Datasheet for the decision of 4 March 2011

Case Number: T 1818/08 - 3.5.03
Application Number: 01918818.4
Publication Number: 1269276
IPC: G05B 19/042
Language of the proceedings: EN
Title of invention: Plug and play sensor integration for a process module
Patentee: LAM RESEARCH CORPORATION
Opponent: -
Headword: Plug and play sensor/LAM RESEARCH CORPORATION
Relevant legal provisions:
EPC Art. 82, 111(1)
Relevant legal provisions (EPC 1973): -
Keyword: "Unity of invention - yes"
"Remittal to first instance - yes"
Decisions cited:
G 0002/92, T 0063/86, T 2287/08
Case Number: T 1818/08 - 3.5.03

DECISION
of the Technical Board of Appeal 3.5.03
of 4 March 2011

Appellant: LAM RESEARCH CORPORATION
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Decision under appeal: Decision of the Examining Division of the European Patent Office posted 3 April 2008 refusing European patent application No. 01918818.4 pursuant to Article 97(2) EPC.

Composition of the Board:
Chairman: A. S. Clelland
Members: A. J. Madenach
R. Moufang
Summary of Facts and Submissions

I. The present appeal is against the decision of the examining division to refuse application No. 01918818.4 on the grounds that the application did not fulfil the requirement of unity (Article 82 EPC) and that the claims relating to a second invention had not been searched.

In an obiter dictum, the examining division also observed that claim 1 lacked clarity (Article 84 EPC) and its subject-matter lacked an inventive step (Article 56 EPC), citing in this respect:


II. An appeal was filed on 27 May 2008. The appropriate fee was paid and the corresponding statement of grounds was filed. The appellant requested that the decision be set aside and a patent be granted on the basis of the claims of a main or of an auxiliary request. On 26 November 2010, the board summoned the appellant to oral proceedings. Together with the summons, the board issued a communication under Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA).

III. Oral proceedings took place on 4 March 2011.

The appellant requested that the decision of the examining division be set aside and a patent be granted on the basis of the claims 1-15 of a revised main
request or of claims 1-9 of a revised auxiliary request, both filed at the oral proceedings.

IV. Independent claim 1 according to the main request reads as follows:

"A computer-implemented method for communicating between a computing system (20) of a process module (12) and a first sensor (16), wherein the process module (12) has a process chamber (18), the method comprising the steps of:

initializing (402) the computing system (20) of the process module (12);
initializing (404) the first sensor (16) which is able to measure a first parameter in the process chamber (18);
transmitting a request to connect message (408) from the first sensor (16) to the computing system (20) of the process module (12);
transmitting a command to get reportable specification message [sic] from the computing system (20) of the process module (12) to the first sensor (16), having the first sensor (16) respond to the command by transmitting to the computing system (20) a reportable specification message (434) which informs the process module (12) of the type, range, frequency and distribution of data that will be provided by the first sensor (16) to the computing system (20) and such that the process module computing system is able to use data from the first sensor (24) without requiring additional programming of the computing system (20) of the process module (12);
transmitting, from the computing system (20) to the first sensor (16), process related commands related to the execution of process actions; and thereafter at the computing system (20) of the processing module (12) and during processing, receiving real-time sensor data from the first sensor (16), the sensor data time-stamped and synchronized to the process chamber (18); and making use of the reportable specification message (434) at the computing system (20) to render the sensor data in a form usable by the computing system (20) of the processing module (12) to adjust processing in the process chamber (18)."

