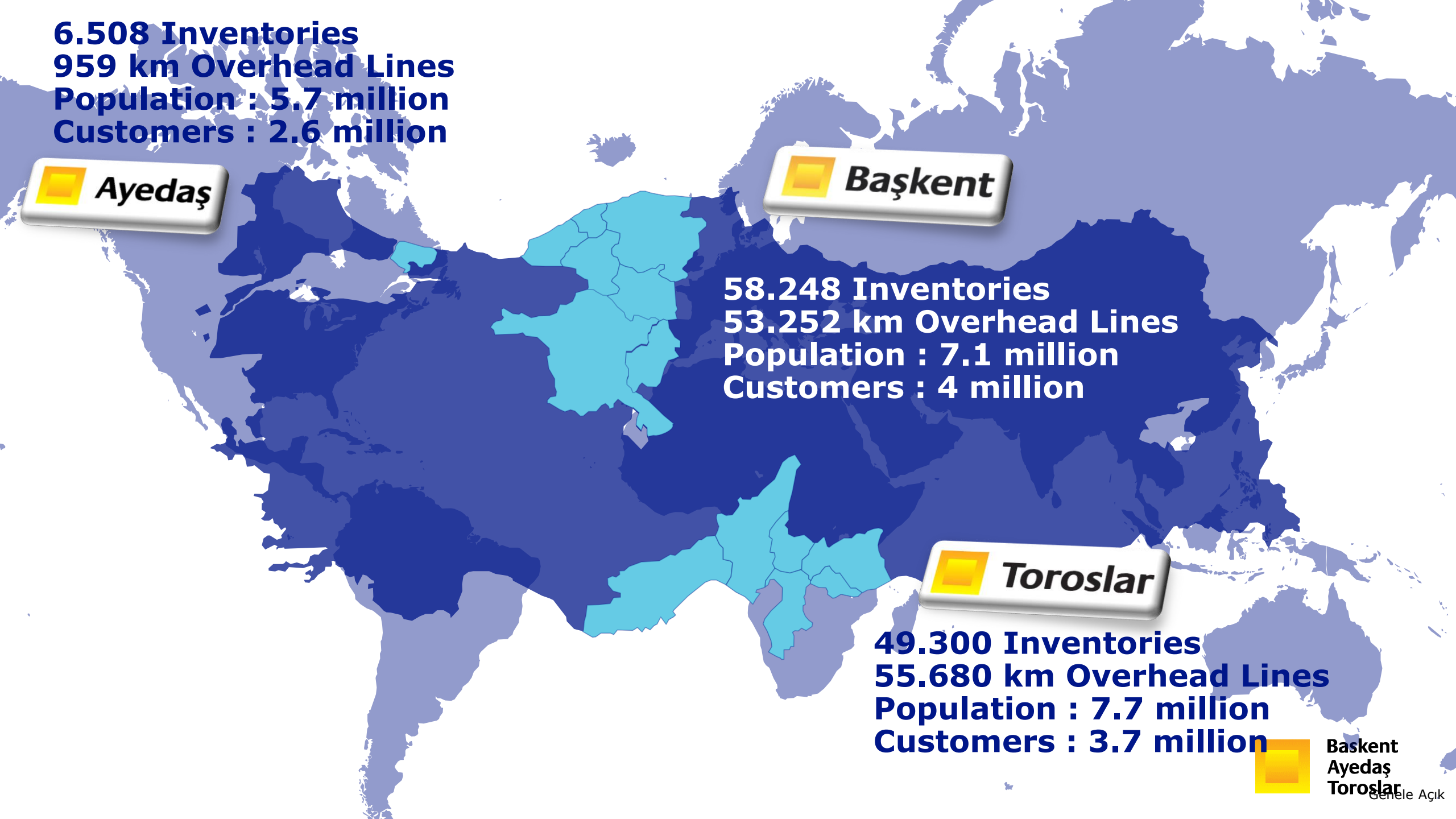
OPTIMIZING MAINTENANCE STRATEGIES

NEW APPROACH IN MAINTENANCE PROCESS

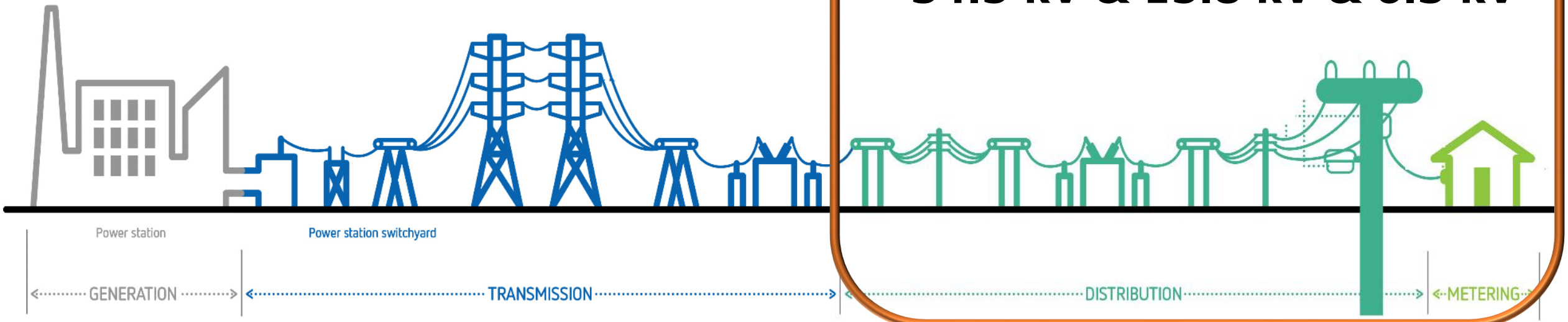

6.508 Inventories
959 km Overhead Lines
Population : 5.7 million
Customers : 2.6 million
Ayedaş
Başkent
58.248 Inventories
53.252 km Overhead Lines
Population : 7.1 million
Customers : 4 million
Toroslar
49.300 Inventories
55.680 km Overhead Lines
Population : 7.7 million
Customers : 3.7 million
Baskent
Ayedaş
Toroslar
Genele Açık

Responsibilty of the STATE

380 kV & 154 kV

Responsibilty of DSOs Generally Controlled by SCADA

34.5 kV & 15.8 kV & 6.3 kV



State
%35-40

Private
%60-65

TEİAŞ
(State
Owned)

