A rehabilitation planning handbook for water supply infrastructures

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LESAM 2009 – Miami 11-13 November 2009
Contents

- Context and handbook objective
- Rehabilitation drivers
- Integrated approach for rehabilitation
- Handbook contents
- Strategic planning
- Tactical planning
- Final remarks
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The case of Portugal

Remarkable evolution in the past 15 years

- Quality of the services provided
- Institutional and organisational framework
- Investments made in new infrastructures
- Regulatory environment
- Management skills
- Scientific developments
What is needed?

- International networking
- National & regional SAM policies
- Change of culture of politicians, policy makers, utility managers, engineers, customers, society in general
- Cooperation between all stakeholders (utilities, users, researchers, academy, regulators, manufacturers, consultants, enterprises)
  - Individual initiatives are not effective
- Clear guidance, training and support tools to decision makers
What is needed?

- National & regional perspectives
- Change of culture of politicians, policy makers, utility managers, engineers, customers, society in general
- Cooperation between utilities and research, academy, regulators, industry (manufacturers, consultants, enterprises) and users – Individual initiatives are not effective
- Clear guidance, training and support tools to decision makers

(2009-2011)

www.aware-p.org

or

www.aware-p.com
AWARE-P vision

- Awareness
- Change of culture
- Networking
- Know-how for sustainable urban water services

For the international community
AWARE-P outputs  
(by 2011)

- Two rehab handbooks
- Computer decision support applications
- User manuals of the software
- Pilot studies / demonstration cases
- Training courses (direct teaching)
- Materials for e-learning courses
- Dissemination platform (web-based)
- Technical and scientific papers
AWARE-P outputs
(by 2011)

- Two rehab handbooks
- Computer decision support applications
- User manuals
- Pilot studies
- Training courses
- Materials for e-learning courses
- Dissemination platform (web-based)
- Technical and scientific papers

- Portuguese & English public domain / open source software (EPANET style)
AWARE-P outputs
(by 2011)

Two rehab handbooks

- Computer decision support applications
- User manuals of the software
- Pilot studies / demonstration cases
- Training courses (direct teaching)
- Materials for e-learning courses
- Dissemination platform (web-based)
- Technical and scientific papers
Handbooks

- **Scope:**
  - HB1 – Rehab of transmission and distribution systems
  - HB2 – Rehab of wastewater drainage systems

- **Objective**
  - Provide detailed guidance for rehab planning

- **Published by IRAR (the National Regulator)**
  - Full drafts ready
  - Currently under public discussion & revision

- **Directed to utility managers**
  - asset owners, asset managers and asset operators
Handbooks

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REHAB DRIVERS:

✓ Promoting adequate service levels and reliability
✓ Managing risk of service failure, taking into account users’ needs and risk acceptability
✓ Extending service life of existing assets
✓ Improving investment and operational efficiency
✓ Justifying investment priorities
✓ Improving the sustainable use of water and energy
✓ Planning for climate change in a phased way
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Rehab tactical planning process

- Define Rehab TACTICS and produce rehab plan

Consider asset solutions
Consider non-asset solutions

Monitor and review

Strategic level

- Define rehab STRATEGIES, as part of the utility strategic plan
- External global context
- Stakeholders’ specific context
- Internal context

Tactical level

Operational level

Implement rehab plan(s)
PDCA-based process

- P: Plan
  - (i) Identify problems
  - (ii) Investigate causes
  - (iii) Select solutions

- D: Do
  - Implement solutions

- C: Check
  - Monitor results

- A: Act
  - Identify and implement opportunities for continuous improvement
At each stages of planning process...

Plan review

1. Objectives & targets
2. Diagnosis
3. Plan production
4. Plan implementation
5. Plan monitoring control
Contents

- Context and handbook objective
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- **Handbook contents**
  - Strategic planning
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  - Final remarks
# HANDBOOK CONTENTS

## PART I – General context
1. Introduction
2. Rehabilitation relevance and basic concepts
3. Rehabilitation in the context of infrastructure asset management

## PART II – Integrated approach to rehabilitation
4. Global framework
5. Rehabilitation strategic planning
6. Rehabilitation tactical planning
7. Rehabilitation operational planning
8. Rehabilitation planning for small and medium utilities

