

**netBravo**



# netBravo Server Aggregated Data Format

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The data coming from crowd sourcing could become very large and releasing it through the EU Open Data Portal (ODP - <https://open-data.europa.eu/>) could become a challenge for the system administrator. Also the reader of the end user data could take a long time to download the necessary volume. That is why we snap the raw data to a space and time grid according to Grid\_ETRS89-GRS80z1\_1S, Grid\_ETRS89-GRS80z2\_1S and Grid\_ETRS89-GRS80z3\_1S<sup>1</sup>. As a starting point, we will use ground level, resolution level 13 (1 arc second of latitude) in the horizontal space and one week for the time grid system.

To avoid divulging private information details from the raw data, we anonymize (hashing) the instance ID of the data (which is the unique identifier of an application instance and could be used to find or even forge the identity of users uploading data), the SSID of the wireless hotspots (the name of the network) and the names of cellular and network operators.

We release aggregated data only where we have at least 3 different measuring contributors at the same location in the same time period, so we do not inadvertently publish individual movements or geographical locations.

We release the yearly and weekly maximum, minimum, mean and standard deviation value of crowded measured data on the European Open data Portal.

We limit ourselves to the following continental European limits (45600 x 51600):

- S-N  $34^{\circ} \leq \text{degree} \leq 72^{\circ}$
- E-W  $-32^{\circ} \leq \text{degree} \leq 11^{\circ}$

<sup>1</sup> INSPIRE.D2.8.1.2 Data specification on Geographical Grid Systems – Technical Guidelines.  
[http://inspire.jrc.ec.europa.eu/documents/Data\\_Specifications/INSPIRE\\_DataSpecification\\_GG\\_v3.1.pdf](http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_GG_v3.1.pdf)

We publish a in the following format:

**[Exported weekly Entity]**

Field name	Field type	Description	Example
Year	Int	Year of the aggregated weekly data	2015
Week	Int	Week number of the aggregated data (1 to 53 and 00 for yearly average)	38
measurements	array of [ExportMeasure Entity]	Records containing averaged data for location (l,j)	

**[ExportMeasure Entity]**

Field name	Field type	Description	Example
location	[Location Entity]	Space index of the aggregated data (l, j)	33,456
gsmdata	array of [Gsmdata Entity]	GSM data averaged	
wifidata	array of [Wifidata Entity]	Wifi data averaged	
broaddata	array of [Broaddata Entity]	Broadband data averaged	
protodata	array of [Protodata Entity]	Net Neutrality data averaged	

**[Location Entity]**

Field name	Field type	Description	Example
I	Int	Grid Index for Latitude in 1 sec arc	3456
J	Int	Grid Index for Longitude in 1 sec arc	56788

**[Gsmdata Entity]**

<b>Field name</b>	<b>Field type</b>	<b>Description</b>	<b>Example</b>
gsmdataoper	integer	GSM Operator number (anonymous)	456
gsmtech	integer	GSM Technology number (see lookup)	12
gsmdatameas	Array of [Gsmdatameas Entity]	GSM average measurements during averaging period (one week) at i,j for gsmdataoper GSM operator	

**[Gsmdatameas Entity]**

<b>Field name</b>	<b>Field type</b>	<b>Description</b>	<b>Example</b>
gsm-measures	integer	Number of measuring GSM Records during averaging period (one week) at I,j for gsmdataoper operator	3450
gsm-lvl-min	integer	Minimum signal level (one week) dbm	-103
gsm-lvl-max	integer	Maximum signal level (one week) dbm	-103
gsm-lvl-mean	integer	Average signal level (one week) dbm	-103
gsm-lvl-stddev	integer	Standard Deviation signal level (one week)	0.3

**[Wifidata Entity]**

Field name	Field type	Description	Example
wifidatafreq	integer	Wifi frequency for 2.4GHz & 5 GHz in MHz of center frequency of channel in KHz	2412 or 5180
wifidatameas	Array of [Wifidatameas Entity]	Wifi average measurements during averaging period (one week) at I,j at wifidatafreq central frequency	

