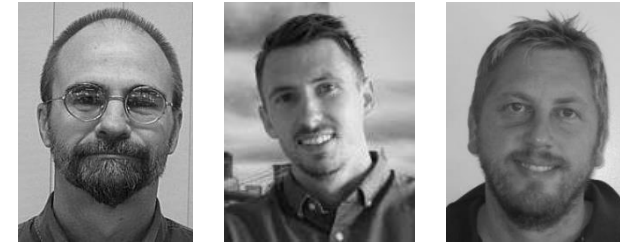


IFC 4.3 Infrastructure Extension: Unit Test Hackathon

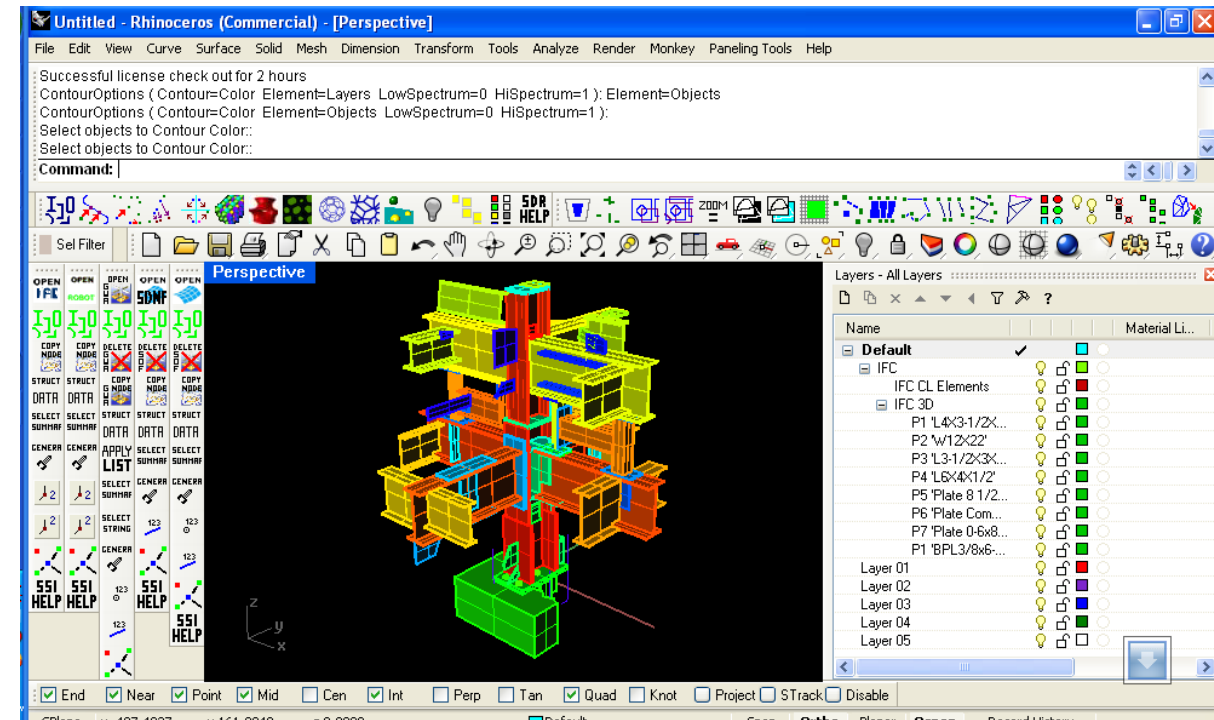
Jon Mirtschin, Geometry Gym (Australia)

@geometrygym jonm@geometrygym

Geometry Gym



- 10 years young!!!!
- Evolved out of projects by hybrid structural engineer / software developer
- Business model distributing development costs across multiple firms
- Trail Blazing BIM
- Mix Software / Consultancy



Implementing IFC - Technologies

- Roll your own Toolkit vs 3rd Party Toolkit
- Early Binding vs Late Binding
- Multiple version support
- Level of Abstraction
- Validation (Schema compliance and Geometry)

Implementing IFC - Toolkits

- C++ : IfcEngine, IfcOpenShell, Jotne, ODA, CSTB
- DotNet : IfcKit (IfcDoc), Xbim, Geometry Gym, IfcEngine, Hypar
- Java, Perl, Python, SQL etc etc
<https://technical.buildingsmart.org/resources/software-implementations/>
- Let us know requests for future open coding sessions

Validating IFC4.3 (Work in Progress)

- <http://rdf.bg/product-list/ifc-engine/>
- <http://www.geometrygym.com> (IfcTreeView, Plugins for Rhino3d, Revit etc)
- <https://github.com/buildingSMART/ProductData/tree/master/Tools/SchemaValidator> (Not confirmed IFC4x3)
- <https://openifcviewer.com/>

(Let us know more options)

IFC4.3 Samples

- <https://github.com/buildingSMART/Sample-Test-Files>
- <https://github.com/IFCRail/IFC-Rail-Unit-Test>
- <https://github.com/GeometryGym/GeometryGymIFCExamples>

Implementing IFC4.3 – C# early binding

- <https://github.com/GeometryGym/GeometryGymIFC> (Also on nuget)
- <https://github.com/buildingSMART/IfcDoc/tree/master/IfcKit> (Should we add this to nuget?)
- Might assist learning the data model, even if it's not utilized in your authoring and/or importing application

Implementing IFC4.3 – C# Open Coding

Analog to Digital (Machine Readable)

- Borehole
- Spatial Structure
- Linear Placement
- Participant suggestions?

Implementing IFC4.3 – Borehole



Department of
Transport and Main
Roads

- <https://www.tmr.qld.gov.au/-/media/busind/techstdpubs/Geotechnical/Geotech-Borehole-Logging/Geotechnical-Borehole-Logging.pdf?la=en>

Queensland Government		GEOTECHNICAL BOREHOLE LOG		FINAL 09/03/2016							
		FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/8-2014		BOREHOLE No BH-CC-01							
				Sheet 1 of 2							
				REFERENCE No H12327							
PROJECT <u>Gold Coast Light Rail (GCLR) Stage 2</u>											
LOCATION <u>Coomabah Creek Abutment</u>			COORDINATES <u>533654.0 E; 6909338.8 N</u>								
PROJECT No	<u>FG6280</u>	SURFACE RL <u>0.99m</u>	PLUNGE <u>90°</u>	DATE STARTED <u>10/09/2015</u>	GRID DATUM <u>MGA Zone 56</u>						
JOB No	<u>498/04375</u>	HEIGHT DATUM <u>AHD</u>	BEARING <u>°</u>	DATE COMPLETED <u>11/09/2015</u>	DRILLER <u>North Coast Drilling</u>						
DEPTH (m)	R.L. (m)	AUGER CASING WASH BORING CORE DRILLING	ROD (%)	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USCS WEATHERING	INTACT STRENGTH	DEFECT SPACING	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
0.89					Silty CLAY (Topsoil) Dark grey, moist.						
					Silty CLAY (Estuarine) Dark grey, moist, soft.	(CI)					
1	-0.21			A	Clayey SAND (Estuarine) Dark grey, wet, very loose.						U75
					Fine to medium grained. Shell						

Implementing IFC4.3 – Spatial Structure

	C	D	E	F	G	H	I	J	K
1	Location Hierarchy		ECM Location Filter			User friendly location information for display only		Location Classification	
	Project Location ID	Parent Project Location ID	Mark top level location in ECM	ECM Location Level	Location Description	Project Location Hierarchy Tree View	Location Display	Uniclass2015 or agreed Location Code	Uniclass2015 (Co, EN, SL) or otherwise agreed Project Location Title
2									
3	SLR				Sydney Light Rail	Sydney Light Rail	SLR - Sydney Light Rail	Co_80_50_45	Light rail complexes
4	CS2	SLR			CBD and SE Light Rail	Sydney Light Rail \ CBD and SE Light Rail	CS2 - CBD and SE Light Rail	En_80_50_71	Railway corridors
5	DES	CS2	Y	L1 - Location	DE Stop	Sydney Light Rail \ CBD and SE Light Rail \ DE Stop	DES - DE Stop	SL_80_50_47	Light rail stops
6	PLA	DES		L2 - Sub-location	Platform 1/2	Sydney Light Rail \ CBD and SE Light Rail \ DE Stop \ Platform 1/2	PLA - Platform 1/2	En_80_50_58	Platforms
7	P01	PLA		L3 - Sub-sub Location	Platform 1	Sydney Light Rail \ CBD and SE Light Rail \ DE Stop \ Platform 1/2 \ Platform 1	P01 - Platform 1	SL_80_50_24	Double sided platforms
8	P02	PLA		L3 - Sub-sub Location	Platform 2	Sydney Light Rail \ CBD and SE Light Rail \ DE Stop \ Platform 1/2 \ Platform 2	P02 - Platform 2	SL_80_50_24	Double sided platforms
9									
10									

	C	D	E	F	G	H	I	J
1	Asset Hierarchy			Asset Classification		User friendly asset information for display only		Project Location
	Project Asset ID	Project Parent Asset ID	Asset Description	Uniclass2015 Asset Code (EF, Ss, Pr)	Uniclass 2015 Asset Title (EF, Ss, Pr)	Asset Hierarchy Tree View	Project Location ID	Project Location Title
2								
12	BIN01-1	FUR	Waste bin - General Waste	Pr_40_50_07_77	Segregated waste bins	Street Furniture System \ Waste bin - General Waste	PLA	Sydney Light Rail \ CBD and SE Light Rail \
13	BIN01-2	FUR	Waste bin - General Waste	Pr_40_50_07_77	Segregated waste bins	Street Furniture System \ Waste bin - General Waste	PLA	Sydney Light Rail \ CBD and SE Light Rail \
14	PIS		Passenger Information System	Ss_75_10_68	Public communications systems	Passenger Information System	SLR	Sydney Light Rail
15	POST01-1	PIS	Sign Post Type 1	Ss_40_10_20_96	Wayfinding signage systems	Passenger Information System \ Sign Post Type 1	PLA	Sydney Light Rail \ CBD and SE Light Rail \
22	POST04-2	PIS	Sign Post Type 4	Ss_40_10_20_96	Wayfinding signage systems	Passenger Information System \ Sign Post Type 4	PLA	Sydney Light Rail \ CBD and SE Light Rail \
23	CAB01-1	PIS	Cabinet	Pr_40_30_75	Safes and security cabinets	Passenger Information System \ Cabinet	DES	Sydney Light Rail \ CBD and SE Light Rail \
24	OPL		Opal system	Ss_75_90	Ticket management systems	Opal system	SLR	Sydney Light Rail \ CBD and SE Light Rail \
25	TKT01-1	OPL	Opal top up machine	Pr_40_70_22_88	Ticket dispensers	Opal system \ Opal top up machine	DES	Sydney Light Rail \ CBD and SE Light Rail \
26	CARD01-1	OPL	Opal Card Reader	Pr_75_75_27_80	Smart card readers and writers	Opal system \ Opal Card Reader	PLA	Sydney Light Rail \ CBD and SE Light Rail \
27	CARD01-2	OPL	Opal Card Reader	Pr_75_75_27_80	Smart card readers and writers	Opal system \ Opal Card Reader	PLA	Sydney Light Rail \ CBD and SE Light Rail \
28	CARD01-3	OPL	Opal Card Reader	Pr_75_75_27_80	Smart card readers and writers	Opal system \ Opal Card Reader	PLA	Sydney Light Rail \ CBD and SE Light Rail \
29	CARD01-4	OPL	Opal Card Reader	Pr_75_75_27_80	Smart card readers and writers	Opal system \ Opal Card Reader	PLA	Sydney Light Rail \ CBD and SE Light Rail \
30								