KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
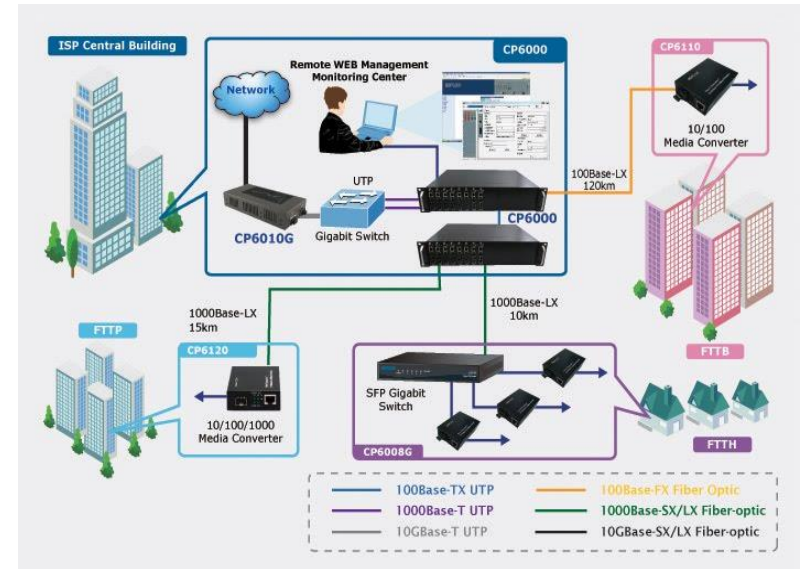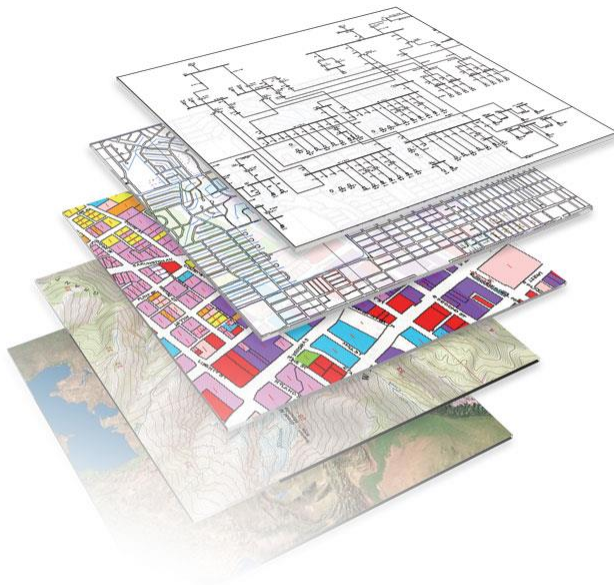
College of Environmental Design
City and Regional Planning Department

CRP 514 (Geographic Information System) – 02
Term Project

Prepared for: Dr. Baqer Al-Ramadan

Presented by: Ahmed Saeed Bagazi

Yasar Salem Obad

Implementing GIS in Optical Fiber Communication

Who are we?

