Historical Advancements in High Speed Distress Data Collection

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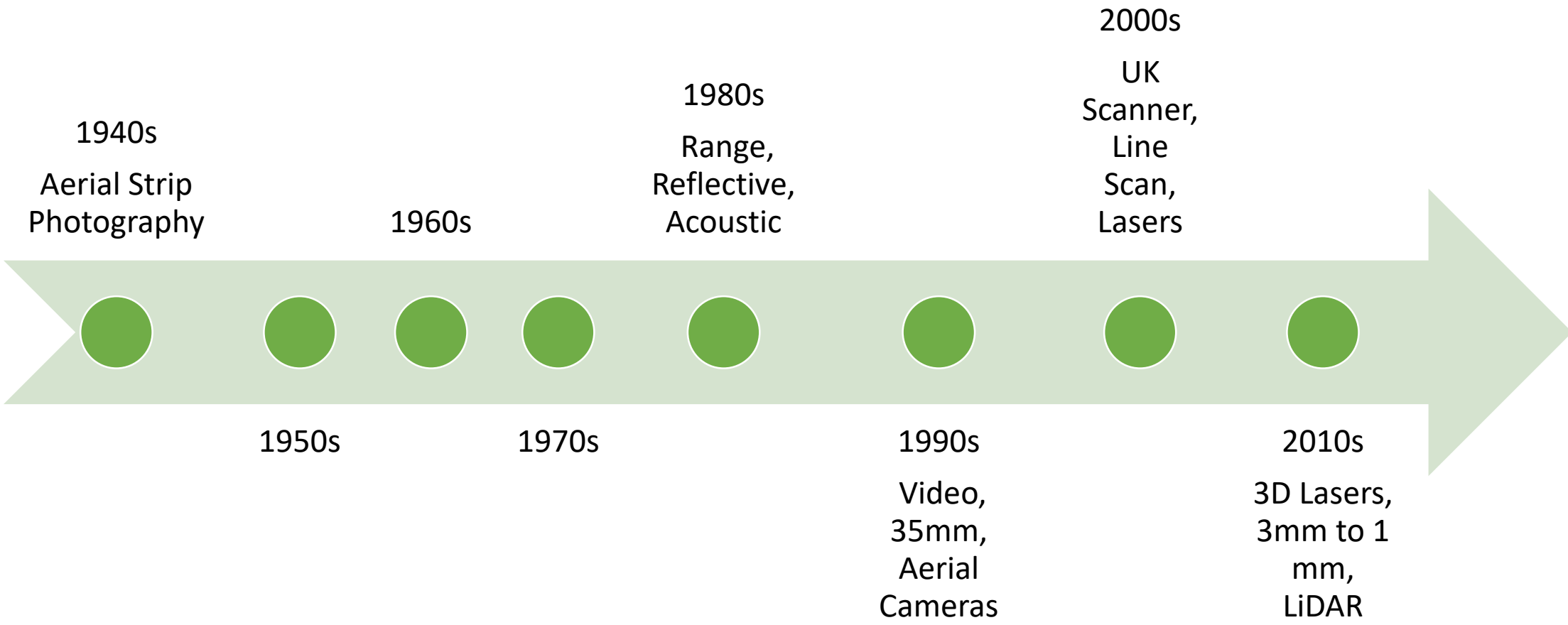
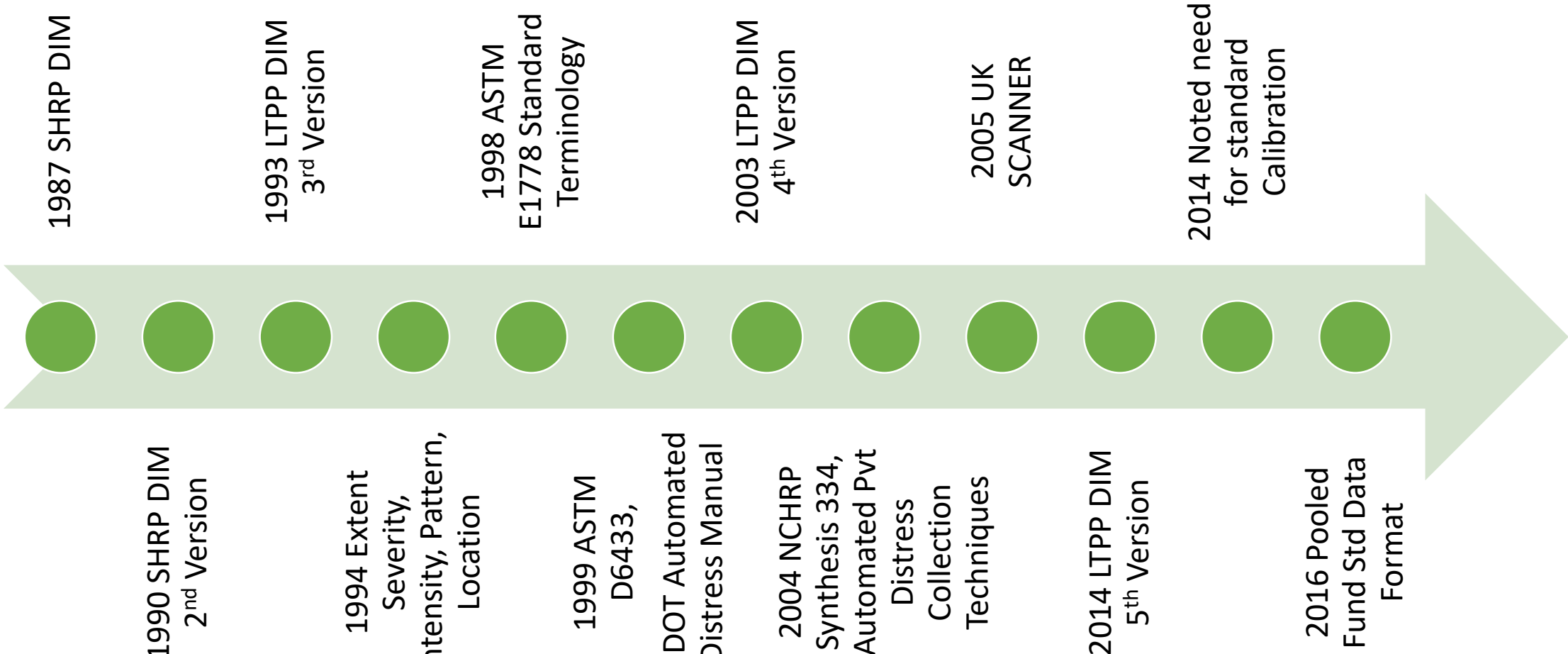
Presentation Outline

