Basecamp, O~pen~S~treet~M~aps~, Waypoints, & BMW Navigator VI

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Clifford Musante - Background

- Retired

- Technology Executive from Silicon Valley

- Rode Patagonia: 2013

- Rode across USA: 2016

- Riding across Europe, Asia: July 10, 2019 to Nov 7, 2019 (120 Days)

- 7 months of preparation

What problem will we learn to solve today

- The problem statement:

- How to manage massive amounts of data, efficiently, quickly, across 20 countries. Using this data to navigate the globe, using free maps, and free tools.

- Related Components: OSM maps, Basecamp, waypoints, POI's, Data, Backups

- Related S/W: Garmin Express, Basecamp, Windows Maps, Javawa GMTK, Javawa Device Manager, RTWTool, POI Loader

Data
(Organizing and preparing for use)

- Types of Data
  - Waypoints
  - POI
  - Lists, Folders
  - Routes
  - Tracks

- Organizing the data for
  - Deployment to GPS
  - Easy access
  - Less confusion
- Managing Data
  - Backups

Organizing Data in Basecamp (#1)

- Organizing Containers
- Collection
  - Folder
  - List
    - Tracks (Historical record of where you've been, automatically gen'd)
    - Waypoints (Represent Start point, end point, stops along the way)
    - Shaping points (Are waypoints, which don't show up)
    - Routes (File that contains waypoints, shaping points)

Organizing Data in Basecamp (#2)

- Organizing Principles within Basecamp
    - Ensure that it is easy to find routes, waypoints, etc
    - Ensure that the same point does not exist with similar names in different lists
    - Understand that subordinate lists can be seen from the hierarchy above
- Understanding Waypoints and POIs
    - Waypoints
        - Usually used as intermediate points within a route
        - Usually single, logical points, used to force the route, or designate a destination
        - Each waypoint is individually significant
    - Points of Interest
        - Each POI type is separately organized (Placed on a list that can be exported separately)
        - There can be hundreds or thousands of the same type of POI
        - POIs are managed in basecamp just like waypoints, but they must be exported as a GPX file to be significant or relevant
        - All POIs are built into a series of GPX files, and for each GPX file, there can be a audio file, and an Icon
        - Icons related to POI are separately sized and attributed from Waypoint icons, which are selected from the palate within Basecamp, or within the GPS
        - Points of Interest can have proximity sensor set, to play audio file when approaching POI

Organizing Data in Basecamp – Examples (#3)

- BMW Dealers (Folder)
  - Dealers (List)
- BDR (Folder)
  - AZ (List)
  - CO (List)
  - ID (List)
  - MA (List)
- States (Folder)
  - NC (Folder)
    - NC (List)
  - SC (Folder)
    - SC (List)
- Ride Log (Folder)
  - 2018 (List)
    - Ride Log 2019-0328
    - Ride Log 2019-0329
    - Ride Log 2019-0401

Numerous dealers
50 states
POI candidate

My places
Organized by BDR
Waypoint candidate

Places I ride/rode
Organized by state
Waypoint candidate

Places I ride/rode
Organized by state
Waypoint candidate

Organizing Data in Basecamp (#4)

- Object Naming
  - Use names that are descriptive, include differentiator (such as city name or date)
  - Good naming standards make it easier to find, organize objects
- Object Type
  - Waypoint
  - POI
  - Track
  - Route
- Object Icon
  - Use custom icons
- Object Location
  - In a list, in a folder, multiple lists
- Object Persistence
  - Is the same object included/visible in multiple lists?

Examine data in Basecamp

POI - BMW Dealers   Tracks – Ride Logs   POI – NC Breweries

POI – NC Breweries
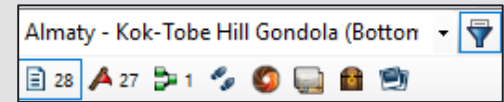Notice special Icon

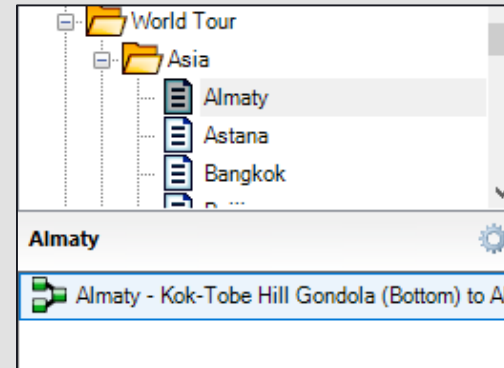# Examine data in Basecamp
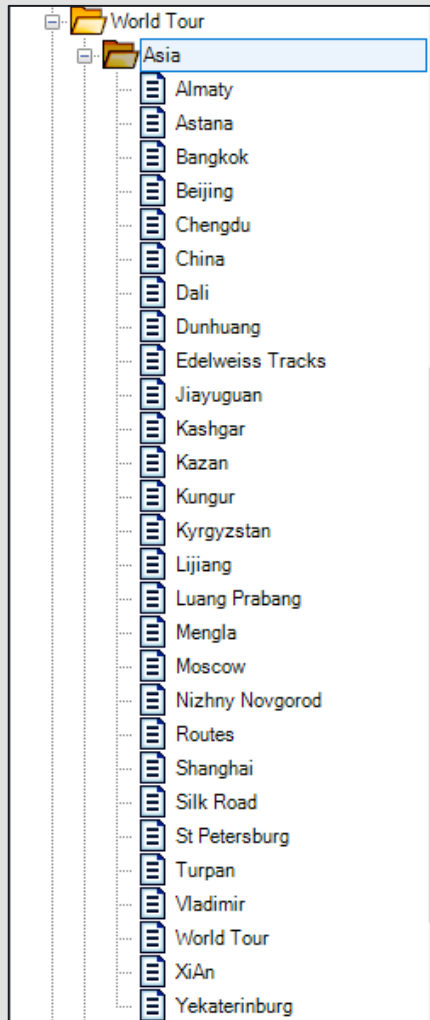
Asia – List of lists
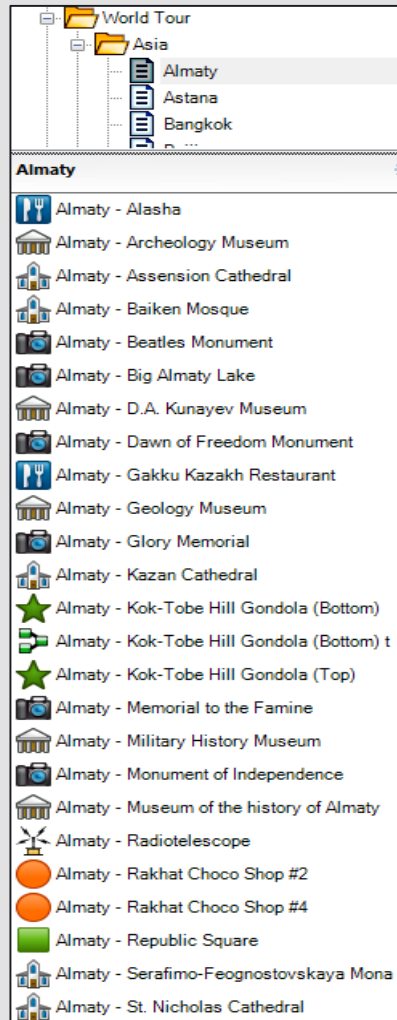
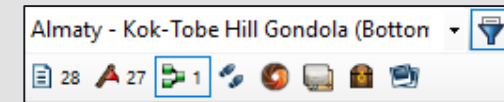Asia – Selecting list for Almaty (Sorted by name)

