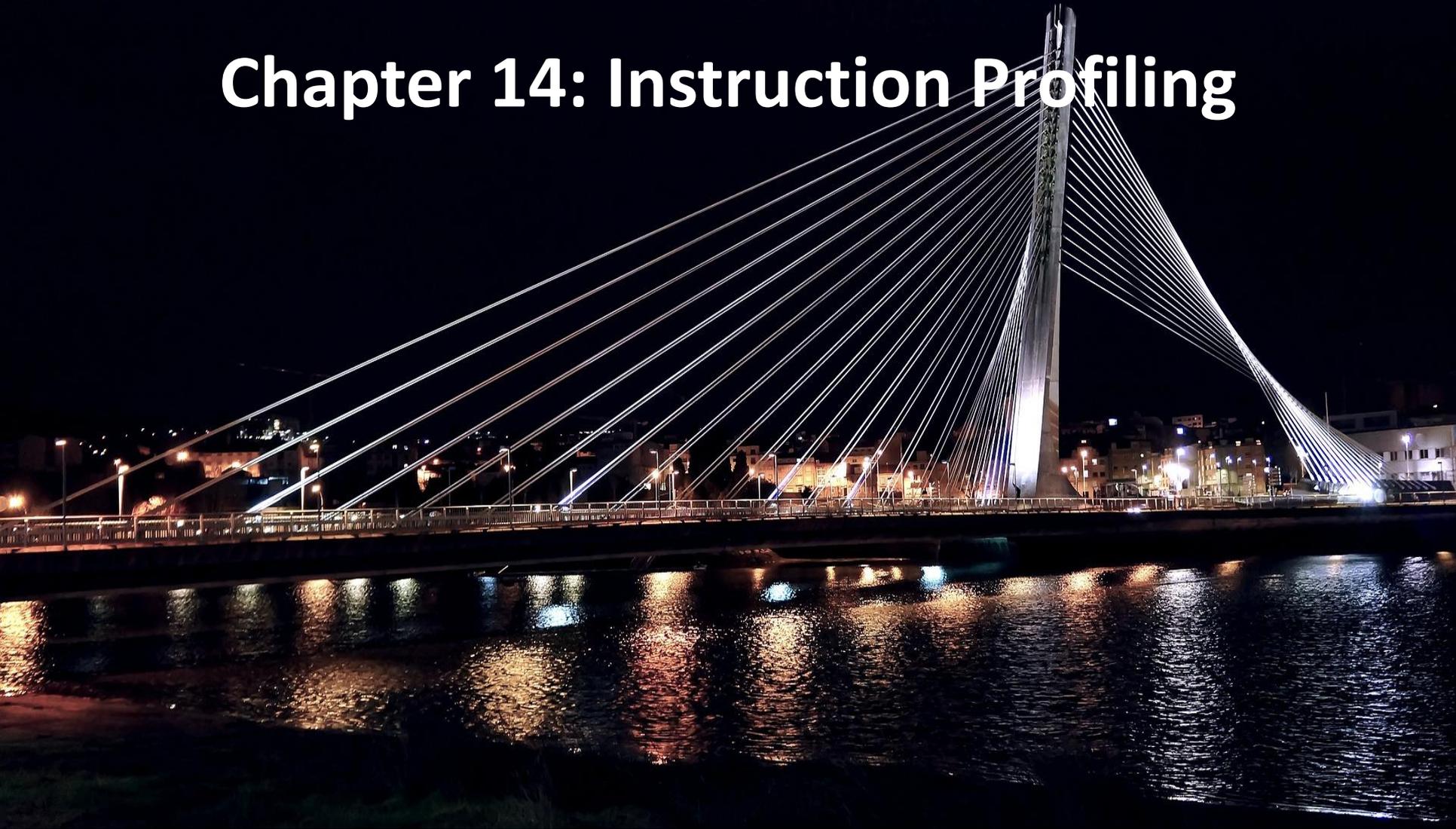


Chapter 14: Instruction Profiling



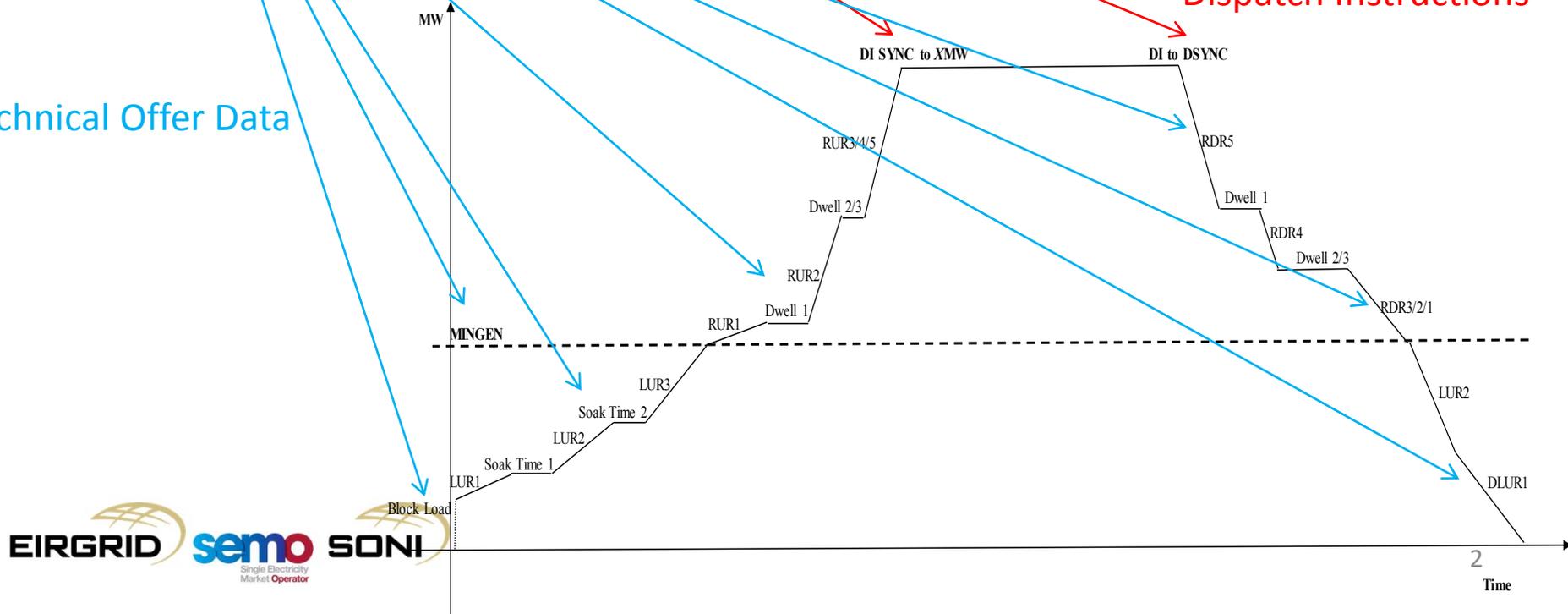
Instruction Profiling

TOD is used in Instruction Profiling to calculate the MW output a unit should be performing to meet its dispatch instruction. Instruction Profiling has uses in two areas.

