

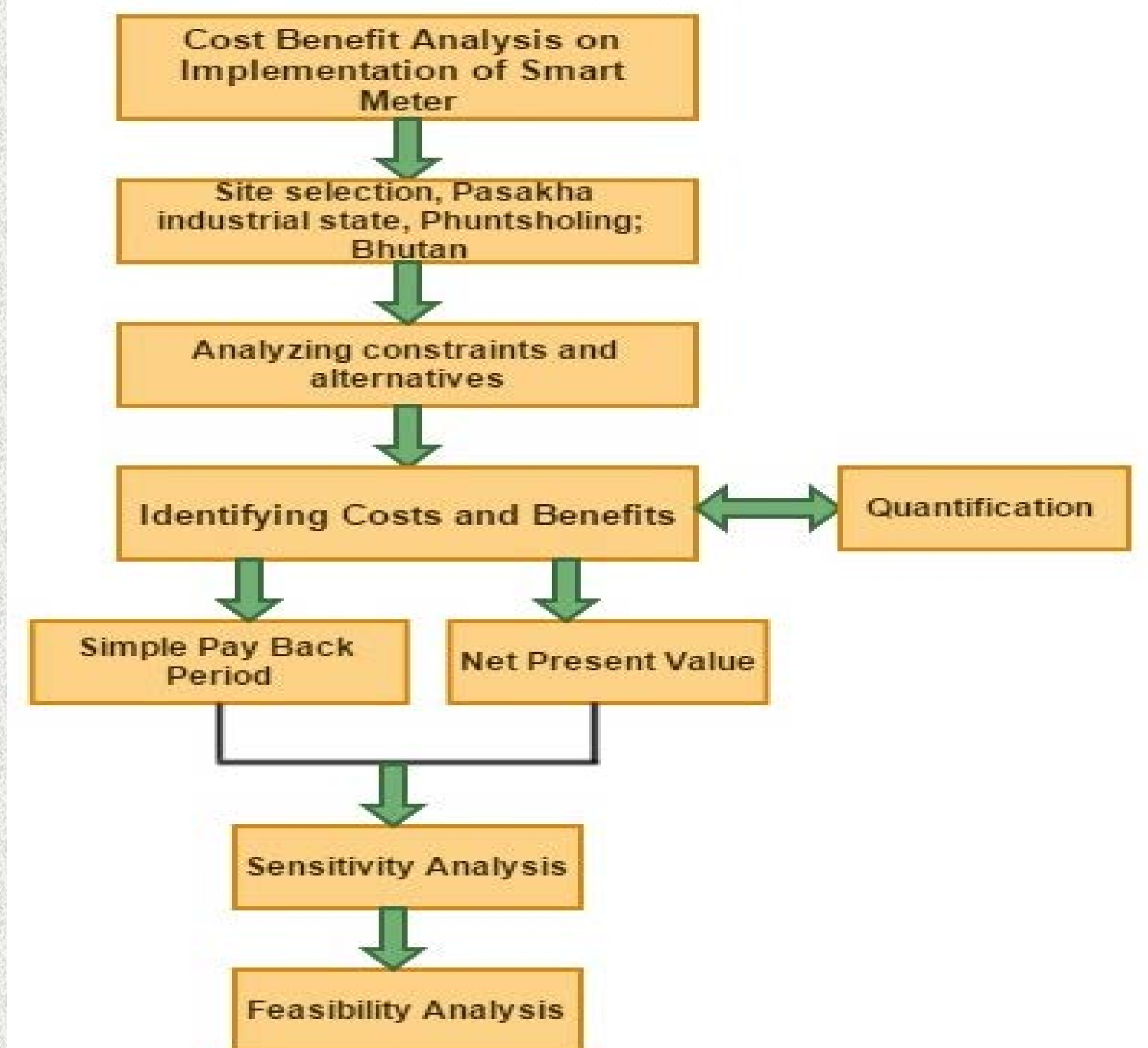
COST BENEFIT ANALYSIS FOR IMPLEMENTATION OF GSM/GPRS BASED SMART METERING FOR ELECTRICAL UTILITIES IN PHUENTSHOLING, BHUTAN

N Tenzin*, Y Jamtsho, U Phuentsho, K Pemo and S Norbu
College of Science and Technology, Rinchening, Phuentsholing, Bhutan
[*namyeltemzin@gmail.com](mailto:namyeltemzin@gmail.com), ede2011018@cst.edu.bt

1.Introduction

- ✓ Smart metering is new technology to BPC and to the Bhutanese.
- ✓ Electricity is becoming an expensive commodity, minimize and efficient use of electricity.
- ✓ Cost Benefit analysis provides quantitative comparisons; study on feasibility of a project.
- ✓ Simple payback period and Net Present Value analysis.

2.Methodology

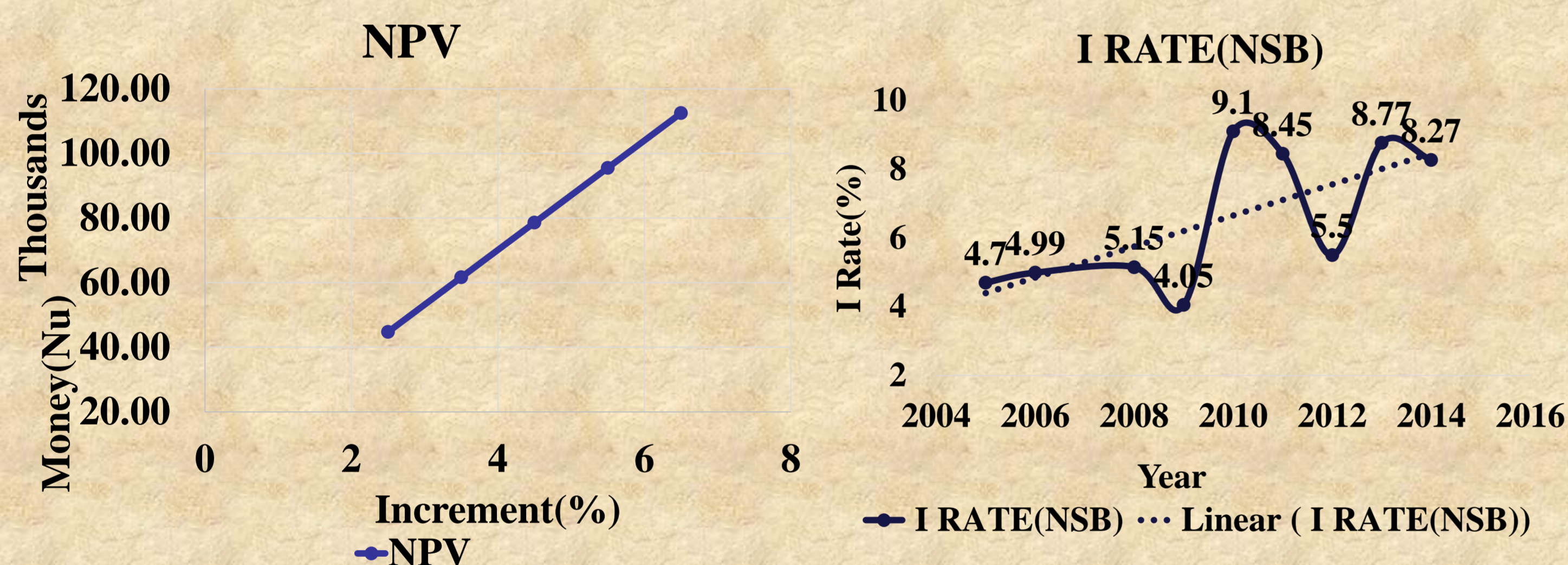


3.Challenges

- ✓ Lack of Previous Data(Financial) & Inflation Rate
- ✓ Justification of costs and Benefits. (Qualitative)

4. Results

- ✓ The simple payback period computed was 4.41 years.
- ✓ The NPV was Nu 44710.89 for the period of five years discounted at 4 % annually with inflation of 8.27 percent.



