Machine Assisted Geodesign

(and the 3-GIS Time Machine)

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3-GIS Journey to AI/ML

esri 2007, 2008, 2010, 2011, 2015

Broadband Communities 2015, 2016, 2017

Inc. 5000 2015, 2016, 2017

- >Launched in 2006 from a deep telecom history
- >First web client in 2007 including mobile
- >First full-edit thin-client GIS in 2008
- >Entered the fiber market in 2010
- >First cloud-based model in 2012 supporting over 40,000 edits/day
- >First infinitely scalable model in 2017 in AWS
- >First machine learning (AI) model in 2017
- >Autonomous Design is the future

>Designing over 24,000,000 route miles of FTTH today!

Solving the Key problems...

FTTx Design Challenges

- **Goals**
  - Ambitious Targets
  - Time to Revenue
  - Capital Budget
- **Obstacles**
  - Ambiguous Requirements
  - Difficulty and Cost of Scaling
  - Inconsistency of Delivery
  - Duplication of Effort
  - Poor Documentation
  - Paralyzing FEAR

Historical solutions to the problem…..

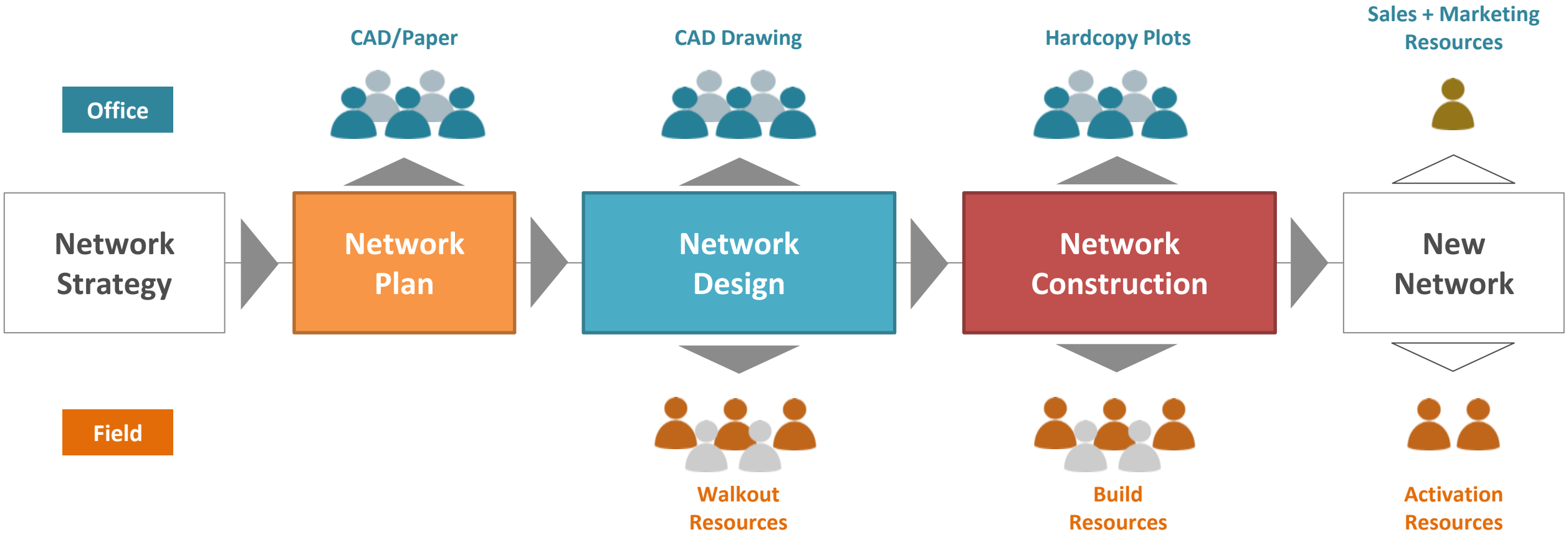
Traditional Method

Designs without locational reference

Manual input CAD or paper

- Segmented design based on cut sheets and project location
- Lack of ability to collaborate across single design for entire market
- Inability to provide effortless visibility for project management
- Difficult to broadcast wholesale changes in design due to changing requirements

Unassisted Planning, Design & Construction



Need exceeds speed

Potential | Costs

> Complex geophysical variables

> Complicated planning and permitting cycles

> Expensive design process

> Changing technology

> Inaccuracy of network data

> Unrealized revenue potential

> Clarity of financial impact

A New Solution: Geodesign

… the process of designing (creating or modifying) some portion or aspect of the environment, be it natural or manmade – occurs within the context of geographic space

