CMB and Limit Management

TIPS UDFS v.1.0.0

- A **Credit Memorandum Balance (CMB)** represents a limit, defined by a TIPS Participant for a Reachable Party, in the usage of the liquidity of a given TIPS Account.

- When defining a CMB, the account owner specifies the limit the CMB user cannot exceed using the payment capacity of the TIPS Account linked to the CMB.

- This presentation provides detailed information about CMB and includes several examples of possible **settlement scenarios** that involve a CMB in TIPS.

- Furthermore, the presentation gives details about **limit management** related to a CMB and provides examples useful to understand how it may affect the settlement of Instant Payment transactions and Recalls when settling on a CMB in TIPS.

TIPS Accounts and CMB

- Each CMB is linked to one TIPS Account, but each TIPS Account may have any number of CMBs, each CMB representing a credit line for a Reachable Party in TIPS.

- CMBs offer the possibility to define limit management flexibly on a TIPS Account, without dedicating liquidity exclusively for each single customer. Specifically, the sum of all CMB limits on a TIPS Account may be higher than the balance of the same Account at any time.

- Limits can be set to zero. In this case, the related user cannot make use of the payment capacity of the TIPS Account linked to the CMB until either (i) the limit is set by the TIPS Participant to a value greater than zero or (ii) the CMB starts receiving Instant Payments in credit.

- A CMB can also be unlimited. In this case, the related user can make use of the full payment capacity of the TIPS Account linked to the CMB.

□ Balance

450

TIPS Account

□ Limit headroom
□ Limit utilisation

Limit

| | 400 | 300 | ∞ |

400
350
300 | | 300 | |
250 | | | 200 |
200
150
100 | 0 | 100 | 100 | ∞ |
50
0
CMB1 | CMB2 | CMB3 | CMB4
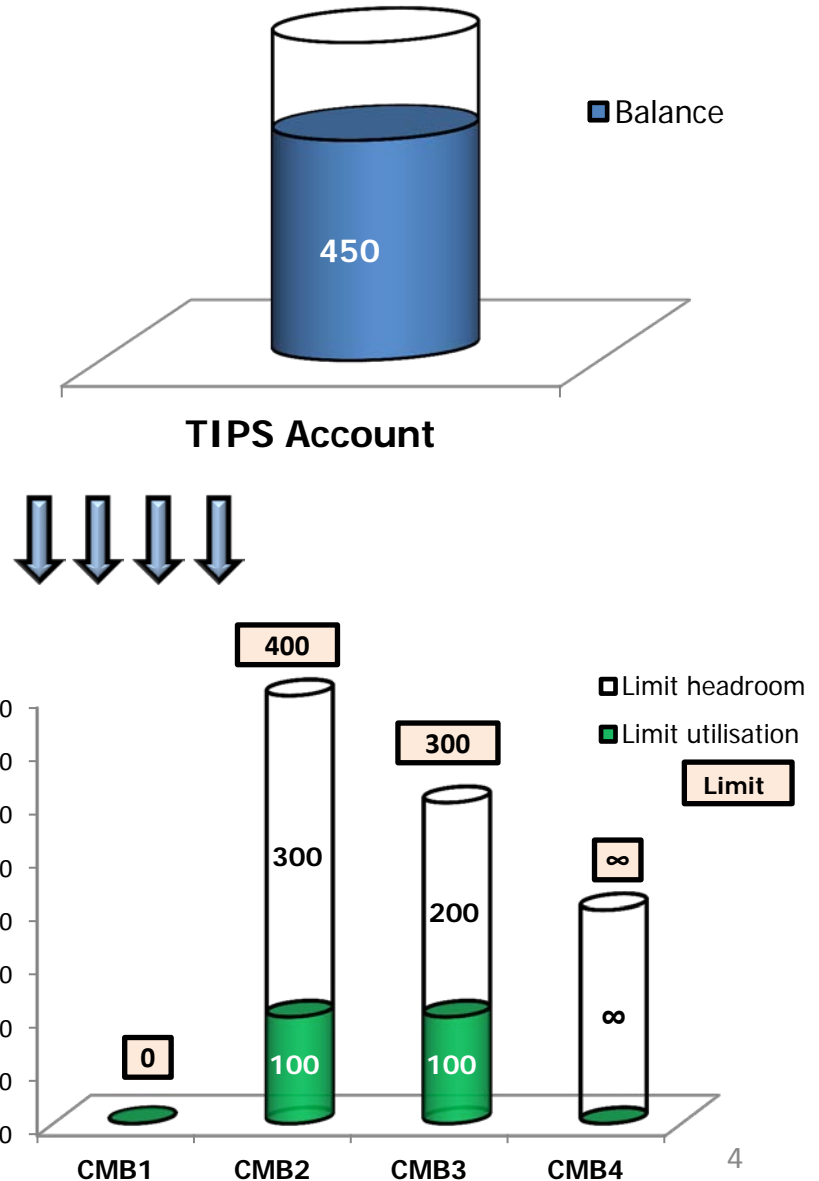
CMB headroom and utilisation

- A CMB Headroom is created in TIPS for each CMB. The current limit utilisation is always equal to the CMB limit minus the CMB headroom.

- When the CMB is unlimited, the headroom is considered infinite and the utilisation always zero.

- When an Instant Payment transaction involving one or two CMBs with a limit is settled, in addition to updating the cash balances for the involved accounts, the headroom and the limit utilisation of the related CMBs are also modified.

Limit headroom
Limit utilisation

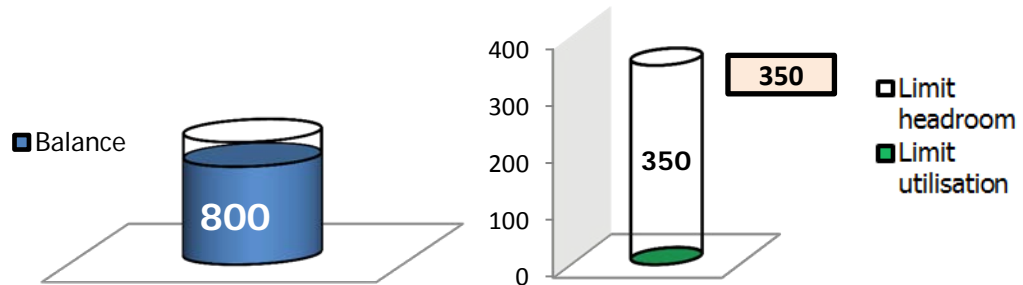Limit

$Lu = L - Lh$

$100 = 300 - 200$
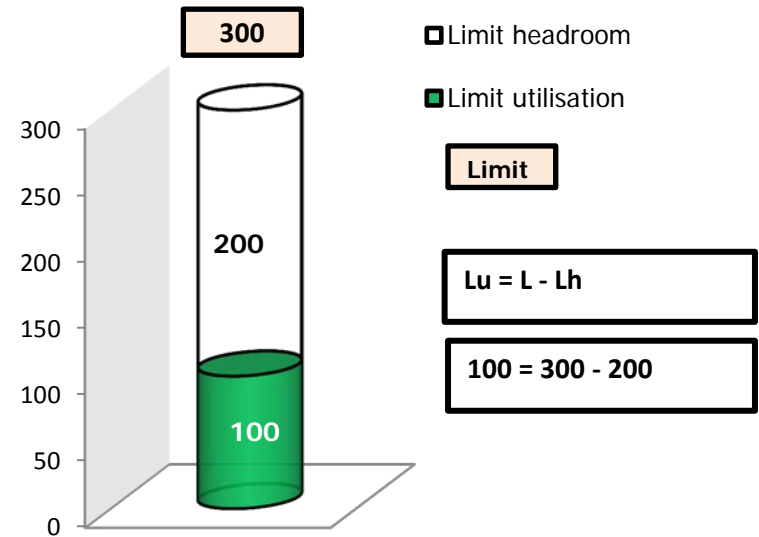
Settlement scenarios – Debiting the CMB

Whenever an Instant Payment transaction is settled against a given Originator CMB, TIPS debits the linked TIPS Account and decreases the relevant CMB Headroom accordingly at the same time. If the amount of an Instant Payment transaction would exceed the current CMB Headroom to be debited (or the available balance of the TIPS Account linked to the debiting CMB), then it is rejected.
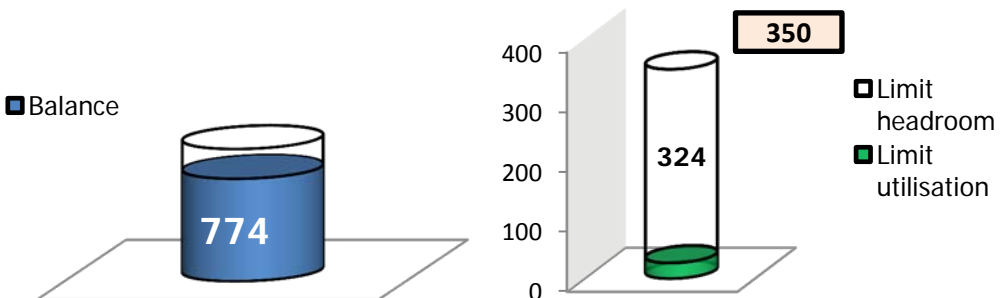
Case 1 – Successful scenario - The requested amount is lower than the limit headroom and lower than the account available balance. TIPS UDFS - 2.2.2.2 Successful scenario with confirmed order – Creditor account and debtor CMB

TIPS Account	CMB		
Available Balance	Limit	Limit utilisation	Limit headroom
800	350	0	**350**

Event	Settlement of an IP (26) against the Originator CMB

TIPS Account	CMB		
Available Balance	Limit	Limit utilisation	Limit headroom
774	350	26	324

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Case 2 – Unsuccessful scenario - The payment fails since the requested amount exceeds the CMB headroom. TIPS UDFS - 2.2.2.5 Error scenarios
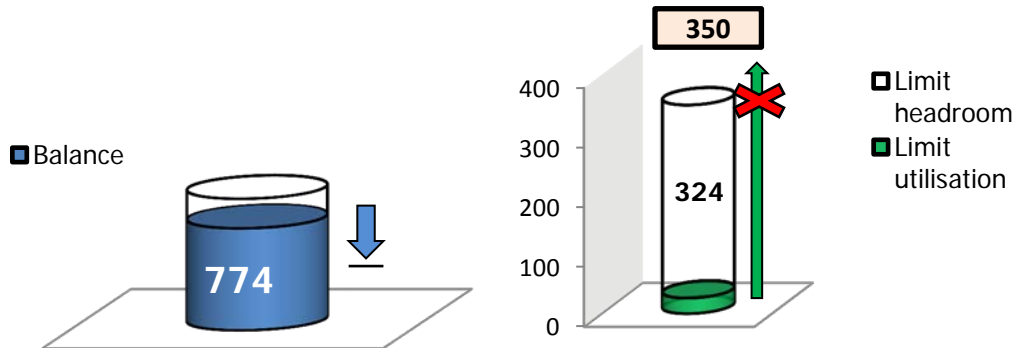
TIPS Account	CMB		
Available Balance	Limit	Limit utilisation	Limit headroom
774	350	26	324
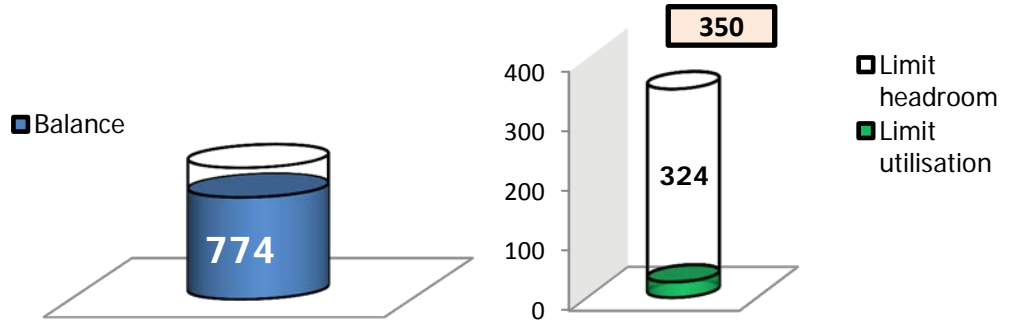
Event	Settlement of an IP (350 EUR) against the Originator CMB

Business rule:
Available amount not exceeded

Error Code:
AM23

TIPS Account	CMB		
Available Balance	Limit		Limit headroom
424	35	376	-26

The transaction is set to "Failed" status

Case 3 – Unsuccessful scenario – The payment fails since the requested amount exceeds the account available balance. <u>TIPS Accounts cannot have a negative balance under any circumstances</u>.

TIPS Account	CMB		
Available Balance	Limit	Limit utilisation	Limit headroom
200	300	0	**300**

Balance
200 / 300

300
Limit headroom
Limit utilisation
300
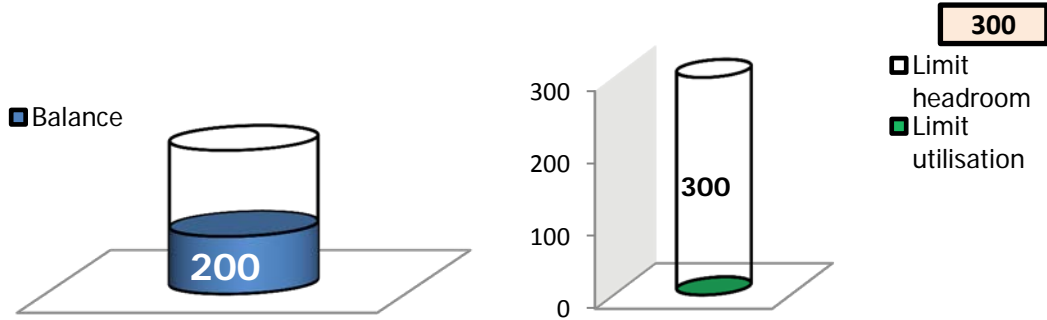
Event	Settlement of an IP (**250**) against the Originator CMB

Business rule:
Available amount not exceeded

Error Code:
AM23

TIPS Account			
Available Balance	Limit		Limit headroom
<0	300	250	50

<u>The transaction is set to "Failed" status</u>

Balance
200

300
Limit headroom
Limit utilisation
300
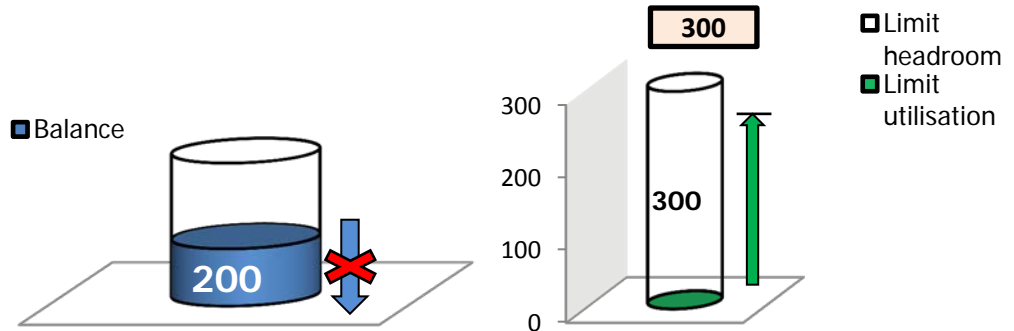
Settlement scenarios – Crediting the CMB

Whenever an Instant Payment transaction is settled against a given Beneficiary CMB, TIPS credits the linked TIPS Account and increases the relevant CMB Headroom accordingly at the same time.

Case 1 – Successful scenario - The available account balance is increased as well as the limit headroom. The utilisation becomes negative when the headroom exceeds the limit as a result of crediting payments. TIPS UDFS - 2.2.2.3 Successful scenario with confirmed order – Creditor CMB and debtor Account

TIPS Account	CMB		
Available Balance	Limit	Limit utilisation	Limit headroom
200	350	0	350
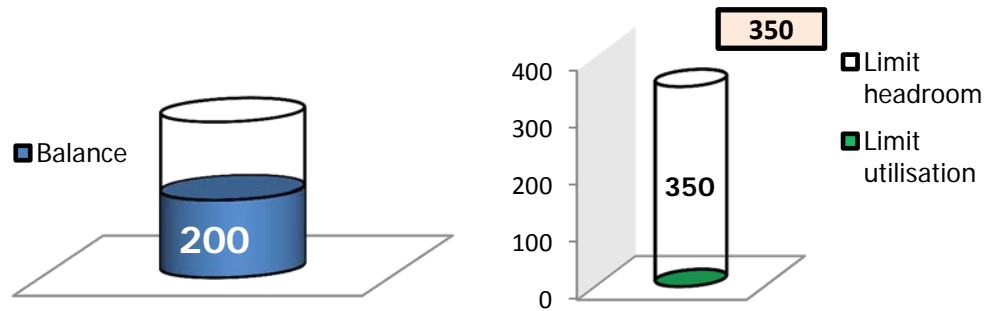
Event	Settlement of an IP (99) against the Beneficiary CMB

TIPS Account	CMB		
Available Balance	Limit	Limit utilisation	Limit headroom
299	350	-99	449

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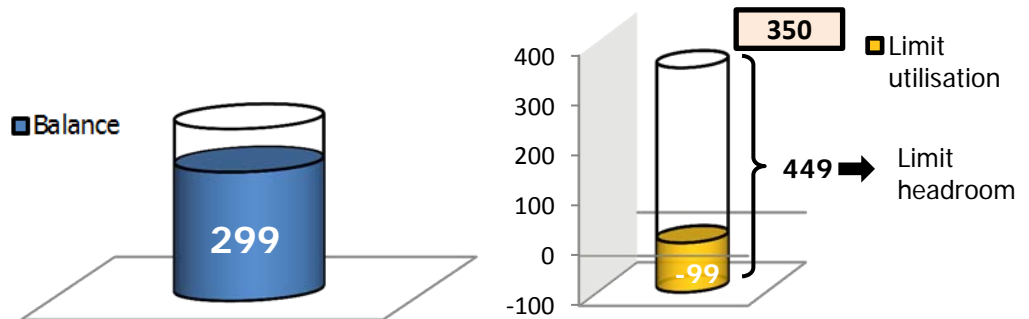
Limit Management

- A CMB Headroom is modified each time an Instant Payment transaction impacting the CMB is processed or <u>the CMB limit is adjusted</u>.

- The update of a CMB limit (and adjustment of the related headroom) together with the actions of blocking/unblocking of a participant/account or CMB, falls under the category: *Immediate reference data changes*. This class of operations refers to high-priority settlement-relevant reference data changes that need to be processed and applied in TIPS as soon as they are instructed.

- <u>The limit of a CMB can never be set to a negative value</u>, although the headroom and utilisation can go negative.

- When a CMB limit is modified, <u>the CMB headroom is updated </u>(increased or decreased) <u>on the basis of the difference between the new limit value of the CMB and the old limit value</u>: if this difference is positive, the headroom is increased; if the difference is negative, the headroom is decreased.
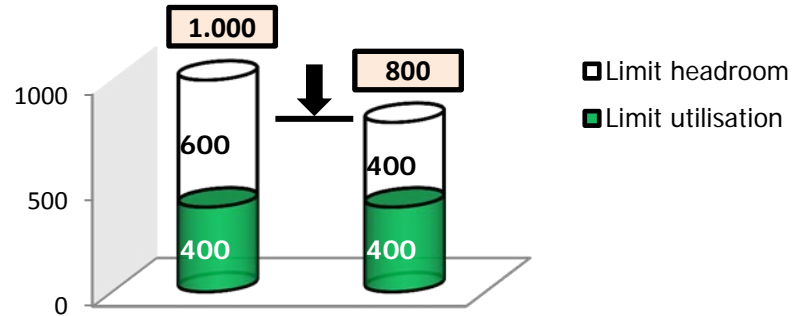
Limit management - scenarios

Case 1 – Successful scenario - The new limit value is set and <u>the CMB headroom amended</u>. It is decreased <u>by the difference between the new limit value and the old limit value</u>. TIPS UDFS - 2.9.1.1.7 Successful scenario – Decrease of a CMB Limit

CMB		
Limit	**Limit utilisation**	**Limit headroom**
1.000	400	**600**

Event	**Decrease the limit - NEW LIMIT 800**

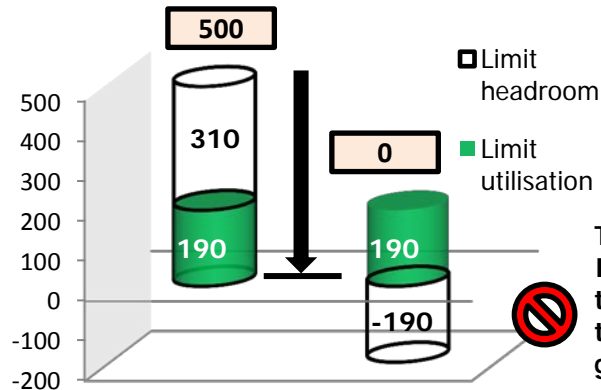| CMB		
Limit	**Limit utilisation**	**Limit headroom**
800	400	**400**

Case 2 – Successful scenario – The limit utilisation is positive and the new limit value is set to 0. The CMB headroom is amended accordingly. It is decreased by the difference between the new limit value and the old limit value. In this case the CMB will only accept Instant Payments transactions in credit until the headroom once again goes over zero.

CMB		
Limit	**Limit utilisation**	**Limit headroom**
500	190	**310**

Event	**Decrease the limit - NEW LIMIT 0**

CMB		
Limit	**Limit utilisation**	**Limit headroom**
0	190	**-190**

The CMB will only accept Instant Payments transactions in credit until the headroom once again goes over zero

Case 3 – Successful scenario - The limit headroom is negative and the new limit value is set greater than zero. The CMB headroom is increased by the difference between the new limit value and the old limit value.

CMB		
Limit	**Limit utilisation**	**Limit headroom**
0	190	**-190**

Event	**Increase the limit - NEW LIMIT 500**

CMB		
Limit	**Limit utilisation**	**Limit headroom**
500	190	**310**
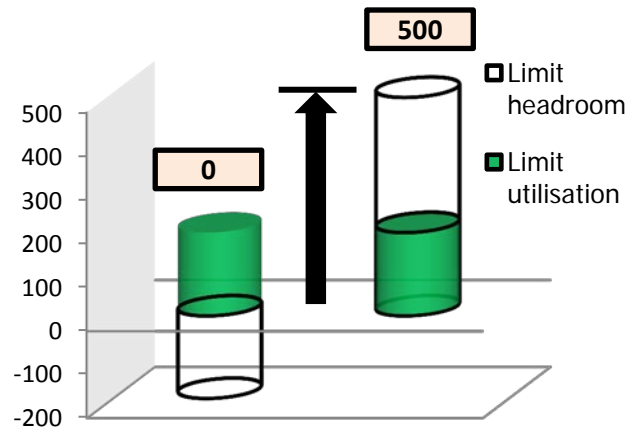
1 - Debit-only CMB Limit Management

1.1 - Periodic Limit Update

1.2 - Periodic Limit Utilisation/Headroom Update

1.3 - Mixed Approach

Debit-only CMB Limit Management

A CMB may be related to a Reachable Party that only executes payments (debiting the CMB) and never receive payments (crediting the CMB).

In order to make sure that sufficient limit headroom is always available for the processing of each single payment, the Account Holder may follow three different approaches:

1. A **periodic limit update** that may be performed in two different ways:
    - The CMB limit is increased at regular intervals***** (e.g. daily) by a fixed amount, no matter the limit utilisation during each interval;
    - The CMB limit is increased at regular intervals***** (e.g. daily) to the same extent as the increase in the limit utilisation, so to offer the same payment capacity for each interval.

2. A **periodic limit utilisation and limit headroom update** (based on the settlement of an Instant Payment wherein the Originator is the Account Holder and the Beneficiary is the CMB user) that may be performed in the two ways:
    - The limit headroom is increased (i.e. utilisation decreased) at regular intervals (e.g. daily) by a fixed amount no matter the limit utilisation;
    - The limit headroom is increased (i.e. utilisation decreased) at regular intervals to the same extent as the increase in the limit utilisation.

    After the settlement, the available balance of the TIPS Account remains unchanged, while the CMB limit headroom is increased by the same amount of the transferred amount. The limit utilization is decreased accordingly.

*The maximum value of the CMB limit is 999.999.999.999.999.999 (18 digits) in TIPS and 99.999.999.999.999 in the CRDM (14 digits).

3. A **mixed approach**:
    - The CMB limit is increased at regular intervals***** (e.g. daily) by a fixed amount, no matter the limit utilisation;

    And, when the Account Holder deems it appropriate:

    - The CMB limit is restored at its starting value;
    - The limit headroom is increased (and the utilisation decreased) to the same extent as the CMB limit utilisation (an Instant Payment is sent to settlement by the Account Holder with an appropriate transferred amount).

The maximum value accepted by TIPS and CRDM allow adopting both option 1 and 3 virtually without any technical restriction, as even when increasing the limit e.g. by 10^7 euros on a daily basis, the maximum value would be reached after many thousands of years.

*The maximum value of the CMB limit is 999.999.999.999.999.999 (18 digits) in TIPS and 99.999.999.999.999 in the CRDM (14 digits).

Periodic Limit Update

(Example 1) The Account Holder increases the CMB limit by 10.000 EUR at the beginning of each interval no matter the limit utilisation.

T	CMB	
Limit	**Limit utilisation**	**Limit headroom**
10.000	5.000	5.000

T+1	Event	Increase the limit - NEW LIMIT 20.000

T+1	CMB	
Limit	**Limit utilisation**	**Limit headroom**
20.000	5.000	**15.000**

T+2	Event	Increase the limit - NEW LIMIT 30.000
T+2	Event	Settlement of an IP (6.500) against the Originator CMB

T+2	CMB	
Limit	**Limit utilisation**	**Limit headroom**
30.000	11.500	**18.500**
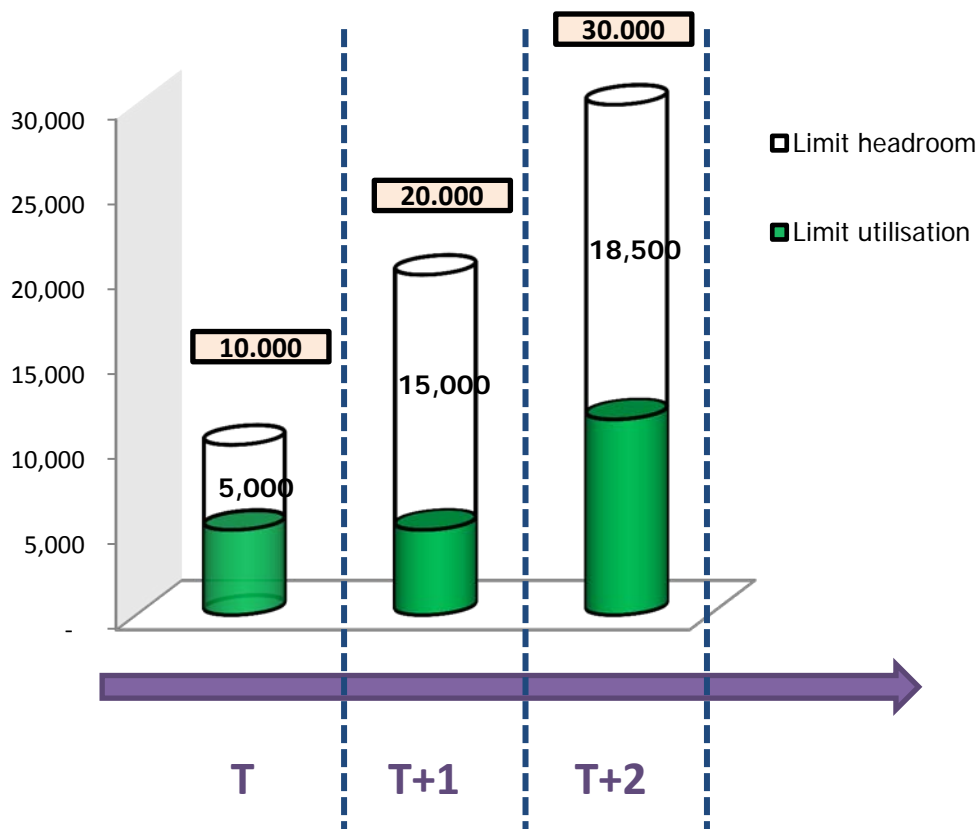
Periodic Limit Update

(Example 2) The Account Holder increases the CMB limit to the same extent as the increase in the limit utilisation (8.200 EUR).
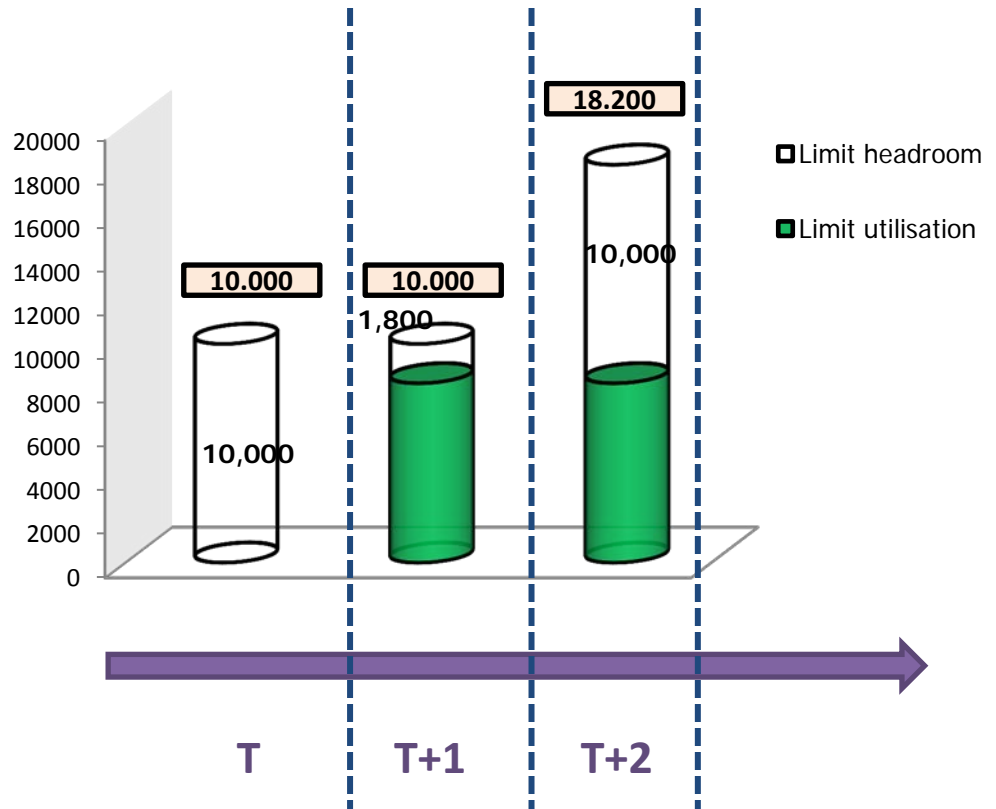
T	CMB	
Limit	**Limit utilisation**	**Limit headroom**
10.000	0	10.000

T+1	**Event**	Settlement of an IP (**8.200**) against the Originator CMB

T+1	CMB	
Limit	**Limit utilisation**	**Limit headroom**
10.000	**8.200**	**1.800**

T+2	**Event**	Increase the limit - NEW LIMIT 8.200

T+2	CMB	
Limit	**Limit utilisation**	**Limit headroom**
18.200	8.200	**10.000**

Periodic Limit Utilisation/Headroom Update

(Example 1) The Account Holder sends an IP (Transferred Amount 10.000 EUR) in order to increase the limit headroom (i.e. decrease the limit utilisation) at the beginning of each interval by 10.000 EUR no matter the limit utilisation.

T	CMB	
Limit	Limit utilisation	Limit headroom
10.000	9000	1000

T+1	Event	Settlement of an IP (**10.000**) against the Beneficiary CMB

T+1	CMB	
Limit	Limit utilisation	Limit headroom
10.000	**-1.000**	**11.000**

T+1	TIPS Account
Available Balance	
20.000	

T+2	Event	Settlement of an IP (**10.000**) against the Beneficiary CMB
T+2	Event	Settlement of an IP (**7.500**) against the Originator CMB

T+2	CMB	
Limit	Limit utilisation	Limit headroom
10.000	-3.500	**13.500**

T+2	TIPS Account
Available Balance	
12.500	
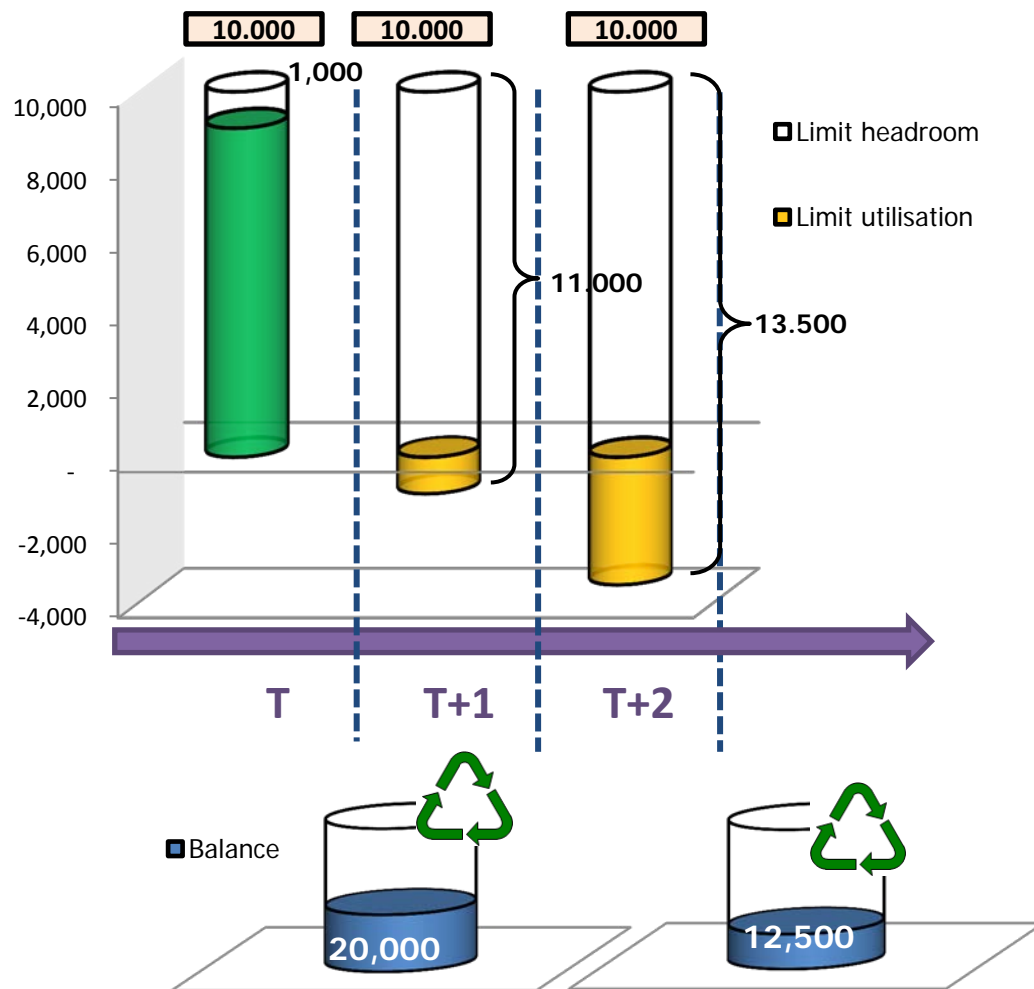
Periodic Limit Utilisation/Headroom Update

(Example 2) The Account Holder sends an IP (Transferred Amount 4.200 EUR) in order to increase the limit headroom (i.e. decrease the limit utilisation) to the same extent as the increase in the limit utilisation (4.200 EUR).

T	CMB	
Limit	Limit utilisation	Limit headroom
10.000	0	10.000

T+1	Event	Settlement of an IP (4.200) against the Originator CMB

T+1	CMB	
Limit	Limit utilisation	Limit headroom
10.000	**4.200**	**5.800**

T+1	TIPS Account
Available Balance	
20.000	

T+2	Event	Settlement of an IP (4.200) against the Beneficiary CMB

T+2	CMB	
Limit	Limit utilisation	Limit headroom
10.000	0	**10.000**
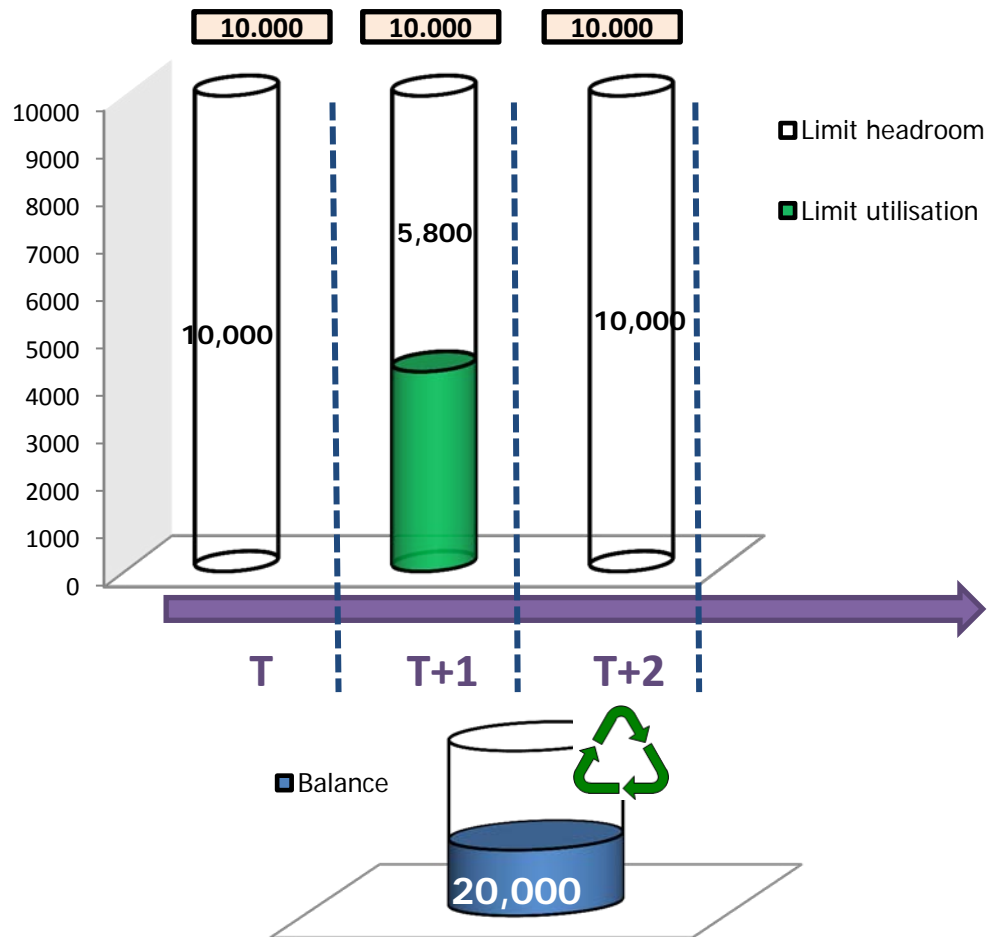
Mixed Approach

