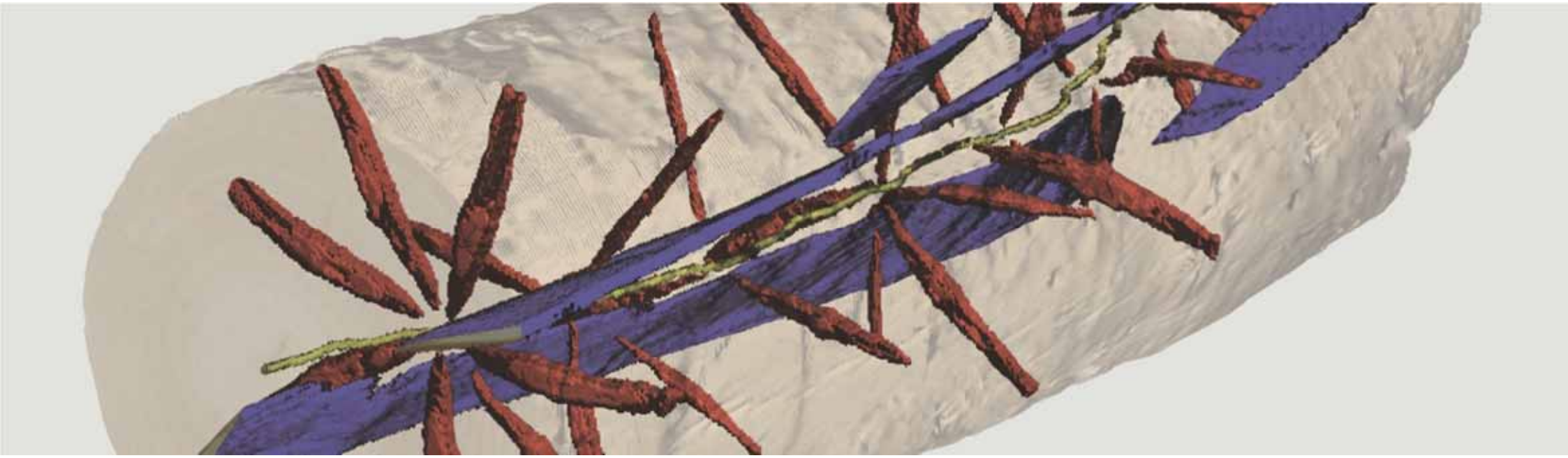
MiCROTEC
INNOVATING WOOD

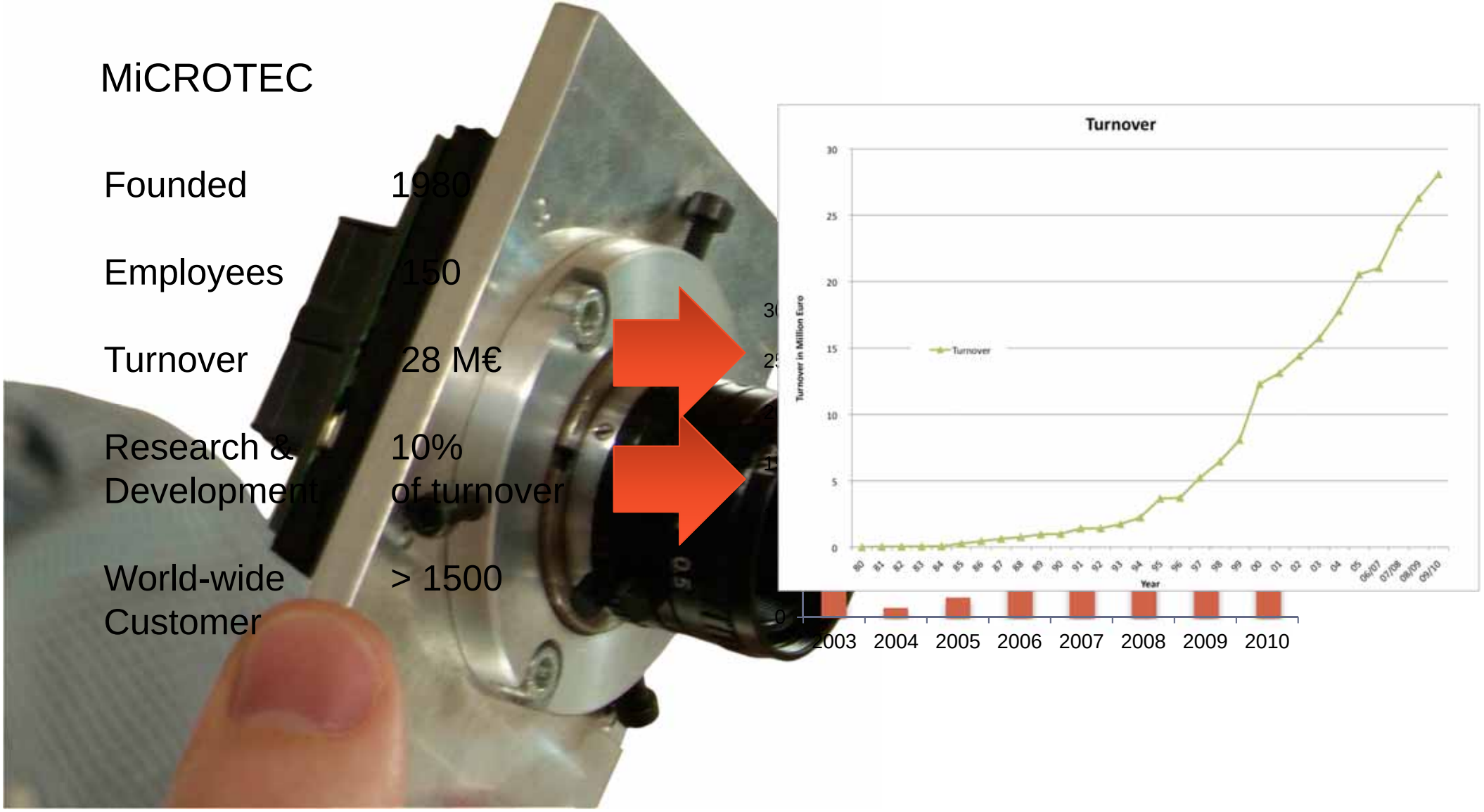


COMPUTER TOMOGRAPHY FOR LOGS

Value optimization for the woodworking industry

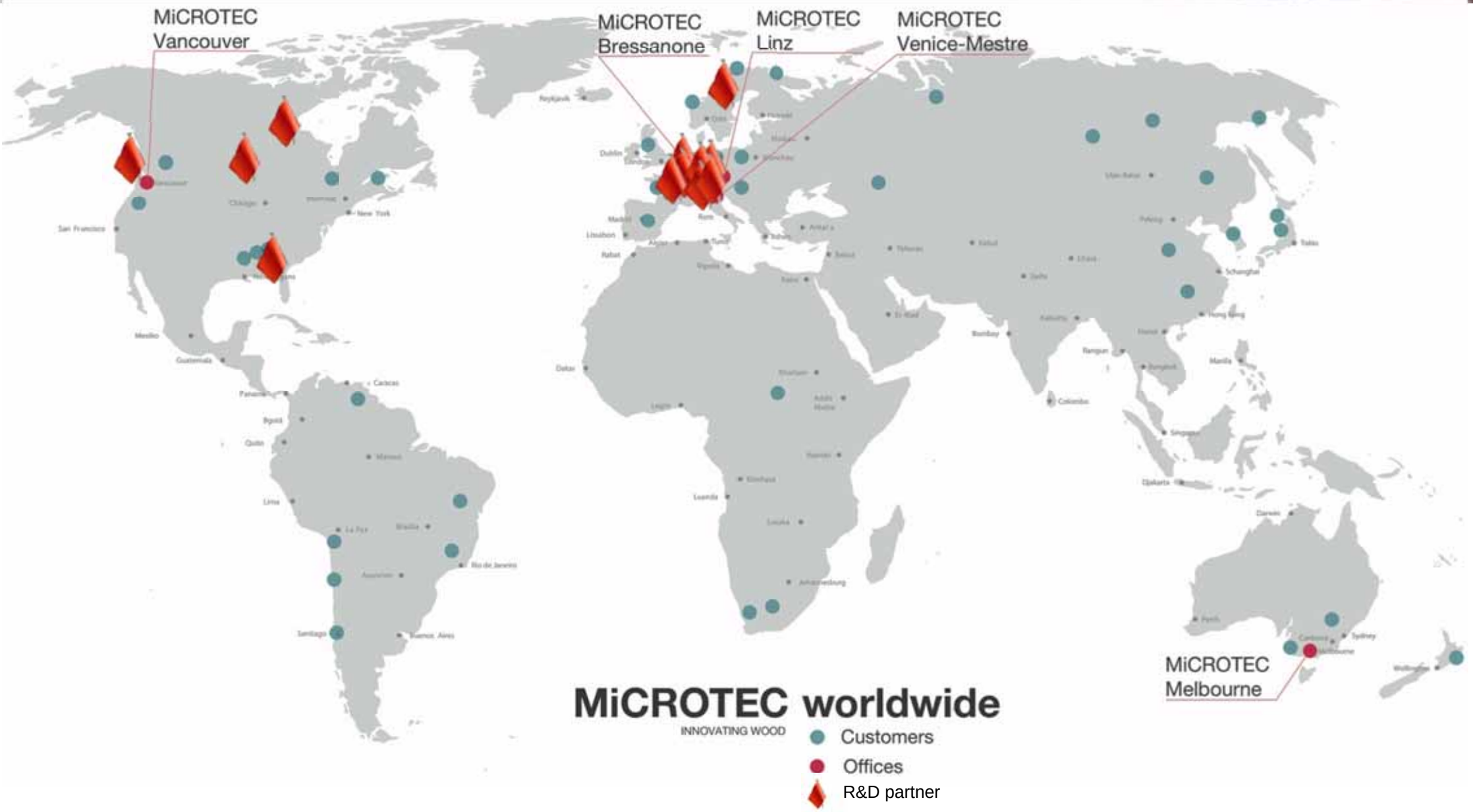
MiCROTEC

Founded	1980
Employees	150
Turnover	28 M€
Research & Development	10% of turnover
World-wide Customer	> 1500



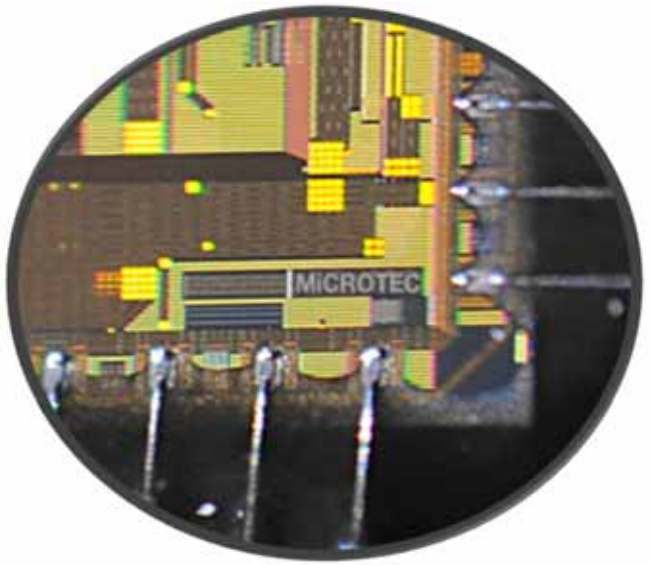
www.microtec.eu BRIXEN VENEZIA · LINZ · VANCOUVER · MELBOURNE

MiCROTEC
INNOVATING WOOD



A GLOBAL PLATFORM FOR LOCAL EXCELLENCE

MiCROTEC‘s Technology is vertically integrated



Chip-design

- Camera sensors

Sensor-design

- Infrared scanning
- Shadow scanner
- Laser scanning
- High speed color scanning
- X-ray imaging
- Radio & microwave technology
- Computer tomography

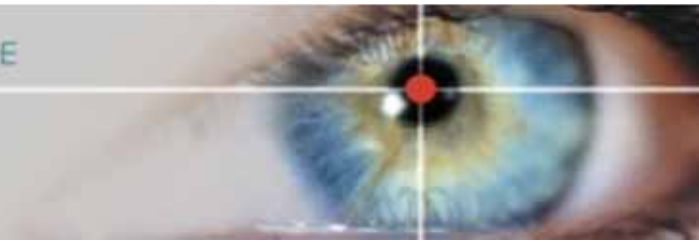
Control-design

- PLC controls

Software-design

- C++ applications
- High speed image processing
- Artificial vision

Application-design



THE TECHNOLOGICAL ROADMAP

The technological roadmap of the wood industry results from applied medical innovations.
The challenge remains to adapt these technologies to the performance requirements of the wood industry.