- History of Cracking Distress Data Collection
- Current Practice
- Implementation

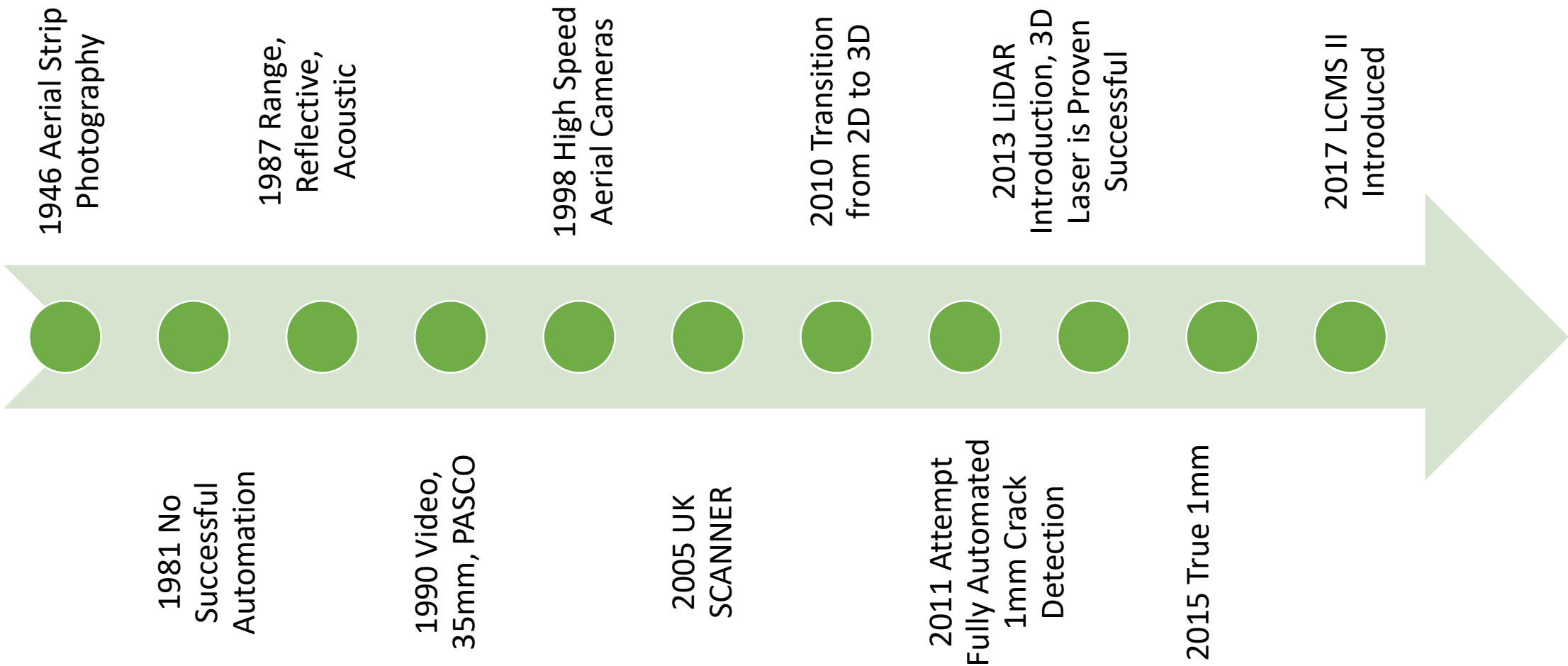
Historical Overview of High Speed Cracking Distress Data Collection



