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# **EXPERIENCE IN STANDARDISATION FOR ELECTRIFICATION**

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# UNDERSTAND BUSINESS OBJECTIVES

- **National objectives**
- **Current business:**
  - **Current revenue streams, subsidies and aid**
  - **Customer service expectations and requirements**
  - **Current network**
- **Future business:**
  - **Customer service expectations and requirements**
  - **Future revenue streams, subsidies and aid**
  - **Energy carrier options competitiveness**

# Successful Standardisation Requires:

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- 1. Consideration of the total life cycle of the infrastructure**
- 2. Understand the environment the standards have to serve**
- 3. Standards processes and support**
- 4. Rationalisation**
- 5. Documentation**
- 6. Discipline**

# Factors/Benefits Affecting Standardisation

- **Asset creation**
  - **Optimal lifecycle cost**
  - **Volume production; competition and backup (security) of suppliers**
  - **Environmental considerations**
  - **Learning and optimisation**
- **Asset operation and maintenance (Customer services and Field services)**
  - **Staff training**
  - **Spares holding and breakdown response**
- **Asset upgrade**
- **Finally ..... asset disposal**
- **Quality management throughout the life of the asset and service**

# REQUIREMENTS

- **Understand load and service requirements**
  - ADMD in kVA
  - Urban, rural, commercial, accessibility etc
- **Determine operating and maintenance philosophy**
  - Business structure of customer services
  - Business structure of network maintenance services
- **Determine planning philosophy**
  - Existing network vs where to go to
  - SWER – voltage and conductor
  - MV and LV voltage
  - Sub-transmission voltage
- **Reliability/ quality of supply and service requirements**

# RATIONALISATION

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- **Stay wires, insulator types, creepage, strength.**
- **Conductor types.**
- **Bundle conductor sizes and single or three phase.**
- **Transformer sizes, voltages and tap settings.**
- **Pole heights, strength, specification.**
- **NRS used in South Africa to link Eskom and municipalities.**

# DOCUMENTATION

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- **Need control process for changes**
  - **Revision dates**
  - **Voting process**
  - **Process to adapt suggestions**
- **Research plan in place for long term development**
- **Web page to ensure latest standards are used.**
- **Technical bulletins to address urgent issues.**

# USE OF STANDARDS

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- **Need to ensure optimal use of standards.**
- **Indicators developed to enable rapid assessment on use of standards**
  - **Span length**
  - **Conductor type**
  - **Three phase vs single phase**
  - **Actual ADMD**



# AVAILABILITY

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- **Eskom standards available**
- **Process in place and is transferable**

# Eskom Standard Levels

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- **LV: 230V, Dual Phase  $\pm 230V$ , 400V**
- **MV: 11kV, 22kV, 33kV, SWER**
- **Sub Tx: 66kV, 88kV and 132kV.**
- **Conductors: fox, mink, hare.**
- **ABC 75mm<sup>2</sup> and 35mm<sup>2</sup> (1,2,3 phase)**

# CONCLUSION

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- **Need to link requirements to standards**
- **Need to allow for innovation**
  - **Suggestions**
  - **Research**
- **Need to have a process for approval of changes and revision**
- **Need to have documentation control**
- **Need to have process for technical bulletins to address certain issues.**
- **Need to monitor use of standards**