

Creating a Telecom GeoDatabase from Various Sources

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About 3-GIS

Over 20 Years of Experience
Building Fiber Management
Systems

Focused on Smart Solutions to
Fiber Management Challenges

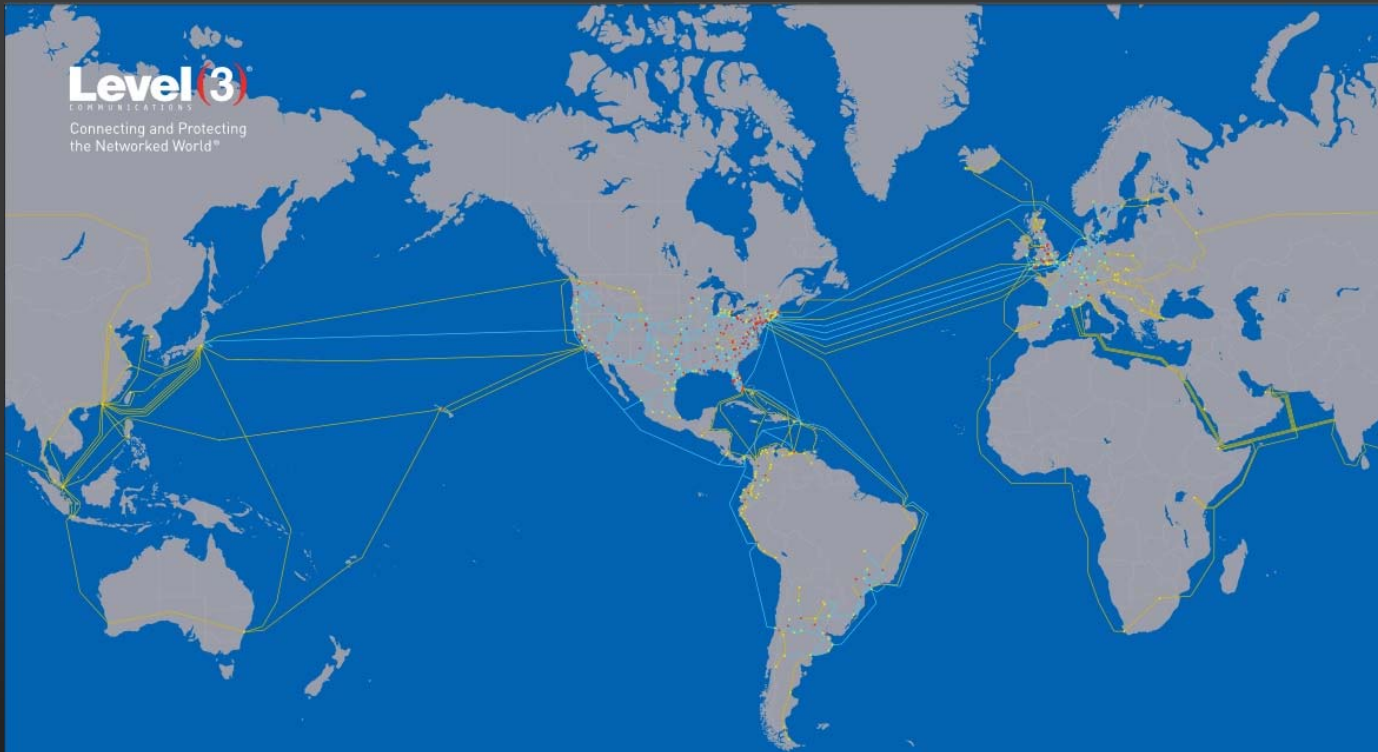
3-GIS is used to manage over
20M miles of fiber in 10
countries



About Level(3)

Level(3) was formed in 1998 as a spin off from Kiewit Corporation and provides core transport, IP, voice, video, and content delivery for medium-to-large Internet carriers in North America, Latin America, Europe, and selected cities in Asia. Level (3) is also the largest competitive local exchange carrier (CLEC) and the 3rd largest provider of fiber-optic internet access (based on coverage) in the United States.

