Internal distribution code:

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

Datasheet for the decision of 21 January 2025

Case Number: T 0650/22 - 3.5.01

Application Number: 10814328.0

Publication Number: 2473966

IPC: G06Q10/06

Language of the proceedings: EN

Title of invention:
INFORMATION SYSTEM FOR INDUSTRIAL VEHICLES INCLUDING CYCLICAL RECURRING VEHICLE INFORMATION MESSAGE

Patent Proprietor:
Crown Equipment Corporation

Opponent:
Jungheinrich Aktiengesellschaft

Headword:
Transmitting information over an industrial vehicle network bus/CROWN EQUIPMENT

Relevant legal provisions:
EPC Art. 100(a), 56, 111(1)
RPBA 2020 Art. 11

Keyword:

Inventive step - main request (no)
Remittal - auxiliary requests (yes)

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0

Case Number: T 0650/22 - 3.5.01

D E C I S I O N
of Technical Board of Appeal 3.5.01
of 21 January 2025

Appellant: (Opponent)	Jungheinrich Aktiengesellschaft Friedrich-Ebert-Damm 129 22047 Hamburg (DE)
Representative:	Hauck Patentanwaltspartnerschaft mbB Postfach 11 31 53 20431 Hamburg (DE)
Respondent: (Patent Proprietor)	Crown Equipment Corporation 40 South Washington Street New Bremen, OH 45869 (US)
Representative:	Moore, Michael Richard Keltie LLP No.1 London Bridge London SE1 9BA (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 7 January 2022 rejecting the opposition filed against European patent No. 2473966 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	M. Höhn
Members:	I. Kürten
	C. Schmidt

Summary of Facts and Submissions

I. This is an appeal against the decision of the opposition division to reject the opposition against European patent EP 2 473 966 B1.

II. The following document, cited during the opposition proceedings, is relevant for the present decision:

D1: Holger Zeltwanger (Hrsg.), "CANOpen - das standartisierte, eingebettete Netzwerk", VDE Verlag Berlin, 2008, 2. Auflage.

III. With the statement setting out the grounds of appeal the appellant (opponent) requested that the decision under appeal be set aside and the patent be revoked.

IV. With the reply to the grounds of appeal, the respondent (patent proprietor) requested that the appeal be dismissed, i.e. that the patent be maintained as granted (main request). Alternatively, they requested that the patent be maintained in amended form on the basis of the first to sixth auxiliary request filed during the opposition proceedings, or the seventh or eighth auxiliary request filed with the reply to the grounds of appeal.

V. In the communication accompanying the summons to oral proceedings, the Board expressed its preliminary opinion that *inter alia* claim 1 of the main request lacked an inventive step over D1.

VI. During the oral proceedings held on 21 January 2025 by videoconference, the parties confirmed their written requests.

VII. Claim 1 of the main request reads (numbering as in the decision under appeal):

M1 *A method of internally transmitting a cyclical recurring vehicle information message on an industrial vehicle network bus, the method comprising:*

M2 *obtaining data by an information master, wherein the information master is a control module that communicates across the industrial vehicle network bus, wherein the data is obtained from at least one other component that communicates across the industrial vehicle network bus;*

M3 *storing industrial vehicle information in a memory device, wherein the industrial vehicle information is stored according to a mapping specified by a data object model, wherein the data object model associates the stored industrial vehicle information with an associated context, and wherein the memory device is accessible by the information master;*

M4 *designating at least a portion of the stored industrial vehicle information as broadcast information;*
characterized in that the method further comprises:

M5 *defining a data set that includes an entirety of the broadcast information to be broadcast across the vehicle network bus, the data set further defined by subsets of data; and*

M6 *performing a cyclically recurring operation by the information master,*

M6.1 *wherein the cyclically recurring operation repeatedly broadcasts the data set on the industrial vehicle network bus across a plurality of periodically transmitted broadcast messages, each transmitted broadcast message containing an associated subset of the data set*

M6.1.4 *such that an entire sequence of broadcast messages is required to reconstruct the entirety of the data set,*

M6.2 *wherein the cyclically recurring operation refreshes the state of the industrial vehicle information;*

M7 *and wherein the cyclical recurring operation comprises repeatedly:*

M7.1 *extracting a portion of the industrial vehicle information stored in the memory device and designated as broadcast information by the information master, the portion corresponding to one or more data subsets;*

