

**REPORT OF THE 3RD STAKEHOLDER COUNCIL MEETING**

**HELD IN ISPRA, ITALY, ON JULY 7<sup>TH</sup> 2008**

**WIM DEVOS**

**11-SEP-2008**

**FIELDFACT-WP1-JRC-DEL-1.6.3**



**FIELDFACT: GNSS INTRODUCTION IN THE AGRICULTURE SECTOR**

**Report of the 3rd Stakeholder Council Meeting**

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## EXECUTIVE SUMMARY

This document reports the topics and findings discussed during the 3<sup>rd</sup> Stakeholder Council meeting in Ispra Italy, on July 7<sup>th</sup>, 2008. Seven members representing public administrations, farmer organisations, the agricultural appliances industry and the research sector were present at this session, in addition to six representatives from the FieldFact project.

The agenda included sessions on the evaluation of the FieldFact project as a GNSS demonstration tool, the relationship between Galileo and the agricultural sector and an overall assessment of the current situation in that sector.

This third SC meeting reconfirmed the key issues identified in the 2<sup>nd</sup> Stakeholder Council, notably the need to quantify analyses, to identify the most important agricultural use cases based on Galileo's added value and to demand that sector requirements are met by the yet unknown Galileo specifications.

With the closure of the project in sight, the SC considers that the LED has intrinsic values that merit its survival after the project if it would be certified and its specifications to be taken on board by the commercial manufacturers and during the EU legislative process.

The Stakeholder Council also observed that the project has widened the focus from Galileo to general GNSS application. The project has not succeeded to present much new information on Galileo itself.

The Stakeholder Council recommended:

- For FieldFact to use the result analysis phase to further investigate what of the rich stakeholder input can still be taken on board. The major priorities are to quantify the results and to make explicit the specifications that result from the identified requirements within the agricultural community.
- For Galileo to make haste with providing services that meet these requirements of the agricultural community and to offer them with a high level of quality. Detailed specifications of the Galileo value-added services need to be published urgently.

The Stakeholder Council showed interests in a fourth meeting if the result analysis phase would identify the need for additional feedback.



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## 1 INTRODUCTION

### 1.1 Purpose and scope

The European global navigation satellite system (GNSS) Galileo is to be fully operational around 2012. In order to promote this technology and assess user needs within agricultural sector, the GJU funded the FieldFact project.

The FieldFact Stakeholder Council is established as objective 2 of the work package WP1 of the FieldFact proposal. Its role is to provide a platform for the representation of the interests of the agriculture sector user community in the overall discussion for the GNSS technology and in particular for the EGNOS and Galileo optimization.

The Stakeholder Council Meetings are organized to inform the Stakeholder Council members about the project progress and obtain their feedback.

The purpose and scope of this document is to report the topics and findings reached during the 3<sup>rd</sup> Stakeholder Council meeting in Ispra (Italy), 7 July 2008. As such, this document addresses and fulfils the tasks T.1.4 and T.1.5 of WP1 of the project.

### 1.2 Intended audience / Classification

This document is intended for all project partners and Stakeholder Council members and therefore designed as a project internal document.

The document is classified as a public document. It is presented here as a deliverable D1.6.3.

### 1.3 Associated and reference documentation

The presentation of project progress was presented by the participants in form of slide presentation. The slide presentation documents are distributed among the meeting participants.

Other associated documents are the:

- FieldFact Proposal tender documents
- FieldFact Stakeholder Community (D1.1 – 1.5)
- FieldFact Report of the Inaugural Stakeholder Council Meeting (D1.6.1)
- FieldFact Report of the 2<sup>nd</sup> Stakeholder Council Meeting (D1.6.2)
- FieldFact Draft Critical Analysis Report (D2.1)
- FieldFact Requirements Report (D2.3).

