
الله اكبر
The Ministry of Electricity
Planning & Studies office
وزارة الكهرباء
Using Esri Shapefiles for Web GIS for Iraqi Electrical Grid System
IRAQ – Baghdad
Sept. 2020
By
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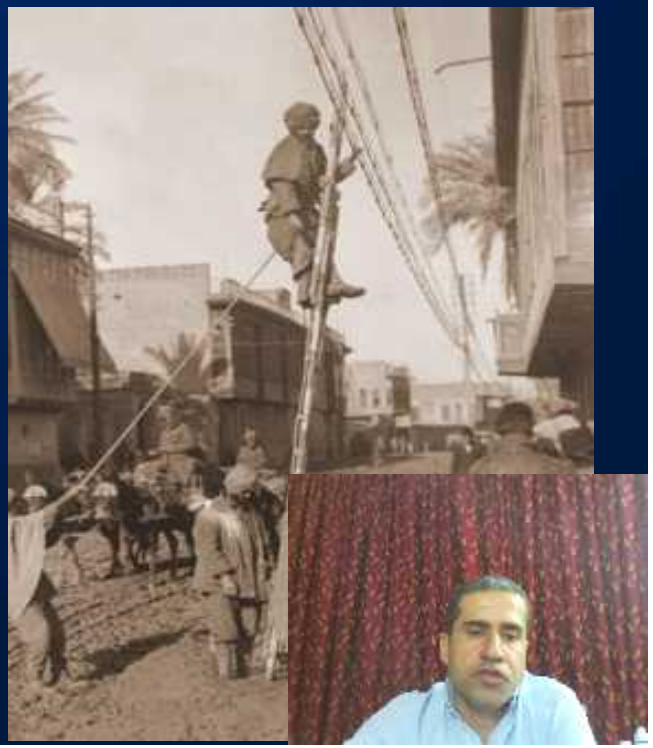
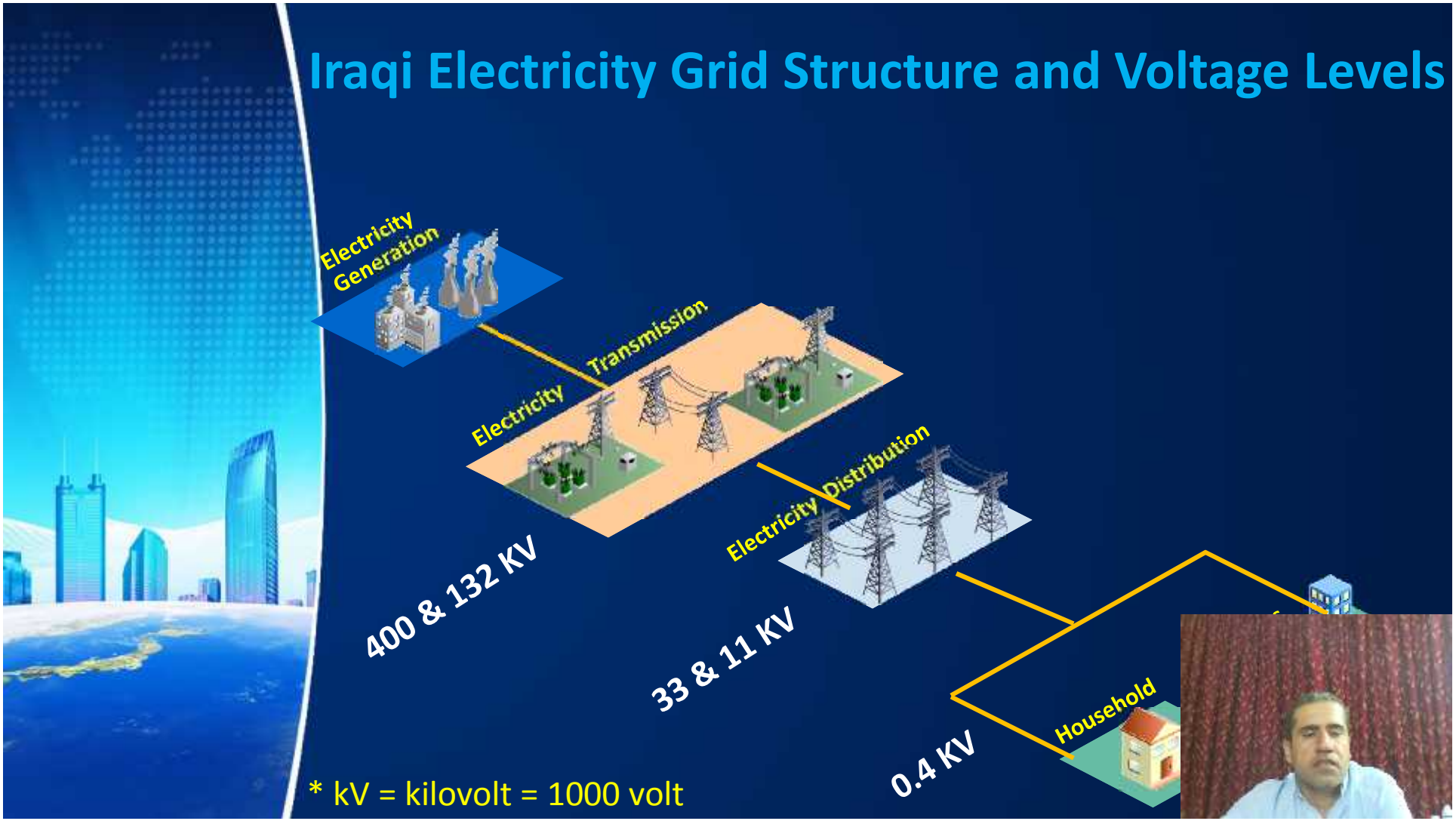
Background of Electricity in Iraq