21 DSO
(All Private)

Customer

Baskent
Ayedaş
Toroslar

Genele Açık

Integrated Maintenance Management Project
May 2018

TEİAŞ

Software Sharing

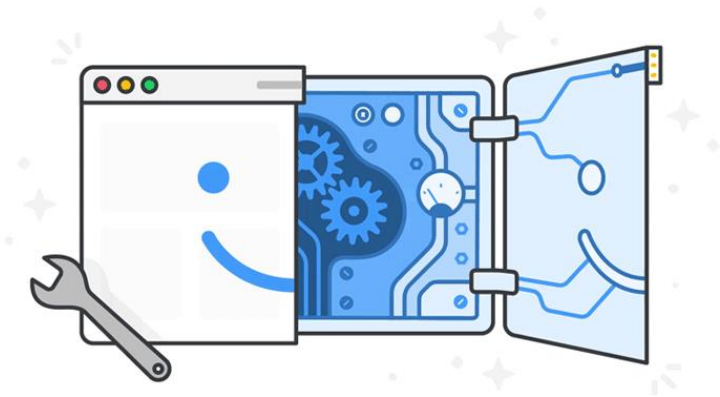
ENERJİSA
e·on | SABANCI

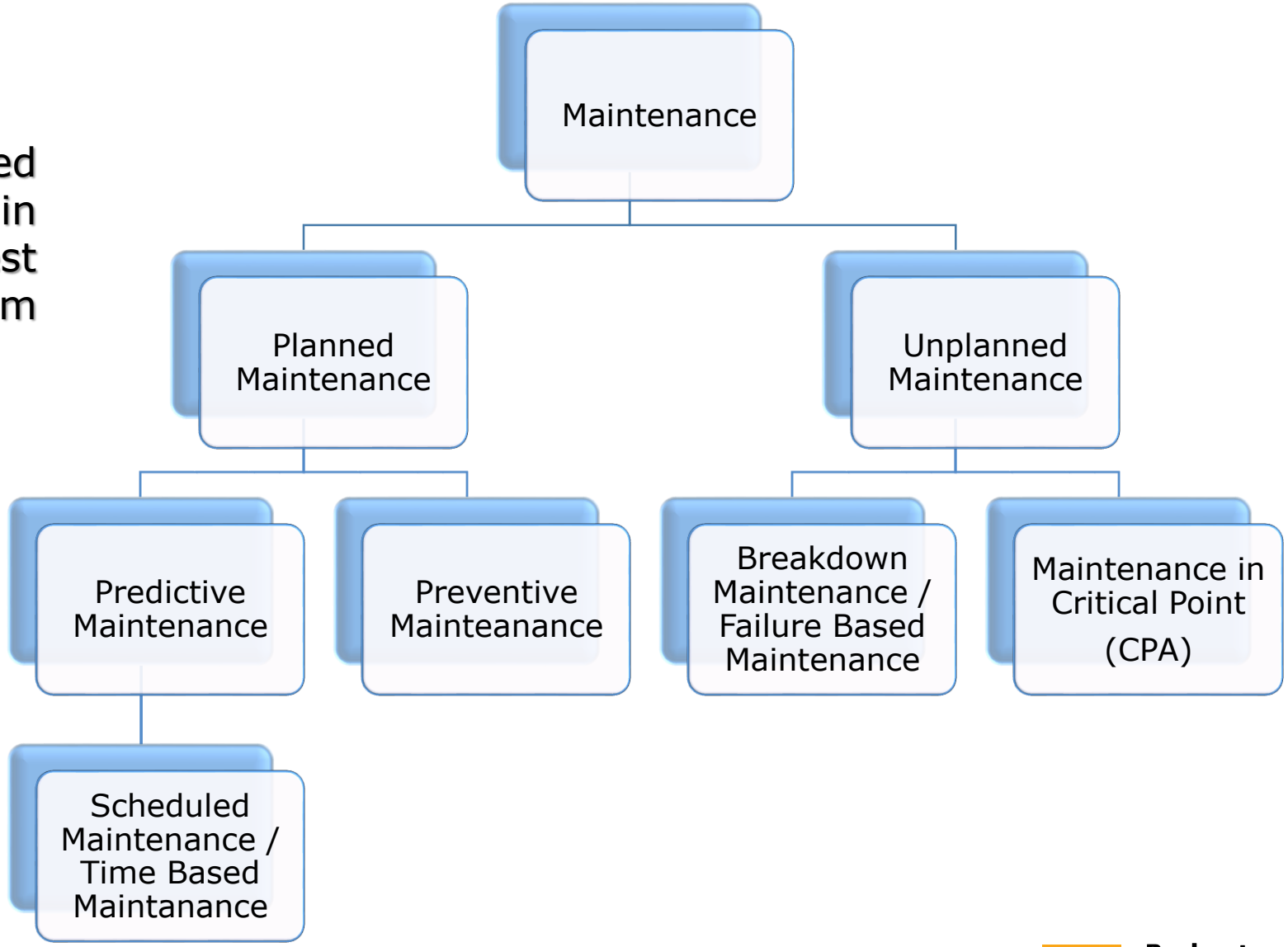
With the cooperation of TEİAŞ and ENERJİSA, it is aimed;

- to provide sustainability of network,
- to coordinate planned outages schedules for maintenance purposes,
- to reduce downtime
- thus, to increase the customer satisfaction

Maintenance

Maintenance is a set of organised activities that are carried out in order to keep an item in its best operational condition with minimum cost acquired.





Gizli

Baskent Ayedaş Toroslar
Genele Açık

Why do we need ‘Periodic Maintenance’?

- Customer satisfaction
- Strict regulation rules, audit and penalties
- Growth in distribution network
- Inadequate investment
- New connections to network by increasing generation facilities (solar, wind etc.)