## PART III – Rehabilitation support tools and techniques
9. Rehabilitation support tools and methodologies
10. Rehabilitation techniques

References
Appendices
HANDBOOK CONTENTS

PART I – General context

1. Introduction
2. Rehabilitation relevance and basic concepts
3. Rehabilitation in the context of IAM

• Handbook introduction (scope, structure, target public)
• Rehab relevance (drivers, consequences, symptoms)
• Rehab and IAM (management components - ISO 24512: 2007)

4. Global framework
5. Rehabilitation strategic planning
6. Rehabilitation tactical planning
7. Rehabilitation operational planning
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4. Global framework
5. Rehabilitation strategic planning
6. Rehabilitation tactical planning
7. Rehabilitation operational planning
8. Quick reference guide

› The core of the handbook
› Guidelines for level of planning
› Digest of the procedure and guide or small and medium utilities

Appendices
HANDBOOK CONTENTS

PART I – General context

› Main support tools (software applications, methodologies, equipment)

› Pipe and storage tank rehabilitation techniques

PART III– Rehabilitation support tools and techniques

9. Rehabilitation support tools and methodologies

10. Rehabilitation techniques

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- Context and handbook objective
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- **Strategic planning**
- Tactical planning
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Strategic planning

Plan review

- Strategic objectives & targets
- Diagnosis
- Plan production
- Plan implementation
- Plan monitoring control
Strategic planning

Strategic objectives & targets

- Aligned with mission and vision
- Based on the ISO 24500 (6 strategic objectives)
- Define assessment criteria and performance measures
- Define short, medium and long term targets
Strategic planning

- Strategic objectives & targets
- Diagnosis
  - Assessment of current performance
  - Characterization of **external context**
  - Characterization of **stakeholders specific context**
  - Characterization of **internal context**
  - **SWOT** analysis
- Plan monitoring control
Strategic planning

- Strategic objectives & targets
  - Defines *where to go*
  - Formulates strategies
  - Produces the plan with the summary of previous steps (including strategies)

- Diagnosis

- Plan production

- Plan monitoring & control

- Review
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- Context and handbook objective
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Tactical planning

1. Tactical objectives & targets
2. Diagnosis
3. Plan production
4. Plan implementation
5. Plan monitoring control

Plan review
Tactical planning

Tactical objectives & targets

› Define **tactical objectives** aligned with strategies
› Define **tactical assessment criteria** and **performance measures**
› Define **tactical targets**
Tactical planning

Tactical objectives & targets

Diagnosis

- Identification and analysis of information
  - Identification of necessary information
  - Identification and analysis of existing data
  - Identification of information gaps
  - Establishment of procedures for data collection

- Information collection and performance assessment
  - Identification of critical components and subsystems
  - Assessment of reference (current) situation
  - Prediction of future situation based on *status quo*
  - Identification of priorities for critical components and subsystems
Tactical planning

- Tactical objectives & targets
- Diagnosis
- Plan production

- **Identification and analysis of alternative solutions**
  - Identification of alternative solutions
  - Prediction of future performance for alternative solutions
  - Selection of the best solution for each subsystem
  - Establishment of priorities

- **Formulation of tactics**
  - Infrastructural rehab tactics
  - O&M tactics
  - other tactics

- **Plan production**
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“Digest” with simplified procedures included
Some hints

✓ CEO decide to change statu quo
✓ SAM is all about people
✓ Go phased, step by step: make it simple
✓ Get the most of pre-existing data: recycle!
✓ Balance external expert advice
✓ Do not start by buying IAM software
✓ Share problems and solutions with peers

- Leadership
- Co-ordination
- Collaboration
- Corporate culture
- Acceptance
- Team building
- Motivation
- Commitment
- Know-how
Some hints

✓ CEO decide to change
✓ SAM is all about people
✓ Go phased, step by step: make it simple
✓ Get the most of pre-existing data: recycle!
✓ Balance external expertise
✓ Do not start by buying IAM software
✓ Share problems and solutions with peers

✓ Make it happen
To conclude...

- SAM is a must for any urban water utility, in any country

- SAM needs to be addressed at strategic, tactical and operational levels

- The AWARE-P project and its rehab handbooks are a step forward
Acknowledgements

All AWARE-P partners and sponsors