- Electricity was first generated in Iraq in 1917 by small Diesel D.C. Generators.
- In the 1930s, first steam power plants were constructed in Al-Sarafiya with 2 MW.
- In 2020, the generated power was 19,300 MW



Iraqi Electricity Grid Structure and Voltage Levels



ADVANTAGES OF A WEB MAPPING GIS

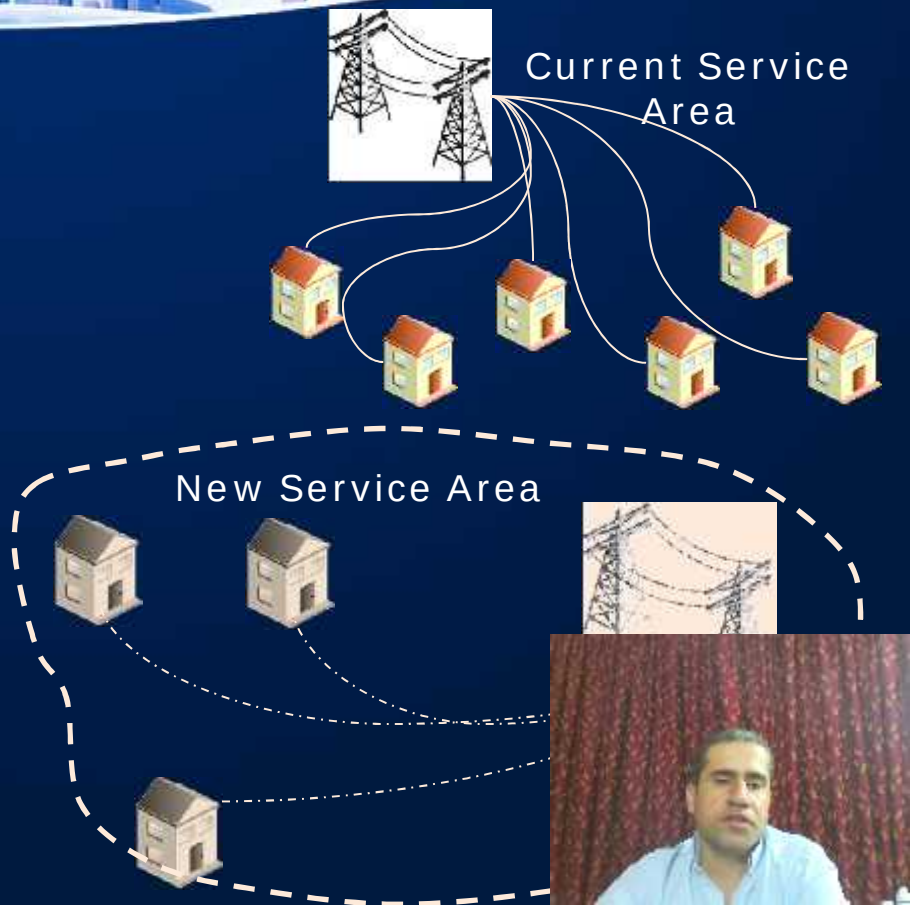
- Does not require installation of software on the machine.
- Requires internet with decent bandwidth.
- GIS on-the-move (secure data) can be accessed anywhere by anyone.
- Mobile GIS is an extension of Web GIS.