**[Wifidatameas Entity]**

Field name	Field type	Description	Example
wifi-measures	integer	Number of measuring Wifi Records during averaging period (one week) at I,j at wifidatafreq frequency	444444
wifi-open-min	Int	Minimum number of Open WIFI measurements during averaging period (one week) at I,j at wifidatafreq frequency	3
wifi-open-max	Int	Maximum number of Open WIFI measurements during averaging period (one week) at I,j at wifidatafreq frequency	348
wifi-open-mean	Int	Average number of Open WIFI measurements during averaging period (one week) at I,j at wifidatafreq frequency	34
wifi-open-stddev	Real	Standard Deviation of number of Open WIFI measurements during averaging period (one week) at I,j at wifidatafreq frequency	0.3
wifi-closed-min	Int	Minimum number of Closed WIFI measurements during averaging period (one week) at I,j at wifidatafreq frequency	34
wifi-closed-max	Int	Maximum number of Closed WIFI measurements during averaging period (one week) at I,j at wifidatafreq frequency	34666
wifi-closed-mean	Int	Average number of Closed WIFI measurements during averaging period (one week) at I,j at wifidatafreq frequency	346
wifi-closed-stddev	Real	Standard Deviation of number of Closed WIFI measurements during averaging period (one week) at I,j at wifidatafreq frequency	0.3

**[Broaddata Entity]**

Field name	Field type	Description	Example
broaddataoper	integer	Broadband Operator number (anonymous)	456
broaddatameas	Array of [Broaddatameas Entity]	Broadband average measurements during averaging period (one week) at I,j for broaddataoper Broadband operator	

**[Broaddatameas Entity]**

Field name	Field type	Description	Example
broad-measures	integer	Number of measuring Broadband Records during averaging period (one week) at I,j for broaddataoper Broadband operator	3450
broad-ping-min	integer	Minimum ping time (one week) dbm	12
broad-ping-max	integer	Maximum ping time (one week) dbm	10333
broad-ping-mean	integer	Average ping time (one week) dbm	120
broad-ping-stddev	integer	Standard Deviation ping time (one week)	0.3
broad-upload-min	integer	Minimum upload Kb/s (one week) dbm	1200
broad-upload-max	integer	Maximum upload Kb/s (one week) dbm	10333
broad-upload-mean	integer	Average upload Kb/s (one week) dbm	6000
broad-upload-stddev	integer	Standard Deviation upload Kb/s (one week)	0.3
broad-download-min	integer	Minimum download Kb/s (one week) dbm	1200
broad-download-max	integer	Maximum download Kb/s (one week) dbm	10333
broad-download- mean	integer	Average download Kb/s (one week) dbm	6000
broad-download- stddev	integer	Standard download upload Kb/s (one week)	0.3

**[Protodata Entity]**

<b>Field name</b>	<b>Field type</b>	<b>Description</b>	<b>Example</b>
protodataoper	integer	Broadband Operator number (anonymous)	456
protodatameas	Array of [Protodatameas Entity]	Protocol Neutrality Test average measurements during averaging period (one week) at I,j for protodataoper Broadband operator	

**[Protodatameas Entity]**

<b>Field name</b>	<b>Field type</b>	<b>Description</b>	<b>Example</b>
proto-measures	integer	Number of measuring Protocol Neutrality Test during averaging period (one week) at I,j for protodataoper Broadband operator	3450
proto-id	integer	Network Protocol Type tested(Lookup table)	12
proto-true	integer	Number of successful tests	10333
proto-false	Integer	Number of unsuccessful tests	33



## NETWORK PROTOCOL LOOKUP TABLE

1	ICMP	
2	SIP	
3	FTP	
4	POP	
5	SMTP	
6	IMAP	
7	DNS	
8	IPP	
9	HTTP	
10	MDNS	
11	NTP	
12	NETBIOS	
13	NFS	
14	SSDP	
15	BGP	
16	SNMP	
17	XDMCP	
18	SMB	
19	SYSLOG	
20	DHCP	
21	PostgreSQL	
22	MySQL	
23	TDS	
24	DirectDownloadLink	
25	I23V5	
26	AppleJuice	
27	DirectConnect	
28	Socrates	
29	WinMX	
30	VMware	
31	PANDO	
32	Filetopia	
33	iMESH	
34	Kontiki	
35	OpenFT	
36	Kazaa/Fasttrack	

