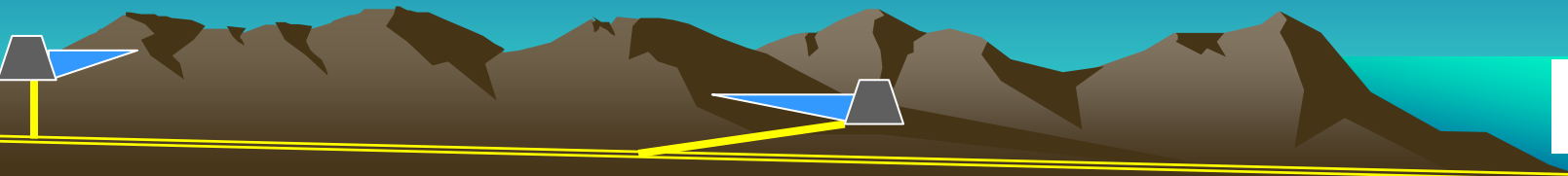


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Ingenionics Project Control System Overview

**An internet supported common database
for the management of complex projects by the:
Employer,
Designer,
Project Manager,
Contractor
and
Operator
alike**



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Project Control System

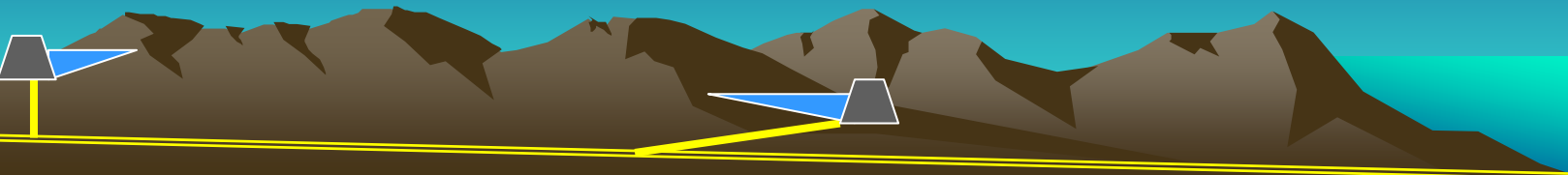
A unique and comprehensive database for the construction industry

with a single point of entry

for updating information as it becomes available or superseded

Always the latest versions available to all parties

Automatic updating of records providing
a traceable and transparent audit trail



The Power of a Coordinated Project Control System

Capabilities of the system

1	Ability to relate ALL AVAILABLE INFORMATION to the OUTCOME OF THE PROJECT	OBJECTIVE
2	Ability to ANALYSE and CONSOLIDATE any data IMMEDIATELY	SPEED
3	Ability to SORT and SELECT from the Database AS and WHEN required	POWER
4	Ability to CONSOLIDATE INFORMATION on ANY SELECTED CRITERIA	ORGANISATION FLEXIBILITY
5	Ability to COMPARE information with RESULTS from OTHER SOURCES	DEPARTMENTAL CONSISTENCY
6	Ability to use COMMON CODING STRUCTURE for all ASPECTS of Project Development	REPORTING CONSISTENCY
7	Ability to analyse the PRODUCTIVITY of ANY CRITERIA	SHORT TERM PRODUCTIVITY ANALYSIS
8	Ability to RELATE INFORMATION gathered to PHYSICAL SITUATIONS	RESOURCE-EXPENSE COMPARISON
9	Ability to CROSS-RELATE ENGINEERING, PROCUREMENT, CONSTRUCTION, SUPERVISION	WORK BREAKDOWN STRUCTURE
10	Ability to SUB-DIVIDE into yet further COMMON ELEMENTS	DELIVERABLES PER DISCIPLINE
11	Ability to relate COST to PROGRESS	EARNED VALUE
12	Ability to COLLATE BUDGET, COST ANTICIPATED and ACCOUNTS PAYABLE	CONTROL OF LIABILITIES
13	Ability to INTERFACE with OTHER INFORMATION SYSTEMS	ADAPTABILITY
14	Ability to ANALYSE OVERHEADS	ORGANISATION EFFECTIVENESS
15	Ability to BREAKDOWN into CONTROLLABLE and MEASURABLE ELEMENTS	EFFECTIVE CONTROL
16	Ability to MAXIMISE TECHNOLOGY and MINIMISE MANPOWER requirements	ECONOMY
17	Ability to IMPROVE as TIME PROGRESSES	QUALITY

