

# ASSET MANAGEMENT

*Optimizing the business  
of  
electricity transmission and distribution*

**ROEL VERLAAN**  
**KEMA CARIBBEAN OFFICE**

# NOWADAYS T&D BUSINESS

LIBERALISATION

PRIVATISATION

LEGISLATION  
REGULATION

SHAREHOLDERS

GENCO'S  
IPP'S

SOCIETY

ENVIRONMENT

CLIENTS

# NOWADAYS BUSINESS DRIVERS AND THEIR MAIN DEMANDS

**SHAREHOLDERS**



**REVENUES**

**CLIENTS**



**LOW TARIFFS**



**RELIABILITY**

**POWER PRODUCERS**



**CAPACITY**



**RELIABILITY**

**POWER TRADING**



**LOW TARIFFS**



**CAPACITY**

**GOVERNMENT &**



**REGULATION**

**SOCIETY**



**ENVIRONMENT**



**SAFETY**

# **FULFILLING BUSINESS DRIVERS' DEMANDS**

## **REDUCING COSTS**

- OPERATIONAL COSTS**
- INVESTMENTS**
- OVERHEAD**

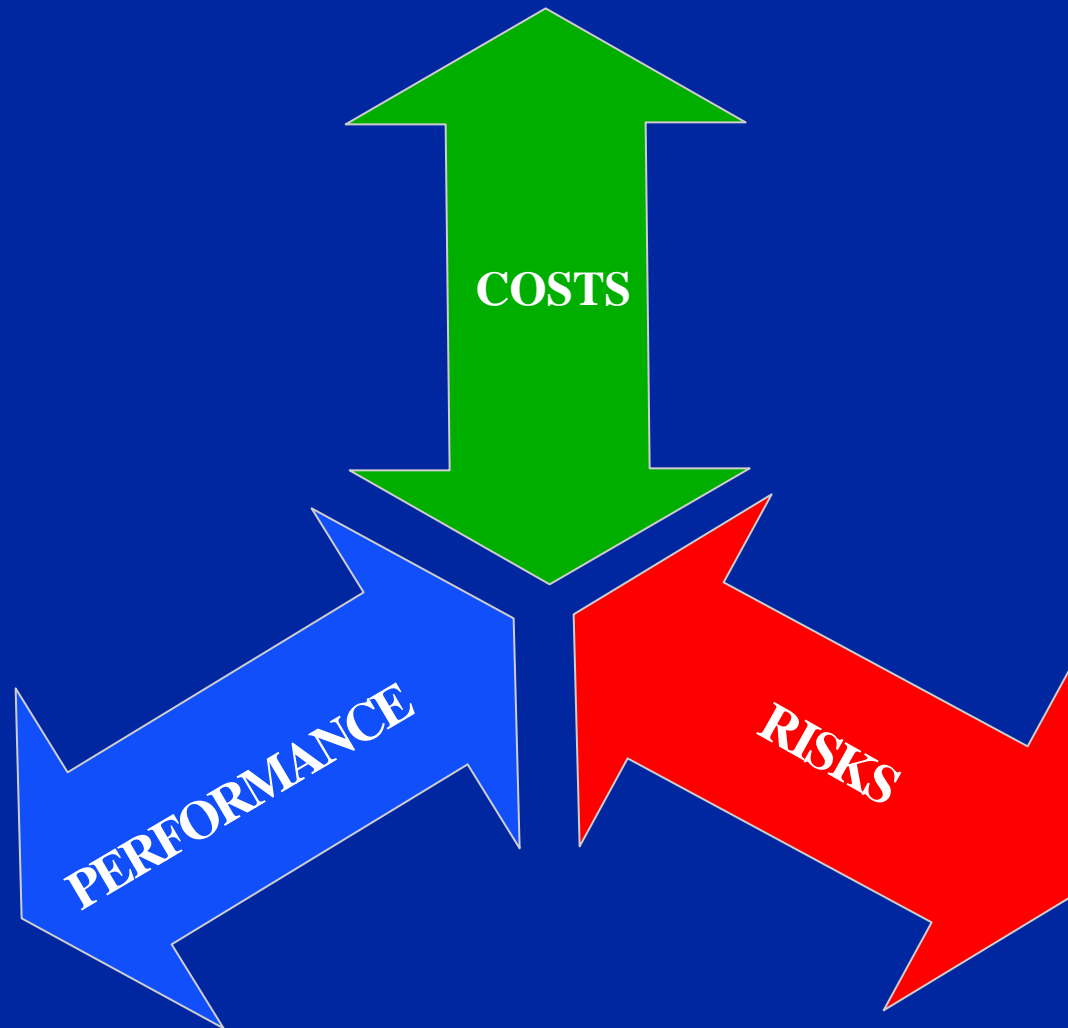
## **PERFORMANCE IMPROVEMENT**

- RELIABILITY**
- POWER QUALITY**
- FAILURE ANALYSIS**

## **REDUCING RISKS**

- RISK MANAGEMENT**

# MANAGING THE T&D ASSETS



# **ASSET MANAGEMENT**

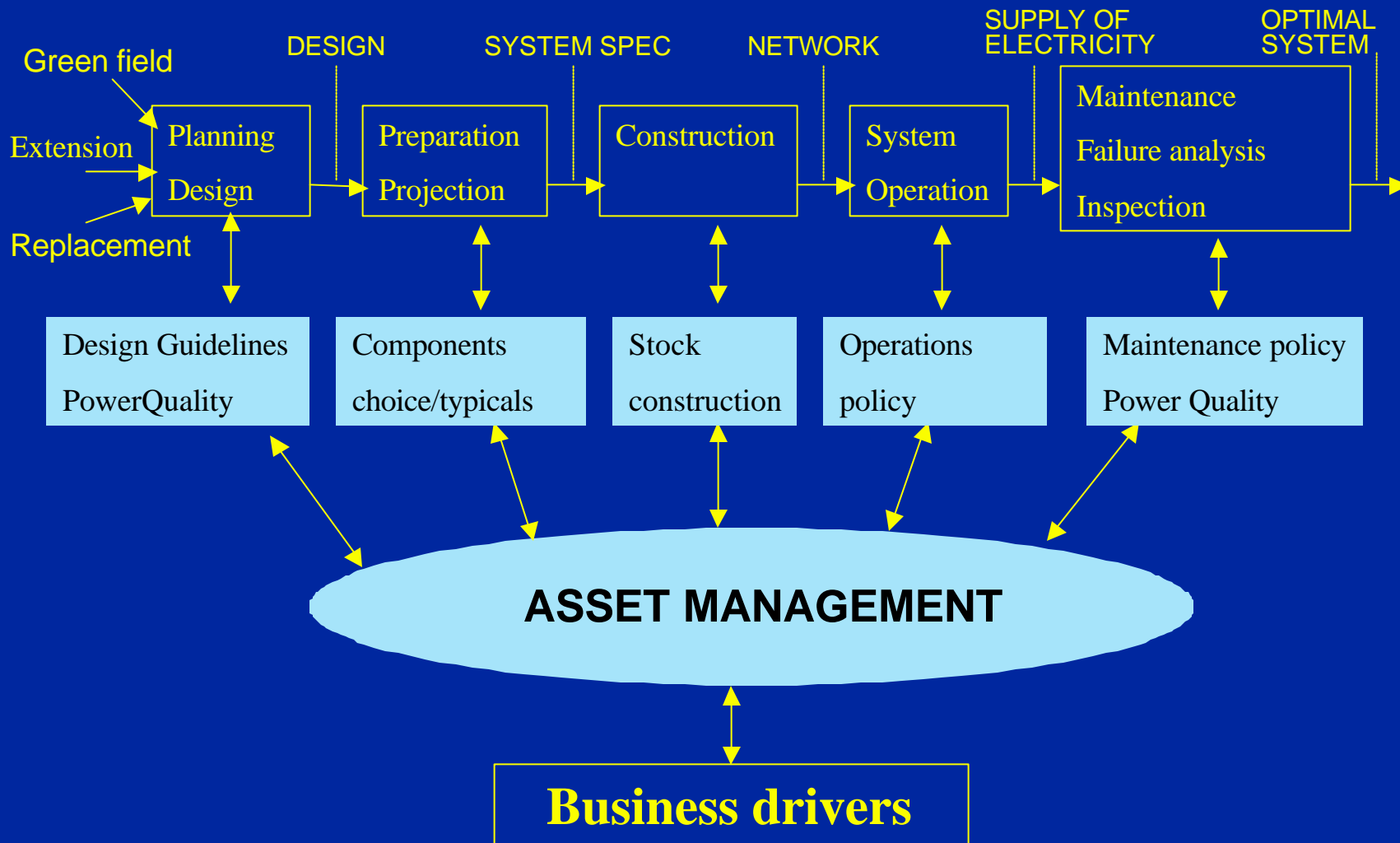
**INTEGRAL APPROACH OF ALL NETWORK  
ACTIVITIES AND CAPITAL EQUIPMENT**

