# A Conceptual Methodology and Practical Guidelines for Managing Data and Documents on Hydroelectric Projects

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# Managing Project Data

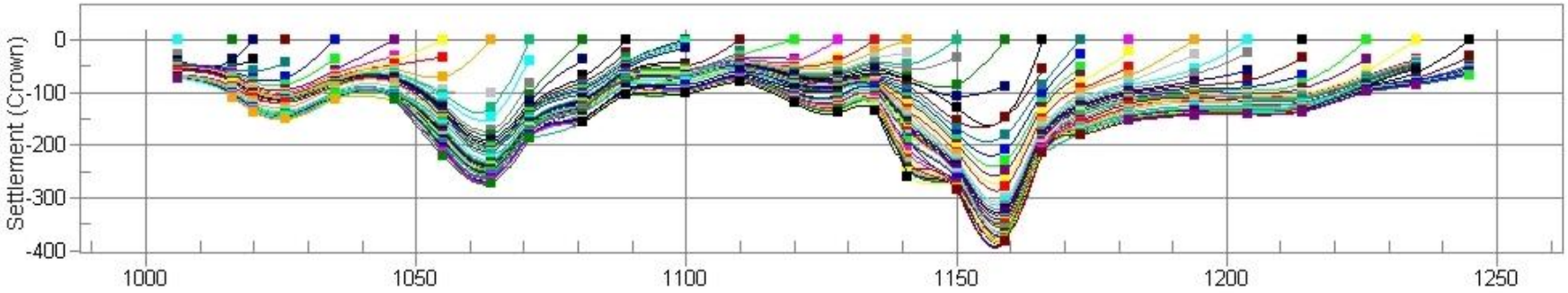
## Overview

1. Data Importance
2. Problem
3. Benefits
4. Procedures
5. Technical Issues
6. Practical Tips

# 1. Data is Important!

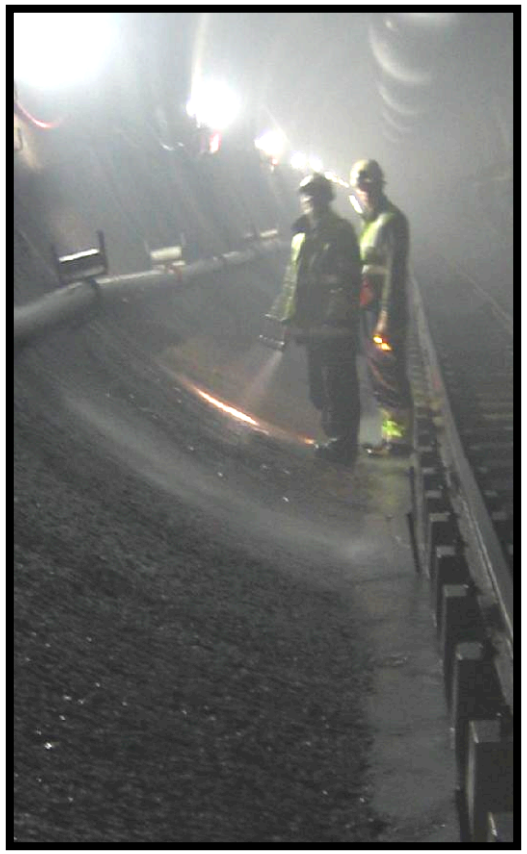
Hydro projects produce a ***lot*** of data

1. **Basis for critical decisions**
2. Many types of data
3. Consequences of loss
4. Long lifetime (technology issues)



# 1.1 Data Types

1. Site investigation (geology, etc.)
2. Inspections
3. Materials testing
4. Quantities
5. Profiles
6. Monitoring
7. Numerical Simulations
8. Production (TBM) data
9. and more..



*Data is the basis for technical and financial decisions*

# 2. Project Data Poorly Managed

1. **Poor awareness of problem**
2. Data islands
3. Proprietary formats
4. Difficult to find and correlate
   - With documents and other data
5. No formal procedures
   - No culture of checks, corrections, approvals
   - Which data is authoritative?

*If you can't find it, understand it, or trust it, the data is useless*

# 3. Benefits of Data Management

1. Problem solvers need access to data
   - Synergy of correlating drawings, documents and data
   - Saves engineers, managers and experts time
   - Increases likelihood of correct decisions
2. Promotes transparency
   - Provides authority for decisions
   - Reduces conflict
   - Proves regulatory compliance
3. Operations & maintenance savings

*Increases project efficiencies, reduces risk*

# 4. Procedures

1. Start early
   - Define authoritative set of project data
   - Contractual provisions for data submittals
   - Get all parties to agree
2. Provide budget & personnel
   - Data manager & librarian in project team
   - Establish a QM culture that includes data
3. Setup formal procedures
   - Treat data like drawings
   - Define in project handbook and provide training

*Make someone responsible and give them authority*

# 4.1 Formal Procedures

1. Define workflow
   - Collection (forms and data entry)
   - Checking (check prints)
   - Correction (audit trail)
   - Approval (distribution)
2. Define responsibilities
   - Who performs and signs for each step? How?
3. Define a classification system
   - Location, work type, project phase, data type, WBS, etc.
   - Helps you find data & catch inconsistencies

*Procedures ensure you can find, understand and trust your data*

# 5. Technical Issues

1. Central registry for all data
   - Store data files in your document management system?
   - Archive PDF copies of signed-off data
2. Document all data formats
   - Protect against knowledge loss
   - Can all applications export (and import) data?
3. Define a project geometry
   - Coordinate system & chainage for locations
4. Consider data and presentation separately
   - Raw data should not be thrown away
   - New uses for data and report formats evolve

# 6. Practical Tips

1. Allow time for setting up systems and get advice
2. Select IT systems based on project needs
3. Use centralized servers to hold authoritative copies of data
4. Define access roles and rights for different classes of data
5. Make paper input forms that match computer screens
6. Make checklists for collecting, checking, correcting and approval procedures
7. Define procedures for making check prints of data
8. Get someone with good IT skills on the team

*More at: http://wiki.softxs.ch/softxs/Info/WhitePapers*