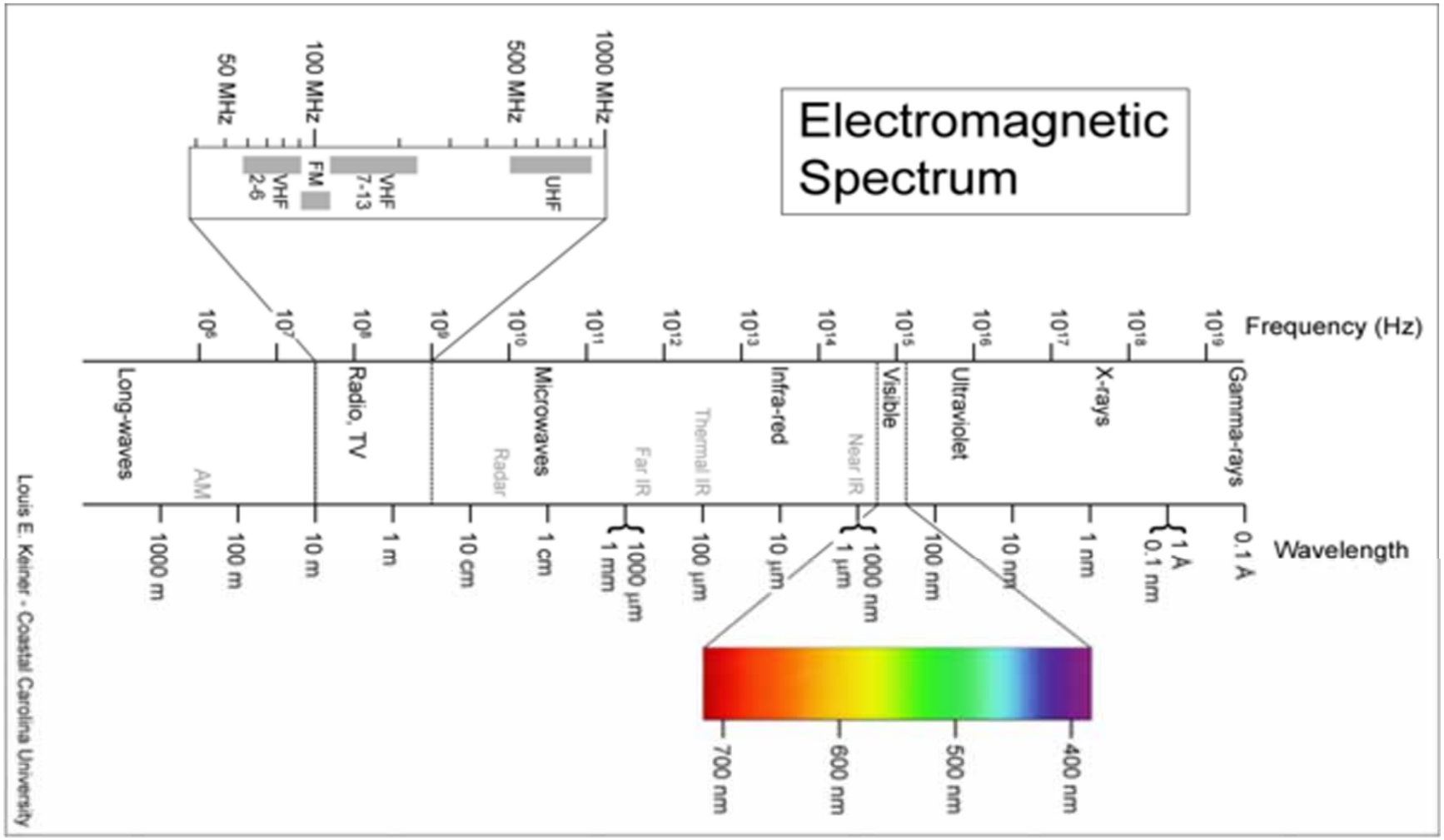
Medical

Radiography	Ultrasonography	CT	NMR
1896	1964	1972	1977

Woodworking

Radiography	Ultrasound	CT
1992	2000	2011

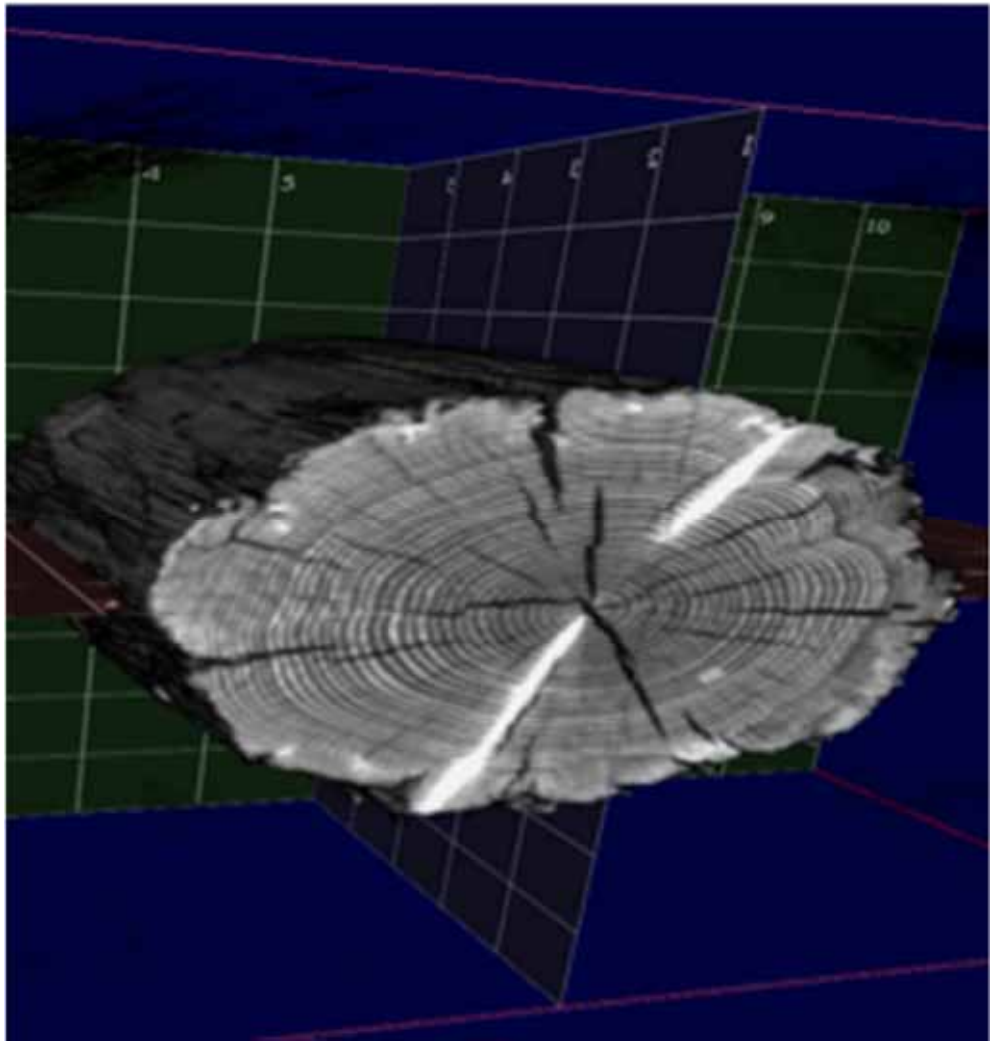
MULTISENSORY APPROACH TO ARTIFICIAL VISION



