

The image features a stylized orange map of Westchester County as a background. Overlaid on the map is a blue magnifying glass with a white circular lens. Inside the lens is a detailed grey fingerprint. The text "3D Laser Scanning" is centered over the magnifying glass.

3D Laser Scanning

Westchester County Department of Public Safety

HOW DOES IT WORK



Laser Measures Distance Much Like a Total Station

Laser Beam is Passed Through Rotating Mirror

Scanner Rotates 180 Degrees Capture Both Sides for 360 Degree Scan

Scanner Captures Almost Everything Within Sight and Range

FACTS ABOUT 3D LASER SCANNING



Millions of Collected Scan Points Create a Point Cloud

Scanner Can See Better in the Dark

Initially Scans Have No Color

Point Clouds are Visible as Greyscale Image

Intensity of Measurement Determines How Dark A Point Is

SCAN COLOR



Color Is Added from Color Photographs Taken By Scanner's Internal Camera

- RGB (Red, Green, Blue) Color is Added to Each Individual Point As Determine By Photograph Alignment with Scan Points
- **Camera Inside Scanner Needs Light To Take Photographs**

TIME TO SCAN



- Outdoor Scans Can Take Less Than 10 Minutes Per Scan Including Move and Setup
- Capturing About 44 Million Points
- At Night Scan Time May Be Less Than 5 Minutes Per Scan Depending on Settings

RESOLUTION AND QUALITY SETTINGS

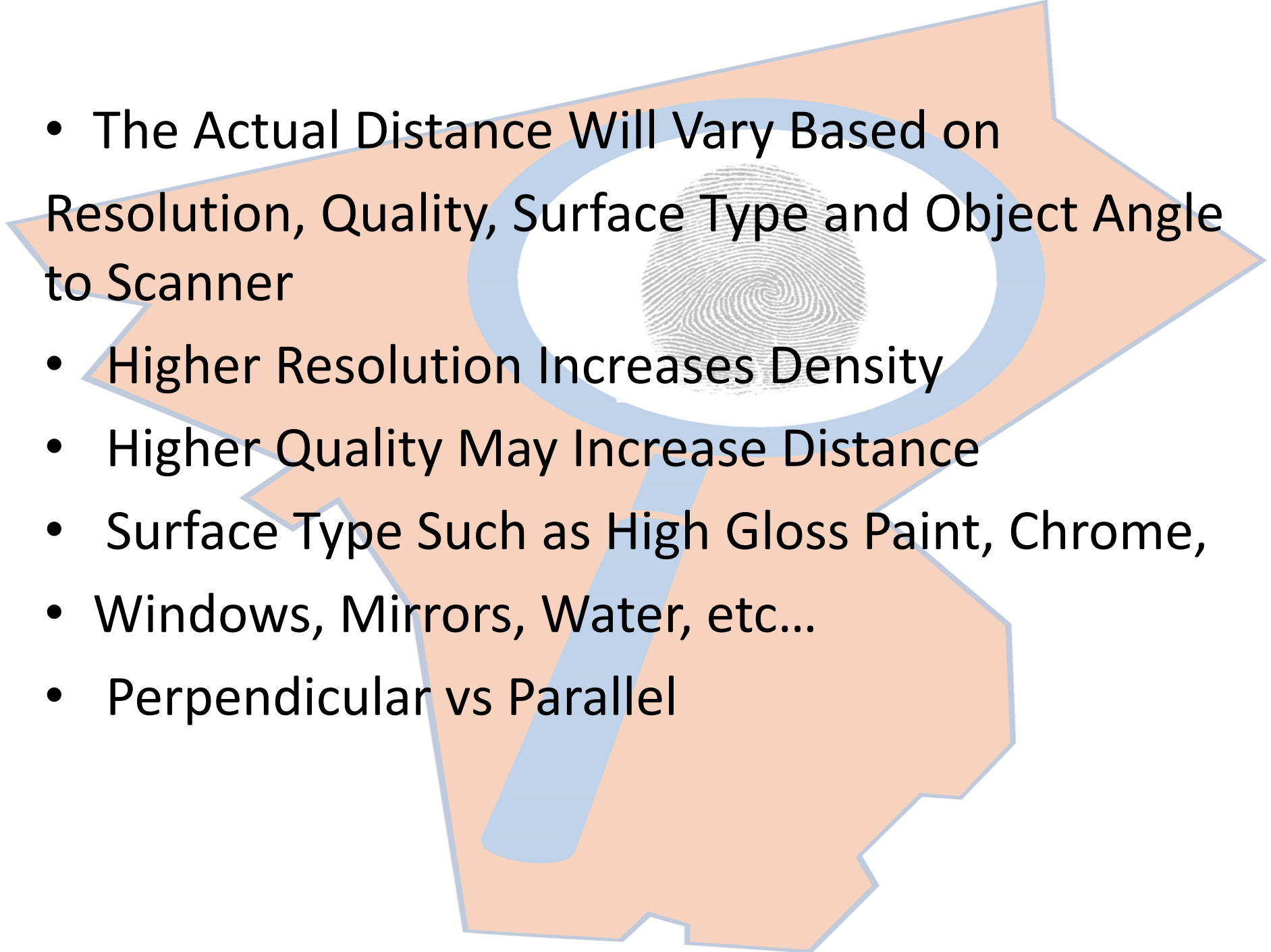


- Time to Scan Is Directly Related to Resolution and Quality of Settings
- Resolution and Quality Determine How Good a Scan Looks (Detail)
- Higher Resolution and/or Higher Quality = More Time