**IN ORDER TO**

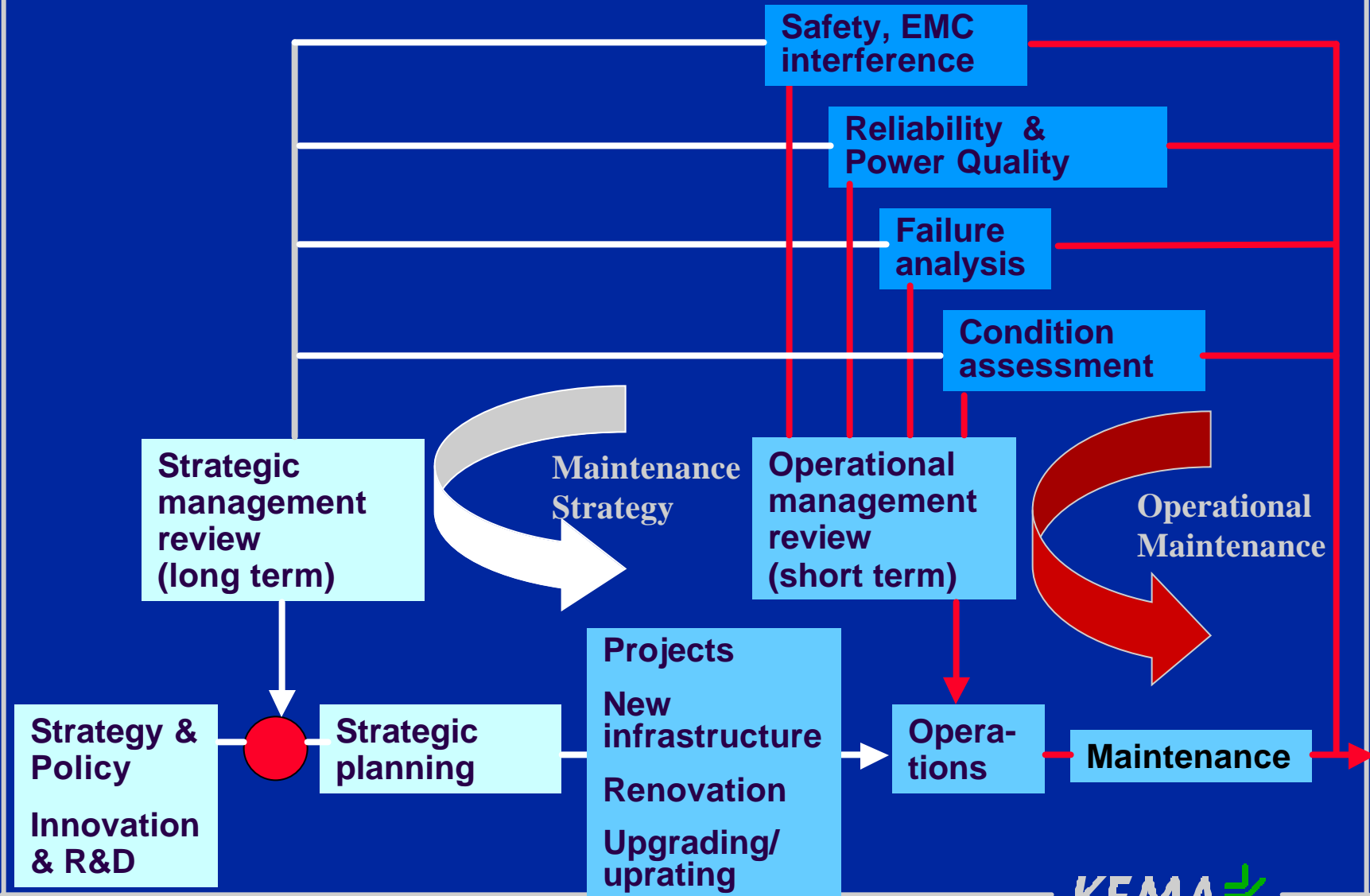
**MANAGE THE NETWORK WITH MINIMAL  
COSTS AND MAXIMAL REVENUES**

**AT A HIGH PERFORMANCE LEVEL  
AND WITH LOW RISKS**

# Business drivers - asset management - network activities



# VISION ON NETWORK MANAGEMENT



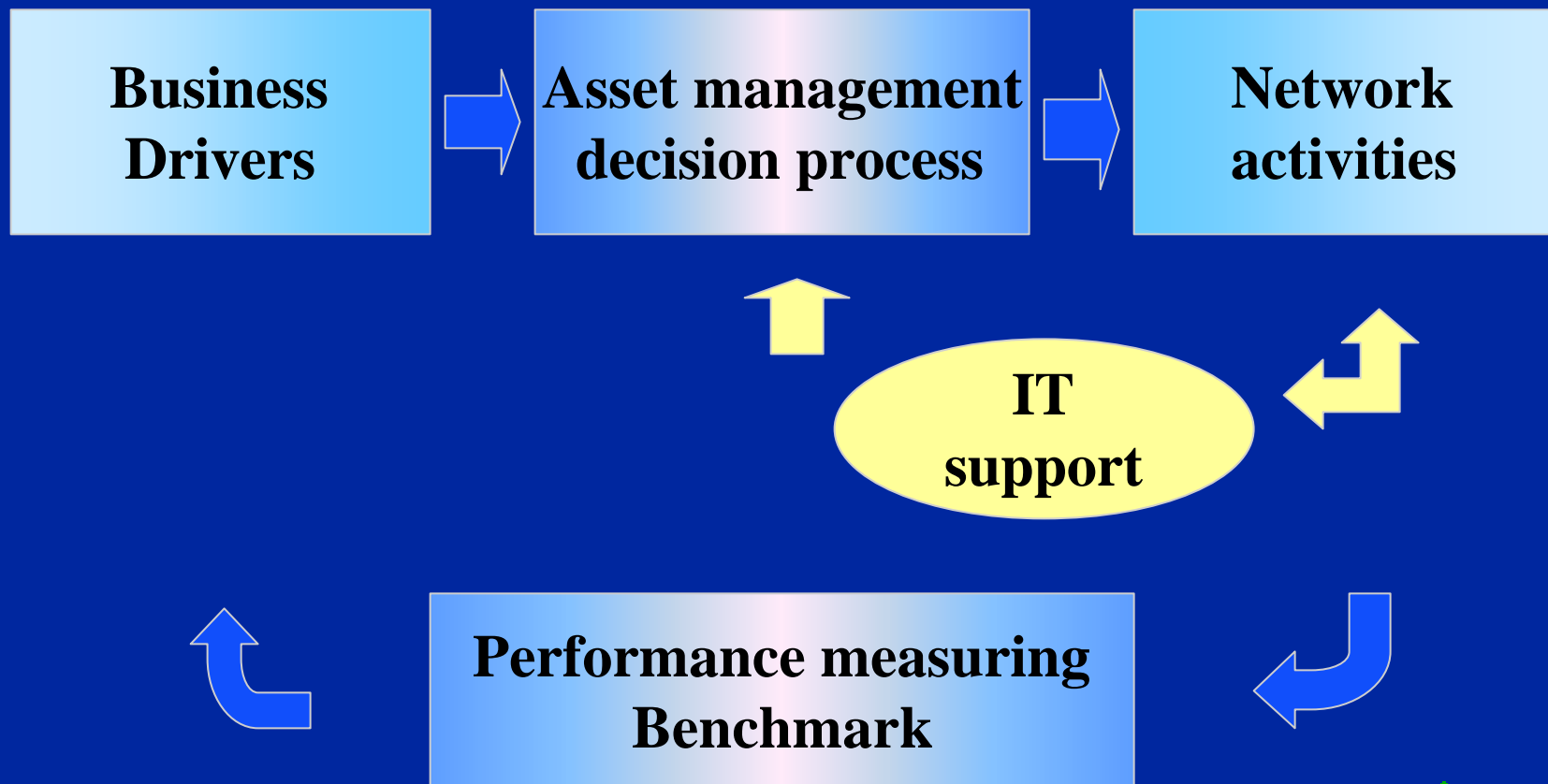
# **ASSET MANAGEMENT: THE KEY TO OPTIMIZING**

