

- White Paper
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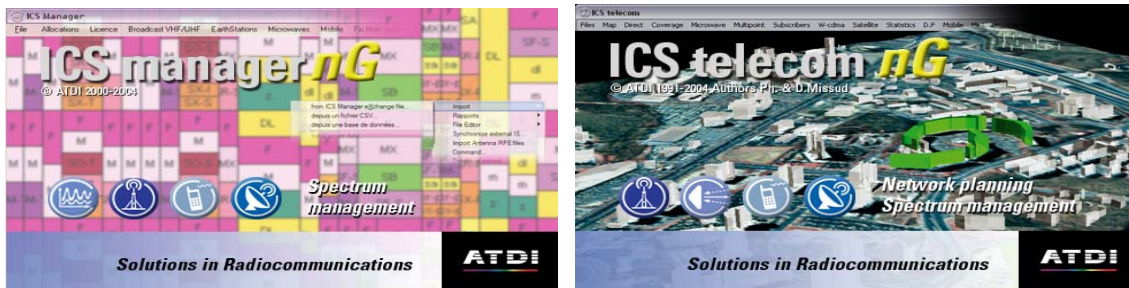
RRC06 procedures
with ICS manager
and ICS telecom
(Appendix 4 of the
final acts)

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Introduction

ICS manager and ICS telecom integrate planning process for Terrestrial digital radiocommunication services (T-DAB and DVB-T) according to specifications approved in Geneva during RRC06 meeting.



More particularly, ATDI's tools make it possible to follow the procedures defined in the Section I and the Section II of the Appendix 4 of the final acts.

- The Section I define the limits and methodology for determining when agreement with another administration is required when an administration proposes to modify the Plan or to coordinate an assignment to a station in another primary terrestrial service.
- The Section II describes the method to be used for the examination of conformity of the conversion of a digital Plan entry comprising an allotment or an allotment with linked assignments to one or more assignments.

ATDI's tools allows thus:

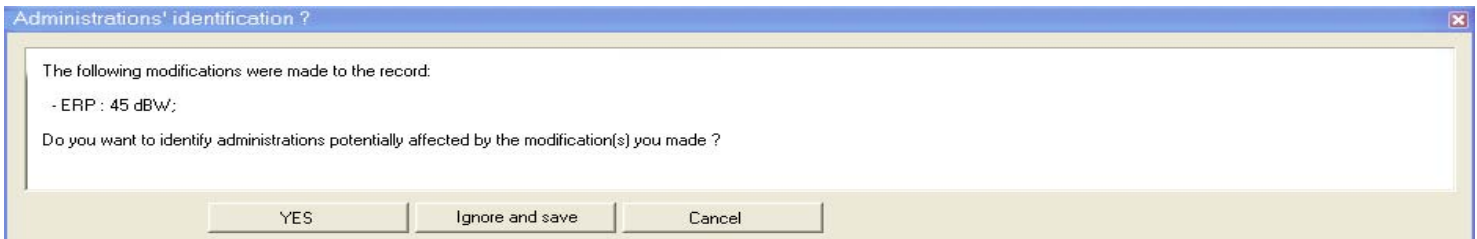
- To identify potentially affected administrations (Section I), and;
- To carry out the examination of conformity with the digital Plan entry (Section II).

Here is a quick description of how these processes are integrated in ATDI's tools.



Identification of the potentially affected administrations

The procedure of identification is automatically performed by ICS Manager and is activated as soon as the user confirms that the modifications that he wants to bring to the record require an identification of administrations potentially affected.



As soon as the procedure is accepted, the five following stages are carried out automatically in ICS Manager:

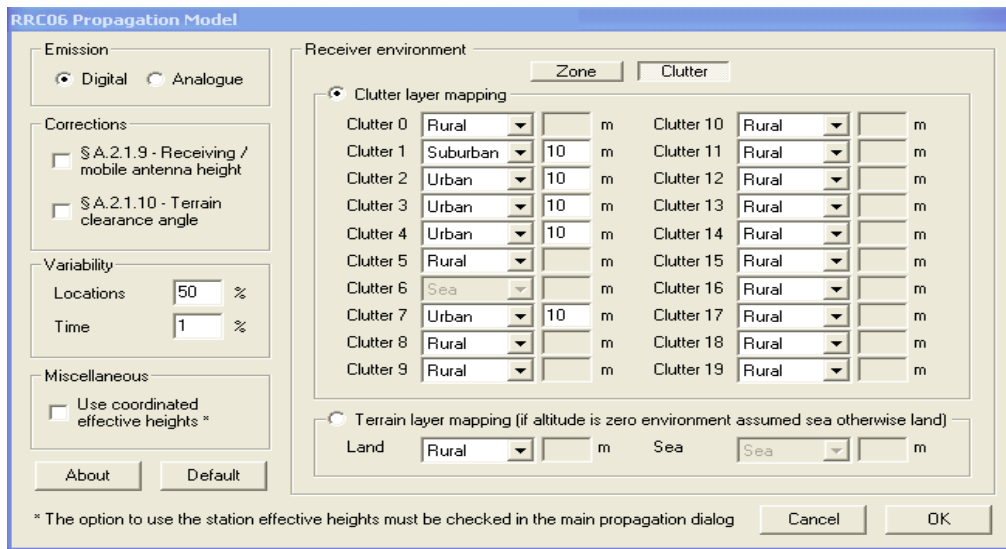
- **Step 1 – Establishment of the 1 000 km contour**
In this step, ICS Manager creates a 1 000 km contour that the user can display.



- **Step 2 – Selection of administrations whose broadcasting service is potentially affected**
In this step, ICS Manager generates a coordination contour by calculating with a one degree step in azimuth around the coordinating broadcasting station the distance at which the trigger field strength is reached.

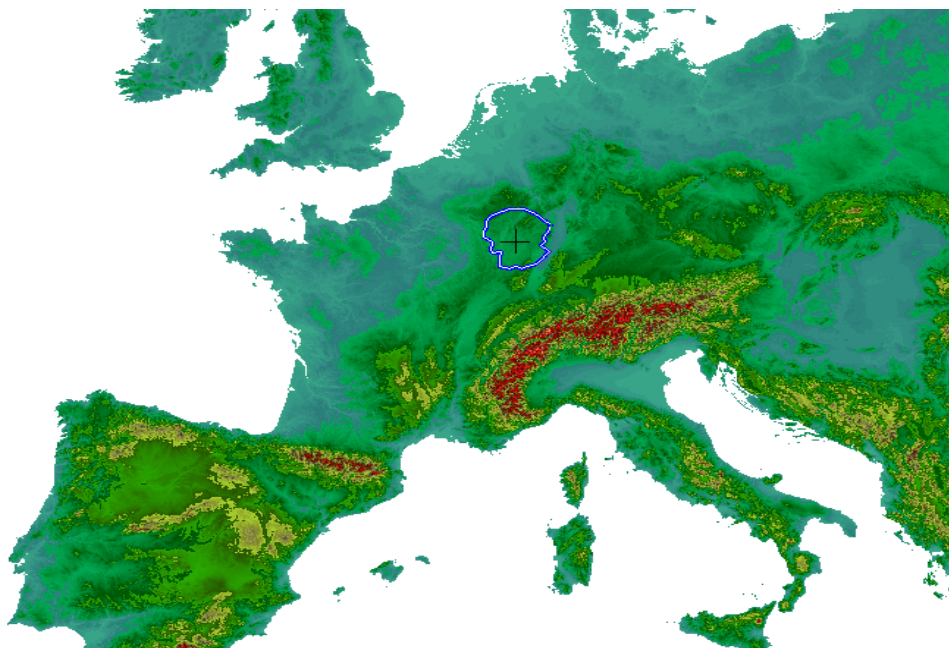
This calculation is based on:

- The propagation model described in Chapter 2 of Annex 2 to the Final Acts;



- A Digital Terrain model ;
- A receiving antenna height of 10 m ;
- A trigger coordination value corresponding to the broadcasting service to be protected specified in Table AP1.1 of the Appendix 1 to Section 1 ;
- A reference point according the coordination scenario;
- The characteristics of the signal sources that are notified in the Plan.

