

When to Repair

Pipeline R&D Forum

March 22-24, 2005

Walter Kresic



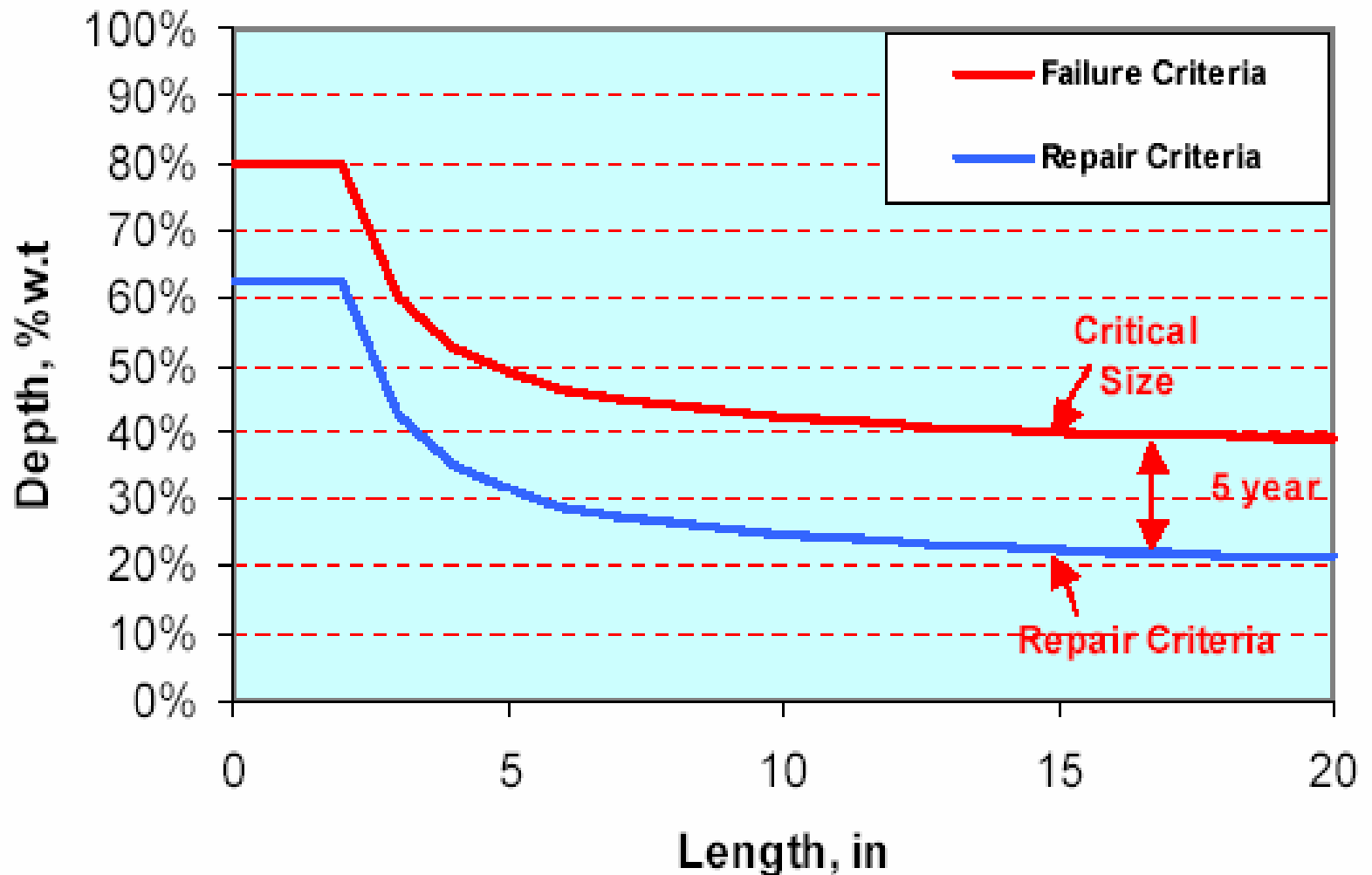
What Drives Our Planning Cycles?