OBJECTIVES:

1- **Using Web GIS as a Planning Tool:**

- We can use Web GIS for planning network expansion.
- Based on information available, location of new poles / DTs / substations can be analyzed.

" Web GIS can be used as a planning tool as it enables the availability of information anytime & anywhere to anyone authorized."



OBJECTIVES:

2- Reduction in Operational Costs:

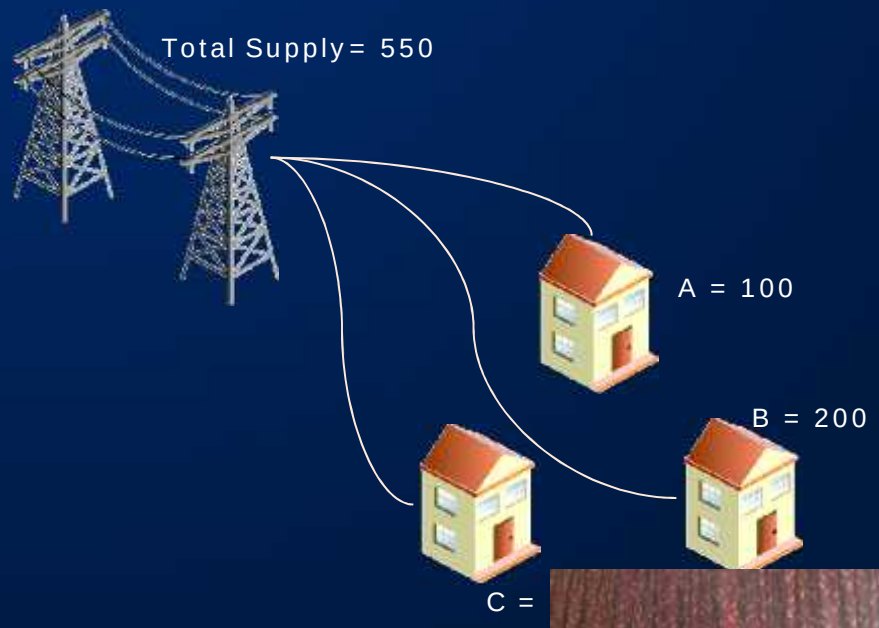
- Best routes can be planned using the GIS at zonal office levels.
- Route maps can be downloaded onto Web GIS or Mobile GIS to assist the field teams.
- Field crew can analyze the nature of maintenance jobs and accordingly carry with them the required equipment.
- The engineers can also update the GIS once done with the maintenance job.

"Planning the routes for the jobs and analyzing t nature of the jobs will save trips to and fro to t equipment warehouse and bring down the ope costs."

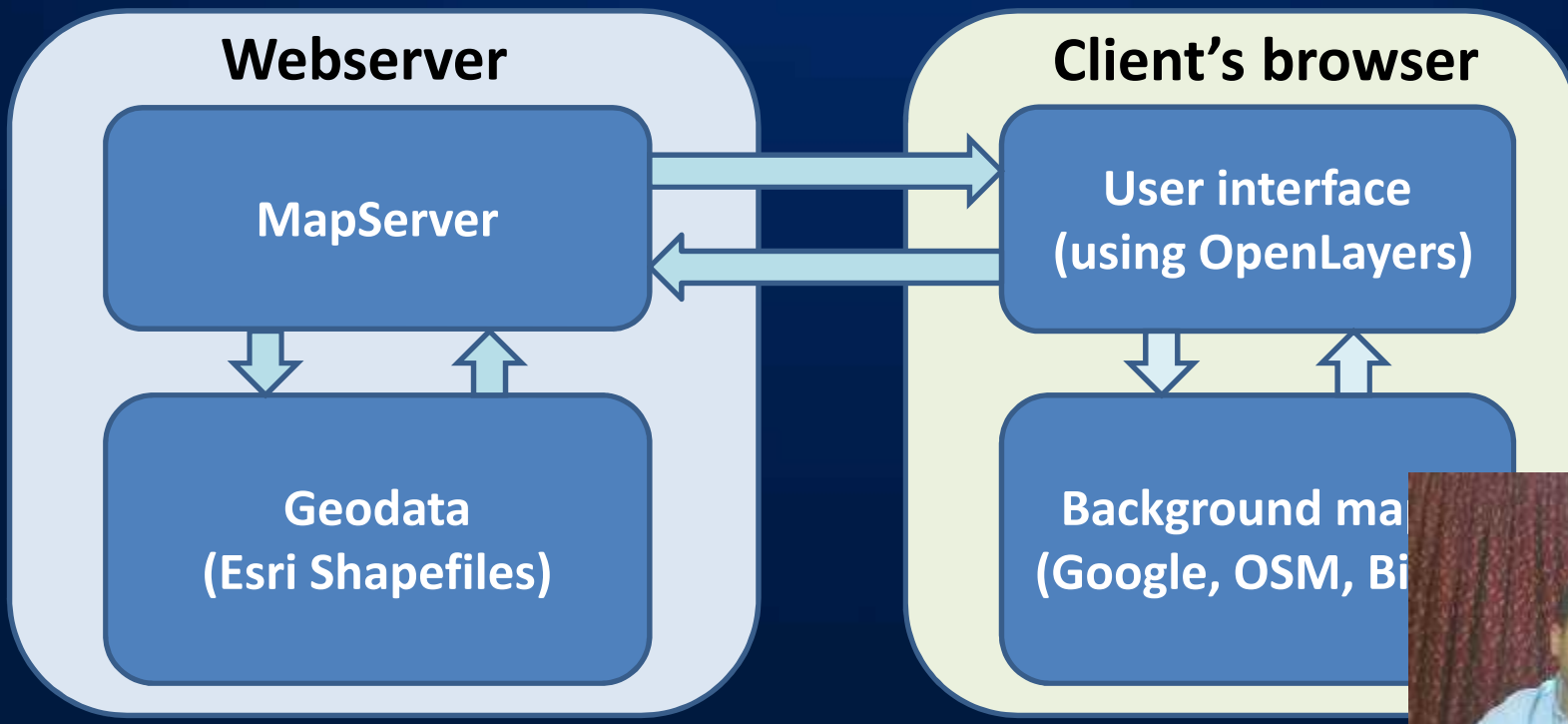
OBJECTIVES:

3- Tackling Power Pilferage:

- Power Pilferage causes commercial losses.
- Difference in power units can indicate errors in billing and metering as well as Power Pilferage.



The Structure of Web GIS Application



The Base Layers:

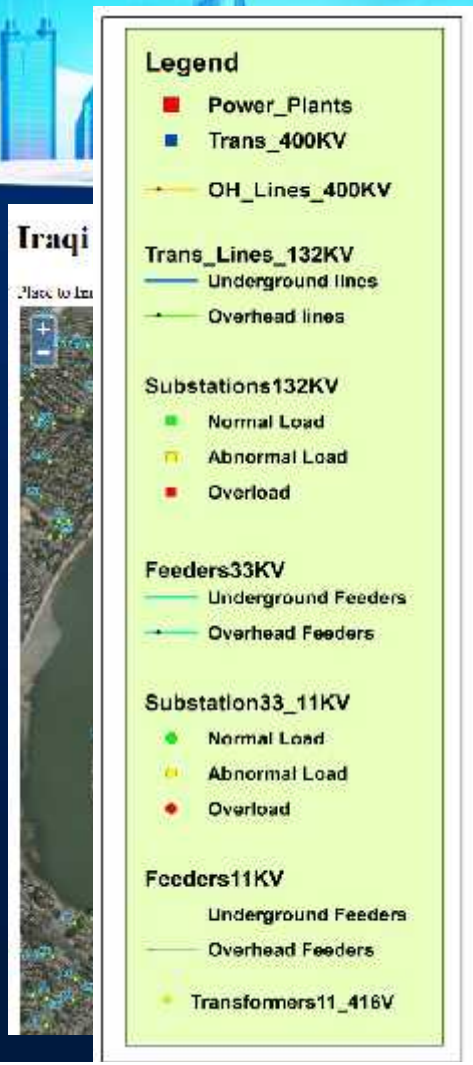
By using OpenLayers in this application, there are the following Base layers:

- The OpenStreetMap as the first Base layer.
- Google maps, as the second Base layer.
- Bing maps was the third Base layer.

The Overlays Layers:

Nine Esri shapefiles representing the Iraqi Electrical Grid system are provided as WMS layers using MapServer.

These overlays are queryable (clicking the map reveals detailed feature information).



Full Screen for the Application with some Information about Grid Elements

Future plans

- Monitoring loads continuously by connecting data with control centers.
- Continuously updating of data (especially in the transmission and distribution sectors), processing data entry in Arabic and updating its to be all data in English.
- Web enabled GIS can be used as an analysis and planning tool in the Smart Grid system, Utilities
  - Minimal loss of power.
  - Secure networks.
  - High customer satisfaction.

The Application Web address:

http://mercator.elte.hu/~i5hod8/Iraqi_grid/iraq_electricity_grid.html


Thank you for your attention