Baskent Ayedaş Toroslar

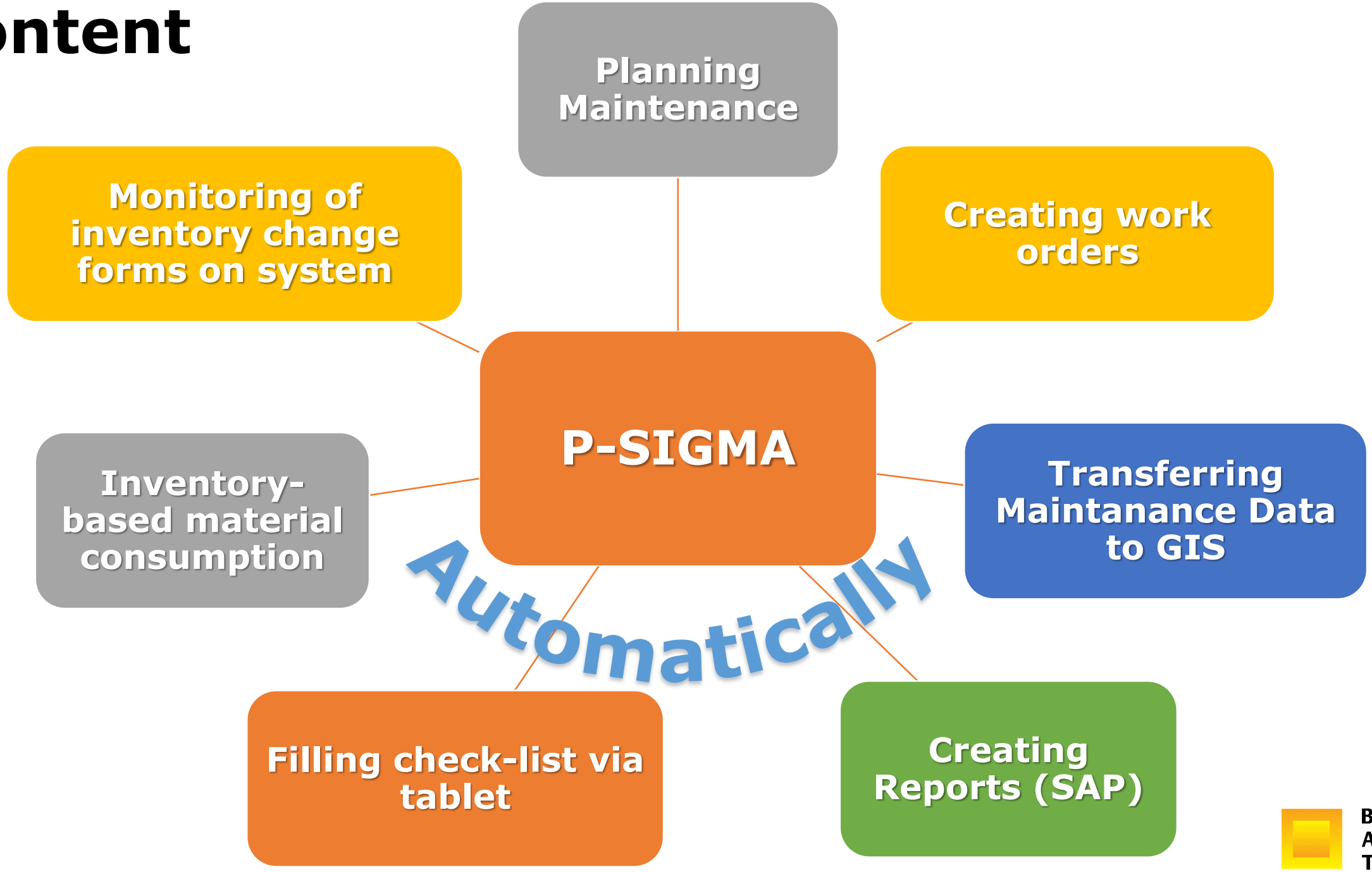
Genele Açık

P-SIGMA for Maintenance

The P-SIGMA Project aims ;

- To plan the periodic maintenance of the inventories in the distribution network systematically
- To follow up the relationship between the maintenance and the failure through the system on an inventory basis,
- Thus to establish the infrastructure of the maintenance that needs to be done in a correct and effective way.

Content


Planning Maintenance
Monitoring of inventory change forms on system
Creating work orders
P-SIGMA
Inventory-based material consumption
Transferring Maintanance Data to GIS
Automatically
Filling check-list via tablet
Creating Reports (SAP)

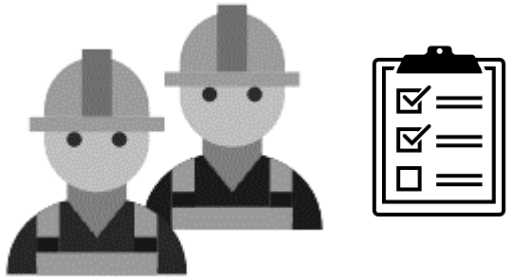
Old Times

Field Operations Engineer

Prepares faulty-based maintenance plan

Field Operations Chief

- ✓ Coordinates all works
- ✓ Sends works to appropriate field team by phone



Field Team

- ✓ Fills check-list forms
- ✓ Solves problems

Baskent Ayedaş Toroslar

Genele Açık

