



Evolution of Modeling and GIS Support to Drinking Water Security

Development of the Integrated Water Quality Security System (IWQSS)

Incident Command Information Tool (ICIT)
for Drinking Water Protection Workshop

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Overview

- ◆ Program History
- ◆ Development
- ◆ Constituents of Concern
- ◆ Users



Timeline

- ◆ TSWG & FEMA (1999 – 2001)
 - RiverSpill Pilot Projects
 - Salt Lake City Winter Olympics
- ◆ TSWG & EPA (2001- to date)
 - RiverSpill Operational
 - Additional Cities
- ◆ AwwaRF (2002 - 2003)
 - PipelineNet Enhancements
- ◆ TSWG & USFS (2003 - 2005)
 - Incident Command Information Tool



Need

Two approaches for water utility security

◆ Upgrade Infrastructure

- Costly
- Long Process
- Partial Protection

◆ Upgrade Preparedness

- Substantial & Rapid gains
- Bolster security and response while Infrastructure is being Improved



Purpose

- ◆ Develop an Emergency Response Tool
 - ◆ Assess the population at risk
 - ◆ Determine which Intakes and water treatment plants are impacted





Approach

◆ Systems Approach for Problem Solving

- ◆ Model
- ◆ Database
- ◆ Interface



Design Criteria

- ◆ Minimum manual interaction
- ◆ Minimum input data required for modeling
- ◆ Tabular and graphical output



Constituents of Concern

◆ Information Sources

- Code of Federal Regulations*
 - ◆ biological warfare agents
- US Army Medical Research Institute of Infectious Diseases
 - ◆ chemical warfare agents
- Dr. Rolf Deininger – University of Michigan School of Public Health
 - ◆ The Threat of Chemical and Biological Agents to Public Water Supply Systems



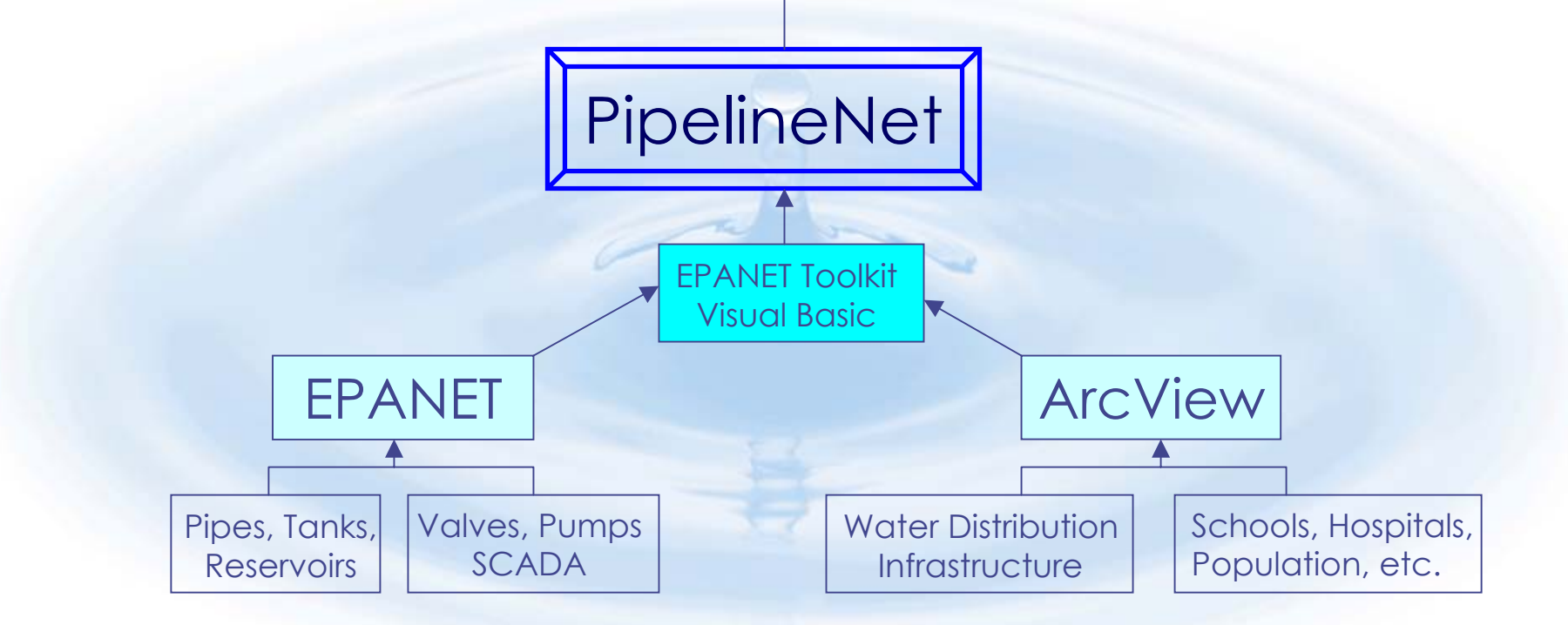
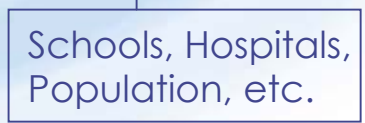
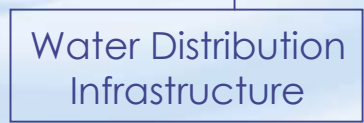
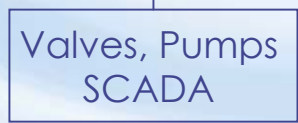
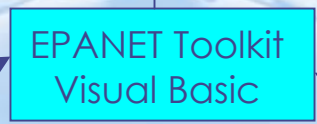
Constituents of Concern

- ◆ Toxins
- ◆ Chemical Warfare Agents
- ◆ Toxic Industrial Chemicals
- ◆ Protozoa
- ◆ Viruses
- ◆ Bacteria and Rickettsiae



IWQSS

- ◆ Comprehensive approach to water quality security
 - Analyze effects in **raw water**:
 - ◆ upstream of the intake of a water supply system
 - ◆ at the water intake
 - Analyze effects at the **treatment plant**
 - Analyze effects in **finished water**
 - ◆ At a service reservoir
 - ◆ At a point in the distribution system





Current Users

- ◆ Federal
- ◆ State
- ◆ Local