	Disruptive Innovation
CT.LOG	Full CT for industrial internal Log Scanning

VISION

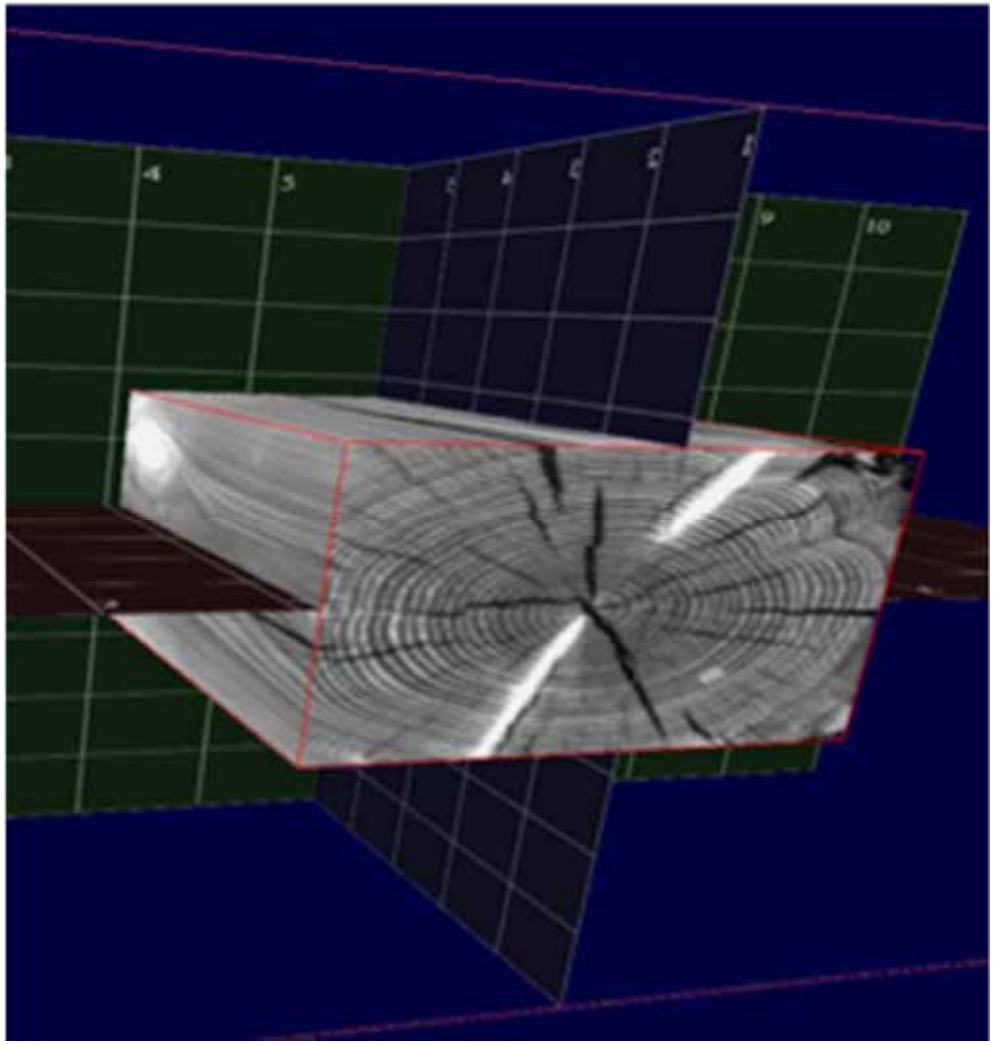
I. A full digital log reconstruction for volume and quality determination.



CT.LOG

VISION

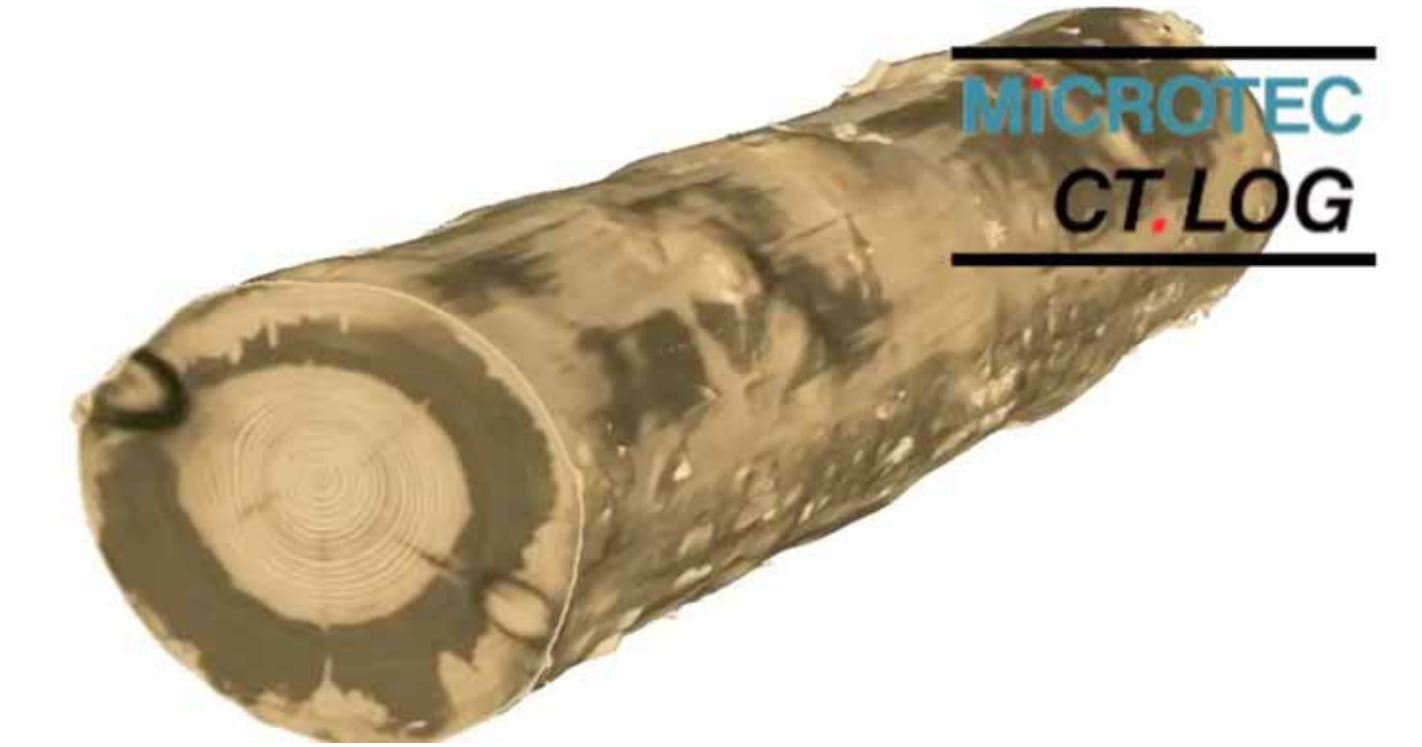
II. A virtual primary breakdown for determining the value of the products. This process can be repeated until the value-optimized cutting-mask has been identified.