Before P-SIGMA (Manual)

Field Operations Engineer/Chief

Prepares maintenance plan

Dispatcher

Manually creates work order

SAP

Field Operator

- ✓ Fills
  - check-list forms
  - inventory replacement forms
- ✓ Identifies the problems

Updates GIS

GIS Desktop Operator

P-SIGMA: Predictive Maintenance (Automated)

Central Systems Operations Engineer

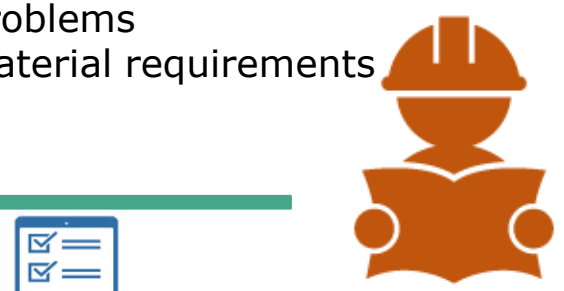
Prepares maintenance plan just for once

SAP

SAP Database

Triggers work orders according to their due dates

- ✓ Records workforce activities
- ✓ Fills check-lists
- ✓ Identifies
  - Problems
  - Material requirements



Field Operator

SAP Reports

SAP

GIS

Updates GIS

Baskent Ayedaş Toroslar

Genele Açık

P-SIGMA: Preventive Maintenance (Automated)

✓ Triggers preventive maintenance orders automatically
✓ Determines planned outage dates

Preventive maintenance is triggered from predictive maintenance

Field Operator

✓ Fixes & Replaces faulty inventory
✓ Updates GIS data (inventory change) via Mobile GIS app