SEM Inputs

Dispatch Instructions

Technical Offer Data



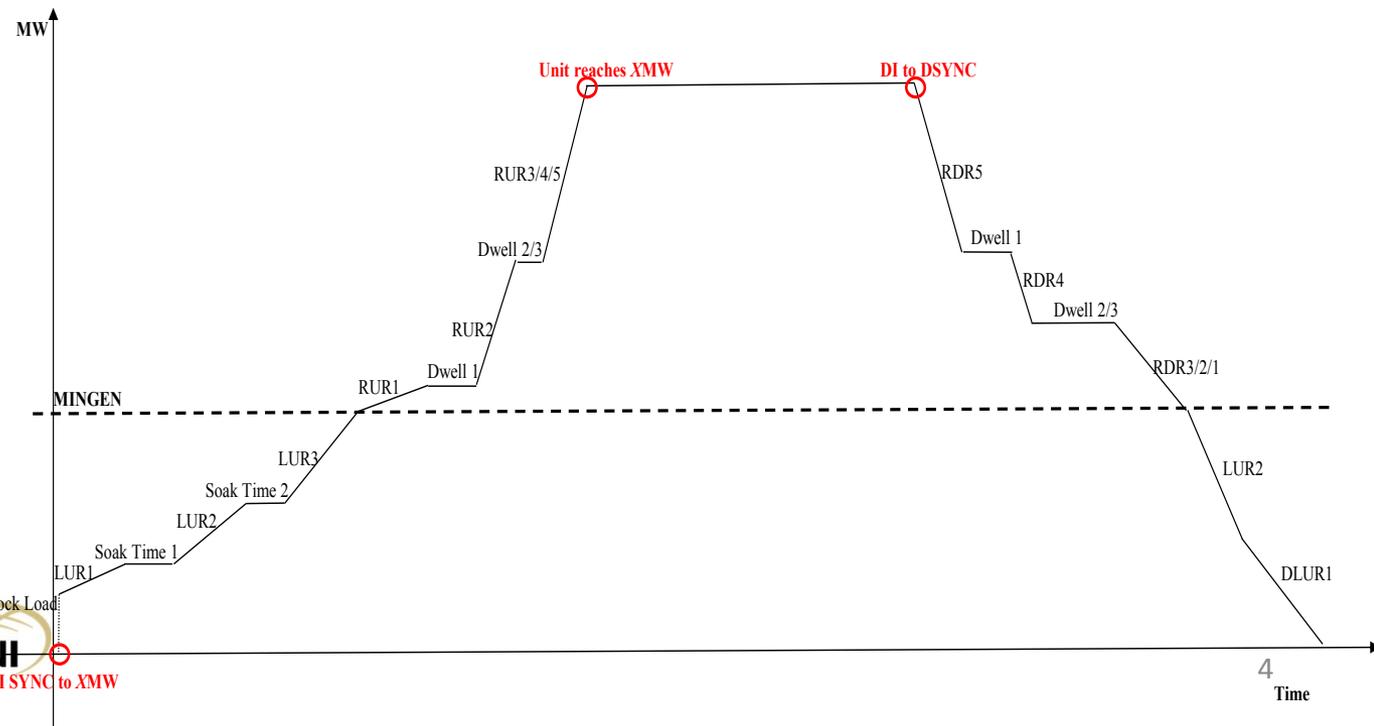
Instruction Profiling

- Like today this is used to calculate the half-hour resolution Dispatch Quantity, which considers the output of the unit over an Imbalance Settlement Period;
- This is used to have a half-hour resolution quantity for dispatch to compare with other half-hour quantities, such as against Metered Quantities in calculating Uninstructed Imbalance Charges;
- Three step process to calculate this:
 1. Dispatch Instructions recorded and validated from EDIL;