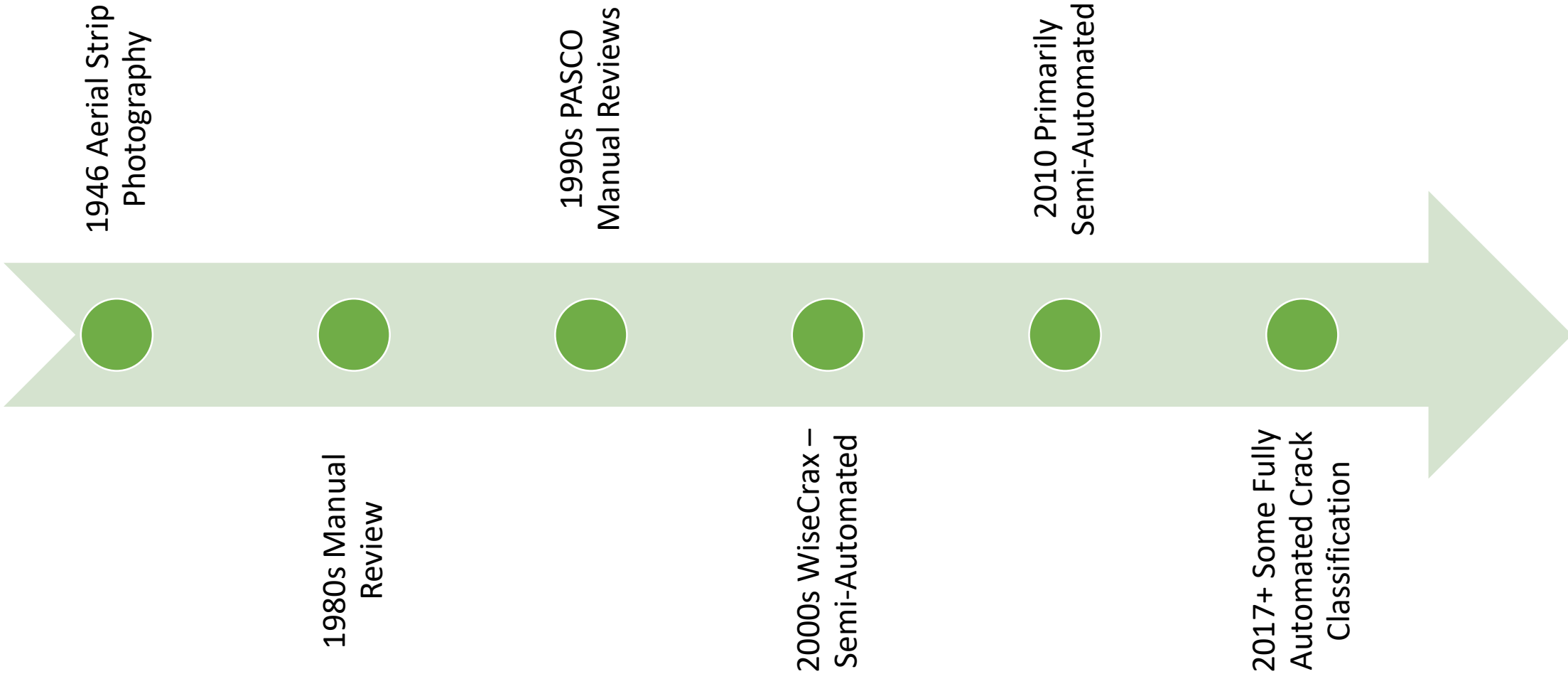
Historical Overview of National Cracking Definitions/Standards



Historical Overview of Imaging Systems



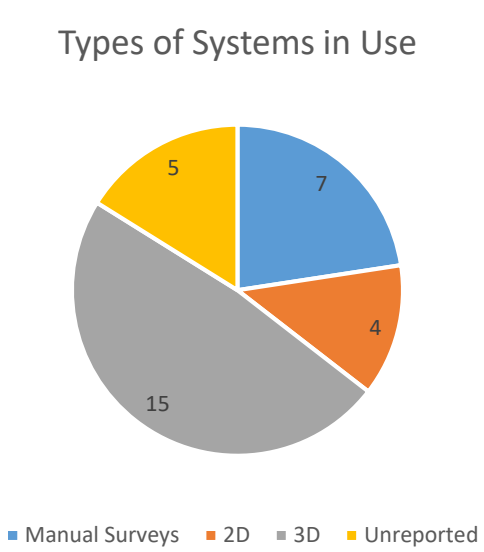
Historical Overview of Automated Cracking Classification

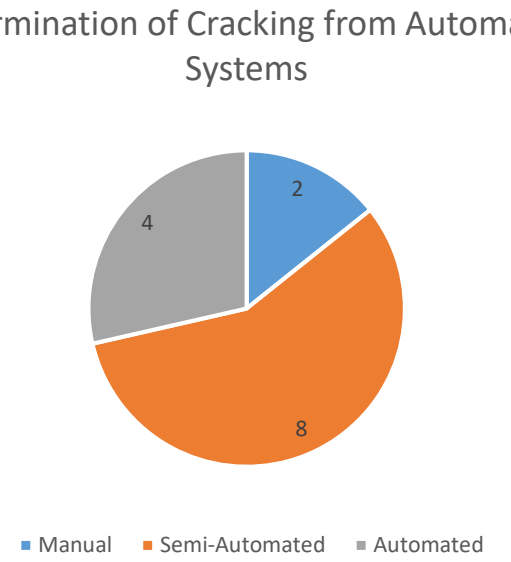


Current Practice

- Literature Review and Information Gathering
  - Reviewed and summarized over 30 documents
    - Domestic and international literature
  - Sent agency specific questions to pooled fund agencies
  - Have had conversations with multiple data collection vendors