New Method

Example (real) Project Details

100K+ Demand points
900+ Service points in large market metro
100+ unique municipal “landscapes”

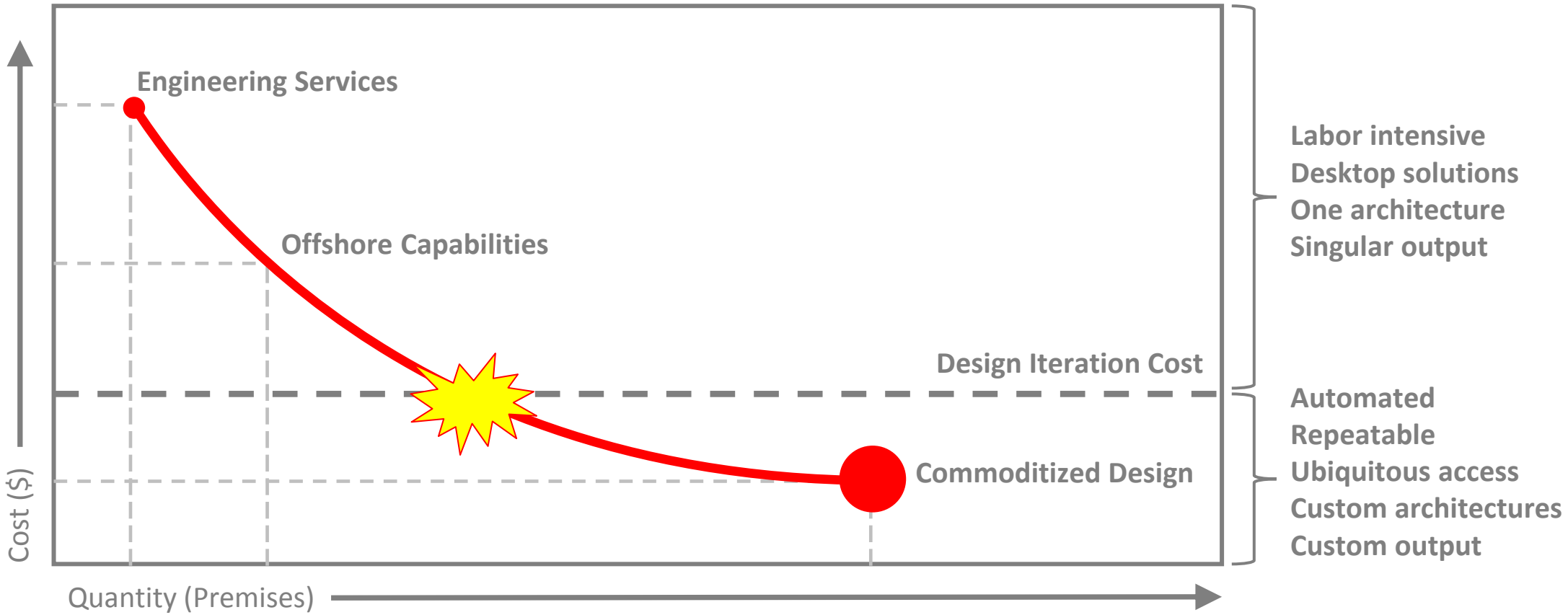
Requirements:

- Timeline: <8 Weeks time
- SOW: Route to all service points within the constraints of the network architecture while utilizing existing infrastructure where practical. Validate the proposed route
- Deliverable: GDB, KML, Bill of Materials, Deployment Cost estimate

Project Outcome

- Timeline: Completed 3 different architectures in 10 weeks
- Iterations used as a value add to the customer
- Data retained for future analysis and design work
- Overall effective reduction of ~60% of design engineering cost

