

ICMA / ISDA REPO WORKSHOP

14 February 2020 – Modelling of Open Repo



1. “Show and Tell” of latest CDM changes to accommodate Open Repo

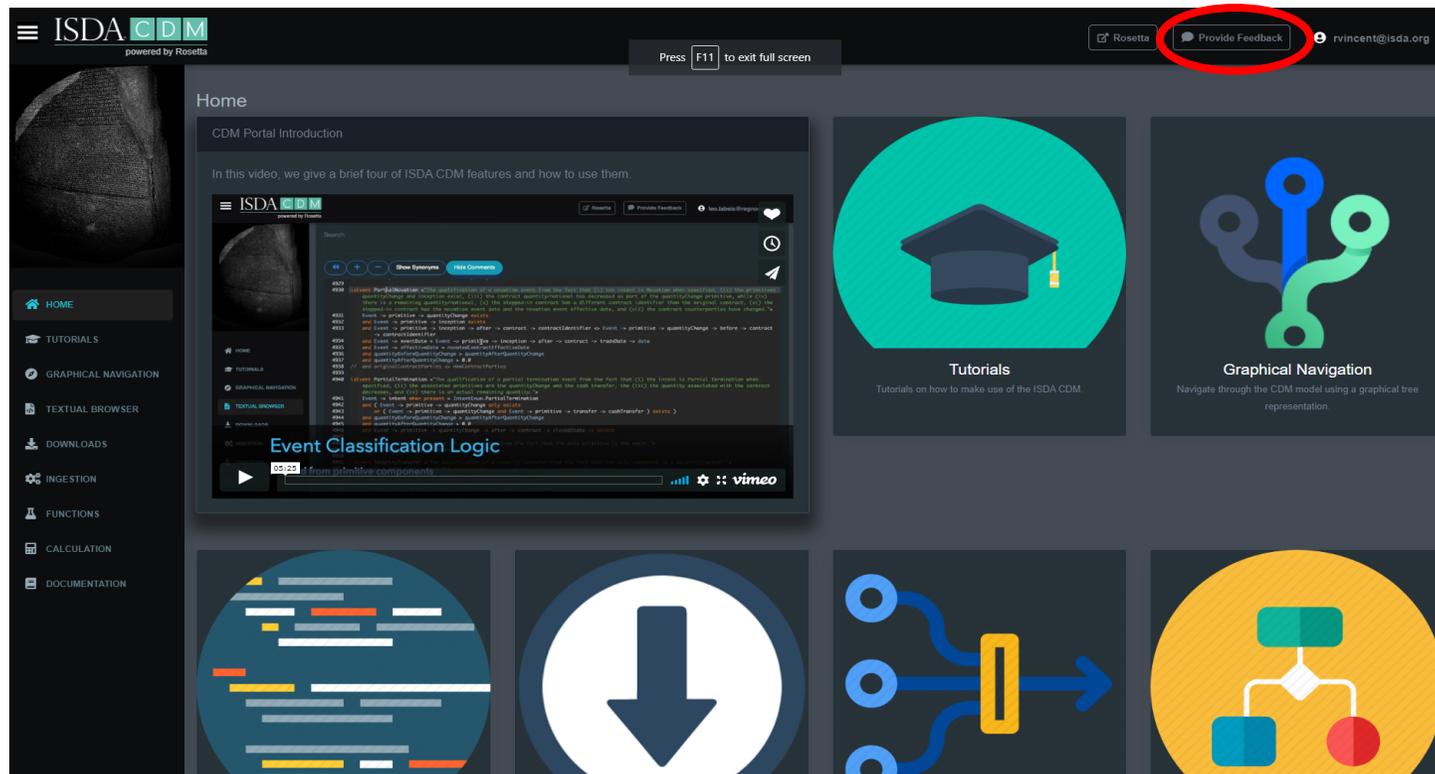
- a. Modelling of the “Calling Party” attribute
- b. Example CDM representation
- c. Application: a lifecycle sequence example
- d. Deep-dive #1: coupon payment

