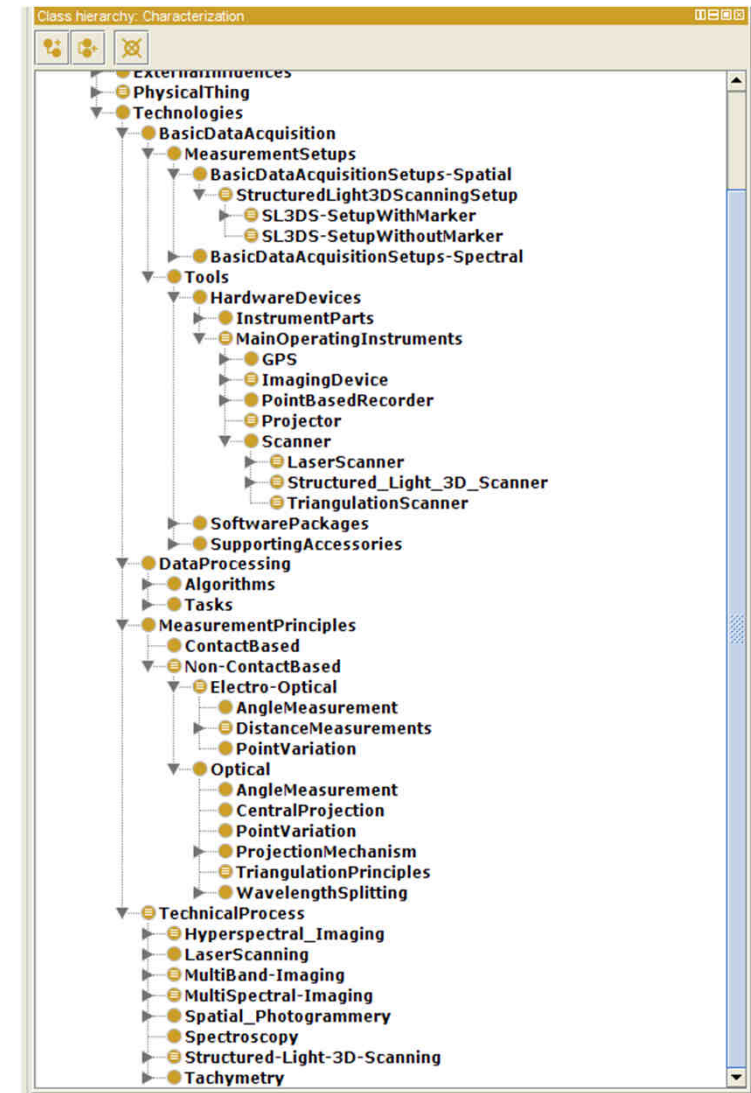


COSCH^{KR}: how does the inference work

Stefanie Wefers, Ashish Karmacharya, Frank Boochs
i3mainz - Institute for Spatial Information and Surveying
Technology, Mainz

Technologies

- **Measurement Principles**
 - those actually are responsible for data generation
- **Tools**
 - Instruments
 - based on measurement principles and responsible for data generations
 - Setups
 - setups with instruments and necessary accessories for optimal data generations
- **Data Processing**
 - post processing algorithms and tasks for end data product
- **Technical Process**
 - packages all technical components



Technologies: Principles

- Measurement Principles
 - Triangulations

Description: TriangulationPrinciples

Equivalent To +

- hasBaseHeightRatio **only**
(HighBaseHeightRatio
or MediumBaseHeightRatio
or SmallBaseHeightRatio)
- hasGenerationOnData **some** 3D_Data

SubClass Of +

- (hasBaseHeightRatio **only** HighBaseHeightRatio)
and (hasGenerationOnData **only**
(3D_Data
and (hasLocalSpatialDataAccuracy **some**
(HighLocalAccuracy-in-3D
or LowLocalAccuracy-in-3D
or MediumLocalAccuracy-in-3D))))))
- Optical

- Angle Measurement / Distance Measurement

Description: AngleMeasurement

Equivalent To +

SubClass Of +

- Electro-Optical
- hasInCombination **only** (DistanceMeasurements and (hasGenerationOnData **only** ((3D_Data
and (hasLocalSpatialDataAccuracy **some**
(HighLocalAccuracy-in-3D
or LowLocalAccuracy-in-3D
or MediumLocalAccuracy-in-3D))))))
- Optical

- Central Projection

- hasGenerationOnData **only**
(2D_Data
and (hasLocalSpatialDataAccuracy
some
(MediumLocalAccuracy-in-2D
or LowLocalAccuracy-in-2D))))

Technologies: Principles

- Measurement Principles
 - Triangulations

Description: TriangulationPrinciples

Equivalent To +

● hasBaseHeightRatio **only**
(HighBaseHeightRatio
or MediumBaseHeightRatio
or SmallBaseHeightRatio)
and (hasGenerationOnData **only** some 3D_Data)

● (hasBaseHeightRatio **only** HighBaseHeightRatio)
and (hasGenerationOnData **only**
(3D_Data
and (hasLocalSpatialDataAccuracy **some**
(HighLocalAccuracy-in-3D
or LowLocalAccuracy-in-3D
or MediumLocalAccuracy-in-3D))))))

● Optical

- Angle Measurement / Distance Measurement

Description: AngleMeasurement

Equivalent To +

SubClass Of +

● Electro-Optical

● hasInCombination with DistanceMeasurements and (hasGenerationOnData **only** ((3D_Data
and (hasLocalSpatialDataAccuracy **some**
(HighLocalAccuracy-in-3D
or LowLocalAccuracy-in-3D
or MediumLocalAccuracy-in-3D))))))

● Optical

- Central Projection

● hasGenerationOnData **only**
(2D_Data
and (hasLocalSpatialDataAccuracy
some
(MediumLocalAccuracy-in-2D
or LowLocalAccuracy-in-2D))))

Technologies: Instruments

- **Main Hardware**
 - **Structured Light Scanner**
(Triangulation)

Description: Structured_Light_3D_Scanner

Equivalent To +

- hasGenerationOnData **some** 3D_Mesh
- hasOperatingNature **only** Active
- (hasEssentials **min** 1 Camera)
and (hasEssentials **exactly** 1 Projector)
- hasMeasurementPrinciples **only** TriangulationPrinciples

- **Laser Scanner**
(Distance/Angle
Measurement)

Description: LaserScanner

Equivalent To +

- hasOperatingNature **only** Active
- hasMeasurementPrinciples **some**
(AngleMeasurement
and DistanceMeasurements)
- hasGenerationOnData **some**
(3D_Data
and (hasDataTexture **some** NoTexture))
- hasGenerationOnData **some** 3D_Points