**LOOKING AT THE PRESENT WAYS OF:**

- **NETWORK PLANNING & DESIGN**
- **MAINTENANCE**
- **CAPACITY PLANNING**
- **OPERATIONS**
- **PERFORMANCE**

**HOW CAN COSTS BE REDUCED WHILE FINDING  
AN OPTIMUM IN RELATION TO  
THE PERFORMANCE AND RISKS?**

# HARMONIZING BUSINESS DRIVERS DEMANDS WITH NETWORK MANAGEMENT



# APPROACH

**1. SHORT TERM APPROACH BY MEANS OF THE  
PARETO RULE ( 20/80 RULE)**

**2. LONG TERM APPROACH  
INCLUDING OPTIMIZED IT-SOLUTIONS  
(STEP BY STEP APPROACH LEADING TO  
AN INTEGRAL IT-ARCHITECTURE)**

# **20/80 RULE APPROACH (1)**

## **1. ASSESSMENT PHASE**

### **ASSESSMENT OF:**

- CAPITAL EQUIPMENT**
- PROCESSES AND ACTIVITIES**
- PERFORMANCE**

**DETERMINATION OF COSTS INVOLVED,  
RESERVES AND RISKS**

# **20/80 RULE APPROACH (2)**

## **2. INVESTIGATION PHASE**

**IDENTIFYING THE 20/80 SITUATION BY “FILTRATING”  
THE GATHERED INFORMATION.**

**FILTERS TO BE USED (for example):**

- PLANNED INVESTMENTS**
- POLICY REGARDING REPLACEMENTS AND  
RENOVATIONS**
- COSTS OF DIFFERENT NETWORK ACTIVITIES**
- FAILURES, COSTS INVOLVED, FAILURE RISKS**
- OUTAGES, OUTAGES LOCATIONS**
- RELIABILITY, POWER QUALITY INFORMATION**
- DESIGN PRINCIPLES**
- CAPACITY RESERVES**
- ETC**

## **20/80 RULE APPROACH (3)**

### **3. DETERMINATION OF TERMS RELATED TO BUSINESS DRIVERS' DEMANDS**

**WHICH WILL AFFECT THE ASSETS,  
PROCESSES AND THE PERFORMANCE**

**THESE TERMS WILL BE DETERMINED BY:**

- THE COMPANY'S STRATEGY AND POLICIES**
- PERFORMANCE REQUIREMENTS  
(LAID DOWN BY THE REGULATOR)**
- CUSTOMER DEMANDS/EXPECTATIONS**
- ENERGY TRADING REQUIREMENTS**

