



La Gaude Energy & Utilities Solution Center

Lessons learned from the Smart Grid project in Malta.

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The client context

A complex series of challenges required immediate attention to ensure that Malta is able to deliver affordable secure energy and water while protecting the environment.



Water Services Corporation provides water from underground fresh water and **more than half of its water supply by electrically powered desalination plants**

- Supplies drinking water for all Malta
- Manages waste water for all Malta
- WSC handles the Billing Functions for both itself as well as Enemalta.
- 1,300 employees
- 100% government owned



Enemalta Corporation generates electricity entirely by **imported fossil fuel**

- Small isolated system
- Vertically integrated
- 1,400 electricity related employees
- 100% Government owned
- 100% Fuel oil dependency

Enemalta / Water Services Corporation pain points



- Huge Exposure to Fuel prices & weather fluctuations
- Increasing Demand
- Risk Management Policies

- Lack of Monitoring Systems
- Annual Blackouts
- Technical Losses
- Inefficient workforce management

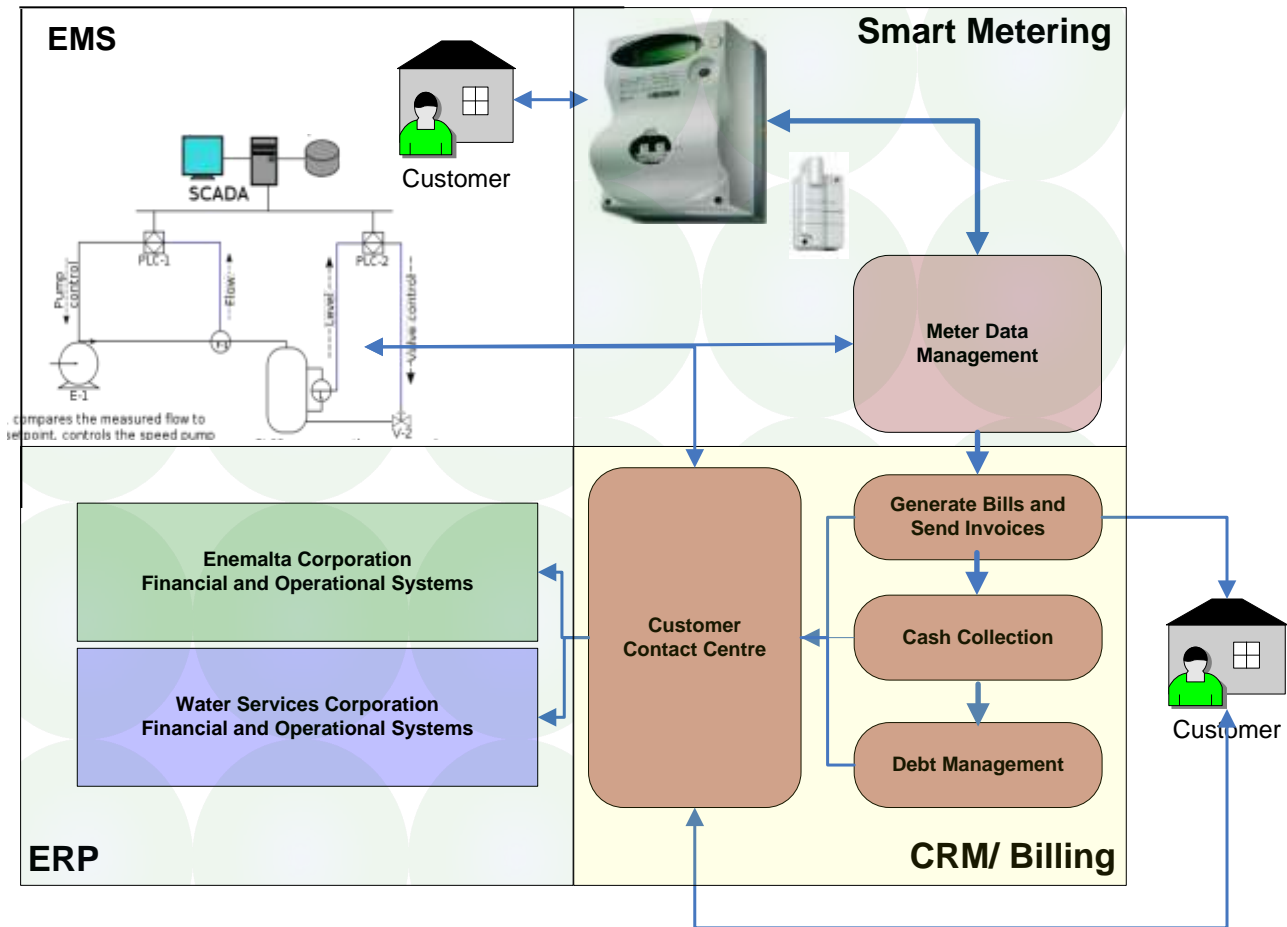
- Poor Data Quality
- Customer Dissatisfaction
- Increasing Debt
- Average Revenue per user can be increased easily (cross-up selling)