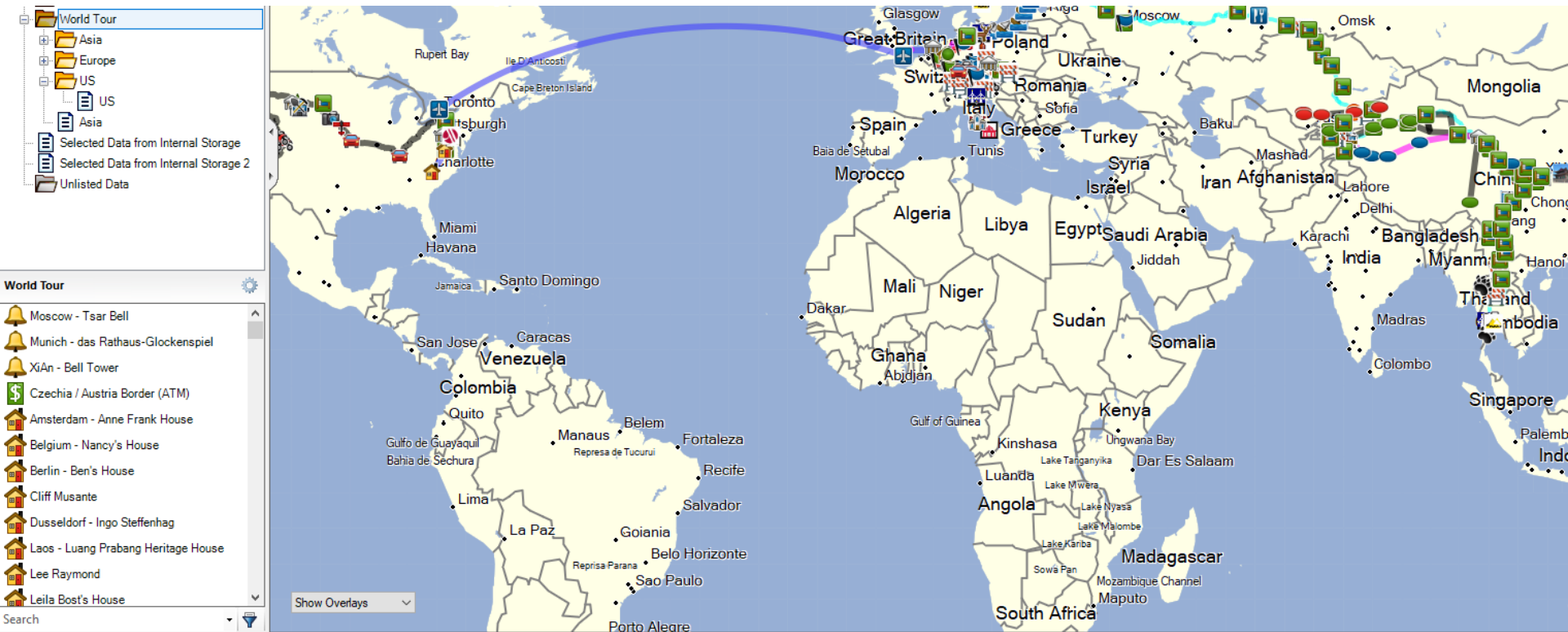Asia – Selecting list for Almaty (Sorted by type)

