

**Internal distribution code:**

- (A) [ - ] Publication in OJ
- (B) [ - ] To Chairmen and Members
- (C) [ - ] To Chairmen
- (D) [ X ] No distribution

**Datasheet for the decision  
of 15 April 2016**

**Case Number:** T 1225/12 - 3.5.07

**Application Number:** 99935996.1

**Publication Number:** 1101177

**IPC:** G06F17/40, G06F13/00, H04B3/60,  
H04B7/00, H04B7/155, H04B7/204,  
H04L5/00

**Language of the proceedings:** EN

**Title of invention:**  
Aircraft flight data acquisition and transmission system

**Patent Proprietor:**  
Teledyne Controls, LLC

**Opponent:**  
Sagem Défense Sécurité

**Headword:**  
Flight data transmission/TELEDYNE CONTROLS

**Relevant legal provisions:**  
EPC Art. 56  
RPBA Art. 12(4)

**Keyword:**

Late-filed document - justification for late filing (yes)  
Inventive step - (yes)

**Decisions cited:**

T 0176/84, T 0195/84, T 0101/87, T 0026/98, T 0736/99,  
T 0241/10

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
**Chambres de recours**

European Patent Office  
D-80298 MUNICH  
GERMANY  
Tel. +49 (0) 89 2399-0  
Fax +49 (0) 89 2399-4465

Case Number: T 1225/12 - 3.5.07

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.07**  
**of 15 April 2016**

**Appellant:** Sagem Défense Sécurité  
(Opponent) 18/20 Quai du Point du Jour  
92100 Boulogne-Billancourt (FR)

**Representative:** Regimbeau  
20, rue de Chazelles  
75847 Paris Cedex 17 (FR)

**Respondent:** Teledyne Controls, LLC  
(Patent Proprietor) 1049 Camino Dos Rio  
Thousand Oaks, CA 91360 (US)

**Representative:** Dunlop, Hugh Christopher  
RGC Jenkins & Co.  
26 Caxton Street  
London SW1H 0RJ (GB)

**Decision under appeal:** **Interlocutory decision of the Opposition**  
**Division of the European Patent Office posted on**  
**12 March 2012 concerning maintenance of the**  
**European Patent No. 1101177 in amended form.**

**Composition of the Board:**

**Chairman** R. Moufang  
**Members:** R. de Man  
M. Rognoni

### **Summary of Facts and Submissions**

- I. The opponent (appellant) appealed against the decision of the Opposition Division concerning maintenance of European patent No. 1 101 177 in amended form.
- II. The patent had been opposed as a whole on the basis of Article 100(a) EPC (lack of inventive step) and of Article 100(b) EPC (insufficient disclosure).
- III. The documents cited in the decision included the following:

- D2: EP 0 774 724 A2, 21 May 1997;
- D6: Rivadeneyra Sicilia J.M. et al.: "A communication architecture to access data services through GSM", 7th IFIP/ICCC Conference on Information Networks and Data Communications, June 1998;
- D8: "Digital cellular telecommunications system (Phase 2+); High Speed Circuit Switched Data (HSCSD) - Stage 1 (GSM 02.34 version 5.2.1)", ETSI SMG, July 1997; and
- D9: WO 94/14273, 23 June 1994.

The Opposition Division decided that the subject-matter of independent claims 1 and 9 as granted lacked inventive step in view of a combination of documents D2, D6 and D8 and that the subject-matter of the claims according to an auxiliary request involved an inventive step and was sufficiently disclosed.

- IV. With the statement of grounds of appeal, the appellant submitted the following document:

- D27: WO 85/04300, 26 September 1985.

The appellant gave reasons why the subject-matter of claim 1 of the patent as amended lacked inventive step. The ground of insufficiency of disclosure was not maintained.

- V. With its reply, the proprietor (respondent) submitted a signed statement by Mr William Cecil.
- VI. The Board issued a summons to oral proceedings. In a subsequent communication under Article 15(1) RPBA, it summarised the points to be discussed.
- VII. Oral proceedings were held on 15 April 2016. At the end of the oral proceedings, the chairman pronounced the Board's decision.
- VIII. The appellant requested that the patent be revoked. The respondent requested that the appeal be dismissed.
- IX. Claim 1 of the patent as amended reads as follows:

"An aircraft data transmission system (10) for communicating a file of flight data using a cellular infrastructure (14) after the aircraft (12) has landed, the system comprising, in the aircraft:

a digital flight data acquisition unit (20);

a storage medium having stored thereon flight data sensed by at least one sensor (24) on the aircraft (12) as a file;

means for compressing said flight data to provide a compressed file;

a communications unit (26) located in the aircraft and in communication with the storage medium having a multiport serial card having multiple I/O ports, each attached to a cell channel which can open, sustain, and

close a physical, over-the-air channel to the cellular infrastructure;

wherein communication between the cellular infrastructure (14) and the communications unit (26) can take place simultaneously over multiple parallel channels and is initiated automatically for transfer of the compressed file upon landing of the aircraft and includes the flight data, wherein the flight data relates to a flight of the aircraft and includes time, airspeed, altitude, vertical acceleration, and heading data."