## **20/80 RULE APPROACH (4)**

### **4. PREPARATION OF IMPROVEMENT PLANS IN ORDER TO REACH COMPLIANCE WITH THE DETERMINED TERMS AND PRECONDITIONS**

#### **TO BE CONSIDERED:**

- BENCHMARK INFORMATION**
- PERFORMANCE INDICATORS**
- RISK ANALYSIS WITH RESPECT TO POSSIBILITIES OF PUSHING BACK FRONTIERS IN A CONTROLLED MANNER**

## 20/80 RULE APPROACH (5)

### 5. IMPLEMENTATION OF IMPROVEMENTS

TO BE STARTED WITH THE TOP 3 OR TOP 5

IMPLEMENTATION MIGHT EFFECT MANY ASPECTS, LIKE:

*= design principles = standardization = network  
planning = investments = maintenance concept =  
operational instructions = monitoring equipment =  
organization = etc = etc =*

# ICT APPROACH

## Process / Systems Fragmentation (Island systems)

Asset Management

Fault Management

Operations Policy

Data Management

Business Systems

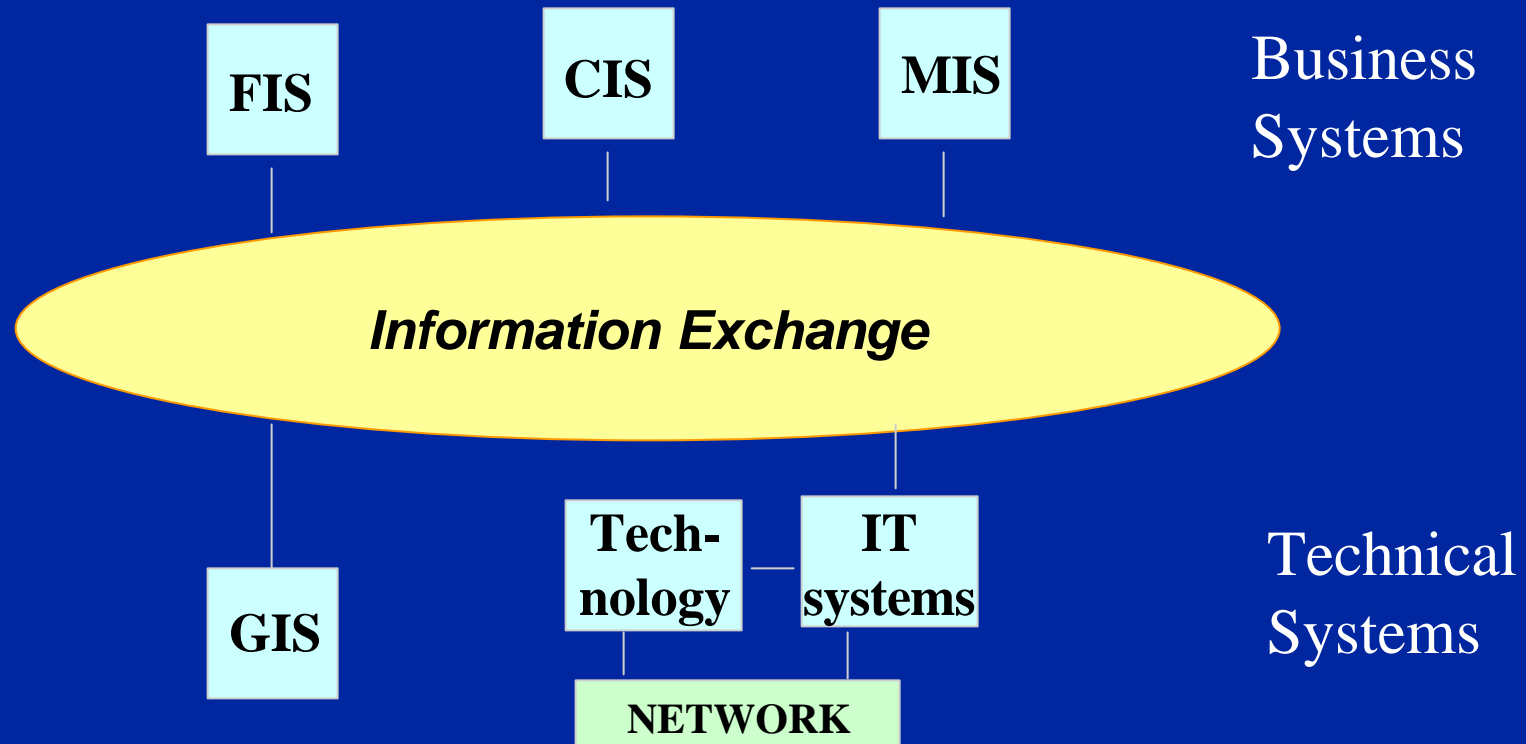
Work Management

Monitor & Control

Training

Communications

# ICT: How Far?.....What Cost?



*Needs cost-effective & appropriate solutions.*

# SYSTEM INTEGRATION

- STRATEGIC VIEW IS REQUIRED
- STEP BY STEP APPROACH
- COST/BENEFIT ANALYSIS FOR POSSIBLE SOLUTIONS
- APPROPRIATE INFORMATION EXCHANGE BETWEEN SYSTEMS