- **Defect management**
- **Fixed schedules based on regulations**
- **Alignment with pipeline capacity restrictions**
- **Risk tolerance**
- **Breakdown maintenance**
- **Financial lifecycle management**
- **Other (i.e. agreement with landowners, public works)**

Technology for Defect Management

- **Risk = Uncertainty**
- **Many levels of uncertainty**
 - Where do defects exist? (Detection)
 - How bad are the defects? (Discrimination)
 - How are they changing? (Growth)
- **Low tolerance for inappropriate risk management decisions**
- **Technology streamlines our decisions**

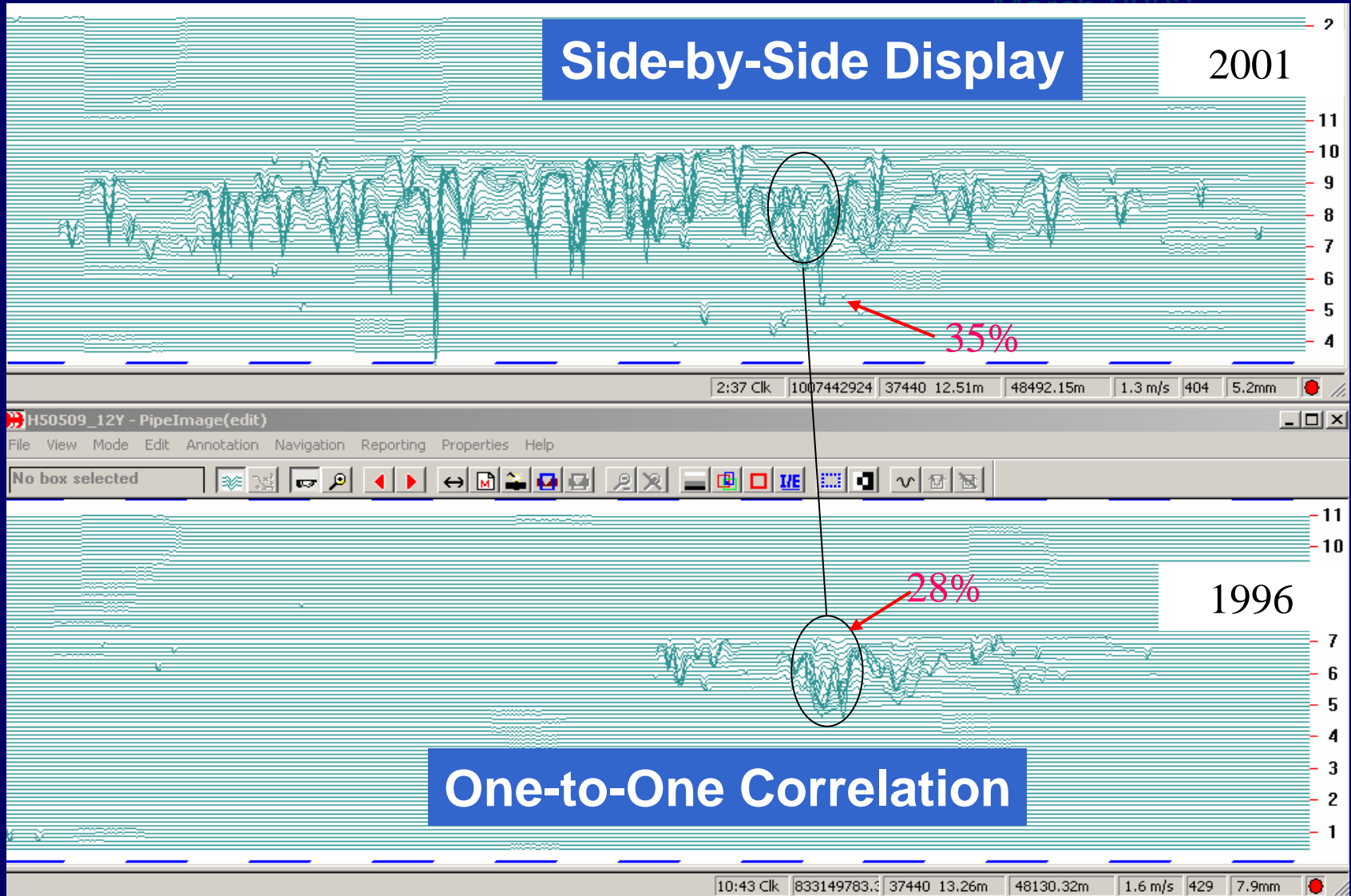
Defect Management Repair Targets



Defect Management

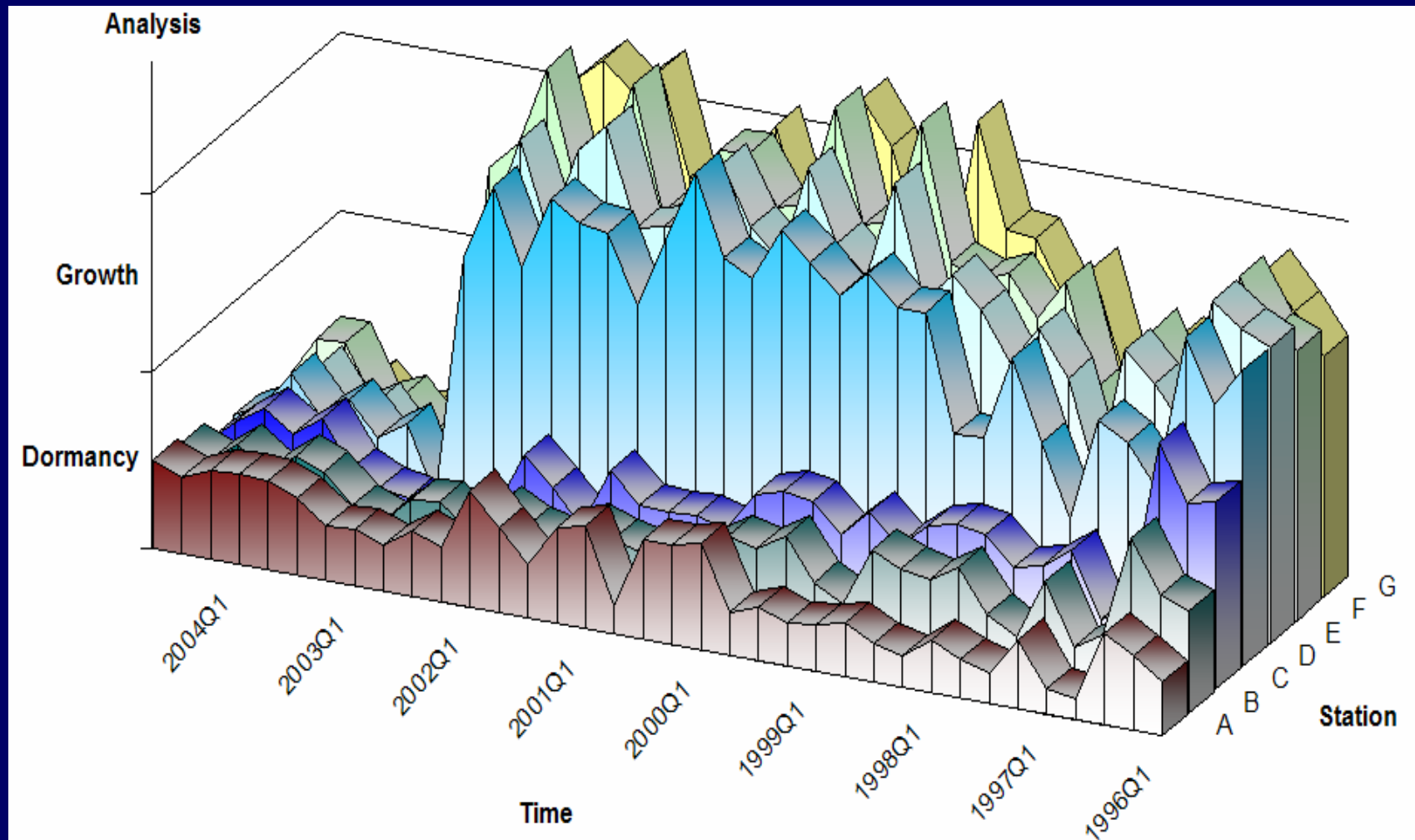
Is the state of art precise enough?