Machine assisted geodesign



The solution for a performance network

3-GIS from the desk, to the field, throughout the enterprise

Software service solutions

> Visibility

> Access

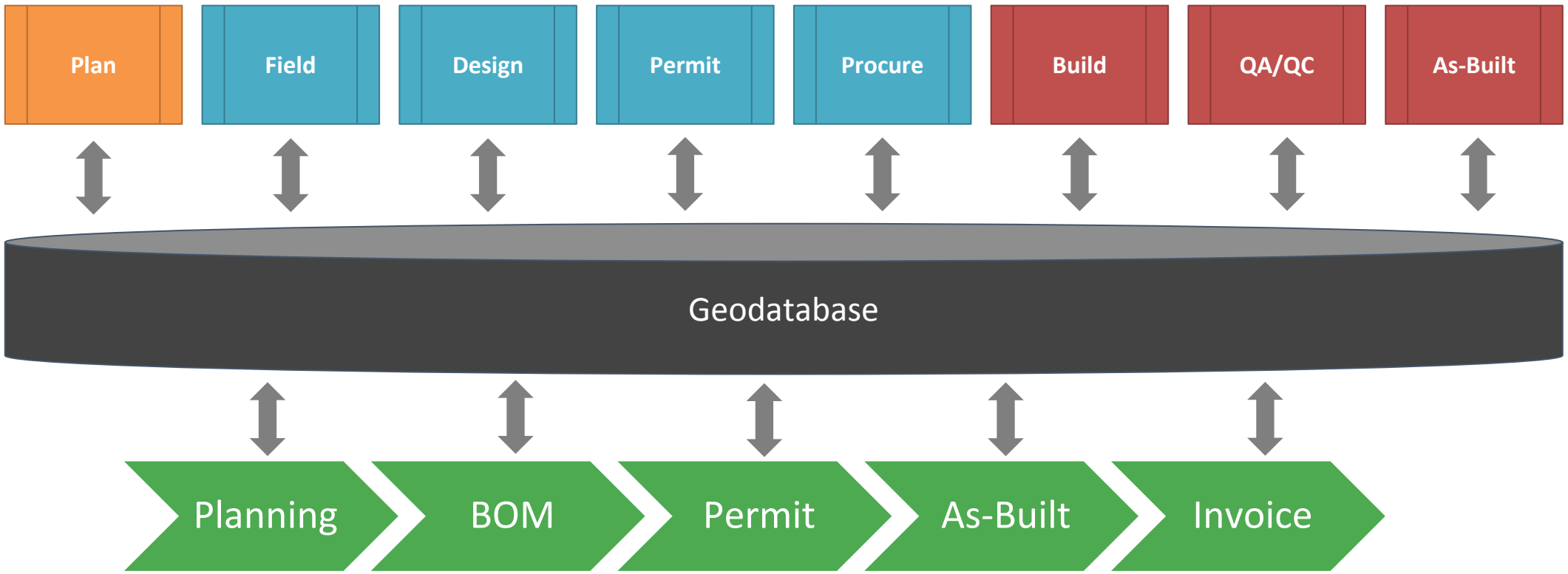
> Speed

> Agility

> Accuracy

Achieving agility

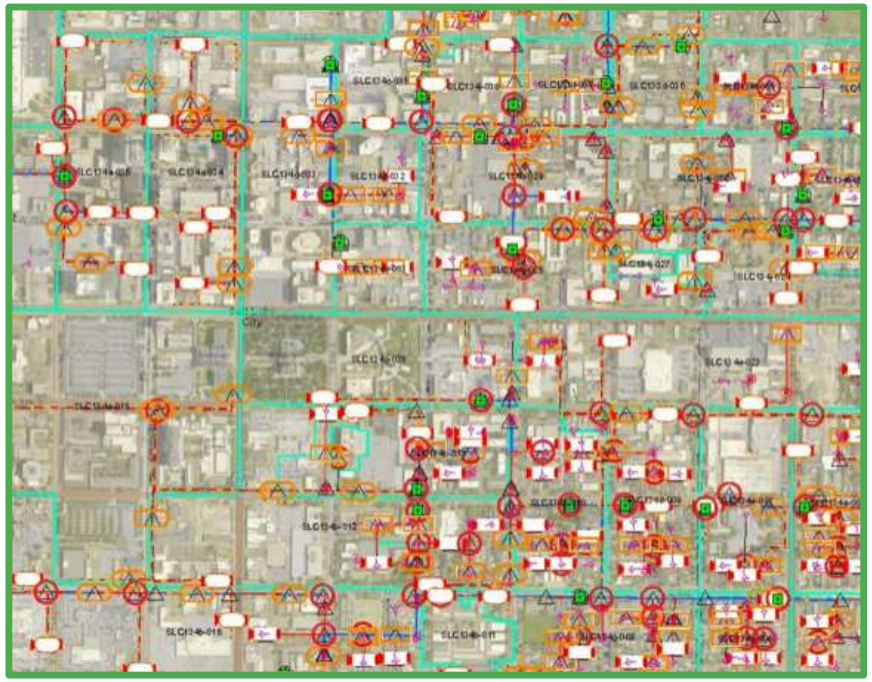
Single source database of geodesign



Understand the design in detail

Detail design & permitting

Platform + input data creates a level of differentiating detail



Existing Infrastructure
Routing Constraints
Highways, Rail, Gas, Bridges, Waterways, Natural Obstacles
Fire & Flood zones
Crime & Vandalism zones
Distressed Properties
Urban Renewal Zones
Site and Neighborhood Expansion Zones
Technology Densification Zones

