



ArcGIS & 3D Simulation Life of Field Planning Tool

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- **Outline Brief of ArcGIS and VROV Capability**
 - Why we did this?
 - What does it do for us
 - Additional benefit it provides

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■ Why we did this?

- Gendalo & Gechem required a tool to enable field layout architecture to be established
- ArcGIS already utilized within CVX community
- Tool enabled global field from onshore facility to subsea wells to be visualized
- Enabled project decisions to be made based on comprehensive and accurate data

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■ What Does it Do For Us

- Enables CVX to generate/manage **field layouts in-house**
- Reduces project risk by enabling field layout to be **established early** in project life
- Provides a structured mechanism for field layout generation **compatible with other GIS** based disciplines
- Maintains project historical data in **centralized location** (CVX server)
- Latest revision **drawings controlled** and readily exported from data base
- **All disciplines represented** in single field layout design tool
- Enables field layout **solutions to be verified** utilizing 3D simulation
- Provides **life of field** support
- Provides information **link to e-room**

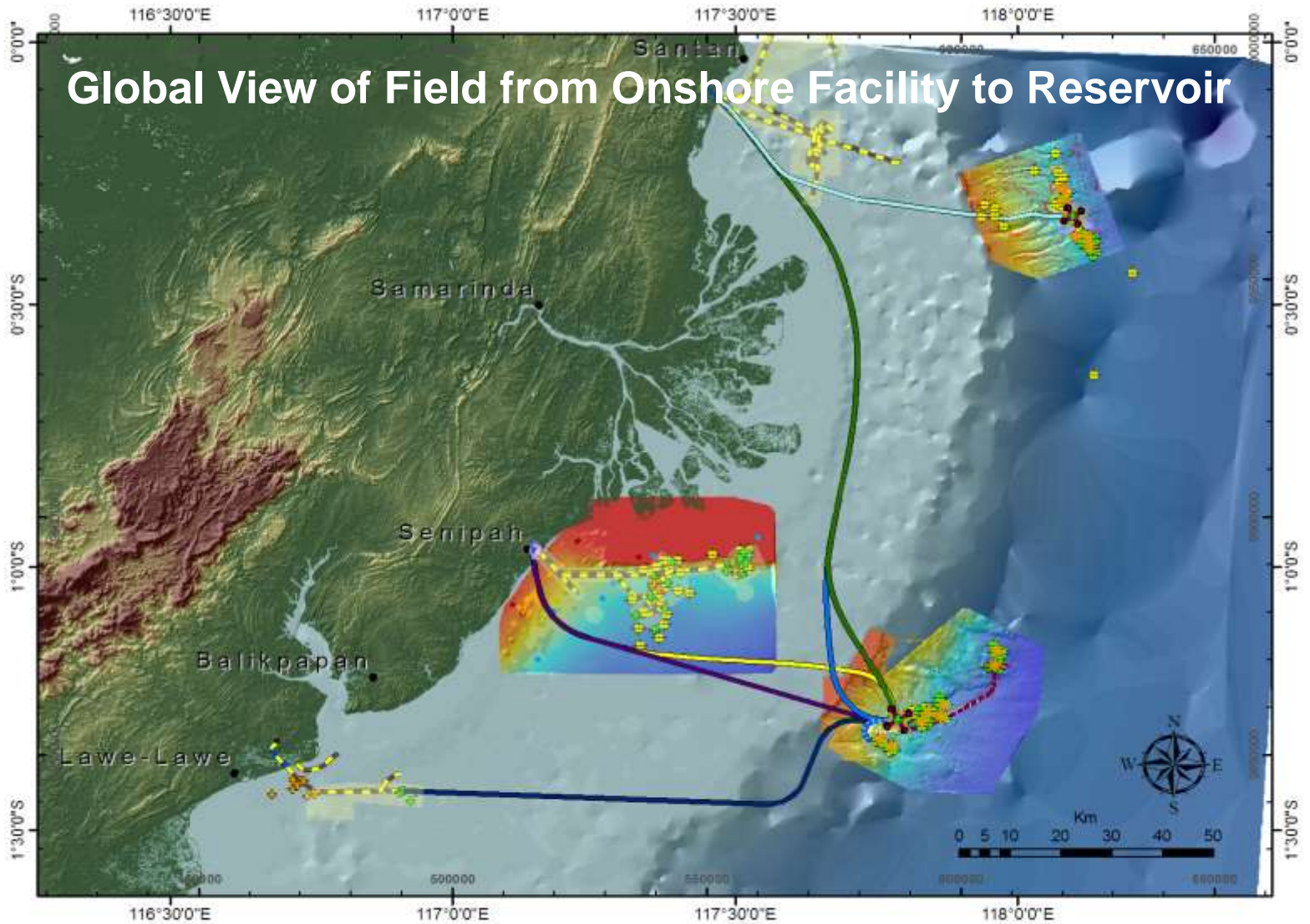
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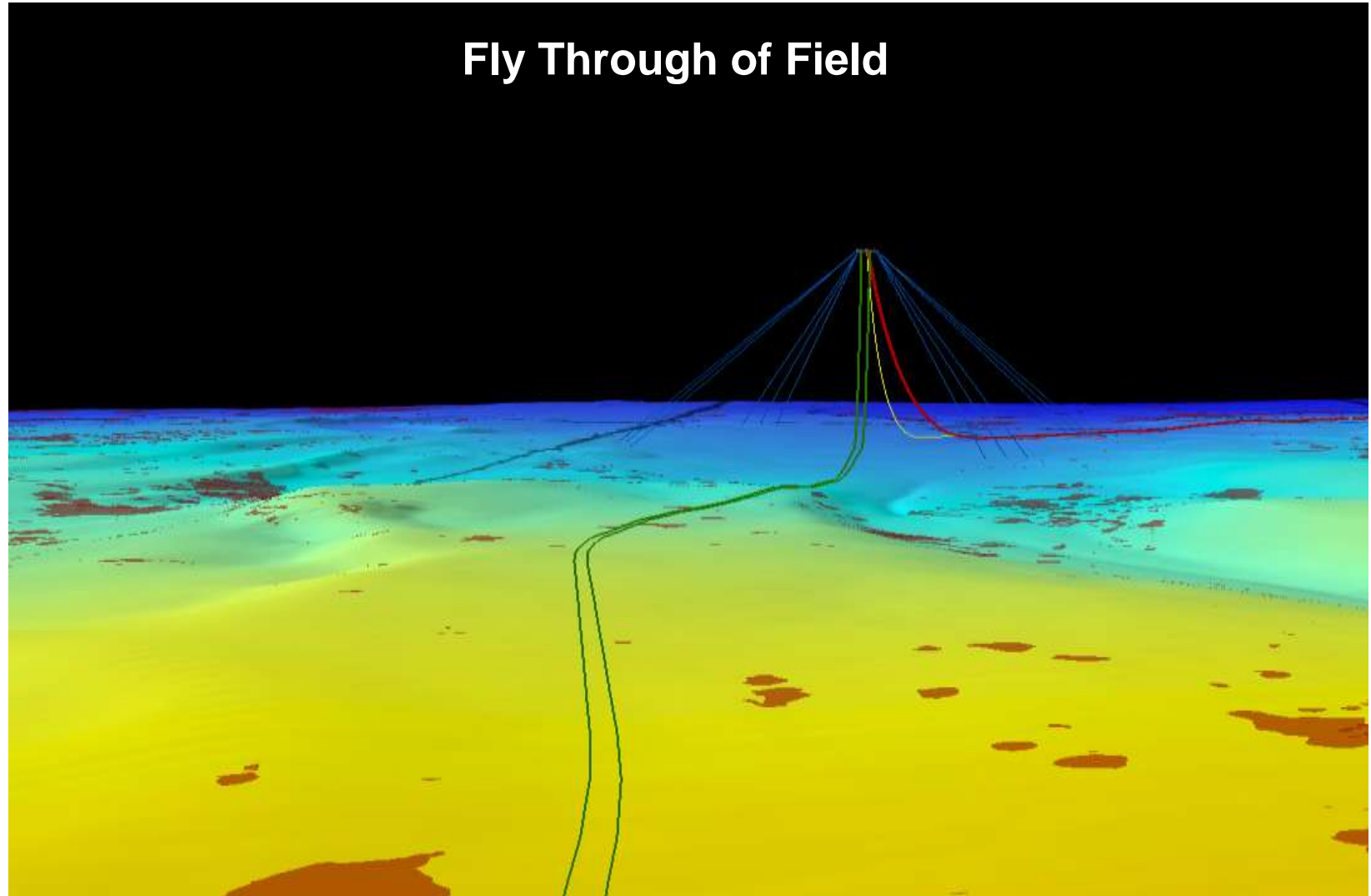
■ Additional Benefit It Provides

- Utilizes existing data available within CVX to **generate seabed maps** (3D seismic /AUV)
- Enables equipment to be installed in **flat terrain** free from surface and subsurface geo-hazards.
- Enables equipment **clash checks** (host moorings, MODU moorings, flowline routes)
- Enables pipeline / flowline deployment scenarios to be verified (lay away from host / anchor lengths)
- Enables pipeline to be routed to **facilitate flow assurance**
- Enables pipelines to be routed clear of **geo-hazards**
- Enables completion and tree's to be **positioned accurately** relative to drill center
- Enables desk top metrology and **early jumper fabrication**. Early jumper fabrication improves first oil
- All components and critical interfaces **uniquely tagged**

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Working With Data in ArcGIS Video

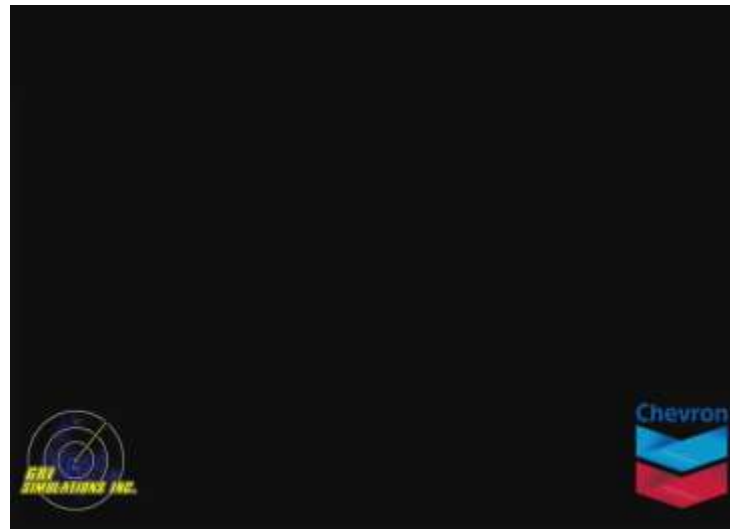
**ARCgis FIELD LAYOUT
PLANNING AND
DEVELOPMENT TOOL**



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VROV Simulation Tool Video



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Example of Database – Subsea Equipment



Attributes of Equipment

FID	Shape	Sub_Theme	Date_Entrd	Author	Taglum_Key	Abbrev	Conn_From	Conn_To	Loc_Name
0	Point ZM	Manifold	1/1/1901	Gus Colyer	GEH_SSE_MFLD12_03_01_00	MFLD12	NA	NA	Gehem SWC -Manifold-12H
16	Point ZM	Well	1/1/1901	Gus Colyer	GEH_SSE_WELHED_03_01_00	WELHED	NA	NA	Gehem SWC WELHED
17	Point ZM	Well	1/1/1901	Gus Colyer	GEH_SSE_WELHED_03_02_00	WELHED	NA	NA	Gehem SWC WELHED
18	Point ZM	Well	1/1/1901	Gus Colyer	GEH_SSE_WELHED_03_03_00	WELHED	NA	NA	Gehem SWC WELHED

Attributes of Equipment

Loc_From	Loc_To_Tgt	Mfgr	Eqpt_Det	Const_Mat	Ctrl_Oprtn
NA	NA	Subsea Equipment Supplier	Dual Header, Vertical Connections, Pigging Loop	CRA/Clad	Electro-Hydraulic Multiplexed SCM
NA	NA	Subsea Equipment Supplier	Manufacture Wellhead Type	CS/Inlaid	
NA	NA	Subsea Equipment Supplier	Manufacture Wellhead Type	CS/Inlaid	
NA	NA	Subsea Equipment Supplier	Manufacture Wellhead Type	CS/Inlaid	
NA	NA	Subsea Equipment Supplier	Manufacture Wellhead Type	CS/Inlaid	

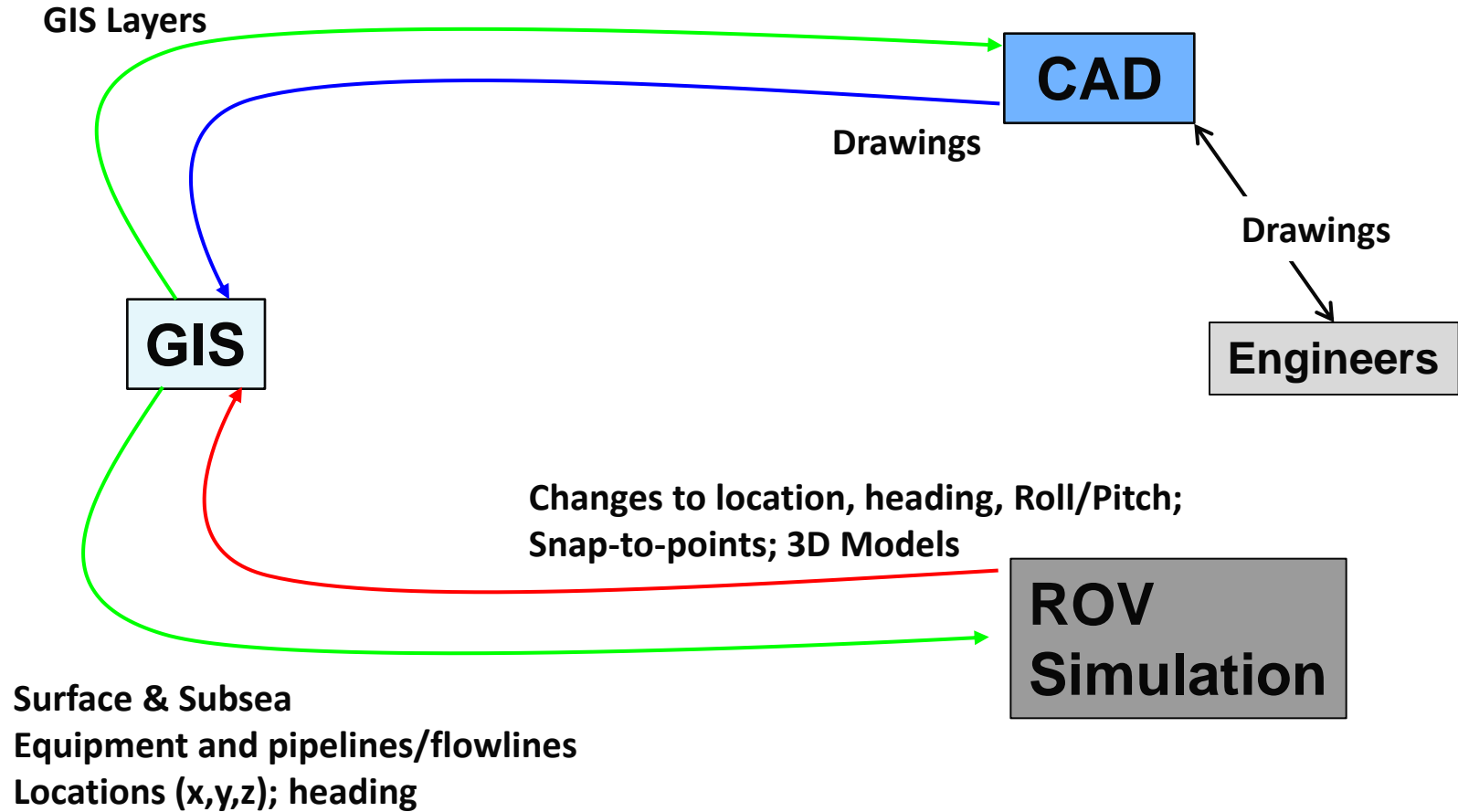
Attributes of Equipment

Pressure	Insulatn	Prod_Srvc	Size	Weight	Inst_Date	Elevation	Ref_ID_Num
10K MVP	None	Sweet Service	10" x 10"	0	1/1/1901	Manifold	NA
10K MVP		Sweet Service	30" x 18 3/4"	0	1/1/1901		NA
10K MVP		Sweet Service	30" x 18 3/4"	0	1/1/1901		NA
10K MVP		Sweet Service	30" x 18 3/4"	0	1/1/1901		NA
10K MVP		Sweet Service	30" x 18 3/4"	0	1/1/1901		NA
10K MVP		Sweet Service	30" x 18 3/4"	0	1/1/1901		NA
10K MVP		Sweet Service	30" x 18 3/4"	0	1/1/1901		NA
10K VHSIP	None	Sweet Service	6"				
10K VHSIP	None	Sweet Service	6"				
10K VHSIP	None	Sweet Service	6"				
10K VHSIP	None	Sweet Service	6"				
10K VHSIP	None	Sweet Service	6"				
10K VHSIP	None	Sweet Service	6"				
10K VHSIP	None	Sweet Service	6"				
LP= 3K HP= 10K	NA	NA	Le				
LP= 3K HP= 10K	NA	NA	Le				

X	Y	Z_WD	Z_TVDSS	Roll	Pitch	Hdg_deg
625524.86	9956851.13	-1785.8	-1000	0	0	350
625525.335	9956815.001	-1784	-1000	0	0	0
625507.896	9956830.067	-1785	-1000	0	0	0
625542.316	9956830.399	-1787	-1000	0	0	0
625506.092	9956871.061	-1786	-1000	0	0	0
625540.481	9956872.778	-1786	-1000	0	0	0
625522.445	9956887.125	-1784	-1000	0	0	0
625526	9956815	-1784	-1000	0	0	359.7
625543	9956831	-1785	-1000	0	0	317.8
625540	9956873	-1787	-1000	0	0	220
625506	9956871	-1786	-1000	0	0	135.3
625522	9956887	-1786	-1000	0	0	177.2
625508	9956830	-1784	-1000	0	0	42.5
625536.54	9956888.29	-1784	-1000	0	0	0
625553.91	9956817.98	-1784	-1000	0	0	0

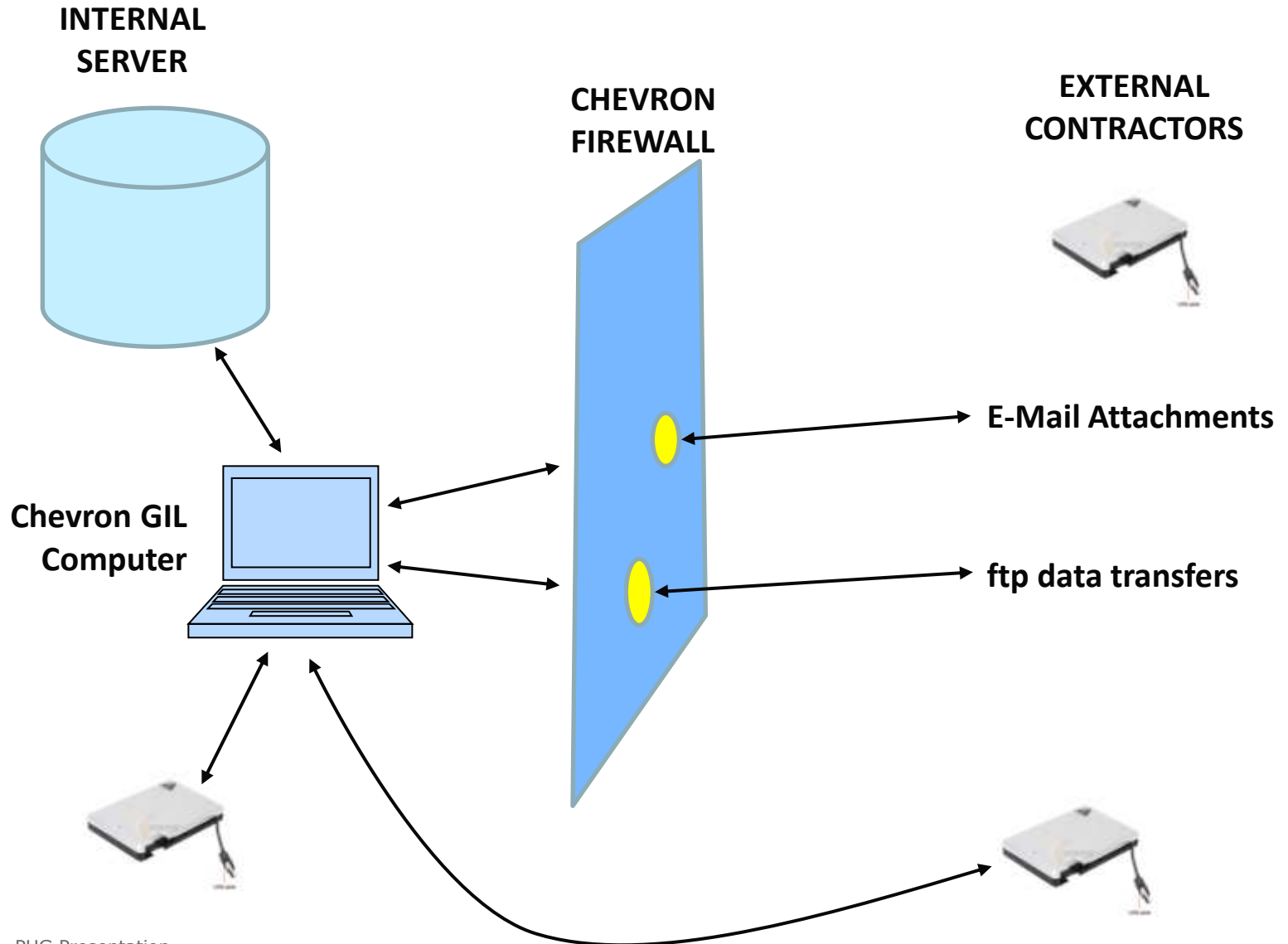
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Data Exchange & Update



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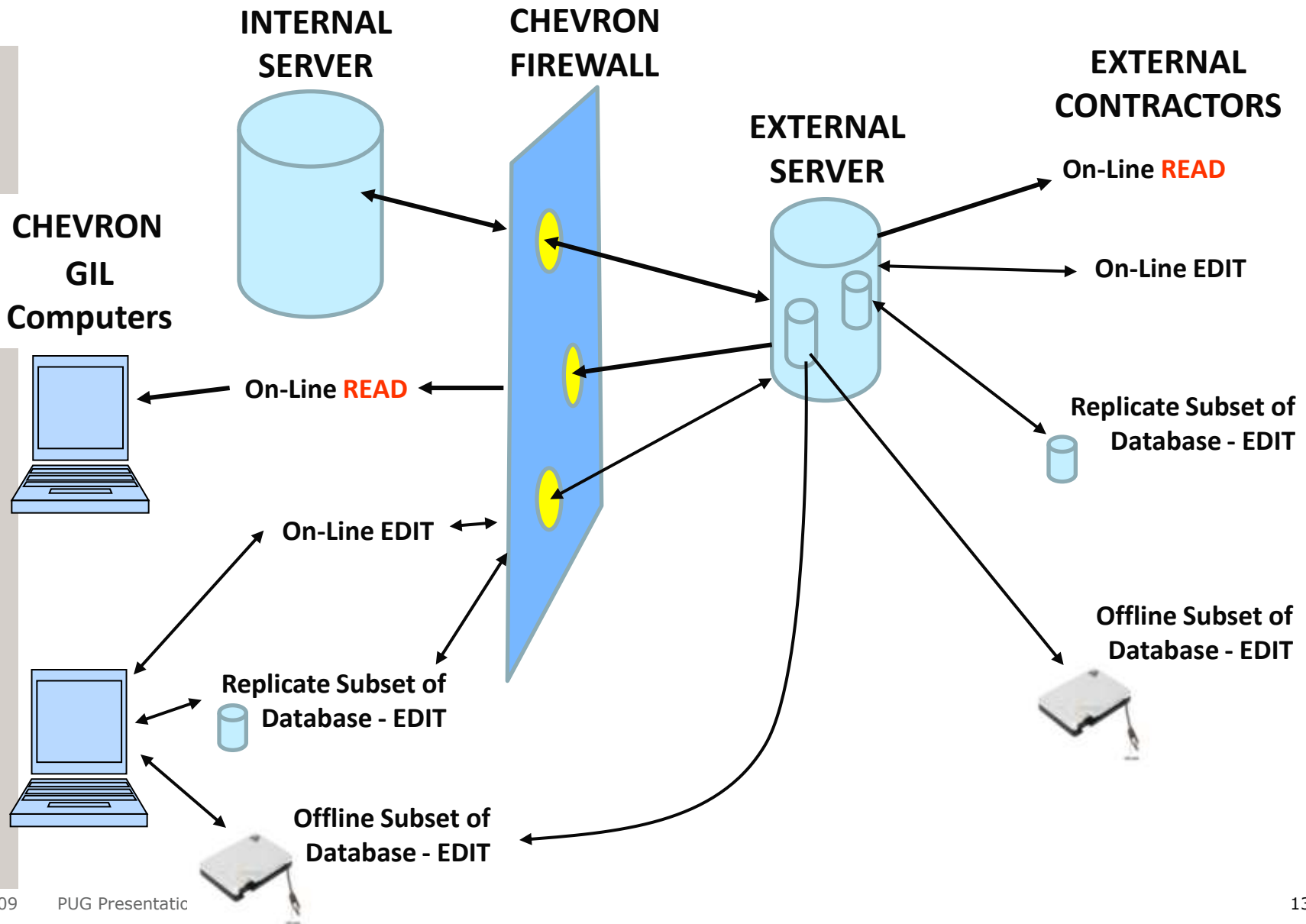
Prototype GIS Access & Distribution