### 1.4 Reference Documentation

There is no reference documentation to this document

### 1.5 Abbreviations and Acronyms

CAP            Common Agricultural Policy



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CAPIGI	Conference on Agricultural Policy Implementation and Geo Information
CAR	FieldFact Critical Analysis Report
EC	European Commission
EGNOS	European Geostationary Navigation Overlay Service
EU	European Union
FF	FieldFact
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GPX	GPS exchange format (XML dialect developed by Topografix)
GSA	European GNSS Supervisory Authority
HED	FieldFact High End Demonstrator
IACS	Integrated Administration and Control System
KML	Keyhole Markup Language (XML dialect adopted by Google)
LED	FieldFact Low End Demonstrator
PDOP	Positional Dilution Of Precision
RTK	Real Time Kinematic
SC	FieldFact Stakeholder Council
UWM	University of Warmia and Mazury
VAR	Variable Application Rate



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## 2 DESCRIPTION OF THE WORK CARRIED OUT

### 2.1 General

The 3<sup>rd</sup> Stakeholder Council meeting was announced by email to the candidate participants on April 23<sup>th</sup> 2008. In order to show the FieldFact demonstrators in their intended context, the first proposal was to organise the Council during the Field Days of Bayer CropScience at Senice na Hane, in the Czech Republic on 11<sup>th</sup> -12<sup>th</sup> of June 2008. This location required a considerable logistic effort. A reminder sent on May 19<sup>th</sup> triggered a number of cancellations and upon the availability given by the invitees, the stakeholder council was postponed to be organised in Ispra, during the 2<sup>nd</sup> week of July.

The formal invitation was sent on June 11<sup>th</sup> to the stakeholder council, mainly focussing on farmers associations and industry and farm advisory bodies and consultants. Despite the prior information round to set the dates, not all invited parties were able to participate in this 3<sup>rd</sup> Stakeholder Council Meeting; As most Stakeholder Council members expressed they had a busy schedule in this period just before the holidays, this time a single day formula was chosen.

An internal FieldFact project meeting was scheduled immediately after this third Stakeholder Council Meeting. Therefore several FieldFact team leaders were present during the stakeholder Council. In order to allow for a maximum of feedback to be expressed, these FieldFact team leaders were explicitly asked to play an observer's role.

### 2.2 Participants

The following participants were present during this 3<sup>rd</sup> stakeholder Council meeting:

Name (initials)	Position	Organisation
Gilbert Maesschalck ( <b>GM</b> )	responsible for combined data acquisition;	Flemish department of Agriculture (Belgium)
Lucie Savelková ( <b>LS</b> )	responsible for on the spot checks;	Czech payment agency (Czech Republic),
John O'Rourke ( <b>JO</b> )	responsible for controls	Irish department of Agriculture (Ireland)
Alexander Sassenberg ( <b>AS</b> )	market analyst & product planner	John Deere AMS
Michel Berduchat ( <b>MB</b> )	responsible for research on technologies for mobility and security	Cemagref
Anne-Douwe van der Zee ( <b>AZ</b> )	farmer / project leader	Zuidelijke Land en Tuinbouworganisatie (Southern Agriculture and Horticulture organisation)
Maria Antonietta Del Moro (for Federico Steidl) ( <b>MD</b> )	responsible for information systems	ALMAVIVA, Servizi Territoriali, Ambientali e Controlli (for AGEA)



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The following FieldFact project members were also present:

Tamme van der Wal ( <b>TW</b> )	FieldFact Project leader	FieldFact (Alterra)
Simon Kay ( <b>SK</b> )	WP1 staff	FieldFact (JRC)
Jan Nammen Jukema ( <b>JJ</b> )	WP4 staff	FieldFact (PPO)
Stanislaw Oszczak ( <b>SO</b> )	WP5 leader	FieldFact (PPO)
Adam Ciecko ( <b>AC</b> )	WP5 co-leader	FieldFact (UWM)
Wim Devos ( <b>WD</b> )	WP1 leader	FieldFact (JRC)

### 2.3 Meeting agenda

9h30	Welcome
9h40 - 10h30	Status of the FieldFact project
10h30-10h45	Coffee
10h45-12h30	Discussion session 1: Evaluation of the project in terms of promotion and introduction of GALILEO / GNSS
12h30-14h00	Lunch
14h00-15h30	Discussion session 2: Galileo and the agricultural sector
15h30-15h45	Coffee
15h45-17h15	Discussion sessions 3: Overall assessment
17h15-17h30	Closure of meeting

A detailed agenda, with topical question for each of the discussion points was forwarded to the Stakeholder Council some day in advance of the meeting. This agenda is included in annex.