GIS

Updates SAP

SAP Database

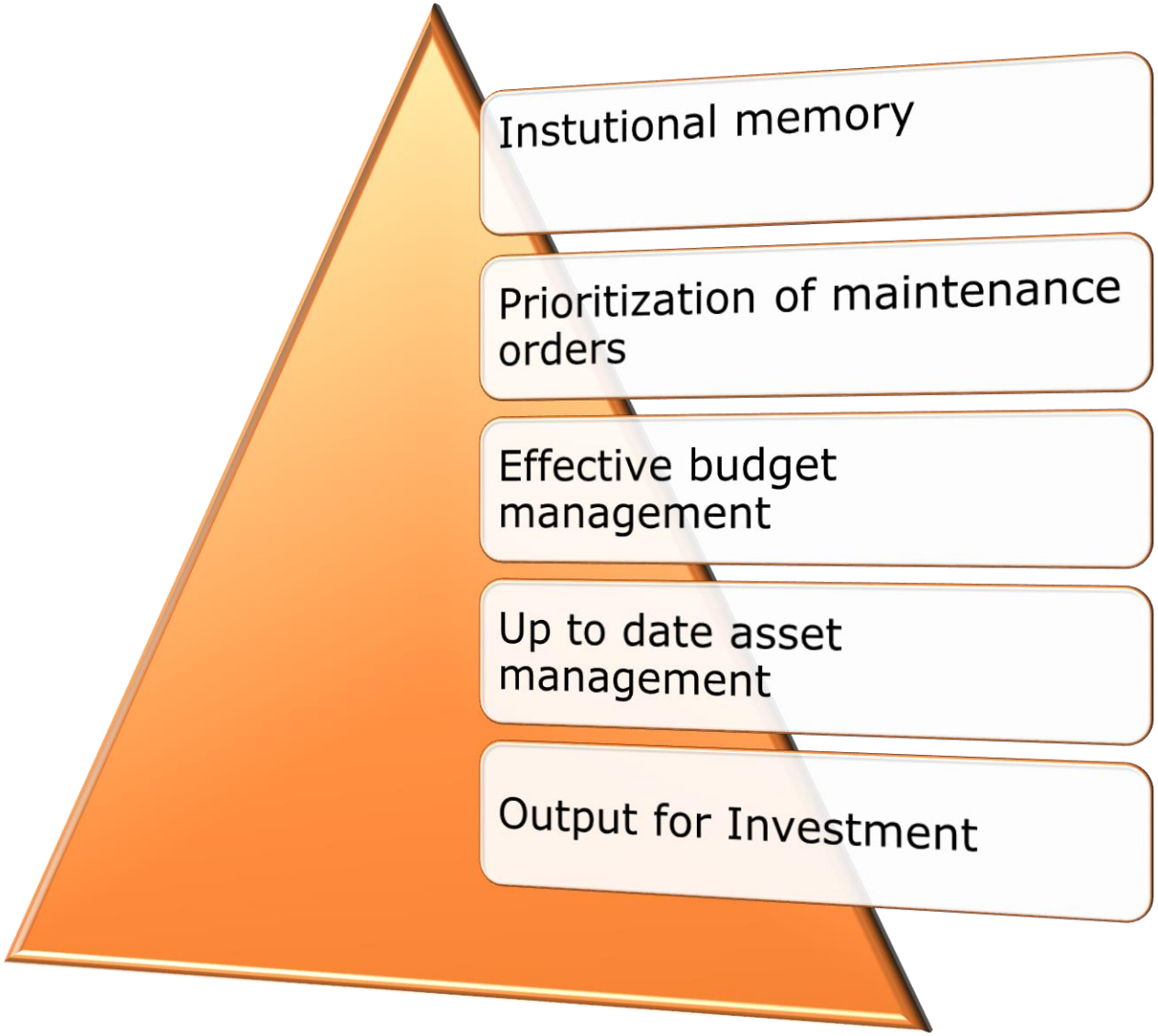
Maintenance activities are reported

SAP Reports

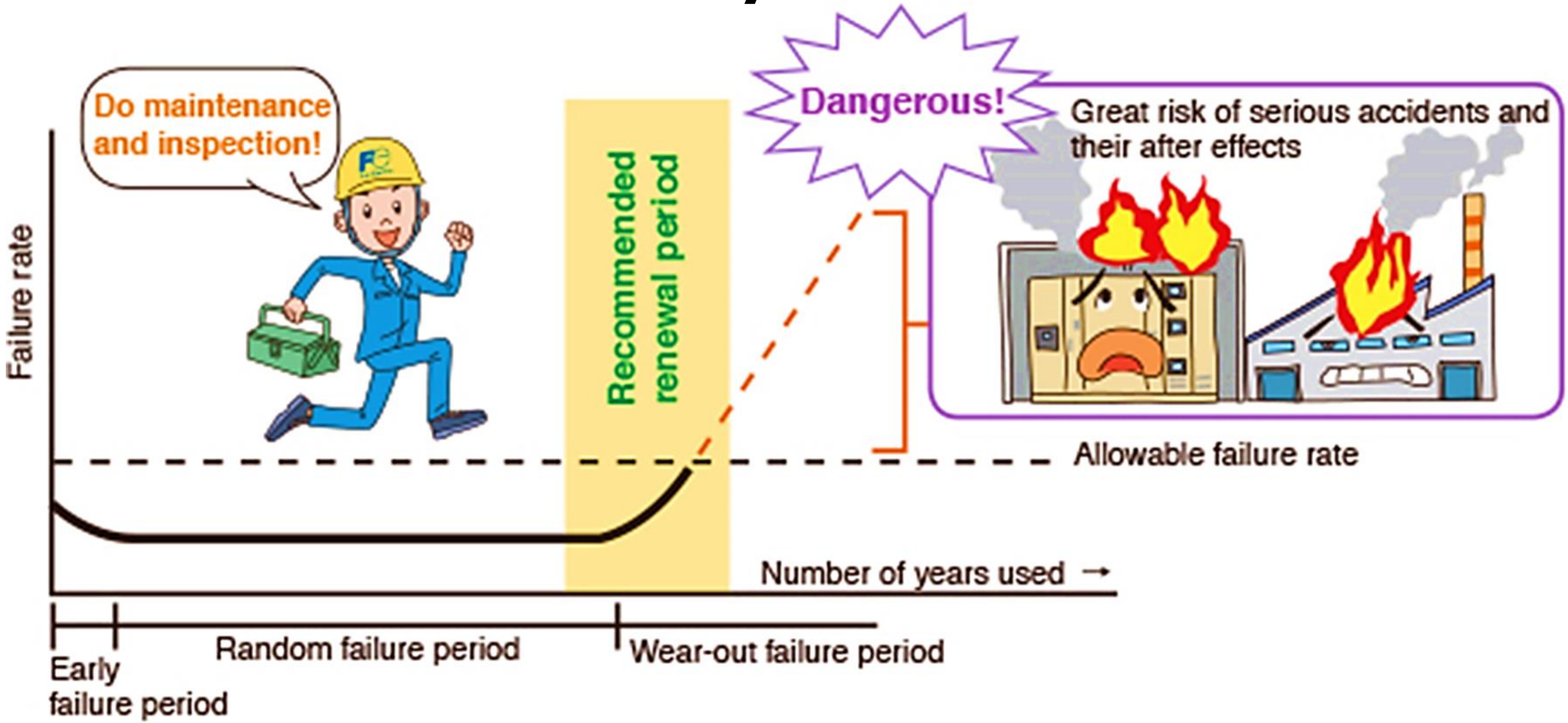
