



**Fundamentals of Telecommunications in GIS**

**01 - Mar -2024**

**Facebook:** [BeGISer](https://www.facebook.com/BeGISer)

**Website:** [begiser.com](https://www.begiser.com)

**Email:** [Support@begiser.com](mailto:Support@begiser.com)

Copyright © 2024 BeGISer  
All rights reserved.

## Document Policy

The information contained in this document is subject to change without notice.

Any inquiry regarding this document must be discussed with the document author. Contact with the document author can be made through a formal e-mail or by sending a meeting request.

This document, developed by BeGISer, provides the training catalog for the  
**fundamentals of Telecommunications in GIS.**

The information contained in this document is the exclusive property of BeGISer. This work is protected under Egyptian copyright law and other international copyright treaties and conventions. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system, except as expressly permitted in writing by BeGISer. All requests should be sent to the [Technical Manager](#).  
[17 Rashdan, Ad Doqi, Dokki, Giza Governorate 3750305.](#)

### Training Environment:

Training will be conducted at the BeGISer or client premises site (classroom format).

### Training Scope:

The training of the GIS End-user, Professional users, and System Admins.

## An introduction

This document provides a training guide for GIS Telecommunications fundamentals using the ESRI platform. The Course is intended for professionals or recent graduates with strong knowledge of GIS specifically, those working in the field of GIS and who want to migrate to using ArcGIS Pro instead of ArcMap.

## About this Course

Are you a professional GIS user? You have at least two years of experience in the field of GIS in general and want to enrich your knowledge in one of the areas of utility networks.

We have many paths that are concerned with all utility networks, such as gas networks, water and sewage networks, and electricity networks, in addition to communications networks, which are the subject of this course.

In this course, you will learn the basics and principles of communications networks and an understanding of the types of networks and how they work in reality, in addition to how to link spatial data and tabular data to solve the daily problems that you are working with.

In addition to this, you will acquire skills in detecting spatial errors and descriptive errors using quality control tools using ArcGIS Pro and ArcMap in some cases.



## Section 1: Introduction to Telecommunications

### Fundamentals of Telecommunications.

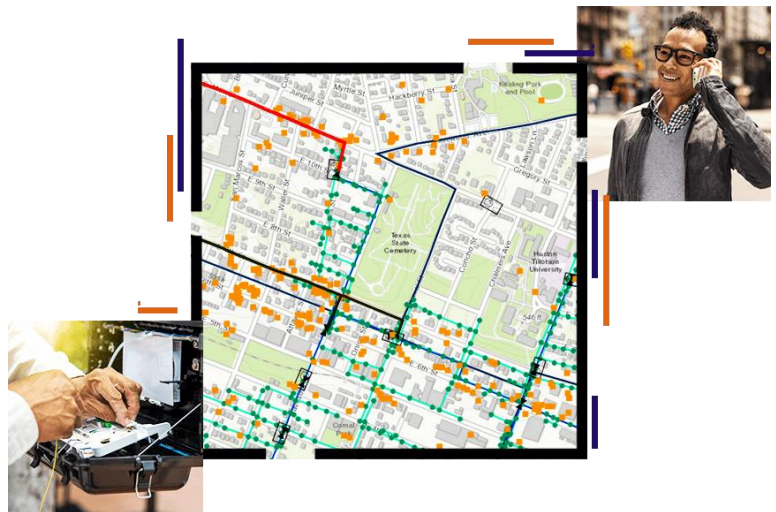
- What is Telecommunications?
- Historical overview and evolution of telecommunications
- Telecommunication Technologies.
  - Wired Technologies.
  - Wireless Technologies.
  - Optical Fiber Structure.
  - Single-Mode Fiber (SMF).
  - Multi-Mode Fiber (MMF).

### FTTx Telecom Networks.

- Overview of FTTx Networks.
- Submarine Cables.
- FTTH Network.
- P2P (Point-to-Point) and P2MP (Point-to-Multipoint) configurations.
- P2MP Components.
  - OLT
  - ODN
    - Feeder part
    - Distribution part.
    - Splitters.
  - ONT
- Planning and implementing the primary and secondary network.

### Installing FTTH Onsite.

- Civil Works.
- Drop Cables.



## Section 2: Utilize GIS in FTTH Network

### Preparing Data for Different Systems.

- Improving Network in Civil3D.
- Converting DWG to GIS (ArcGIS Pro).
- Transfer Data from Dwg layers to Schema.

### Network Geometry Quality control

- Catch issues using Topology roles.
- ArcGIS Data Reviewer.
- Geoprocessing Tools.
- Advanced Editing and Modifying.

### Fill Attributes with Tools

- Geoprocessing Tools
  - Join methods Spatial and attributes
  - Calculating values and Field
  - Features and Vertices
- Using Python scripts to autofill attributes.



## Section 3: Enabling Telecom Network in Web GIS

Publish and share your data

Creating and modifying Web Map Viewer

Monitoring data using ArcGIS experienced builders and Dashboards

Inspect and Collect data using field map apps