Several participants left the meeting around 16h00 to catch their transport to the airport.

### 2.4 Meeting objectives

The meeting objectives were the same as those of the previous Stakeholder Council Meeting:

1. Inform the stakeholder Council members on the overall FieldFact project progress;
2. Advise the Council on actions taken on actions taken as a result of previous SC meetings;
3. Obtain additional feedback, opinions and recommendations from the Council;
4. Provide a communication platform between the Stakeholder Council and the key project partners.



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### 3 MINUTES OF THE MEETING

#### 3.1 Status of the FieldFact project

The presentation of the FieldFact project was deliberately kept to a minimum. A combined presentation offered the status of the various FieldFact work packages by a couple of slides each.

The presentation triggered the following questions

**MB:** Where does FF address the Galileo value added?

**TW:** Galileo was conceived to increase availability (in the time where Beidou and Glonass were still distant projects) and intended to offer additional services such as integrity and authentication. At that time, an envisaged application field was food safety during transport. Currently, RTK-system offer alternatives for precision applications.

**JO:** Does FF only produce demonstrators?

**TW:** FF also provides brochures, posters and other promotion material, and publishes in the scientific community e.g. scientific articles

**LS:** What is the expected accuracy of the Galileo services?

**TW:** GPS is daily improving, the open signal operates currently at 2.5 meter, with EGNOS augmentation this becomes 1 m. With Galileo, the expected accuracy will be between 60 cm and 75 cm.

**AS:** Please turn the logic around 100%! The expectancy should be to meet the requirement of the farmer application.

**LS:** Does the accuracy have impact on validation schemes of the CAP regulations?

**SK:** This is not likely; the validation depends on accuracy required for the specific application. However, considering the potential financial implications during control of payments, there is always a risk the EC might change (lower) the tolerance value of the regulations.

**JO:** Will the LED be certified?

**TW:** No, although the LED has been tested and passed all tests of the certification procedure, a formal certification only makes sense for commercialised products.

**AS:** Build a case upon the 90-98% -to be quantified by the project- area that is currently deprived from GNSS use. Is this quantitative analysis of how much area is concerned already done?

**TW:** The FF project intends to do some quantifications of Galileo added value in the results analysis. The number of farmers or the number of area that will directly benefit from Galileo as it has now too low availability of GPS can be one of these quantifications. We have to see if this can be done or is a separate study in itself.

A subsequent presentation summarised the main outcomes from the Inaugural and the 2<sup>nd</sup> Stakeholder Council Meetings.

**AS:** Is there an overview of the adoption of the SC feedback and recommendation by the individual work packages?



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**TW:** As all team leaders were present during the 2<sup>nd</sup> SC, the whole work is affected. Since the FF response to the feedback has not been explicitly addressed, an overview will be distributed with the draft minutes. Some feedback, especially on quantification issues will be taken up in the results analysis

### 3.2 Discussion session 1: Evaluation of the project in terms of promotion and introduction of GALILEO / GNSS

**AS:** Have the LED officially approved so it can act as a starting point for the Galileo case! List the requirements identified by FF and have that list endorsed by the EC!

**TW** FF is a promotion project; it is up to the industry to launch products and offer support and training.

**LS:** Can the LED application be loaded onto other devices?

**AC** In principle yes. As the server part only provides NMEA strings, the front end can be loaded on any mobile device that fulfils the required specifications. However, the whole application also requires a server that takes care of projecting and presenting imagery.

**LS:** In the Czech Republic we observed that many farmers didn't understand the demonstrator. The precision farmer will go for other devices (with an integrated application) those who need area measurement will rely on surveyors. FF cannot claim to reach all farmers.

**GM:** Will the administration (and the EC) trust the farmer's measurement?

**AS:** Since nobody will buy the LED, no commercialisation is needed, however to assure the value of the project there still is a need to have the LED certified.

**SK** There are two sides; the pessimistic is that auditors will take time to accept farmer measurement; the optimistic side is that the boundaries identified by farmers should be correct. As circumstances will change, there will be a stronger case to accept farmer measurement, esp. as it is compared to an auditor's measurement that was made two years after that of the farmer.