Independent claim 10 according to the main request reads as follows:

"An apparatus for processing semiconductor related devices, comprising:

a process chamber (18) for processing semiconductor related devices;
a computing system (20) of a process module (12), the computing system (20) electrically connected to the process chamber (18) and arranged to control the process chamber (18), the computing system (20) having means for transmitting a command to get reportable specification messages;
a network (14) electrically connected to the computing system;
a connection monitor task which is spawned in the computing system after the computing system is initialized;
a first sensor (16) electrically connected to the network, the first sensor (16) arranged to sense and
report time-stamped and synchronized process conditions within the process chamber (18), the first sensor (16) further including a reportable specification message that contains data uploadable by the first sensor (16) to the computing system (20) in response to the command, the reportable specification message configured to inform the process module (12) of the type, range, frequency and distribution of data that will be provided by the first sensor (16) and such that the computing system (20) of the process module (12) is able to use data from the first sensor (24) without requiring additional programming of the computing system (20) of the process module (12); and a first sensor messaging task which is spawned from the connection monitor task within the computing system of the process module after the first sensor initiates a connection with the computing system; wherein:
the computing system (20) of the process module (12) is configured to transmit to the first sensor (16) process related commands related to the execution of process actions; and
the computing system (20) of the processing module (12) is configured to receive, during processing in the processing chamber (18), sensor data from the first sensor (16) in real time and to make use of the reportable specification message (434) to render the sensor data in a form usable by the computing system (20) of the processing module (12) to control processing in the processing chamber (18)."

The claims of the first auxiliary request are identical to claims 1-9 of the main request, the apparatus claims 10-15 having been deleted.
Reasons for the decision:

1. Amendments (Article 123(2) EPC):

1.1 Claim 1 is based on original claim 1. The board is satisfied that the further features of present claim 1 (of both requests) do not contain subject-matter which extends beyond the content of the application as filed.

1.2 Specifically, the feature "having the first sensor (16) respond to the command by transmitting to the computing system (20) a reportable specification message (434) which informs the process module (12) of the type, range, frequency and distribution of data that will be provided by the first sensor (16) to the computing system (20) and such that the process module computing system is able to use data from the first sensor (24) without requiring additional programming of the computing system (20) of the process module (12); transmitting from the computing system (20) to the first sensor (16), process related commands related to the execution of process actions" essentially derives from page 8, lines 12-30 in combination with step 434 in Figure 4 of the published application.

The feature "at the computing system (20) of the processing module (12) and during processing, receiving real-time sensor data from the first sensor (16), the sensor data time-stamped and synchronized to the process chamber (18); and making use of the reportable specification message (434) at the computing system (20) to render the sensor data in a form usable by the computing system (20) of the processing module (12) to
adjust processing in the process chamber (18)"

essentially derives from page 10, line 8-14 in

combination with step 448 in Figure 4 of the published application.

1.3 Claim 10 according to the main request is based on

original claim 10 with amendments corresponding to

those in claim 1.

The application accordingly complies with the

requirement of Article 123(2) EPC.

2. Unity (Article 82 EPC):

2.1 The examining division refused the application for lack

of unity (Article 82 EPC). The board concludes that,

after amendment, the present application complies with

the requirements of Article 82 EPC for the following

reasons:

2.2 Independent claim 1 of the main request relates to a

computer-implemented method for communicating between a

computing system and a sensor. This method essentially

comprises steps for (i) initialisation of the computing

system and of the sensor and steps for transmitting (ii)

a request to connect message(s) from the sensor to the

computing system, (iii) a command to get reportable

specification message(s) from the computing system to

the sensor, (iv) a reportable specification message of

a specific format from the sensor to the computing

system, (v) from the computing system to the sensor,

process related commands, and (vi) receiving, at the

computing system, sensor data which are in a form

usable to the computing system by making use of the
reportable specification message, and for (vii) making use of the reportable specification message to adjust processing in the process chamber.

Independent claim 10 of the main request relates to an apparatus for processing semiconductor related devices. This apparatus comprises a process chamber, a computer system, a network, a connection monitor task, a first sensor and a first sensor messaging task.

2.3 According to Article 82 EPC, a European application must "relate to one invention only or to a group of inventions so linked as to form a single general inventive concept". In relation to groups of inventions, Rule 44(1) EPC further stipulates that "the requirement of unity of invention under Article 82 shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those features which define a contribution which each of the claimed inventions considered as a whole makes over the prior art."

