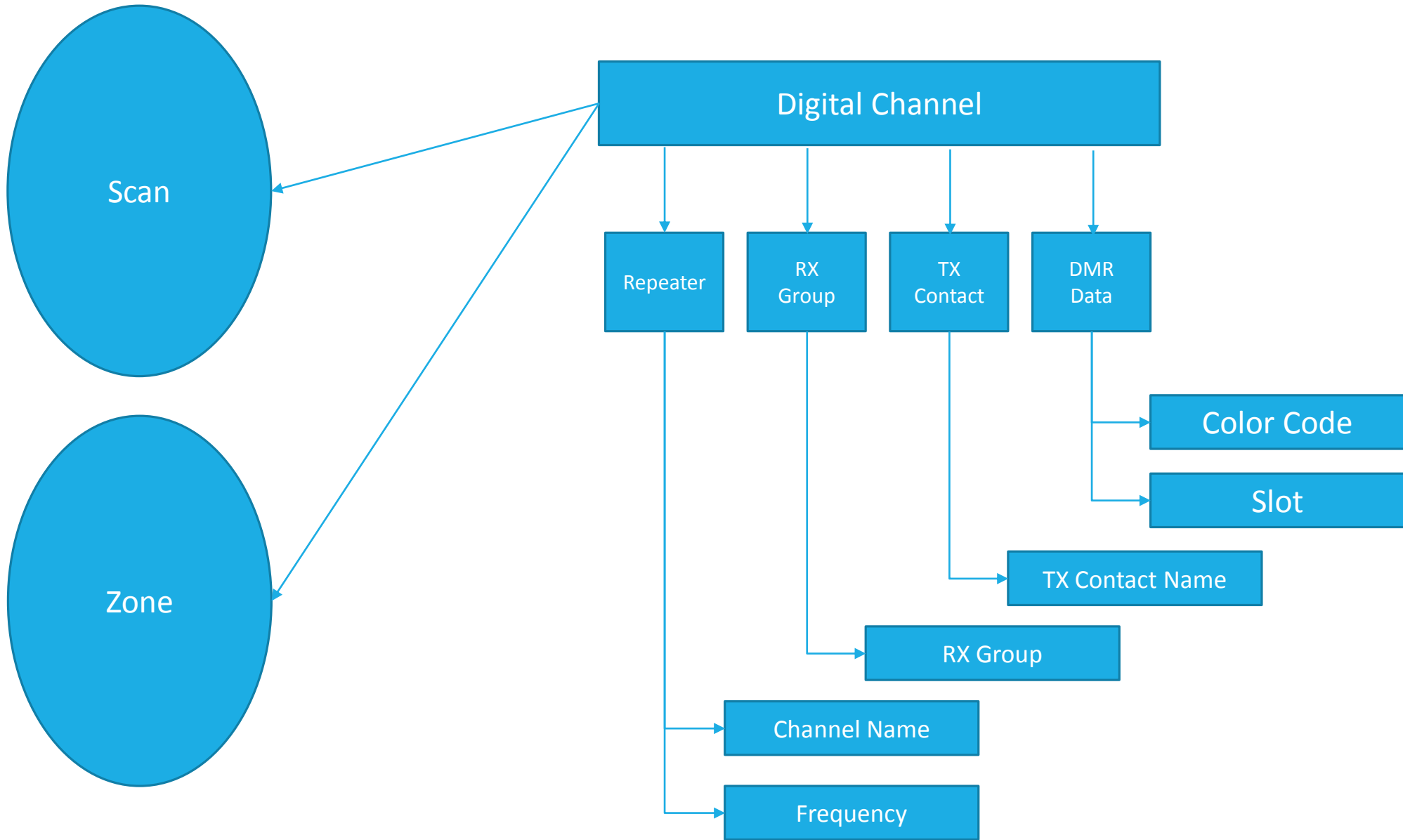
Region North

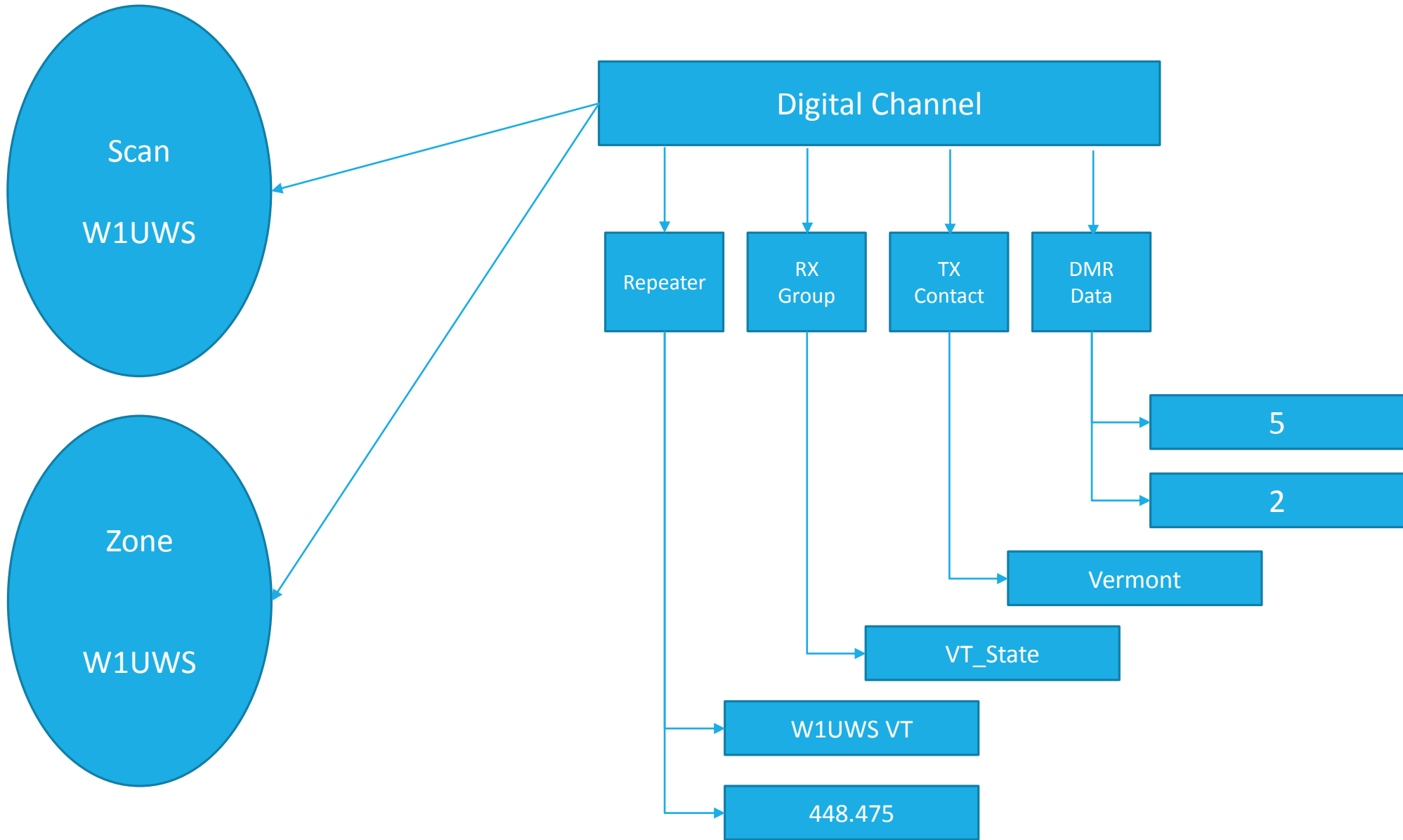
TX Contact Name

When transmitting is the name displayed on the radio. Defines the TX TG for the channel.

Example

MA, VT, NH, ME





# Notes

---

Scan group does not have to match Zone.

- Define one scan group for local channels, exclude WW, NA, TAC, or UA. ([Nuisance Channels](#))
- Combine different repeaters, or TG based on your operating preferences.

Channels can be defined in any number of Zones

- One zone that defines all channels on the repeater
- In a zone that groups all channels of the same purpose
- Merging more than one repeater into one zone with selected channels.
- Group same type of channels together from many repeaters. (Poor man's roaming)

Naming

- Match the names but use the display to be more descriptive ([Region North Example](#))
- Naming is a personal preference. As you learn more change to suit your personal operating style
- Conventions followed in CVFMA starter plugs are for beginners to DMR to aid in learning the new mode.