2. Next steps

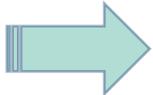
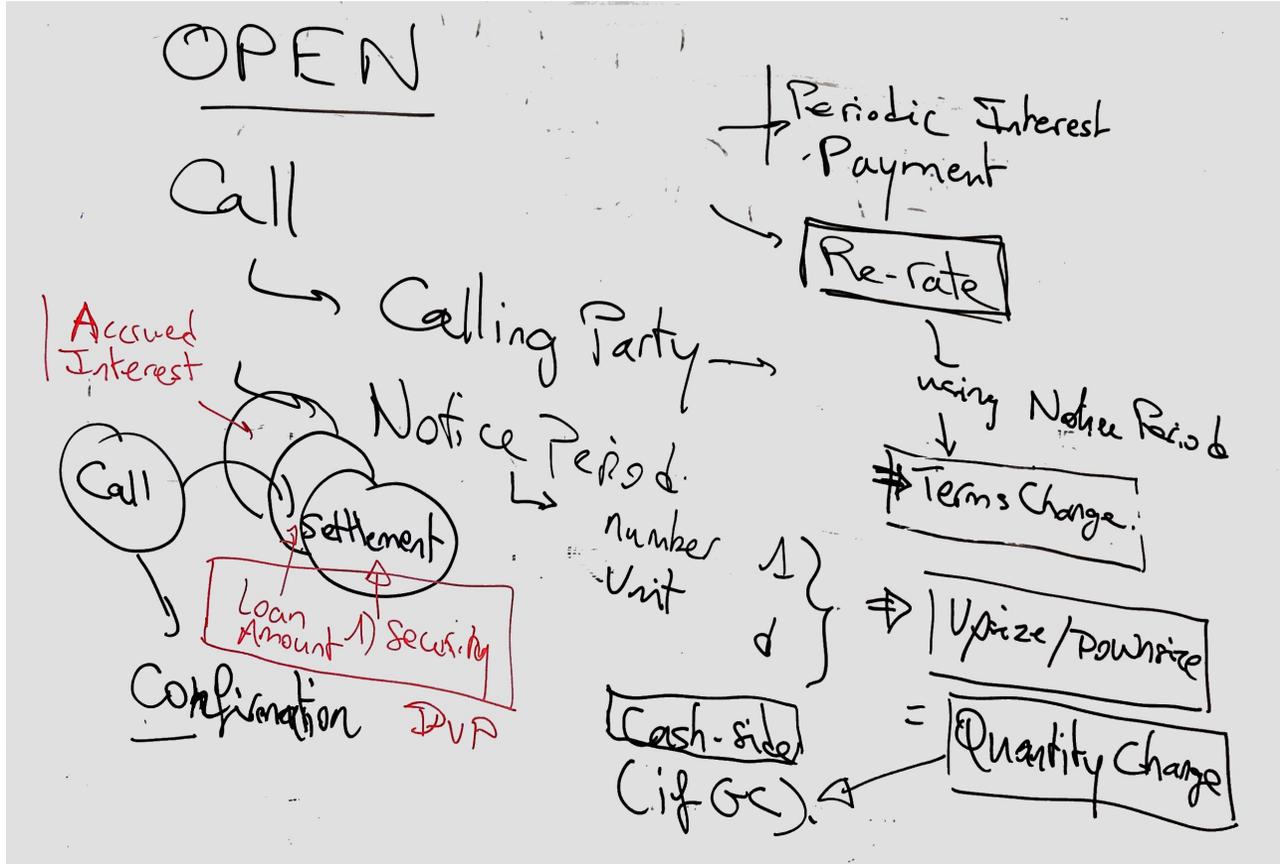
- a. Price refactoring and re-rate implementation
- b. Further next steps TBD

The ISDA CDM is accessible in open source via the following address:
<http://portal.cdm.rosetta-technology.io>

