Ecuador
Geographic Situation
QUITO capital of Ecuador
Population: 2.6 million

<table>
<thead>
<tr>
<th>Km²</th>
<th>Sq Miles</th>
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<tbody>
<tr>
<td>4 230</td>
<td>1 633</td>
</tr>
<tr>
<td>1 089</td>
<td>420</td>
</tr>
<tr>
<td>2 387.5</td>
<td>6 190.5</td>
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</tbody>
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**Coverage and production**

- **Potable water**: 98.61%, 8 m³/Sec
- **Sewerage**: 93.05%, 1% treated
- **Power energy**: 170 386.60 J (64% to sell)

**Indicators**

- **Supply Continuity**: 98.53 %
- **Water Quality**: 99.97%
  (Compliance with drinking water standards)
- **Not Counted Water**: 28%, 22%(u) 39%(r)
  (real losses in water distribution)

**EPMAPS Employees**

- 2.7 employees per 1 000 connections
- **Total**: 1 800 employees

**EPMAPS (Sustainable Performance)**
Public Metropolitan Enterprise for Water and Sanitation its mission is to provide potable water and sanitation with social responsibility. It belongs to the Metropolitan District Goverment of Quito.

**QUITO capital of Ecuador**
Because it is a mountain city, Quito is served by 20 treatment plants of potable water which represents 80% of production, the remaining 20% is produced by underground sources.
We have 20 treatment plants for Potable water. Each plant has its own Scada system.

There are 5,800 Km of water distribution network divided in 8 operational areas with problems in their shared limits.

The 5,800 Km of sewerage network is divided in three operational areas with problems in their shared limits as well.

This problem produces:

- Many approximate reports in unfavorable time slots for decision making especially in times of emergency.
- Inability to access important integrated information on line.
- Duplicated operational efforts.
- Many Non-integrated information repositories.

**ENTERPRISE STRATEGY PLAN**

**Goal 17: To count with enterprise integrated and timely information**
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The stakeholders for this goal are: EPMAPS Executive personnel, The City Mayor, FONAG NGO, and citizens.
KEY ISSUES OF THE **IMPROVEMENT OF THE GIS DATA QUALITY** PROJECT IMPLEMENTATION

**GOAL:** The geo-data must be at least ± 30 cm accurate in plant and 25 cm in High. It must be updated and complete.

**Obstacles and difficulties:**

1. 40% differences between the designed network plans and constructed network plans, and since the first origin of geo-data gathering were the design plans, the outcome after 10 years has been a Geo-data base 60% confident.

2. EPMAPS contracts other enterprises to construct and extent new networks. These contractors are reluctant to create and load the final constructed network plan.

3. Nowadays we are organizing a cloud repository to allow contractors directly load their final files of constructed networks. It is a set of applications and implementation of work flows not easily accepted by contractors, project administrators and auditors.
GOAL: The geo-data must be at least ± 30 cm accurate in plant and 25cm in High. It must be updated and complete.

Interests and Conflicts:
4. EPMAPS’ interest is to eliminate that 40% of uncertainty in the Geo-databases. Contractors, administrators and auditors don’t want to change their customary way of work.
5. EPMAPS wants to stop making expensive cadastral works of real position of networks and their characteristics when there is a request from another utility construction.

Favorable and unfavorable conditions:
6. EPMAPS is on favor of let the constructors directly load the final constructed network file in the corresponding geo-data base. The constructors, project administrators and auditors don’t want to change their customary way of work.
KEY STRATEGIES FOR SUCCESS OF THE IMPROVEMENT OF THE GIS DATA QUALITY PROJECT IMPLEMENTATION

GOAL: The geo-data must be at least ± 30 cm accurate in plant and 25cm in High. It must be updated and complete.

Two main scenarios of correction:

1. Adjustment of the legacy data (80% of the total data):
   - Adjustment of the network real position (in all events of network operation or maintenance there should be always a high accuracy surveying control points insertion, alternatively to speed up the process it can be contracted network cadaster projects).
   - Geometry correction (topology and geometric network validation).
   - Attribute table correction and completeness (software application).

2. Adding the new data from constructed network by the contractors themself.
   - Monitor and control the upload of files directly to appropriate geographic databases by contractors of new network projects (Work flows, repositories in the cloud, software applications).
KEY STRATEGIES FOR SUCCESS OF THE IMPROVEMENT OF THE GIS DATA QUALITY PROJECT IMPLEMENTATION (Continuation)

GOAL: The geo-data must be at least ± 30 cm accurate in plant and 25cm in High. It must be updated and complete.

EPMAPS’ role in this problem solution:

EPMAPS is the contracting company

- Enables suitable geo-data bases in the cloud.
- Delivery the necessary software applications for the effect.
- Establishes the technical specifications for hiring.
- Supervises and controls the contractor’s work and products.
Avoid duplicate efforts
The constructors create the data so they must be the ones to load it into the Geo-data bases, the technology is ready to control this scenario. All they need is clear terms of reference and available software tools.

Data quality
The quality of data is critical for decision making, its improvement will imply many simultaneous projects for legacy data, and new work flows, better terms of reference and suitable technology for the new data. We have to get the data producer loads the data into the data-bases himself, there is no need for intermediate work from others. Data quality improvement projects take much more time than software applications implementations and it is more crucial.

Data Integration
Means interoperation of SCADA, ERP, CRM, and GIS Systems and this must be done in a sustainable way.

Money saving
Avoiding duplicate efforts and costly network cadastral projects, it outcomes a lot of savings (millions of dollars).