Claims 2 to 8 are dependent on claim 1 and correspond to claims 2 to 8 of the patent as granted.

X. The appellant's arguments may be summarised as follows:

Starting from document D2 as closest prior art, the invention according to claim 1 solved two independent partial problems. The first problem was that of modifying the system of document D2 to avoid the use of a dedicated data link. The claimed solution, i.e. the use of a cellular infrastructure, was obvious in the light of documents D6 and D8. The second problem was that of improving the data rate and achieving a low data transmission time. This problem was solved by means of simultaneously transferring data over multiple parallel channels, which was obvious in view of documents D9 and D27.

Even if the invention was not considered to solve two independent partial problems, the subject-matter of claim 1 still lacked inventive step in view of documents D6 and D8 and the skilled person's common general knowledge as evidenced by documents D9 and D27.

XI. The respondent argued essentially that an approach based on partial problems was not justified in the present case. No combination of documents on file disclosed all the features of claim 1. In addition, as evidenced by Mr Cecil's signed statement a technical prejudice existed in the airline industry against the use of a cellular infrastructure for uploading data.

### **Reasons for the Decision**

1. The appeal complies with the provisions referred to in Rule 101 EPC and is therefore admissible.

2. *The invention*

2.1 The invention relates to aircraft flight data acquisition. As explained in the background section of the patent, during each flight an aircraft generates data relating to flight and performance parameters such as air speed, altitude, vertical acceleration, heading and time. This data is typically gathered by a digital flight data acquisition unit, which may store data on magnetic or magnetic-optical media. When the aircraft lands, ground personnel board the aircraft, remove the media and mail the media to a flight operations center. This manual removal and posting of the data results in significant labour costs and time delays.

2.2 The use of radio frequency transmission systems to transmit flight data from an aircraft is known, but such systems are expensive to construct. Using a telephone system to transmit the data is also known, but that requires the aircraft to be docketed at the gate before transmission begins, resulting in a substantial time delay.

2.3 The invention proposes transmitting flight data from an aircraft upon landing by means of a (pre-existing) cellular infrastructure. To this end, the aircraft is equipped with a communications unit having multiple I/O ports, each attached to a cell channel. This allows communication between the cellular infrastructure and the communications unit to take place over multiple parallel channels.

3. *The term "cellular infrastructure"*

Claim 1 refers to the use of a "cellular infrastructure" to transfer flight data from an aircraft. Although this term could be interpreted broadly as encompassing any cellular network, including high-bandwidth networks, the Board considers that, in the light of the patent as a whole, the term is to be understood as referring only to cellular mobile phone services of the kind commercially offered at the patent's priority date. Indeed, paragraph [0010] of the patent explains that "the present invention ... requires little expense to implement because it uses well-known technology and the cellular infrastructure which is already in place".

4. *Admission of document D27*

4.1 The appellant filed document D27 together with the statement of grounds of appeal. In support of the document's admission into the proceedings, it observed that claim 1 had been filed only during the oral proceedings at which the Opposition Division had taken its decision and contained features which had not been present in the claims of the patent as granted. Referring to decisions T 101/87 of 25 January 1990, T 736/99 of 20 June 2002 and T 241/10 of 10 July 2014,



the appellant argued that a new document submitted upon filing an appeal in reaction to substantial amendments filed during oral proceedings was not late-filed and, therefore, had to be admitted into the appeal proceedings. In addition, document D27 disclosed a telecommunication method for increasing the data rate of a transmission and was relevant for assessing inventive step for the system of claim 1, according to which "the communication between the cellular infrastructure and the communications unit can take place simultaneously over multiple parallel channels".

4.2 The respondent argued that document D27 should not be admitted into the proceedings because it was "completely irrelevant", in particular in view of its publication date. The skilled person at the priority date of the patent would not go back to technology dating from 1985. Its admission would also go against procedural economy, as a large number of documents were already on file.

4.3 Since the Board agrees with the appellant that document D27 cannot be said to be irrelevant for assessing inventive step for the subject-matter of claim 1 and that its filing was a reasonable reaction to amendments filed during the oral proceedings before the Opposition Division, it decides to exercise its discretion under Article 12(4) RPBA and admit the document into the proceedings.

## 5. *Inventive step*

5.1 It is undisputed that document D2 represents the closest prior art. Document D2 discloses an aircraft data communication system having a plurality of wireless ground links that link aircraft-resident

subsystems storing flight performance data with airport-located ground subsystems, each ground subsystem being coupled to a remote flight operations control centre (see page 1, lines 3 to 14).

