



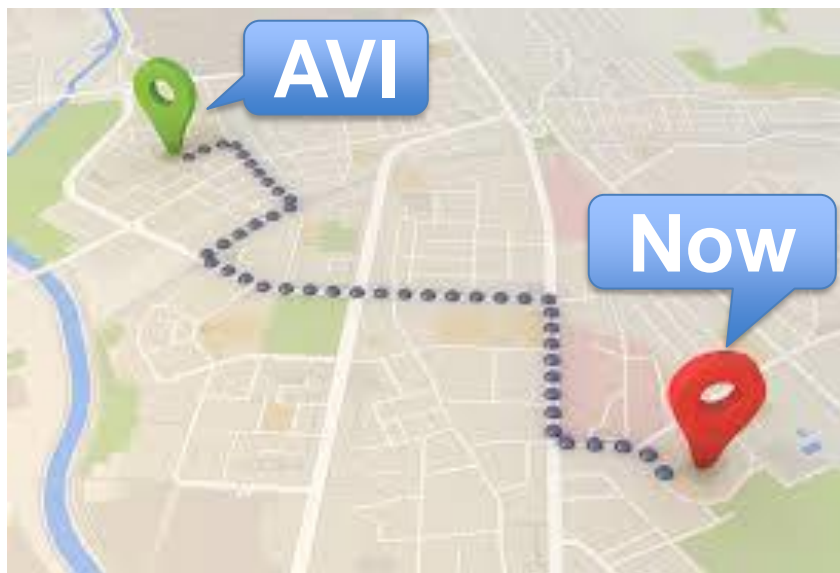
# Mastering AVI



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# Mastering Automated Visual Inspection

.....A long way, let's guide you !



# Training principle

- **Target audience**

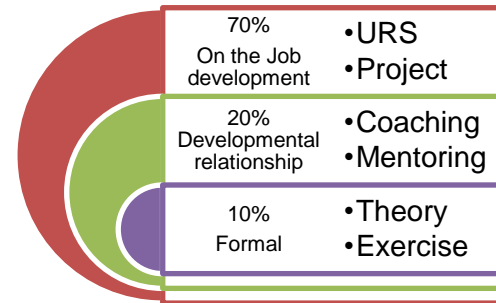
- This course is designed specifically for those who are involved or interested in moving from manual to automated inspection like
- Managers, Supervisors and all Decision makers in the visual inspection area Quality personnel

- **Prerequisites:**

- Basic understanding and practical experience of manual inspection (as conveyed in the PDA course 'Introduction to Visual Inspection – A hands-on course')

- **Learning Objective:**

- Acquire basics about Regulatory landscape for AVI
- Be ready to design your URS
- Understand Key function of AVI equipment
- Define your defect kits and validation strategy
- Develop your own control strategy around AVI
- Have basic knowledge about computer vision