# CS800 / CS750

---

CONNECT SYSTEMS RADIOS



# Programming the Connect System Radio CS800 / CS750

---

One Customer Software Program (CSP) will program both radio models.

Download the software from the Connect Systems web site:

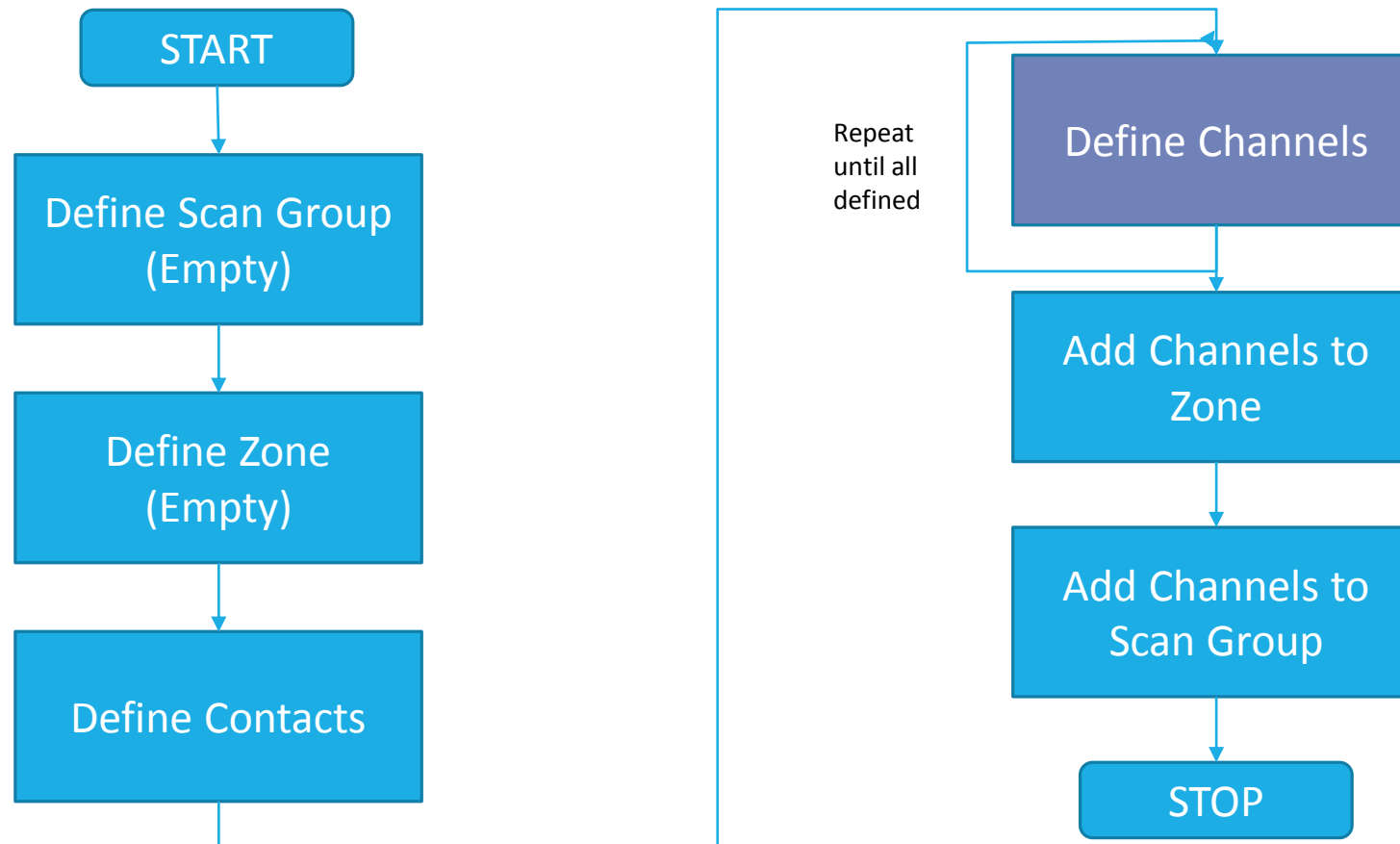
- <http://connectsystems.com/software/software%20CS800.htm>
- <http://connectsystems.com/software/software%20CS750.htm>

Use the version of software that matches the firmware version on your radio

- CS800: Firmware version **2.00.05**, Software version **4.00.13**
- CS750: Firmware version **1.01.07**, Software version **4.00.13**
- Refer to manufacture web site for earlier version of firmware/software combinations



# High-level programming flowchart



# CS 800 / CS 750 Programming

---

How to navigate around the Connect Systems - Customer Software Program

Let's talk about Naming conventions – how and why is stuff named this way?

