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**Datasheet for the decision  
of 11 January 2024**

**Case Number:** T 0675/22 - 3.5.05

**Application Number:** 17724647.7

**Publication Number:** 3465451

**IPC:** G06F13/38, G06F13/42

**Language of the proceedings:** EN

**Title of invention:**

Processing apparatus, image sensor, and system

**Applicant:**

Sony Semiconductor Solutions Corporation

**Headword:**

Single data bus/SONY

**Relevant legal provisions:**

EPC Art. 56

RPBA 2020 Art. 13(2)

**Keywords:**

Inventive step - main request (no)

Admittance of claim requests filed after summons - 1st to 3rd  
auxiliary requests (no): no "exceptional circumstances"

Representative's disrespectful behaviour before the Board -  
epi Code of Conduct invoked

**Decisions cited:**

T 0223/05, T 1404/05, T 2764/19



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Case Number: T 0675/22 - 3.5.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.05**  
**of 11 January 2024**

**Appellant:** Sony Semiconductor Solutions Corporation  
(Applicant) 4-14-1 Asahi-cho  
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**Representative:** MFG Patentanwälte  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 2 November 2021  
refusing European patent application  
No. 17724647.7 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chair** K. Bengi-Akyürek  
**Members:** E. Konak  
R. Romandini

## Summary of Facts and Submissions

I. The appeal is against the examining division's decision to refuse the present application. The examining division decided that the main request and auxiliary request 1 to 3 then on file did not meet the requirement of Article 56 EPC. The decision is based on following prior-art documents:

**D1:** "DRAFT MIPI Alliance Specification for Camera Serial Interface 2 (CSI-2)",

**D3:** US 2011/242342 A1.

Moreover, auxiliary requests 2 and 4 then on file were not admitted into the examination proceedings (Rule 137(3) EPC).

II. Oral proceedings were held before the board on 11 January 2024.

The appellant's final requests were that the decision under appeal be set aside and that a patent be granted on the basis of the claims of a **main request** filed as "auxiliary request 2" with the statement of grounds of appeal, or, of **auxiliary request 1**, submitted during the oral proceedings before the board, or either of **auxiliary requests 2 and 3**, both filed in response to the board's communication under Article 15(1) RPBA 2020 with letter of 27 December 2023.

At the end of the oral proceedings, the board's decision was announced.

III. Claim 1 of the **main request** reads as follows:

"A processing apparatus (100) comprising:  
a processing circuitry (102) configured to connect to a single data bus (B1) and to a control bus (B2),  
transmit control information to each of a plurality of image sensors (200A, 200B, 200C) via the control bus (B2),  
wherein the processing circuitry (102) and the plurality of image sensors (200A, 200B, 200C) are connected together by the single data bus (B1), and  
control an image output of each of the plurality of image sensors (200A, 200B, 200C) via the control bus (B2) on the basis of the control information, and  
control a joining of images received from the plurality of image sensors (200A, 200B, 200C), by controlling the plurality of image sensors (200A, 200B, 200C) to insert a frame start packet (FS) before a first line of a first image of the plurality of images received from the plurality of image sensors (200A, 200B, 200C), and insert a frame end packet (FE) after a last line of a last image of the plurality of images received from the plurality of image sensors (200A, 200B, 200C), and  
wherein an image of the plurality of images received from the plurality of image sensors (200A, 200B, 200C) neither containing a frame start packet (FS) nor a frame end packet (FE) is joined between the first image of the plurality of images to which the frame start packet (FS) was inserted and the last image of the plurality of images to which the frame end packet (FE) was inserted, and  
control an output timing of the images that are output by each of the plurality of image sensors (200A, 200B, 200C)."

Claim 1 of **auxiliary request 1** reads as follows:

"A processing apparatus (100) comprising:  
a processing circuitry (102) configured to connect to a single data bus (B1) and to a control bus (B2),  
transmit control information to each of a plurality of image sensors (200A, 200B, 200C) via the control bus (B2),  
wherein the processing circuitry (102) and the plurality of image sensors (200A, 200B, 10 200C) are connected together by the single data bus (B1), and  
control an image output of each of the plurality of image sensors (200A, 200B, 200C) via the control bus (B2) on the basis of the control information, and  
control a joining of images received from the plurality of image sensors (200A, 200B, 200C), by controlling a first image sensor (200A) of the plurality of image sensors (200A, 200B, 200C) to insert a frame start packet (FS) before a first line of a first image of the plurality of images received from the plurality of image sensors (200A, 200B, 200C), and a last image sensor (200C) to insert a frame end packet (FE) after a last line of a last image of the plurality of images received from the plurality of image sensors (200A, 200B, 200C), and  
wherein an image of the plurality of images received from another image sensor (200B) of the plurality of image sensors (200A, 200B, 200C) neither containing a frame start packet (FS) nor a frame end packet (FE) is joined between the first image of the plurality of images to which the frame start packet (FS) was inserted and the last image of the plurality of images to which the frame end packet (FE) was inserted, and  
controlling an output timing of the images that are output by each of the plurality of image sensors (200A, 200B, 200C)."