The user can display the coordination contour that has been created:

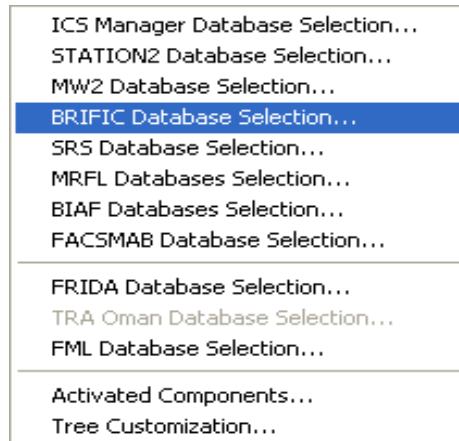




- **Step 3 – Selection of assignments of other services located in the 1 000 km contour**

In this step ICS Manager makes it possible to select assignments of other services that could be affected by the changes.

To carry out this selection the BRIFIC database containing other primary terrestrial services must be imported in ICS Manager.

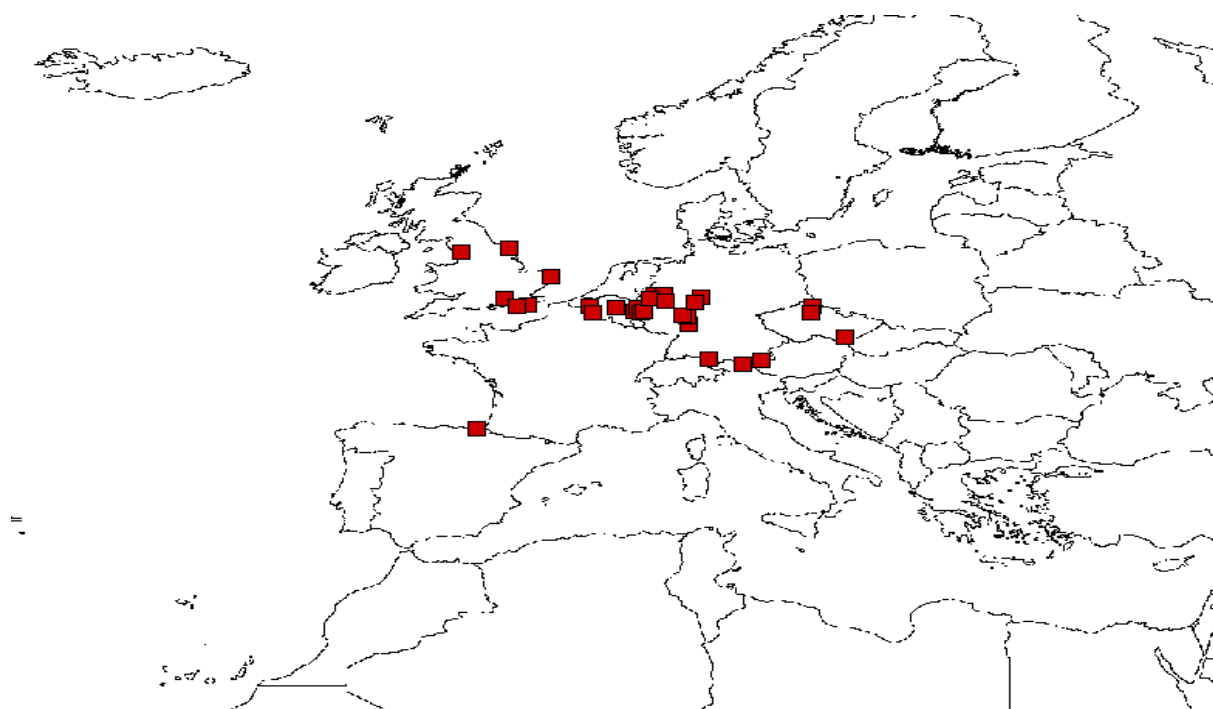


Based on this database ICS Manager reads the coordinates of every station and checks if they are located within the 1000 km contour.

Finally ICS Manager generates a file containing the name of the assignments which are located within the 1 000 km contour, as well as, their service, their administration and the trigger coordination value, and the receiving antenna height associated to the service.