Use filters to select objects
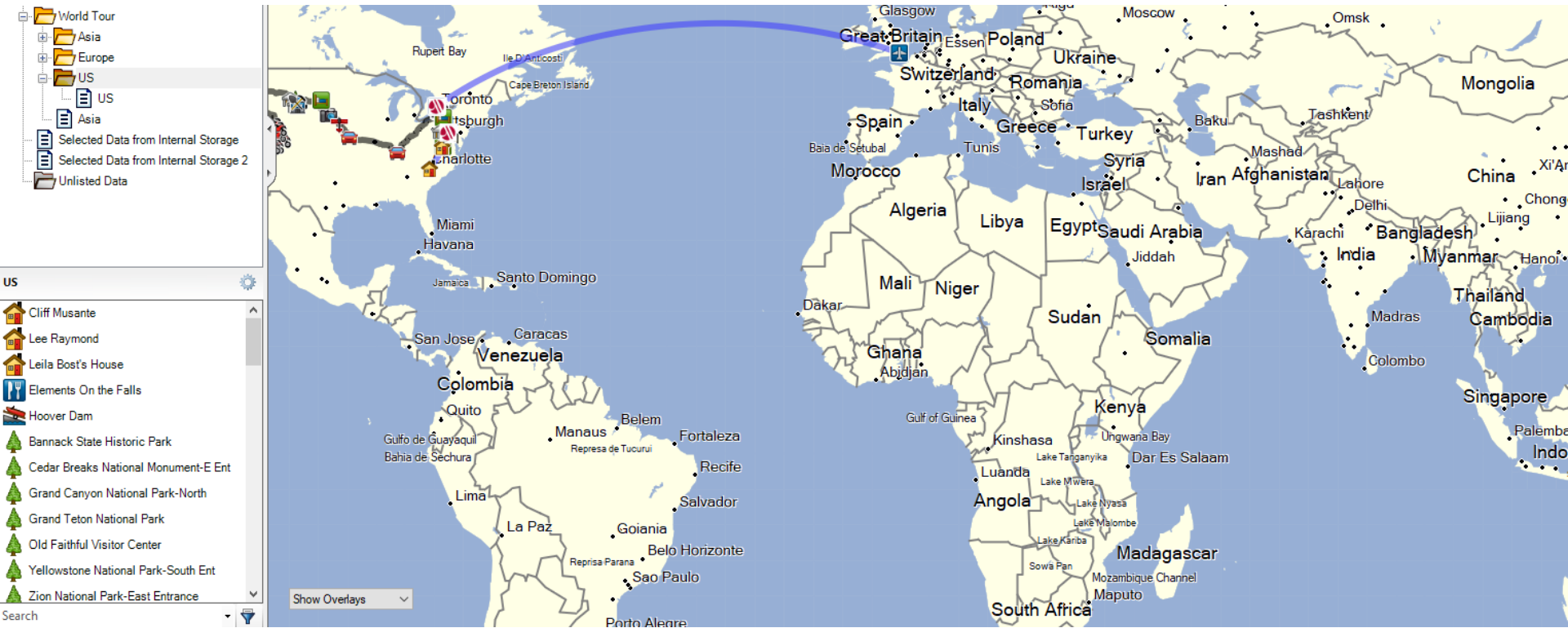
Filters used to select Routes

Top Level – World Tour

- Includes all points from US, Europe & Asia

2ⁿᵈ Level - US

- Includes all points in US and Departure/Arrival in UK

2nd Level - Europe

- Includes all points in Europe and Departure/Arrival in UK

2nd Level – Asia

- Includes all points in Asia

- No longer includes Departure/Arrival in UK

Points of Interest (Manage and deploy)

Deploying on GPS

- Directory Location:

- Files to be deployed: GPX file for all points

- File manipulation: GPX file, Audio File, Icon File must be combined into DB

- Audio File: Must have same name as POI file

- Icon: Must be HH x WW x CC, must have same name as other files
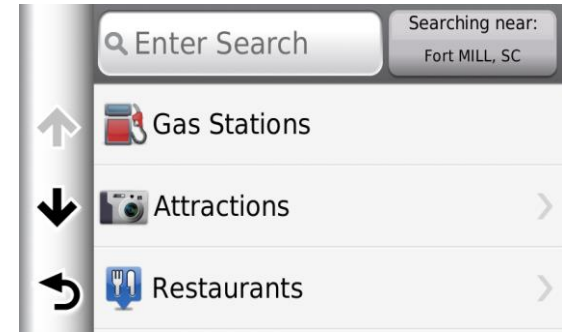
- Deployment Tool: SW Tool Name
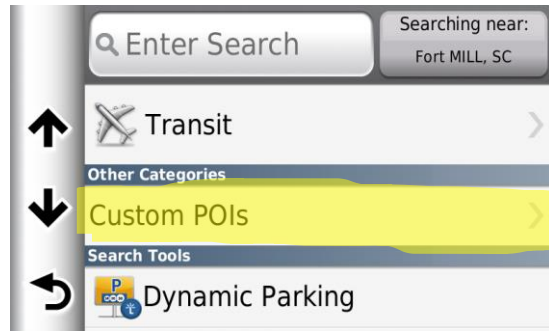
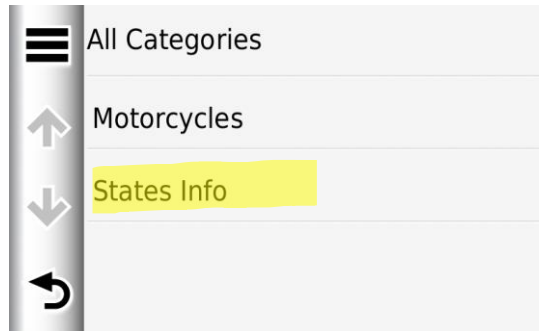# Points of Interest (Look and Feel on the GPS)
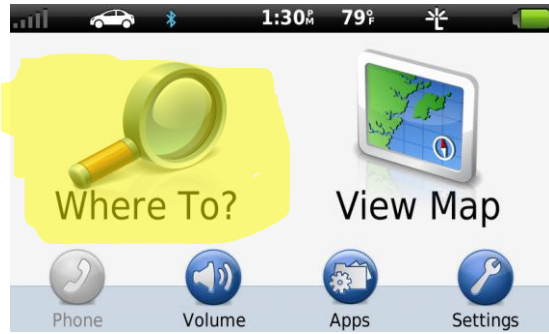
(1)

(2)

(3)

(4)

(5)

(6)

Data Management

- Managing Data
  - Backups

Backing up data from basecamp

- Backup of all data
- How to do it
  - Basecamp: [File] -> [Backup] <Enter>
- Where to put it
  - On a storage drive that cannot be corrupted, and is not on same PC as primary