**GM:** A tool for measurement does not guarantee a good measurement. With the second pillar developments – fully based on area-, area measurements become ever more important

**SK:** For direct aid, all area is rarely measured, One can rely on visual inspection of the reference parcel.

**LS:** The question remains: what is special to Galileo?

**AS:** Agricultural applications can be categorized according to their accuracy requirements (A, B, C,D classes), Galileo allows applications to move up this scale by improved accuracy.

**SK:** From the comments above we can summarize: the demonstrator, as any piece of equipment should be certified, farmers can use it if benefits are quantified, 25 % of the farmers are the target.

**TW::** New technology is existing, using it to measure not only serves subsidies, but also business, Demands on Galileo are to provide integrity (How good is the signal) and authentication.

**LS:** Alternative technologies for that are already available

**AS** Quantification IS the Galileo business case



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**SK:** There is a need to know how these services for integrity and authentication will be available. Will it be under the form of certified services?

**JO:** The GNSS workshop in Dublin has shown there are problematic measurements, e.g. of hedges. So the key question is to define what is needed from Galileo and how will it be facilitated for customer applications such as in the dairy sector or arable land

**TW:** The effect of latitude on performance has already been one of the design specifications of Galileo, so to make GNSS available at higher latitudes e.g. Scandinavia and the Baltic states. Even in the Netherlands shading by trees is a serious show-stopper for precision farmers

**AS:** Start modelling, using geospatial database available within the EC, e.g. identify critical slopes and overlay results with agricultural layers! This analysis is needed to identify the areas where Galileo MUST offer benefits

**TW:** This suggestion, although valuable, exceeds the scope of the project. However, it should be considered a given fact that the constellation will change with Galileo

**AS:** Within the agricultural sector, GPS could move, say a first 50% of the target customers. If the next system will move another 40%, Galileo will have a case of only 10% if it comes in operation as the third system.

**SK:** For the CAP-LED use case, it had once been investigated to provide GNSS receivers through the Farm Advisory system. This would have involved 9 billion € (the total financial resource available) for an estimated improvement of area measurement accuracy of only 2 percent.

**AS:** schematizes the categories of GNSS application

Category	Accuracy	Application	User	Technology
A	2cm	High Value / speciality	Speciality/niche	RTK
B	20 cm	Fertilizer, , Seeding	Arable farmer	ST HP
C	75 cm	Slurry application	Dairy	EGNOS
D	1.5m	Olive culture	State/County	DGPS

**AS:** Map out Europe to check where farmers would move to higher application. This modelling could be static, analysing with IACS registers or dynamic, introducing a scenario to see what happens when Glonass becomes operational

**LS** supports the dynamic approach. It also has EU implication as this GNSS data capture would become competing with remote sensing.

### 3.3 Discussion session 2: Galileo and the agricultural sector

As introduction, participants were asked to list the two most important issues of the earlier discussion:

**SK:** 1/ List the needs actively 2/ quantify effect

**TW:** 1/ Quantification (variable application) 2/ opening up of material



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**AZ:** 1/ Differentiate between Glonass and Galileo on effects 2/ link back to the Cap Health Check (condition changes occur very fast)

**JO:** 1/ Encourage Manufacturers to integrate the LED 2/ concentrate on the LED; the HED will follow

**AC:** 1/ The Categorisation of point position versus area measurement. 2/ list up applications

**SO:** 1-2/ Focus on Galileo (it is the EU system)

**JJ:** 1/ create a list of cost of GPS and accuracy 2/ focus on the Galileo Value Added

**AS:** 1/ there is little progress on the quantification needed to go further, an additional SC meeting might be needed 2/ disagreement to focus on Galileo alone; look at the broader picture

**GM:** 1/ regarding the LED; inform of possibilities and limitations 2/ use with systems as they are now; in combination with alternatives as area photography

**LS:** 1/ Specify the Added Value of Galileo and try to influence the reform of the CAP. 2/ The Low and high end use will be shown by the market

**MB:** 1/ The information on Galileo is the same as 4 years ago. What is behind the term integrity" as a promotion project, FF should have direct access and technical aspects should be driven by the requirements. What will be the nature of the 4 services of Galileo, By contrast, today GPS and differential are known.