INTERFACING

CONVERSION SOFTWARE

STRONG DATABASE



IT ARCHITECTURE

# MAJOR PRACTICAL EXPERIENCES

- **REDUCTION OF CAPITAL COSTS**
- **REDUCTION OF MAINTENANCE COSTS**
- **PERFORMANCE IMPROVEMENT**

# **REDUCING CAPITAL COSTS**

## **POSTPONING INVESTMENTS BY MEANS OF:**

- **LIFETIME EXTENSION**
- **UPRATING / UPGRADING OF EQUIPMENT**
- **DYNAMIC CONTROL FOR OPTIMAL LOADING**

## **REDUCING INVESTMENTS BY MEANS OF:**

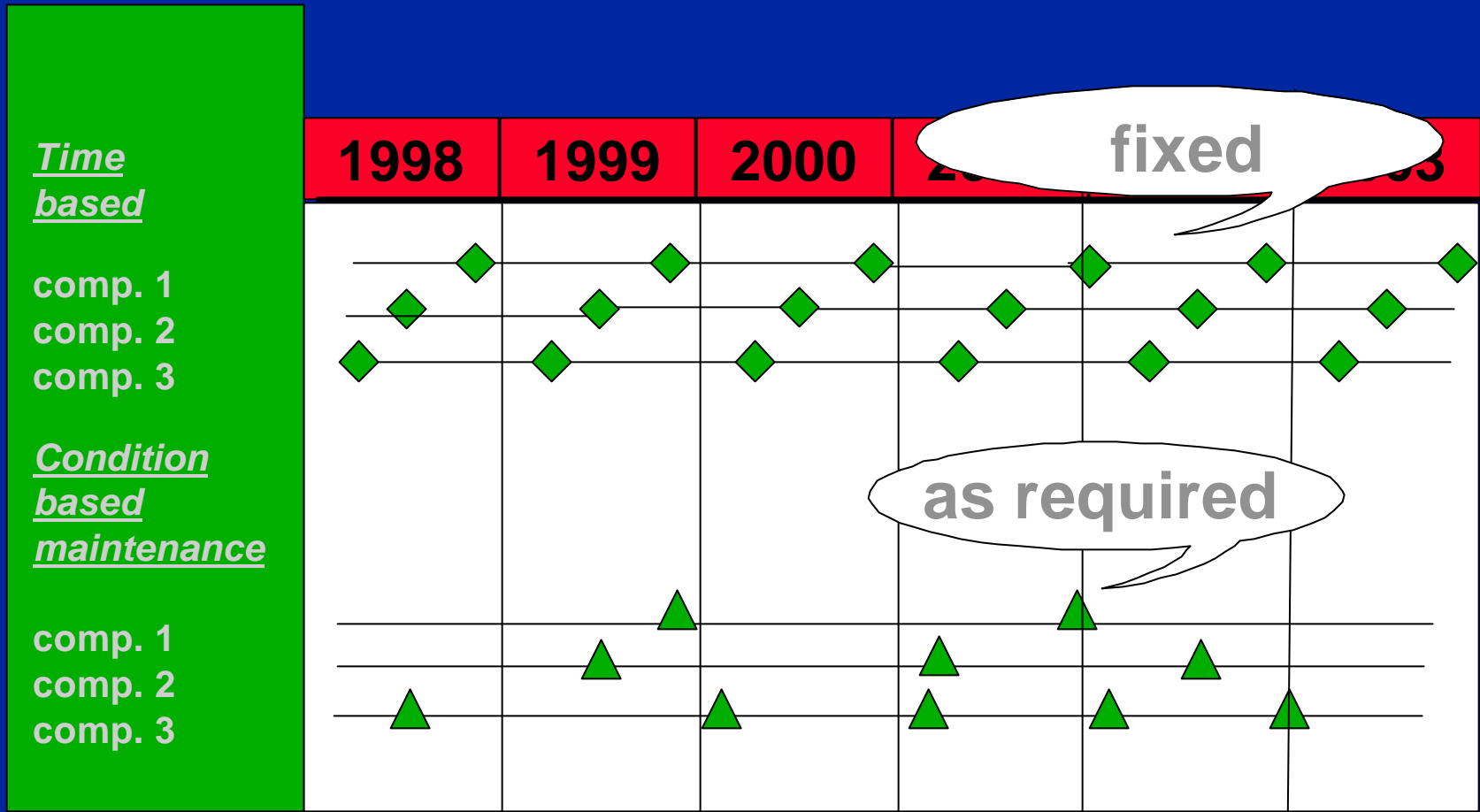
- **NEW NETWORK DESIGN PRINCIPLES IN COMBINATION WITH RISK MANAGEMENT AND IT SOLUTIONS**

# **REDUCING MAINTENANCE COSTS**

## **INTRODUCTION OF NEW MAINTENANCE CONCEPTS:**

- **FMECA METHODOLOGY**  
**(Failure Mode Effect and Criticality Analysis)**
- **RELIABILITY CENTERED MAINTENANCE**
- **CONDITION BASED MAINTENANCE**  