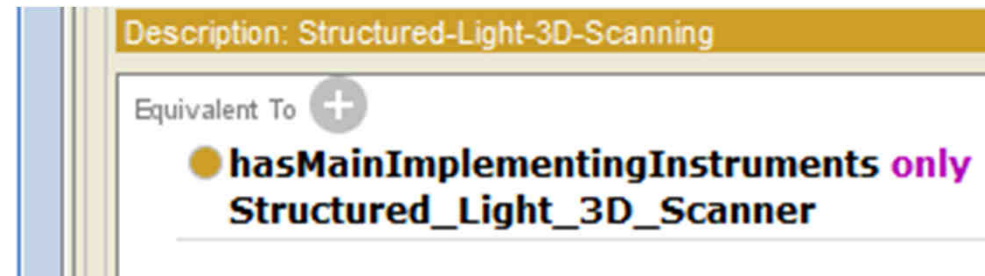
- **Camera**
(Central Projection)

SubClass Of (Anonymous Ancestor)

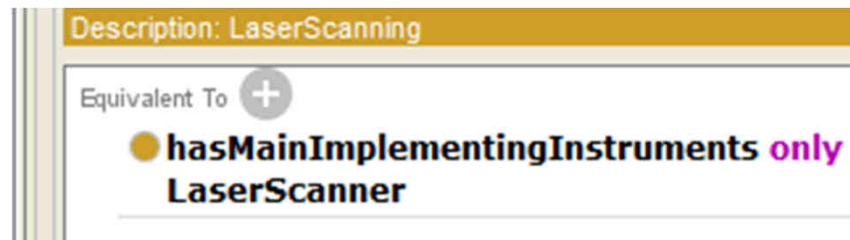
- hasGenerationOnData **only** BasicData
- hasOperatingNature **only** OperatingNature
- hasMeasurementPrinciples **some** MeasurementPrinciples
- hasMeasurementPrinciples **only** CentralProjection

Technologies: Technical Process

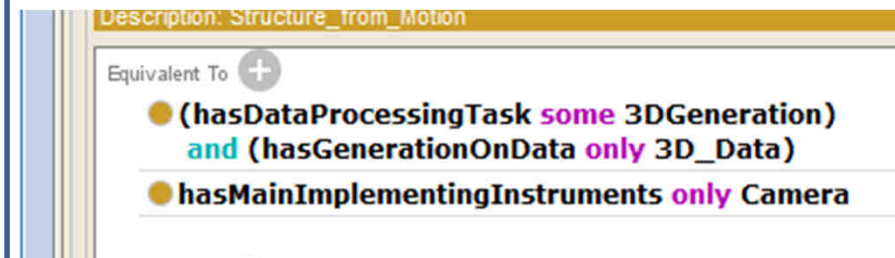
- **Structured Light Scanning**
(Structured Light Scanner)



- **Laser Scanning**
(Laser Scanner)

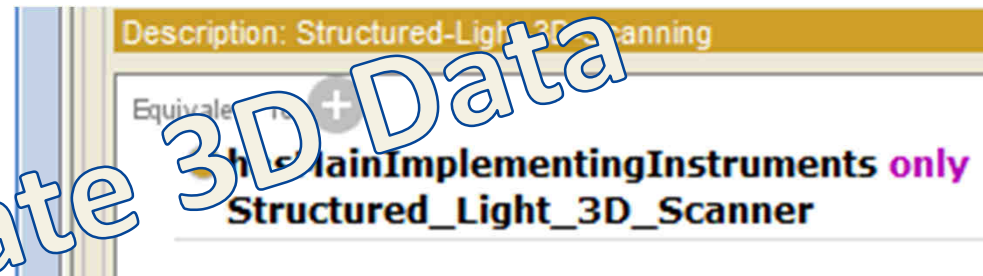


- **Structure from Motion**
(Camera)

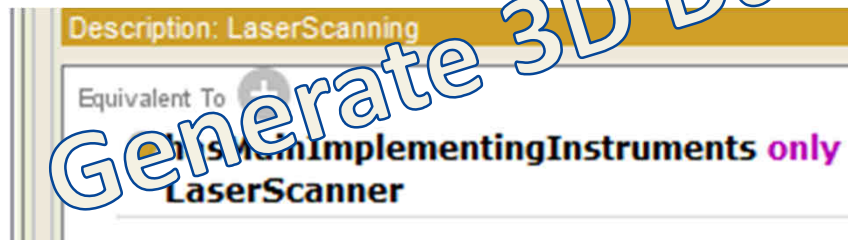


Technologies: Technical Process

- **Structured Light Scanning**
(Structured Light Scanner)



- **Laser Scanning**
(Laser Scanner)



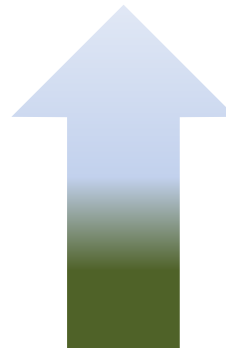
- **Structure from Motion**
(Camera)



CH Application (Deformation Analysis)



Data (High Quality 3D Data)



Technology

(Structured Light Scanning, Laser Scanning, SfM)

Technologies: Technical Process

- **Structured Light Scanning**
Instrument: Structured Light Scanner
Principle: Triangulation
- **Laser Scanning**
Instrument: Laser Scanner
Principle: Distance/Angle Measurement
- **Structure from Motion**
Instrument: Camera
Principle: Central Projection

SubClass Of +

● (hasBaseHeightRatio **only** HighBaseHeightRatio)
and (hasGenerationOnData **only**
(3D_Data
and (hasLocalSpatialDataAccuracy **some**
(HighLocalAccuracy-in-3D
or LowLocalAccuracy-in-3D
or MediumLocalAccuracy-in-3D))))

● hasInCombination **only**
(DistanceMeasurements
and (hasGenerationOnData **only**
(3D_Data
and (hasLocalSpatialDataAccuracy **some**
(HighLocalAccuracy-in-3D
or LowLocalAccuracy-in-3D
or MediumLocalAccuracy-in-3D))))))

SubClass Of +

● hasGenerationOnData **only**
(2D_Data
and (hasLocalSpatialDataAccuracy
some
(HighLocalAccuracy-in-2D or
MediumLocalAccuracy-in-2D
or LowLocalAccuracy-in-2D)))

Technologies: Technical Process

- **Structured Light Scanning**

Instrument: Structured Light Scanner

Principle: Triangulation

SubClass Of +

● (hasBaseHeightRatio **only** HighBaseHeightRatio)
and (hasGenerationOnData **only**
(3D_Data
and (hasLocalSpatialDataAccuracy **some**
(HighLocalAccuracy-in-3D
or LowLocalAccuracy-in-3D
or MediumLocalAccuracy-in-3D))))