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Project Control System

Anyone can adopt the system even if the project has commenced because the benefits of a common database accessible by any party far outway the cost of any potential claims due to differences in documentation or the cost of individual filing systems

Ingenionics is your permanent Project Filing Assistant

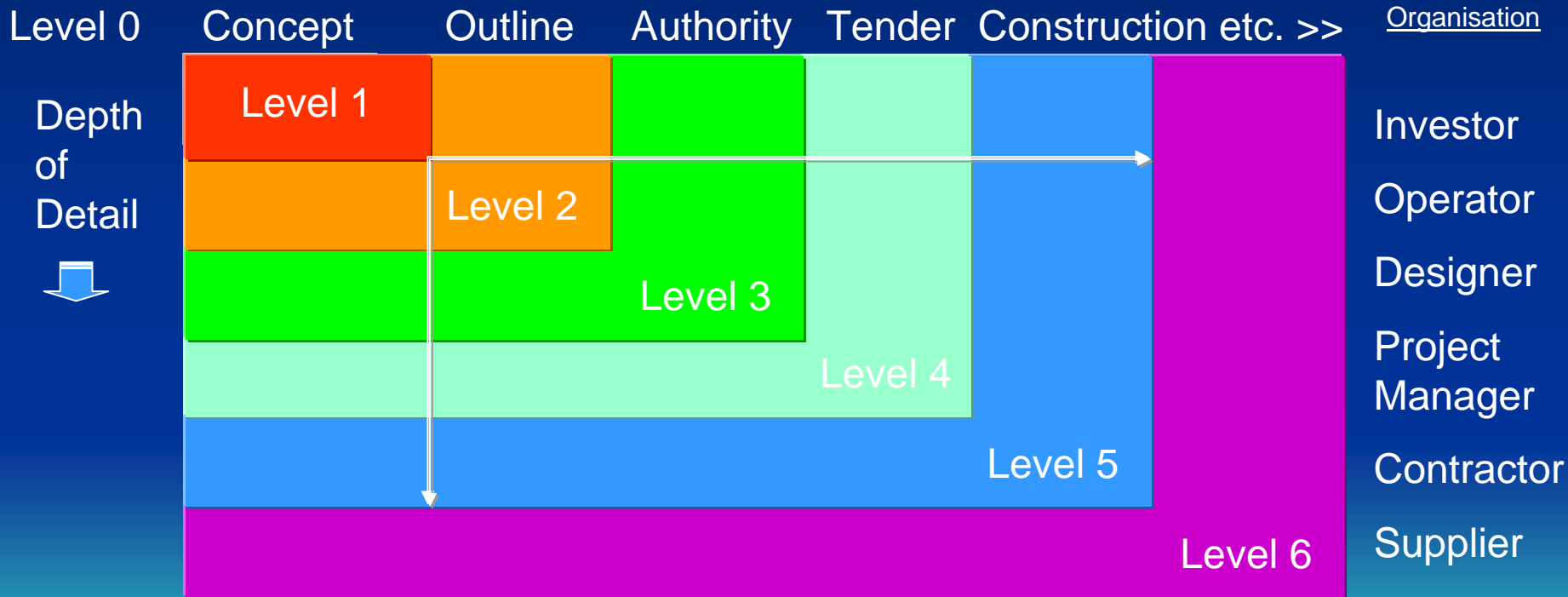
Records can be classified automatically or individually providing flexibility for the users

Project Control System

SCOPE:

Common Project Life Data Base

Data Detail expanded as information becomes available
e.g. Level of Detail corresponding to Design Phase >>



Project Control System

The System provides:

Continuous information update
via
the Internet and WIFI using GPR telephone
& RFID technology
both on the surface and underground.