Backing up to local/network drive

Name	Date modified	Type	Size
.recycle	1/31/2016 2:35 PM	File folder	
Backup	11/13/2018 2:19 PM	File folder	
Download	5/18/2019 8:33 AM	File folder	
My Audio	5/21/2018 3:35 PM	File folder	
My Documents	3/25/2019 9:50 AM	File folder	
My Games	3/4/2014 5:07 PM	File folder	
My Icons	11/15/2018 4:00 PM	File folder	
My Pictures	6/5/2019 4:25 PM	File folder	
My PST	6/6/2019 1:45 PM	File folder	
My Video	10/10/2018 1:53 PM	File folder	
Outlook Files	3/16/2019 11:57 AM	File folder	

Name	Date modified	Type	Size
BaseCamp 2018-09-30.Backup	9/30/2018 2:23 PM	BACKUP File	30,5
BaseCamp 2018-10-30.Backup	10/30/2018 10:18 ...	BACKUP File	30,7
BaseCamp 2018-11-24.Backup	11/24/2018 2:01 PM	BACKUP File	31,5
BaseCamp 2018-12-28.Backup	12/28/2018 10:30 ...	BACKUP File	31,5
BaseCamp 2019-03-08.Backup	3/8/2019 12:58 PM	BACKUP File	31,5
BaseCamp 2019-03-27.Backup	3/27/2019 11:21 AM	BACKUP File	31,8
BaseCamp 2019-04-21.Backup	4/21/2019 6:11 PM	BACKUP File	32,5
BaseCamp 2019-05-07.Backup	5/7/2019 7:06 AM	BACKUP File	32,7
BaseCamp 2019-05-08.Backup	5/8/2019 9:34 AM	BACKUP File	32,7
BaseCamp 2019-05-13.Backup	5/13/2019 6:30 AM	BACKUP File	32,7
BaseCamp 2019-05-23.Backup	5/23/2019 9:05 AM	BACKUP File	32,1
BaseCamp 2019-05-28.Backup	5/28/2019 2:29 PM	BACKUP File	32,3
BaseCamp 2019-05-29.Backup	5/29/2019 6:13 PM	BACKUP File	32,4

ne: BaseCamp 2019-06-06.Backup
pe: Backup Files (*.Backup)

- Use consistent backup location
- Allow Basecamp to set/create filename
- Notice that date is embedded into filename
- Take frequent backups, delete unused/unwanted backups periodically

Backing up data from GPS device

- Backup of all data
- How to do it
  - Open Basecamp
  - Attach GPS device to PC
  - GPS objects will appear on LH side of Basecamp
    - No folders in hierarchy of GPS
  - Drag & Drop data (Routes, tracks, Waypoints) to a Basecamp Folder
  - Backup Basecamp according to previous procedure
- Where to put it
  - The objects created on the GPS (Tracks, and perhaps waypoints and routes) get "backed up" to Basecamp Collection, Folder, List
- Cleaning up the GPS
  - Open the GPS and remove "old data"

Maps
(Load and manage maps in Basecamp)

- Understanding Maps

  – What are they

  – Where to get them

- Understanding file types

  – .EXE (For Basecamp)

  – .IMG (For GPS)

- Accessing and viewing maps

- Setting metadata for maps

Understanding Maps

- Maps can be purchased from Garmin, or downloaded from OpenStreetMaps
- A single "Map", must include file for PC/Basecamp, IMG file for GPS
- Basecamp can include numerous maps, which you can enable/disable
- A GPS device can include several maps at any given time
  - These maps can be enabled, or disabled to adjust "load time" of the GPS (or size limits)
  - Maps need to be deployed
    - To Basecamp
    - To the GPS device
    - Failure to deploy the "same map" to both devices causes confusion
- Maps downloaded from OpenStreetMaps
  - These maps might cause a conflict when installed
  - There are two methods to create/download a map
    - Preset/Preselected areas (Product ID is set correctly, IMG file = gmapsupp.img)
    - Manually selected areas (Product ID is 2000, IMG file = gmapsupp.img)