2.4 The inventions defined in claims 1 and 10 pertain to different categories, i.e. claim 1 to a method and claim 10 to an apparatus. They do, in the board's opinion, fall into the category (ii) listed in the Guidelines for Examination C III-20, 7.2:

"(ii) in addition to an independent claim for a given process, an independent claim for an apparatus or means specifically designed for carrying out the said process".
The amended apparatus claim 10 is specified as being for processing semiconductor related devices and now specifically comprises both the feature that the computing system has means for transmitting a command to get reportable specification messages and the feature that the first sensor includes a reportable specification message having the specific data format as recited in claim 1 and being configured to inform the process module about the data format. The computing system is specifically designed to transmit process related commands to the sensor. These features serve to carry out the method steps (iii) to (v) referred to at point 2.2 above. The claimed apparatus also specifies that the computing system spawns a connection monitor task. The presence of this task implies the generation and transmission of a request to connect message which is to be monitored by it. The apparatus according to claim 10 is thus specifically designed for carrying out the method step (ii) of paragraph 2.2 above. The claimed apparatus is also specifically designed for carrying out the above initialisation step, explicitly as far as the computer is concerned and implicitly as far as the sensor is concerned. Finally, the claimed apparatus is specifically configured to carry out method step (vi) of paragraph 2.2 above, i.e. receiving, at the computing system, sensor data which are in a form usable by the computing system, and the step of making use of the reportable specification message to adjust, i.e. control, processing in the process chamber (method step (vii) of paragraph 2.2 above).
2.5 The amended claims thus fulfil the requirements of Article 82 EPC.

2.6 The examining division also indicated in the impugned decision that the subject-matter of (original) claim 10, i.e. that of a second invention, had not been searched. This was said to be in contravention of the principle established in G 2/92 that an application cannot be pursued for subject-matter in respect of which no search fees have been paid.

2.7 The ruling of G 2/92, i.e. that an applicant who fails to pay the further search fees for a non-unitary application when requested to do so by the Search Division under Rule 46(1) EPC [1973] (now Rule 64(1) EPC) cannot pursue that application for the subject-matter in respect of which no search fees have been paid and that such an applicant must file a divisional application in respect of such subject-matter if he wishes to seek protection for it, no longer applies to the present case since for the reasons set out at paragraphs 2.1-2.5 above the independent claims 1 and 10 are directed to the searched invention.

3. Clarity (Article 84 EPC):

3.1 The examining division found in an obiter dictum to its decision that claim 1 did not satisfy the requirements of Article 84 EPC.

3.2 The specific deficiencies indicated by the examining division in this respect have been overcome by amendment.
The board is, thus, satisfied that claim 1 of both requests now fulfils the requirements of Article 84 EPC.

4. **Inventive step, main and auxiliary request (Article 56 EPC):**

4.1 The examining division found in an obiter dictum to its decision that claim 1 did not satisfy the requirements of Article 56 EPC.

4.2 The examining division considered during the examination procedure that D1 represents the closest prior art. The board agrees.

D1 relates to the same problem as the present invention, i.e. how to connect a variety of sensors to a system without having to program the system to match the various sensor protocols (see paragraph "Smart Transducer Interface Standards" bridging pages 24 and 25).

According to the solution described in D1, sensors include a memory chip with identification data including information such as manufacturer name, identification number, type of device, serial number and calibration data (paragraph bridging pages 24 and 25). These data are uploaded to the system upon power up or upon request thus enabling "plug and play" for replacement (of sensors) and upgrade (*loc. cit.*). In the board's view, the uploading of such data corresponds to transmitting a reportable specification message which at least implicitly informs the computer...
system, via the sensor identification, of the type of data that will be provided by the first sensor.

The system in D1 refers to a distributed measurement and control system comprising *inter alia* control networks (see opening paragraph on page 23). It is self-evident that such systems require a computing system.

Therefore, D1 discloses a computer-implemented method for communicating between a computing system and a sensor.

Computing systems need to be initialised. The same applies to intelligent devices such as sensors connected to computing systems via digital communications protocols of the kind used in D1 (paragraph bridging pages 24 and 25). Thus the method according to D1 comprises (implicitly) the steps of initializing the computing system and the sensor.