Head Office:

Employer

Project
Manager

Designers

Contractors

Suppliers

Site Office 2

Site Office 1

DAB Drive 1

TBM Drive 2

Workshops

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Project Control System

The System uses the same coordinated data structure for all project aspects:

Surveys, Layout, Operational and Technical Units

Outline Design to Detail Working Drawings

Contract Conditions, General and Detail Specifications

Planning and Progress Reporting

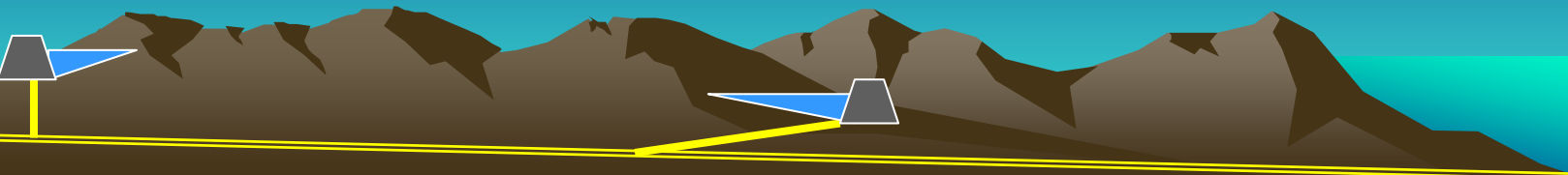
Risk Analysis and Risk Management

Resource Analysis and Management

Estimating and Costing

Auditing

Communication, Documentation and Drawing Management



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*can be used whether on the surface or underground
for Design, Construction or Maintenance*