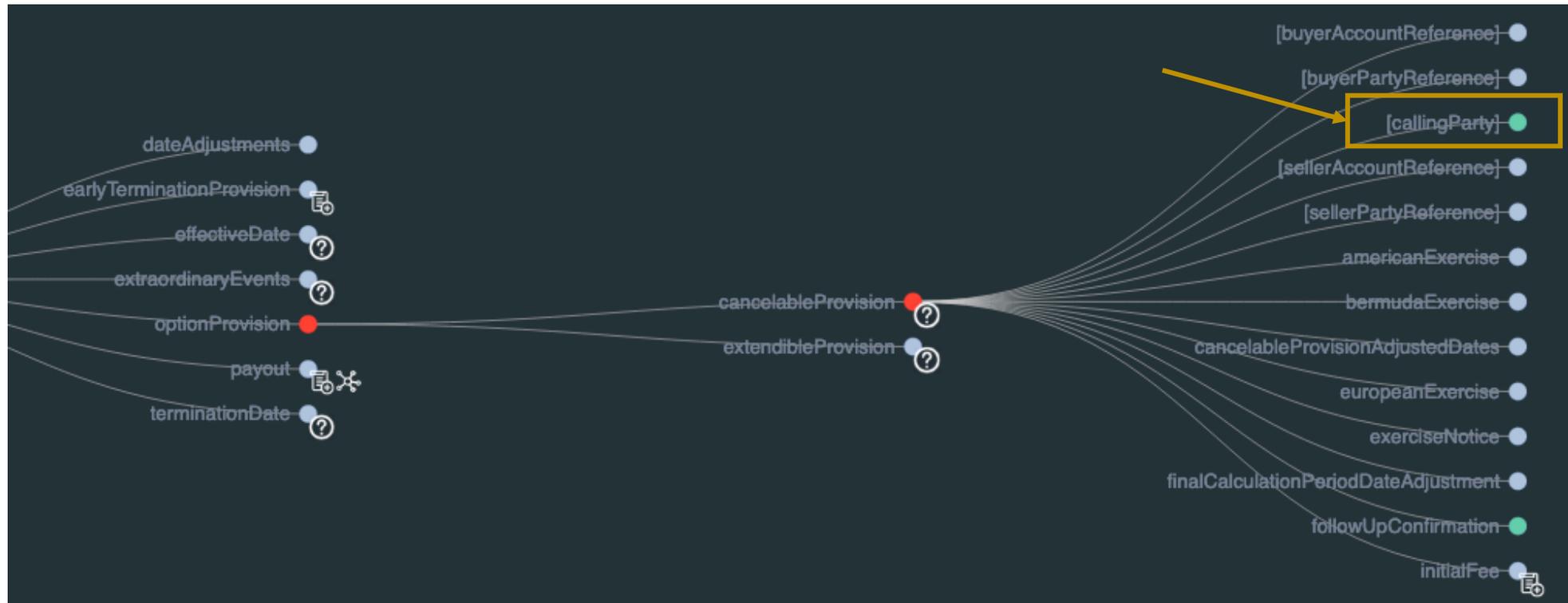
Please direct questions or comments to our mailbox: MarketInfrastructureandTechnology@isda.org or [Provide Feedback](#) on the ISDA CDM directly via the [ISDA CDM portal](#) while logged in



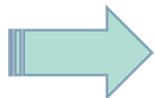
We got the “intellectual download” from workshop participants:
(a bit scruffy, but modelling always starts from here – i.e. from industry practices)



Qn: Can we get (some of) that into CDM proper?



- “Calling Party” included as an *enumerated value* in the existing CDM “Cancelable Provision” block
- It means that the “Open” Repo feature is represented in the same way as a Cancelable Swap



And all of this has already been released in CDM v2.34.0!

ROSETTA Pro (BETA) Workspace: CDM Latest (2.34.0) CDM Portal

INPUT repo ex02 repo open fixed rate FpML_5_10

Collapse All Expand All

- ▼ dataDocument
 - fpmVersion 5-10
 - schemaLocation http://www.fpml.org/FpM...
 - ▼ trade
 - ▼ tradeHeader
 - ▼ partyTradeIdentifier
 - ▼ partyReference
 - href Party1
 - ▼ tradeId Party19235
 - tradeScheme http://www.party1.com/s...
 - ▼ partyTradeIdentifier
 - ▼ partyReference
 - href Party2
 - ▼ tradeId Party22000
 - tradeScheme http://www.party2.com/s...
 - tradeDate 2014-11-19
 - ▼ repo
 - ▼ fixedRateSchedule
 - initialValue 0.85
 - dayCountFraction ACT/ACT.ICMA
 - callingParty AsDefinedInMasterAgree...
 - ▼ initialMargin
 - marginType Cash
 - ▼ margin
 - marginRatio 1.25

CDM Collapse All Expand All

- ▼ Contract
 - > contractIdentifier
 - > contractIdentifier
 - ▼ contractualProduct
 - ▼ economicTerms
 - ▼ optionProvision
 - ▼ cancelableProvision
 - callingParty AS_DEFINED_IN_MAST...
 - ▼ payout
 - ▼ interestRatePayout
 - ▼ payoutQuantity
 - ▼ assetIdentifier
 - currency USD
 - ▼ calculationPeriodDates
 - ▼ effectiveDate
 - ▼ adjustableDate
 - unadjustedDate 2014-11-3
 - ▼ dateAdjustments
 - businessDayConvention NONE
 - dayCountFraction ACT/ACT.ICMA
 - ▼ rateSpecification
 - ▼ fixedRate
 - initialValue 0.85
 - ▼ securityPayout
 - ▼ initialMargin

DIAGNOSTICS

MAPPING ●

Mapping Successes: (32)

Mapping Excluded Paths: (3)

VALIDATION ●

Validation Failures (2)

| TYPE | RULE |
|----------------|---------------------------------|
| CHOICE_RULE | CancelableProvisionExerciseC... |
| MODEL_INSTANCE | CancelableProvision |

Validation Successes (121)

QUALIFICATION ●

ORG.ISDA.COM.ECONOMIC TERMS.