The discussion after this summary round continued, roughly following topics of the detailed agenda::

**SK** agrees that the FF objectives are focused on Galileo (by preference ignoring GPS, Omnistar etc.) but Galileo is struggling with unknown cost, availability data and nature of services. Furthermore, there are currently alternatives available.

**AS** suggests investigating the reasons for the US government opposition to Galileo (i.e. beyond the obvious military interest). This despite it is clear to everybody that GPS performance has gaps.

**SK:** FF has indeed had an EU centric view and ignored to look into US or worldwide use cases for e.g. for the HED. But this would be in scope of another project.

**AS:** Who should Galileo be promoted to? Officially: to legislators and sectors (transport, agriculture, ...) based on business cases. However, the system legitimacy comes from its current users. Long term prognoses are very difficult so focus on the near future.

**MB:** With unknown availability and costs, potential users are inclined to wait more. There is a need to have the final specification. Without specifications, Galileo must align itself with existing applications but do better than GPS.

**AS:** The solution is to specify the objectives and requirement under the business scenarios as he outlined before. Improvement can be expected for closing gaps in GPS performance (shading, waterways, ...). A sensitivity analysis might help

**SK:** FF needs to investigate how to do such GIS analysis within the contract and how much of the data is really available.

**TW:** There is clear potential for Galileo applications in controlling cross compliances

**AZ:** GNSS is useful for e.g. of spraying restrictions near a water body



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**AS:** On increased availability of satellites, there is a good presentation from TOPCON on CAPIGI 2008 in Dublin. For authentication there is the UniqueAreaID that demonstrates one is working in the field with guaranteed accuracy.

**MB:** Integrity de facto requires the replacement of the PDOP signal by an equivalent signal

**SK:** Regarding the modelling of the use case; IACS data of the MS is reported by 15/4/2008. There is meeting of paying agency directors that could discuss the requirements of these agencies.

**AS:** Training requirements depend on the circumstances; In the EU there is a preference for trained staff, but in the US agriculture, untrained (Mexican) labour is abundant. In South-East Asia a similar situation exists.

**AZ:** EGNOS is part of the agricultural scenario. The biggest problem of EGNOS is that the resulting position shifts too often; 50cm in a short term interval prohibits interruption of the field labour.

**SK:** With the current disclaimers on the website, EGNOS has to be considered as not yet operational.

**AS:** The experience of EGNOS in the Biotechnology community has turned off the potential also for agricultural applications for Galileo. Extra promotion to compensate is needed.

**MB:** EGNOS information is lacking, e.g. when the signal is turned off or about the satellites identifications (PRN, what application? where?)

### 3.4 Discussion session 3: Overall assessment

**TW:** The results analysis phase lays ahead. Should the FF final report be distributed in the sector? Is it useful to see it from a farmer's perspective with the farmer's terminology? What if conclusions are different from MS to MS since Galileo opportunities will depend on conditions (hilly regions)?

**JO:** The rapport should get the farming press.

**GM:** Only a journalist has the right mindset to make a message broadly understood.

**SK:** What is the feedback from the Polish publications?.

**AC:** The articles dealt with testing and certification were published in a dedicated magazine on precision farming.

**TW:** So: a full report for farmers is not considered useful and we should make dedicated articles in farmers press and media.

**SK:** What is the GSA expecting from the results phase?

**TW:** finds in the project documentation "describe added value and technical specifications for end user value". This translate in to active statement of need, translation of needs into technical specification, quantification of benefits of Galileo, description of CAP changes or availability of new technology (including farming economies as fertilizers costs rise). Describe added value of more providers (extend to EGNOS, Starfire, Omnistar)

**SK:** Effects of new technology on CAP are very incremental; long term stability is not guaranteed and no direct changes can be expected.



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**GM:** There is huge impact of the reinforced 2<sup>nd</sup> pillar. Since there are no entitlements, there is no longer a buffer (envelope) to quantify the use of land. All financial values are directly related to measured land and additional land (vegetable and potato) may well be claimed.

**SK:** Auditors have conservative view and consider an object should be single land use on compatible land cover (de facto ignoring the 2<sup>nd</sup> pillar's objectives). It is therefore all about the protocol.