Looking at maps in Basecamp

Garmin.openstreetmap.nl (Map of Russia, Size 1996K)
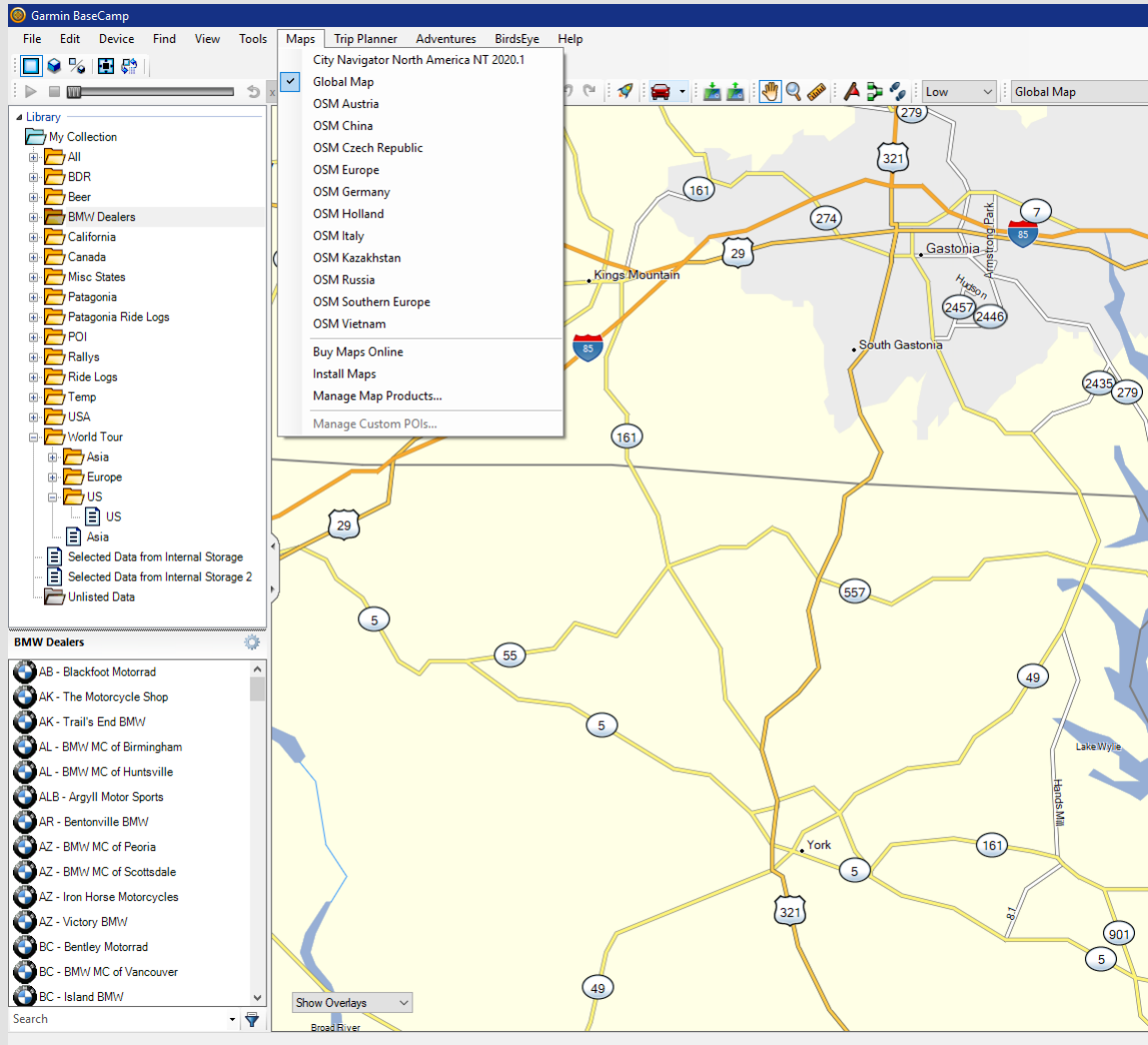
Garmin.openstreetmap.nl (Map of Russia, Size 2362K)

Free maps for Garmin brand GPS devices

from OpenStreetMap

Site menu

Home
About
Forum
F.A.Q.
Manual
Screenshots

Other Garmin maps

OpenStreetMap
OpenFietsMap

Paypal:

Donate

Bitcoin:

Bitcoin Cash:

Tools for mapmakers

Boundaries
Sea polygons

Choose your map type:
- ○ Generic Routable
- ◉ Generic Routable (new style)
- ○ Routable Bicycle (Openfietsmap Lite)
- ○ Generic Nautical (non-routable)
- ○ Transparent overlay with elevation contours
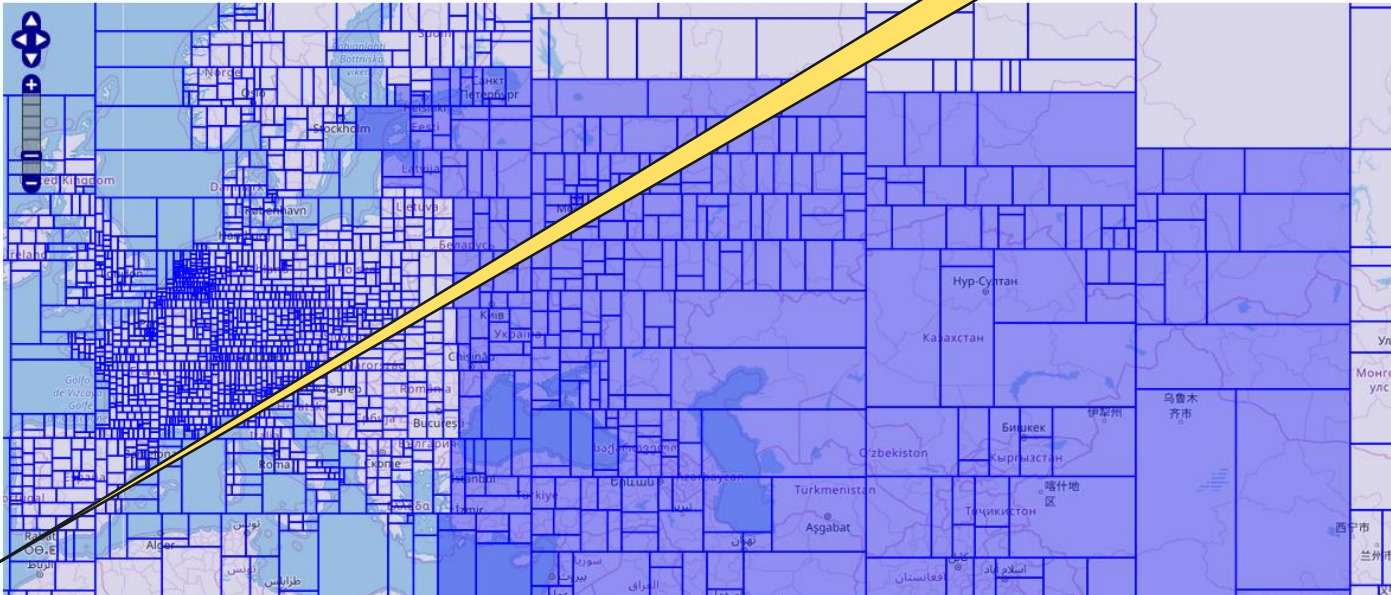
Choose a predefined country:

| Africa | Asia | Europe | North America | Oceania | South America |

Perhaps you'd like to add some additional tiles?
Enable manual tile selection: ☑, then use the map below to add and remove tiles to the selection. Reset Selection

Request your map or download it directly:
Email address: enter email address   Build my map

Notice the file size is **larger than 2GB**

Selected tiles: 2362 MB

25

Garmin.openstreetmap.nl (Rules)

- Filesize must be less than 2000 Mb (2 GB)