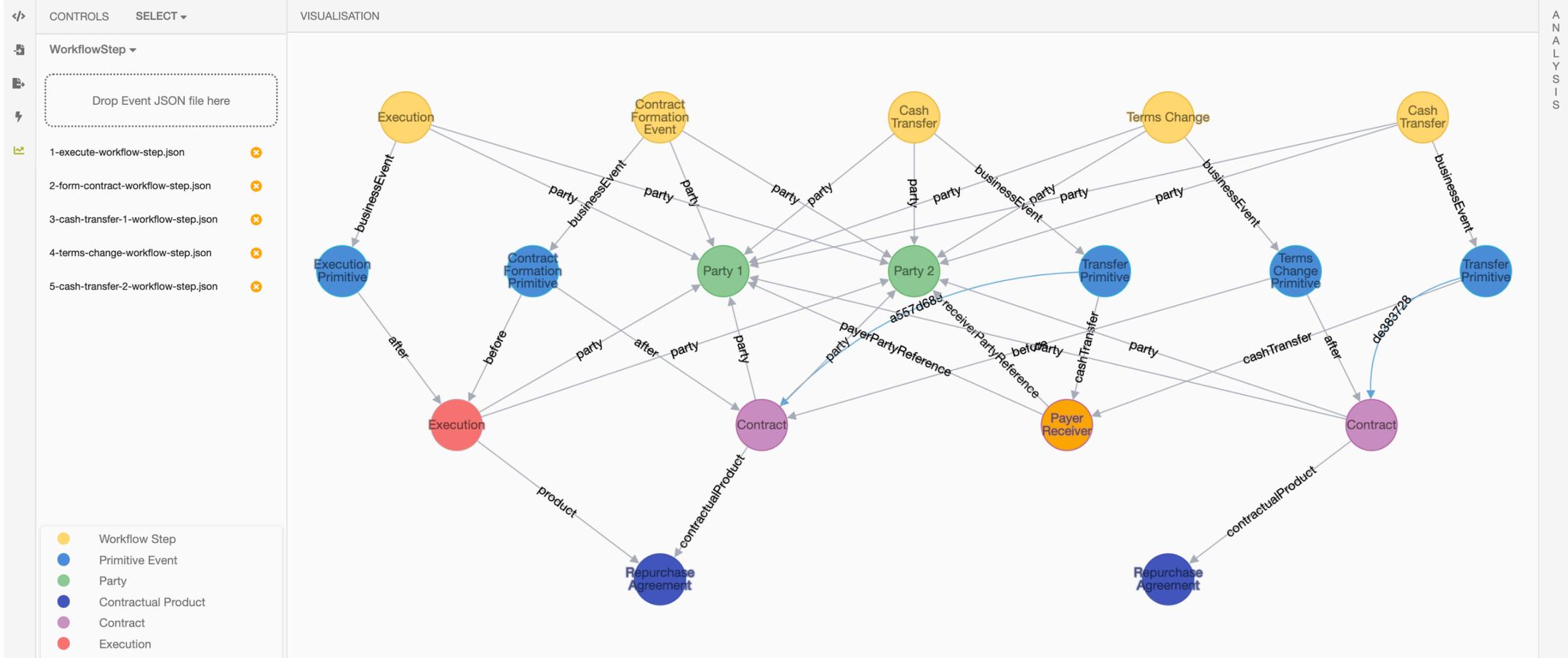
RepurchaseAgreement

- Validation Failures: actually a good thing (!) – means that data are being sanitised up-front
- Shows that we're missing key attributes for the option provision: e.g. "Notice Period" (not in the input file)

ROSETTA Pro (BETA)

Workspace: CDM Latest (2.34.0)

CDM Portal



- Based on previous CDM trade, we can execute a series of “Lifecycle Events” that create further CDM objects
- Every Lifecycle Event is defined in the CDM by a “Function” that specifies how to perform the state-transition

VISUALISATION

ANALYSIS

Collapse All Expand All

- ▼ TransferPrimitive
 - status INSTRUCTED
 - ▼ cashTransfer
 - > transferCalculation
 - cashflowType COUPON
 - ▼ amount
 - amount 55452.27
 - currency USD
 - ▼ payerReceiver
 - ▼ payerPartyReference
 - externalKey Party1
 - > partyId Party 1
 - ▼ receiverPartyReference
 - externalKey Party2
 - > partyId Party 2
 - ▼ settlementDate
 - adjustedDate 2014-12-3

