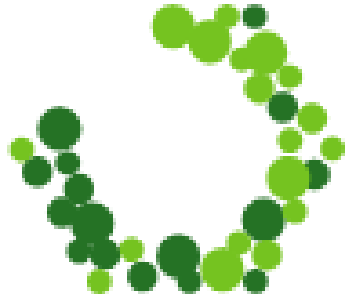


Experience from Smart Metering Rollout using PLC technologies and security issues

Smart Metering in Spain

- 28 Millions Smart Meters
  - Big 4 Utilities: 27 Millions
  - + 400 Small Utilities: 1Million
- Prime and Meters&More Protocols (50%/50%)
- Masive Rollout 2012-2018
- 96% Smart Meters Installed

Smart Metering in Spain

- Iberdrola leading the technical specifications
- 80% Smart Meters installed in 5 Years (2012-2016)
- Almost 98% Finished for 2018
- Ecosystem based on Price Level
- 10 Meters Vendors (Just 5 for Data Concentrators)
- 92 Meter Hardware Models
- 5 Companions Versions (1.4 to 1.8)
- +250 Firmware Versions for DLMS Layer
- +80 Firmware Versions for PLC (Prime 1.3.6)

Customer Expectations

- Plug & Play Technology.
- Online System
- Multiple Vendors and Full Compatibility
- No Network Maintenance (Communication Level)
- Meter Replacement Project
- Use the Same Non Skilled Staff for Field Services
- IT Infrastructure will support the Project.

Reality

- Smart Metering without Communications are NOT Smart at all
  - No Technology Transfer
  - Utilities without Non Skilled Staff for Field Services
  - Non Properly Tools for Network Maintenance & Operations
  - Meter Vendors acting mainly as Meter Providers
  - Lack of support for Field Services
  - Penalties for Non Readings on Smart Meters.
  - IT infrastructure not flexible and Scalable

Non PLC Problems

Wan/Lan Communications

Data Concentrators wrongly Parameterized

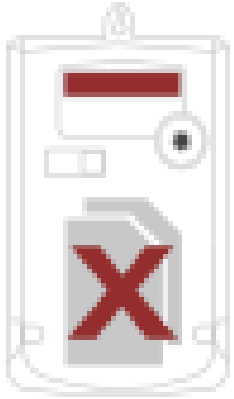
Hardware Failures (Electronic versus Mechanicals)

