

Dam safety: Risks



- **Natural hazards (floods, earthquakes, etc.)**
- **Technical or human failure**
- **Sabotage and terrorism**

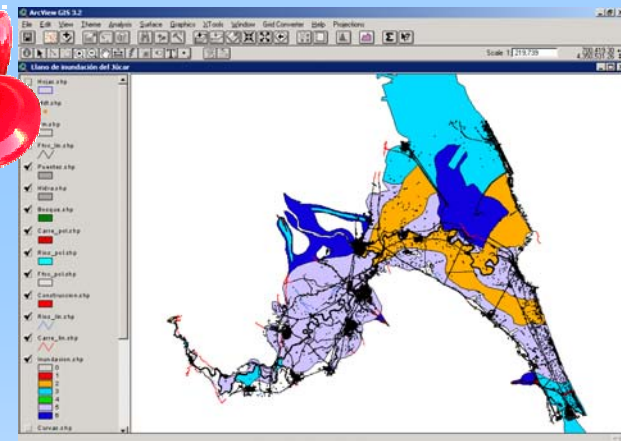
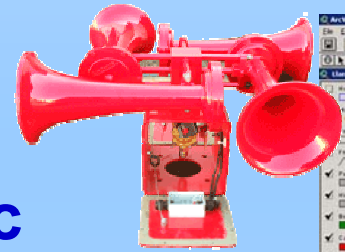


Tools for Risk Management



Hydraulic safety: Early warning systems (1980ies)

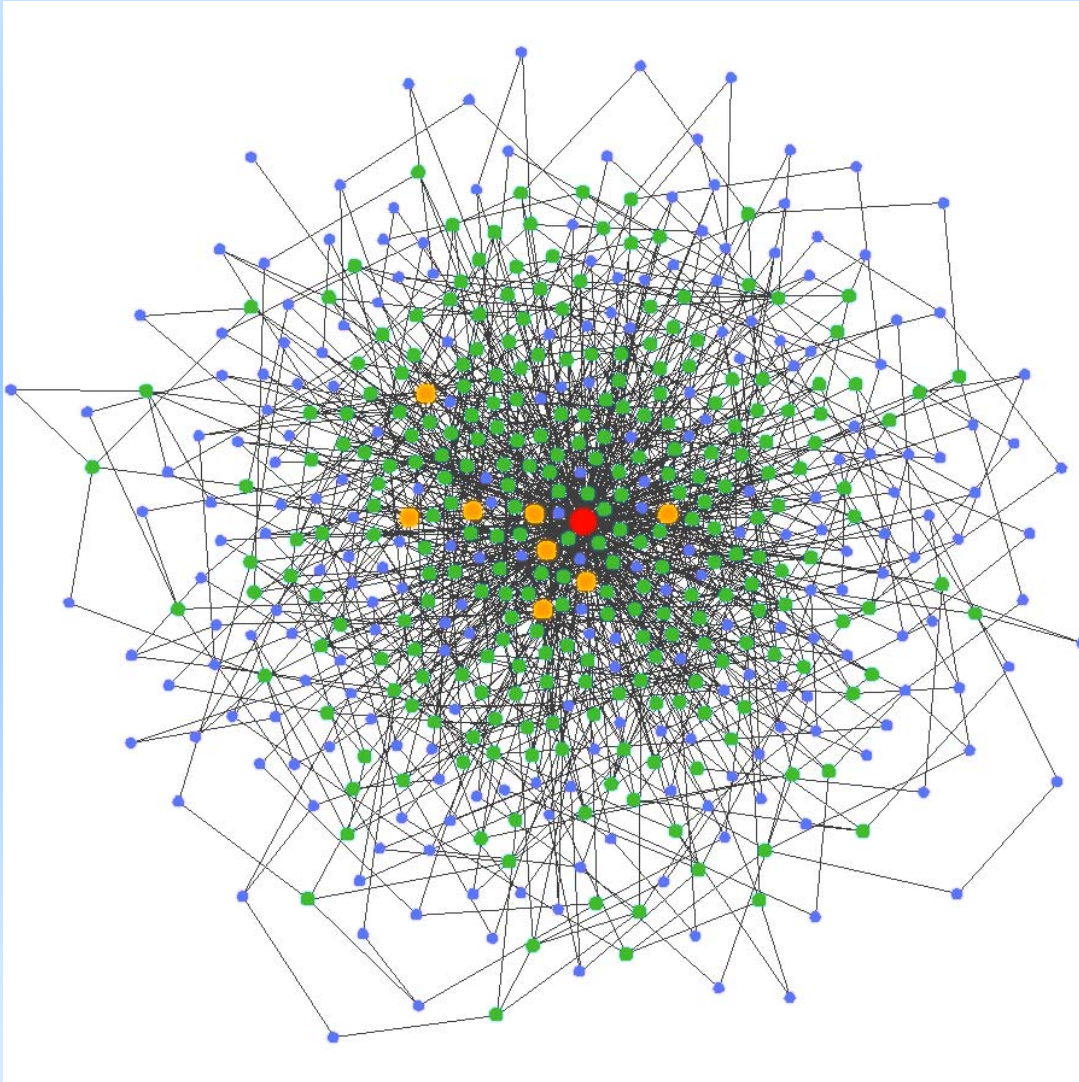
Structural safety: Dam safety regulations, including operation guidelines, periodic safety inspections and emergency action plans (1990ies)



Dam Security:

Comprehensive Risk Analysis – Present Challenge

Increasing interdependence of critical infrastructures



- **Government & Authorities**
- **Research facilities**
- **Cultural assets**
- **Broadcast & TV**
- **Health care**
- **Rescue and emergency service**
- **Water supply**
- **Transport & logistics**
- **Food supply**
- **Information Technology (IT)**
- **Energy**
- **Finance & insurance**
- **Dangerous goods**

Increasing awareness



German Ministry of the Interior:

**“Protection of Critical Infrastructures –
Risk and Crisis Management”**

**(Guideline for business companies and
public administrations)**

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Conclusions

Do we need a methodology to perform a comprehensive risk analysis?

YES!

What should the dam engineer do?

- **HELP TO REACH SYNERGIES WITH EXISTING SAFETY MANAGEMENT**
- **BE OPEN TO COOPERATE WITH PROFESSIONALS FROM OTHER DISCIPLINES**
- **APPLY RISK ANALYSIS METHODOLOGY TO GET A BETTER UNDERSTANDING OF THE OVERALL DAM SAFETY**