Baskent Ayedaş Toroslar

Genele Açık

Benefits of P-SIGMA



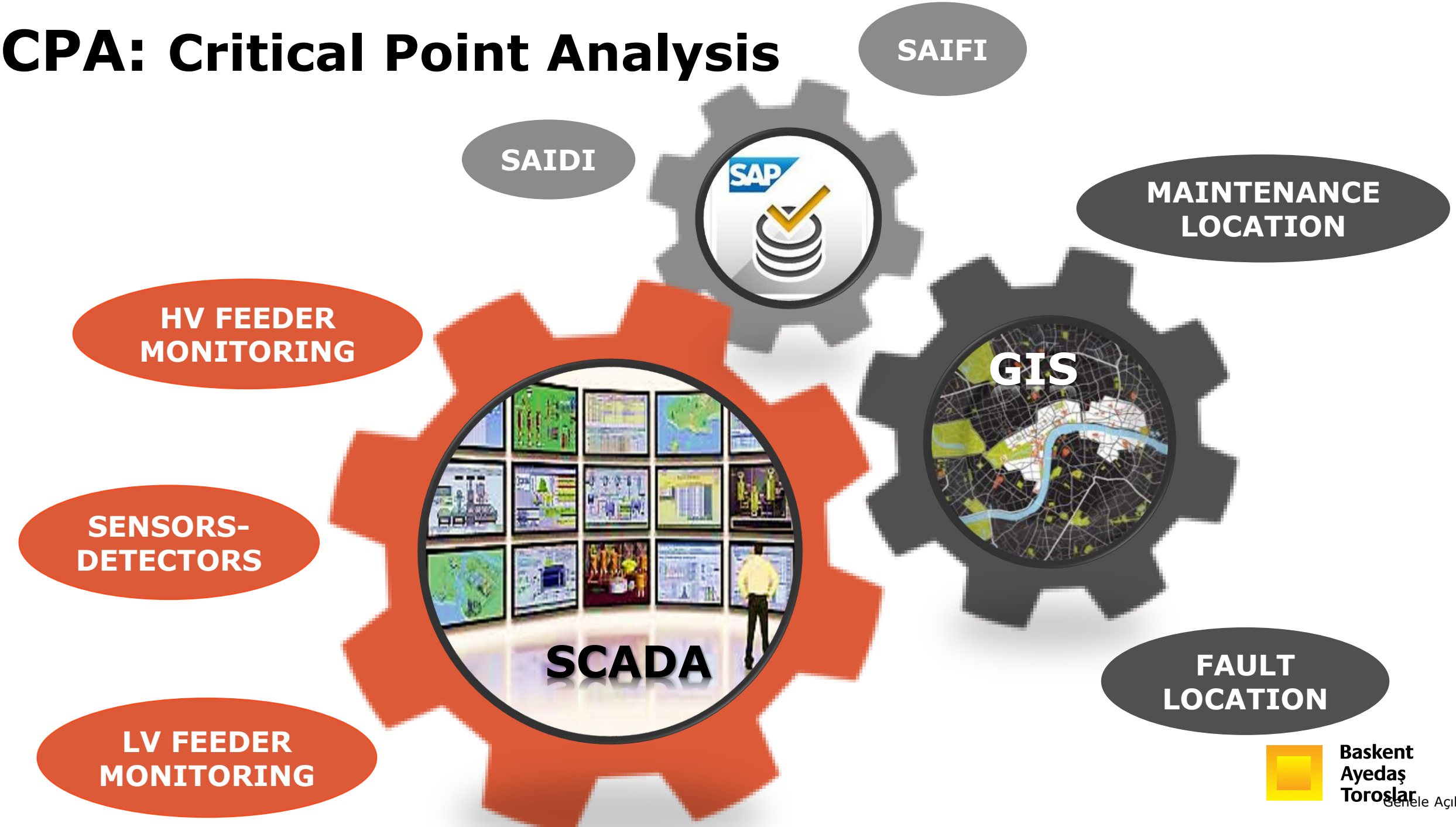
CPA: Critical Point Analysis



Gizli

Baskent Ayedaş Toroslar