System to be protected	System type code	Frequency range	Name	Administration	X	Y	Trigger field strength (dBµV/m)	Height of Rx antenna (m)
Analog private mobile radio	NV	Bande III	FLOBECQ	BEL	3.41 55	50.4 548	30	20
Analog private mobile radio	NV	Bande III	MALMEDY	BEL	5.59 15	50.2 436	30	20
Analog private mobile radio	NV	Bande III	EIFEL BAERBELKRE UZ	D	6.27 36	50.2 525	30	20
Analog private mobile radio	NV	Bande III	KREHBERG	D	8.43 54	49.4 105	30	20
Analog private mobile radio	NV	Bande III	LANCASTER	G	- 2.46 523	54.0 52	30	20

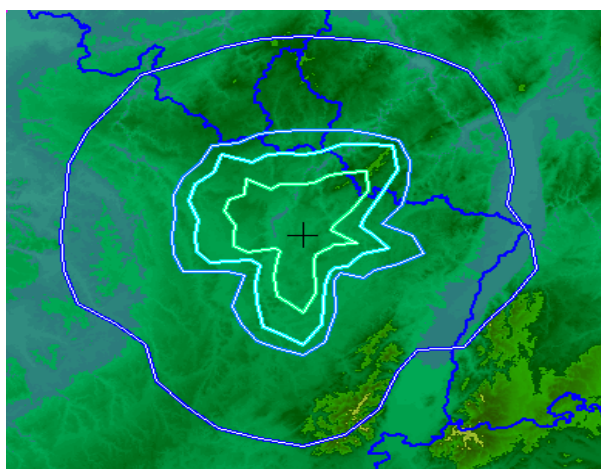
All listed assignments can be displayed on a map.



- **Step 4 – Construction of coordination contours**

In this step ICS Manager creates a coordination contour for every service listed at step 3.

The contours are created by using exactly the same method as step 2 and according to the trigger coordination values and the heights of the receiving antenna, specific to each service.



- **Step 5 – Identification of potentially affected administrations**

In this step ICS Manager automatically generates the list of the administrations with which it is necessary to coordinate:



11 - Provisions

Status

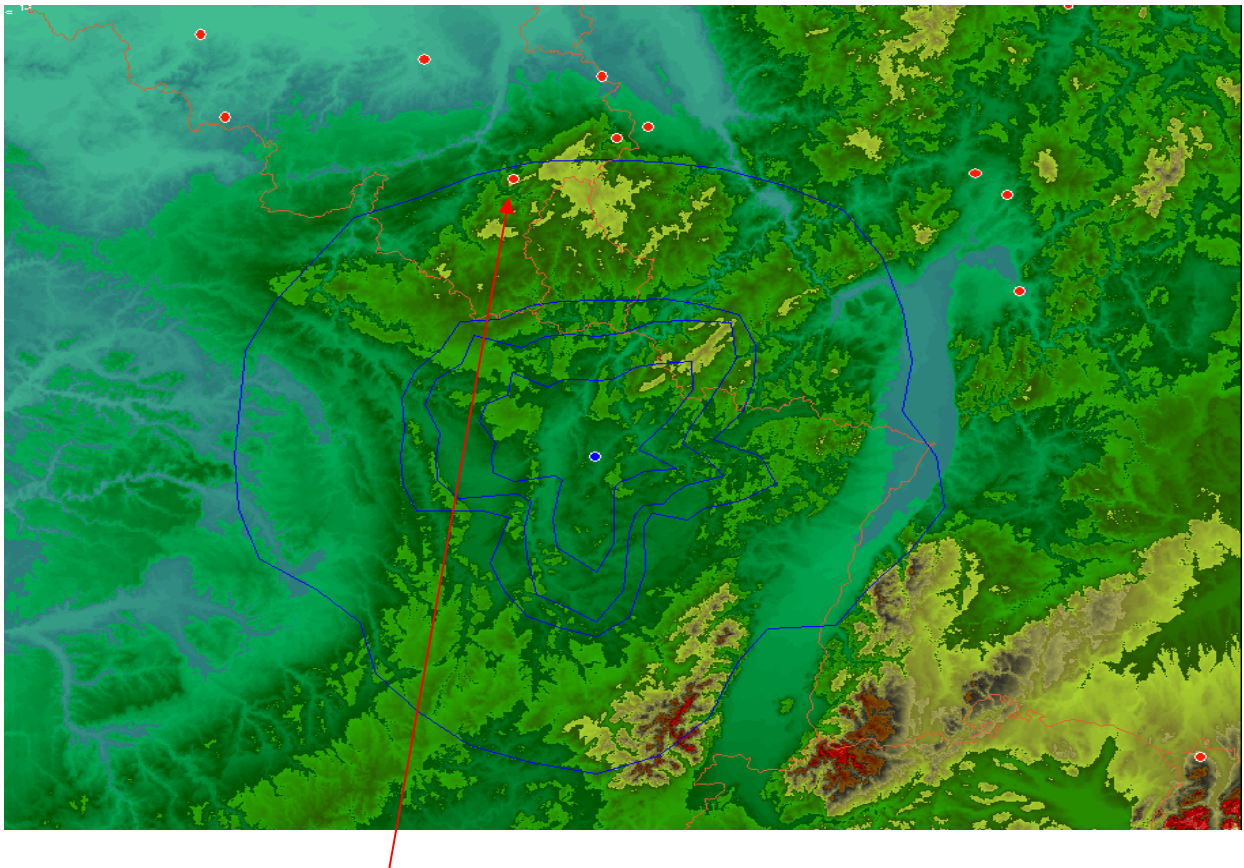
Agreement Coordination sought

Coord. With... List of administrations below is complete

Administration	Req. ...	Req. ...	Concl	Concl. Refer...	Concl. Date	Un-Coord.
BEL			↔			
D			↔			
LUX			↔			

I.e. those:

- where the boundaries are crossed or enclosed by the coordination contour created at step 2, and ;
- the locations of receiving stations/service areas of other primary services identified in Step 3 are crossed or enclosed by the coordination contours created during step 4.





In this example, the identified administration with which coordination is required for other primary services is Belgium (BEL).