Claim 1 of **auxiliary request 2** differs from claim 1 of the main request by the following phrase (with the additions underlined):

"[...] controlling an output timing of the images that are output by each of the plurality of image sensors (200A, 200B, 200C) such that the images are multiplexed on the single data bus (B1) to join the images."

Claim 1 of **auxiliary request 3** differs from claim 1 of auxiliary request 2 by the following phrase (with the additions underlined):

"[...] connect to a single data bus (B1) and to a control bus (B2), the single data bus (B1) being a single serial data bus, [...]"

## **Reasons for the Decision**

1. Main request

1.1 Claim 1 of the main request includes the following limiting features (board's labelling):

- (1) A processing apparatus comprising: a processing circuitry configured to:
- (2) connect to a single data bus and to a control bus,
  - (2.1) transmit control information to each of a plurality of image sensors via the control bus,
  - (2.2) wherein the processing circuitry and the plurality of image sensors are connected together by the single data bus, and

- (3) control an image output of each of the plurality of image sensors via the control bus on the basis of the control information, and
- (4) control a joining of a plurality of images received from the plurality of image sensors, by:
  - (4.1) controlling the plurality of image sensors to insert a frame start packet before a first line of a first image of the plurality of images received from the plurality of image sensors, and
  - (4.2) controlling the plurality of image sensors to insert a frame end packet after a last line of a last image of the plurality of images received from the plurality of image sensors, and
  - (4.3) wherein an image of the plurality of images received from the plurality of image sensors neither containing a frame start packet nor a frame end packet is joined between the first image of the plurality of images to which the frame start packet was inserted and the last image of the plurality of images to which the frame end packet was inserted, and
  - (4.4) control an output timing of the images that are output by each of the plurality of image sensors.

1.2 The contested decision found the subject-matter of claim 1 not to involve an inventive step starting from the closest prior art **D3** in combination with **D1**, which was said to disclose the skilled person's common general knowledge with regard to the "CSI-2 standard".

1.3 A major point of contention between the appellant and the examining division was the interpretation of the term "single data bus". According to the appellant,



taking into account Article 69(1) EPC, the claims had to be interpreted in light of the description. In light of this, it referred to various passages of the description, and submitted that a "single data bus" should be understood as a "single data transfer means or interface", which was "single" in such a way that it could only be used by one sensor at a time.

The board disagrees. According to established case law, a claim should be read and interpreted on its own merits (see e.g. T 223/05, Reasons 3.5; T 1404/05, Reasons 3.6; T 2764/19, Reasons 3.1.1). For the skilled person, the term "single data bus" does not mean that the data bus can be used by only one sensor at a time. Rather, a bus can be serial or parallel and a "serial bus" can have multiple lanes. Therefore, a "single data bus" has no meaningful delimiting effect. The board also sees no reason to interpret claim 1 in view of any particular standard, let alone the "CSI-2 standard", since the claim does not provide for such a limitation.

- 1.4 The board thus agrees with the view expressed in the contested decision that the "data interface 1702" used in the system of D3 corresponds to a "single data bus" within the meaning of claim 1. As a consequence, the board does not regard features (2) and (2.2), which the appellant considers not to be disclosed by D3, as distinguishing features.

The appellant disagreed with this assessment. It argued, with reference to document D3, paragraph [0123], which states that "*each camera of the array 1700 has a first type of interface (i.e. data interface 1702)*", that in D3 each of the cameras was provided with an "*individual*" "serial data bus". Multiple serial data buses individually connected to

respective cameras was not a "single data bus" within the meaning of claim 1. The appellant also referred to D3, Fig. 2, which depicts separate "*data lines*" for each sensor. The board does not agree. Instead, the cited passage in paragraph [0123] clearly states that each camera of the array is connected to the *same* "data interface 1702", i.e. to a "single data bus". Regarding the "data lines" in Fig. 2, it is stated nowhere that they are individual data buses.