Dams



High Speed Railways



Metros



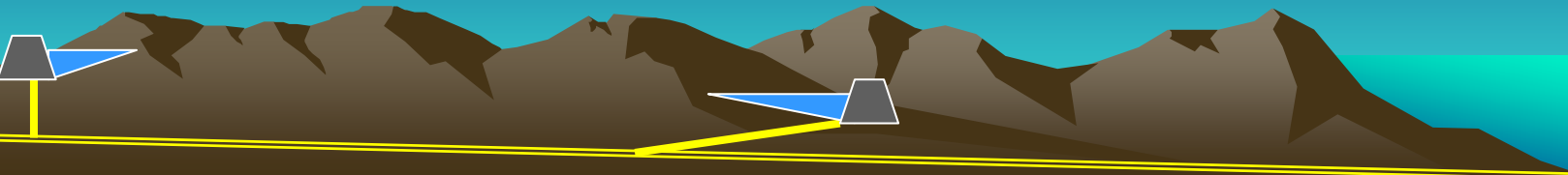
Hydropower



from Concept to Detail



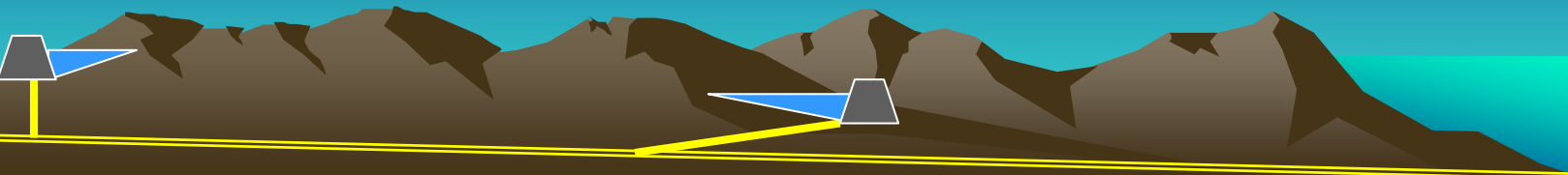
Road Tunnels



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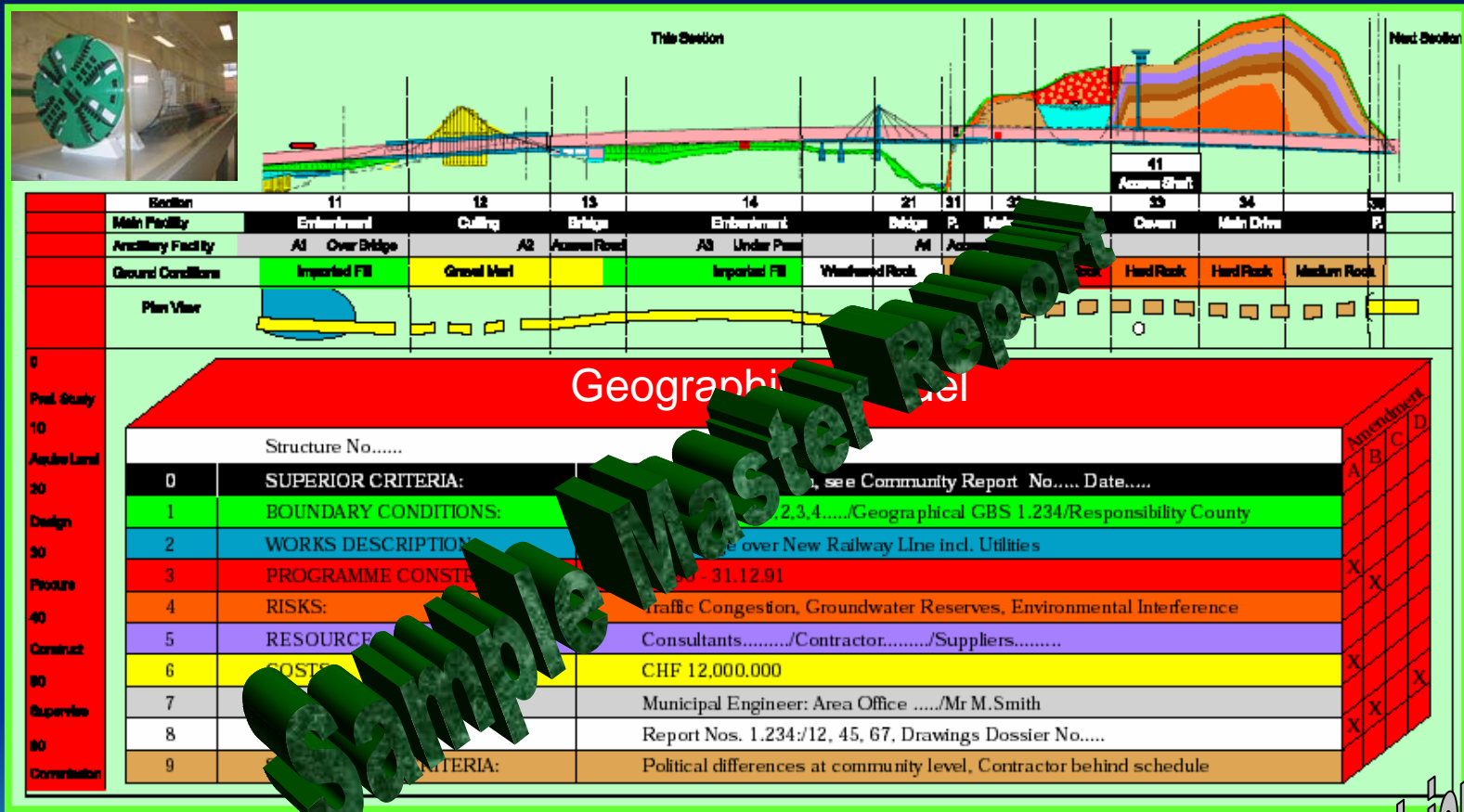
Modelling the relationships