Pipeline Integrity
March 2009



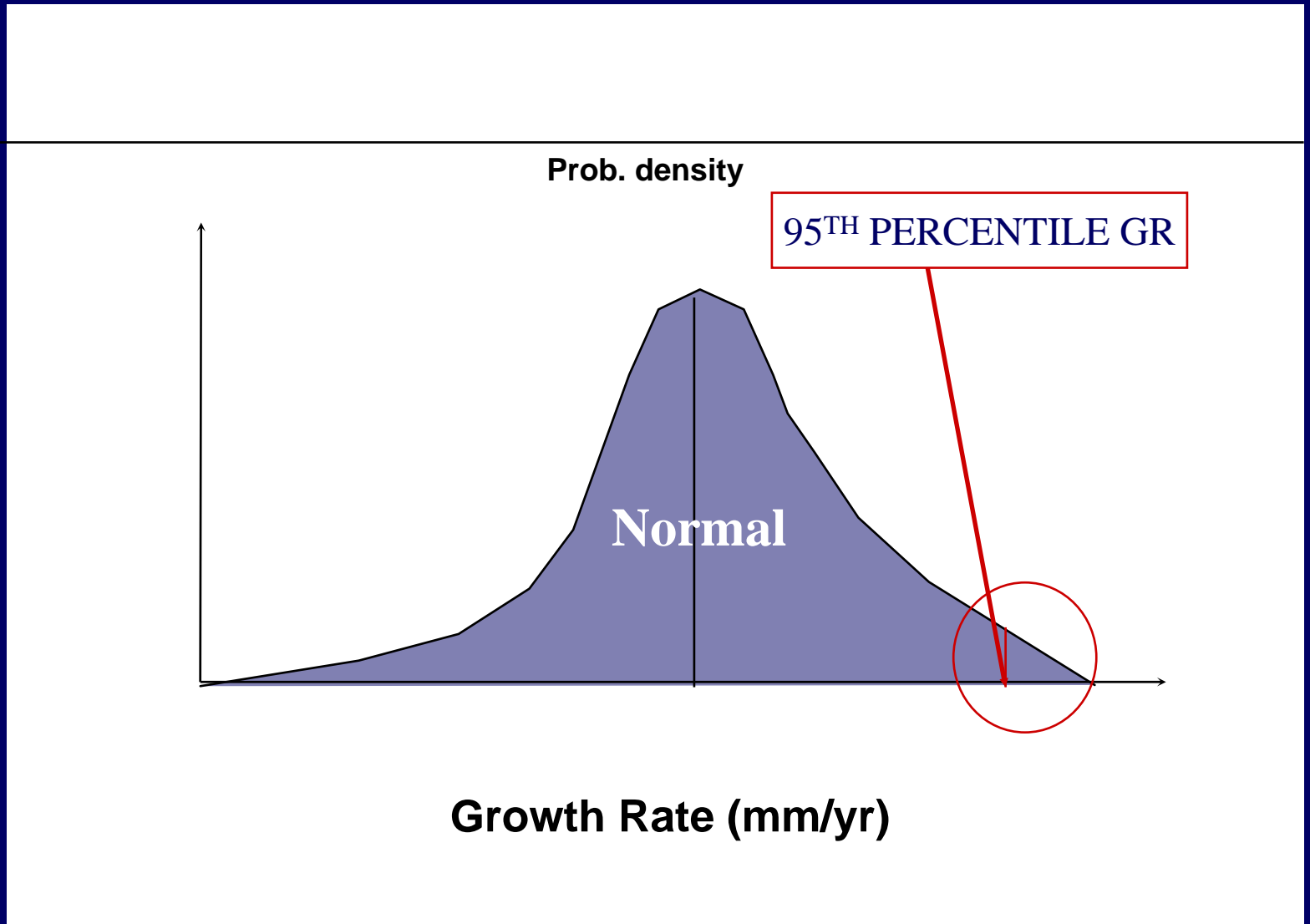
Defect Management

Is the the technology widely applied?



Defect Management

How should we deal with Uncertainty?



Defect Management

All Facets Require Technology Improvements

- **ILI tools**
- **Fitness for purpose formulae**
- **Field analysis gadgets**
- **Repair methods**
- **Trending and analysis tools**

When to Repair – Summary

(Using a Defect Management Approach)

- **Repair plans dependent upon**
 - what you know regarding the condition of the pipeline
 - level of risk tolerance associated with uncertainty
- **What is measurable, and our treatment of uncertainty, can be enhanced through achievable technology improvements**
- **Which improvements will best help us with our plans?**