**USING FMECA AND WITH PRACTICAL USE**  
**OF EXPERT RULES**

# CONDITION BASED MAINTENANCE versus TIME BASED MAINTENANCE



# **PERFORMANCE IMPROVEMENT**

**DIFFERENT PERFORMANCE DEMANDS ARE TO BE DISTINGUISHED**

**FOR EXAMPLE IN:**

- INDUSTRIAL AREAS**
- RESIDENTIAL AREAS**
- AGRICULTURAL AREAS**

**ANALYSE THE OUTAGE CAUSES AND POWER QUALITY PROBLEMS FOR THE DIFFERENT AREAS**

**PREPARE IMPROVEMENT PLANS FOR THE TOP 10 WHICH HAS BEEN IDENTIFIED**

# CONCLUSIONS

- **THE BUSINESS OF NETWORK OPERATORS HAS CHANGED**
- **OPTIMIZING CAN BE REACHED BY MEANS OF ASSET MANAGEMENT AS AN INTEGRAL APPROACH**
- **METHODOLOGIES FOR AN INTEGRAL APPROACH HAVE BEEN DEVELOPED AND ALREADY PROVED TO BE SUCCESSFUL**
- **COST SAVINGS UP TO 30% CAN BE REACHED WITHOUT EFFECTING THE RELIABILITY AND EVEN WHILE IMPROVING THE RELIABILITY**

# ASSET MANAGEMENT

*Optimizing the business  
of  
electricity transmission and distribution*

**End of presentation**

**Paper with more information available**