- **Laser Scanning**

Instrument: Laser Scanner

Principle: Distance/Angle Measurement

● hasInCombination **only**
(DistanceMeasurements
and (hasGenerationOnData **only**
(3D_Data
and (hasLocalSpatialDataAccuracy **some**
(HighLocalAccuracy-in-3D
or LowLocalAccuracy-in-3D
or MediumLocalAccuracy-in-3D))))))

SubClass Of +

● hasGenerationOnData **only**
(2D_Data
and (hasLocalSpatialDataAccuracy **some**
(HighLocalAccuracy-in-2D or
MediumLocalAccuracy-in-2D
or LowLocalAccuracy-in-2D)))

- **Structure from Motion**

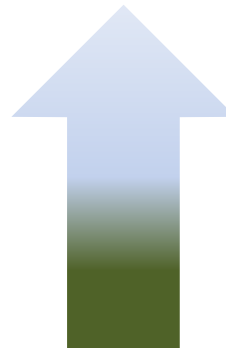
Instrument: Camera

Principle: Central Projection

CH Application (Deformation Analysis)



Data (High Quality 3D Data)



Technology

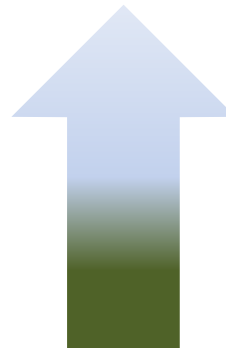
(Structured Light Scanning, Laser Scanning, SfM)

USERS INPUTS

CH Application (Deformation Analysis)

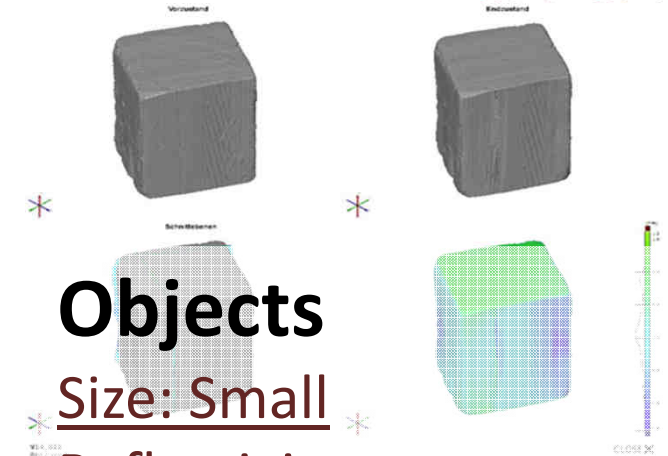


Data (High Accuracy 3D Data)



Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

Size: Small

Reflectivity:

Quantity:

Texture:

Condition:

Technologies: Instruments

- Main Hardware
 - Structured Light Scanner

Description: Structured_Light_3D_Scanner

- (hasEssentials **min** 1 Camera)
and (hasEssentials **exactly** 1 Projector)
- hasMeasurementPrinciples **only** TriangulationPrinciples

Sub Class Of +

- (hasCost **some** High_Cost)
and (hasOperatingProject **some**
(Projects
and (hasProjectBudgetRange **some** High_Budget)))
- isSuitabilitiesFor **some**
(PhysicalThing
and ((hasObjectSize **some** 2DSize_Small)
or (hasObjectVolume **some** 3DVolume_Small)))

- Laser Scanner

Sub Class Of +

- (hasCost **some** High_Cost)
and (hasOperatingProject **some**
(Projects
and (hasProjectBudgetRange **some** High_Budget)))
- isSuitabilitiesFor **some**
(PhysicalThing
and (hasObjectTexture **some**
(Non-Textured
or Textured)))
- isSuitabilitiesFor **some**
(PhysicalThing
and (hasObjectVolume **some**
(3DVolume_Big
or 3DVolume_Medium)))

- Camera

Sub Class Of +

- **ImagingDevice**
- isSuitabilitiesFor **some**
(PhysicalThing
and (hasObjectVolume **some**
(3DVolume_Big
or 3DVolume_Medium
or 3DVolume_Small)))

Technologies: Instruments

- **Main Hardware**

- **Structured Light Scanner**

Description: Structured_Light_3D_Scanner

- (hasEssentials **min** 1 Camera)
and (hasEssentials **exactly** 1 Projector)
- hasMeasurementPrinciples **only** TriangulationPrinciples

SubClass Of +

- (hasCost **some** High_Cost)
and (hasOperatingProject **some** (Projects
and (hasProjectBudgetRange **some** High_Budget)))
- isSuitabilitiesFor **some** (PhysicalThing
and ((hasObjectSize **some** 2DSize_Small)
or (hasObjectVolume **some** 3DVolume_Small)))

- **Laser Scanner**

SubClass Of +

- (hasCost **some** High_Cost)
and (hasOperatingProject **some** (Projects
and (hasProjectBudgetRange **some** High_Budget)))
- isSuitabilitiesFor **some** (PhysicalThing
and ((hasObjectSize **some** 2DSize_Small)
or (hasObjectVolume **some** 3DVolume_Small)))
- isSuitabilitiesFor **some** (PhysicalThing
and (hasObjectVolume **some** (3DVolume_Big
or 3DVolume_Medium)))

- **Camera**

SubClass Of +

- **ImagingDevice**
- isSuitabilitiesFor **some** (PhysicalThing
and (hasObjectVolume **some** (3DVolume_Big
or 3DVolume_Medium
or 3DVolume_Small)))

Technologies: Instruments

- Main Hardware
 - Structured Light Scanner

Description: Structured_Light_3D_Scanner

- (hasEssentials **min** 1 Camera)
and (hasEssentials **exactly** 1 Projector)
- hasMeasurementPrinciples **only** TriangulationPrinciples

Sub Class Of +

- (hasCost **some** High_Cost)
and (hasOperatingProject **some**
(Projects
and (hasProjectBudgetRange **some** High_Budget)))
- isSuitabilitiesFor **some**
(PhysicalThing
and ((hasObjectSize **some** 2DSize_Small)
or (hasObjectVolume **some** 3DVolume_Small)))

- Laser Scanner

Sub Class Of +

- (hasCost **some** High_Cost)
and (hasOperatingProject **some**
(Projects
and (hasProjectBudgetRange **some** High_Budget)))
- isSuitabilitiesFor **some**
(PhysicalThing
and (hasObjectSize **some**
(Non-Textual or Textual)))
- isSuitabilitiesFor **some**
(PhysicalThing
and (hasObjectVolume **some**
(3DVolume_Big
or 3DVolume_Medium)))

- Camera

Sub Class Of +

- ImagingDevice
- isSuitabilitiesFor **some**
(PhysicalThing
and (hasObjectVolume **some**
(3DVolume_Big
or 3DVolume_Medium
or 3DVolume_Small)))

Technologies: Technical Process

- **Structured Light Scanning**
(Structured Light Scanner)

Description: Structured-Light-3D-Scanning

Equivalent To +

- **hasMainImplementingInstruments only**
Structured_Light_3D_Scanner

- **Laser Scanning**
(Laser Scanner)

Description: LaserScanning

Equivalent To +

- **hasMainImplementingInstruments only**
LaserScanner

- **Structure from Motion**
(Camera)

Description: Structure_from_Motion

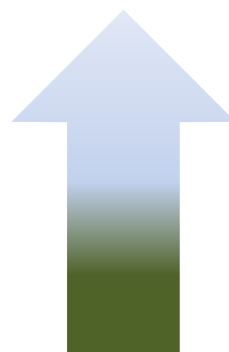
Equivalent To +

- **(hasDataProcessingTask some 3DGeneration)**
and (hasGenerationOnData only 3D_Data)
- **hasMainImplementingInstruments only Camera**

CH Application (Deformation Analysis)

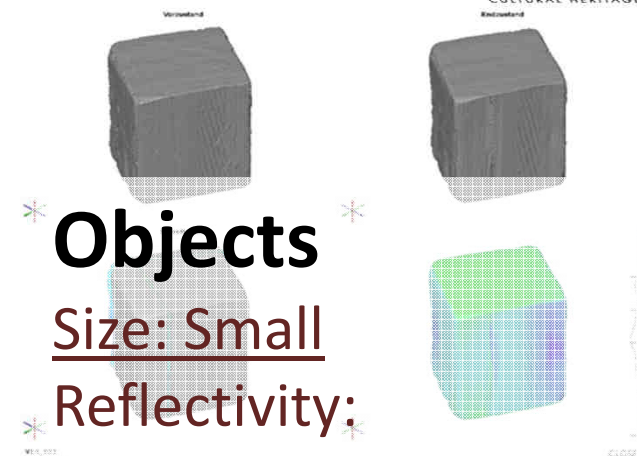


Data (High Quality 3D Data)



Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

Size: Small

Reflectivity:

Quantity:

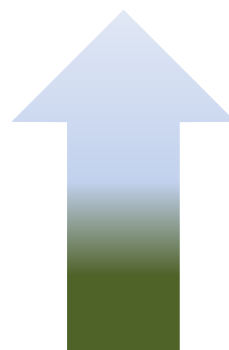
Texture:

Condition:

CH Application (Deformation Analysis)

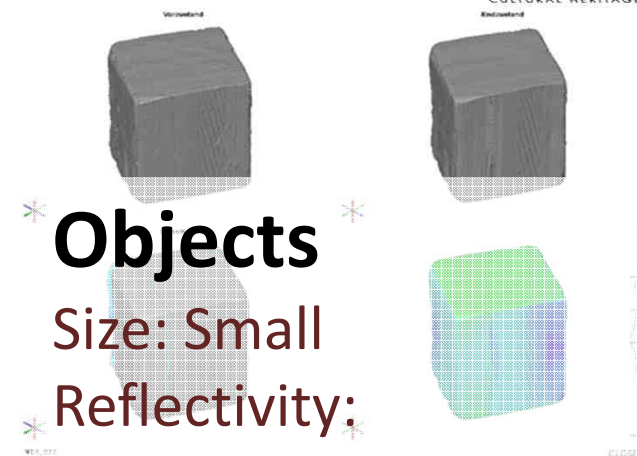


Data (High Accuracy 3D Data)



Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

Size: Small

Reflectivity:

Quantity:

Texture: Non-Textured

Condition:

Technologies: Instruments

- Main Hardware
 - Structured Light Scanner

Description: Structured_Light_3D_Scanner

Equivalent To +

- hasOperatingNature **only** Active
- (hasEssentials **min** 1 Camera)
and (hasEssentials **exactly** 1 Projector)
- hasMeasurementPrinciples **only** TriangulationPrinciples
- hasGenerationOnData **some** 3D_Data

- Laser Scanner

Description: LaserScanner

Equivalent To !

- hasOperatingNature **only** Active
- hasMeasurementPrinciples **some**
(AngleMeasurement
and DistanceMeasurements)
- hasGenerationOnData **some**
(3D_Data
and (hasDataTexture **some** NoTexture))
- hasGenerationOnData **some** 3D_Points

- Camera

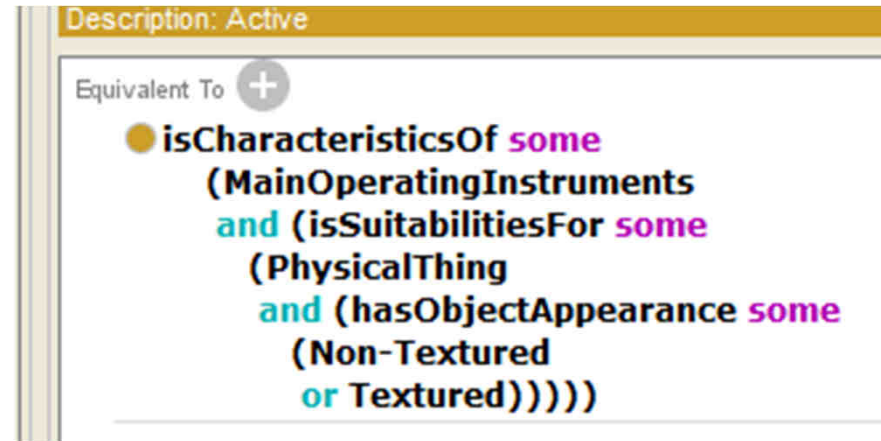
Description: Camera

Equivalent To +

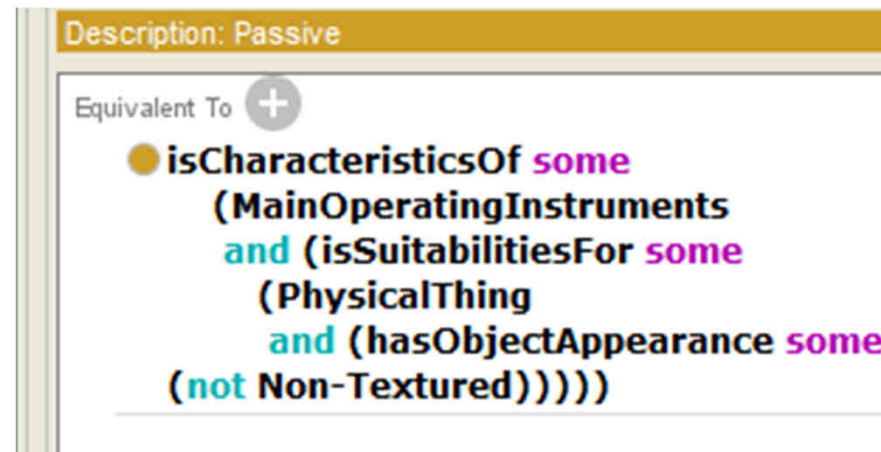
- hasEssentials **min** 1 Lens
- hasEssentials **some** CameraParts
- hasGenerationOnData **some**
(AdditionalData
and (hasImageScale **some**
(ImageScale-High
or ImageScale-Low
or ImageScale-Medium)))
- hasOperatingNature **only** Passive

Instruments: Operating Nature

- Active



- Passive




Instruments: Operating Nature

- Active


Description: Active


Equivalent To 


 isCharacteristicsOf some
(MainOperatingInstruments
and (isSuitabilitiesFor some
(PhysicalThing
and (hasObjectAppearance some
(Non-Textured
or Textured))))

- Passive

Description: Passive

Equivalent To 

 isCharacteristicsOf some
(MainOperatingInstruments
and (isSuitabilitiesFor some
(PhysicalThing
and (hasObjectAppearance some
Non-Textured))))



Technologies: Instruments

- Main Hardware
 - Structured Light Scanner

Description: Structured_Light_3D_Scanner

Equivalent To

- hasOperatingNature **only** Active
- (hasEssentials **min** 1 Camera)
and (hasEssentials **exactly** 1 Projector)
- hasMeasurementPrinciples **only** TriangulationPrinciples
- hasGenerationOnData **some** 3D_Data

- Laser Scanner

Description: LaserScanner

Equivalent To

- hasOperatingNature **only** Active
- hasMeasurementPrinciples **some**
(AngleMeasurement
and DistanceMeasurements)
- hasGenerationOnData **some**
(3D_Data
and (hasDataTexture **some** NoTexture))
- hasGenerationOnData **some** 3D_Points

Camera

Description:

Equivalent To

- hasEssentials **min** 1 CameraParts
- hasEssentials **min** 1 CameraParts
- hasGenerationOnData **some**
(Additional
and (hasEssentials **some**
(ImageScale
on ImageScale
ImageScale)))
- hasOperatingNature **only** Active

Technologies: Technical Process

- **Structured Light Scanning**
(Structured Light Scanner)

Description: Structured-Light-3D-Scanning

Equivalent To +

- **hasMainImplementingInstruments only**
Structured_Light_3D_Scanner

- **Laser Scanning**
(Laser Scanner)

Description: LaserScanning

Equivalent To +

- **hasMainImplementingInstruments only**
LaserScanner

- **Structure from Motion**
(Camera)

Description: Structure_from_Motion

Equivalent To +

- **(hasDataProcessing and (hasGeneration 3DGeneration) and (hasGenerating 3D_Data) only 3D_Data)**
- **hasMainImplementingInstruments only Camera**

Technologies: Technical Process

- **Structured Light Scanning**
(Structured Light Scanner)

Description: Structured-Light-3D-Scanning

Equivalent To +

- **hasMainImplementingInstruments only**
Structured_Light_3D_Scanner

- **Laser Scanning**
(Laser Scanner)

Description: LaserScanning

Equivalent To +

- **hasMainImplementingInstruments only**
LaserScanner

- **Structure from Motion**
(Structure from Motion Camera)

Description: Structure from Motion

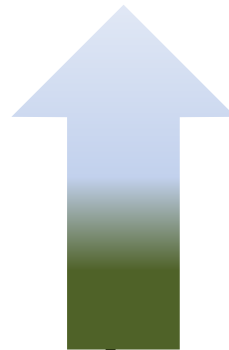
Equivalent To +

- **(hasDataProcessingTask some 3DGeneration)**
and (hasGeneratedData only 3D_Data)
- **hasMainImplementingInstruments only Camera**

CH Application (Deformation Analysis)

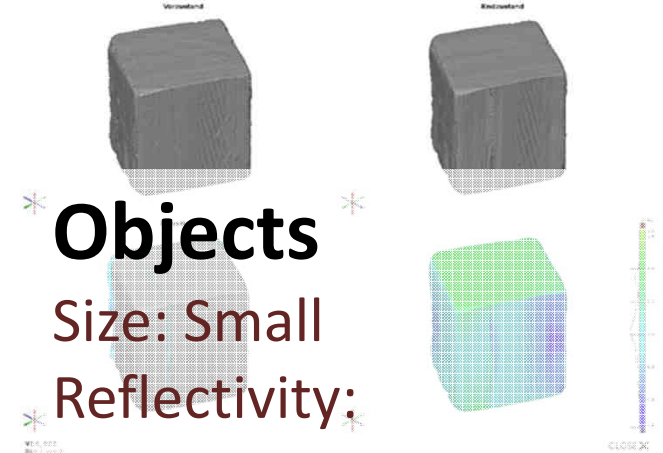


Data (High Quality 3D Data)



Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

Size: Small

Reflectivity:

Quantity:

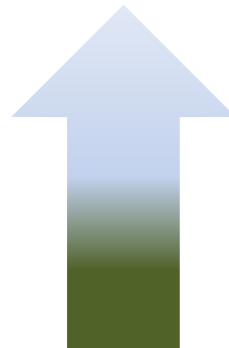
Texture: Non-Textured

Condition:

CH Application (Deformation Analysis)

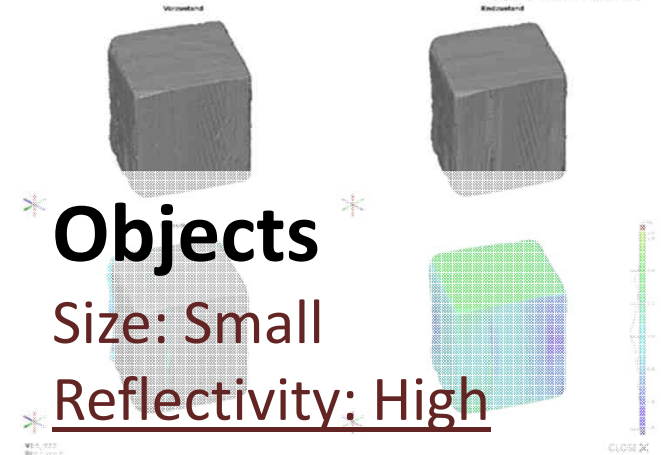


Data (High Quality 3D Data)



Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

Size: Small

Reflectivity: High

Quantity:

Texture: Non-Textured

Condition:

Technologies: Principles

- **Triangulations**
 - Structured Light Scanner –
Structured Light Scanning
- **Angle/Distance Measurements**
 - Laser Scanner – Laser Scanning
- **Central Projection**
 - Camera – Structure from Motion

Description: Non-ContactBased

- (hasGenerationOnData some
 (BasicData
 and (hasLocalSpatialDataAccuracy some
 (HighLocalAccuracy-in-2D
 or HighLocalAccuracy-in-3D))))
 and (hasOperatingOnObject some
 (PhysicalThing
 and (hasObjectReflectance some Low_Reflectivity))))
- (hasGenerationOnData some
 (BasicData
 and (hasLocalSpatialDataAccuracy some (LowLocalAccuracy-in-3D)
 or (LowLocalAccuracy-in-2D))))
 and (hasOperatingOnObject some
 (PhysicalThing
 and (hasObjectReflectance some High_Reflectivity))))
- (hasGenerationOnData some
 (BasicData
 and (hasLocalSpatialDataAccuracy some (MediumLocalAccuracy-in-3D)
 or (MediumLocalAccuracy-in-2D))))
 and (hasOperatingOnObject some
 (PhysicalThing
 and (hasObjectReflectance some Moderate_Reflectivity))))
- MeasurementPrinciples

Technologies: Principles

- Triangulations
 - Structured Light Scanner –
 - Structured Light Scanning
- Angle/Distance Measurements
 - Laser Scanner – Laser Scanning
- Centric Projection
 - Camera – Structure from Motion

Description: Non-ContactBased

- (hasGenerationOnData some (BasicData and (hasLocalSpatialDataAccuracy some (HighLocalAccuracy-in-2D or HighLocalAccuracy-in-3D)))) and (hasOperatingOnObject some (PhysicalThing and (hasObjectReflectance some Low_Reflectivity)))
- (hasGenerationOnData some (BasicData and (hasLocalSpatialDataAccuracy some (LowLocalAccuracy-in-2D or LowLocalAccuracy-in-3D)))) and (hasOperatingOnObject some (PhysicalThing and (hasObjectReflectance some Moderate_Reflectivity)))
- (hasGenerationOnData some (BasicData and (hasLocalSpatialDataAccuracy some (MediumLocalAccuracy-in-3D or MediumLocalAccuracy-in-2D)))) and (hasOperatingOnObject some (PhysicalThing and (hasObjectReflectance some Moderate_Reflectivity)))

MeasurementPrinciples

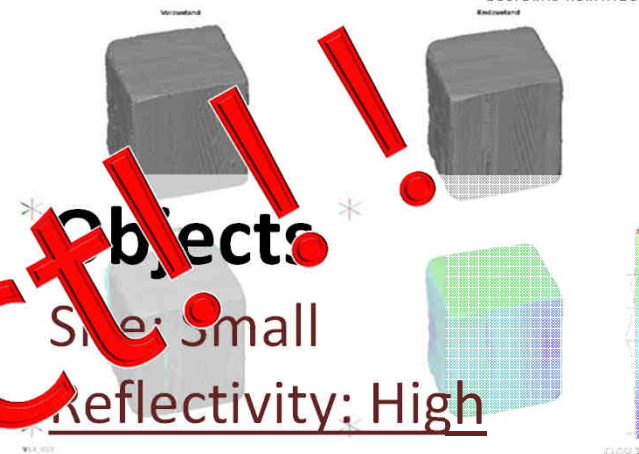
High Reflectivity:
Low Quality

CH Application (Deformation Analysis)

Data (High Accuracy 3D Data)

Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

Size: Small

Reflectivity: High

Quantity:

Texture: Non-Textured

Condition: Fragile

Conflict!

Technologies: Principles

- **Triangulations**
 - Structured Light Scanner –
Structured Light Scanning
- **Angle/Distance Measurements**
 - Laser Scanner – Laser Scanning
- **Central Projection**
 - Camera – Structure from Motion

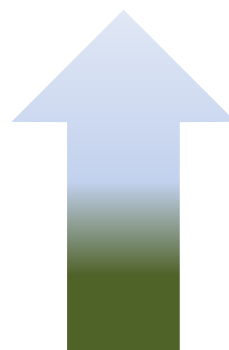
Description: Non-ContactBased

- (hasGenerationOnData some
 (BasicData
 and (hasLocalSpatialDataAccuracy some
 (HighLocalAccuracy-in-2D
 or HighLocalAccuracy-in-3D))))
 and (hasOperatingOnObject some
 (PhysicalThing
 and (hasObjectReflectance some Low_Reflectivity))))
- (hasGenerationOnData some
 (BasicData
 and (hasLocalSpatialDataAccuracy some (LowLocalAccuracy-in-3D)
 or (LowLocalAccuracy-in-2D))))
 and (hasOperatingOnObject some
 (PhysicalThing
 and (hasObjectReflectance some High_Reflectivity))))
- (hasGenerationOnData some
 (BasicData
 and (hasLocalSpatialDataAccuracy some (MediumLocalAccuracy-in-3D)
 or (MediumLocalAccuracy-in-2D))))
 and (hasOperatingOnObject some
 (PhysicalThing
 and (hasObjectReflectance some Moderate_Reflectivity))))
- MeasurementPrinciples

CH Application (Deformation Analysis)

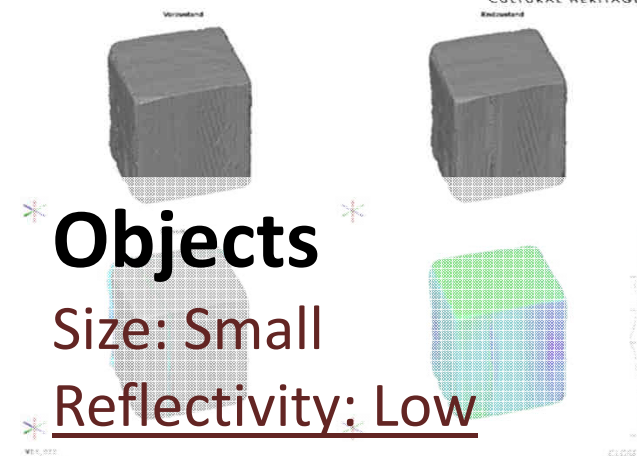


Data (High Quality 3D Data)



Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

Size: Small

Reflectivity: Low

Quantity:

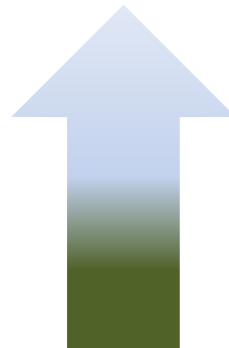
Texture: Non-Textured

Condition:

CH Application (Deformation Analysis)

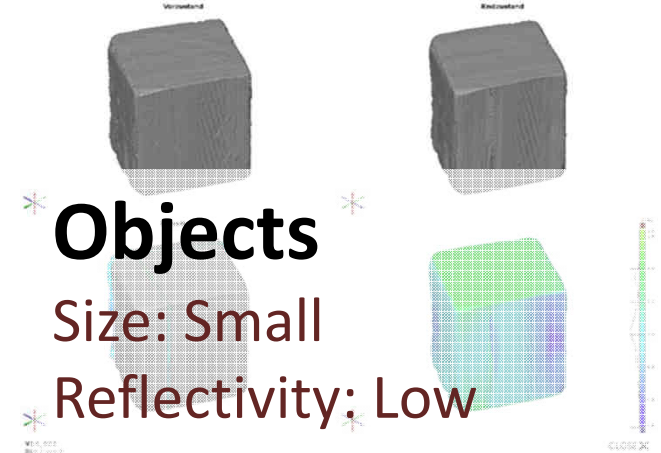


Data (High Quality 3D Data)



Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

Size: Small

Reflectivity: Low

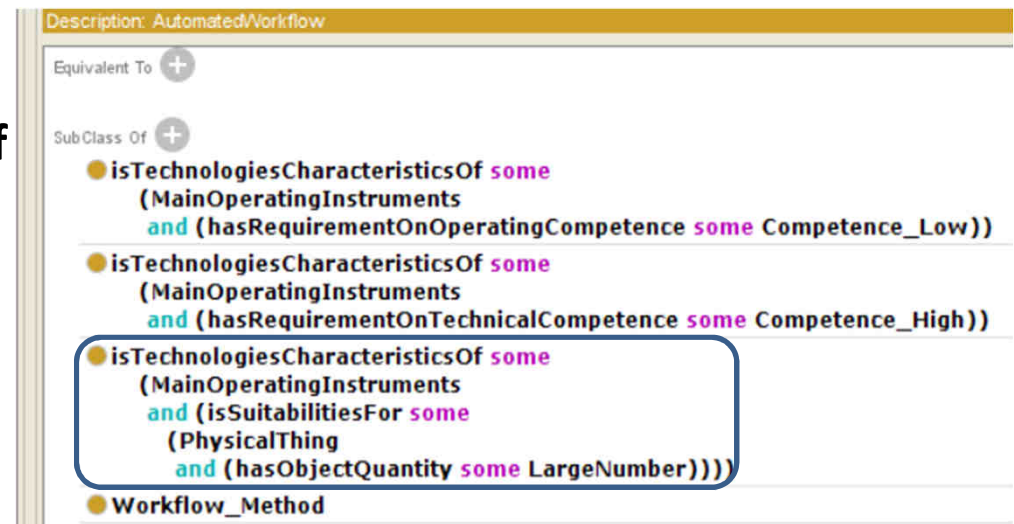
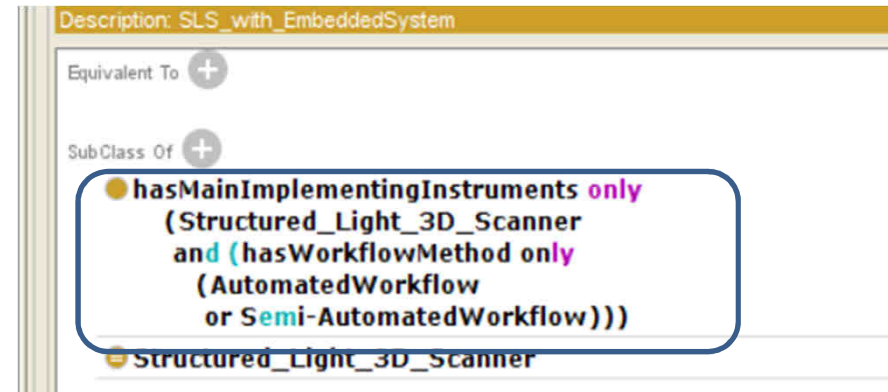
Quantity: Large

Texture: Non-Textured

Condition:

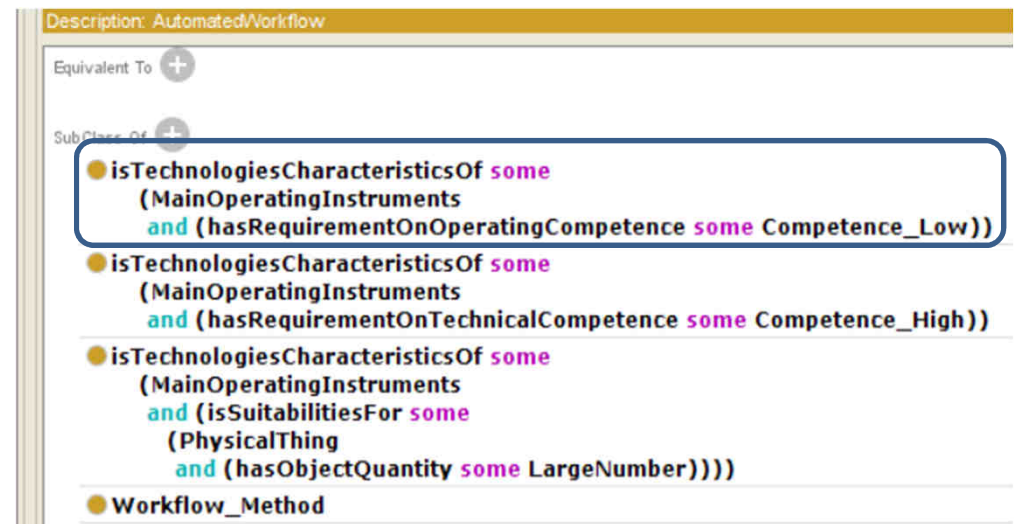
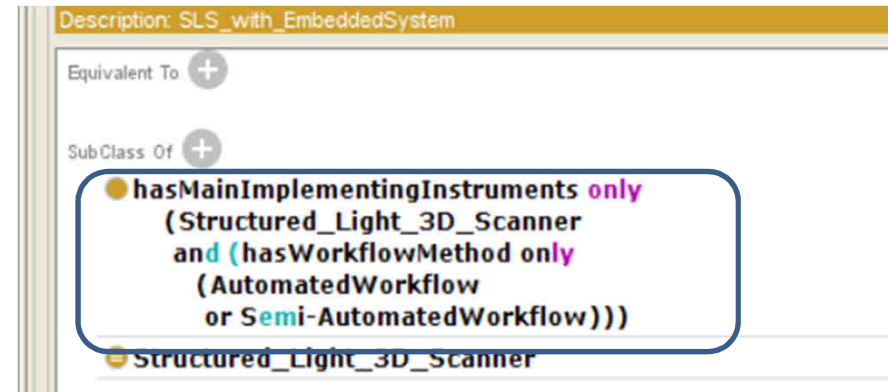
Technologies: Instruments

- **Structured Light Scanners**
 - Automated / Semi-Automated Workflow
- **Automated / Semi-Automated Workflow**
 - Suitable for large numbers of object

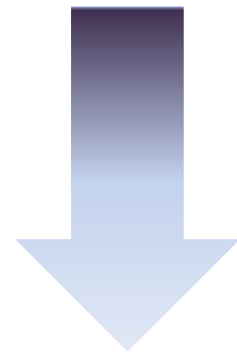


Technologies: Instruments

- **Structured Light Scanners**
 - Automated / Semi-Automated Workflow
- **Automated / Semi-Automated Workflow**
 - Suitable for operating staff competency: Low



CH Application (Deformation Analysis)

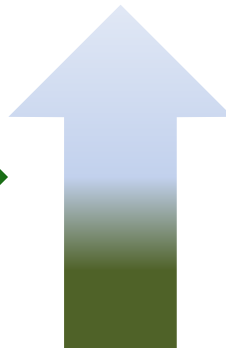
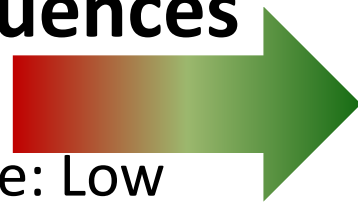


Data (High Accuracy 3D Data)

External Influences

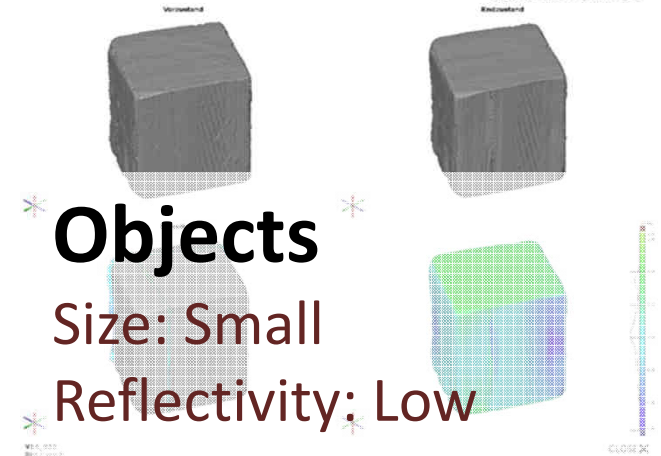
Project

Staff Competence: Low



Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

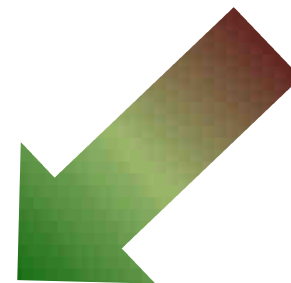
Size: Small

Reflectivity: Low

Quantity: Large

Texture: Non-Textured

Condition: Fragile



Technologies: Technical Process

- **Fragile**

- No internal markers

Description: Severely_Fragile

Equivalent To +

- isObjectCharacteristicsOf some (PhysicalThing and (hasORcanApply some (not InternalMarker)))
- isObjectCharacteristicsOf some (PhysicalThing and (hasObjectMobility some Mobility_Low))

- **Structured Light Scanning**

- Setup with Markers
- Generates highly accurate data

Description: Structured-Light-3D-Scanning

Equivalent To +

- hasMainImplementingInstruments only Structured_Light_3D_Scanner

SubClass Of +

- (hasMeasurementSetups some SL3DS-SetupWithMarker) and (hasMainImplementingInstruments only (Structured_Light_3D_Scanner and (hasGenerationOnData some (BasicData and (hasAlignedSpatialDataAccuracy only (AlignedAcBgSz_High-in-3D or AlignedAcMdSz_High-in-3D or AlignedAcSzSm_High-in-3D))))))
- (hasMeasurementSetups some SL3DS-SetupWithMarkerandTT) and (hasProcessingTime some ShortTime)
- TechnicalProcess

Technologies: Technical Process

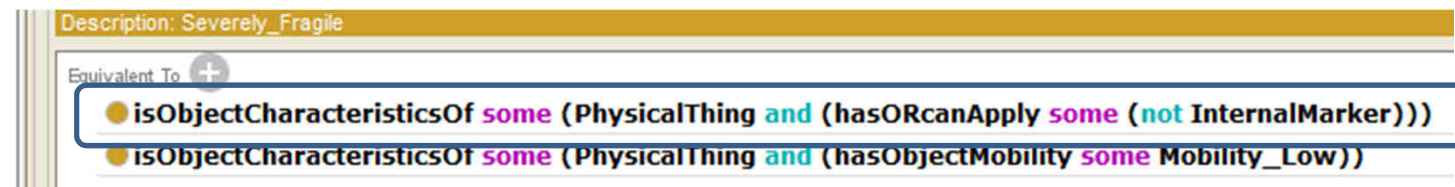
– Setup with Markers

- Needs at least 5 internal markers



– Object – Fragile

- No internal Marker Possible



CH Application (Deformation Analysis)

Data (High Accuracy 3D Data)

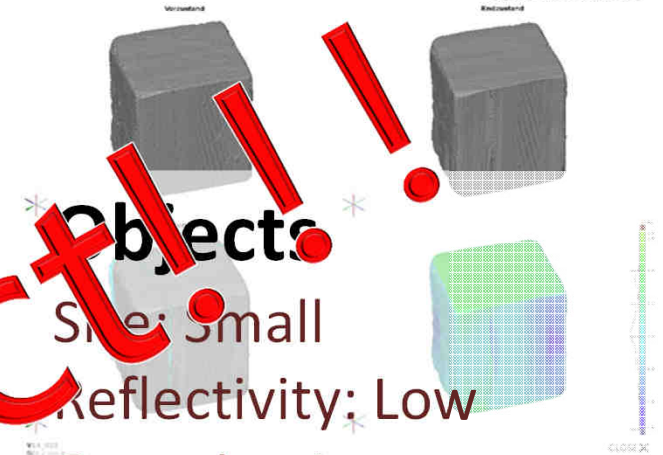
External Influences

Project

Staff Competence: Low

Technology

(Structured Light Scanning, Laser Scanning, SfM)



CH Application (Deformation Analysis)



Data (High Quality 3D Data)

External Influences

Project

Staff Competence: Low



Technology

(Structured Light Scanning, Laser Scanning, SfM)



Objects

Size: Small

Reflectivity: Low

Quantity: Large

Texture: Non-Textured

Condition: Fragile

but internal markers possible