- Map must be a pre-defined country, or a manually selected set of tiles

- Be sure to select Generic-Routable-New-Style

  – Provides best overlays

  – Greatest level of detail based on zoom level

Installing Maps into Basecamp

All custom maps from OSM come with a generic family ID of 2000, all others have unique family ID values
You cannot install multiple maps into Basecamp with the same family ID, so you must alter the Family ID.
The maps are installed to
C:\Garmin\maps\OSM XXXX\
Map settings (As installed on my computer)

Name on Computer	Name on Device	Folder Name	Family ID
OSM Southern Europe	OSM Southern Europe	OSM Southern Europe	2000
OSM Russia	OSM Russia	OSM Russia	2010
OSM China	OSM China	OSM China	2020
OSM Kazakhstan	OSM Kazakhstan	OSM Kazakhstan	2030
OSM Vietnam	OSM Vietnam	OSM Vietnam	2040
OSM Europe	OSM Europe	OSM Europe	2050
OSM Holland	OSM Holland	OSM Holland	2060
OSM Czech Republic	OSM Czech Republic	OSM Czech Republic	2070
OSM Germany	OSM Germany	OSM Germany	23276
OSM Austria	OSM Austria	OSM Austria	24040
OSM Italy	OSM Italy	OSM Italy	24380

Name on Computer	Name on Device	Folder Name	Family ID
OSM Germany	germany	OSM generic routable new(DEU)	24276
OSM Russia	russia	OSM generic routable new(DEU)	24643
OSM Italy	italy	OSM generic routable new(DEU)	24380
OSM Great Britain	greatbritain	OSM generic routable new(DEU)	24826
OSM China	china	OSM generic routable new(DEU)	24156
OSM Austria	austria	OSM generic routable new(DEU)	24040
OSM Czech Republic	czech	OSM generic routable new(DEU)	24203
OSM Netherlands	netherland	OSM generic routable new(DEU)	24528
OSM Canada (Ontario)	canada	OSM generic routable new(DEU)	24989

Viewing all maps and their metadata

Notice that most maps are color-coded orange
(Showing an error that map segments are included in multiple maps)

Looking at Points of Interest in Basecamp
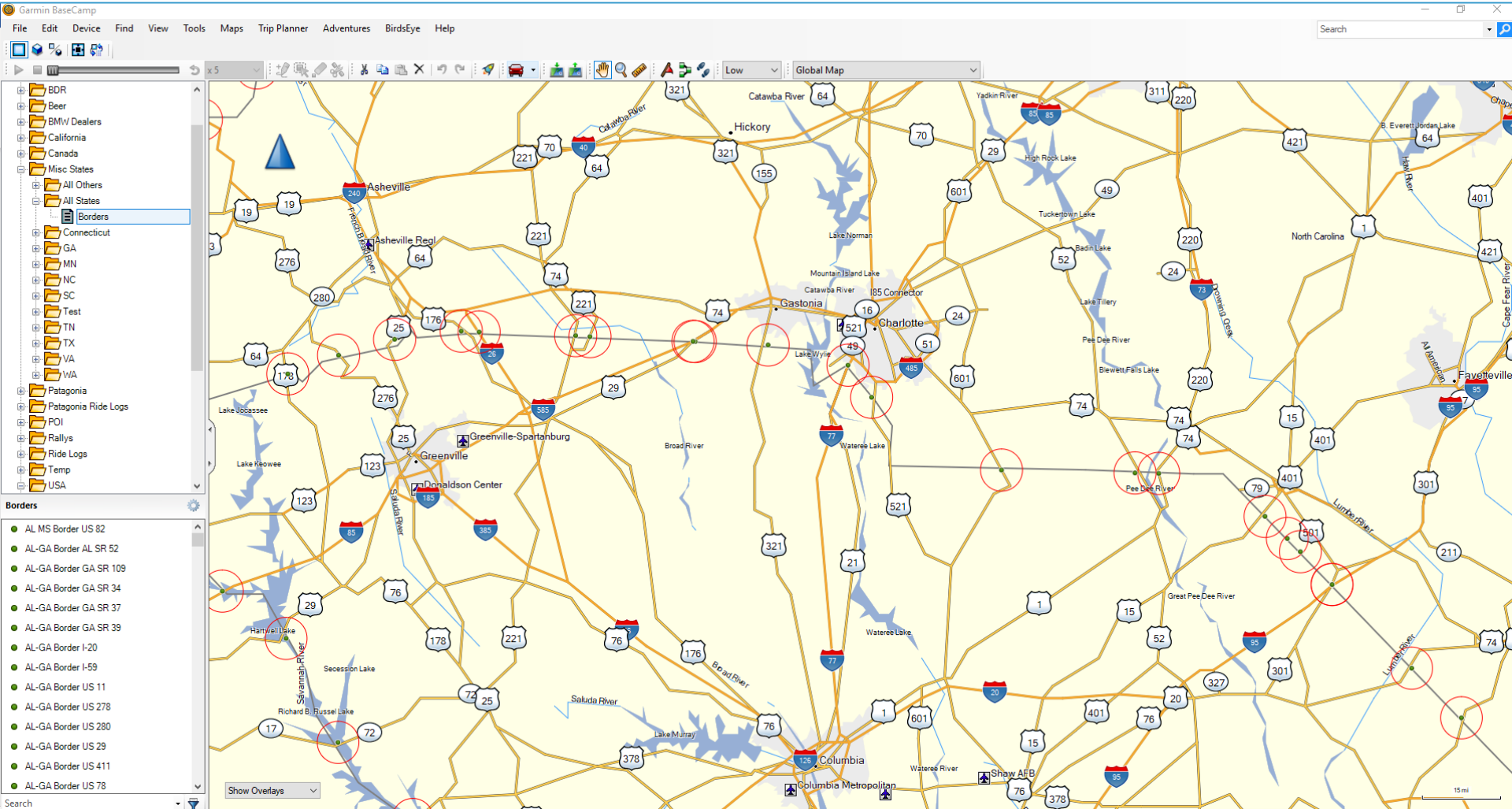
- Notice how all of the borders between states are encircled? (Proximity is set)