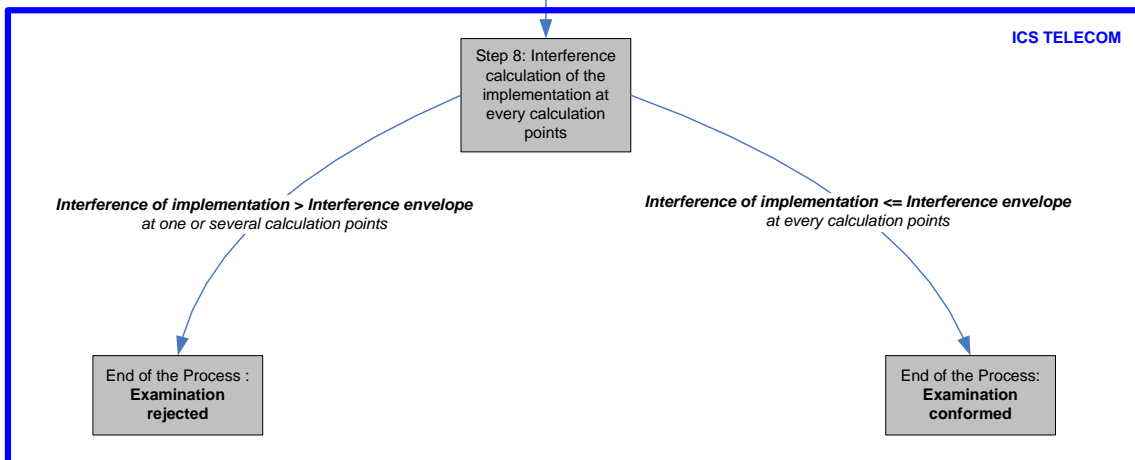
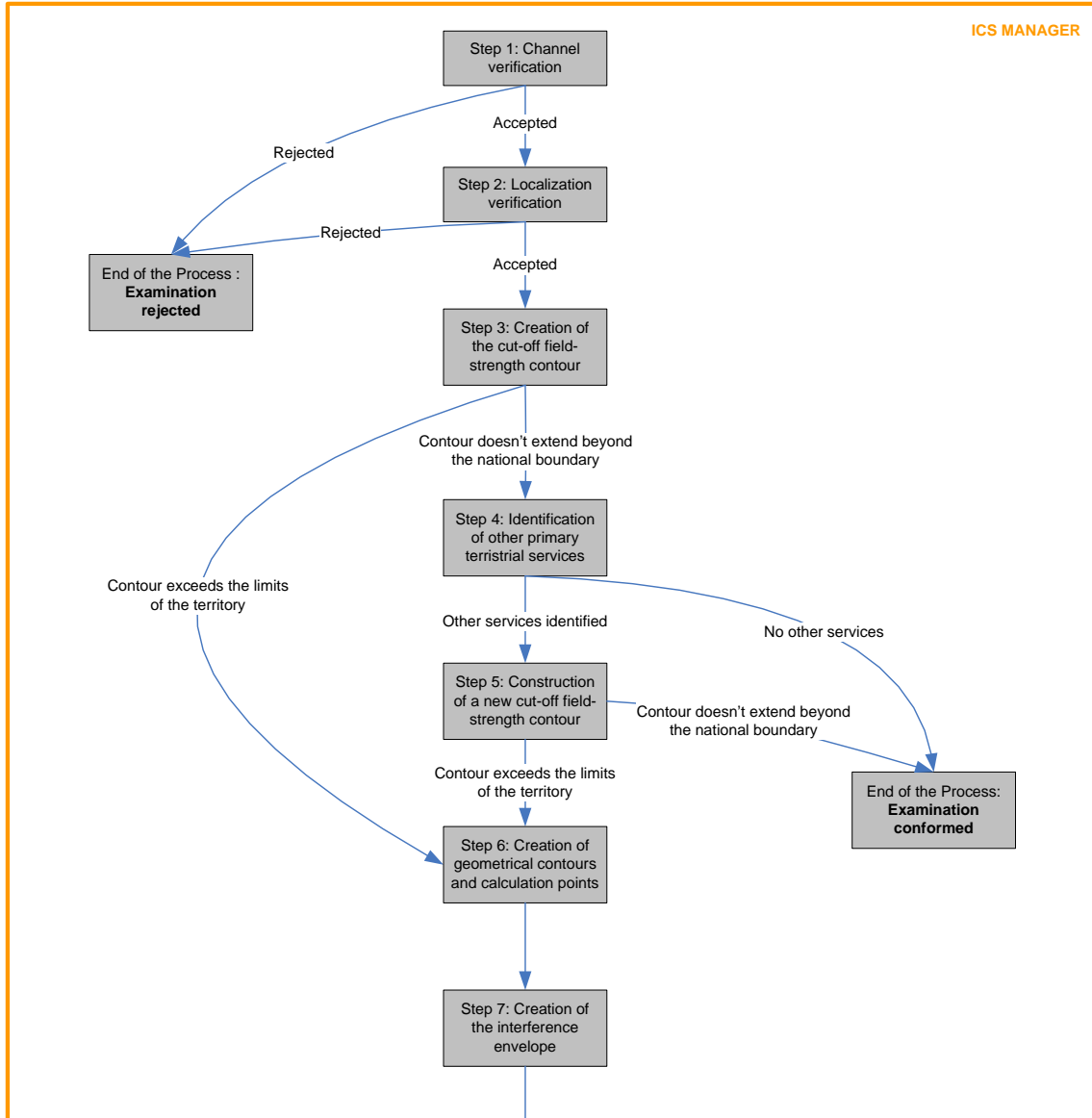
Examination of conformity

The procedure of examination of conformity is carried out at the same time by ICS Manager and ICS Telecom.

This procedure is carried out in 8 steps, which are as follows :

- **Step 1 – Verification of the channel used by the digital Plan entry implementation;**
- **Step 2 – Verification of the geographical location of the digital Plan entry implementation;**
- **Step 3 – Construction of the “broadcasting” coordination contour;**
- **Step 4 – Identification of other primary services;**
- **Step 5 – Construction of the new coordination contour;**
- **Step 6 – Construction of the geometrical contours and of the calculation points;**
- **Step 7 – Construction of the Cut-off field-strength contour, and;**
- **Step 8 – Final comparison of the total interfering field strengths.**

The following figure summarizes the structure of this process.





The steps 1 to 7 can be managed by ICS Manager and make it possible to identify the relevant calculation points and create the interference envelope derived from the characteristics of the digital Plan entry.