Genele Açık

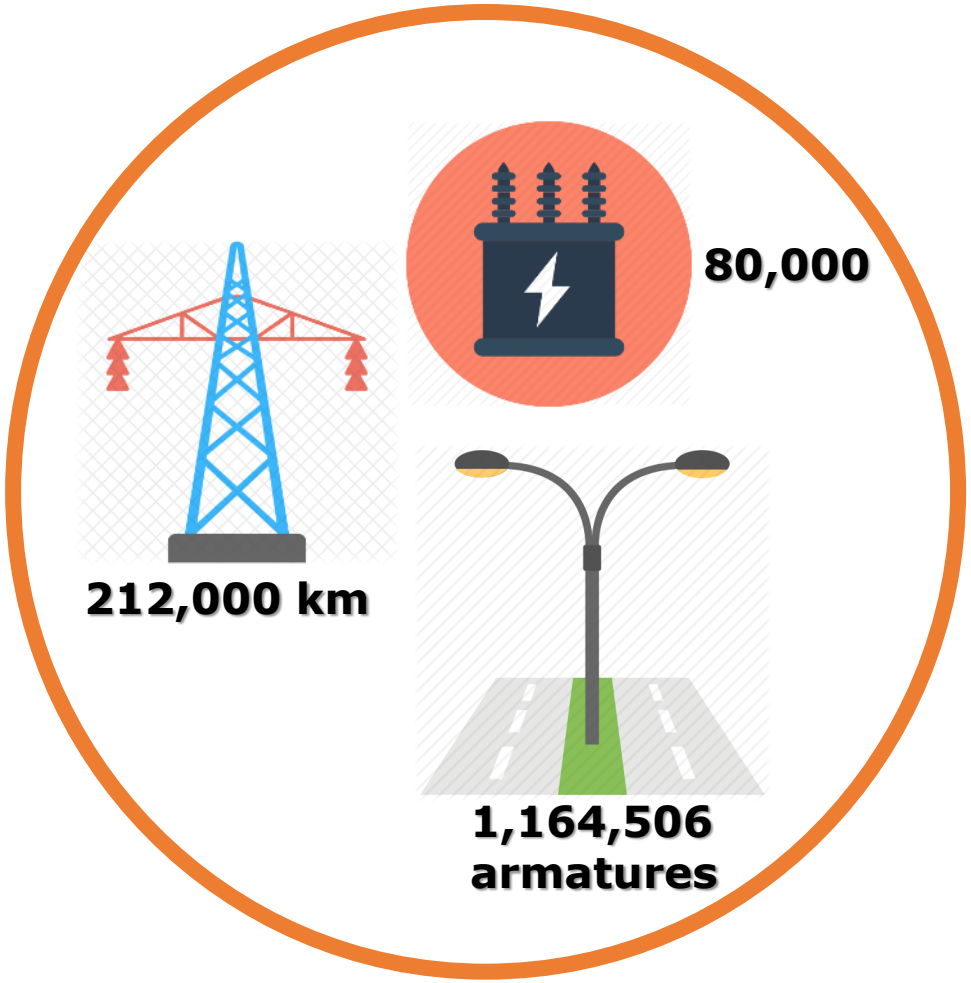
CPA: Critical Point Analysis



Baskent Ayedaş Toroslar

Genele Açık

Workforce (Maintenance 2018)