What did we observe

- State border crossings are PointsOfInterest

- Each POI is easily visible

- Every State Line POI is saved in a single list/folder

- Each POI has

  - Proximity set at 3.0 mi

  - The Same ICON

  - An audible alert at the perimeter

Tools and Metadata
(Garmin toolset is limited)
(Free tools are available)

- Why are tools needed

- Where and how to get tools

- Understanding the tools

  – Javawa GMTK

  – RTW Tool

  – Javawa Device Manager

  – POI Loader

Map name (before and after)
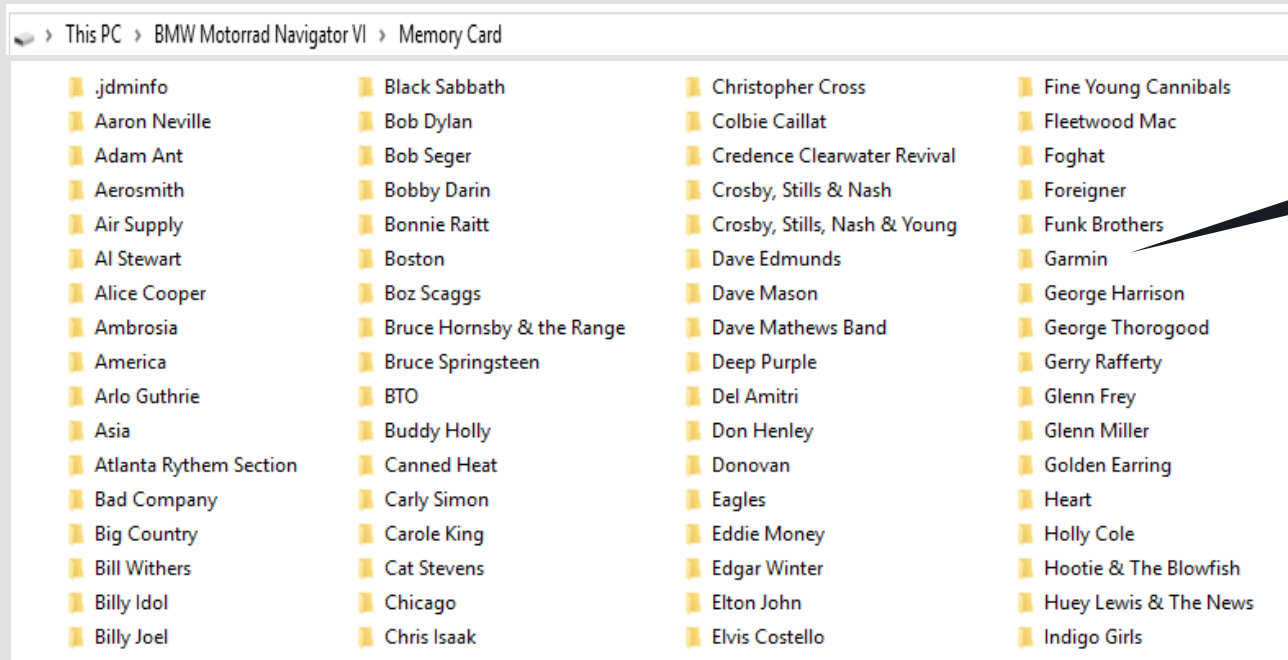# (Set filename, map name, map set name)

Maps and the GPS
(Loading and unloading)
(Set the metadata first)

- Loading maps onto GPS

- File type and File size

- Map Descriptions

  – Dependent on metadata

Installing maps into GPS

- Filenames:

- Directory Location: \Memory Card\Garmin\filename.img (kazakstan.img, vietnam.img, etc)

- Set all names for .IMG files to friendly names, using JAVAWA Device Manager

GPS File/Folder structure (Overview)

This PC > BMW Motorrad Navigator VI > Memory Card

|			
.jdminfo	Black Sabbath	Christopher Cross	Fine Young Cannibals
Aaron Neville	Bob Dylan	Colbie Caillat	Fleetwood Mac
Adam Ant	Bob Seger	Credence Clearwater Revival	Foghat
Aerosmith	Bobby Darin	Crosby, Stills & Nash	Foreigner
Air Supply	Bonnie Raitt	Crosby, Stills, Nash & Young	Funk Brothers
Al Stewart	Boston	Dave Edmunds	Garmin
Alice Cooper	Boz Scaggs	Dave Mason	George Harrison
Ambrosia	Bruce Hornsby & the Range	Dave Mathews Band	George Thorogood
America	Bruce Springsteen	Deep Purple	Gerry Rafferty
Arlo Guthrie	BTO	Del Amitri	Glenn Frey
Asia	Buddy Holly	Don Henley	Glenn Miller
Atlanta Rythem Section	Canned Heat	Donovan	Golden Earring
Bad Company	Carly Simon	Eagles	Heart
Big Country	Carole King	Eddie Money	Holly Cole
Bill Withers	Cat Stevens	Edgar Winter	Hootie & The Blowfish
Billy Idol	Chicago	Elton John	Huey Lewis & The News
Billy Joel	Chris Isaak	Elvis Costello	Indigo Girls

Garmin folder contains music/maps

- Place music, maps, custom symbols as shown
  - Music folders contain MP3, MP4, Other
  - Garmin folder includes maps, in .IMG format (with metadata set)
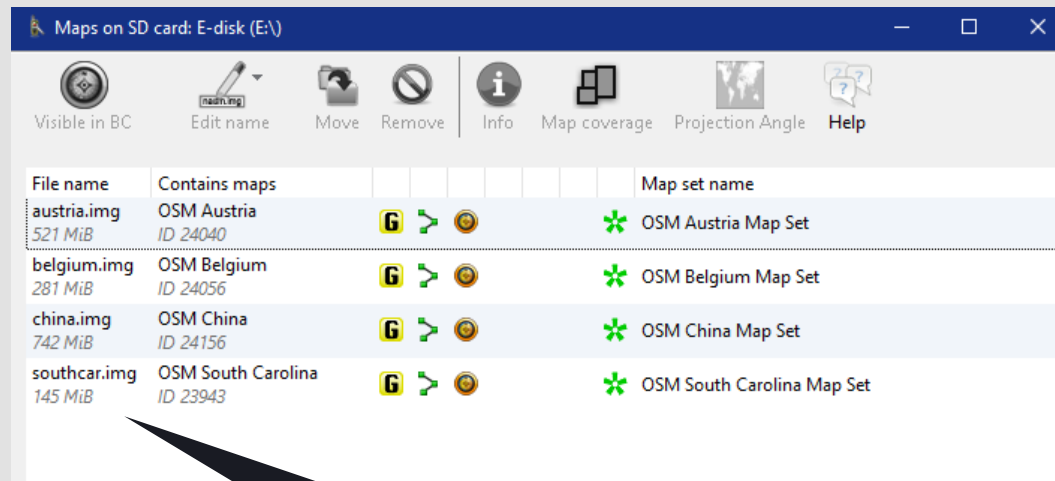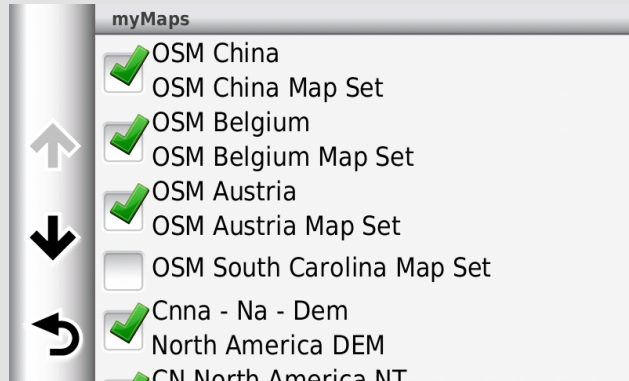
GPS File/Folder structure (Detailed view)
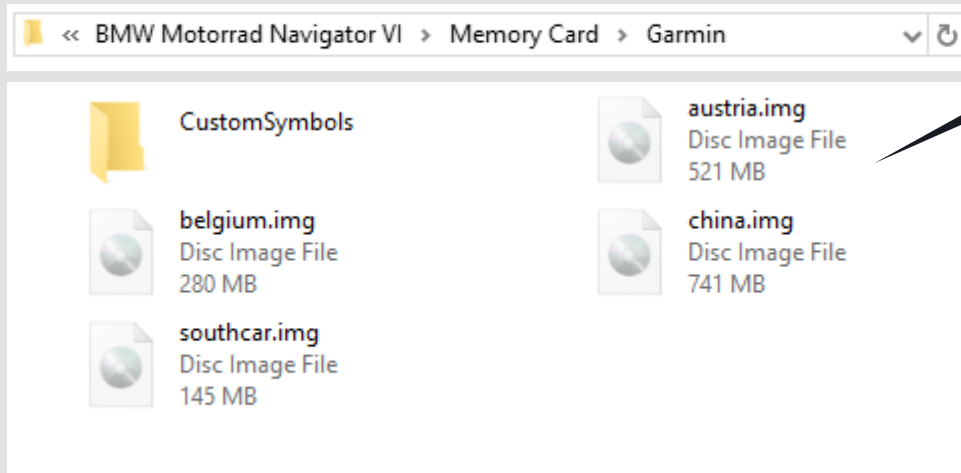
All maps are .IMG format
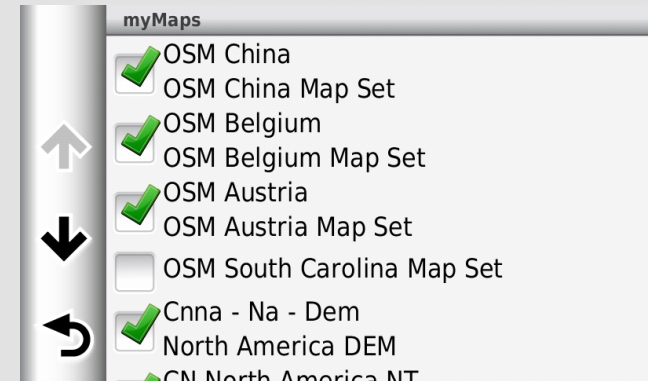
- Maps located in Garmin directory appear as available
  - Notice name of map, and mapset name
- Alternate naming for mapset 1) OSM Custom Map Set   2) OSM China Map Set

IMG files: What metadata needs to be set

Using Javawa Device Manager, we can see the metadata for all of the installed maps.

- Maps have been copied/moved to SD Card, which mounts as E:
  - Device Manager examines SD Card, locates maps, allows metadata manipulation
  - Metadata has been set, maps renamed

Appendix

- Download this presentation

- Find my Blog

- Questions?

S/W Downloads & Tools

Javawa GMTK

- **Download** at: http://www.javawa.nl/gmtk_en.html
- **Purpose**: Is used to manipulate the properties for a windows deployed map.

RTWTool (Routes, Tracks, Waypoints)

- **Download** at: http://www.javawa.nl/rtwtool_en.html
- **Purpose**: Used to convert tracks to routes intelligently, or any to any conversions

Javawa Device Manager

- **Download** at: http://www.javawa.nl/jdm_en.html
- **Purpose**: Allows you to manipulate the Image map files that get deployed on the GPS. These files will need to have their attributes changed, so that they are easy to distinguish from one another.

POI Loader (Provided by Garmin)

- **Download** at: https://www8.garmin.com/support/download_details.jsp?id=927
- **Purpose**: To convert and publish a GPX file that contains POIs, as a POI DB, which also includes audio and icon information