

#### SuperMap GIS Enables "City Blood"

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5th International Workshop on GIS Technology and Application

# **Existing Problems**

Underground space resources are becoming increasingly tense, and pipeline planning and management are facing severe challenges

The refined level of pipeline planning and management needs to be improved

The intelligent level of pipeline management is not compatible with the status of global cities

Arranged in a crisscross pattern

Strong concealment

High density



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**P2** 









### **Digital Base**





# **Surrounding Environment Modeling**







# SuperMap Pipeline Data Technical Scheme

In response to the industry demand for pipelines,

various stages of pipeline data management and

sharing.

Data

check

SuperMap provides a GIS based pipeline processing

technology scheme to provide technical support for

#### Pipeline data



#### Application presentation layer







iMobile

iClient

Online

iPortal



#### Data Check

Whether the elevation field exists

Whether the pipe point is on the pipeline

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#### **Pipeline Data Processing**

#### Data Convertion

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# Data Storage





#### **Pipeline Full Cycle Application Process** Import Building **Build 3D** Pipeline pipeline **3D** Analysis pipeline Network data Application scene Dataset (DWG, MDB)









### **3D Pipeline Scene - Pipeline**





#### Round tube

Square tube



# **Construct 3D Pipeline**

# Automatic construction of 3D pipeline symbols

相机高度 69.15 m

# **3D Pipeline Scene - Pipe Points**





#### Ancillary facilities



Well



Characteristic point

# Construct Elbow, Tee and Cross

### Automatic generation of adaptive pipe point symbols

相机高度 69.15 m

#### Build Valves and Wells





Automatic generation of adaptive pipe point symbols

# **3D Pipeline Scene (Outdoor)**



# **3D Pipeline Scene (Indoor)**



#### **Multi Terminal Experience of Municipal Facilities**



# **Pipeline Full Cycle Application Process**





## **Pipeline Analysis Application**

Most user requirements

- Cross-sectional analysis
- ♦ Profile Analysis
- ♦ Pipeline

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comparison

Analysis of data topological relationship



- Upstream and downstream analysis
- Connectivity analysis
- ♦ Planning Rule Base
- Spacing analysis
- Burial depth
  detection

Facility Operation Management Department

> Valve closing search

- Analysis of accident impact scope
- Leakage diffusion analysis

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Requirements for installation and laying of facilities



- Engineering excavation analysis
- Weekly report
  detection and analysis
- Burial depth analysis
- Compliance analysis
- Buffer Analysis
- ♦ …







- Thematic map production
- Roller shutter contrast
- Status analysis
- Spatial query
- Attribute Query



#### 二三维一体化





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#### **Overburden Analysis**

Application: layout of municipal underground pipe gallery – soil cover analysis

Underground pipelines

3D surface modeling

3D buffer

(intersection)



Highlight the model that does not meet the soil covering requirements



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#### **Cross-sectional Analysis**

三维管线展示系统



# **Special Planning and Detailed Control Planning**



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#### **Space compliance analysis**



#### **Dimension reduction calculation (BIM 3D pipeline dimension reduction)**



# **Progress Simulation**

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#### Process Management Analysis



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## **Technology Roadmap**











#### Operation Management: Traffic Analysis C) 20/30 ℃

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亿力大厦-姚与母招出湖值18.0%



**Facility Working Status and Scope Query** 

# **Mobile Patrol Intelligent Collection**









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# **Pipeline Burst Analysis**





#### "Underground Meridians" of Beijing Urban Sub center

Auxiliary Design and Management of Urban Comprehensive Pipeline

**Application Scenario** 

#### **Technical Means**

2D&3D integration scenario construction AR visualization

#### Main Business

- 1. 3D integrated management of ground and underground in the whole area
- 2. Underground pipeline construction safety supervision
- 3. Pipeline data query service
- 4. Data update
- **5.63**Emergency response



#### Sichuan Tianfu New Area Pipe Gallery

#### **Application Scenario**

Integrated information management, comprehensive analysis and display of planning, construction and management of comprehensive pipe gallery in Tianfu New Area

#### **Technical Means**

#### 3D, BIM

2.

**P64** 

Use 3D space analysis to review some design parameters of pipe rack

#### Main Business

- Realize the two-dimensional and threedimensional integrated display and auxiliary analysis of the planning, construction and current data of the pipe gallery in Tianfu New Area
- Construction progress, construction investment statistics, statistics of contractors, investment trend display and analysis



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#### Nanjing Sewage Treatment Supervision Information Platform System

#### **Technical Means**

- Docking central control equipment of sewage treatment plant
- Docking with video monitoring of sewage treatment plant, supporting real-time viewing and video playback
- A picture of sewage
- Docking Beidou positioning equipment and positioning sludge truck
- 3D pipeline

2.

#### Main Business

- Supervision and management of construction and operation of sewage treatment facilities
- Collect six categories of data such as sewage plant operation data and sludge treatment data
- Management, analysis and assessment **pof-s**ewage treatment in the area





# Thank You!