Ingenionics
uses a
common general framework
to
visualize the relationships



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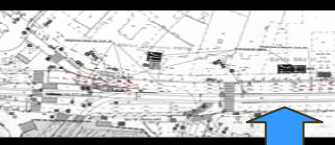
Project Control Management Model



Project Control Management Reporting Panel

Revisions

Classification	CSD-14 - Headrace Tunnel	Document Type	CWG - Construction Drawing
Contract	CSD-14 CAN EC	Project Phase	CONSTR - Construction
Discipline	C-CAN or Structural	Work Category	DES - Design
Location	1 - General		
Work Type	01 - Rock support		
Sequence Number	123		
Alignment	HR - Headrace Tunnel	KKS Process	
Change	1x100 - 1x200	KKS Installation	
Elevation		KKS Location	
Supplier	Fandreas		
External Key			



Equal Revenue Design: Example Arrangement of Rock Bolts in Cross-Section

EMBEDDED PLANS

Step 1 - First General Layout to Economic Review

Step 2 - Second General Layout to Economic Review

Step 3 - Final General Layout to Economic Review

Figures 13 General Level based on operational and geological conditions

Figures 14 General operational level based on best experience to the location

Figures 15 Final General Level to Economic Review

Figures 16 Design of rock bolting arrangement and layout of excavation

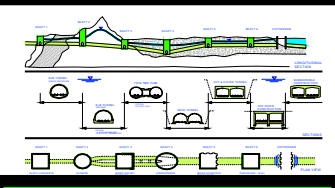
Figures 17 Details of Rock Bolt

Location / Structure Type

Hydrogeology / Drifts / Slips

Chalk / Excavation

Stage 1
Stage 2
Stage 3



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provides continuous staged development of information

Initial to Final Design Stages

Structure No.	Structure Name	Structure No.	Date
1	SUPPLIER CRITERIA		
2	BOUNDARY CONDITIONS		
3	MODIFIED CONSTRAINTS		
4	PROGRAMME CONSTRAINTS		
5	DESIGN CRITERIA		
6	COSTS		
7	CONTROL		
8	DOCUMENTATION		

Sample shot

ACTIVITY RESOURCING

ACTIVITY PROGRESS

COST MANAGEMENT

ESTIMATING

Classification	CDD-14 - Headrace Tunnel	Document Type	CDD - Construction Drawing
Contract	CDD-14 CAN EC	Project Phase	CONSTR - Construction
Discipline	C-CAN or Structural	Work Category	DES - Design
Location	1 - General		
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Sequence Number	123		
Alignment	HR - Headrace Tunnel	KKS Process	
Challenge	1x100 x 1x200	KKS Installation	
Elevation		KKS Location	
Supplier	Fordwirth		
External Key			

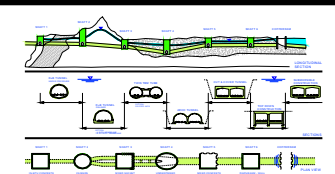


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provides instant visualisation

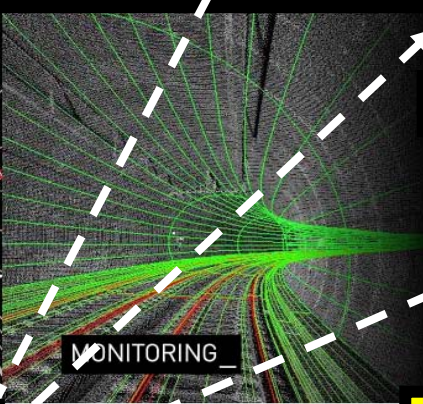
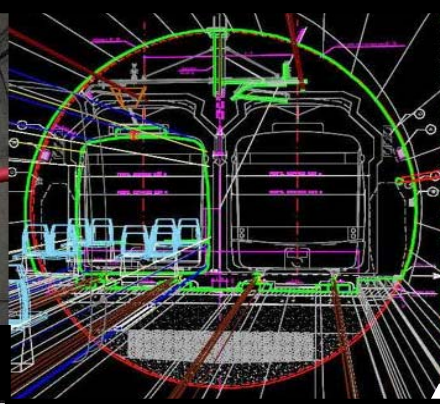
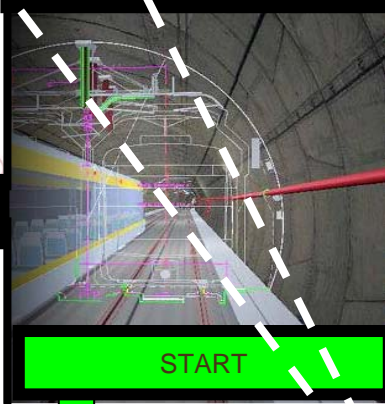