Firmware Versions Incompatibility

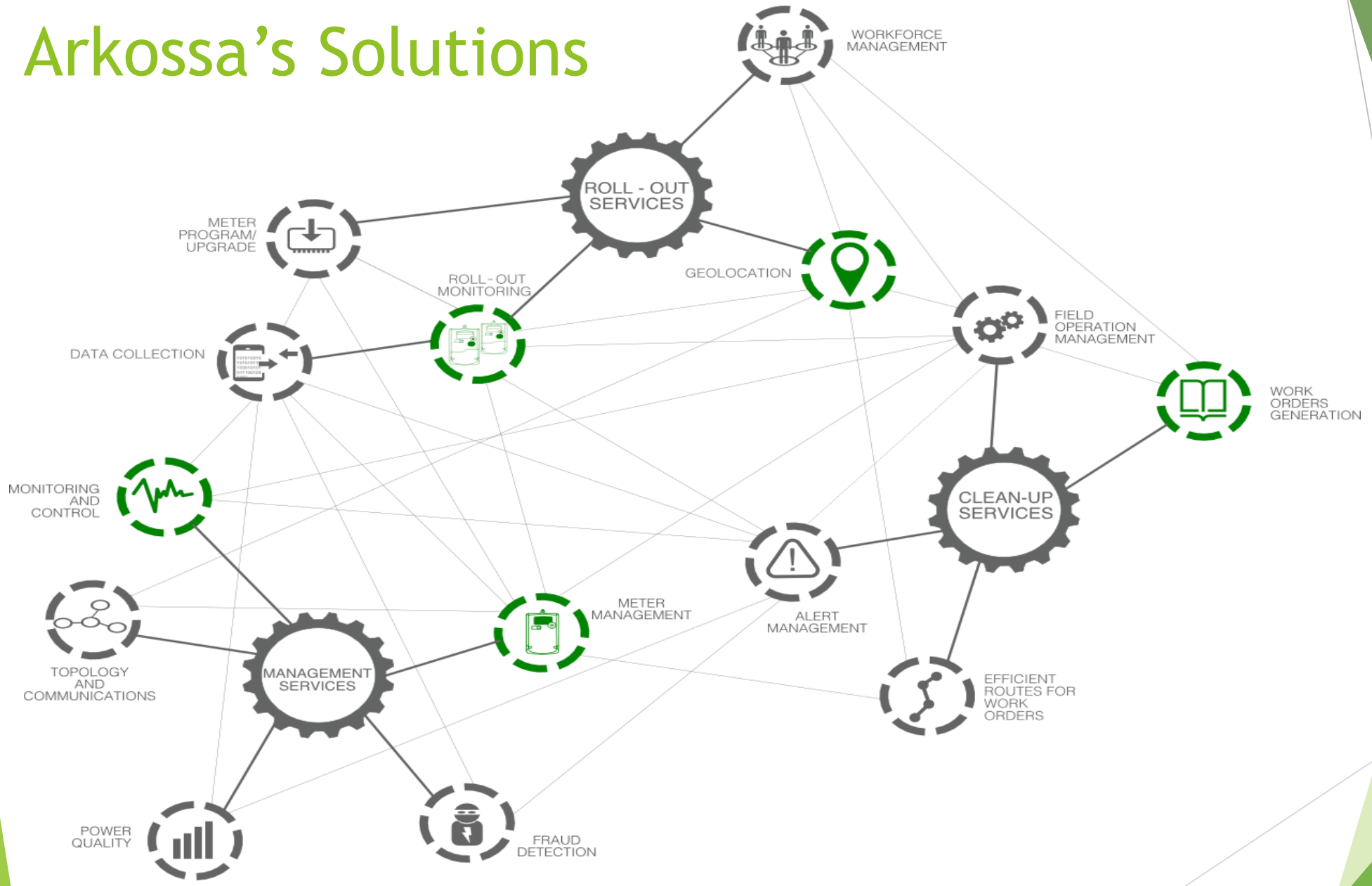
Wrong Meter Programming

IT Infrastructure (Data Repositories, FTP Server Availability)

Data Integration in ERP/Billing Systems.



Arkossa's Solutions



Arkossa's Solutions

- Solution Provider (all PLC protocols: PRIME, Meter&More, G3, PLAN…)
  - Consultancy Services
  - Training Provider
  - Project Management
- Hardware Solutions
  - Design Tools for Non Skilled People (Spectrum Analyzers, Meter Software APPS)
  - Design of Filters, Repeaters and Signal Amplifiers.
- Software Solutions
  - Big Data for Analysis For Network Operations
  - Flexible Data Integration

Arkossa's Solutions

Arkossa's tools and Services gives to utilities enough capabilities for daily operations.

- With our Big Data Software tools:
  - PLC Readings Performance.
  - PLC Network Problems.
  - Detailed Analysis for Metering Points.
  - Work Orders Optimization.

SmartFinder
The Smart Surveillance

- With our mobility tools:
  - Work Orders for field Services.
  - Software for Meter Management on Field.

arko Worker PRIME
arko Worker IEC 870
ARKOPath
arko reader

- With our hardware tools:
  - PLC Signal Analyzer
  - Noise Localizator
  - Filters & Repeaters

NOISE 2.0
SPECTRUM ANALYZER
smartBOX
NOISE IDENTIFIER

- With our Training Services:
  - Trained Staff with skills for Noise Detection & Signal Analysis using our different tools.

SmartFinder
The Smart Surveillance

Data Sources

MDC

ERP

GIS

OMS

CRM

HES

OTHERS

BILLING

Process

ETL

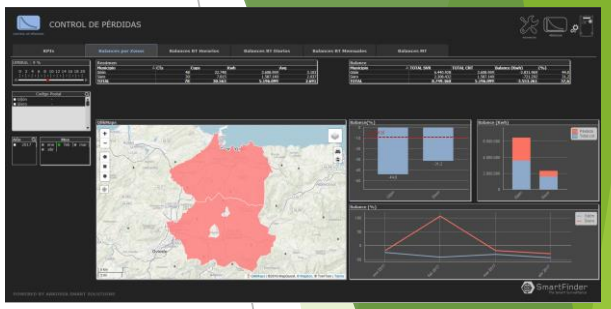
PROCESS

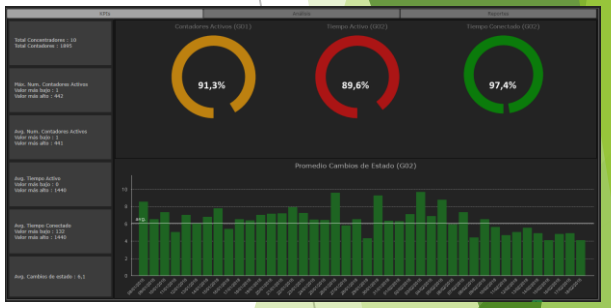
ALGORITHM

CALCULATION

VEE

Advanced Analytics





Our references

- Spain & Portugal: PRIME, Meters&More PLC Clean-up & Roll-out solutions, Distribution losses identification solutions & services, Cyber Security services
- CEE (Bosnia, Croatia, Slovenia,…): PLAN & G3-PLC Clean-up solutions & services
- Skandinavia (Denmark, Estonia,…): PLC noise identification tools
- Latin America (Peru): Consulting Services for Smart Metering System implementation
- Middle East (Israel): PLC noise identification tools and filters
- Asia (Pakistan): Consultancy for Smart Metering System Implementation
- Africa (Ethiopia): Consulting Services, Smart Metering System Compliance testing

Conclusions & lessons learned

- PLC communication works!!!
- Well deployed Projects Got an Average +95% of Meter Readings without Field Services
- Readings Performance and PLC Availability are different concepts
- Utilities needs a new organization structure for Smart Grid Operations and Maintenance
- Cyber Security of Smart Metering devices in utility environment
- Innovation is mandatory
- …

arkossa

CONNECTING ENERGY

arko reader · arko Worker PRIME · arko Worker IEC 870 · Smart Bank · ARKOPath

THE SMART WAY FOR DATA CONNECT

smartBOX NOISE IDENTIFIER · arkosoft · SmartFinder The Smart Surveillance · NOISE 2.0

Questions ?

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