- 5.2 The system of document D2 comprises, in the aircraft,
- a digital flight data acquisition unit (column 9, lines 47 to 57);
  - a storage medium having stored thereon flight data sensed by at least one sensor on the aircraft as a file (column 9, lines 47 to 57); and
  - means for compressing said flight data to provide a compressed file (column 10, lines 15 to 27).

5.3 The system further comprises, in the aircraft and coupled to the storage medium, a communications unit in the form of a wireless transceiver (column 10, lines 28 to 36). This transceiver is intended to communicate the compressed flight data to a wireless router installed in an airport terminal building (column 10, lines 28 to 51; column 11, lines 11 to 22). The data transfer is initiated automatically upon landing of the aircraft (column 19, lines 11 to 22).

5.4 Document D2 does not explicitly disclose that the flight performance data includes "time, airspeed, altitude, vertical acceleration, and heading data", but these parameters are well-known flight performance parameters as admitted in paragraph [0003] of the background section of the patent.

5.5 The only remaining differences from the subject-matter of claim 1 are the following two features:

- (i) the infrastructure is cellular; and

(ii) the communications unit has a serial card having multiple I/O ports each attached to a cell channel which can open, sustain, and close a physical, over-the-air channel to the cellular infrastructure, so that communication between the infrastructure and the communications unit can take place simultaneously over multiple parallel channels.

5.6 In its letter of 15 March 2016, the appellant observed that document D2 disclosed a plurality of coverage areas (corresponding to a plurality of wireless routers) which could be regarded as cells and, hence, appeared to disclose the "cellular infrastructure" of feature (i). At the oral proceedings the appellant no longer maintained that argument. The Board notes that document D2 in any event does not disclose a cellular infrastructure within the meaning of the patent (see point 3. above).

5.7 As to feature (ii), at the oral proceedings the parties agreed that its essential element was the communications unit's ability to support simultaneous communication of data over multiple parallel channels and that "a serial card having multiple I/O ports each attached to a cell channel which can open, sustain, and close a physical, over-the-air channel to the cellular infrastructure" was an obvious implementation of that ability.

5.8 According to the appellant's main line of argument, features (i) and (ii) solved independent partial problems and could therefore be treated separately in the assessment of inventive step. Feature (i) allowed using, for the transfer of flight data, a well-known technology which was already in place and thereby

avoided the use of a dedicated data link, whereas feature (ii) improved the data rate and achieved a low data transmission time by transferring data over multiple channels in parallel.

Each feature could be used without the other and would then still achieve the same effect. A cellular infrastructure could be used without the simultaneous transfer of data over multiple channels, and the respondent actually had, during both the examination proceedings and the opposition proceedings, attempted to obtain protection for a system incorporating feature (i) but not feature (ii). Similarly, multiple parallel channels could be used without the infrastructure being a cellular infrastructure; it was in fact common practice to transfer data through multiple channels in any communication infrastructure.

As to the respondent's argument that features (i) and (ii) were interrelated because feature (ii) mitigated the low data transfer rate of the cellular infrastructure, the appellant noted that it was not indicated anywhere in the application as filed that the data transfer rate of a cellular infrastructure would be too low for transferring flight data files or that too low data a transfer rate would have to be mitigated. In any case, it had not been shown that a cellular infrastructure had insufficient capacity for transferring flight data files. In addition, document D6 disclosed that, at the priority date, GSM was a growing technology and would offer higher data rates in the future. In any event, claim 1 was not limited to GSM.

5.9 The respondent submitted that document D2 disclosed the use of a high-bandwidth short-range wireless

communication medium operating in the unlicensed 2.4-2.5 GHz frequency band. The skilled person would not replace a high-bandwidth communication network with a GSM network allowing only narrow-bandwidth communication. Document D6 stated on page 1, lines 2 to 8, that cellular links had high latency with long, variable delays and a low and variable throughput and were prone to sudden disconnection. Section 2.3 pointed out further problems when using TCP/IP as the transport protocol in a GSM network. Since the aircraft industry was conservative, the skilled person would conclude that he should not use GSM. Feature (ii) mitigated those problems. The skilled person would not take a step backwards unless he also saw the step forward. Features (i) and (ii) were therefore interrelated and could not be treated separately.

5.10 Neither document D2 nor the patent in suit mentions the data rate of the respective wireless networks used or the minimum acceptable data rate for transferring flight data, and at the oral proceedings the respondent confirmed that a GSM network's data rate at the priority date of the patent was in principle sufficient. Furthermore, for most of the problems of cellular data links pointed out in document D6 the Board fails to see how feature (ii) could provide a solution.