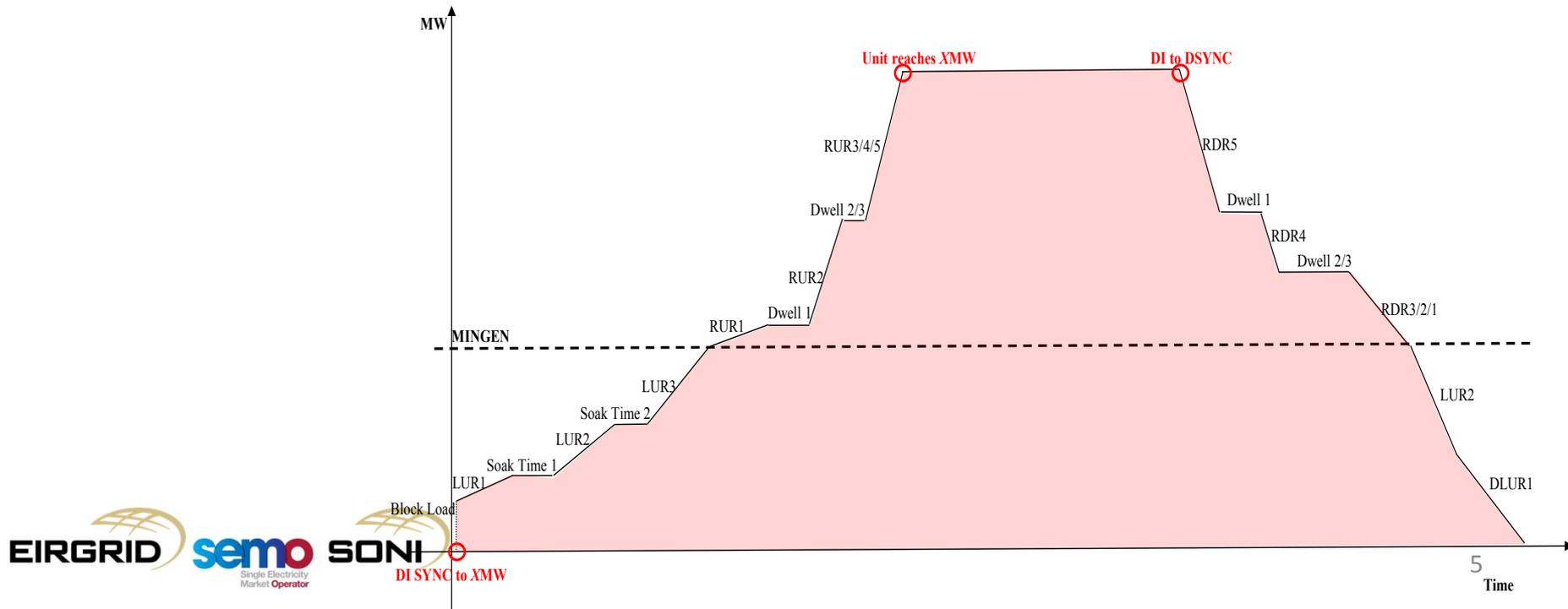
Instruction Profiling

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- Three step process to calculate this:
 1. Dispatch Instructions recorded and validated from EDIL;
 2. Create a Profile joining all the DI according to Technical Offer Data (TOD);



Instruction Profiling

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- This is used to have a half-hour resolution quantity for dispatch to compare with other half-hour quantities, such as against Metered Quantities in calculating Uninstructed Imbalance Charges;
- Three step process to calculate this:
 1. Dispatch Instructions recorded and validated from EDIL;
 2. Create a Profile joining all the DI according to Technical Offer Data (TOD);
 3. Calculate Dispatch Quantity as the area under the curve divided into each Imbalance Settlement Period in MWh.



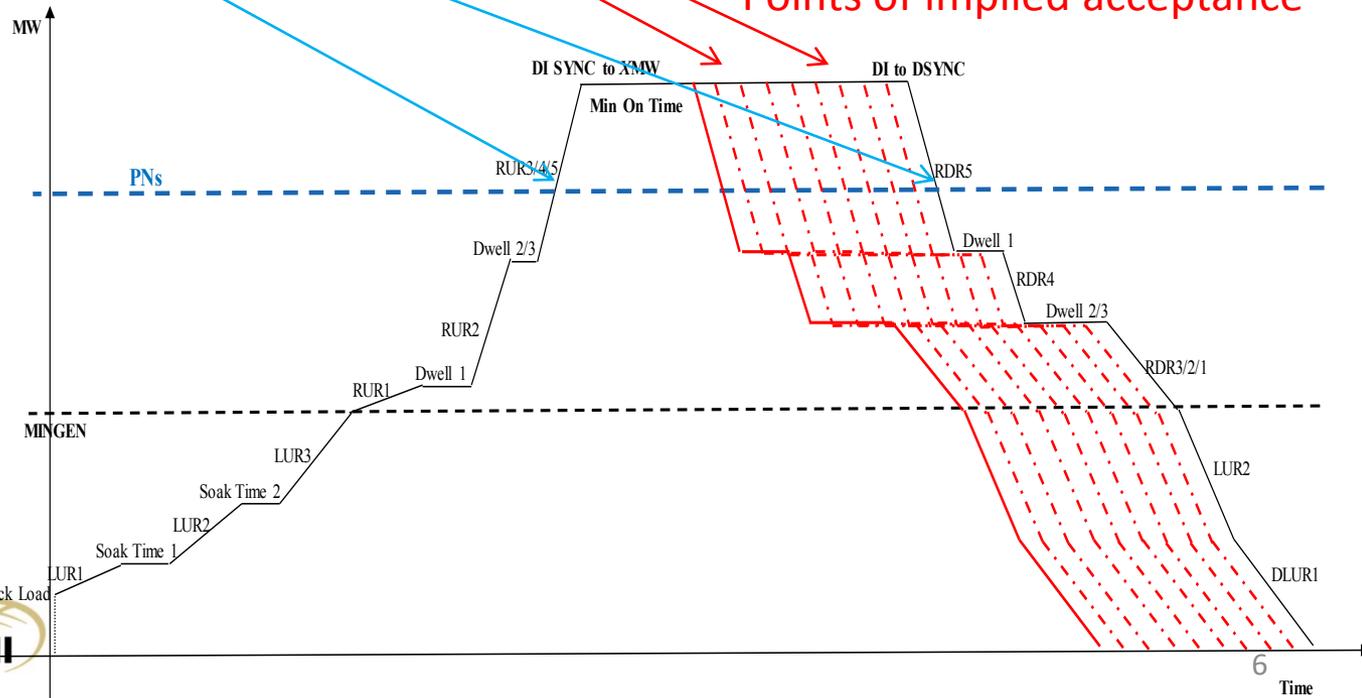
Instruction Profiling

Additional Outputs

Another use of TOD in instruction profiling is to create a minute-by-minute resolution Dispatch Quantity profile which is used along with the PN profile to calculate Bid Offer Acceptances. Every Bid Offer Acceptance has its own Dispatch Instruction and its own Dispatch Quantity profile to calculate the accepted quantity for that particular acceptance.