SI No	Inflation Rate (%)	NPV over 5 Years (Nu)	SI No	Cost Esc. %	NPV(Nu)
1	6.533	43,939.73	1	1%	23062.89
2	8.018	44,597.43	2	2%	1414.89
3	8.27	44,710.88	3	3%	-20233.11
4	13	46,942.65			

5.Conclusions

- Viable Project according to Simple pay back period , NPV & Sensitivity Analysis.
- Annual Maintenance costs is not considered.
- Analysis covers only Pasakha Industrial Estate.
- Smart meter using AMR is a proven technology, BPC should implement though costly.
- Acknowledgement to Mr. C Phuntsho(Manager) and BPC ESD Phuentsholing for their assistance.

6.Scope

- ✓ AMI system can be explored.
- ✓ CBA with different discount rates (BPC)
- ✓ Multiple Analysis (Voltage, Load, harmonics can be performed).

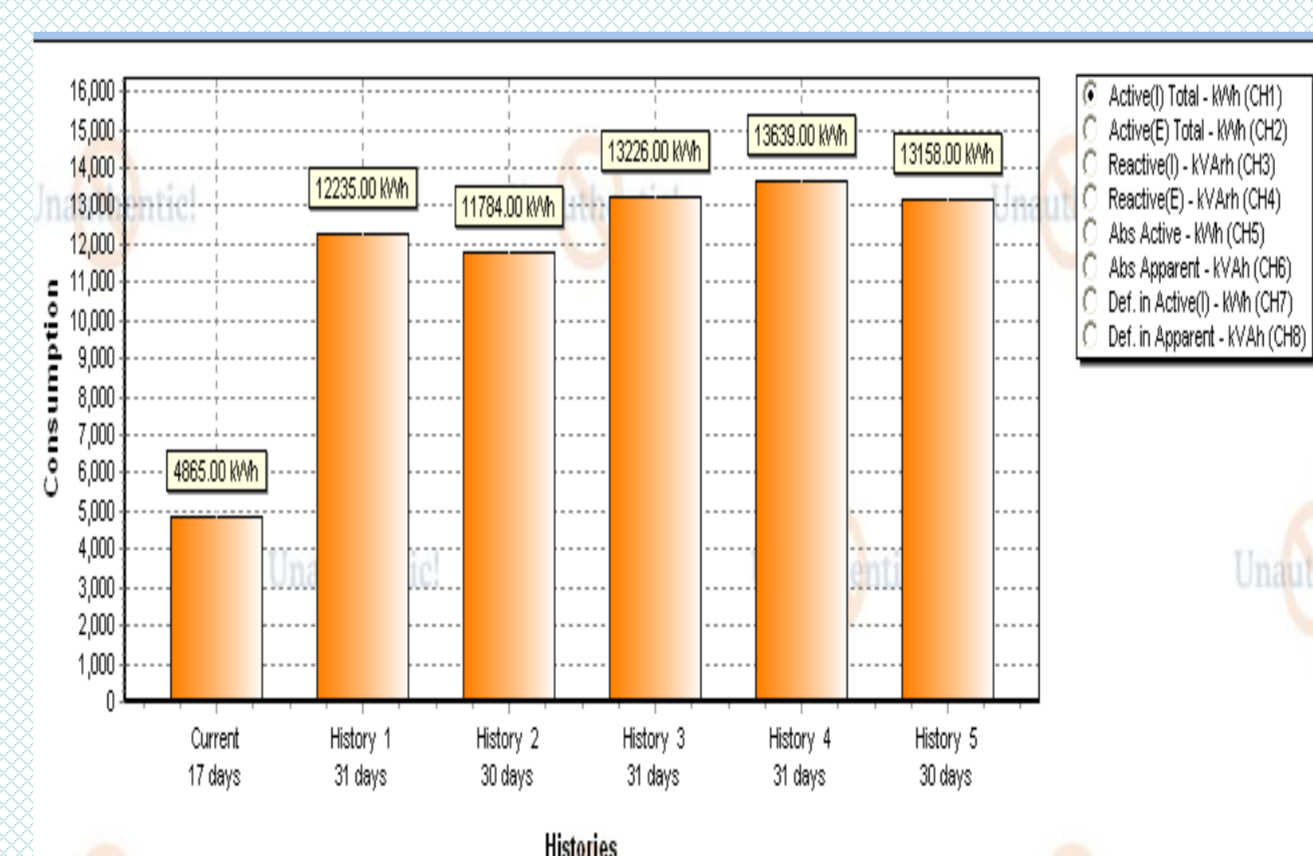


Fig.1. Sample Energy Consumption data

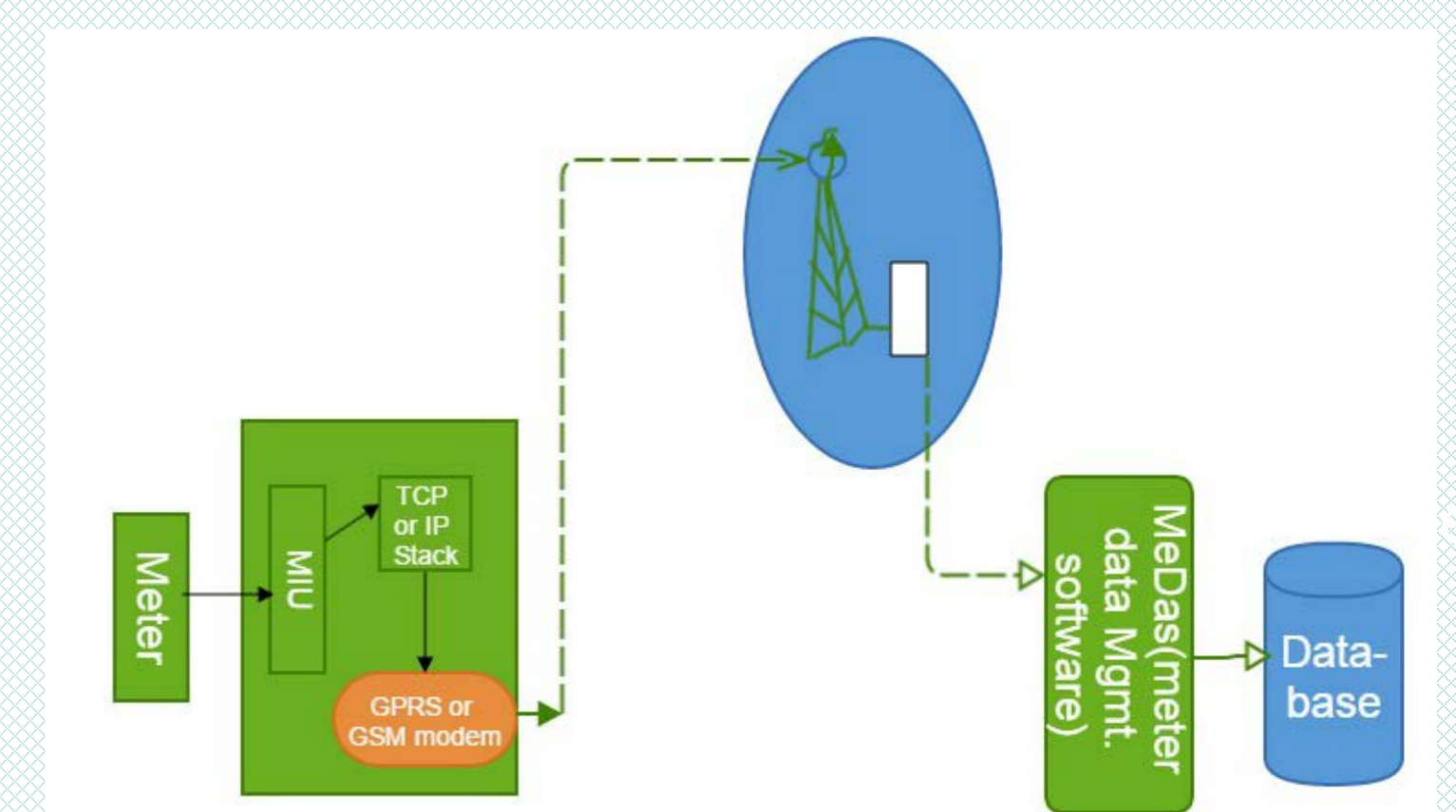


Fig.2. AMR Network Architecture