AHMED SAEED BAGAZI
ELECTRICAL ENGINEERING DEPARTEMENT

YASAR SALEM OBAD
CONSTRUCTION ENGINEERING DEPARTMENT

Outline

Introduction

Objective

Methodology

Data used

Case study

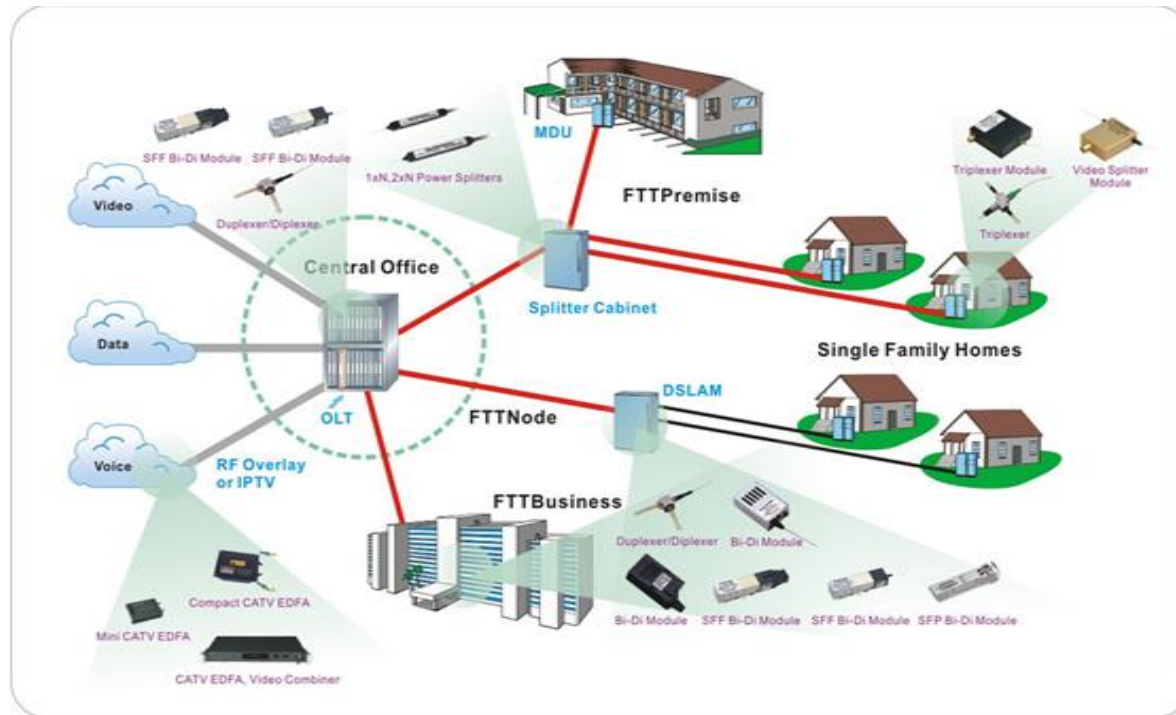Conclusion

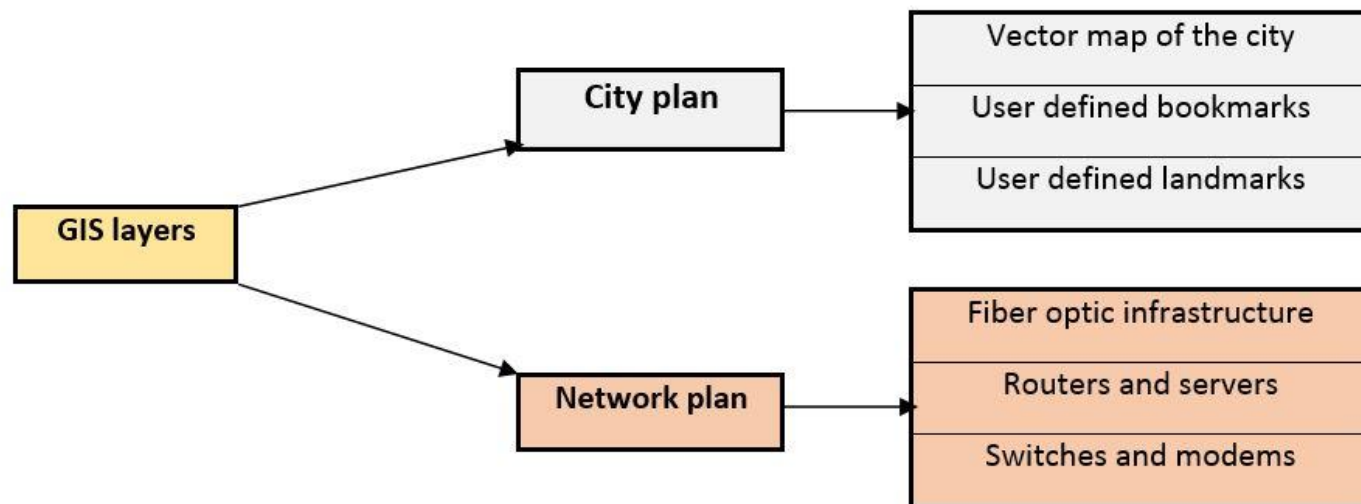# Introduction

❖ GIS system definition and concept.

❖ Optical fiber network.

Introduction (Cont.)

❖ GIS used for optical fiber contains two layers :

Objective

❖ Building database for the topology and the locations of the optical fiber project.

❖ To know the exactly location of the problem and ability to track any fault.