M7.2 *generating a broadcast message containing the extracted one or more data subsets; and*

M7.3 *transmitting the generated broadcast message across the industrial vehicle network bus;*

M7.4 *wherein the entire contents of the designated broadcast information is eventually transmitted on the industrial vehicle network bus across a plurality of transmitted broadcast messages such that the entirety of the data set can be reconstructed from a sequence of broadcast messages.*

Reasons for the Decision

The invention

1. The invention concerns transmitting vehicle information over an industrial vehicle network bus, such as a CAN bus ([0049] and [0050] of the B1 publication).

Looking at Figure 7, a control module ("information master" 120) in the industrial vehicle receives data from other vehicle components 122, such as motor or hydraulics control modules (Figure 5), via the industrial vehicle network bus 68. The received data is stored according to a "data object model" 124, which associates the data with context information ([0051] to [0053] and [0058] to [0060]).

A set of the stored data is designated as "broadcast information" and divided into subsets. The information master repeatedly and periodically broadcasts messages, each containing a data subset. This process, referred to as a "cyclically recurring operation" in the claims and an "industrial vehicle pulse" in the description, enables the complete data set to be reconstructed from the sequence of broadcast messages ([0054], [0055], and [0061] to [0063]).

2. *Main request - Article 100(a) EPC*

2.1 The Board judges that claim 1 of the patent as granted does not involve an inventive step (Article 56 EPC) over D1.

2.2 D1 is a textbook on the CANOpen standard. Section 4.2.1 (page 50) describes a centralised master/slave control

system for communication between multiple devices (slaves) over a CAN bus. It explains that the entire process data ("das gesamte Prozessbild") are periodically transmitted over the bus. A control master polls the slave devices for their data, processes them, and may copy them before sending the processed data to other slaves (Figure 26). Section 1.3 states that all process data in CANOpen follow a common object model that requires context information. Hence, D1 discloses features M2 to M4.

Furthermore, the transmission of process data involves dividing them into 8-byte segments, called process data objects (PDOs, page 51, second paragraph), with each PDO corresponding to a separate data frame. The data frames are broadcast over the CAN bus (section 4.2.1.2, first paragraph). The segmentation of process data into PDOs corresponds to dividing broadcast information into data subsets, as in features M5 and M7.1 of claim 1. Broadcasting the data frames corresponds to the message broadcasting in features M6, M7.2 and M7.3. Finally, sending data in multiple segments inherently requires their reconstruction at the receiver's side, as in feature M7.4.

2.3 Hence, the Board agrees with the appellant that the only difference between claim 1 and D1 is that the bus is an *industrial vehicle* network bus (M1).

2.4 The Board agrees with the opposition division and the appellant that this is obvious (see point 10.1.4 of the decision and points 3.4 and 3.7 of the grounds of appeal). D1 describes the use of CAN for communication between components of commercial vehicles, such as trucks (e.g., page 193, first paragraph). The skilled person, looking for other applications of CANOpen,

would consider its use in industrial vehicles, such as forklifts, without any inventive effort.

2.5 The respondent argued that while D1 disclosed message broadcasting, this was not in the context of master/slave communication. They noted that the first paragraph on page 50 described the master sending process data to all slaves sequentially ("*an alle Slave-Geräte nacheinander*"), which, in their view, contradicted broadcasting.

However, the Board considers that even if the first paragraph on page 50 suggests sequential transmission, this is merely an example of how the master sends data to the slaves and does not exclude other transmission methods taught elsewhere in D1. As observed by the appellant, D1 explicitly states on page 48, lines 7 to 8, that master/slave communication can be implemented as an unconfirmed (broadcast) service. Furthermore, as described on page 51, each PDO consists of a single data frame and according to page 52, paragraph 4.2.1.2, all data frames in a CAN bus system are sent in broadcast mode.

The opposition division's argument that D1 merely mentioned broadcasting as a possibility without explaining how to adapt master-slave communication for broadcasting is not convincing, since claim 1 is drafted on a similar level of generality. The patent specification even acknowledges that the broadcasting in the invention is the same as the known broadcasting in the CAN protocol([0057] of the B1 publication).

2.5.1 In this context, the respondent argued that the broadcasting mentioned on page 52 of D1 (section 4.2.1.2) pertained to the producer/consumer

communication mode only, where a single PDO, originating from a single sender, was transmitted to multiple recipients without central control by a master.

The Board is not convinced. Section 4.2.1 on page 50 generally describes PDOs and their modes of transfer (master/slave and producer/consumer), while subsections 4.2.1.1 to 4.2.1.7 detail various aspects of PDOs and their transmission. Hence, in the Board's view, section 4.2.1.2 is not limited to the producer/consumer communication mode, but provides details that apply to both modes. Although this section states that a master is not necessary for sending a PDO to multiple recipients, it does not imply that a master does not broadcast data. In the Board's view, a master is also a bus participant to which PDO broadcasting equally applies.

2.6 The respondent further argued that the claimed division of a data set (i.e., the broadcast information) into multiple subsets and the separate transmission of each subset differed from the segmentation of large process data into PDOs in CANOpen. The opposition division also held that the segments in D1 were independent, whereas the data subsets in claim 1 were part of a larger data set.

However, the Board agrees with the appellant that the patent specification provides no details about the data subsets that would distinguish them from the PDOs. The only information given is that the data subsets are part of a larger data set and are broadcast over the bus. The same applies to PDOs: they are part of the process data and are broadcast to interested listeners over the CAN bus. In the Board's view, the term

"independent segments" used in D1 (page 51, second paragraph) does not suggest that the segments contain unrelated data, but rather that each segment corresponds to a separate PDO. Since D1 describes broadcasting individual PDOs (section 4.2.1.2), transmitting the entire process data would necessarily require multiple messages, which the receiving devices would have to reconstruct.

2.7 Finally, the respondent argued that in Figure 26 of D1, the master merely forwarded data from a single slave to other slaves. It did not collect and store data from multiple components in a central storage. In contrast, the central storage in claim 1 enabled the information master to repeatedly transmit the entire data set to interested listeners. This approach decoupled data transmission from data reception and enabled late-joining listeners to obtain the full data set. Moreover, data transmission could be timed to avoid network congestion. Data subsets could be broadcast when bandwidth was available, and broadcasting could be paused when other nodes needed the bus. Such flexibility was not possible in the master/slave communication mode of D1, where the master immediately forwarded received data in the next bus cycle.

In view of these perceived differences, the respondent defined the objective technical problem as how to reliably keep the devices on the bus informed about each other's status without consuming too much bandwidth.

2.8 However, the Board agrees with the appellant that these differences are not evident from claim 1.

In terms of data collection, the information master in claim 1 does not necessarily gather data from multiple nodes, as it only requires data "from at least one other component." Figure 26 of D1 already illustrates obtaining data from a single component (slave).

Regarding storage, the master in D1 processes and copies the data it collects, which inherently involves storing the data before transmitting it to other devices. Thus, the storage in claim 1 does not differ from that in D1.

As for data transmission, D1 already discloses repeatedly transmitting the entire process data in the context of the master/slave communication mode (page 50, first sentence). Furthermore, the claim does not establish any decoupling between data reception and broadcasting and allows transmitting the received data in the next bus cycle, as in D1. Moreover, the Board sees no bandwidth-related advantages, as claim 1 imposes no restrictions on the size of the data subsets or the frequency of broadcasting. This means that it encompasses the frequent transmission of large data subsets, potentially consuming the entire bandwidth.

2.9 In view of the above, the Board judges that the ground for opposition under Article 100(a) EPC in conjunction with Article 56 EPC prejudices the maintenance of the patent as granted.

3. Remittal

Under Article 11 RPBA the Board may remit a case to the department whose decision was appealed if there are special reasons for doing so (Article 111(1) EPC). In this case, the appellant did not address any of the

auxiliary requests in their grounds of appeal. Although the Board highlighted this issue in its communication accompanying the summons, the appellant still did not provide arguments regarding the auxiliary requests. Hence, these requests would have had to be discussed for the first time during the oral proceedings before the Board. Considering this and the fact that the primary purpose of appeal proceedings is to review the first-instance decision, which did not deal with the auxiliary requests, the Board finds that there are special reasons for remitting the case to the opposition division for further prosecution based on the auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division for further prosecution.

The Registrar: The Chairman:

T. Buschek M. Höhn

Decision electronically authenticated