Level 3
COMMUNICATIONS
Connecting and Protecting
the Networked World™



THE LEVEL 3 NETWORK

- | | |
|--|--|
|  On-Net Market with Metro Network |  Owned Network |
|  On-Net Market |  Leased Network |



North America



Europe



Latin America



Asia



Africa

Level(3) Challenge

Description of Problem – Level(3) has bought several companies over the last 9 years (Genuity, Wiltel, Broadwing, LGN, Progress Telecom, Telcove, ICG, Global Crossing, TWTelecom). All of these companies had fiber networks that were documented and inventoried using various tools and methods, and to various degrees of accuracy.

Level(3) required a scalable, yet controllable GIS environment where user access can be classified according to job role.

Level (3) Example

The main task was to take all of these sources and creating a single Geodatabase to represent all of Level(3) OSP network.

Data: Single Oracle Database Instance for 140,000 route miles of fiber.

Data converted from 8+ legacy companies by 3-GIS and Level 3. These data sources included, but were not limited to:

- GE Smallworld
- ArcGIS Shapefiles
- Ericsson Network Engineer
- AutoCAD in Multiple Formats
- Excel Spreadsheets
- MapInfo
- Level (3) Custom Built Solutions

Conversion Project Outline

- Source data to target data model
- Source formats to deal with
- Questions to ask
- Tools in our toolbox
- Problems we have encountered
- Validations and assumptions

Data Mapping

CAD Layer Number	Feature
#1	DF Cables
#2	Splice
#3	Building

Spread Sheet	Cell value	Splice #
#1	A1-4 to C5-6	Splice KR1
#1	B3-4 to C1-2	Splice KR1
#1	B1-2 to A5-6	Splice KR1