The 5 different following types of digital Plan entry are taken into account in this process:

1. *Digital Plan entry is an allotment;*
2. *Digital Plan entry is an assignment;*
3. *Digital Plan entry is an allotment with linked assignments;*
4. *Digital Plan entry is a set of assignments with a common SFN;*
5. *Digital Plan entry is an assignment linked to an allotment with no SFN identifier.*

At the end of step 7, a csv file is automatically generated as well as a “read me” file, giving the following information:

- *Calculation_points_F_73029-33.txt*: date of creation, notifying administration, administration unique reference ID, propagation model, version of the propagation model, % of Time, % of Location, clearance angle taken into account or not, Mobile antenna height taken into account or not, type of receiver environment.

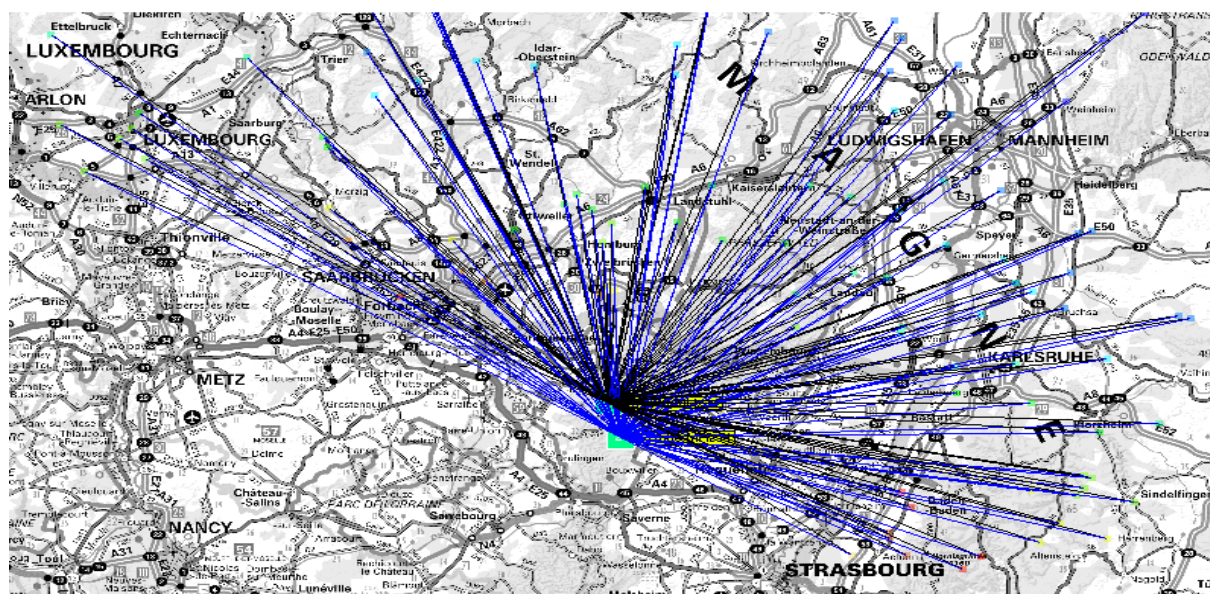
```
Date      26/10/2206
Notifying adm  F
Administration unique reference ID      F_73029-33
Propagation model      PROPGE06.d11
Version 2
% Time 1%
% Location      50%
Clearance angle No
Mobile ant height      No
Receiver environment      Clutter
```

- *Calculation_points_F_73029-33.csv*: calculation point number, X, Y, coordinate code, azimuth, Info 1: location of the calculation point (on the geometrical contour at 60 km: 60, on the geometrical contour at 100 km: 100... on the cut-off field strength contour: C), Info 2: administration on which the calculation is located and the interference field strength (E envelope).



