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Integrated tactile-optical coordinate measuring system

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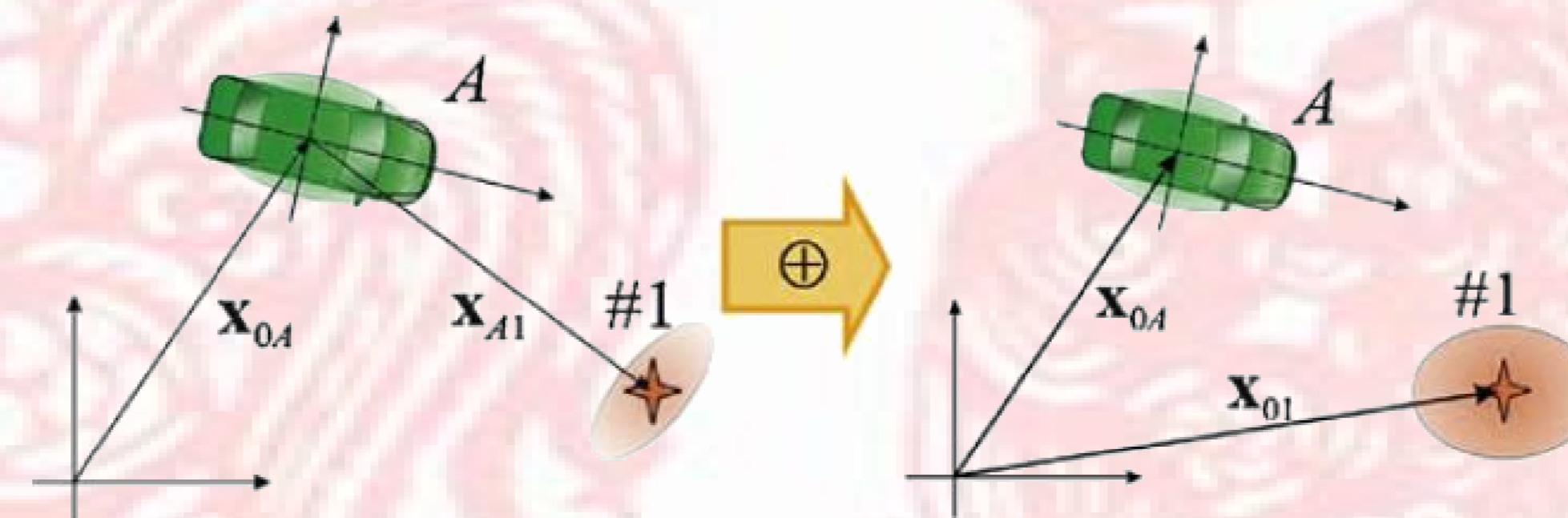
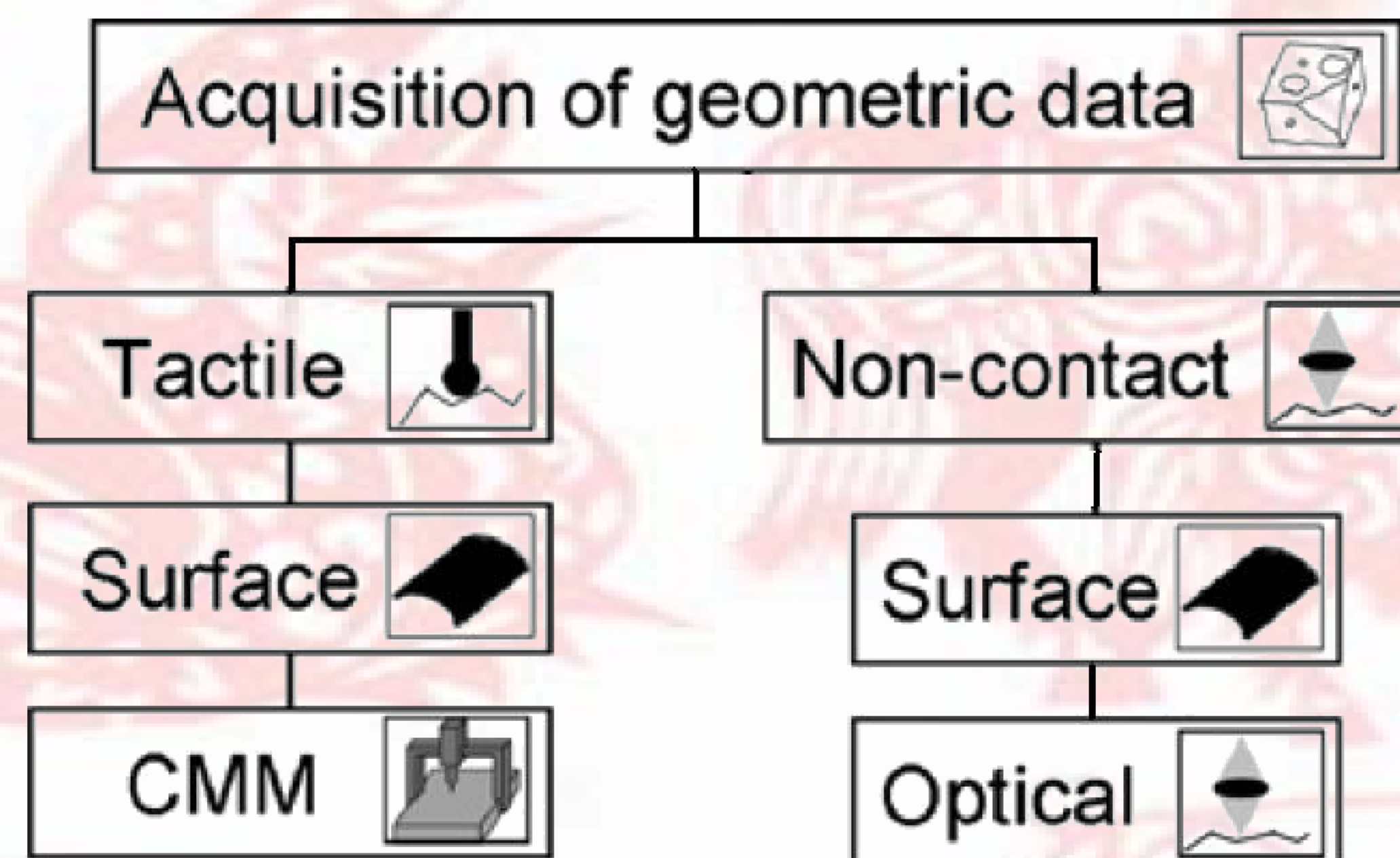
1. Challenge

- Requirements to improve the speed and accuracy of dimensional metrology
- Achieve holistic geometrical measurement information
- Improve reliability and reduce uncertainty
- Automatic data acquisition and processing in one single measurement

2. Definition

- Process of combining data from several sensors into a common representational format
- Elements of the hybrid system
 - Optical scanner(s)-projector, camera
 - Co-ordinate measuring machine (CMM)
 - Metrological software
 - PC Workstation

A HYBRID COORDINATE MEASUREMENT SYSTEM
FAST OPTICAL MEASUREMENT
ACCURACY IMPROVED BY PROBE



3. Measurement Strategy

- Phase measurement
- The optical system calibration
- Coordinate system unification
- The optical scanner and the CMM have their own separate coordinate systems, then these two coordinate systems have to be unified
- Data processing

4. Research Implications

- Phase measurement
- Improvement in the quality and usability of the measurement result
- Increased spatial and temporal coverage and better resolution
- Increased robustness to sensor and algorithmic uncertainty
- Better noise suppression and improved accuracy