Data Definition and Modelling Project proposed changes to OSDU Master, Abstract, and Reference objects

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# OSDU Master Data Proposed Changes

The following changes have been proposed, reviewed and approved by the Data Definitions & Modelling project, and are ready for consortium review and ratification.

## Abstract Facility Vertical Measurement (add)

Creation of an abstract facility vertical measurement resource to replace abstract wellbore depth and combine with the concept of elevations. This object will be used for inclusions anywhere a depth or elevation is called for.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| VerticalMeasurementID | Add | The ID for a distinct vertical measurement within the Facility array so that it may be referenced by other vertical measurements if necessary. | String | To provide a unique identifier for a distinct vertical measurement for it to be specifically referenced subsequently by another measurement | Need to determine how distinct vertical measurements within a “facility” can be uniquely identified and subsequently referenced |
| EffectiveDateTime | Add | The date and time at which a vertical measurement instance becomes effective. | String, Datetime (10) | n/a | n/a |
| VerticalMeasurement | Add | “The value of the elevation or depth. Depth is positive downwards from a vertical reference or geodetic datum along a path, which can be vertical; elevation is positive upwards from a geodetic datum along a vertical path. Either can be negative.” | Number | n/a | n/a |
| TerminationDateTime | Add | The date and time at which a vertical measurement instance is no longer in effect. | String, Datetime (10) | n/a | n/a |
| VerticalMeasurementTypeID | Add | Specifies the type of vertical measurement (TD, Plugback, Kickoff, Drill Floor, Rotary Table...) | String | Allow for discrete classification of the “type” of vertical measurement. | Create [Vertical Measurement Type](#_Facility_Vertical_Measurement) reference object and define reference values (can repurpose wellbore depth type) |
| VerticalMeasurementPathID | Add | Specifies Measured Depth, True Vertical Depth, or Elevation. | String | Allow for discrete classification of the “path” of the vertical measurement along a measured, vs. vertical path and differentiate between depths and elevation. | Create [Vertical Measurement Path](#_Facility_Vertical_Measurement_1) reference object and define values |
| VerticalMeasurementSourceID | Add | Specifies Driller vs Logger | String | Allow for discrete classification of the “type” of vertical measurement. | Create [Vertical Measurement Source](#_Facility_Vertical_Measurement_2) reference object and define values |
| WellboreTVDTrajectoryID | Add | Specifies what directional survey or well path was used to calculate the TVD | String | Allow for discrete classification of the “type” of vertical measurement. | n/a |
| VerticalMeasurementUnitOfMeasureID | Add | The unit of measure for the vertical measurement. If a unit of measure and a vertical CRS are provided, the unit of measure provided is taken over the unit of measure from the CRS. | String | n/a | Define reference values |
| VerticalCRSID | Add | Vertical CRS. It is expected that a Vertical CRS or a Vertical Reference is provided, but not both. | String | n/a | Define reference values |
| VerticalReferenceID | Add | The reference point from which the vertical measurement is made. Must resolve ultimately to a vertical CRS. It is expected that a Vertical CRS or a Vertical Reference is provided, but not both. | String | n/a | n/a |
| VerticalMeasurementDescription | Add | Text which describes a vertical measurement in detail. | String (4000) | n/a | n/a |

## Wellbore

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| DatumTypeID | Update | Update name to “DefaultDatumTypeID” with description “The default datum reference point used to determine other points in a wellbore.” | String | This name better matches the description and is consistent with the naming of corresponding properties of the Well object | Define reference values |
| WellboreDepth | Update | Rename “VerticalMeasurements” with description “List of all depths and elevations pertaining to the wellbore, like, plug back measured depth, total measured depth, KB elevation” | Array | Wellbore depths and elevations have been merged into a single abstract vertical measurement concept | Update $ref to Abstract Facility Vertical Measurement |
| KickOffMeasuredDepth | Remove | n/a | n/a | Included under Abstract Vertical Measurements | n/a |
| KickOffMeasuredDepthUnitID | Remove | n/a | n/a | Included under Abstract Vertical Measurements | n/a |
| TotalDepthFormation | Update | Rename “TargetFormation” and add description “The Formation of interest for which the Wellbore is drilled to interact with. The Wellbore may terminate in a lower formation if the requirement is to drill through the entirety of the target formation, therefore this is not necessarily the Formation at TD.” | String | The Wellbore may terminate in a lower formation if the requirement is to drill through the entirety of the target formation, therefore this is not necessarily the Formation at TD, so Target Formation is more relevant | Define reference values for Geological Formation |
| BoreStartDateTime | Remove | n/a | n/a | This is a type of Facility Event | Define Facility Event Type values |
| RigReleaseDateTime | Remove | n/a | n/a | This is a type of Facility Event | Define Facility Event Type values |
| WellboreEvent | Remove | n/a | n/a | This has been abstracted to the facility object as facility event | Define Facility Event Type values |
| TrajectoryTypeID | Add | “Describes the predominant shapes the wellbore path can follow if deviated from vertical. Sample Values: Horizontal, Vertical, Directional.” | String | This is a commonly used property for searching and filtering, which is specific to Wellbore | Create [Wellbore Trajectory Type](#_Wellbore_Trajectory_Type) reference object and define values |
| ShellStandardLegendTypeID | Remove | n/a | n/a | This is not a required attribute of a wellbore and can be derived from the properties that define the legend at a given point in time | Also remove the shell standard legend type reference object |
| InitialDrillingCost | Remove | n/a | n/a | This is not a common data requirement | Also remove CurrencyID |
| CurrencyID | Remove | n/a | n/a | Not required without initial drilling cost property | Also remove the currency reference object |
| CurrentDrillingReasonTypeID | Update | Rename “DrillingReason” with description “The history of drilling reasons of the wellbore” as an array of items referencing an abstract wellbore drilling reason object | Array | The drilling reason may change more than once over the lifecycle of the wellbore. | Create an [Abstract Wellbore Drilling Reason](#_Abstract_Wellbore_Drilling) object |
| InitialDrillingReasonTypeID | Remove | n/a | n/a | This is unnecessary since it can be included under the array of wellbore drilling reason type | n/a |

## Abstract Spatial Location

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| Elevation | Add | The elevation of the measured coordinates above the datum expressed by the VerticalCRS. | Number | Provide a means to record the elevation of a spatial location so that it can be located in 3D space, and/or used as a vertical reference if necessary. | n/a |
| GroundLevelElevation | Update | Rename “HeightAboveGroundLevel” with description “The height of the measured coordinates above the ground.” | Number | Name and description reflect more accurately the intended purpose of the property | n/a |
| GroundLevelElevationUOMID | Remove | n/a | n/a | The unit of measure is included in the CRS | n/a |
| GeographicCoordinateUOMID | Remove | n/a | n/a | The unit of measure is included in the CRS | n/a |
| ProjectedCoordinateUOMID | Remove | n/a | n/a | The unit of measure is included in the CRS | n/a |

## Well

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| VerticalMeasurements | Add | List of all depths and elevations pertaining to the well, like, water depth, mud line elevation, etc. | Array | A Well can have multiple potential depths and elevations, which have been merged into a single abstract vertical measurement concept | Has $ref to Abstract Facility Vertical Measurement |
| GroundLevelElevation | Update | Rename “DefaultVerticalCRSID” | String | This name better fits the description vs. ground level elevation | Replace $ref to Abstract Spatial Location with pattern” for Vertical CRS and define values |
| DatumTypeID | Update | Update name to “DefaultDatumTypeID | String | This name better matches the description and is consistent with the naming of default vertical CRS ID | Define reference values |
| ProjectedSurfaceLocation | Remove | n/a | n/a | This is now covered under the array of spatial locations for abstract facility | n/a |
| OperatingEnvironmentID | Add | Identifies the Well’s general location as being onshore vs. offshore | String | This is an important attribute used for searching and filtering wells with a distinct list of values | Create a [Well Operating Environment](#_Well_Operating_Environment) reference object and define values |
| InterestTypeID | Update | Update definition to “Pre-defined reasons for interest in the well or information about the well.” | String | Remove operator specific reference and tidy up wording | n/a |
| BasinID | Add | The basin where the well is located | String | Used to search and filter wells on | **Create basin object** for this to relate to |

## Abstract Facility

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| SpatialLocation | Update | Update type to “array”; description remains the same | Array | A Facility can have multiple potential expressions of location, for example geographic vs. projected, or different resolutions of spatial shapes. | Does Abstract Spatial Location need a “type” attribute to distinguish locations from this array? |
| FacilityEvent | Add | “A list of key facility events” | Array | Wells and Wellbores can have multiple events over their lifecycle. Since they are both types of facility, abstracting to the facility level avoids duplication | Define an [Abstract Facility Event object](#_Abstract_Facility_Event) (can repurpose Abstract Wellbore Event) |
| FacilitySpecification | Update | “facility Specification maintains the specification like slot name, wellbore drilling permit number, rig name etc.” | Array | Removed examples from the description that are covered by other existing, or added properties | n/a |
| CurrentOperatorOrganisationID | Update | Rename “FacilityOperator” with description “The history of operator organizations of the facility” as an array of items referencing an abstract facility operator object | Array | A facility can have more than one operator over time; the current array type does not support this. | Create an [abstract facility operator](#_Abstract_Facility_Operator) object |
| OriginalOperatorOrganisationID | Remove | n/a | n/a | This is unnecessary since it can be included under the array of facility operators | n/a |

## Abstract Facility Event (add)

Creation of an abstract facility event resource to replace abstract wellbore event. This object will be used for inclusions anywhere an event is called for.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| FacilityEventTypeID | Add | The facility event type is a picklist. Examples: Propose, Completion, Entry Date, etc. | String | To differentiate different types of event in a facilities lifecycle | Create [Facility Event Type](#_Facility_Event_Type) reference and define values (can repurpose wellbore event type)  **Define Event super class if applicable** |
| EffectiveDateTime | Add | Effective date of the event. | String, Datetime (100) | n/a | n/a |
| TerminationDateTime | Add | The first point in time when the instance is no longer in effect | String, Datetime (4000) | n/a | Evaluate max length size |

## Abstract Facility Operator (add)

Creation of an abstract facility operator resource to replace individual properties. This object will be used for tracking history of operatorship of a facility.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| FacilityOperatorOrganisationID | Add | “The company that currently operates, or previously operated the facility.”  Uses the Organisation reference object | String | The identifier of distinct operators over time | Define reference values |
| EffectiveDateTime | Add | Effective date of the event. | String, Datetime (100) | n/a | n/a |
| TerminationDateTime | Add | The first point in time when the instance is no longer in effect | String, Datetime (4000) | n/a | Evaluate max length size |

## Facility Event Type (add)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| FacilityEventTypeName | Add | The name of the entity instance | String (100) | n/a | n/a |
| FacilityEventTypeID | Add | A system generated unique identifier for an event type | String (36) | n/a | n/a |
| Inactive Indicator | Add | This is set to T (True) if the instance is no longer in use | Boolean | n/a | n/a |
| FacilityEventTypeDescription | Add | Text which describes an event type in detail | String (4000) | n/a | n/a |
| FacilityEventTypeCode | Add | Abbreviated or mnemonic | String (50) | n/a | n/a |

## Facility Vertical Measurement Type (add)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| FacilityVerticalMeasurementTypeID | Add | Unique identifier of the type | String (36) | n/a | n/a |
| FacilityVerticalMeasurementTypeCode | Add | Abbreviated or mnemonic | String (50) | n/a | n/a |
| FacilityVerticalMeasurementTypeName | Add | Textual name - abbreviated or a mnemonic if a fully spelled name is not present or needed. | String (100) | n/a | n/a |
| FacilityVerticalMeasurementTypeDescription | Add | Textual description of the type | String (4000) | n/a | n/a |
| Inactive Indicator | Add | This is set to T (True) if the instance is no longer in use | Boolean | n/a | n/a |

## Facility Vertical Measurement Path (add)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| FacilityVerticalMeasurementPathID | Add | Unique identifier of the path | String (36) | n/a | n/a |
| FacilityVerticalMeasurementPathCode | Add | Abbreviated or mnemonic | String (50) | n/a | n/a |
| FacilityVerticalMeasurementPathName | Add | Textual name - abbreviated or a mnemonic if a fully spelled name is not present or needed. | String (100) | n/a | n/a |
| FacilityVerticalMeasurementPathDescription | Add | Textual description of the path | String (4000) | n/a | n/a |
| Inactive Indicator | Add | This is set to T (True) if the instance is no longer in use | Boolean | n/a | n/a |

## Facility Vertical Measurement Source (add)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| FacilityVerticalMeasurementSourceID | Add | Unique identifier of the source | String (36) | n/a | n/a |
| FacilityVerticalMeasurementSourceeCode | Add | Abbreviated or mnemonic | String (50) | n/a | n/a |
| FacilityVerticalMeasurementSourceName | Add | Textual name - abbreviated or a mnemonic if a fully spelled name is not present or needed. | String (100) | n/a | n/a |
| FacilityVerticalMeasurementSourceDescription | Add | Textual description of the source | String (4000) | n/a | n/a |
| Inactive Indicator | Add | This is set to T (True) if the instance is no longer in use | Boolean | n/a | n/a |

## Wellbore Trajectory Type (add)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| WellboreTrajectoryTypeID | Add | Unique identifier of the type | String (36) | n/a | n/a |
| WellboreTrajectoryTypeCode | Add | Abbreviated or mnemonic | String (50) | n/a | n/a |
| WellboreTrajectoryTypeName | Add | Textual name - abbreviated or a mnemonic if a fully spelled name is not present or needed. | String (100) | n/a | n/a |
| WellboreTrajectoryTypeDescription | Add | Textual description of the type | String (4000) | n/a | n/a |
| Inactive Indicator | Add | This is set to T (True) if the instance is no longer in use | Boolean | n/a | n/a |

## Well Operating Environment (add)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| WellOperatingEnvironmentID | Add | Unique identifier of the instance | String (36) | n/a | n/a |
| WellOperatingEnvironmentCode | Add | Abbreviated or mnemonic | String (50) | n/a | n/a |
| WellOperatingEnvironmentName | Add | Textual name - abbreviated or a mnemonic if a fully spelled name is not present or needed. | String (100) | n/a | n/a |
| WellOperatingEnvironmentDescription | Add | Textual description of the instance | String (4000) | n/a | n/a |
| Inactive Indicator | Add | This is set to T (True) if the instance is no longer in use | Boolean | n/a | n/a |

## Geopolitical Entity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| SpatialLocationCoordinatesDate | Remove | n/a | n/a | There is no spatial location coordinates property for this date to apply to | n/a |

## Abstract Wellbore Drilling Reason (add)

Creation of an abstract wellbore drilling reason resource to replace individual properties. This object will be used for tracking history of drilling reasons of a wellbore.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Property | Action | Description | Type | Reason | Further Action |
| DrillingReasonTypeID | Add | “Identifier of the drilling reason type for the corresponding time period.”  Uses the Drilling Reason Type reference object | String | The identifier of distinct drilling reasons over time | Define reference values |
| EffectiveDateTime | Add | Effective date of the event. | String, Datetime (100) | n/a | n/a |
| TerminationDateTime | Add | The first point in time when the instance is no longer in effect | String, Datetime (4000) | n/a | Evaluate max length size |