Figure 13 Overall level based on operational and geological conditions
 Figure 14 Overall operational level based on non-operational DA line location
 Figure 15 Overall level based on geological and hydrological conditions
 Figure 16 Overall level based on geological and hydrological conditions



ACTIVITY RESOURCING

SURVEYING AND VISUALISATION



ACTIVITY PROGRESS

START

MONITORING

COST MANAGEMENT

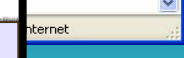
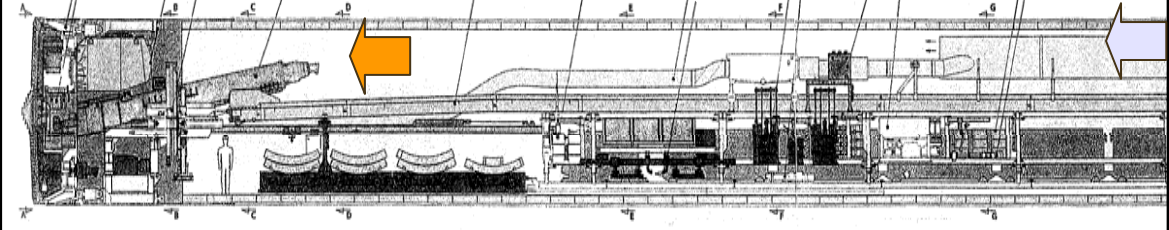


Item	Description	Quantity	Unit	Value
1	Concrete	1000	m ³	100000
2	Steel	500	kg	50000
3	Rebar	200	kg	20000
4	Formwork	100	m ²	10000
5	Labour	1000	hours	10000
6	Equipment	10	units	10000
7	Material	1000	kg	10000
8	Energy	1000	kWh	10000
9	Water	1000	m ³	10000
10	Other	1000	kg	10000

Sample shot

MASTER CONTROLS

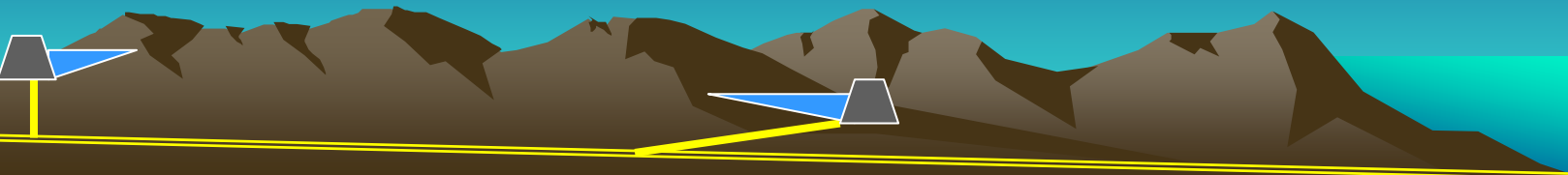
ESTIMATING



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Interested ?

Please do not hesitate to contact us for details



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Part III: Ingenionics Project Controls Sample Screen Shots

Part IV: Ingenionics Worked Examples

Part V: Ingenionics Project System in Detail

Part VI: Experience