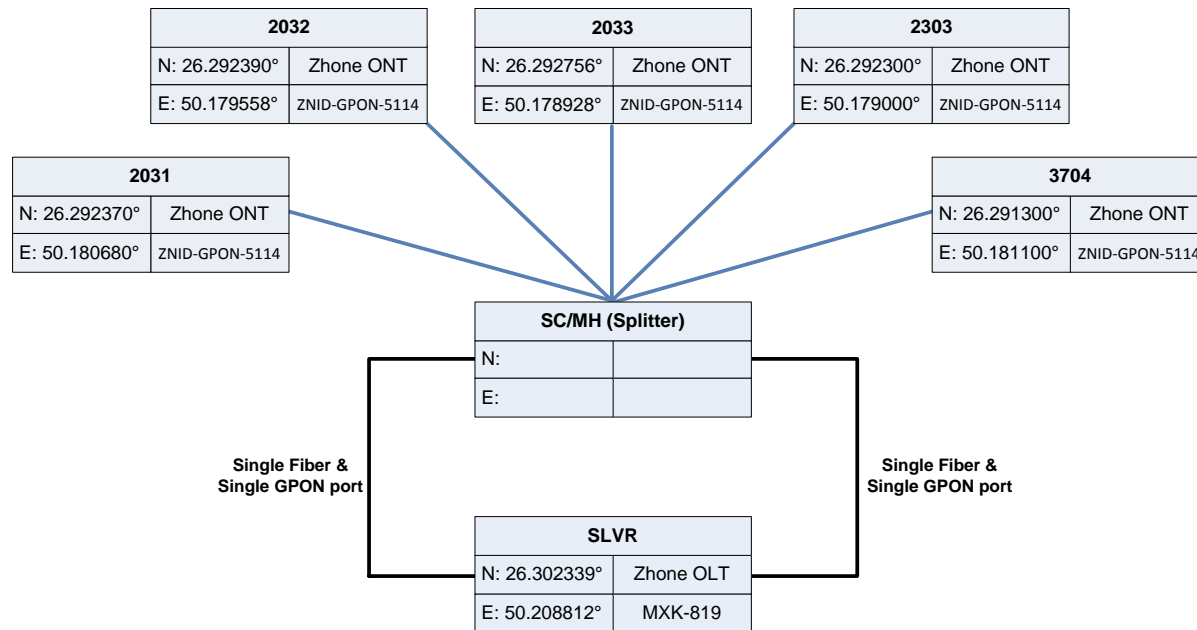❖ To reduce the period time of the troubleshooting.

Methodology

❖ Determining the location of the customer.

❖ Determining the nearest exchange or the branch of the service provider company to the customer and finding free ports in the exchange.

❖ Taking the map for the route between the customer and exchange of the service provider.

❖ Converting the map to a GIS and building database for this project.

Data Used

1. Rashid Mall

2032	
N: 26.292390°	Zhone ONT
E: 50.179558°	ZNID-GPON-5114

2033	
N: 26.292756°	Zhone ONT
E: 50.178928°	ZNID-GPON-5114

2303	
N: 26.292300°	Zhone ONT
E: 50.179000°	ZNID-GPON-5114

2031	
N: 26.292370°	Zhone ONT
E: 50.180680°	ZNID-GPON-5114

3704	
N: 26.291300°	Zhone ONT
E: 50.181100°	ZNID-GPON-5114

SC/MH (Splitter)	
N:	
E:	

Single Fiber & Single GPON port

Single Fiber & Single GPON port

SLVR	
N: 26.302339°	Zhone OLT
E: 50.208812°	MXK-819

Data Used (Cont.)

2. Timimi Commercial Group

S116	
N: 26.340278°	
E: 50.151944°	

RAKA	
N: 26.363394°	OLT
E: 50.197967°	MA5600

Case Study

I. Downloading the map according the coordinates

2032	
N: 26.292390°	Zhone ONT
E: 50.179558°	ZNID-GPON-5114

2033	
N: 26.292756°	Zhone ONT
E: 50.178928°	ZNID-GPON-5114

2303	
N: 26.292300°	Zhone ONT
E: 50.179000°	ZNID-GPON-5114

2031	
N: 26.292370°	Zhone ONT
E: 50.180680°	ZNID-GPON-5114

3704	
N: 26.291300°	Zhone ONT
E: 50.181100°	ZNID-GPON-5114

SC/MH (Splitter)	
N:	
E:	