CT.LOG

VISION

III. To fully automate it.



CT.LOG

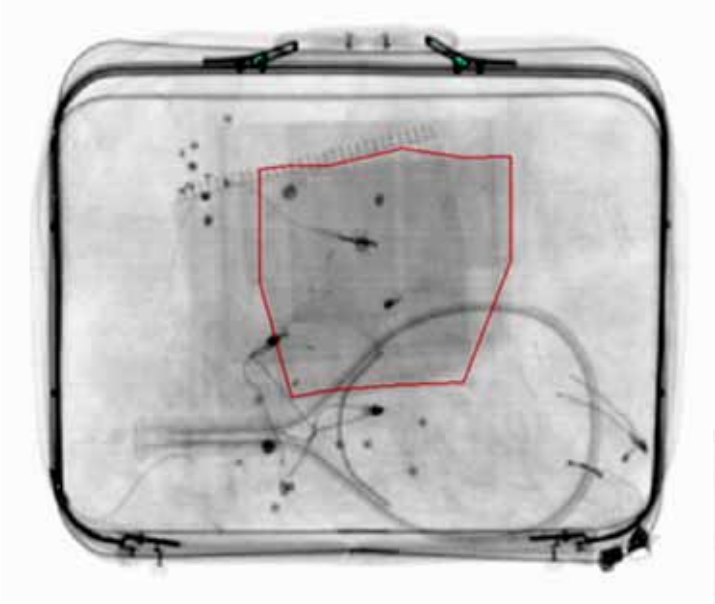
X-RAY VS CT SCANNING

X-ray scanning allows a two-dimensional view of an objects.

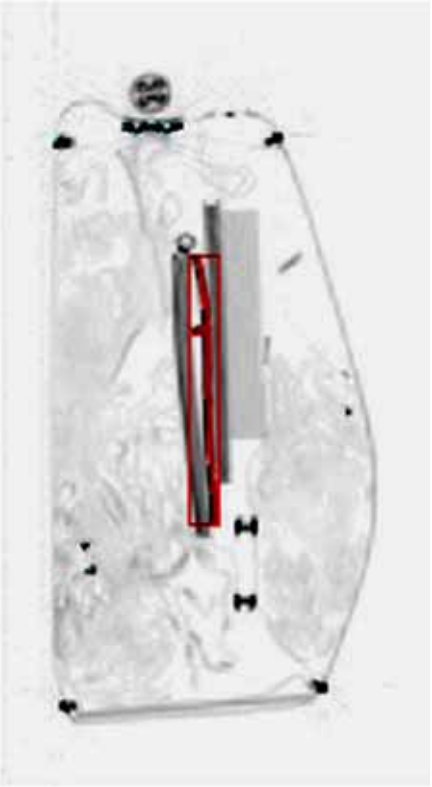
CT scanning “sees” the third dimension of the object.

X-RAY VS CT SCANNING

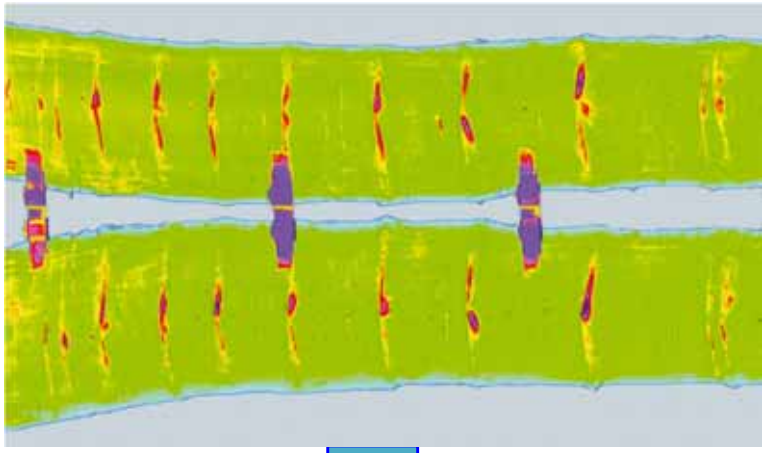
X-ray scanning allows a two-dimensional view of an objects.



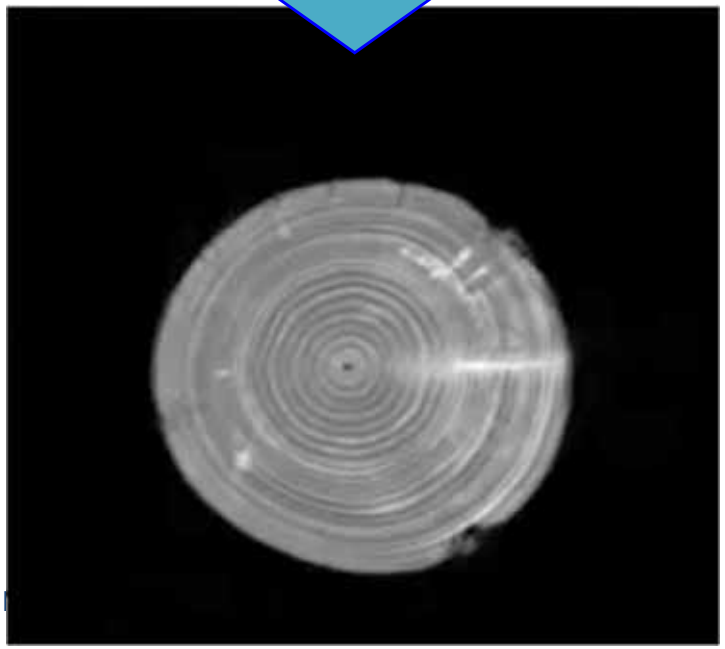
CT scanning “sees” the third dimension of the object.