Accurate budgetary cost estimates

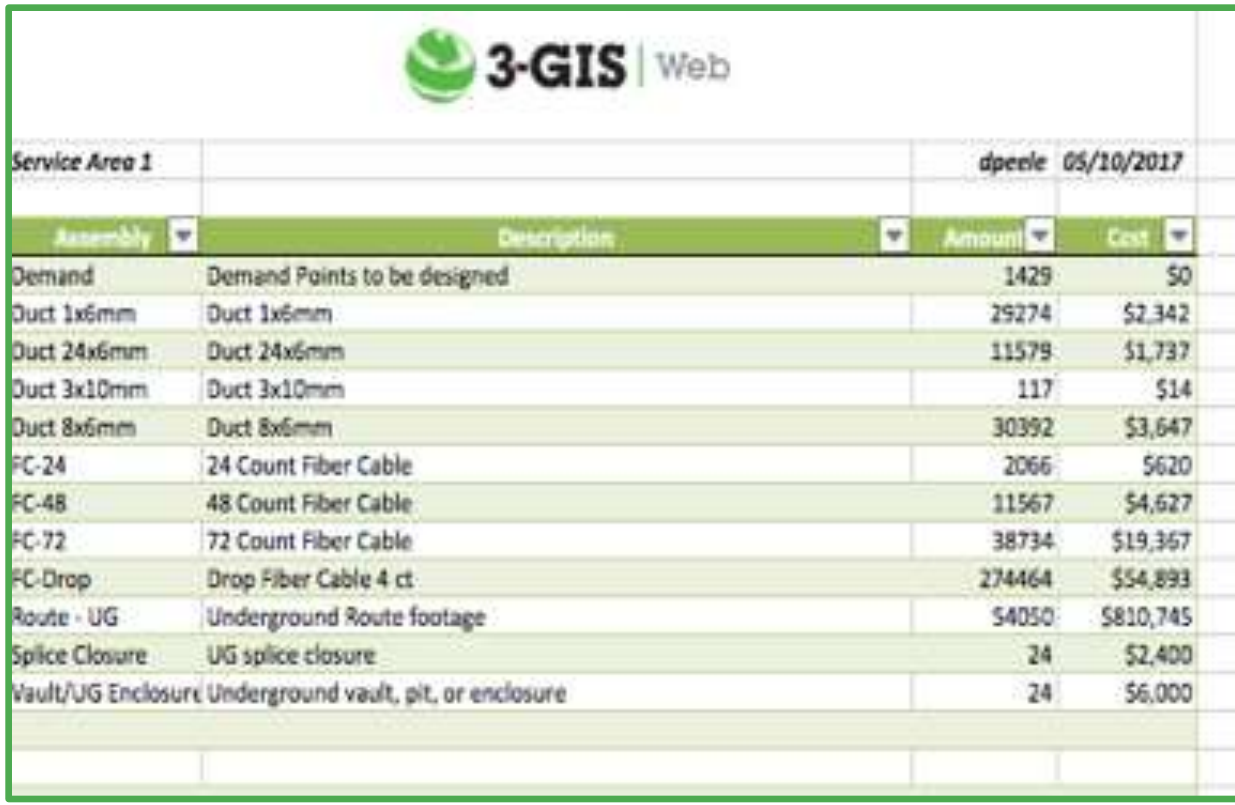
Detail design & permitting

Planning the financial & schedule impacts

> Bill of Quantities (BOQ)

