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Datasheet for the decision
of 23 November 2022

Case Number:	T 1332/19 - 3.4.03
Application Number:	05110957.7
Publication Number:	1632917
IPC:	G07F19/00
Language of the proceedings:	EN

Title of invention:
Secure handling of stored-value data objects

Applicant:
ERICSSON INC.

Headword:

Relevant legal provisions:
EPC 1973 Art. 56

Keyword:
Inventive step - (yes)

Decisions cited:

Catchword:

Case Number: **T 1332/19 - 3.4.03**

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 23 November 2022

Appellant: (Applicant)	ERICSSON INC. One Triangle Drive Research Triangle Park, NC 27709 (US)
Representative:	Brann AB P.O. Box 3690 Sveavägen 63 103 59 Stockholm (SE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 22 November 2018 refusing European patent application No. 05110957.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	T. Bokor
Members:	M. Papastefanou
	A. Böhm-Pélissier

Summary of Facts and Submissions

I.   The appeal is against the decision of the examining
        division refusing the European patent application
        No. 05 110 957.7 for lack of inventive step.

II.   The appellant-applicant requested initially that the
        decision under appeal be set aside and that a patent be
        granted on the basis of the "claims on file" as main
        request or of the auxiliary request filed with the
        statement of the grounds of appeal.

        As "claims on file" the board understands the claims
        underlying the contested decision, i.e. claims 1 to 22
        filed on 3 October 2018.

III.   The following documents are referred to in this
        decision:

        D5: EP 1 109 138 A2
        D6: WO 01/39055 A1

IV.   The board summoned the appellant to oral proceedings
        scheduled for 1 December 2022. In a communication under
        Article 15(1) RPBA 2020 the board expressed its
        preliminary opinion that the claims according to the
        main request seemed to involve an inventive step. It
        however raised objections under Article 84 EPC and
        indicated that a decision could be issued in writing,
        if the appellant submitted amendments overcoming those
        objections in time before the oral proceedings.

V.   With a letter dated 10 October 2022 the appellant
        submitted amended description pages. The board is
        satisfied that the amendment addresses its objections

(see the reasons for the decision below).

VI.   With a letter dated 15 November 2022 and received at
        the EPO on 17 November 2022, the appellant filed new
        claims replacing the claims then on file.

        Since these claims differ from the previous main
        request only in some editorial aspects and not in
        substance, the board does not see any reason to change
        its preliminary opinion with respect to inventive step,
        as based on the claims of the main request.

        Therefore, the board cancelled the oral proceedings and
        issues its decision in writing, as it had announced in
        its communication.

VII.   The current main - and sole - request is constituted by
        the following application documents:
        -   Description:
            Pages 1/31 to 6/31, and 21/31 filed with letter
            dated 10 October 2022;
            Pages 7/31 to 20/31 as originally filed
        -   Claims 1 to 20 filed with letter dated
            15 November 2022;
        -   Drawings, Sheets 1/6-6/6 as originally filed.

VIII.   Claim 1 of the main request reads as follows:

        A user device (16) serving as a secure agent for
        electronic ticket redeeming systems, the user device
        comprising:
        At least one wireless communication interface (42, 44)
        to communicate redemption transactions with the
        redeeming systems and electronic ticket transactions
        with a ticket issuing system, TIS (12);

A security element (20) being a tamper resistant secure module, comprising at least one processor and associated memory, arranged for:
storing an electronic ticket in the memory of the security element (20), said electronic ticket being generated with the desired content and signed or otherwise authenticated by the TIS (12) and sending the electronic ticket to a redeeming system (14) for high security verification of the ticket by a redeeming system, the electronic ticket comprised in a composite data object, digitally signed by the user device (16) and encrypted with a key known to the redeeming system, wherein the redeeming system (14) checks whether the received electronic ticket includes an authentic signature or other verification information from a legitimate TIS (12); wherein the user device further being arranged for:
receiving a rapid verification object comprising a seed value from the redeeming system, in response to the verification; and
using the rapid verification object for subsequent verification by generating a rapid verification token, RVT, based on the seed value of the rapid verification object, and for providing the rapid verification token to a rapid verification system (100) for subsequent verification by the rapid verification system having the same seed value as used by the user device (16), wherein the RVT is a verification sequence having at least one pseudorandom element generated in dependence on the seed value provided by the redeeming system (14).

Independent claim 5 of the main request has the following wording:

A redeeming system (14) arranged for managing the

*redemption of electronic tickets; the redeeming system
comprising:*

*At least one communication interface (80) to
communicate redemption transactions with user devices
storing electronic tickets; and*

A processing system (82) arranged for:

*Receiving, via the communication interface (80), an
electronic ticket comprised in a composite data object,
digitally signed by the user device (16) and encrypted
with a key known to the redeeming system from a user
device (16) according to any of claims 1-4; and*

*Verifying the electronic ticket by high security
verification, wherein the redeeming system (14) checks
whether the received electronic ticket includes an
authentic signature or other verification information
from a legitimate TIS (12);*

*Wherein the redeeming system being further arranged
for:*

*Issuing a rapid verification object comprising a seed
value to the user device (16), in response to the
verification for subsequent verification use, wherein
said seed value is provided by the redeeming system
(14).*

Independent claims 9 and 12 define corresponding
methods to the device of claims 1 and the system of
claim 5, respectively.

Reasons for the Decision

1.   The claimed invention

1.1   The application relates to handling of electronic
        tickets. A user purchases an electronic ticket from a
        Ticket Issuing System (TIS). The TIS sends the ticket
        to the user, who stores it in their user device (e.g.

mobile phone) within a tamper-proof secure module
(memory).

The user wishing to redeem the ticket connects through
their user device to a Ticket Redeem System (TRS) and
transmits the electronic ticket as part of a composite
data object, including the digital signature of the
user device.

The TRS verifies the electronic ticket ("high security
verification"), including the digital signature of the
TIS and, if the verification is positive, it sends a
Rapid Verification Object (RVO) comprising a seed
value, back to the user device.

When the user wants to use the ticket (e.g. enter a
venue for which the ticket was bought), their user
device generates a Rapid Verification Token (RVT) using
the RVO and the seed value. Upon entry to the venue,
the RVT is verified by a corresponding Rapid
Verification System (RVS).

Main Request

2.   In the context of the described invention, claim 1 of
        the main request defines a user device, claim 5 a
        redeeming system and claim 7 a system comprising both
        the claimed user device and redeeming system. Claims 9,
        12 and 15 define corresponding methods. Although claim
        5 defines a broader scope of protection, the decision
        under appeal was based on claim 1.

3.   Amendments, extension of subject-matter, clarity and
        support in the description

3.1   Claim 1 is based on a combination of original claims 5,
        6, and 7 with additional features from the description
        which find basis as follows (references to passages of
        the application as originally filed, unless otherwise
        indicated):
        -    the security element is a tamper resistant module;
             this is disclosed on page 10, lines 14 to 22 (and
             not on page 12, lines 7 and 8 as the appellant,
             then applicant, suggested in its letter of
             3 October 2018, see page 2, 4th paragraph);
        -    the electronic ticket is stored in the memory of
             the security element (20); this is disclosed on
             page 9, lines 5 to 7, page 10, lines 16 to 20 and
             Figure 3;
        -    the electronic ticket is generated with the desired
             content and signed or otherwise authenticated by
             the TIS; this is disclosed on page 11, lines 24 to
             26 and/or page 12, lines 3 to 6.

3.2   Claim 5 is based on a combination of original claims
        10, 11 and 12 with the same features from the
        description as claim 1.

3.3   Claim 7 is based on a combination of current claims 1
        and 5 and finds support in the same claims and passages
        as these claims. Claims 9, 12 and 15 define
        corresponding methods to the devices/systems of claims
        1, 5 and 7 respectively and find basis correspondingly.

3.4   The terms "high security verification" and "rapid
        verification".

3.4.1   Claim 1 gives brief explanations about the meaning of
        those terms:
        -    in high security verification, the redeeming system
             checks whether the received electronic ticket

includes an authentic signature or other
verification information from a legitimate TIS (12)
(see claim 1, lines 16 to 18);
- the rapid verification is done *by generating a*
  rapid verification token (RVT), based on the seed
  value of the rapid verification object, and...
  providing the rapid verification token to a rapid
  verification system (100) for subsequent
  verification by the rapid verification system
  having the same seed value as used by the user
  device (16) (see claim 1, lines 22 to 25).

3.4.2   In the board's view, the skilled reader understands
         from reading claim 1 that the high security
         verification and the rapid verification are different
         verification procedures. Any ambiguities that may exist
         to the skilled reader as to these verification
         procedures are dispelled by turning to the description.

         At first, there is a distinction of the procedures and
         the explanation of the difference between a "high
         security" and a "rapid" verification, see page 7, line
         21 to page 8, line 2. It becomes thus clear that the
         "high security verification" is a stricter verification
         procedure, carried out at/by the redeeming system. The
         rapid verification procedure is a faster, less secure
         procedure meant to be carried out at/by a rapid
         verification system at a subsequent stage. The board
         has no doubts that even from the definition of claim 1,
         it becomes clear for the skilled reader that a
         successful high-security verification is a prerequisite
         for the obtention of a rapid verification object that
         can be used in a subsequent rapid verification
         procedure (see also page 15, lines 11 to 21).

         The details of the high security verification are

described on page 14, line 5 to page 15, line 10, while those of the rapid verification on page 16, line 3 to page 17, line 8.

3.4.3   The board is thus satisfied that these terms are clear and supported by the description.

3.5   The description has been adapted to the claims. It is thus correspondingly limited to electronic tickets without the reference to the more general "value data objects". The board is thus also satisfied that the objections raised in its communication under Article 15(2) RPBA 2020 have been overcome.

3.6   The board's conclusion is, hence, that the requirements of Articles 84 and 123(2) EPC are fulfilled.

4.   Inventive step

4.1   The examining division concluded that claim 1 was obvious for the skilled person starting either from D6 or from D5.

4.2   Regarding D6, the board does not share the examining division's interpretation of D6, and in particular in relation of the rapid verification object (RVO), the seed value and the rapid verification token (RVT).

4.2.1   In the method of D6, the user purchases a ticket from a remote ticket selling server using their user device. When the payment is settled, the server sends a "cyber ticket" (i.e. ticket information), an ID, and a password to the user device (see Figure 2 and Page 12, lines 7 to 17). When the user wants to use the ticket (e.g. to enter a venue), they log to the ticket selling server with their user device using the received ID and

password and the ticket selling server sends the ticket
to be displayed ("in real time") at the user device
(see e.g. page 12, line 18 to page 13, line 29). In the
board's understanding, the electronic ticket is never
stored or generated at the user device but is received
"in real time" from the ticket selling server when
required (e.g. to enter a venue), after the user has
logged in with their ID and password. Indeed, D6 states
explicitly that the ticket is not stored at the user
device but can be received from the server when needed
(see e.g. page 13, lines 30 to 37, and page 15, lines 8
to 18).

4.2.2   The examining division considered the ID and password
received from the ticket selling server to correspond
to the rapid verification object (RVO) and the seed
value of claim 1. According to the examining division,
the user entering the ID and password causing the
display of the ticket at their device corresponded to
using the seed value of the RVO to generate the rapid
verification token (RVT). Moreover, the examining
division concluded that for the ticket to be displayed
at the user device, it had to be stored at the device
first. Hence, the displayed electronic ticket was also
stored in the user device. In any case, claim 1 did not
define that the user device stored the RVO or the seed
value, it only defined that they were used by the user
device to generate the RVT.

4.2.3   The board cannot follow this interpretation. D6
discloses explicitly that the *ticket implemented in the
form of a cyber ticket is not information previously
stored in the memory of the mobile communication
terminal, but information obtained in real time from
the ticket selling server connected thereto and
displayed* (see page 15, lines 8 to 13). In the board's

view, there is nothing in D6 that would have led the
skilled person to conclude that the ticket is stored in
the user device. Even if it could be considered that
when the ticket is received from the server to be
displayed it would be cached in a display memory cache
or similar, the board cannot see this as the ticket
being stored in the user device in the sense of the
claims.

In any case, the board agrees with the appellant that
claim 1 does not explicitly mention that the RVO and
the seed value received from the TRS are stored in the
user device. Although it might be convincingly argued
that both the RVO and the seed value have to be stored
in the memory of the user device in order to be used in
the subsequent generation of the RVT, the board points
rather to the fact that in claim 1 the RVT (i.e. the
"ticket" displayed for verification at the entrance of
a venue) is generated by the user device and not by any
remote server.

4.2.4   Claim 1 differs thus from D6 at least in that the rapid
        verification token is generated locally at the user
        device using information received from the remote
        server (the RVO and the seed value).

        The technical effect of this difference is that the
        user device does not need to connect to any remote
        server at the moment of the final verification (e.g.
        when the user is about to enter a venue or board a
        train, etc.). The verification can thus take place (and
        the user can receive the service they purchased a
        ticket for) without depending on the ability of the
        user device to connect to a remote server. In
        situations like entering a stadium or a concert venue
        where several thousands of people must have their

tickets verified within a short time it is plausible
that connection problems to a remote server could
arise. Connection problems may also arise from other
causes, such as a disruption in the network.

4.2.5   The skilled person would not be motivated to make any
         modifications to the system of D6 and arrive at the
         claimed invention without exercising inventive skill.

         At first, D6 teaches clearly away from allowing the
         user device to generate or even store the electronic
         ticket or any similar token. As D6 states, by keeping
         all the ticket information at the ticket selling server
         it is easier to control and manage all the relevant
         information relating to e.g. whether the ticket has
         been used (see page 15, lines 13 to 18). Letting the
         user device manage (generate, store) the ticket would
         be against this teaching. Moreover, there would be more
         modifications needed, e.g. instead of sending a user ID
         and a password to the user device, the server would
         have to send the necessary information for the user
         device to generate the ticket/token itself. The board
         takes the view that without any corresponding incentive
         in D6, such modifications would go beyond what can be
         considered obvious for the skilled person.

4.2.6   The board's conclusion is, therefore, that claim 1
         involves an inventive step when D6 is taken as a
         starting point. In view of this conclusion there is no
         need to address any other possible distinguishing
         features.

4.2.7   The same conclusion is valid for claim 5 as well. In
         the impugned decision, the examining division did not
         assess claim 5 separately. In view of its conclusion
         that claim 1 was not inventive there was also no need

to do so.

In its interpretation of D6 the examining division
considered that the ticket selling server corresponded
to the ticket redeeming system (TRS) of the
application. It also considered that the "payment
settling means" sent from the user device to the ticket
selling server corresponded to the electronic ticket of
the claims.

4.2.8   Claim 5 of the main request defines, among others, that
        the redeeming system receives an electronic ticket from
        a user device and is configured (the system has a
        processor which is configured) to check whether the
        electronic ticket includes *an authentic signature or
        other verification information from a legitimate TIS.*

        Although the electronic ticket is not part of the
        claimed redeeming system, the board considers that
        checking whether the ticket includes an authentic
        signature or other verification information from a
        legitimate TIS is a function of the system, i.e. it is
        a feature of the claimed redeeming system.

4.2.9   The board cannot follow the interpretation of the
        examining division. In the context of the application
        and D6, an electronic ticket has a specific meaning and
        is not merely "commercial data" as the examining
        division stated. An electronic ticket, like a
        conventional (paper) ticket, usually represents access
        to goods or services the user has paid for. Under these
        considerations, the payment settlement means in D6
        (i.e. user's bank account data or even digital money)
        cannot be seen as an electronic ticket. This becomes
        more evident when the whole of the application is
        considered, i.e. an electronic ticket is purchased from

a TIS, sent to a user device, and then sent from the
user device to a TRS for redemption. In D6 there is no
such course of action: a user purchases an electronic
ticket from a ticket selling server, they receive a
user ID and password to store in their device and use
these ID and password to have the ticket sent from the
server and displayed in their own device. In the
board's view, the ticket selling server of D6 cannot be
seen as the redeeming system of claim 5 and the action
of the user sending their payment settlement means to
the ticket selling server cannot be seen to correspond
as a redemption of an electronic ticket.

In addition, as explained with reference to claim 1,
the ID and the password of D6 cannot be seen as the RVO
and the seed value of the claim, either.

4.2.10   Thus the redeeming system of claim 5 substantially
differs from the system in D6 and the board holds that
D6 is not a suitable starting point for the skilled
person for arriving at the subject-matter of claim 5.

Even if D6 were considered as the starting point, the
skilled person wishing to modify the system of D6 and
arrive at the redeeming system of claim 5 would have to
carry out extensive and substantial modifications of
the system in D6, which, in the board's view, would go
beyond what can be considered obvious.

Therefore, the board holds that claim 5 involves an
inventive step when starting from D6.