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Access & Distribution via Web-Based GIS

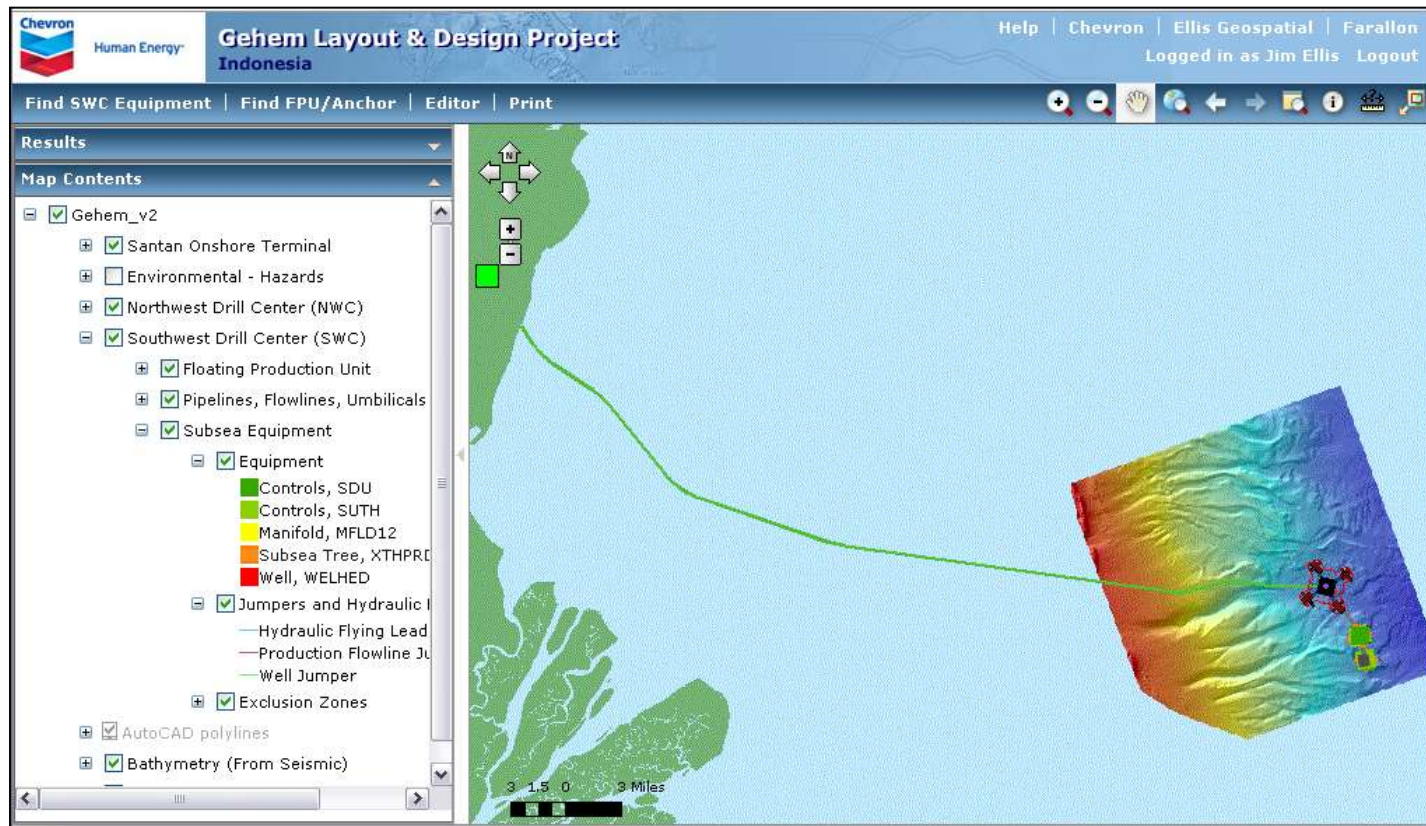


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Access & Distribution via Web-Based GIS