COMPUTER TOMOGRAPHY

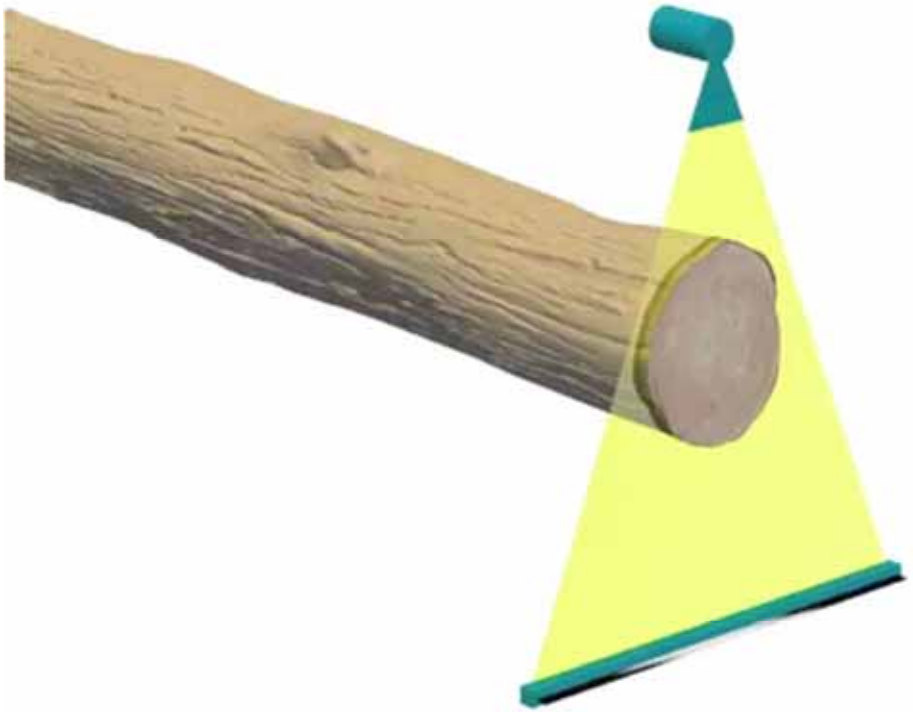


Radiography gives a two-dimensional view of an object

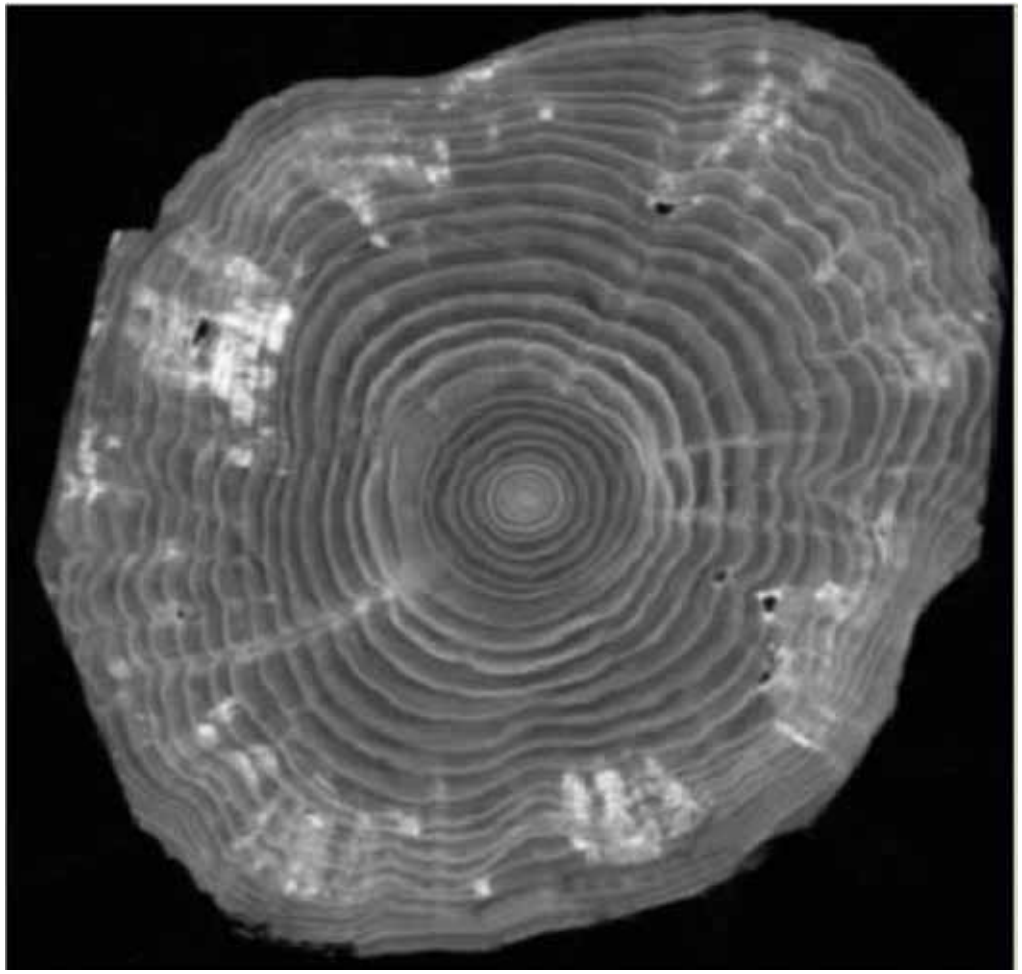


CT can “see” the third dimension of the object

COMPUTER TOMOGRAPHY

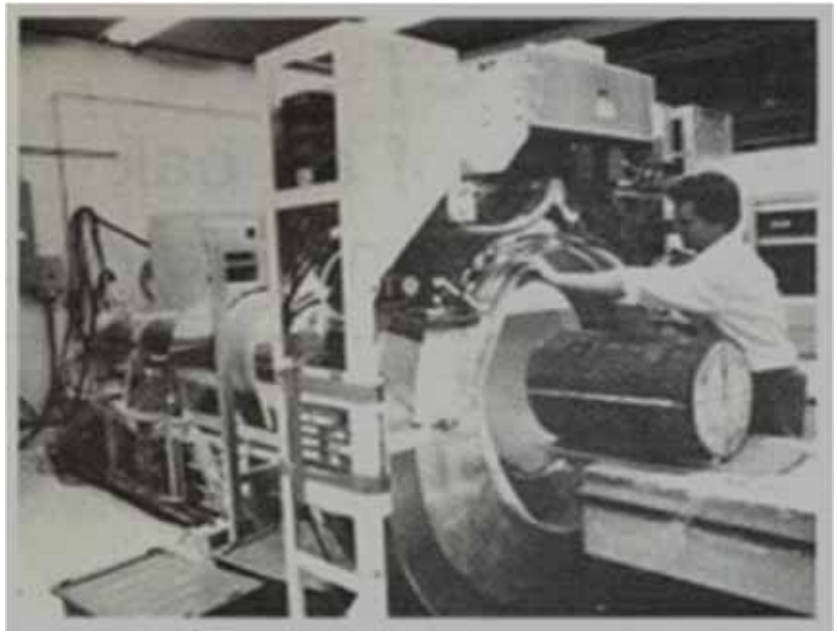


COMPUTER TOMOGRAPHY



Reconstruction of the Axial Image after the Tomographic Inversion (Radon Transform) of the sinogram

