What exactly do we mean by ***Liabilities Waterfall Model***?

Definitions of Terms

In their consultation documents:

- The EBA talks about a "***liability cash flow model***" and then "***a cash flow model related to the liabilities of the securitisation***".
- BCBS/IOSCO talks about "***a liability cash flow model***".

It is first of all important to point out that the term '***cash flow model'*** used with reference to the ABS market over recent decades has not had an entirely consistent definition.

Normally, the term 'cash flow model' when referring to a third-party produced model provided on commercial terms, would consist of two quite distinct elements:

1. an ***Asset Model*** and
2. a ***Liabilities Waterfall Model***

I shall, for clarity, refer to the combination of these two elements as a '***Full Cash Flow Model***'.

See Figure 1 below.

The ***Asset Model:***

Inputs		**Processing**	**Outputs**
Objective Facts	**Subjective Assumptions**		
From transaction documentation and most recent investor reports or loan level data e.g. • Number and value of loans, • credit scores, • loan terms, • interest margins and indexes, • property values and location, etc.	These could vary a great deal in complexity and granularity, but would include the user's assumptions relating to economic variables that could affect the performance of the loan pool such as borrower income, economic activity measures, employment rates, interest rates, house price or vehicle valuation fluctuations, etc. High level inputs could be: • CPR • CDR • Recovery Lag • LIBOR Curve, etc.	Based on the inputs provided, the asset model predicts the future behaviour of the asset pool.	Calculated assumption values for each future period e.g. • Principal cash flow • Interest cash flow • Loan default rates • Losses, etc.

This element is ***Subjective***.

The ***Liabilities Waterfall Model:***

Inputs		Processing	Outputs
Objective Facts	**Subjective Assumptions**		
From transaction documentation e.g. • Note sizes, • priority of payments, • fixed rates, indexes and margins for interest on notes, • rules and initial values of funds and reserves, • fixed rates, indexes and margins for swaps, • trigger definitions, etc.	Outputs from Asset Model and User controlled inputs representing events outside of the asset pool – e.g. • counterparty rating events, • call options, counterparty termination events, • revolving pool options, etc.	Allocates cash flows of principal and interest to the beneficiaries of the transaction according to the liabilities waterfall documentation	• Interest to the notes • Principal to the notes

This element is ***Objective***.

Asset Model + Liabilities Waterfall Model = Full Cash Flow Model

An important reference point to this meeting is agreement of the definition of what a Liabilities Waterfall Model is.

All assumptions associated with the cash flow model are inputs to the Liabilities Waterfall Model. These input values are the full responsibility of the Liabilities Waterfall Model user.

In a commercially available ***Full Cash Flow Model***, the provider will include an ***Asset Model*** which will, given some typically high level assumption inputs, provide/generate for each future payment period a series of predicted values which are then passed into the Liabilities Waterfall Model.

It is only the Liabilities Waterfall Model that is in scope for these discussions.

For the purpose of the meeting, here is a suggested definition of Liabilities Waterfall Model:

> ***"The mathematical or computer code representation of the rules for the allocation of the cash flows of interest and principal of an Asset Backed Security to the beneficiaries of that security as stated in its written legal documentation."***

N.B. An essential feature of a Liabilities Waterfall Model is for it to provide opportunity for input values for every scenario the liabilities waterfall written documentation states consequences for. This serves two purposes:

- To provide the Liabilities Waterfall Model with everything it needs to drive it and give the correct cash flow outputs subject to the input assumptions the user provides and
- To show the user of the Liabilities Waterfall Model the ***full list of inputs*** the Liabilities Waterfall Model needs to allow it to operate properly and apply all of its rules.

Figure 1. Diagram of a Full Cash Flow Model, showing the Liabilities Waterfall Model in green and example inputs