**JO:** Cross-Compliance control penalties require the farmer to be caught "red-handed". This condition makes the current control useless and provides a case for accepting authenticated documents such as on buffer zones. Limitations to nitrate on farm level induce over application on good land by transfer from poor land.

### 3.5 Wrap-up

**TW:** A draft SC meeting report will be distributed to the SC members. This will include a document with the response to the 2<sup>nd</sup> Stakeholder Council Meeting. When the draft FF are ready and distributed among the Stakeholder Council members, they will be asked for their opinion on whether an additional meeting is required.



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## 4 RESULTS OF THE WORK CARRIED OUT

Regarding the reporting of the FF project, some SC member found that a more detailed briefing over the various work packages might have facilitated a more focused discussion. Without these details of the project progress, they feel it makes less sense to stepwise discuss the numerous topics that were provided in the detailed agenda. As a result, rather more general points of view have been expressed.

For a final assessment of the project, more project details must be provided and if relevant, another stakeholder council needs to be organised. Regarding some suggestions from the SC, FieldFact partners have replied that they are outside of the scope the current contractual obligations.

Regarding the evaluation of the project in terms of GNSS and Galileo Introduction, The SC identifies that, although the LED doesn't appeal to all farmers the way it was intended, it has an intrinsic value that should not be lost after completion of the project. The SC suggests that a demonstration tool remains available, but then that tool must be certified according to FFs own certification scheme and its performance must be acceptable within every days farming business. This would imply a tool within the existing technical environments for current applications (direct aid processes) as well as for the expected area measurement needs in the rural development support schemes. Such future developments of the agricultural policy should be aligned with the GNSS technology developments and it is felt that FF has a role therein.

To make the "survival of the FF LED" a success, the LED or its components, especially a list of minimum requirements, should be taken on board by the major device manufacturers. It also requires that the FF promotion is strengthened with a quantitative (financial) use case for the farmer.

The message from the agricultural community to the Galileo authorities is threefold

1. There is a matter of urgency, not only because potential clients are hesitant to accept the GNSS technology awaiting anticipated "better services", but rather because those who take the technology on board are opting for the existing GPS-based alternative technologies. Competing systems (Glonass and Beidou) might pull the bottom out of any remaining Galileo business case when they appear online first.
2. There is need for a final and clear specification of services and conditions. Since that specification is not there now, it must reflect the requirements of the intended audience. For farmers, an important requirement of Galileo would be to step up the accuracy of farming practices in areas where no alternatives technologies are available. If this agricultural potential needs to be quantified, the EC should have the data available to spatially model such use case.
3. The services offered by Galileo must not only be there in time, they must also deliver what is expected (in fact requirements expressed by user community). The EGNOS experience has not overwhelmed the agricultural sector and certification of the Galileo services could help boost the Galileo image.

The overall assessment, to be elaborated during the results analysis phase, shows that FF is roughly on track with the original project plan. Several standing issues have already been identified during the previous discussion sessions (interaction of technology with the legislation, readiness to accommodate future developments). To disseminate the final results of the FF, a



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targeted –article based- communication towards specialised communities is considered to be more effective than an extensive publication of all results and findings.

## **5 CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Conclusions**

This Stakeholder Council has again proven very successful and provided several useful inputs to both the project and the Galileo Supervisory Authority.

The slightly revised format with an emphasis on stakeholder input was not considered optimal by some SC members. While during the second SC the progress of each project work package was presented and discussed in detail, this meeting's format focused on responses to a prepared detailed topic. The latter format led to a rather more general discussion and corresponding views.

This third SC meeting reconfirmed many of the feedback issues and recommendations that were already expressed during the second SC. The most important would be the need to quantify the analysis, identify the most important agricultural use cases on Galileo's added value and demand that the respective requirements are met by the yet unknown Galileo specifications.

The SC considers that the LED possesses intrinsic values that merit the LED's survival even after the closure of the project. However, this would require the LED to be certified and its specifications to be taken on board by the commercial manufacturers and this technology should be considered during the EU legislative process. Especially the requirements and developments of the 2<sup>nd</sup> pillar (rural development aid) need further attention.