	A	B	C	D	E	F	G	H
1	Record	X	Y	Code	Azimuth °	Info 1	Info 2	E envelope (dBu)
2	1	931200	2554350	1FR5		14	100 D	25
3	2	931200	2553350	1FR5		14 C	D	19
4	3	931200	2551850	1FR5		15	100 D	22
5	4	918950	2551100	1FR5		15 C	D	14
6	5	987950	2548350	1FR5		17 C	D	14
7	6	987950	2547100	1FR5		18	60 D	17
8	7	1074200	2545850	1FR5		18 C	D	20
9	8	1024450	2543850	1FR5		23 C	D	20
10	9	999700	2541100	1FR5		35 C	D	21
11	10	858200	2540600	1FR5		47 C	D	21
12	11	1026950	2539600	1FR5		48 C	D	19
13	12	1066700	2539350	1FR5		48 C	D	14
14	13	981700	2538100	1FR5		54 C	D	13
15	14	920450	2536350	1FR5		57 C	D	15
16	15	896700	2535350	1FR5		78 C	D	15
17	16	941950	2534350	1FR5		83 C	D	16
18	17	1037200	2533350	1FR5		83 C	D	16
19	18	953450	2533100	1FR5		86 C	D	17
20	19	1023700	2531850	1FR5		89 C	D	17
21	20	981450	2531100	1FR5		91 C	D	18
22	21	930450	2529600	1FR5		94 C	D	19
23	22	921950	2526100	1FR5		96 C	D	19
24	23	1058450	2524600	1FR5		99 C	D	19
25	24	1024450	2522600	1FR5		101 C	D	19
26	25	876450	2522100	1FR5		104 C	D	20

Thanks to this ASCII file the final verification can be done in ICS Telecom. ICS Telecom calculates the field strength received at each calculation point and compares them to those of the interference envelope.



At the end of the calculation the following report is displayed:



Report

EXAMINATION OF CONFORMITY

Wanted	Address	Conformity
1	BOURG SMAURICE-1	NOK

Printer: HP DeskJet 1220C Printer Print Setup... Print List Quit

font size 8 font size 10
restart to enable modification

If at one calculation point the interference field-strength coming from the converted assignment(s) is greater than the interference envelope then the examination of conformity is rejected (NOK).

User can display a table (csv file) which summarizes the calculations made and the difference found on each calculation point.

Point	X	Y	Code	Azimuth °	Info 1	Info 2	E envelope (dBu)	Implementation	E implementation dBu	Difference dB	status
1	931200	2554350	1FR5	14	100	D	25	BOURG SMAURICE 1	38.2	-13.2	
							25	BOURG SMAURICE 2	38.2	-13.2	Sum
2	931200	2553350	1FR5	14	C	D	19	BOURG SMAURICE 1	37.9	-18.9	
							19	BOURG SMAURICE 2	37.9	-18.9	Sum
3	931200	2551850	1FR5	15	100	D	22	BOURG SMAURICE 1	37.4	-15.4	
							22	BOURG SMAURICE 2	37.4	-15.4	Sum
4	918950	2551100	1FR5	15	C	D	14	BOURG SMAURICE 1	36.5	-22.5	
							14	BOURG SMAURICE 2	36.5	-22.5	Sum
5	987950	2548350	1FR5	17	C	D	14	BOURG SMAURICE 1	35.8	-21.8	
							14	BOURG SMAURICE 2	35.8	-21.8	Sum
6	987950	2547100	1FR5	18	60	D	17	BOURG SMAURICE 1	35.6	-18.6	
							17	BOURG SMAURICE 2	35.6	-18.6	Sum
7	1074200	2545850	1FR5	18	C	D	20	BOURG SMAURICE 1	36.4	-16.4	
							20	BOURG SMAURICE 2	36.4	-16.4	Sum
8	1024450	2543850	1FR5	23	C	D	20	BOURG SMAURICE 1	36.9	-19.9	
							20	BOURG SMAURICE 2	36.9	-19.9	Sum
9	999700	2541100	1FR5	35	C	D	17	BOURG SMAURICE 1	37.2	-17.2	
							17	BOURG SMAURICE 2	37.2	-17.2	Sum
10	858200	2540600	1FR5	47	C	D	20	BOURG SMAURICE 1	37.3	-16.3	
							20	BOURG SMAURICE 2	37.3	-16.3	Sum
11	1025950	2539600	1FR5	48	C	D	20	BOURG SMAURICE 1	37.1	-23.1	
							20	BOURG SMAURICE 2	37.1	-24.1	Sum
12	1065700	2539350	1FR5	48	C	D	21	BOURG SMAURICE 1	36.7	-21.7	
							21	BOURG SMAURICE 2	36.7	-21.7	Sum

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