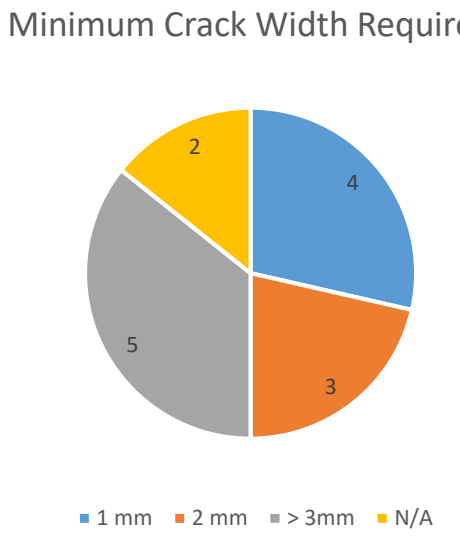
Key Issue from Data Gathering Agency Questions

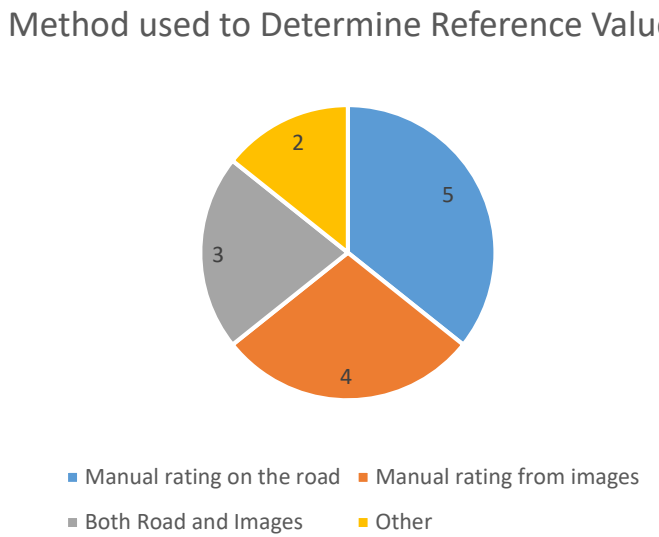




- Conclusion: For procurement the industry standard is 3D
- Conclusion: Over half of the agencies are using semi-automated detection

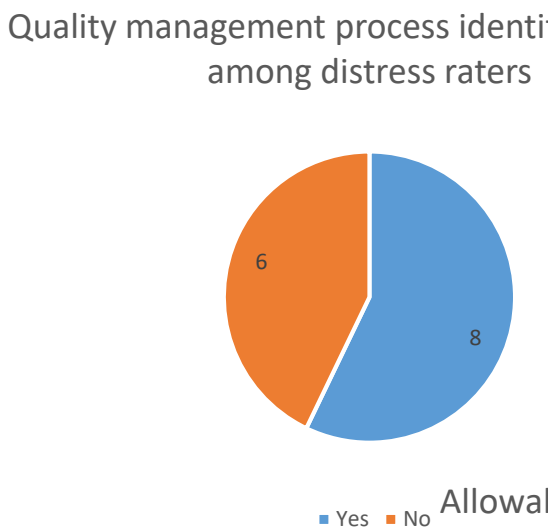
Key Issue from Data Gathering Agency Questions