37	Gnutella	
38	eDonkey	
39	Bittorrent	
40	OFF	
41	AVI	
42	Flash	
43	OGG	
44	MPEG	
45	QuickTime	
46	RealMedia	
47	Windowsmedia	
48	MMS	
49	XBOX	
50	QQ	
51	MOVE	
52	RTSP	
53	Feidian	
54	Icecast	
55	PPLive	
56	PPStream	
57	Zattoo	
58	SHOUTCast	
59	SopCast	
60	TVAnts	
61	TVUplayer	
62	VeohTV	
63	QQLive	
64	Thunder/Webthunder	
65	Soulseek	
66	GaduGadu	
67	IRC	
68	Popo	
69	Jabber	
70	MSN	
71	Oscar	
72	Yahoo	
73	Battlefield	
74	Quake	

75	VRRP	
76	Steam	
77	HalfLife2	
78	World of Warcraft	
79	Telnet	
80	STUN	
81	IPSEC	
82	GRE	
83	IGMP	
84	EGP	
85	SCTP	
86	OSPF	
87	IP in IP	
88	RTP	
89	RDP	
90	VNC	
91	PCAnywhere	
92	SSL	
93	SSH	
94	USENET	
95	MGCP	
96	IAX	
97	TFTP	
98	AFP	
99	StealthNet	
100	Aimini	
101	Truphone	
102	ICMPv6	
103	DHCPv6	
104	Armagetron	
105	CrossFire	
106	Dofus	
107	Fiesta	
108	Florensia	
109	Guildwars	
110	HTTP Application Activesync	
111	Kerberos	
112	LDAP	

113	MapleStory	
114	msSQL	
115	PPTP	
116	WARCRAFT3	
117	World of Kung Fu	
118	MEEBO	
119	FaceBook	
120	Twitter	
121	DropBox	
122	Gmail	
123	Google Maps	
124	YouTube	
125	Skype	
126	Google	
127	DCE RPC	
128	NetFlow_IPFIX	
129	sFlow	
130	HTTP Connect (SSL over HTTP)	
131	HTTP Proxy	
132	Netflix	
133	Citrix	
134	CitrixOnline/GotoMeeting	
135	Apple (iMessage, FaceTime...)	
136	Webex	
137	WhatsApp	
138	Apple iCloud	
139	Viber	
140	Apple iTunes	
141	Radius	
142	WindowsUpdate	
143	TeamViewer	
144	Tuenti	
145	LotusNotes	
146	SAP	
147	GTP	
148	UPnP	
149	LLMNR	

150	RemoteScan	
151	Spotify	
152	H323	
153	OpenVPN	
154	NOE	
155	CiscoVPN	
156	TeamSpeak	
157	Tor	
158	CiscoSkinny	
159	RTCP	
160	RSYNC	
161	Oracle	
162	Corba	
163	UbuntuONE	
164	CNN	
165	Wikipedia	
166	Whois-DAS	
167	Collectd	
168	Redis	
169	ZeroMQ	
170	Megaco	

<b>NETWORK_TYPE_ENUMERATOR description</b>				
<b>Value</b>	<b>Code</b>	<b>Description</b>	<b>Technology</b>	<b>Type of cells</b>
1	NETWORK_TYPE_GPRS	Current network is GPRS	2G (2.5G)	GSM
2	NETWORK_TYPE_EDGE	Current network is EDGE	2G (2.75G)	GSM
3	NETWORK_TYPE_UMTS	Current network is UMTS	3G	GSM
4	NETWORK_TYPE_CDMA	Current network is CDMA: Either IS95A or IS95B	3G	CDMA
5	NETWORK_TYPE_EVDO_0	Current network is EVDO revision 0	3G	CDMA
6	NETWORK_TYPE_EVDO_A	Current network is EVDO revision A	3G (3.75G)	CDMA
7	NETWORK_TYPE_1xRTT	Current network is 1xRTT	2G (2.5G)	CDMA

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8	NETWORK_TYPE_HSDPA	Current network is HSDPA	3G	
9	NETWORK_TYPE_HSUPA	Current network is HSUPA	3G	
10	NETWORK_TYPE_HSPA	Current network is HSPA	3G (3.5G)	
11	NETWORK_TYPE_IDEN	Current network is iDen	2G	GSM
12	NETWORK_TYPE_EVDO_B	Current network is EVDO revision B	3G (3.5G)	CDMA
13	NETWORK_TYPE_LTE	Current network is LTE	4G	LTE
14	NETWORK_TYPE_EHRPD	Current network is eHRPD	3G	
15	NETWORK_TYPE_HSPAP	Current network is HSPA+	3G	
0	NETWORK_TYPE_UNKNOWN	Network type is unknown		