Points of implied acceptance

Cross points between profiles of Instructions and PNs



Instruction Profiling

- Today's approach to Instruction Profiling (high level):
 - Carry out functionality in settlement timeframe;
 - Inputs are all Physical Dispatch Instructions (DIs) recorded from EDIL;
 - Create a single instruction profile taking into account all DIs;
 - The instruction profile follows the DIs, joining the dots according to the TOD;
 - From this instruction profile, calculate DQ (half hour value representing final dispatch output level unit should be following).

Instruction Profiling

- I-SEM approach (high level):
 - Carry out functionality in pricing timeframe and again in settlement timeframes;
 - 2 types of Instructions are used:
 - Physical Dispatch Instructions (as currently understood, input from EDIL); and
 - Pseudo-Dispatch Instructions (created ex-post in Instruction Profiling, according to a ruleset, for settlement purposes only);
 - Create an instruction profile per Instruction:
 - For Physical Dispatch Instructions, take into account all Dispatch Instructions prior to and including the current instruction;
 - For Pseudo-Dispatch Instructions, take into account all Dispatch Instructions prior to and including the current instruction and take into account the next instruction to know when to end the profile.
 - The instruction profiles are created to reflect the following:
 - All Physical Dispatch Instruction profiles should follow TOD, representing the minimum technically feasible profile to reach the instructed level (and maintaining that level if required by the TOD, e.g. min on time, “Effective Until Time”), then ramp back to FPN and maintain FPN;
 - All Pseudo-Dispatch Instruction profiles should be to maintain the level intended by the instruction, until the next instruction, then ramp back to FPN and maintain FPN.
 - Use these profiles to calculate a qBOA for each instruction:
 - Each instruction closes the previous BOA and opens a new BOA, therefore need instruction profiles for each instruction;
 - The inputs to the $qBOA_{uoih}(t)$ calculation are the instruction profile for the current order ($qD_{uoh}(t)$), and the instruction profile for the previous order ($qD_{u(o-1)h}(t)$).
 - Also use the final profile, taking into account all DIs, to calculate QD_{uv} (equivalent to DQ today).

Instruction Profiling

- Why are Pseudo Dispatch Instructions needed?
 - To have open instructions in physical operation, with closed acceptances of order in settlement:
 - Orders are accepted considering “the minimum quantity given the relevant technical offer data, particularly ramp-rates and minimum on time, of a unit, and then subsequent acceptances minute-by-minute of the minimum additional quantity given the technical data”.
 - To reflect the fact that orders accepted at different times can have different prices applying:
 - E.g. an instruction to start issued hours in advance could use COD set 1, while keeping the unit on in that same period could need to use COD set 2.
 - Need to be able to close an order and open a new one to reflect the fact that output is still at the last instructed level;
 - Close order from Physical DI according to TOD;
 - Open order using Pseudo DI to reflect fact output level is being maintained at previously instructed level.
 - Need to keep continuously opening orders to reflect the fact that they are being accepted in real-time, rather than at the time of the previous physical instruction:
 - Closes the previous order and opens a new one in a way which ensures that the Simple Incs and Decs COD (if submitted and relevant) is used, and that the latest submitted COD before gate closure for that period are used;
 - Opens a new order to keep accepting quantities, reflecting the fact that the instruction and the action are still open in operations until a physical Dispatch Instruction is issued.

Instruction Profiling

The table below gives the list of the Pseudo Dispatch Instructions used in Instruction Profiling.

Title	Code
Continuous Open Acceptance After MWOFF	PMWO
Continuous Open Acceptance After MXON	PMXN
Continuous Open Acceptance After MXOF	PMXF
Continuous Open Acceptance After SYNC	PSYN
Continuous Open Acceptance After DESY	PDES
Continuous Open Acceptance After PGEN	PPGE
Continuous Open Acceptance Keeping Unit Off	POFF
Continuous Open Acceptance After COD Change	PCOD
Continuous Open Acceptance After Imbalance Settlement Period Boundary	PISP