Likewise, connecting a sensor of the above type requires transmitting a request to connect message(s) from the first sensor to the computing system.

4.3 The fact that the computing system used in the method of claim 1 is specifically part of a process module having a process chamber relates to a specific industrial environment. The board fails to see any connection between the problem to be solved by the claimed invention, i.e. connecting a process module to a plurality of sensors, without the need for reprogramming to match various protocols of various sensors (page 2, lines 9-12 of the published
application) and the specific environment in which the invention is to be used according to the claim. Instead, the claimed method considered so far appears to be a particular application of the method known from D1 to a specific industrial environment. The application of a generic method to a particular environment which does not require any specific adaptation to the environment does not, in the board's opinion, require inventive skill.

Furthermore, the fact that according to claim 1 the sensor is able to measure a first parameter in the process chamber corresponds to what would be understood by the skilled person to be the routine function of a sensor.

The feature that "the process module computing system is able to use data from the first sensor (24) without requiring additional programming of the computing system (20) of the process module (12)" is intended to more clearly restrict the "specification message" in such a way that it comprises details of their specific operation, thus obviating the need for additional programming of the computer system (cf. point IV.1 of the grounds of appeal).

D1 is silent as to whether there is any need for additional programming of the computing system after the attachment of a sensor. However, the board interprets D1 as not requiring such additional programming. D1 mentions in the chapter "Smart Transducer Interface Standards", at page 24, see 2nd paragraph, that the problem of a time consuming and costly redesign of the application's interface being
required for any new environment can be overcome by the standard discussed in the document. This suggests that the standard described in D1 does not require additional programming upon the connection of a new sensor.

In the board's view, the process according to D1 does not necessarily require transmitting a "request to connect" message from the sensor to the computing system; connection of the sensor could be performed without transmitting such a request. It would, however, appear to be common practice to introduce such a step into the protocol controlling the connection of a sensor to a computing system in order to provide a reliable and systematic connection routine.

4.4 The same considerations apply to the subject-matter of claim 10 according to the main request, which essentially defines in more detail the industrial environment in which the method is to be used, namely an apparatus for processing a semiconductor related device. Here again, the application of an apparatus for a generic method to a particular environment which does not require any specific adaptation of the apparatus to the environment does not, in the board's opinion, require inventive skill.

4.5 D1 does not, however, contain any disclosure of the additional process steps, namely "transmitting from the computing system (20) to the first sensor (16), process related commands related to the execution of process actions; and thereafter at the computing system (20) of the processing module (12) and during processing receiving real-time data from the first sensor (16),
the sensor data [being] time-stamped and synchronized to the process chamber (18); and making use of the reportable specification message (434) at the computing system (20) to render the sensor data in a form usable by the computing system (20) of the processing module (12) to adjust processing in the process chamber (18)”, nor of the further details relating to the reportable specification message, i.e. range, frequency and distribution of data provided by the first sensor.

These features were not part of the claims as originally filed or of the claims the examining division based its decision upon.

The board accordingly concludes that the observations of the examining division as regards inventive step do not apply to present claim 1 of both requests or to claim 10 of the main request.

5. **Remittal to the first instance, Article 111(1) EPC**

5.1 According to Article 111(1) EPC a "Board of Appeal may either exercise any power within the competence of the department which was responsible for the decision appealed or remit the case to that department for further prosecution".

In the present case, there is no formal decision of the examining division on the questions of novelty and inventive step. Moreover, as noted above, the observations on inventive step raised in an *obiter dictum* to the impugned decision concerned a claim 1 of broader scope.
The amendments to claim 1 must thus be considered substantial amendments.

According to established case law, in a case where substantial amendments to the claims which require substantial further examination are proposed on appeal, the case should be remitted to the Examining Division (see e.g. T 63/86, OJ EPO 1988, 224 and T 2287/08, not published in the OJ EPO).

5.2 For these reasons, the board decides to remit the case to the department of first instance for further prosecution.
Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution on the basis of the Revised Main Request filed at the oral proceedings.

The Registrar

G. Rauh

The Chairman

A. S. Clelland