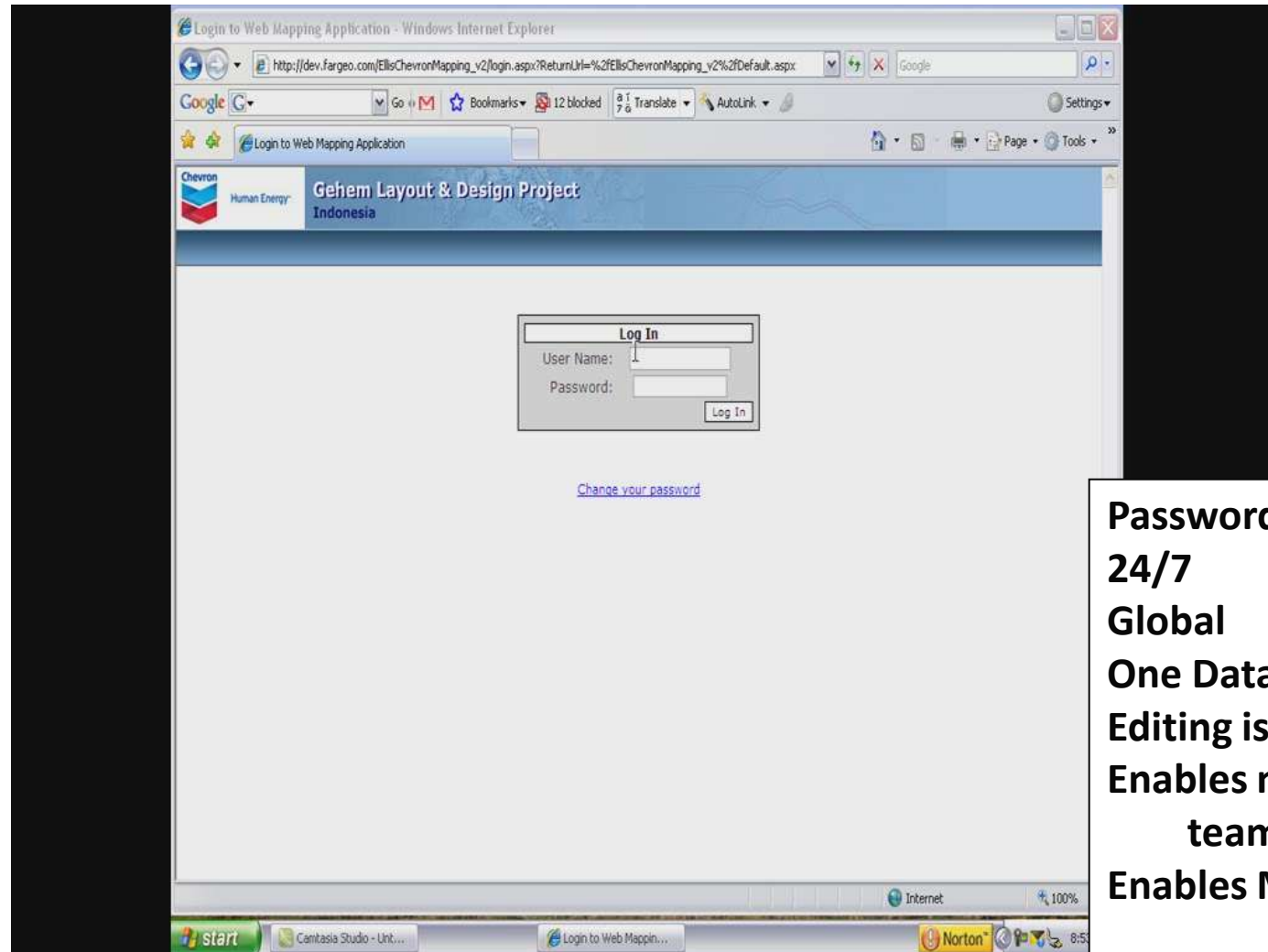


- Converted prototype shapefile database to geodatabase
- Used ArcGIS Server 9.3 Advanced Enterprise software with ArcSDE technology
- Microsoft's SQL Server 2005 database (RDBMS)



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Access & Distribution via Web-Based GIS



**Password-Protected
24/7
Global
One Database
Editing is controlled
Enables non-GIS
team members
Enables Managers**

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A Special Thanks To The Team Members That Made This Possible

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Questions?

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