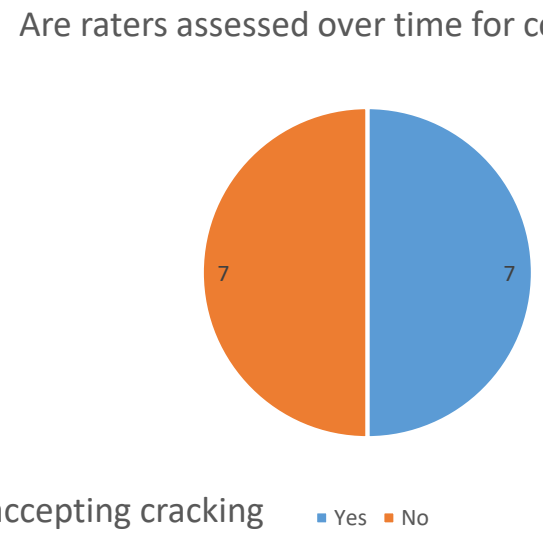


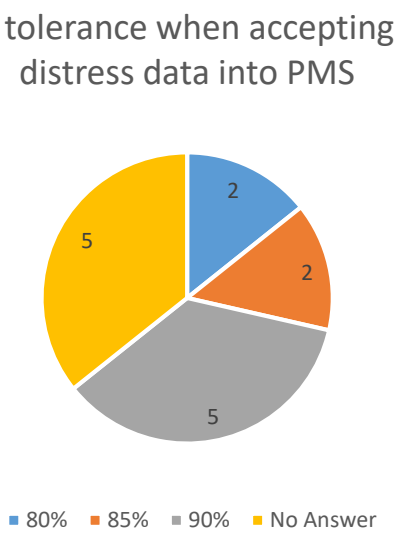


- Conclusion: Minimum crack width required varies
- Conclusion: Agencies see value with comparison to manual road surveys

Key Issue from Data Gathering Agency Questions







- Conclusion: Understanding and application of rating variability remains uncertain

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What Distress Types are used in PMS?

- Two aspects of this
  - Distress types and severities which trigger action in PMS
  - Importance (weight) of distress in causing action
- Distresses which trigger treatment in the PMS
  - Identify which distresses trigger a treatment recommendation
  - Are PMS recommendations sensitive to severity level?
- Other information otherwise used by the agency

Key Issue from Data Gathering Agency Questions

- Primary distress driving decision making

Asphalt	12 Agencies Reported		
	Severity		
	All	Med/High	High
Fatigue Cracking	7	4	
Longitudinal Cracking	7	1	
Transverse Cracking	7	2	1
Block Cracking			
Patching	3		
Potholes	2		
Surface Deterioration	2	1	1
Bleeding			1
Joint Deterioration	1	1	1
Rutting	6	3	1
Other	2		

- Conclusion: Fatigue, transverse and longitudinal cracking and rutting are the primary decision making factors – generally at all severity levels

Key Issue from Data Gathering Agency Questions

- Primary distress driving decision making

Jointed Concrete Pavement	11 Agencies Reported		
	Severity		
	All	Med/High	High
Corner Breaks	5	1	
Longitudinal Cracking	7	2	1
Transverse Cracking	8	2	1
Divided Slab	3	1	
Durability Cracking	2		
Joint Deficiencies	2	1	1
Surface Deducts	1		1
Faulting	5	1	
Patching	2	1	
Other	2		

- Conclusion: Transverse, longitudinal, corner cracking and faulting are the primary decision making factors – generally at all severity levels

Key Issue from Data Gathering Agency Questions

- Primary distress driving decision making

Continuously Reinforced Concrete	5 Agencies Reported		
	Severity		
	All	Med/High	High
Longitudinal Cracking	3	1	
Transverse Cracking	3		1
Durability Cracking	2		
Surface Deducts	1		
Patching	2	1	
Punchout	4		
Cluster Cracking	1		
Other			

- Conclusion: Punchouts, longitudinal and transverse cracking are the primary decision making factors – generally at all severity levels

Agency Challenges During Transition

- Maintain network level distress data collection
- Data of sufficient quality to effectively support PMS recommendations
- Annual reporting
- Communication of changes
- Ability to provide project level data

Agency Implementation Challenges

- Options
  - Maintain historical consistency
    - Adjust for bias between systems
    - Modify condition categories based on change in values
  - Develop new performance models
    - Develop new index calculations
    - Adjust performance curves
    - Adjust selection criteria

Thank You!

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