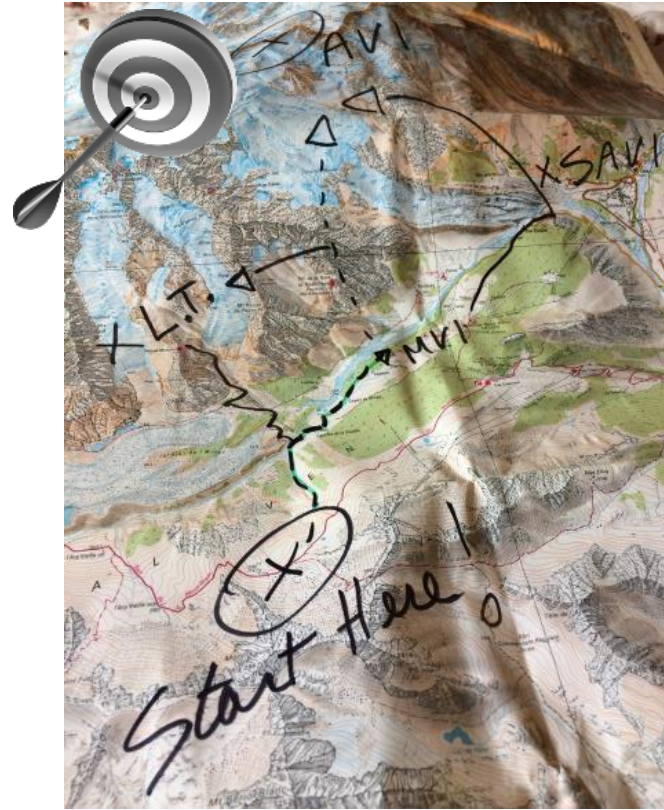


# Training overview

- Visual Inspection mastery is fundamental in parenteral manufacturing in order to guarantee both patient safety and cost-effective supply.
- The capability of Automated Visual Inspection (AVI) has progressed extensively over the years to the point where, when applied appropriately, it can offer significant advantages over manual and semi-automated inspection processes. This has been made possible thanks to major innovations and technology breakthroughs.
- In line with these technological advances, the regulatory requirements for this challenging process have been reinforced.
- As a consequence, AVI machines today are complex and require multidisciplinary project teams for successful implementation (vision engineers, automation, mechanical engineers, validation experts, quality and regulatory affairs).
- This course has been devised to support your AVI program development, by addressing critical parameters, key competencies and practical approaches to managing the inherent complexity of AVI.
- In part 1, after a review of regulatory landscape, key functions of AVI equipment and associated critical parameters will be covered. Successful URS development will be covered by a practical workshop in order to address not only user needs but also to produce a comprehensive process flow model.
- In part 2, the need for an effective Manual Visual Inspection (MVI) baseline process will be overviewed as a prerequisite to AVI. Then, defect kits and validation strategies will be described. AVI has a scope broader than computer vision alone and the overall control strategy for the process will be covered.
- 'Vision Engineering for dummies' will be explained during a practical workshop using modern vision equipment and genuine examples of production defects.

## Introduction to training session

- Instructor lead presentation
- Collection and clustering of expectations,
  - questions and professional
  - background of participants
- Agenda Reviewing



## From Pioneer .....to modern technologies



1983



1987

1981



# AGENDA for training session

## First Part

13:00 13:15 **Welcome & Introduction**

13:15 13:45 **Part 1: Introduction to Regulatory Landscape for Visual Inspection**

- Pharmacopeias
- Findings of recent audits

13:45 14:00 **Part 2: Machine overview with videos**

14:00 16:00 **Part 3: Introduction to Technical Principles of Automated Inspection Machines**

- Functionality of automated inspection machines
- Camera systems / light / motion
- Image processing and database system

15:00 15:15 **Coffee Break**

- Interlinkage of parameters: Speed, Rotation speed, Inspection parameters, Detection probability, False reject rate
- Properties, capabilities and limitations of automated inspection systems
- Scope of Automated Visual Inspection

16:00 16:30 **Part 4: Selection and Purchasing of an Auto- mated Inspection System**

- Technical requirements
- Integration into existing processes, lines/ machines and systems
- Cost and effort considerations
- Risk assessment

16:30 17:00 **Q & A**

17:00 **End of Day 1**

# AGENDA for training session

## Second Part

- 13:00 13:15** Recap of Day 1
- 13:15 14:15** **Part 5: Transition from Manual Inspection to Automated Inspection**
- Manual inspection as a prerequisite for transition to automated inspection
  - Interpretation of inspection results and validation data
  - Considerations on validation program for automated inspection
  - Performance measurement
  - Maintaining the manual inspection
- 14:15 14:30** **Part 6: Overview of computer vision with videos**
- 14:30 15:30** **Part 7: Qualification Test Set and Routine Test Set**
- Statistical considerations on number of objects containing defects
  - Particle selection, particle size and size uniformity
  - Labelling of test set objects
  - Supply/purchase of test sets
  - Maintaining and lifecycle of test sets
  - Sampling from rejects
  - Defect master library
  - Types of defects
  - Quality requirements
- 15:30 15:45** **Coffee Break**
- 15:45 16:15** **Part 8: Visual Inspection Lifecycle and Control Strategy**
- Integration of visual inspection into overall manufacturing process
  - Elements of lifecycle
  - Particle identification/characterization
  - Defect libraries as dynamic database
  - AQL and control charting
- 16:15 16:30** **Future Trend of Automated Visual Inspection**
- 16:30 17:00** **Q & A**
- 17:00** **End of Training Course**