Pole Table	X,Y
#1	12356.12, 43014.84
#2	12376.52, 43022.83
#3	12397.11, 43121.64

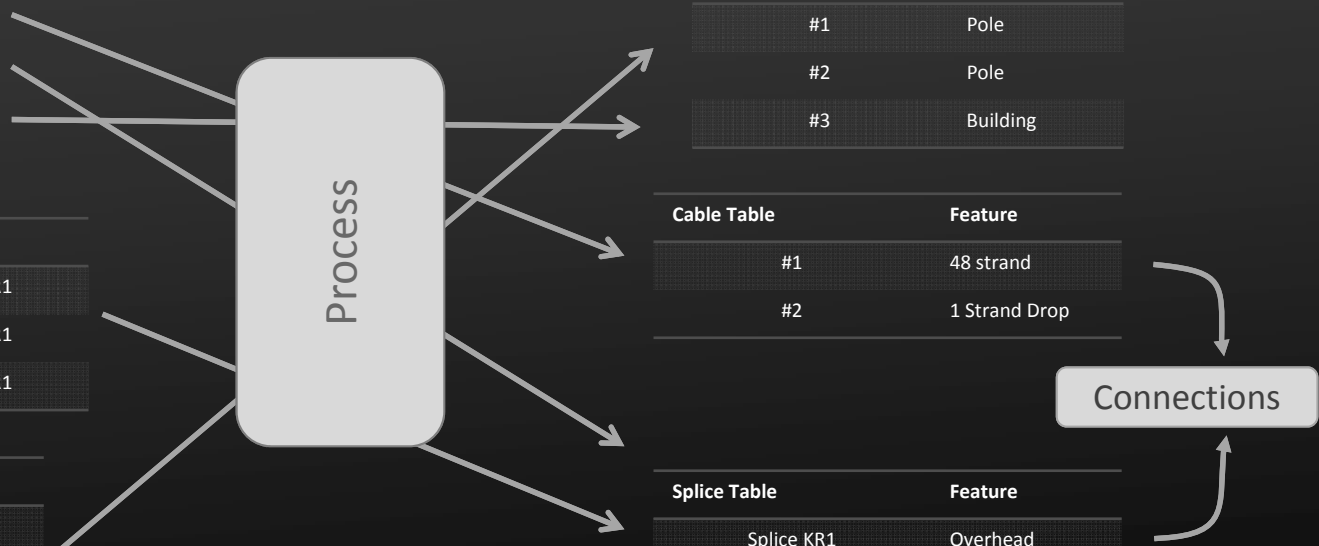
Process

Structure Table	Feature
#1	Pole
#2	Pole
#3	Building

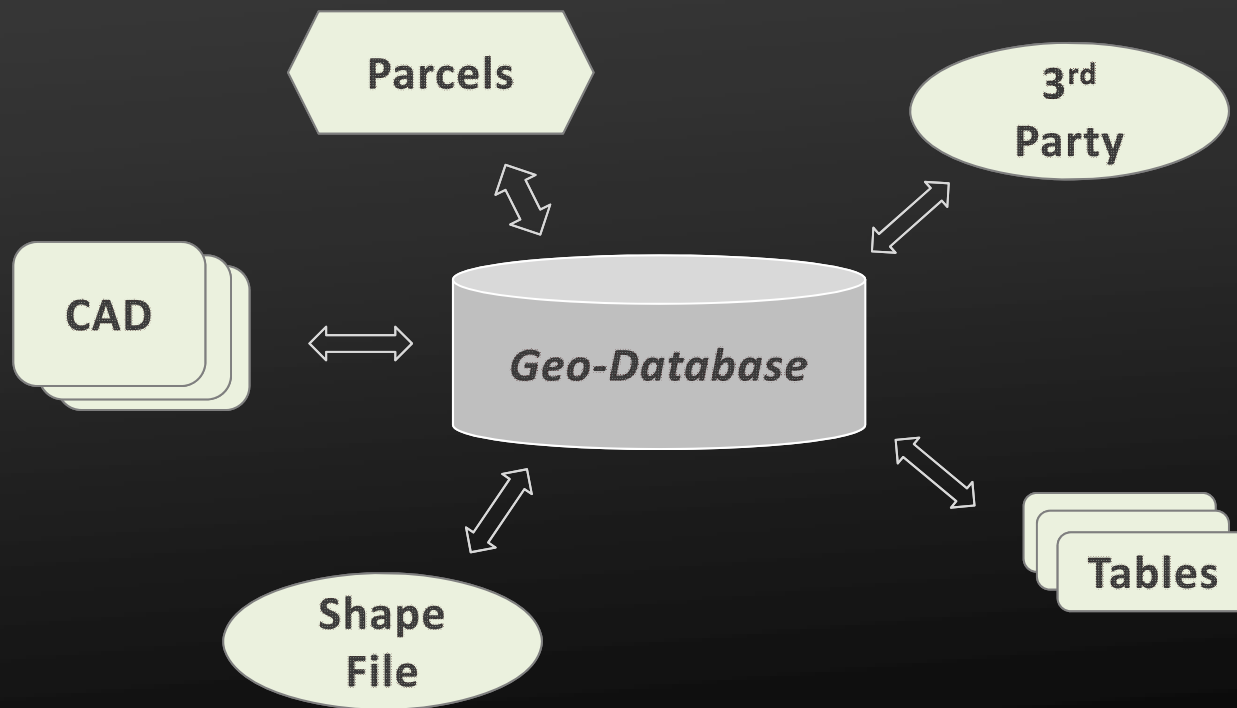
Cable Table	Feature
#1	48 strand
#2	1 Strand Drop

Splice Table	Feature
Splice KR1	Overhead
Splice KZ6	Overhead


Connections



Source Formats



Questions to Ask



Tables



CAD



3rd
Party



Shape
File

Projection
Export Formats
Current Schema
Source Types

Tools in Our Toolbox

ArcDeskTop

FME

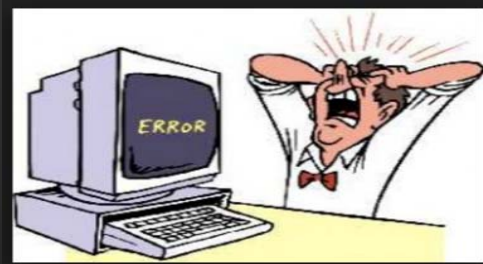
Python

Model Builder



Problems to Expect

Transformation Issues

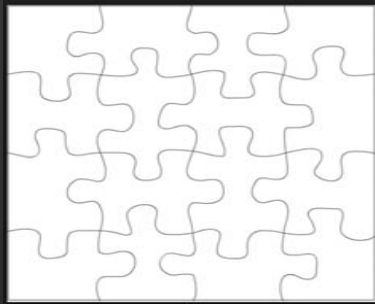


Bad Source

Projection

Linking Information

Validations and Assumptions



QA/QC Scripts

Repair Scripts

Connectivity

	5		6	8		9	
		9	1			5	6
3			9	2			
	7		2	9	3		5
5		6				9	2
9			5	8	6		3
				5	7		4
7		3			9	1	
	4		3	1			6

Summary

- Great tools exist to help
- Data Source will be a major factor
- Bad data in Bad data out
- Develop some validation checks for output