Total Employees : 3000

Employees for Maintenance : 600

System Design : 15 engineers for one year

Maintenance Work Orders

Predictive	**: 50,506**
Preventive	**: 8,027**
Street Lighting	**: 35,184**

Genele Açık

Box Maintenance

Baskent
Ayedaş
Toroslar

Genele Açık

HV Feeder Maintenance

Baskent
Ayedaş
Toroslar

Genele Açık

Transformer Maintenance

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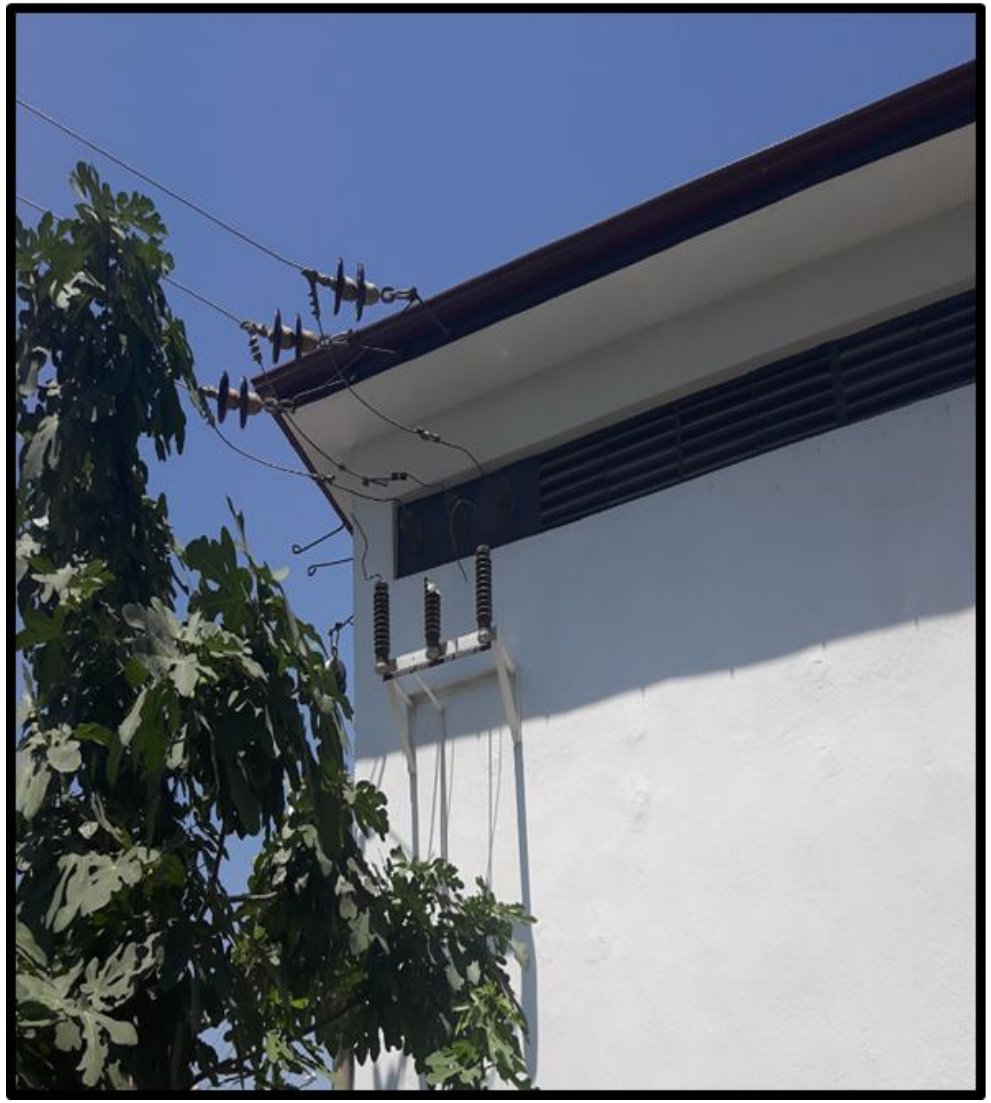
Ayedaş
Toroslar

Genele Açık

Distribution Center Maintenance



THANKS