- Coupon payments are handled in the CDM via a “Transfer” Primitive Event
- Event shows lineage back to the underlying contract

```
func DayCountFraction(dayCountFractionEnum: DayCountFractionEnum -> ACT_ACT_ICMA): <"2006 ISDA Definition Article 4 section 4.16(c):  
(c) if "Actual/Actual (ICMA)" or "Act/Act (ICMA)" is specified, a fraction equal to "number of days accrued/number of days in year",  
as such terms are used in Rule 251 of the statutes, by-laws, rules and recommendations of the International Capital Market  
Association (the "ICMA Rule Book"), calculated in accordance with Rule 251 of the ICMA Rule Book as applied to non US dollar  
denominated straight and convertible bonds issued after December 31, 1998, as though the interest coupon on a bond were being  
calculated for a coupon period corresponding to the Calculation Period or Compounding Period in respect of which payment is being  
made;">  
[calculation]  
alias calculationPeriod: CalculationPeriod(interestRatePayout -> calculationPeriodDates, date)  
alias daysInPeriod: <"Number of calendar in the calculation period">  
    calculationPeriod -> daysInPeriod  
alias periodsInYear: <"Number of calculation periods in a year">  
    PeriodsInYear(interestRatePayout -> calculationPeriodDates -> calculationPeriodFrequency)  
assign-output result:  
    // TODO support the long initial and final stubs  
    daysInPeriod / (daysInPeriod * periodsInYear)
```

- The coupon payment has been generated according to fully specified calculation logic in the CDM

BUT:

- Only available for the interest rate leg, as cashflows are not represented for the bond leg (bond leg simply abstracted away through a reference identifier, e.g. ISIN)
- Logic not yet implemented for step-wise rate schedule – e.g. in case of a re-rate in the middle of a period

ROSETTA Pro (BETA) Workspace: CDM Latest (2.34.0) CDM Portal

| INPUT | FpML_5_10 | CDM | DIAGNOSTICS |
|--|--|---|-------------|
| <p>dataDocument</p> <ul style="list-style-type: none"> schemaLocation: http://www.fpml.org/FpM... fpmlVersion: 5-10 trade <ul style="list-style-type: none"> tradeHeader <ul style="list-style-type: none"> partyTradeIdentifier <ul style="list-style-type: none"> partyReference <ul style="list-style-type: none"> href: party1 tradeId: 6234 <ul style="list-style-type: none"> tradeIdScheme: http://www.partyA.com/e... partyTradeIdentifier <ul style="list-style-type: none"> partyReference <ul style="list-style-type: none"> href: party2 tradeId: 6569 <ul style="list-style-type: none"> tradeIdScheme: http://www.partyB.com/e... tradeDate: 2001-09-24 <ul style="list-style-type: none"> id: TradeDate returnSwap <ul style="list-style-type: none"> productType: Equity:Swap:PriceReturn... returnLeg | <ul style="list-style-type: none"> contractualPrice <ul style="list-style-type: none"> priceNotation <ul style="list-style-type: none"> assetIdentifier <ul style="list-style-type: none"> productIdentifier <ul style="list-style-type: none"> identifier: SHPGY.O price <ul style="list-style-type: none"> cashPrice <ul style="list-style-type: none"> netPrice <ul style="list-style-type: none"> amount: 37.44 priceExpression: ABSOLUTE_TERMS currency: USD contractualProduct <ul style="list-style-type: none"> economicTerms <ul style="list-style-type: none"> extraordinaryEvents payout <ul style="list-style-type: none"> equityPayout <ul style="list-style-type: none"> payoutQuantity returnType: TOTAL calculationPeriodDates dividendReturnTerms payerReceiver | <p>EXPECTATIONS</p> <p>MAPPING</p> <ul style="list-style-type: none"> Mapping Issues: (24) Mapping Successes: (131) Mapping Excluded Paths: (3) <p>VALIDATION</p> <ul style="list-style-type: none"> Validation Failures (2) Validation Successes (203) <p>QUALIFICATION</p> <ul style="list-style-type: none"> org.isda.com.Economic terms: EquitySwap_PriceReturnBasicPerformance_Singl | |

- The “Price” characteristics are being abstracted away from the product and specified in a product-agnostic way
- Going forward: re-rate to be implemented as a “Price Change” event, with rate as part of the “Price” of a repo

- Further handling of re-rate
- Handling of coupon payment on the bond leg
- Including other call feature attributes: notice period – We need samples!
- “As defined in Master Agreement” → GMRA will need to be similarly modelled / digitised

WE NEED:

- To start working with a few firms who can provide sample data!
- Resourcing: proper development takes time and effort, and needs to be prioritised accordingly