- **16 – 21 € Millions Electricity thefts & technical losses**
- Workforce Inefficiencies

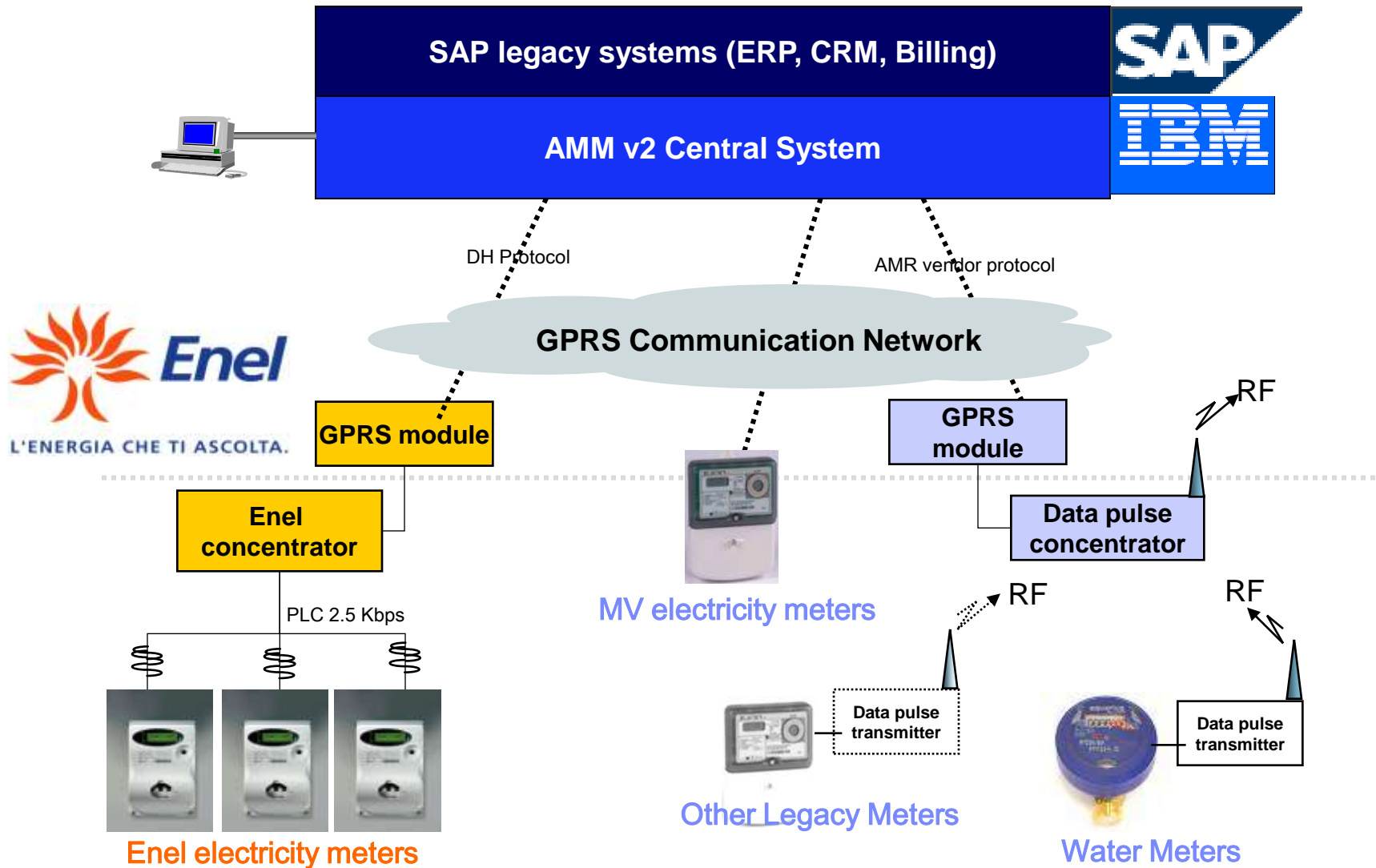


- No connectivity to the EU Grid, isolated system.
- Lack of automation
- Supply Chain Inefficiencies (high Inventories, Purchase Organization,...)
- Staff and Assets Inefficiencies
- Not use of Renewable Energies (by EU Directives they need to generate 5% in 2010)

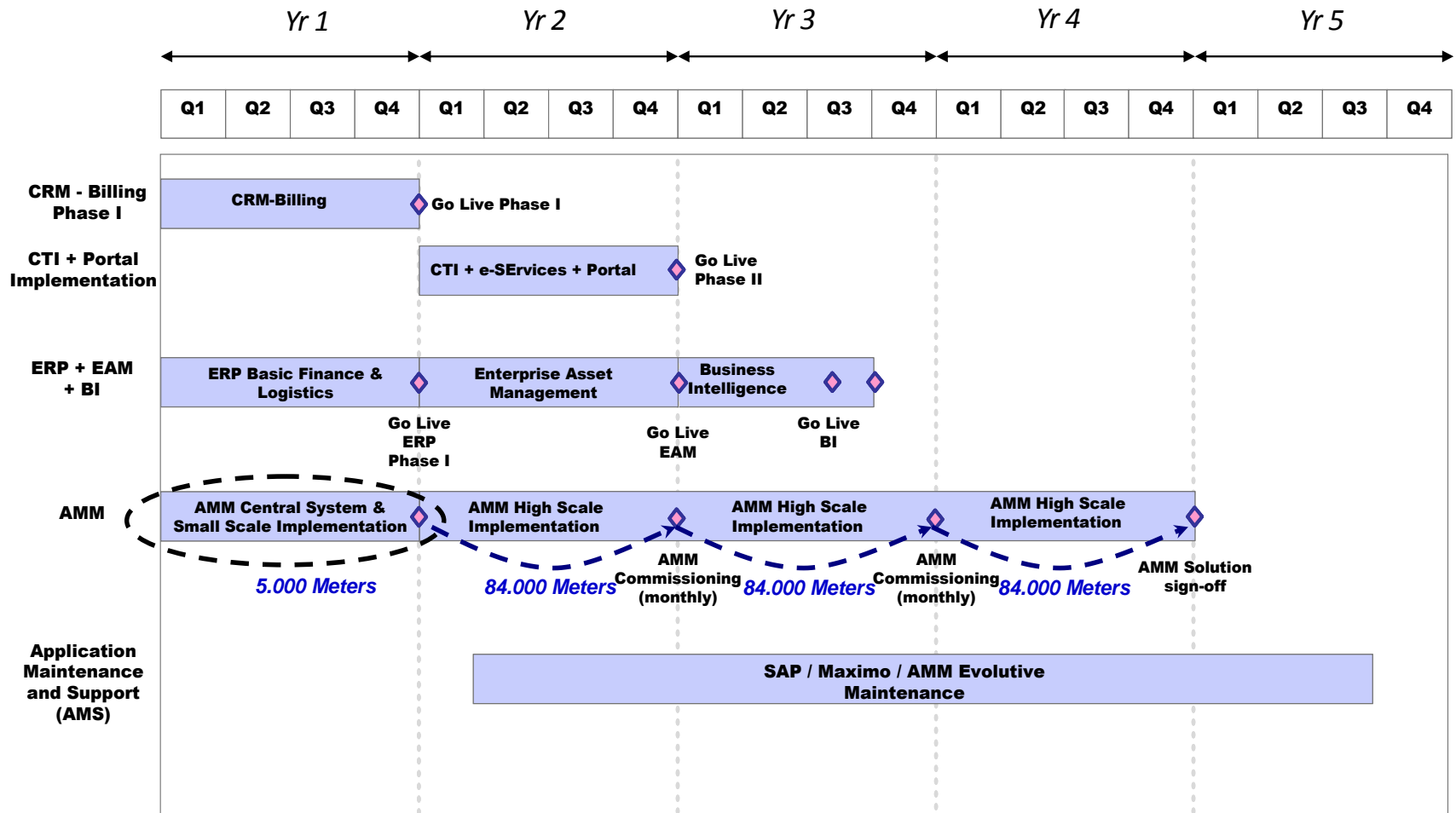
IUBS Program Overview



Technology is the triggering part of the IUBS program with the deployment of a Smart Grid infrastructure for both electricity and water services



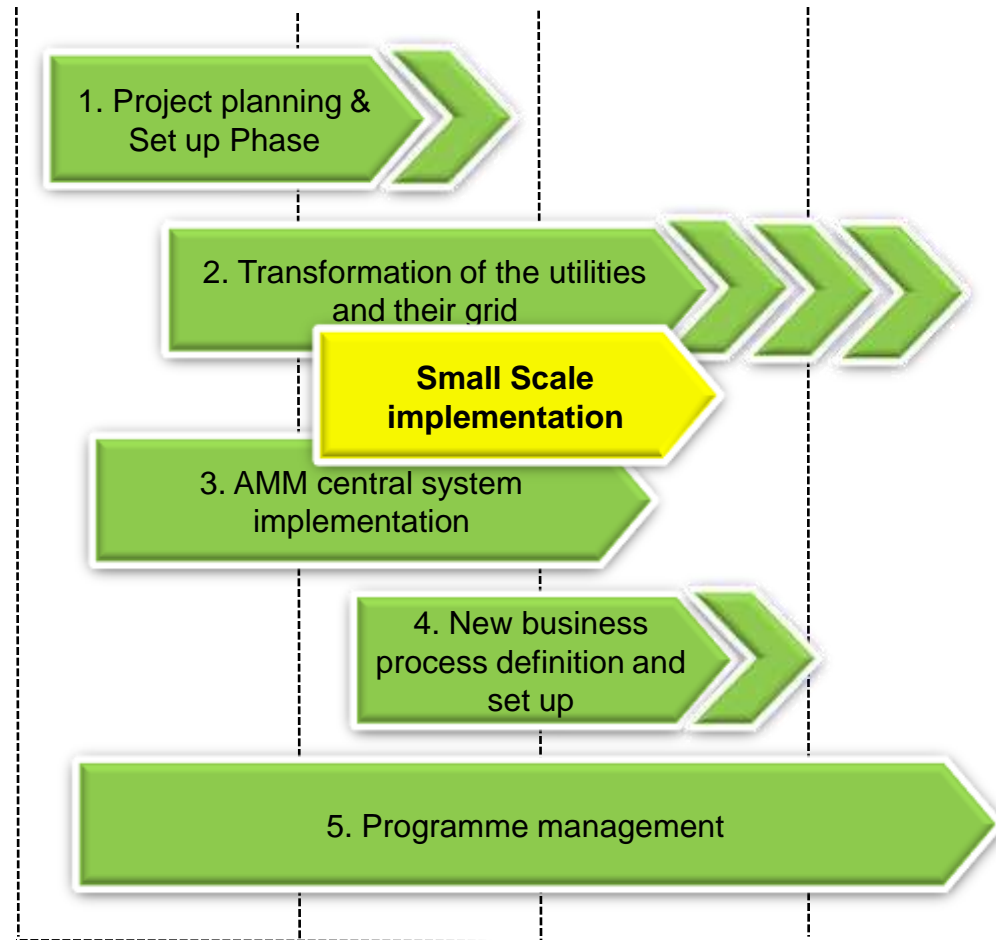
The IUBS programme is a 5 year programme



The timetable and structure of the plan was built in such a way as to ensure business continuity and alignment with the overarching strategy. Moreover, the programme was planned out so as to maximise benefits as early as possible within the programme and facilitate the change the AMM introduced.

Strong project phasing together with execution of a Small Scale Implementation (SSI) heavily facilitates the massive roll-out of the AMM implementation

- Deploy 5000 accounts with AMI field devices as part of a small scale implementation (SSI)
- Define processes to make use of the AMI solution
- **Exploit the results of the SSI** to build knowledge, learn, optimize and reengineer almost all facets of the project, **in an effort to smoothen the Massive roll out (MRO)**
- Replace 245.000 electricity meters and install AMR modules for 245.000 water meters as part of the massive roll-out
- Install field communication devices to communicate with e-meters and AMR modules
- Deploy a central IT system for remote meter management



A successful SSI is more than just the installation of devices, it is the ability to draw conclusions and make extrapolations to the remainder of the project

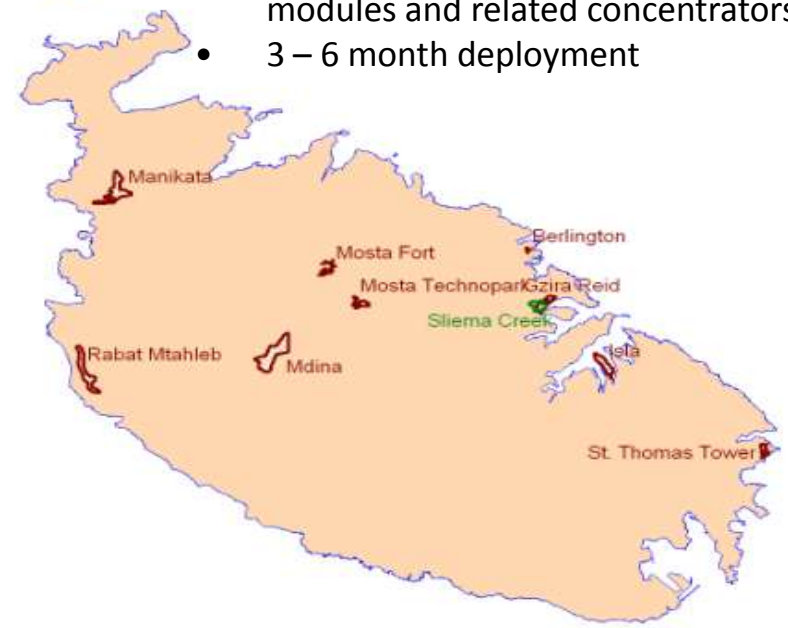
Extrapolating results from a sample is a necessary part of an SSI

In ensuring that the SSI is carried out well the project team:

- Selected a representative sample of customers, based on a series carefully of criteria:
 - Physical topology characteristics
 - Demographics
 - Consumer data
 - Topographic spread , etc.....
- Implemented processes that were to be replicated in the massive rollout
- Implemented systems that were to be utilized in the MRO

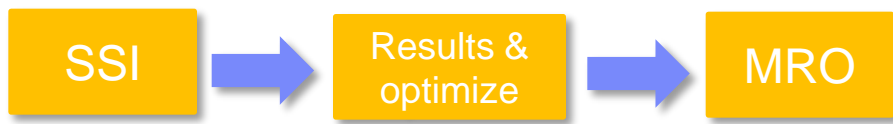
SSI Overview:

- Thorough representative sample of Malta
- 5000 customers
- Installation of E-Meters, LVCs, AMR modules and related concentrators
- 3 – 6 month deployment



SSI installation plan

A SSI is a fast tracked learning curve to understand the necessities of nationwide deployment



Built on experience and best practice, project teams are structured to streamline work and maximize efficiencies