> BOM

> Labor costs



Service Area 1		dpeele	05/10/2017
Assembly	Description	Amount	Cost
Demand	Demand Points to be designed	1429	$0
Duct 1x6mm	Duct 1x6mm	29274	$2,342
Duct 24x6mm	Duct 24x6mm	11579	$1,737
Duct 3x10mm	Duct 3x10mm	117	$14
Duct 8x6mm	Duct 8x6mm	30392	$3,647
FC-24	24 Count Fiber Cable	2066	$620
FC-48	48 Count Fiber Cable	11567	$4,627
FC-72	72 Count Fiber Cable	38734	$19,367
FC-Drop	Drop Fiber Cable 4 ct	274464	$54,893
Route - UG	Underground Route footage	54050	$810,745
Splice Closure	UG splice closure	24	$2,400
Vault/UG Enclosure	Underground vault, pit, or enclosure	24	$6,000

Faster to prints gets to permitting faster

Construction & as-built updates

Automated Work Print generation

> BOMs

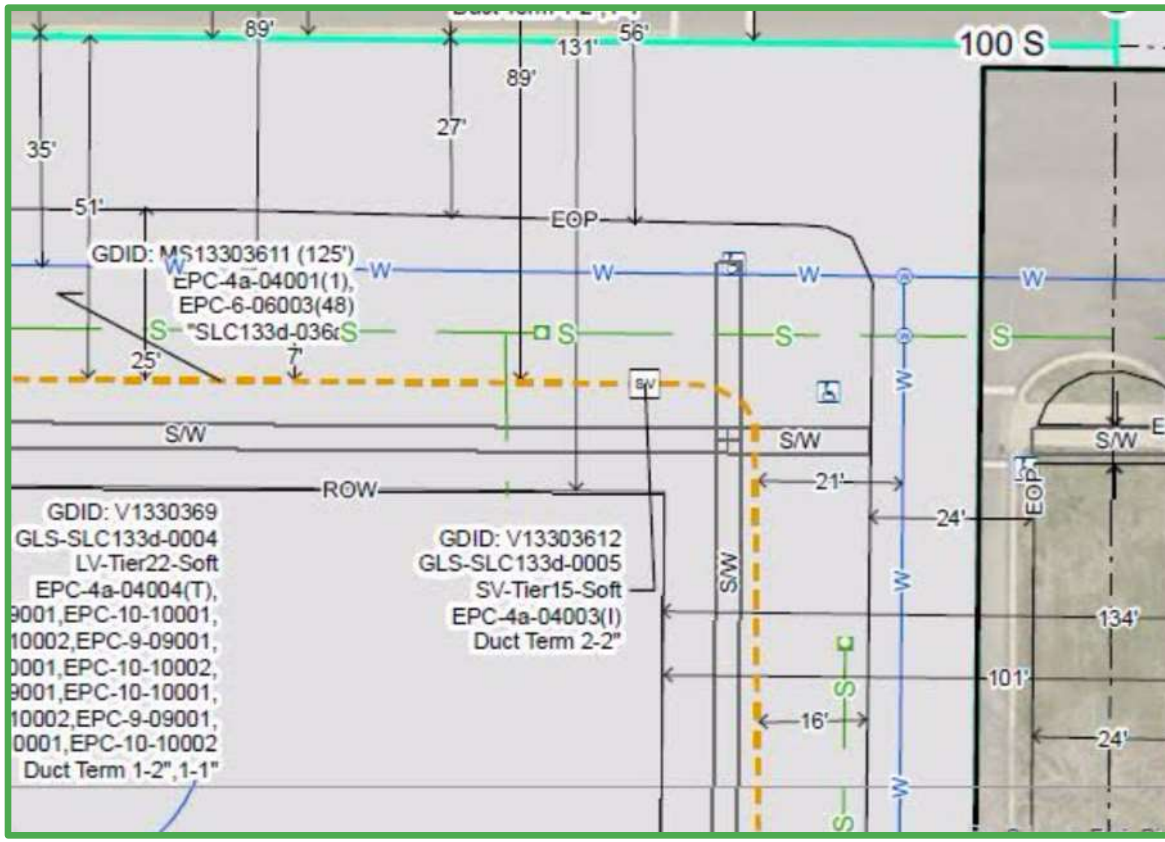
> Prints

> Splicing

> Typicals

> Labeling

> Dimensioning



Life-of-network solutions

3-GIS is pioneering a data driven approach based on spatial analysis, automation, mobility, and cloud-based services that is revolutionizing the deployment and management of fiber assets.

Manage assets for the life-of-network

Better response times, better operations

- Know what port to connect for service delivery
- Know how a specific customer being served
- Know if and where the network has capacity
- Know where to expand
- Know where to react to outages and errors

3-GIS

Thank you!

Tom Counts, CEO
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