(Example 1) The CMB limit is increased by 10.000 EUR at regular intervals no matter the limit utilisation; At T+3, the Account Holder restores the CMB limit at its starting value (10.000 EUR) and sends an IP (Transferred Amount 12.000 EUR) in order to increase the limit headroom (i.e. decrease the limit utilisation) to the same extent as the increase in the limit utilisation (12.000 EUR).

T	CMB	
Limit	**Limit utilisation**	**Limit headroom**
10.000	5.000	5.000

T+1	Event	Increase the limit - NEW LIMIT 20.000
T+1	Event	Settlement of an IP (7.000) against the Originator CMB

T+1	CMB	
Limit	**Limit utilisation**	**Limit headroom**
20.000	12.000	**8.000**

T+2	Event	Increase the limit - NEW LIMIT 30.000

T+2	CMB	
Limit	**Limit utilisation**	**Limit headroom**
30.000	12.000	**18.000**

T+3	Event	Decrease the limit - NEW LIMIT 10.000
T+3	Event	Settlement of an IP (12.000) against the Beneficiary CMB

T+3	CMB	
Limit	**Limit utilisation**	**Limit headroom**
10.000	0	**10.000**
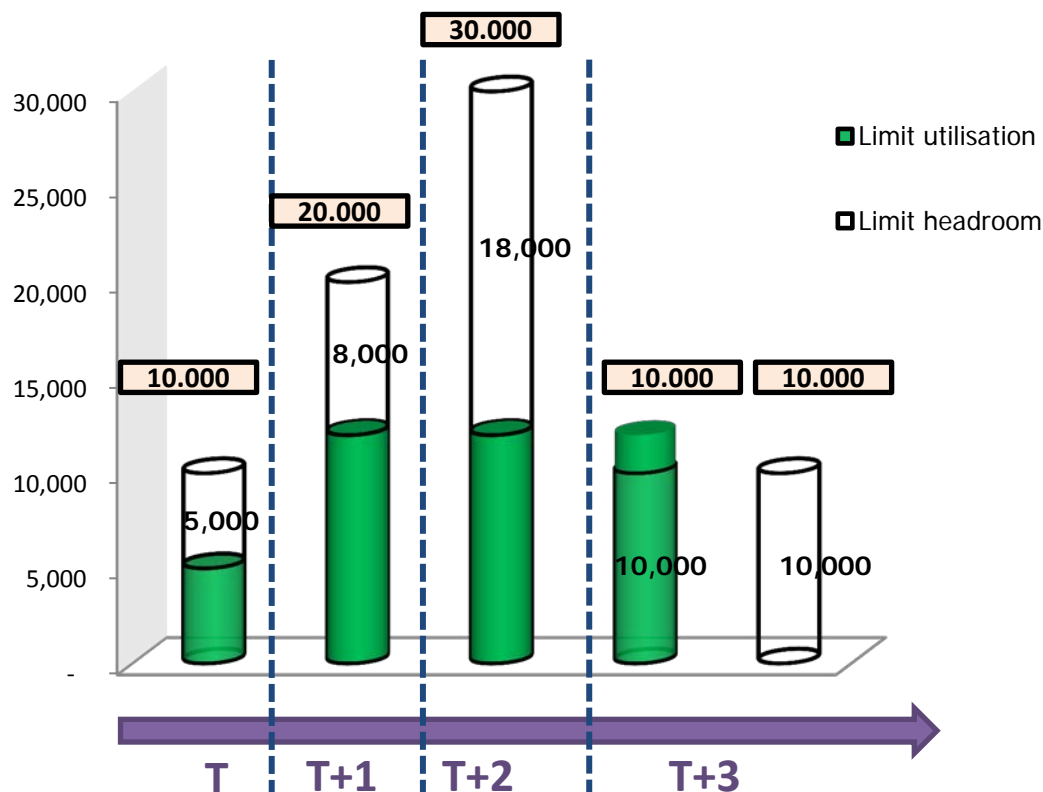
- **CMB in TIPS - CMB headroom and utilisation**
  - ✓ 1.3.2.3. Credit Memorandum Balance;
  - ✓ 1.3.2.4. Reference data for accounts and CMBs in TIPS;
  - ✓ 1.4.5. CMB Headroom;
  - ✓ 1.5.4. Reference data management.

- **Settlement scenarios - Debiting the CMB**
  - ✓ 1.5.2.1. Instant Payment transaction settlement process;
  - ✓ 2.2.2.2 Successful scenario with confirmed order – Creditor account and debtor CMB;
  - ✓ 2.2.2.5 Error scenarios.

- **Settlement scenarios - Crediting the CMB**
  - ✓ 1.5.2.1. Instant Payment transaction settlement process;
  - ✓ 2.2.2.3 Successful scenario with confirmed order – Creditor CMB and debtor Account.

- **CMB in TIPS - Limit Management**
  - ✓ 1.5.4.3. Limit management.