Single Fiber & Single GPON port

Single Fiber & Single GPON port

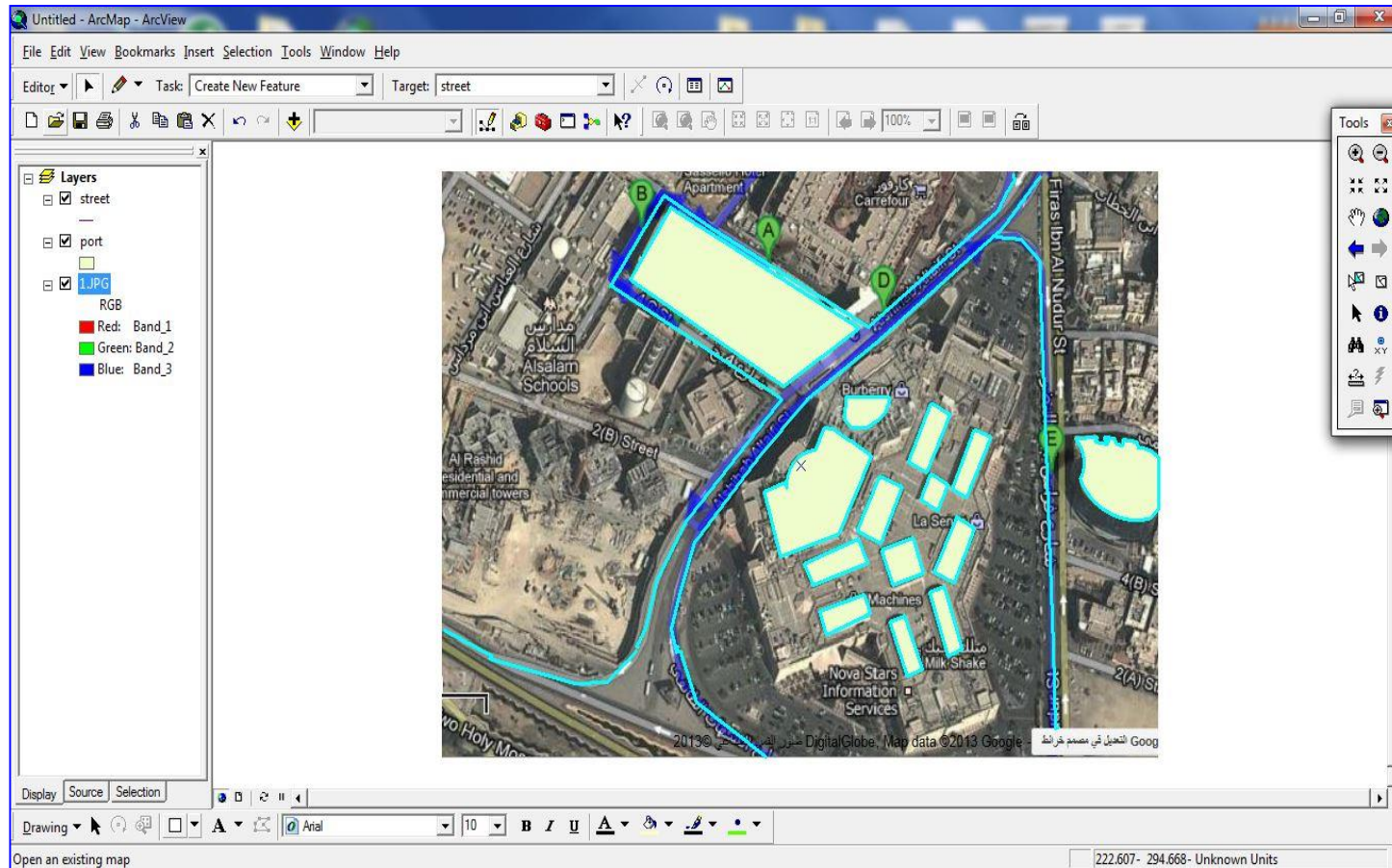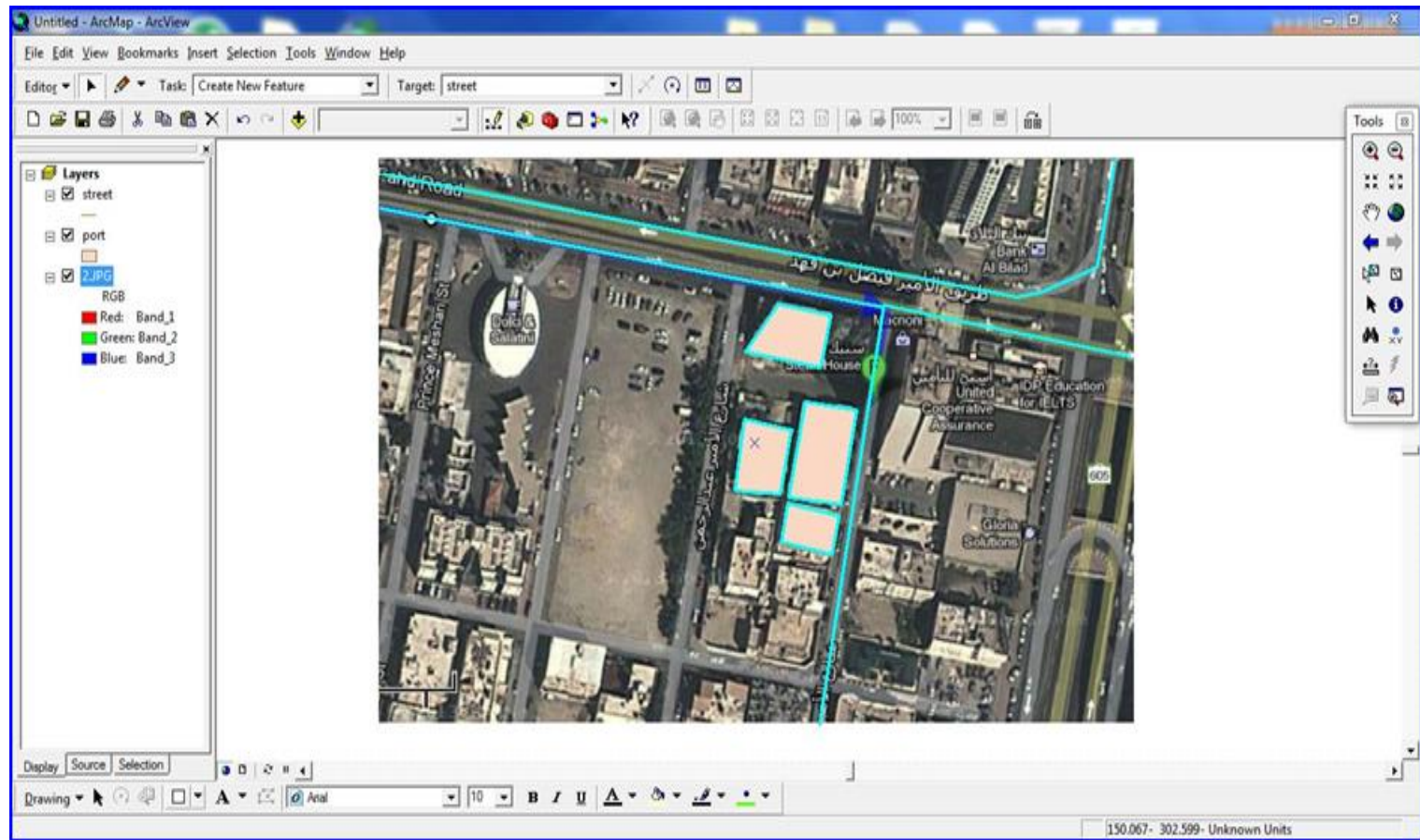| SLVR	
N: 26.302339°	Zhone OLT
E: 50.208812°	MXK-819

Case Study (Cont.)

2. Inserting the map to ArcCatalog to make a shpefile

3. Open the shapefile using ArcMap and insert the data.

4. Determining the streets and what the route that we

used to connect the exchange with the building.

Case Study (Cont.)

Case Study (Cont.)

Case Study (Cont.)

5. Determining the location of the optical fiber services.

S/N	Site A	Site B	Distance	Loss 1310	Loss 1550
1	RAKA	EXMH	17Km	8.45	6.24
2	EXMH	RAKA	14Km	7.40	5.58

Case Study (Cont.)

S/N	Site A	Site B	Distance	Loss 1310	Loss 1550
1	SLVR	EXMH	6Km	4.60	3.82
2	EXMH	SLVR	9Km	5.65	4.48

Comments:

Exchange/PDP — Primary Route
Mobily Site — In Progress
Customer Building — Projection
SC/MH — Existing Route

Case Study (Cont.)

6. Taking the detailed picture as a map.

Conclusion

❖ GIS used for optical fiber to make a good reference database.

❖ The way to determine the exactly location become easily with GIS.

❖ The big problem that we face in this project is the data, because it is not public.

Thank You
for the Attention

Q & A