USABLE DATA

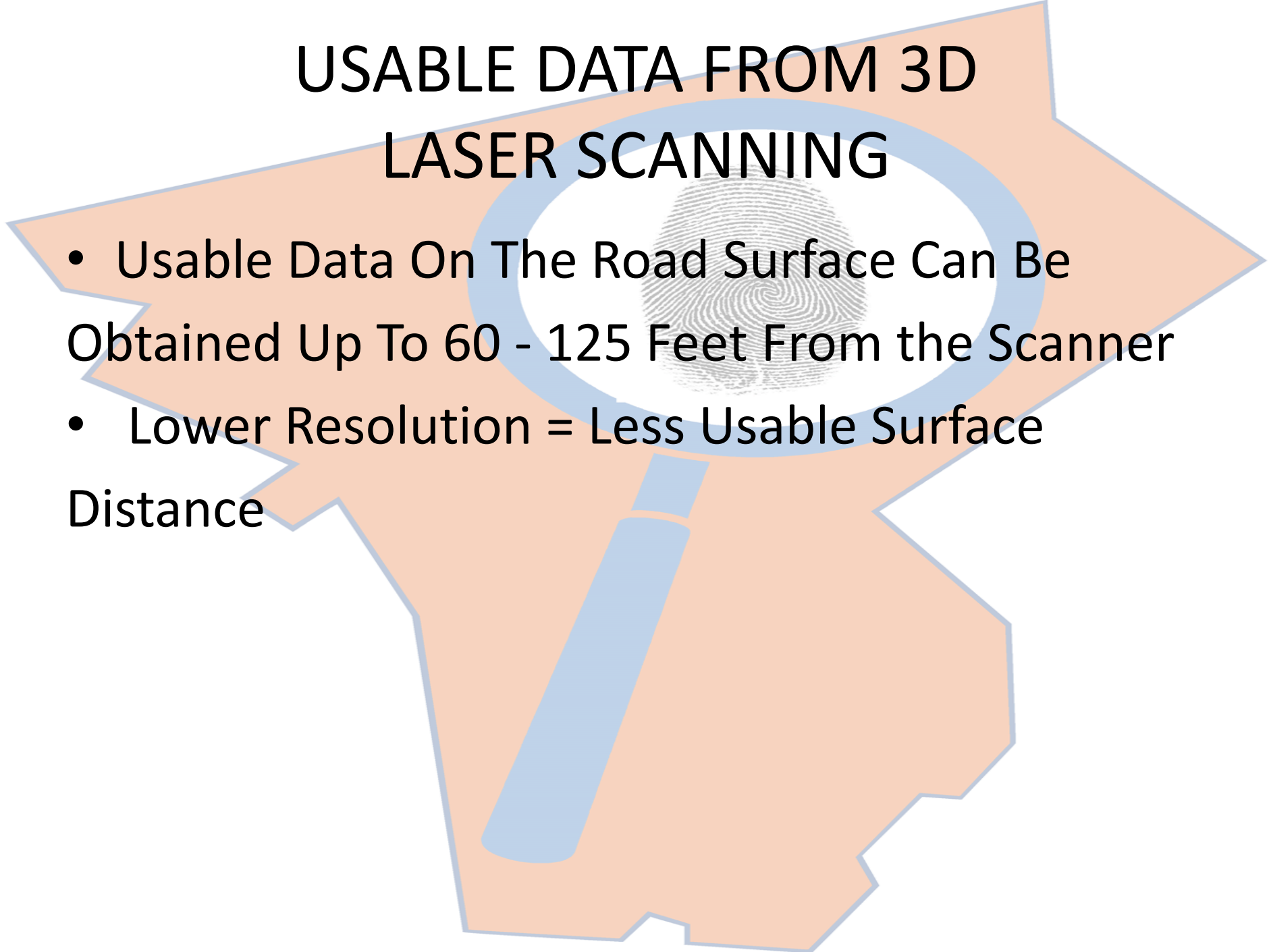


- Not All Data Collected by the Scanner is Usable in Forensics
- The Scanner May Capture Data Over 1,000 Feet from its Position
- The Usable Data Should Be Considered Based on Resolution and Surface Plane
- Typically Forensic Data Details May Be Seen Reasonably Well at 50 Meters / 164.0 Feet or Less

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- The Actual Distance Will Vary Based on Resolution, Quality, Surface Type and Object Angle to Scanner
 - Higher Resolution Increases Density
 - Higher Quality May Increase Distance
 - Surface Type Such as High Gloss Paint, Chrome, Windows, Mirrors, Water, etc...
 - Perpendicular vs Parallel

USABLE DATA FROM 3D LASER SCANNING

- Usable Data On The Road Surface Can Be Obtained Up To 60 - 125 Feet From the Scanner
- Lower Resolution = Less Usable Surface Distance



SCANNER LIMITATIONS



- Line of Sight
- Lighting
- Color of Object
- Surface Type
- Scan Resolution
- Scan Quality Settings

PLANNING LASER SCANNING

- Live Scenes
- People Movement
- Vehicles Movement
- Controlled Scenes
- No Movement
- Site Plan/Field Sketch
- Outdoor
- Indoor
- Large Scenes
- How Many Scans
- Detail
- Scanner Settings