COMPUTER TOMOGRAPHY



First Log in a CT Scanner :
Imatron (California) 1986

FIRST TRIALS

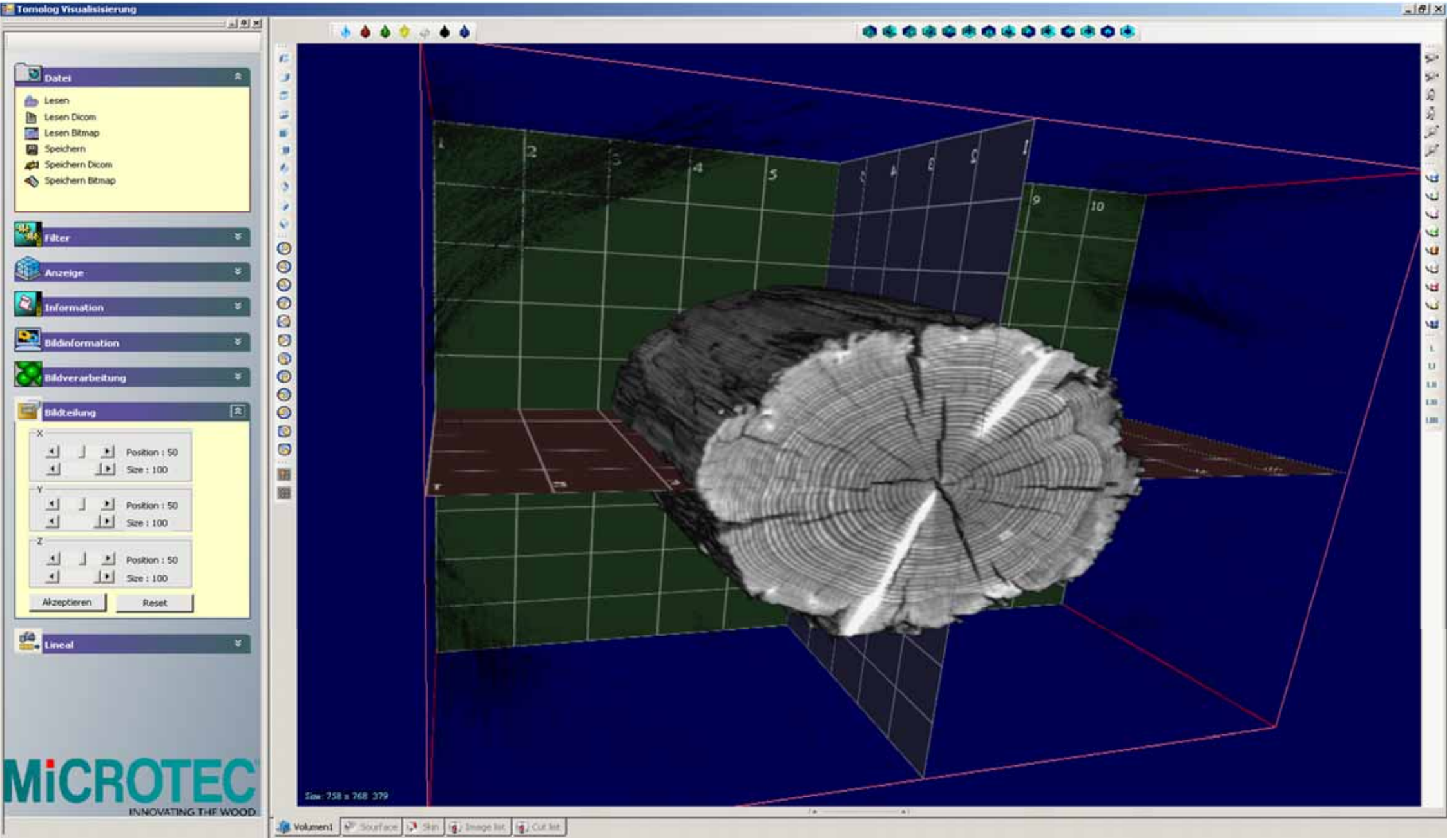
First full Log scanned:
Lousiana State University 1994

CT.LOG

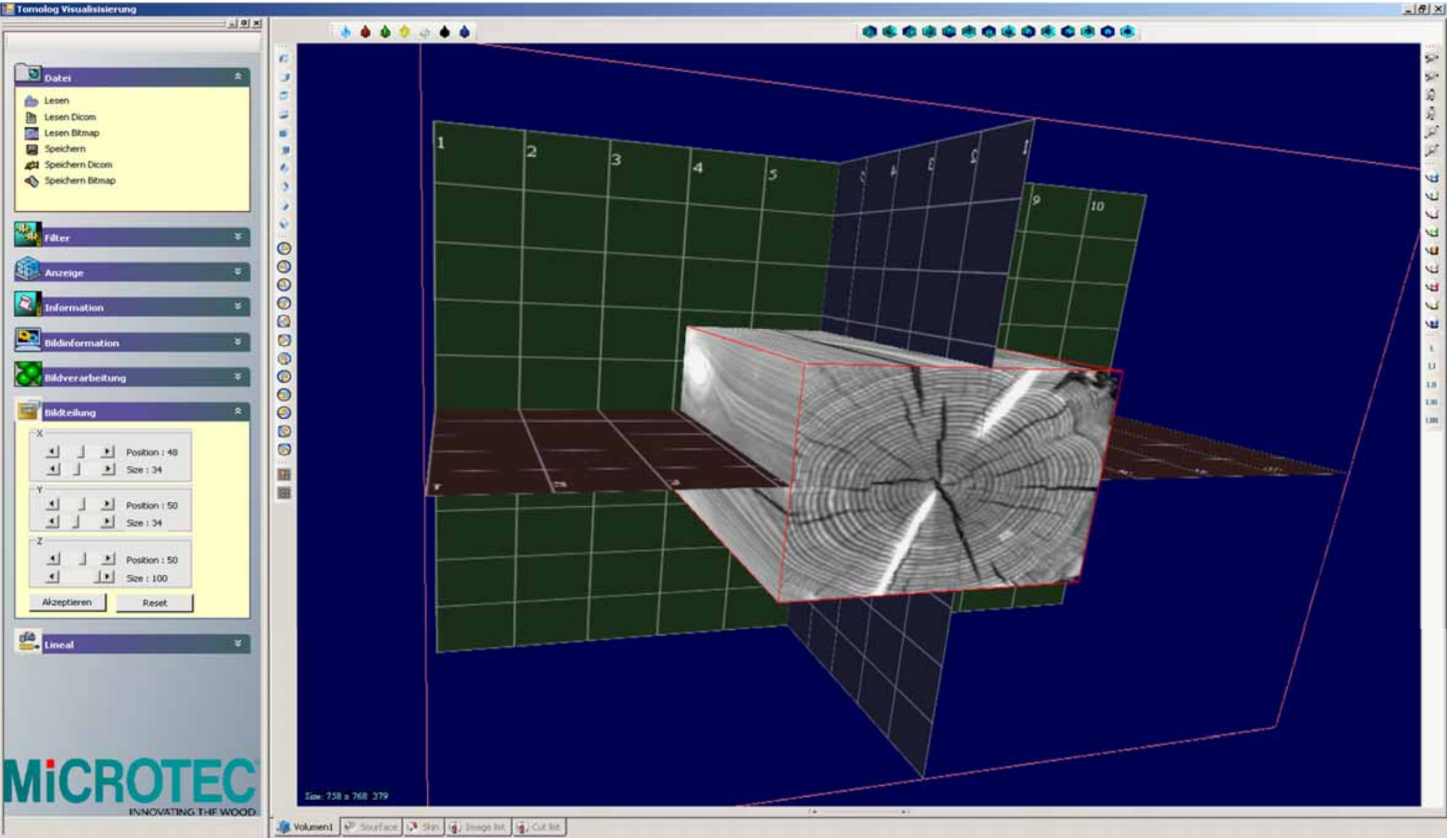
Cone Beam Computer Tomograph at the Wood Research Center of Freiburg Germany (FVA)