5.11 The Board nevertheless accepts that the bandwidth of the wireless network of document D2 is considerably higher than that of cellular mobile phone services commercially offered at the patent's priority date (see point 3 above). Feature (ii), which provides that communication can take place over at least two parallel channels of the cellular network, mitigates the drop in bandwidth when replacing the wireless network of

document D2 with a cellular infrastructure in the sense that the ability to transfer data over multiple parallel channels allows the bandwidth to be increased when the circumstances so require. The Board therefore considers that features (i) and (ii) cannot be treated separately in assessing inventive step.

- 5.12 Starting from document D2, the problem solved by features (i) and (ii) may be seen as that of obviating the need for a dedicated radio frequency communication infrastructure while guaranteeing sufficient bandwidth.

The Board observes that the skilled person to be considered is the person skilled in the field to which the problem belongs (see decision T 26/98 of 30 April 2002, reasons 6.2 and 6.3), which in this case is the field of wireless data communications. This means, in particular, that the respondent's submissions based on an alleged technical prejudice existing in the airline industry are less relevant.

- 5.13 The appellant argued that the skilled person, faced with the above problem, would consider all existing technologies available for transferring data files. He would, in particular, consider using cellular technology because - as acknowledged in column 3, lines 15 to 21, of the patent's description - cellular communications infrastructures were well known in the art. As shown by documents D6 and D8, at the priority date of the patent such cellular infrastructures were already used for transferring data files. Document D6 in particular taught the skilled person to use a GSM architecture in order to avoid the use of a dedicated data link, as it disclosed that GSM networks already existed and were increasingly familiar to the user (page 1, last paragraph) and also that they were widely

available in Europe and rapidly expanding throughout the rest of the world (page 2, third paragraph).

The skilled person would have been aware that GSM could be used to transfer data at the data rate required by the circumstances because it was part of his common general knowledge to increase the data rate by transmitting data over multiple parallel channels. Such solutions were shown, for example, by document D9 on page 2, lines 9 to 15, and by document D27 on page 1, lines 21 to 25, on page 3, lines 26 to 28, and in Figure 1. Although document D27 related not to cellular infrastructures but to wired telecommunication systems, it was established case law that solutions to general technical problems in non-specific general fields had to be viewed as forming part of the general technical knowledge which *a priori* was to be attributed to those skilled persons versed in any specific technical field. In this respect, the appellant referred to decisions T 176/84 (OJ EPO 1986, 50) and T 195/84 (OJ EPO 1986, 121).

- 5.14 Document D9 is a patent application published in 1994, i.e. four years before the priority date of the patent in suit. It discloses an information transmission system for increasing the effective rate of information transfer across a communication medium such as a cellular mobile telephone network by means of data compression and "synchronised superposition of channels" (see abstract). According to page 2, lines 9 to 15, a communication channel between two locations may be implemented by means of a plurality of individual channels of predetermined bandwidth acting together, resulting in a bandwidth greater than the bandwidth of any one of the individuals channels. At the oral proceedings, the respondent sought to

disqualify the technical disclosure of document D9. However, the Board sees no reason why the skilled person would dismiss the document as non-enabling; although it focuses primarily on (video) compression, the disclosed technique of increasing bandwidth by means of a plurality of individual channels is simple enough for it to be implemented by the skilled person.

Document D27 is a patent application published in 1985. It discloses a broadband digital transmission system capable of transmitting a high-bit-rate data stream over low-bit-rate telephone networks by distributing the high-bit-rate stream over six separate low-bit-rate data streams (see abstract).

- 5.15 Although both document D9 and document D27 disclose the principle of transmitting data over multiple parallel channels to increase the data rate, the Board considers its disclosure in two patent applications to be insufficient evidence for the appellant's assertion that, at the priority date of the patent in suit, that principle was in fact part of the common general knowledge of the person skilled in the field of wireless data communications.

Consequently, the Board is not convinced that the skilled person, starting from document D2 and faced with the problem posed, upon reading either document D6 or D8 in the light of his common general knowledge would realise that any shortcoming in bandwidth offered by GSM networks can be compensated for by transmitting data over multiple GSM channels in parallel. The Board therefore judges that the skilled person would not derive from this prior art and his common general knowledge the required hint that would lead him to the combination of features (i) and (ii).



5.16 Hence, the subject-matter of claim 1 and that of its dependent claims 2 to 8 involves an inventive step within the meaning of Articles 52(1) and 56 EPC.

6. *Sufficiency of disclosure*

The Board has no reason to doubt the Opposition Division's conclusion, uncontested on appeal, that the patent as amended complies with the requirement of sufficiency of disclosure (Articles 83 and 100(b) EPC).

7. *Conclusion*

Since the patent as amended meets the requirements of the EPC, the appeal is to be dismissed.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



I. Aperribay

R. Moufang

Decision electronically authenticated