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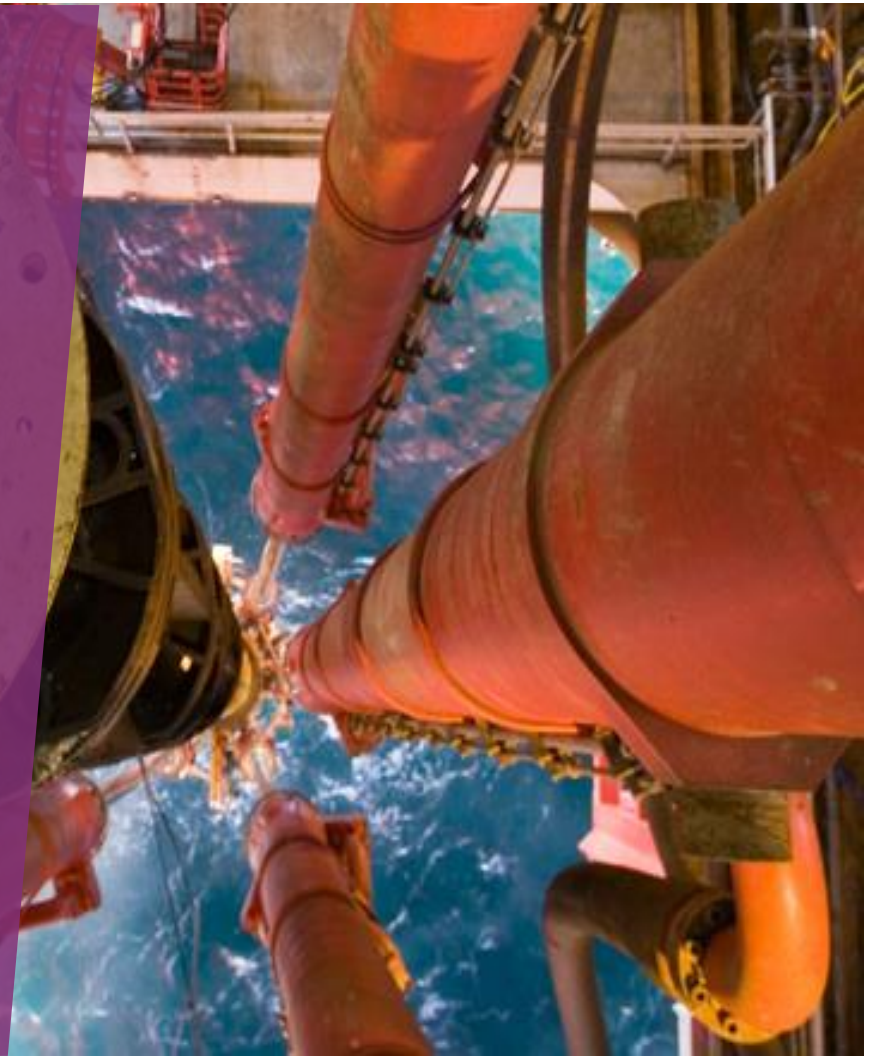
SSDM V2 plan and progress to-date



October 27th , 2016

SSDM v2 progress

- SSDMv2 has been sent for comments and approval to Geomatics Committee and Geo-Information Subcommittee members on October 18th. Feedback is requested by November 7th, 2016.

- Included for review are the following:

  - SSDMv2 schema (as .xml, .eap and .gdb format)
  - Detailed data dictionary
  - Description of the changes as compared to SSDM v1

- Outstanding work that will be continued during the SSDM v2 schema review and affected by provided feedback is the following:

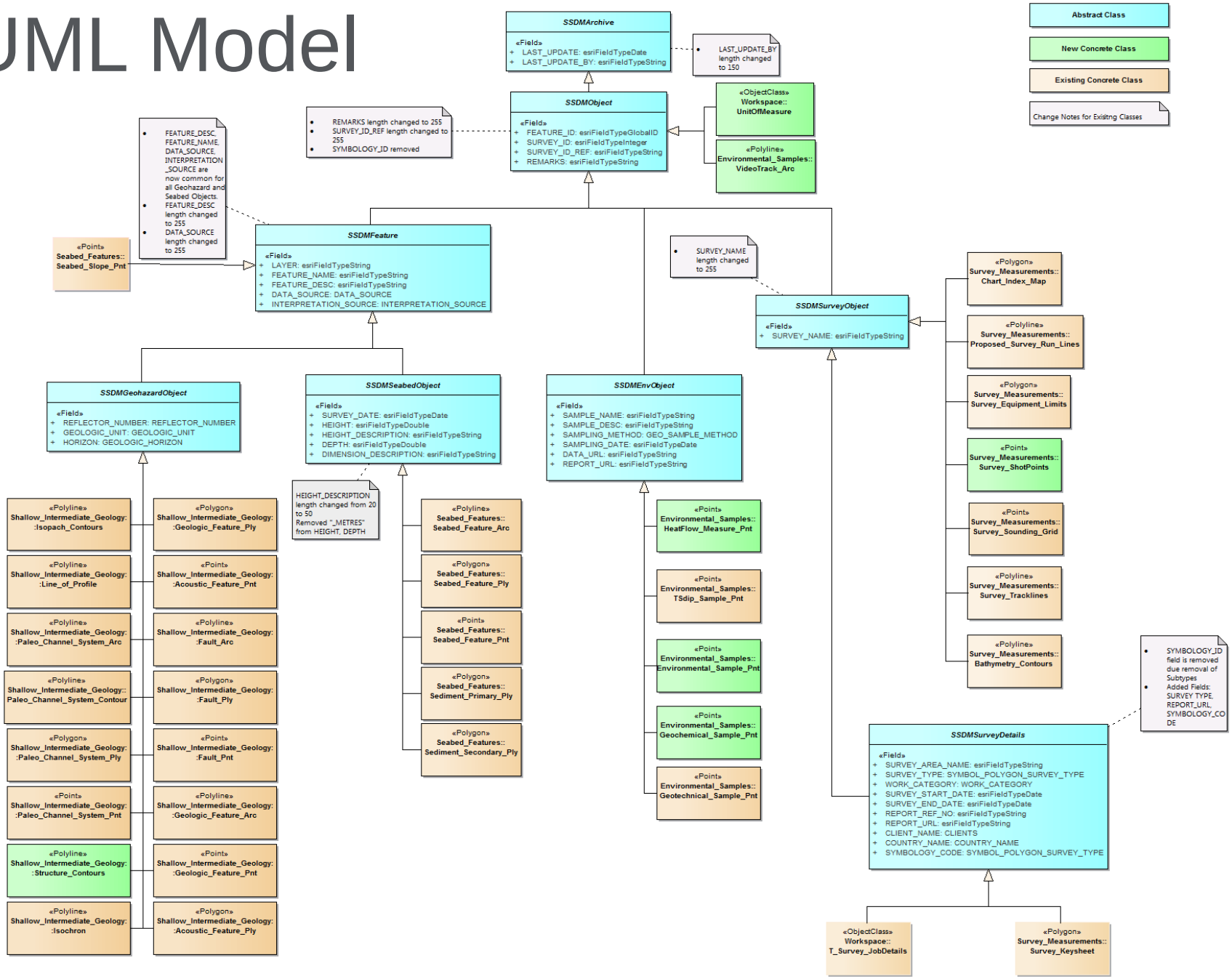
  - GN462-01 and GN462-02 update – by November 1st
  - Symbology work – by December 1st
  - GML Schema – by December 1st

- SSDM TF aims at releasing version 2 of the Model in 2016, therefore comments received after the deadline given above may not be addressed, unless considered critical.

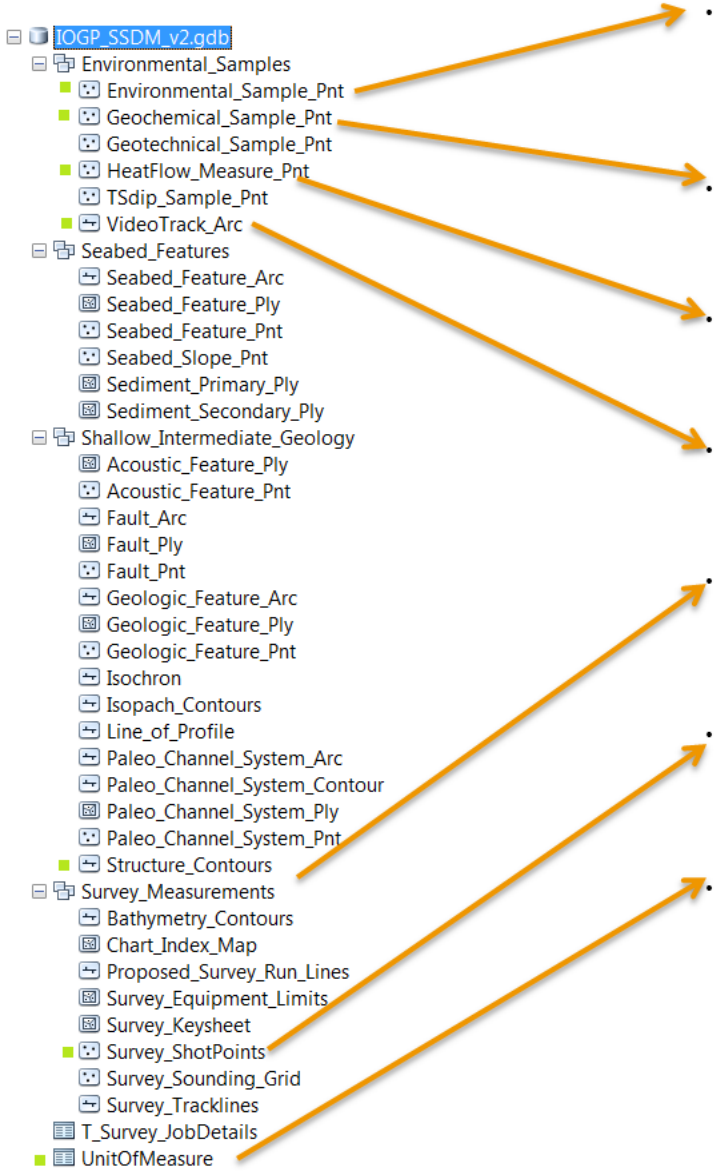
Focus of SSDM V2 development

- UML design of the model in Enterprise Architect for both ArcGIS implementation and GML encoding.
- Compliance with EPSG and consistency with other IOGP Standards
- Closing the gap in defining more seabed and subsurface features
- Completing CAD Template and GIS Symbology stylesheet for SSDM Features
- Integration of environmental/benthic survey and geotechnical surveys
- Considerations for long-term sustainability and maintenance of the SSDM schema

UML Model



NEW SSDM Objects



The environmental sample point is used to store the locations of environmental samples taken to characterize field conditions. These can include physical, kinetic, chemical, acoustic, and optic sensor measurements such as turbidity, metocean, flourometer, or ADCP samples.

Geochemical sampling locations at the seabed that are used as a prospecting tool for identifying the presence of hydrocarbons from deeper source rocks.

Heatflow measurements locations that characterize background heat flow to constrain geochemical models and provide additional data on regional hydrodynamics and hydrocarbon occurrence.

Visual inspections ranges from ROV or AUV surveys can provide visual confirmation of features for asset integrity (i.e pipeline) or environmental feature investigations.

The structure contours feature class stores contours mapping the subsurface depth of a given geologic structure or feature. Characterization of the geology of a field is important in evaluating the risks that subsurface geohazards pose to field development.

The survey shot points feature class (often called event fixes as well) is used to position features and events along geophysical survey lines. This feature class stores these values in addition to the M-values stored in the Survey_Tracklines feature class geometry.

UnitOfMeasure table is used to store units of measure for measured attributes within specific feature classes. The purpose of the table is centralize one reference table for units of measurement for all feature classes in lieu of providing several additional columns within each feature class. If required, the UnitofMeasure can be joined to a table to examine units alongside measurements.

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EPSG Compliance

- SSDM v2 has been made compliant with EPSG and consistent with other IOGP Standards.
- All coordinates in SSDM now reference a single horizontal and vertical Coordinate Reference System.
- The identification of indirect (EPSG - full OGC URN string) and direct description (Well-known text (WKT)) of CRS for the whole model will be defined as string text in the attribute fields of T_Survey_JobDetails table.
- Well-known Text (WKT) format will follow the requirements specified in ISO 19162.
- Direct description of CRS will be required only in cases where indirect citation to EPSG code is not possible.
- It was agreed to remove the coordinate attribute fields such as SOL and EOL easting and northing, latitude and longitude fields, Vertical_Datum and other CRS terminology from all of the attribute tables.

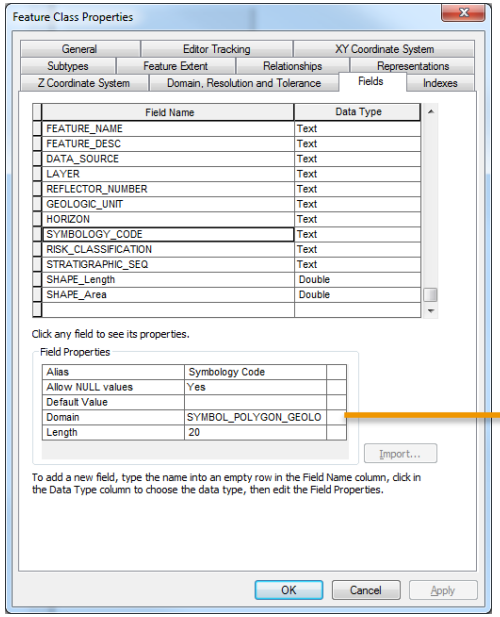
Units of Measure

- All unit declarations in the field names have been removed.
- SSDM v2 includes a centralized reference table for units of measure (‘UnitOfMeasure’) for all of the objects in SSDM.
- Measurement units in ‘UnitOfMeasure’ Table should reference the Energistics Unit Symbols (http://www.energistics.org/asset-data-management/unit-of-measure-standard).
- ‘UnitofMeasure’ can be joined to any table in SSDMv2 to examine units alongside measurements.
- ‘UnitofMeasure’ table is scalable to store multiple units for a specific field differentiated by Survey_ID or Survey_ID_Ref.

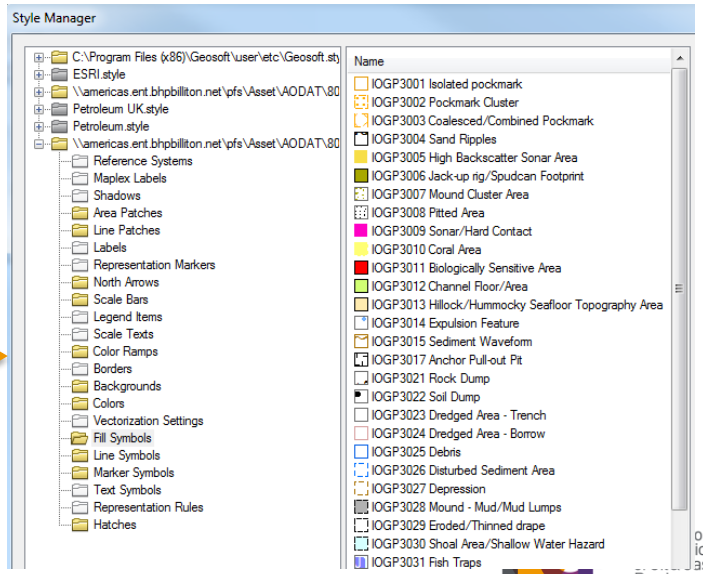
Symbology Codes

- SSDMv2 is a domain based model only and no longer supports Subtypes. This structure is consistent with other IOGP LSDM data model.
- This structural change will allow the update of the feature lists and symbol codes independently from the model schema.
- Symbology Codes have been grouped under SYMBOL_(GEOMETRY)_(SUBJECT) domains:

  SYMBOL_LINE_CHANNEL, SYMBOL_LINE_CONTOURS, SYMBOL_LINE_FAULT, SYMBOL_LINE_GEOLOGIC_FEATURE, etc.
- All Symbology Domain Codes are prefixed with ‘IOGP’.



Description	Value
IOGP3501 Erosional/Truncation Surfaces	IOGP3501
IOGP3502 Hydrate Zones	IOGP3502
IOGP3503 Gas-charged Sediments	IOGP3503
IOGP3504 Shallow Water Flow Zones	IOGP3504
IOGP3505 Buried Channels	IOGP3505
IOGP3506 Diapiric Structures	IOGP3506
IOGP3507 Salt Bodies	IOGP3507
IOGP3508 Slumps/Chaotic Zones	IOGP3508
IOGP3509 Contourites	IOGP3509
IOGP3510 Debris Flow / Mass Flow (doublon avec OGP 2066)	IOGP3510
IOGP3511 Sink Holes / Collapse Feature	IOGP3511
IOGP3512 Buried Reef	IOGP3512
IOGP3513 Syncline	IOGP3513
IOGP3514 Anticline	IOGP3514
IOGP3515 Hydrocarbon accumulation	IOGP3515
IOGP3516 Buried depression	IOGP3516
IOGP3517 High Impedance Reflector	IOGP3517
IOGP3518 Other	IOGP3518
IOGP3519 Abnormal Pressure Zones	IOGP3519
IOGP3520 Shallow Gas Zone	IOGP3520



Symbology Codes

Symbology Codes have been extended to close the gap in defining more seabed and subsurface features.

Changes and Additions to SSDMv2 symbology domain codes are presented in the Change Log as per below, with changes and/or additions highlighted in green:

SYMBOL_LINE_SEABED_FEATURE

Type: esriFieldTypeString

Removed: OGP2111, OGP2112, OGP2113, OGP2114 and OGP2115

Description	Value
IOGP2001 Anchor scar/Plough mark	IOGP2001
IOGP2002 Linear debris	IOGP2002
IOGP2003 Spud Can Drag Scar	IOGP2003
IOGP2004 Trawl Scar	IOGP2004
IOGP2005 Possible wreck	IOGP2005
IOGP2006 Plough Mark - Iceberg	IOGP2006
IOGP2050 Ridge Axis	IOGP2050
IOGP2051 Fault Scarp	IOGP2051
IOGP2052 Scarp/Escarpment	IOGP2052
IOGP2053 Lineament/Linear Feature	IOGP2053
IOGP2054 Channel/Superficial Channel	IOGP2054
IOGP2055 Mud Flow	IOGP2055
IOGP2056 Mound	IOGP2056
IOGP2057 Bulge	IOGP2057
IOGP2058 Diapiric structure	IOGP2058
IOGP2059 Ridge	IOGP2059
IOGP2061 Deposition - Rockfall	IOGP2061
IOGP2062 Deposition - Creep	IOGP2062
IOGP2063 Deposition - Slide	IOGP2063

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Maintenance Plan

- **Maintenance of the Data Model** is the process of supporting a data model after delivery to correct a problem/error in the existing data model and provide assistance, direction, coordination from 6 months to 1 year along with the delivery of documentation.

  After completion of the maintenance period SSDM Task Force will be formally closed.

- **Enhancement of the Data Model** is the process of modifying a data model after delivery intended to increase or decrease functionality and capability from the existing design.

  For enhancements to the original data model, clear scope will be defined and the participation and interest from the industry will be solicited again and formed as the new Task Force.