4.3   The board does not agree with the examining division's
interpretation of D5, either.

D5 describes an electronic settlement system. The

examining division referred to the embodiment of Figure
10 and paragraphs [0112] to [0118]. In that embodiment,
a user with a mobile user device wants to purchase an
electronic ticket for a theatre, bus, train, etc. The
user's device (3B) communicates with the ticket vending
apparatus (40). A ticket is selected and the vending
apparatus (40) sends ticket information to the user
device (3B). The user device sends (3B) (payment)
settling information (of the user) to an electronic
bank (1). The vending apparatus (40) sends settling
information (of the vendor) to the electronic bank (1).
The bank (1) carries out the settlement and sends
settlement result information to the vending apparatus
(40). The vending apparatus (40) sends ticket data to
the user device (3B). The ticket data are stored in the
user device (3B) and retrieved for verification by an
access control apparatus (60) when the user wants to
use the ticket, e.g. to enter a theatre.

4.3.1   The examining division considered the whole "ticket
purchasing system" of D5 to correspond to the ticket
issuing system (TIS) of the application. It regarded
the settlement information sent from the user device to
the electronic bank as the electronic ticket of the
claims. The vending apparatus together with the
electronic bank of D5 were seen to correspond to the
redeeming system of the claims. The electronic ticket
data received and stored in the user device in D5 were
seen to correspond to the rapid verification object
(RVO), the seed value and the rapid verification token
(RVT) of the claims.

4.3.2   The board cannot follow this interpretation of D5. The
ticket issuing system (TIS) and the ticket redeeming
system (TRS) are separate systems, both as defined in
the claims and as described in the application as a

whole. Even if not explicitly mentioned as physically
separate entities, the skilled reader of the claims
understands that they are two distinct operational
entities. In the specific embodiment of D5 there are
only two entities (besides the user device) involved in
the purchase of the electronic ticket, the vending
apparatus and the electronic bank. The division
referred to an abstract "ticket issuing system" as
corresponding to the TIS. Such a system is not
described in D5 and, even if it were to be accepted
that such a system was indeed described, this would
correspond to the vending apparatus together with the
electronic bank. The examining division, however,
considered the vending apparatus with the electronic
bank also to correspond to the redeeming system of the
claims. As the TIS and the TRS of the claims are
separate entities, this interpretation of the system in
D5 cannot be accepted.

4.3.3   The examining division considered the settling
information sent from the user device to the electronic
bank to correspond to the electronic ticket of the
claims. D5 however defines an electronic ticket
("electronic ticket data") that is sent from the
vending apparatus to the user device. The board cannot
accept that an arbitrary piece of data (the settling
information) can be regarded as an electronic ticket
when D5 mentions explicitly a different electronic
ticket.

4.3.4   Finally, the application and the claims differentiate
between a RVO, a seed value and a RVT. The two first
are sent from the redeeming system to the user device,
which uses them to generate the third. Nothing similar
is disclosed in D5 and the board cannot accept that the
RVO, the seed value and RVT correspond to one and same

entity, the electronic ticket data of D5, as the examining division argued.

4.3.5   Summarising, the disclosure of D5 differs significantly from the claimed subject-matter, and the board is of the view that D5 does not represent a suitable starting point for any of the inventions claimed in the independent claims of the main request.

Even if D5 were taken as a starting point, the skilled person would have to carry out extensive modifications in its disclosure, changing its teaching significantly, to arrive at the claimed inventions. The board considers such modifications to go beyond what can be considered obvious for the skilled person, especially in the absence of any corresponding incentive in D5.

4.3.6   The board's conclusion is that the claims of the main request are not obvious when starting from D5.

4.4   The board's conclusion is, therefore, that the subject-matter of the claims of the main request involves an inventive step within the meaning of Article 56 EPC 1973.

5.   The board is hence convinced that the application according to the main request and the invention to which it relates meet the requirements of the EPC and EPC 1973 and a European patent is to be granted according to Article 97(1) EPC.

Order

For these reasons it is decided that:

1.   The decision under appeal is set aside.

2.   The case is remitted to the examining division with the
        order to grant a European patent in the following
        version:
        -   Description:
            Pages 1/31 to 6/31, and 21/31 filed with letter
            dated 10 October 2022;
            Pages 7/31 to 20/31 as originally filed
        -   Claims 1 to 20 filed with letter dated
            15 November 2022;
        -   Drawings, Sheets 1/6-6/6 as originally filed.

The Registrar: The Chairman:

S. Sánchez Chiquero   T. Bokor

Decision electronically authenticated