- 1.5 The appellant further argued that D3 did not disclose joining the images transmitted by the plurality of sensor already on the "single data bus", by inserting the frame start (FS) and frame end (FE) packets. According to the invention, as shown in Figs. 14 and 15 of the present application and indicated in paragraph [0159] of the description, the images were joined "already on the single data bus", getting rid of the need to have a "combiner" as in the system of D3.

However, claim 1 does not indicate **where** the images are joined; thus, the board is not convinced by the argument that the images were joined in claim 1 "already on the single data bus".

- 1.6 In view of these considerations, the subject-matter of claim 1 differs from D3 in **features (4.1), (4.2) and (4.3)**, namely in inserting an FS packet before a *first* image, an FE packet after a *last* image and inserting neither an FS packet nor an FE packet for "*middle*" images.

- 1.7 The technical effect of the distinguishing features is that the images received between an FS packet and an FE packet can be regarded as parts of the same frame.

- 1.8 The objective technical problem associated with those distinguishing features can thus be seen as *how to identify the group of partial images from a plurality of image sensors belonging to the same frame.*
- 1.9 The solution suggested in claim 1 is to insert an FS packet *before* the first partial image and an FE packet *after* the last image. This solution does not involve any inventive step, as it would have been obvious to the person skilled in the field of digital communications to mark the beginning and end of a stream of packets belonging to the same data unit, here a "single frame" captured by a plurality of image sensors.
- 1.10 The appellant argued that D3 would transmit images from the sensors to the combiner according to the CSI-2 standard, which clearly required inserting an FS and an FE packet for each image that is transmitted.

The board does not agree that the disclosure of D3 is limited to a particular standard, in particular to "CSI-2". Document D3 merely refers to the "CSI-2 standard" as one example in paragraph [0064]. Thus, it is not relevant for the issue at hand what the CSI-2 standard requires.

- 1.11 Therefore, the subject-matter of claim 1 of the main request does not involve an inventive step (Article 56 EPC).

## 2. Admittance of auxiliary requests 1 to 3

- 2.1 **Auxiliary request 1** was filed for the first time at the oral proceedings before the board. **Auxiliary requests 2 and 3** were filed with the appellant's letter of reply

to the board's communication under Article 15(1) RPBA 2020.

2.2 According to Article 13(2) RPBA 2020, any amendment to a party's appeal case made *after* notification of the summons to oral proceedings shall not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

2.3 "Exceptional circumstances" clearly do not exist in the case at hand. Instead, the appellant mistook the nature of appeal proceedings.

Regarding **auxiliary request 1**, the appellant argued that it realised that a scenario discussed at the oral proceedings, according to which two arbitrary image sensors would insert an FS or an FE packet, might fall under the scope of claim 1 of the main request and wished to restrict the claim wording accordingly.

Regarding **auxiliary requests 2 and 3**, it argued that the amendments were made to further clarify the meaning of the term "single data bus" and to "increase the distance to the prior-art document D3". However, the main purpose of appeal proceedings is reviewing the decision under appeal in a judicial manner. They are not devised as a "workshop" to arrive at an allowable claim wording.

2.4 The appellant also argued that the examining division had discouraged it from filing the amendments at hand, stating in a preliminary opinion that they would violate Article 123(2) EPC. Thus, the appellant could and in fact should have filed the amendments at the examination proceedings, but decided not to file them

in order to prevent the examining division from taking a decision with respect to Article 123(2) EPC.

2.5 Therefore, the board did not admit auxiliary requests 1 to 3 into the appeal proceedings (Article 13(2) RPBA 2020).

3. Procedural matters

3.1 At the oral proceedings before the board, in particular during the discussion regarding the admittance of the auxiliary requests, the appellant's representative requested a break in order to file a divisional application. When asked for the legal basis of this rather unusual request, he lost his composure. He criticised the board for members for their "destructive approach", lack of an "open mind" and unwillingness to resolve the issues at hand. He complained that he had the impression that the board was in a "hurry" and asked the board whether the board members had another "appointment". He said that he felt himself as if he were in the "military", making the German "*zum Kotzen*" gesture with the index finger pointing towards his open mouth. He then grabbed his mobile phone to call his secretary to give instructions to file a divisional applications unless the board gave a break. The board warned the representative that this behaviour in the proceedings was totally disrespectful towards the members of the board and constituted a violation of **Article 6 of the Code of Conduct of the Institute of Professional Representatives before the European Patent Office** (Official Journal EPO, 2022, A61; "epi Code of Conduct").

3.2 After a break given for the board to deliberate on the admittance of the present auxiliary requests, the

representative had regained his composure and stated that he had meanwhile filed a divisional application. The request for a break to file a divisional application was therefore moot.

## Order

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

The appeal is dismissed.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated