AUTOMATING ANALYSIS

...and making it work

Martin Vester-Christensen

deformalyze
[data analysis by experts]

DEFORMALYZE

- Experts in
  - Computed Tomography
  - Image analysis
  - Statistics
  - Data mining
  - Mathematical modelling

- Services
  - Consultancy
  - Data analysis
  - Software development
  - Algorithms
  - Customized systems

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OUTLINE

CT IMAGE ANALYSIS ?

CASE: PIGCLASSWEB

ISSUES TO CONSIDER

Extraction of Information

ANALYSIS ?

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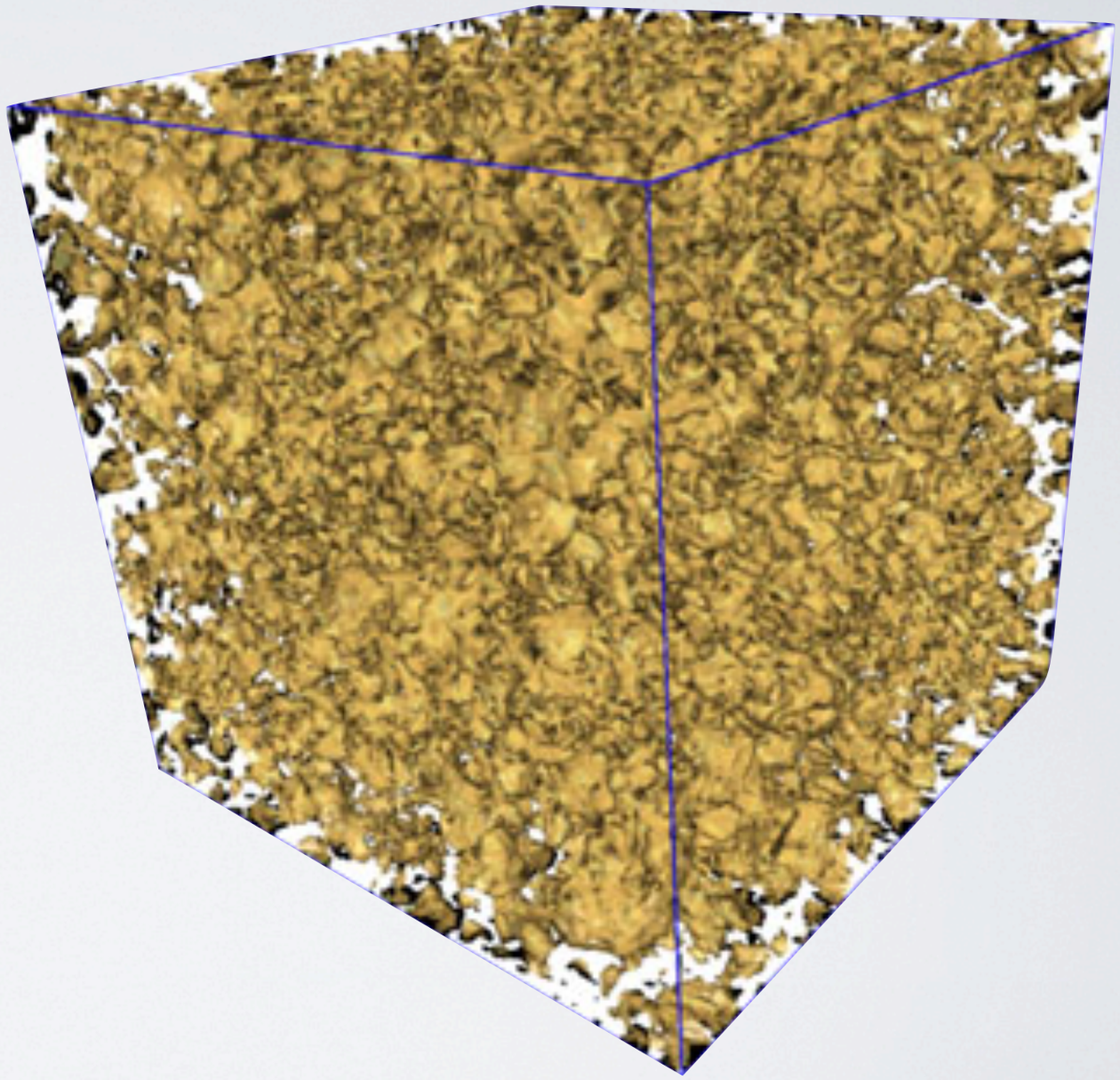
CT IMAGE ANALYSIS

- Materials Science



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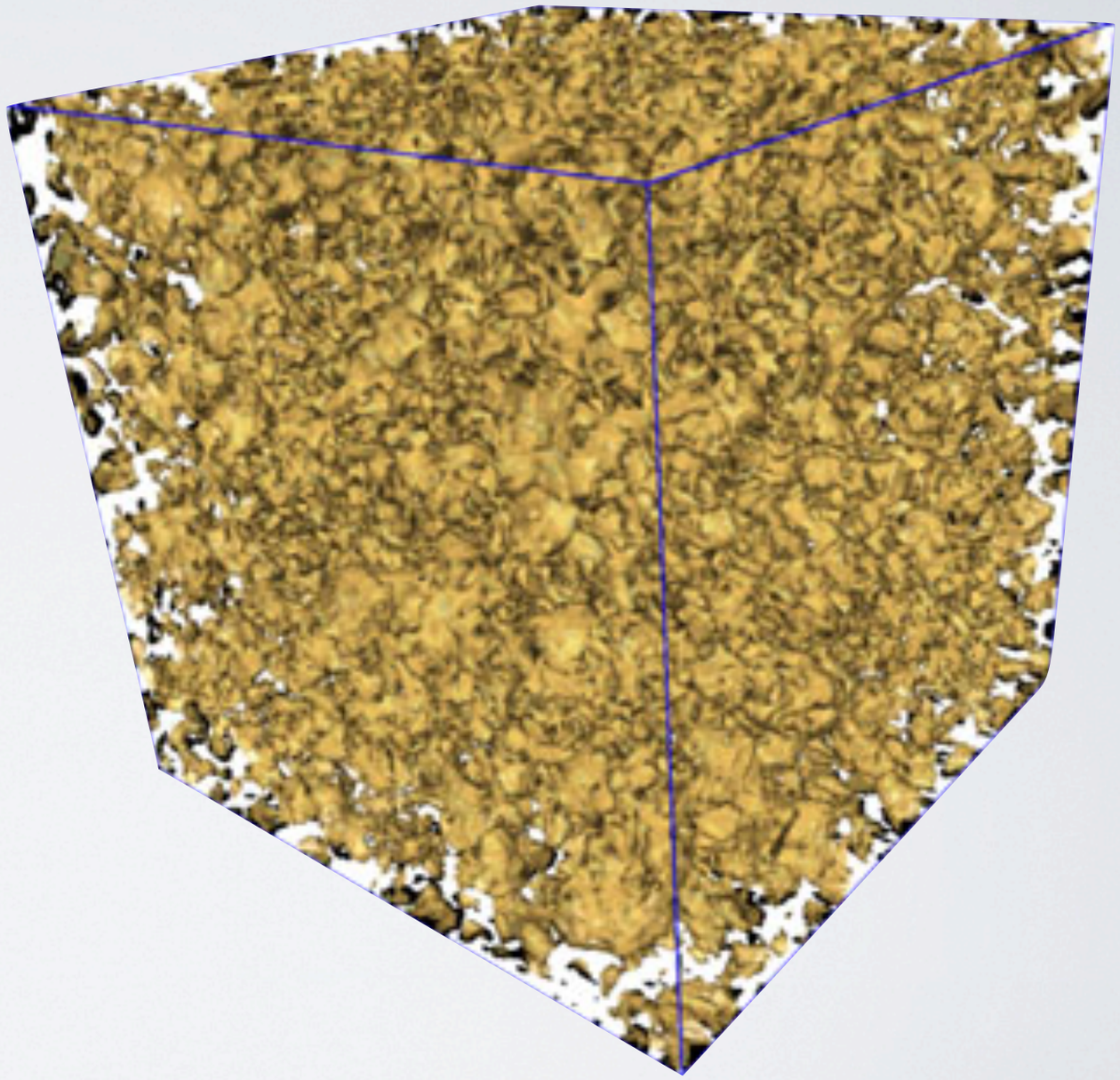
CT IMAGE ANALYSIS

- Materials Science
  - Grain size



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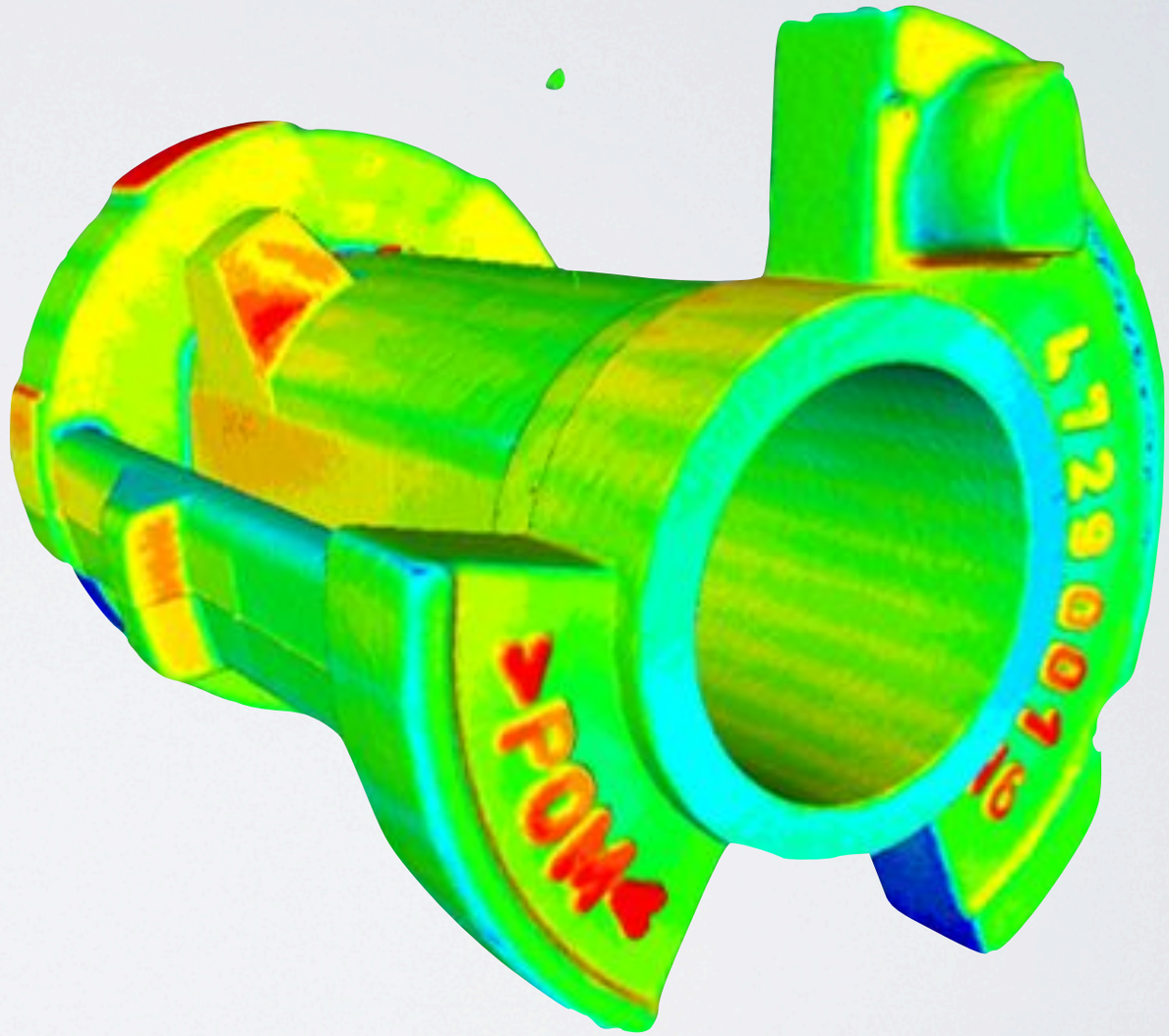
CT IMAGE ANALYSIS

- Materials Science
  - Grain size
- Metrology
  - Wall thickness



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CT IMAGE ANALYSIS

- Materials Science
  - Grain size
- Metrology
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- Medical
  - Tumor detection

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CT IMAGE ANALYSIS

- Materials Science
  - Grain size
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- Medical
  - Tumor detection
- Industrial
  - Meat quality

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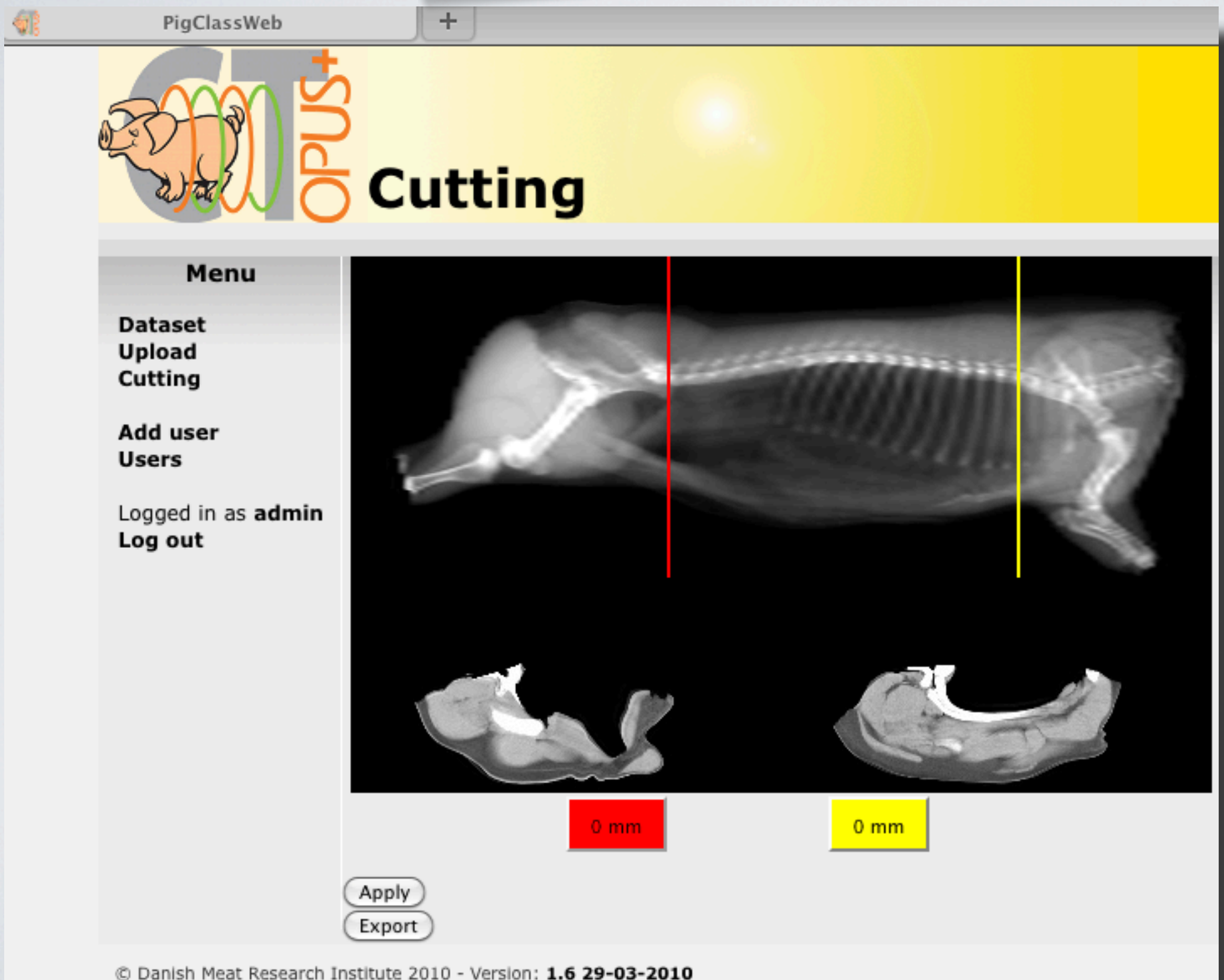
CASE: PIGCLASSWEB



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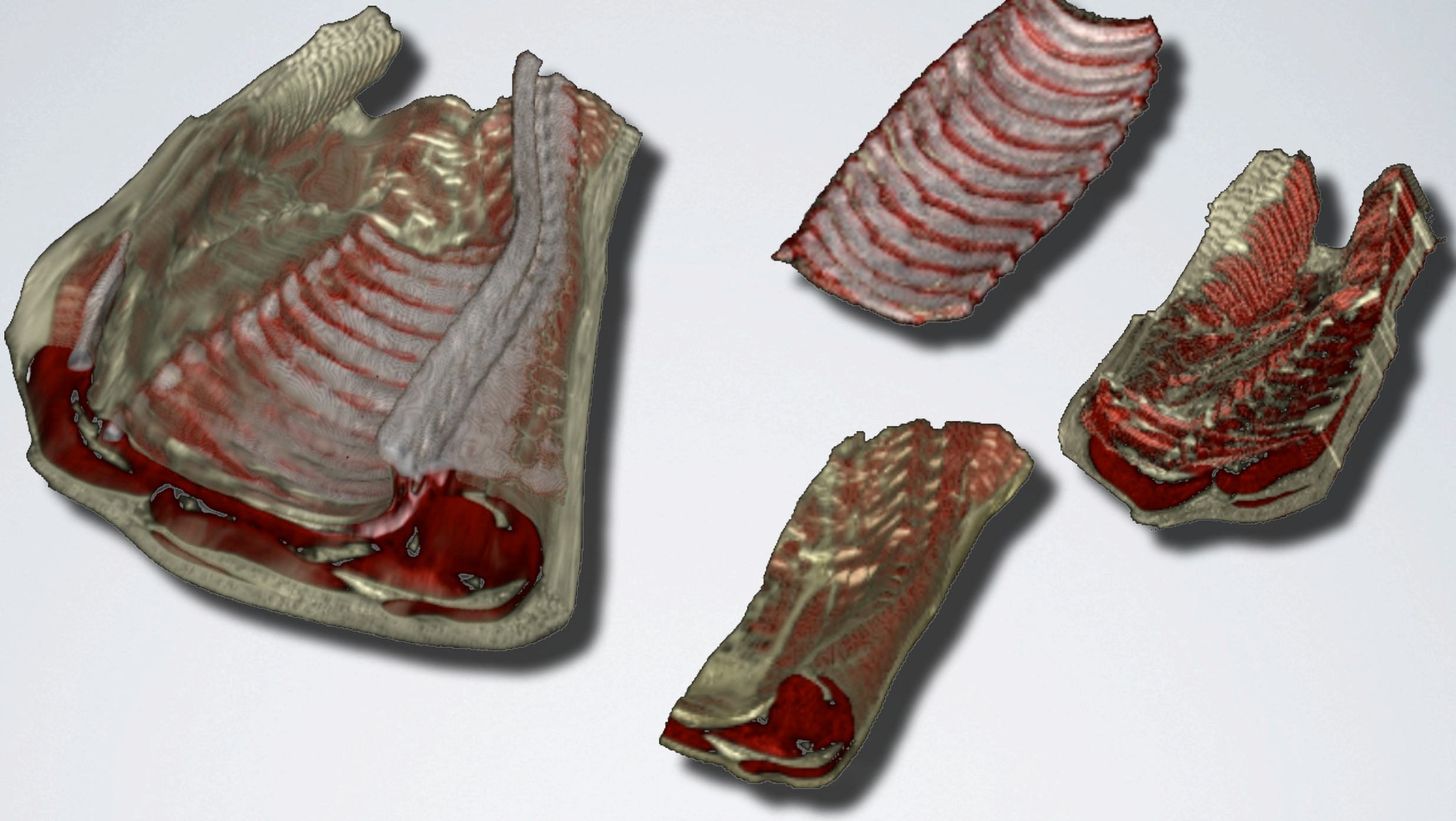

CASE: PIGCLASSWEB

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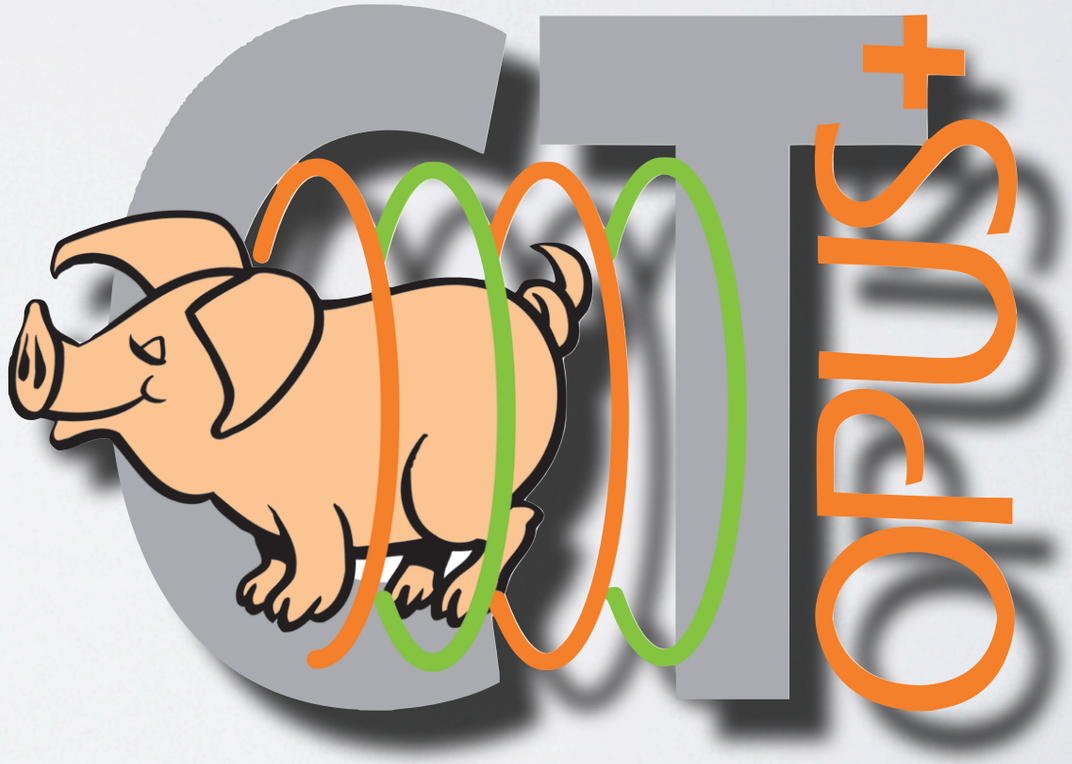
- **System for**
- ✓ Retrieving
- ✓ Storing
- ✓ Processing
- ✓ Analysing
- **CT scans of pig carcasses**

- **Web-based interface for**
- ✓ Visualisation
- ✓ Simulation
- ✓ Statistical analysis
- **In the browser**

- **Developed for**

DMRI
Danish Meat Research Institute
En Division i Teknologisk Institut



CASE: PIGCLASSWEB

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Object

Data Acquisition

Data Transmission

Processing

Storage

Simulation

CASE: PIGCLASSWEB

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CASE: PIGCLASSWEB

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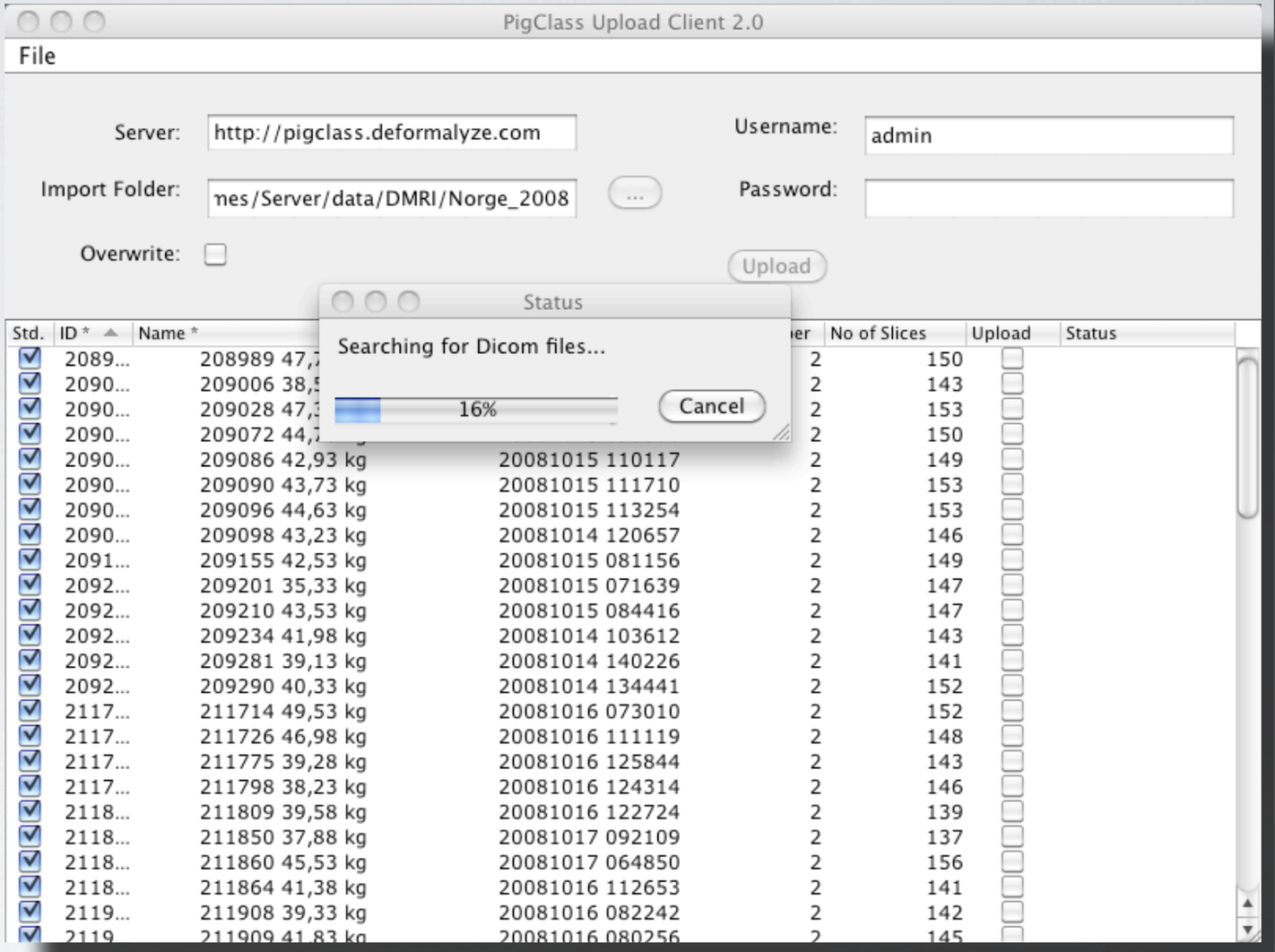

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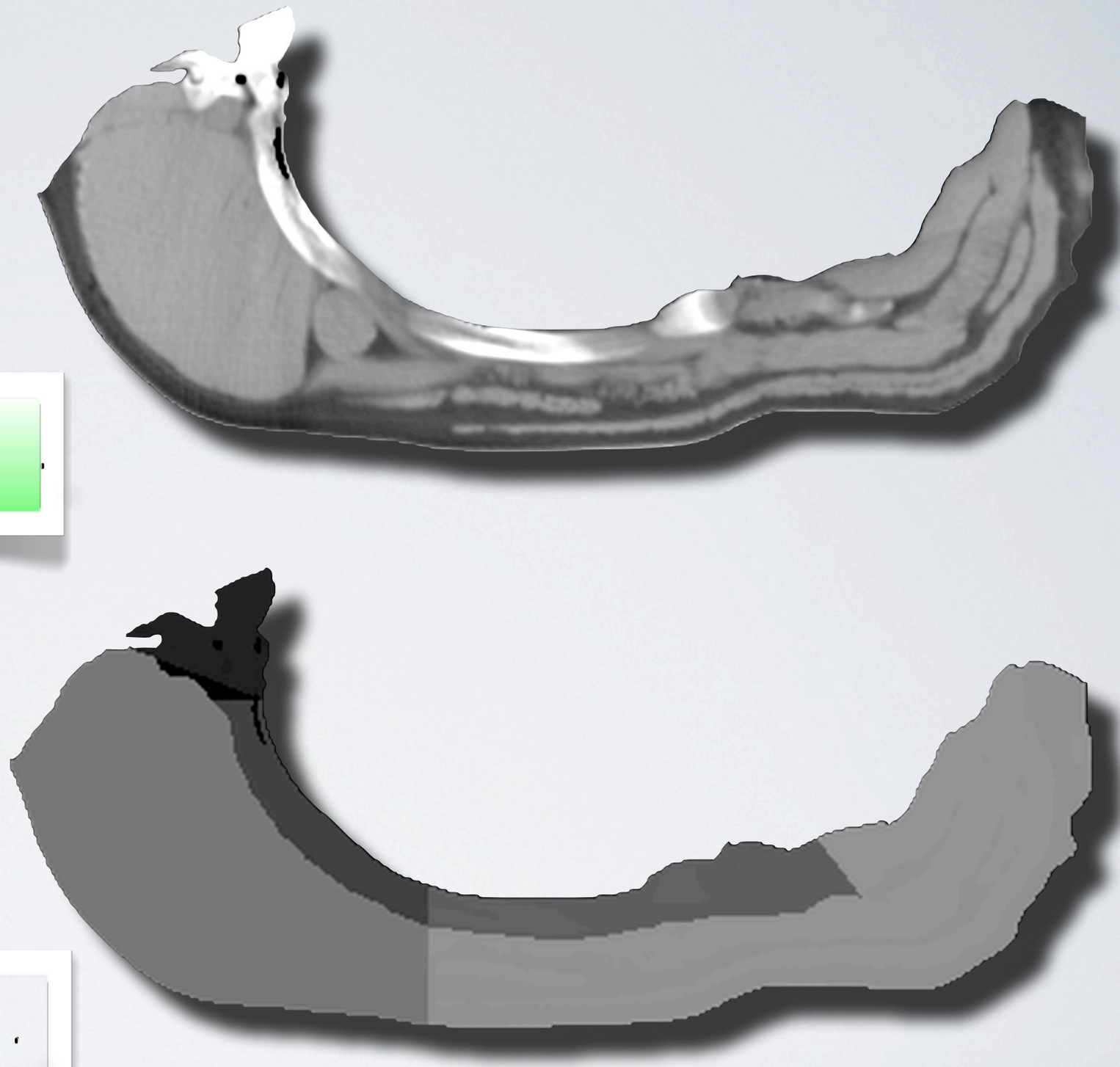

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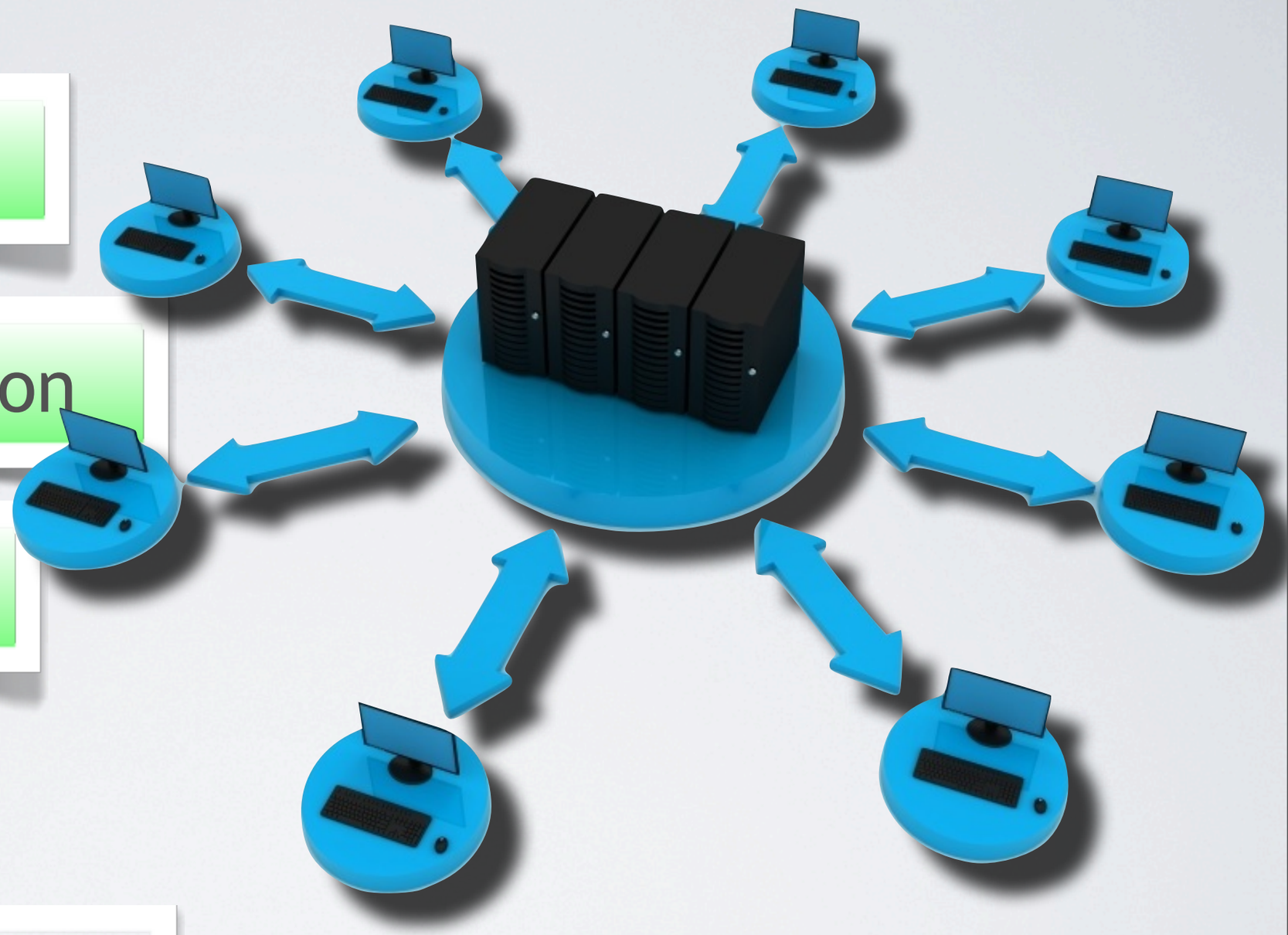

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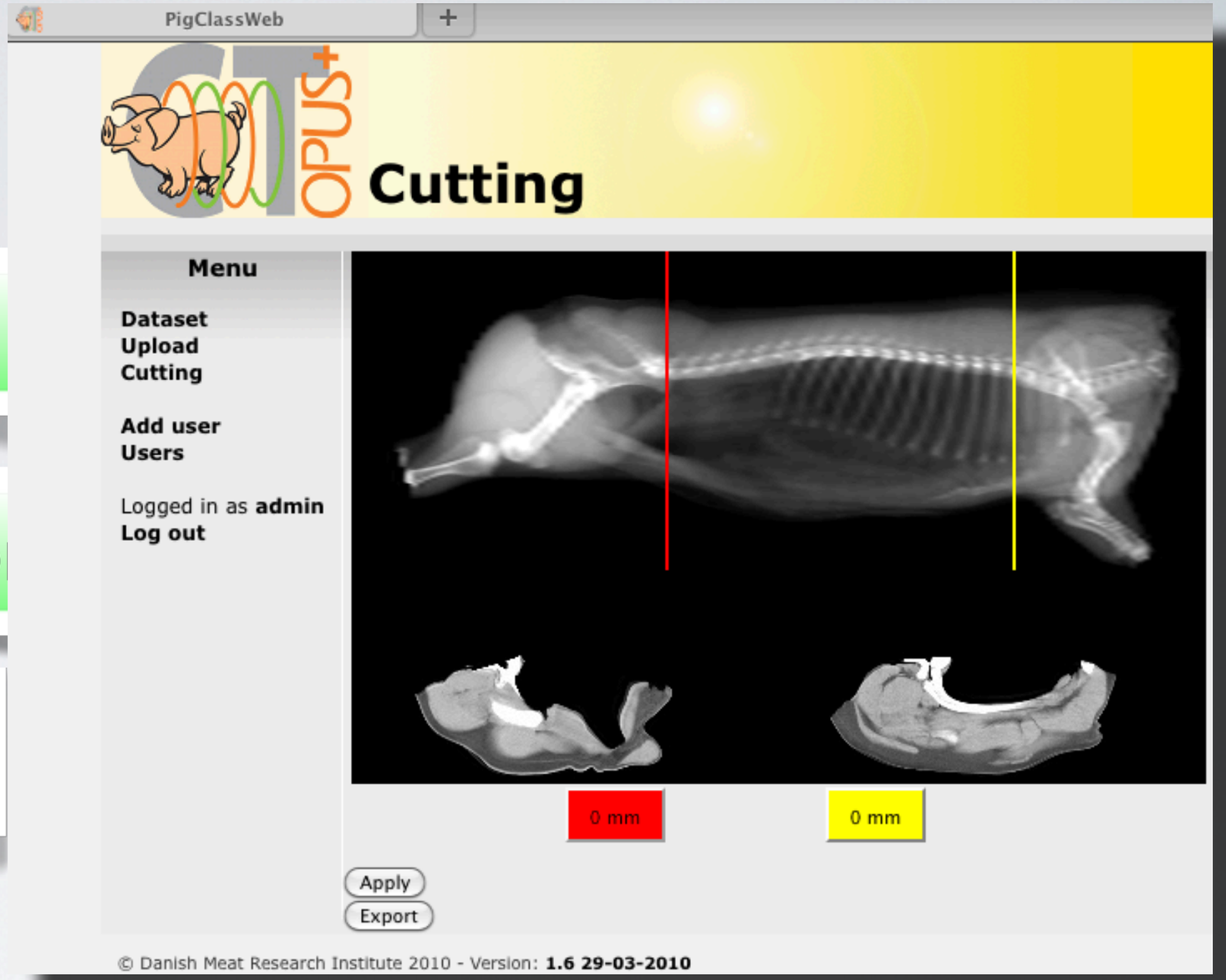

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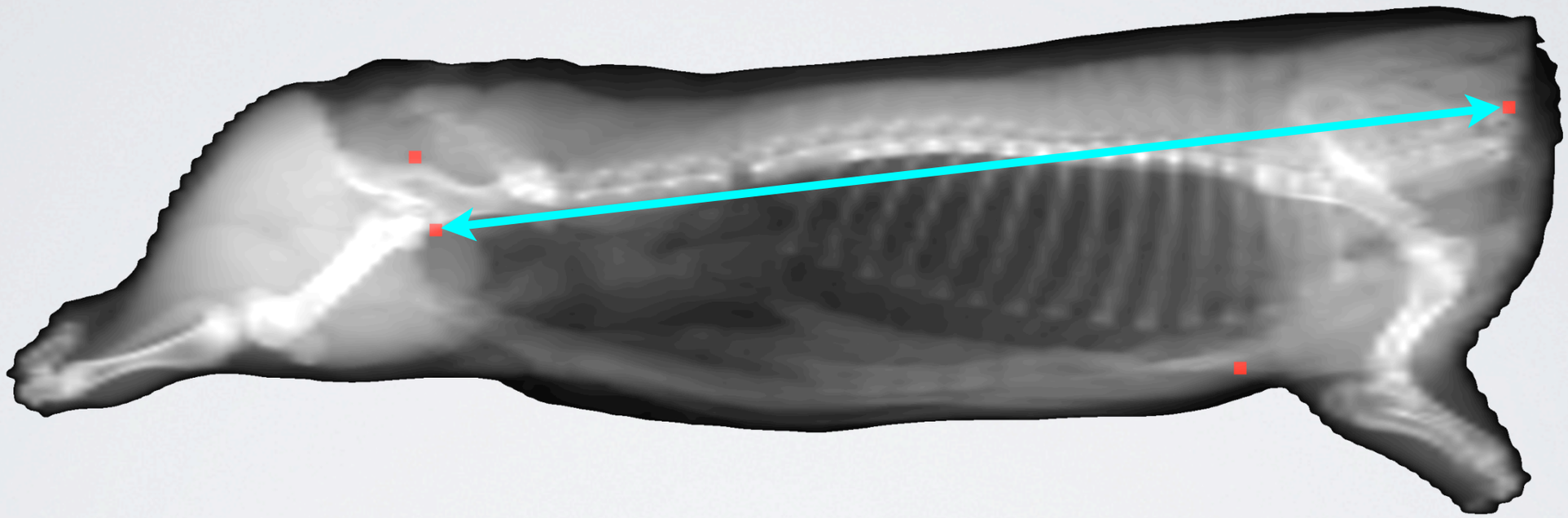
DATA ACQUISITION

ISSUES TO CONSIDER

- Position object
  - Consistently
  - Minimize artefacts
- Optimal settings
  - Resolution / Amount of data
  - Energy
  - Price
  - Reconstruction algorithm
- Operator
  - Discipline
  - Immediate feedback helps

DATA PROCESSING

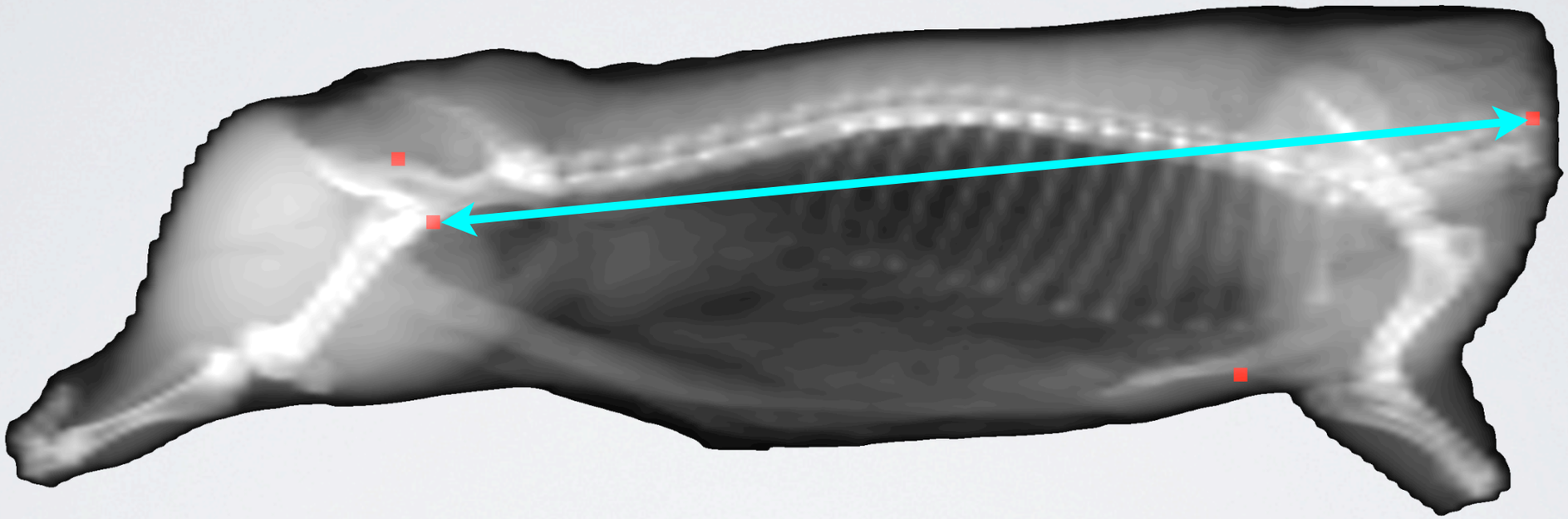
ISSUES TO CONSIDER



CHOICE OF COORDINATE SYSTEM

DATA PROCESSING

ISSUES TO CONSIDER



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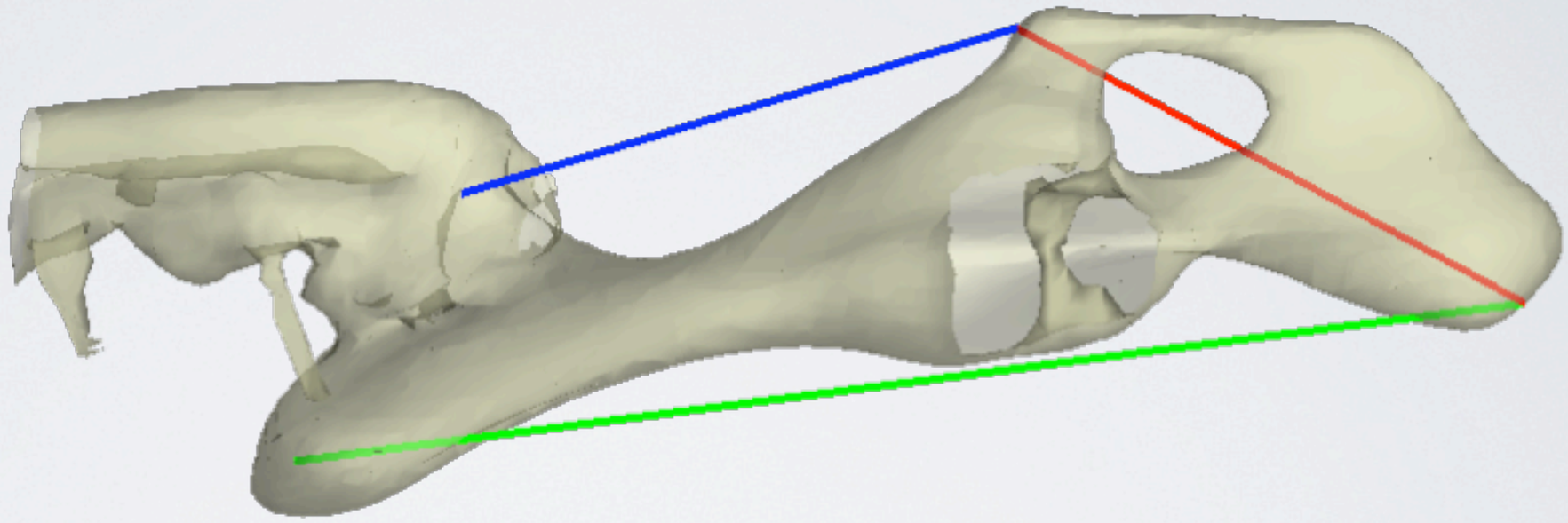

MEASUREMENT REPEATABILITY

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USABILITY

ISSUES TO CONSIDER

- Speed of response
  - Reduce amount of data
  - Graceful degradation
  - Optimize by precalculation
- K.I.S.S.
  - Visua-less
  - Minimize click-ratio

AUTOMATION

Key Selling Points !

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AUTOMATION

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- Less operator workload

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  - Minimize drag'n'drop operations

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  - Automatic QC

AUTOMATION

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  - Sorting
  - Automatic QC
  - Product insight

AUTOMATION

Key Selling Points !

- Less operator workload
  - Minimize drag'n'drop operations
  - Increased volume - more data
  - Focus time on what is important
- Population based information
  - Sorting
  - Automatic QC
  - Product insight
- Data re-use!