The SC finally observed that the project has, to some extent, lost sight of Galileo and proceeded focussed on the general GNSS introduction. As a consequence, FieldFact, a Galileo promotion project, has not yet succeeded to make available any information on Galileo that was not yet available on the GJU/GSA website since four years.

### **5.2 Recommendations**

The FieldFact project, through all its work packages, should use the result analysis phase to further investigate what of the rich stakeholder input can still be taken on board. The major priorities there are to quantify the results and to make explicit the specifications that result from the identified requirements within the agricultural community.

Galileo should make haste with providing services that meet these requirements of the agricultural community and offer them with a high level of quality. Detailed specifications of the Galileo value-added services need to be published urgently.

If more specific feedback on the project is required, a fourth SC meeting should be organised after the result analysis has been completed. WP1 will communicate on this issue with the SC members.



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## ANNEX 1 : DETAILED AGENDA

AGENDA v1.1

3<sup>rd</sup> stakeholder meeting

Ispra, Monday 07/06/2008

9h30: Welcome

9h40 - 10h30: Status of the FieldFact project:

- Goals and objectives (= introduction and promotion of GNSS and GALILEO in particular)
- Project achievements
  - Assessing the situation in the agricultural community
  - Low End Demonstrator
  - High End Demonstrator
  - Testing and training
  - Promotion activities
- Response to 2<sup>nd</sup> Stakeholder Council in Gavirate

### 10h30-10h45 Coffee

10h45-12h30 Discussion session 1: Evaluation of the project in terms of promotion and introduction of GALILEO / GNSS

- Evaluation of the project's achievements::
  - description of investment motivators;
  - choice and justification of low-end and high-end;
  - testing achievements;
  - training achievements;
  - promotion achievements;
  - connecting to sector through stakeholder council;
  - focus on data integration;
  - GNSS general vs. GALILEO;
- What are the recent trends in the agricultural community?
  - New applications;
  - price versus. precision;
  - data integration in the farm management circle;
  - data integration with external data providers (like payment agency);
- Changing external conditions:
  - are there emerging obstacles?
  - have identified obstacles disappeared?
  - are there new opportunities?



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### **12h30-14h00 Lunch**

14h00-15h30 Discussion session 2: Galileo and the agricultural sector

- Is GALILEO of added value to the agricultural sector?
  - increased availability of satellites, of two (three) operators
  - Services offered
  - authentication system
  - integrity systems (if any) but this is supra-agriculture)
- What about EGNOS?
  - (interesting to discuss here the two worlds of equipping large workforces so equipment price is issue versus high quality equipment and trained staff).
- What are the requirements of the sector towards GALILEO?

### **15h30-15h45 Coffee**

15h45-17h15 Discussion sessions 3: Overall assessment

- Has the project sufficiently 'proven' or demonstrated Galileo's value added?
- How must the results analysis be performed?
  - How can we make a report for the sector rather than for scientists?
  - What should it contain?
  - How should it be written?
- Suggestions for follow-up / future studies / applications / tests etc.

17h15-17h30 Closure of meeting



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## **ANNEX 2 : STAKEHOLDER COUNCIL MEMBER'S VIEW**

Received 9/7/2008

**FP6 FieldFact  
3rd Stakeholder Council meeting  
07/07/2008  
JRC – ISPRA – Italy**

### **Synthetic report - Michel Berducat – Cemagref Clermont-Ferrand invited as expert**

The main target of FieldFact project is to promote Galileo in the agricultural sector that means to give information toward end users as advisors, farmers, agricultural machinery manufacture technicians...

#### **I/ Valorisation of Demonstrator results**

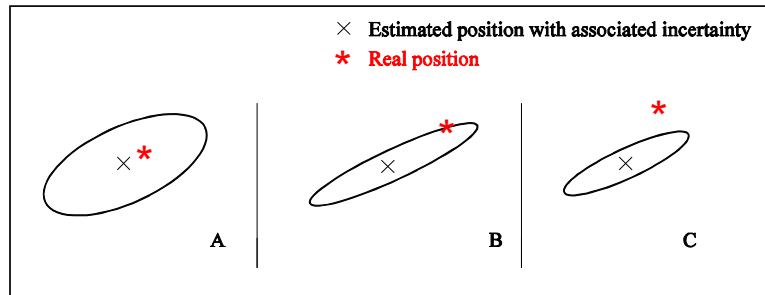
- I well identified interesting works carried out mainly on Low end demonstrator, with particular effort realized by teams to integrate as much as possible new standard tools in the domain of GIS, metadata, encoding language... In the same manner as the small technical presentation brochure given during the meeting describing results, I encourage to integrate these results on the new version of FieldFact web site and to well underline the add value of this software in comparison with current solutions proposed by private companies (John-Derre, Agrocom,...). Be careful as convinced during the meeting to don't used GPS in the text, but the GNSS general term.

#### **II/ Examples of information waiting by end users about future Galileo positioning system for agricultural applications**

- I can imagine that it is not easy to work on Galileo, whereas the system is not yet available. Nevertheless, I think that it is the responsibility of Fieldfact project to try to give new information and to progress in the training of future users. For several years, the presentation of Galileo doesn't progress. We have always the same description: "*Better accuracy, better availability, better reliability due for example to integrity consideration...*" For my opinion, I think it will be a real improvement, if we could help the end users to better understand some notion as integrity and so one.

If the accuracy (or precision) of localization is easy to understand, integrity is a notion not evident to use. Just bellow, you will try one tentative of definition. It describes the probability that the real position belongs to the area defined by the uncertainty (See figure).

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Integrity of localization, (A) good integrity, (B) potential risk of integrity loss, (C) localization corrupted.

For instance the case (C) shows a non coherent localization which can lead to a critical situation in case of control of automatic or robotic process. If we are not able to guarantee the behaviour of the machine, this one could fall inevitably in a critical situation which may be unfavourable for the final work and dangerous in worst case (ex : for mobile robot application).

This kind of figure (improved with a lot of beautiful colour...) could be perhaps used to illustrate as simple as possible different characteristics (accuracy,..) of the potential of the future Galileo GNSS.

- As said during the meeting, I regret also as common end user to have no better explanation on future services of Galileo.

For several years, we have always the same general information about four level of Galileo services "*Open Service (OS), Safety of Life (SoL), Commercial (CS), Public regulated (PRS)*". So I would appreciate to have more details and to distinguish differences about these four services and which one will be more suitable or not for agricultural applications. Anymore, inside one service, it is a priori possible to use single, dual or triple frequency signals. For example the OS mentions that with the three frequency mode, it can be possible to reach centimetric application.

End users currently are quite familiar with GPS solutions and performances associated. In order to increase accuracy positioning, they know that we must work with differential correction. These ones can be delivered by geostationary satellites like EGNOS (without subscription) or Omnistar (VBS or HP mode with subscription). They know also that to reach centimetric accuracy, we need RTK GPS solution with mainly a second reference station closer. What will be Galileo solutions in regard? Will it be possible effectively to reach high accuracy of few centimetres with Galileo as RTK GPS solutions? Do these solutions will also need differential corrections? FieldFact being the FP6 project to promote Galileo in agriculture, it could be interesting to find first answer elements on previous questions in its web site even if it is not exhaustive and definitive information.

### III/ Other outputs of FieldFact project

If FieldFact consortium has some difficulties to communicate toward end-users about information which are not directly of its responsibility (date of availability of Galileo GNSS, future cost of products...), one benefit and interest of FieldFact project at the opposite, will be to take the opportunity to well define the requirements of agricultural domains for the purpose of ESA and future electronics consortium in charge to built Galileo systems. So a relevant inventory and



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classification of performances required in regard of various applications will be certainly an interesting output of FieldFact and will help it to justify its involvement from 2004 to 2008.

#### **IV/ New applications of Galileo**

Beyond applications listed by FieldFact consortium (*"parcel area measurement, parcel and farm geo-coding and identification, livestock and product logistics management, soil and crop sensing, inputs modulation, guided steering, animal disease management, individual animal tracking"*), new other potential applications could be pointed in agriculture about for example safety of workers, fleet management, and also multi-cooperation of machines. For "real time" applications, other characteristics on GNSS performances will have to be considered and in particular "Time latency" criteria. It could be possible to come back on these considerations in a future meeting.

(end document)