Cover the Radio Settings

Cover the Menu Settings

Adding a new Talk Group in your contacts

Adding a new Scan group

Adding a new Zone / Repeater

Adding a new digital channel to a Zone

Adding a new analog channel to a Zone

Updating the pre-defined text messages

Updating the firmware

Adding all North American contacts

- <http://www.foxhollow.ca/DMR/Contacts/>

# Naming Conventions

---

Hopefully the first Code Plug you received was a starter plug

- For the CVFMA is the three repeaters in Vermont: W1UWS, WR1VT, W1IMD

All Zones and Channels have been named with the repeater or location call sign

All Zones have been named with a 3 or 4 character location name for the repeater

- ASC – Ascutney, Pico – Pico Peak, BRAT – Brattleboro

Each Channel is named for the repeater call sign and the Talk Group

- Most radio require some adjustment – display limitations

The Receive Group and Transmit Contact names are chosen to be more descriptive than the channel name of the Talk Group

- Channel name W1UWS VT, Transmit Contact name Vermont
- Channel name W1UWS Reg North, Transmit Contact name MA, VT, NH, ME

# Do's and some Don't

---

Never use encryption settings on a radio

- Forbidden by the FCC – Part 97

Never use GPS

- Unless the repeater is specifically configured to a data channel.

Never use Private Call

- Occupies a TS which blocks other hams use.

Never make a DMR emergency call

- No emergency systems are configured in this network

Never use Lone worker settings

# DM380

---

TYTERA



# Programming the Connect System Radio DM380

---

One Customer Software Program (CSP) will program both radio models.

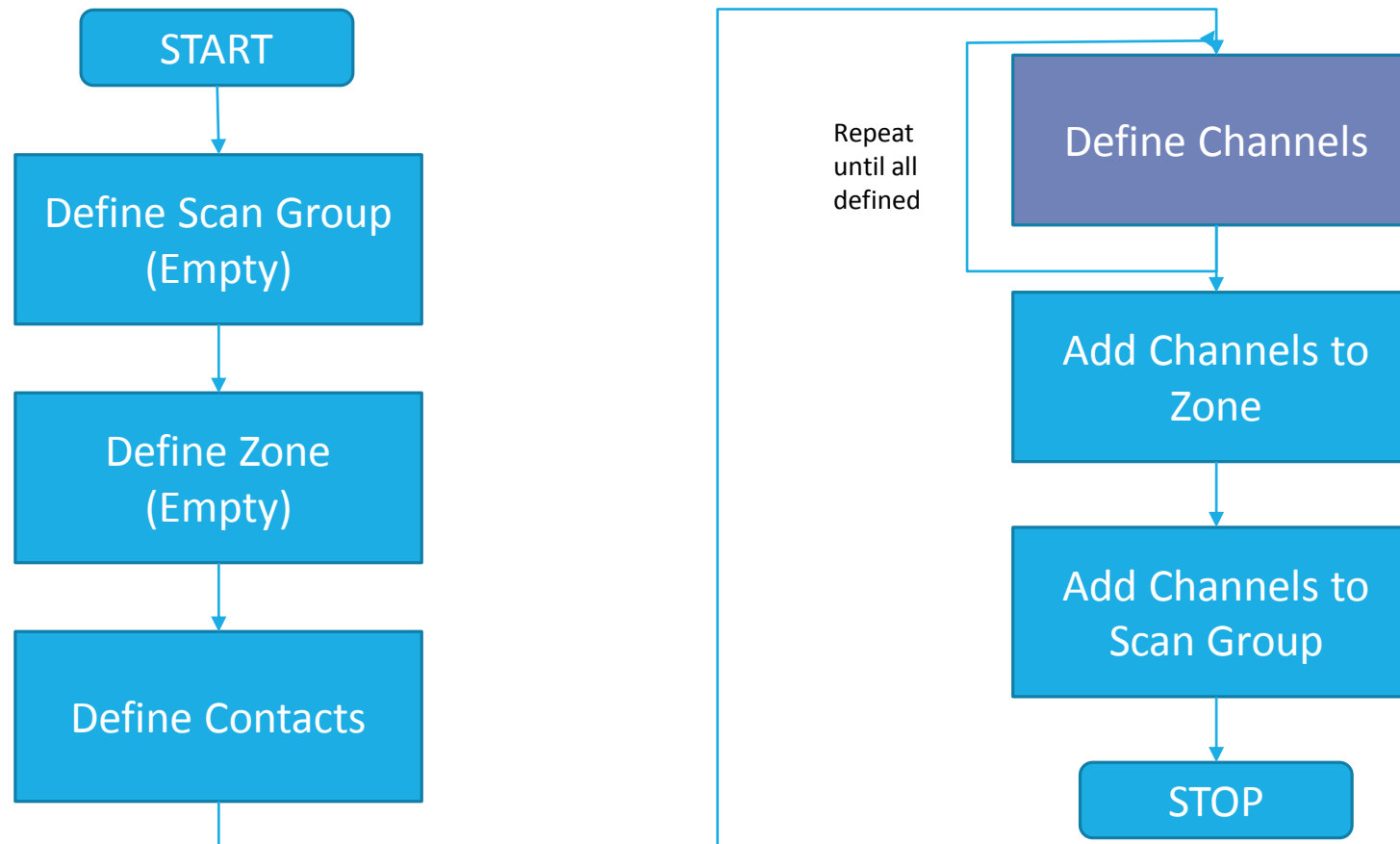
Download the software from the Connect Systems web site:

- <http://connectsystems.com/software/software%20CS800.htm>
- <http://connectsystems.com/software/software%20CS750.htm>

Use the version of software that matches the firmware version on your radio

- CS800: Firmware version **2.00.05**, Software version **4.00.13**
- CS750: Firmware version **1.01.07**, Software version **4.00.13**
- Refer to manufacture web site for earlier version of firmware/software combinations

# High-level programming flowchart



# DM 380 Programming

---

How to navigate around the Connect Systems - Customer Software Program

Let's talk about Naming conventions – how and why is stuff named this way?

Cover the Radio Settings

Cover the Menu Settings

Adding a new Talk Group in your contacts

Adding a new Scan group

Adding a new Zone / Repeater

Adding a new digital channel to a Zone

Adding a new analog channel to a Zone

Updating the pre-defined text messages

Updating the firmware

Adding all North American contacts

- <http://www.foxhollow.ca/DMR/Contacts/>



# Naming Conventions

---

Hopefully the first Code Plug you received was a starter plug

- For the CVFMA is the three repeaters in Vermont: W1UWS, WR1VT, W1IMD

All Zones and Channels have been named with the repeater call sign

All Zones have been named with a 3 or 4 character location name for the repeater

- ASC – Ascutney, Pico – Pico Peak, BRAT – Brattleboro

Each Channel is named for the repeater call sign and the Talk Group

- Most radio require some appreciation – display limitations

The Receive Group and Transmit Contact names are chosen to be more descriptive than the channel name of the Talk Group

- Channel name W1UWS VT, Transmit Contact name Vermont
- Channel name W1UWS Reg North, Transmit Contact name MA, VT, NH, ME

# Do's and some Don't

---

If you purchase radio from Connect Systems, use their firmware updates

- DO NOT USE MANUFACTURES FIRMWARE UPDATES – YOU WILL LOOSE AMATEUR RADIO FEATURES

Never use encryption settings on a radio

- Forbidden by the FCC – Part 97

Never use GPS

- Unless the repeater is specifically configured to a data channel.

Never use Private Call

- Occupies a TS which blocks fellow hams.

Never make a DMR emergency call

- No emergency systems are configured in this network

Never use Lone worker settings

# Importing contacts for DM380

---

Feature not in the DM380 standard DSP

- Must use NOGSG program
  - This program does work with the DM380 RDB directly. Make sure you backup before use
  - <http://n0gsg.no-ip.org/contact-manager/>

This program will import contacts directly from the DMR database online.

Can also be used to repair DM380 RDB which have been corrupted and won't open with standard CSP.