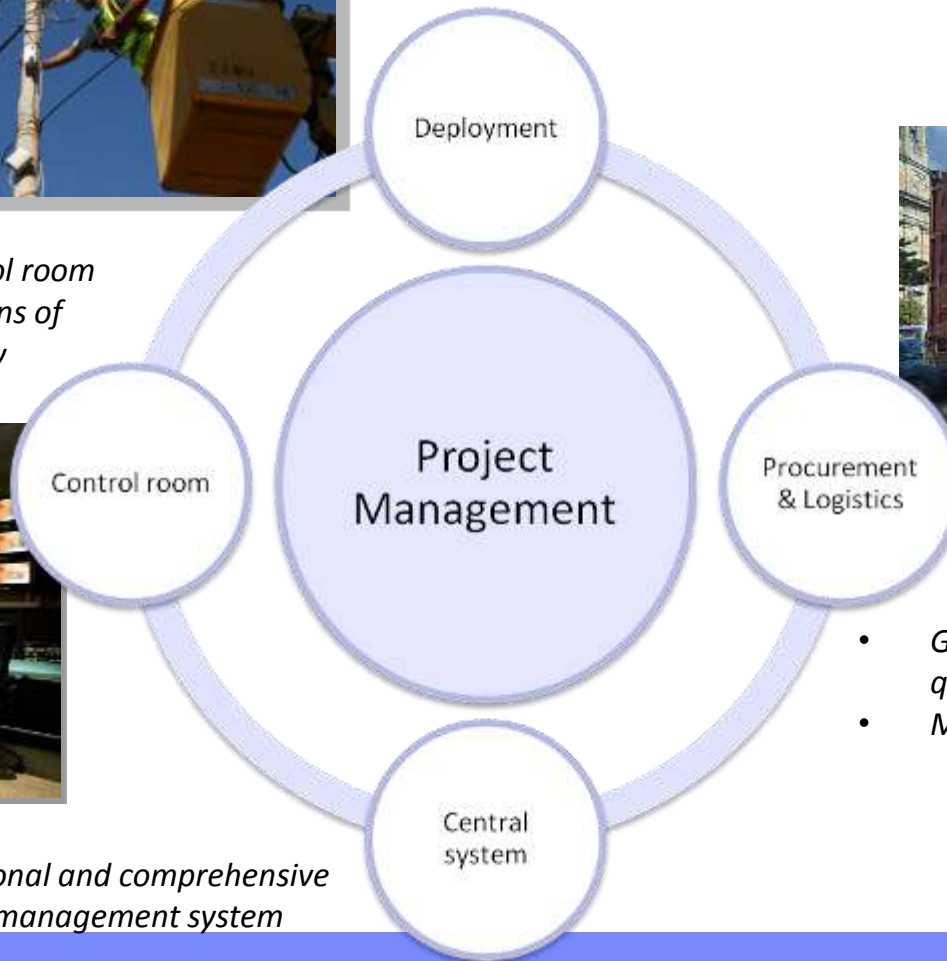


- *Ensure efficiency and quality of installations*

- *Set-up and organize control room*
- *Ensure successful operations of communication technology*



- *Deliver fully functional and comprehensive Automated meter management system*



- *Guarantee availability and quality of devices*
- *Manage Vendor relationships*

Key success factors : governance & management of business processes

The massive deployment needs to be coupled with changes in the SCM processes

Processes

The application of industry experience as well as best practice is necessary when implementing new processes that are part and parcel of an AMM solution.

More so when one thinks that the level of operations can increase ten fold during the massive deployment.

It is estimated that for every metering point as much as 5 accessories and materials are needed!

Therefore
**250.000 metering points can result in
 1.500.000 devices
 going through the warehouse!**

- Inventory management processes
- Warehousing processes
- Materials delivery and receipt processes
- Quality assurance processes
- Logistic processes
- Etc.....

AMM redefines the coordination of delivery and logistic activities

Delivery & Logistics

The specialist integrated supply chain (ISC) team was brought in to aid in the increased operational logistics. They also supported in the coordination of complex activities that arise when sourcing devices from several suppliers across the globe

The ISC team also ensured that all devices supplied to IBM customers are compliant with strict IBM resale policies as well as EU regulations

A strategy and handbook relating to all activities was drafted to ensure successful implementation of all activities

- Coordination of deliveries and drafting of delivery plans
- Warehouse assessment and evaluation
- Warehouse design and adaptations
- Support at delivery reception
- Materials guarantee and return
- Quality audits, assurance and assessment

AMM solutions are not always plug & play..... strong vendor partnerships allow solutions to be customized to meet needs

Supplier Relationships

- Multi input model for AMR module
- Base plate design and rollout for smart meter installation
- Field testing equipment and applications
- Firmware adaptations
- Etc.....

The project team worked with suppliers to ensure thoroughness of the solution, commitments across the board and adequate knowledge transfer

Tangible added value in the form of solutions, work-arounds, optimizations, efficiencies etc can be brought about by ensuring that vendors partake in the project as partners

Implementing an AMM system is not always a plug and play activity. In Malta a series of tasks had to be carried out to ensure that the solution would fit the environment. The project team worked with suppliers to deliver enhancements, modifications and customizations to the solutions

A support structure needs to be put in place to facilitate the complete process

Rational
Portfolio Manager

A strong support structure ensured business continuity and the streamlining of work flows as well as preservation of project assets for future implementations / solution operations:

- Rational ClearQuest as help desk and ticketing tool
 - Support interface for AMM and other segments of IT, SAP etc
 - Provides support to work groups; SAP users, AMM installers, AMM dispatchers etc
 - Logging of resolved and pending issue
- Rational Portfolio Manager as a project document management system
 - Control and archive all project documentation
 - Manage deliverables
 - Log and store reusable assets

An AMM Journey

An AMM journey may have 3 steps:

1. Proof Of Concept (PoC)

The overall orientation of the PoC is to successfully **demonstrate the technology and functionality of the solution**

2. Small Scale Implementation (SSI)

The SSI phase is geared towards **validating and operating the complete solution successfully from end-to-end, while providing business case warranty.**

3. Massive Roll-Out (MRO)

The MRO primarily focuses on **speed and fluidity of operations to achieve the maximum possible rate of massive deployment**

The three sequential phases ensure that :

- The most suitable solution and technology, that meet utility requirements, is tried, tested and validated prior to selection
- The vendors and partners which are finally selected are the best fit for the utility, its customers and the operating environment