Operations were started October 2007.

The Machine is used for developing and validating the Algorithms for the TOMOLOG by delivering the reference and simulating different projections for an optimal choice of number and angular distance of the Multi-view projections



MiCROTEC
INNOVATING WOOD

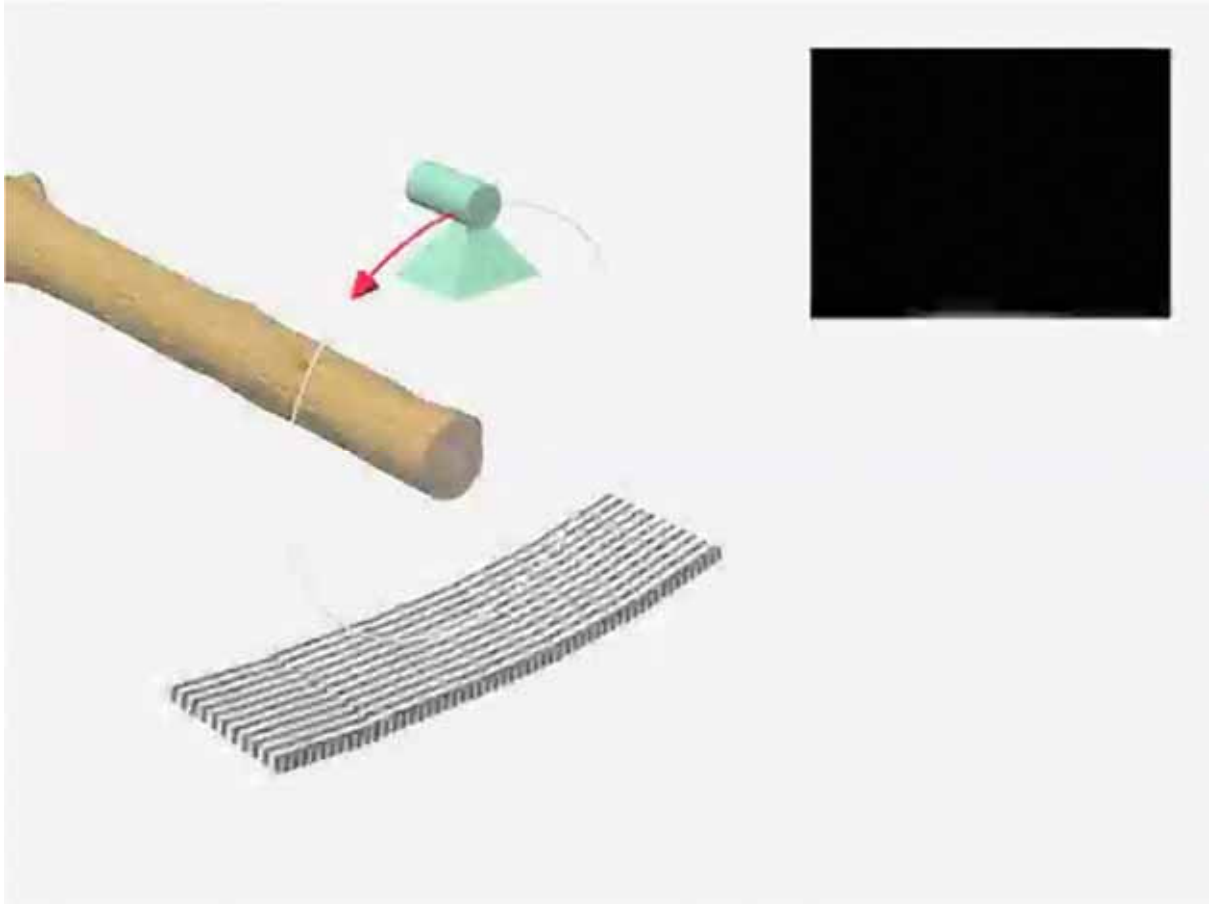


COMPUTER TOMOGRAPHY

Multi-slice Spiral
Cone Beam CT

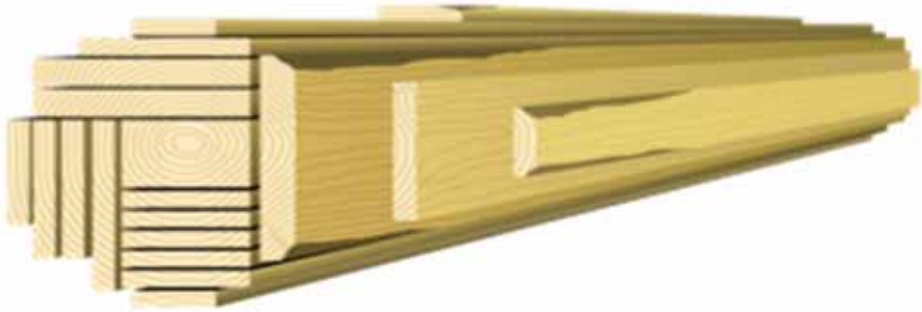
CT.LOG is designed
With max 64 row
Detector-array

Max scanning speed
140 m/min



FROM VOLUME (YIELD) TO VALUE (OPTIMIZATION)

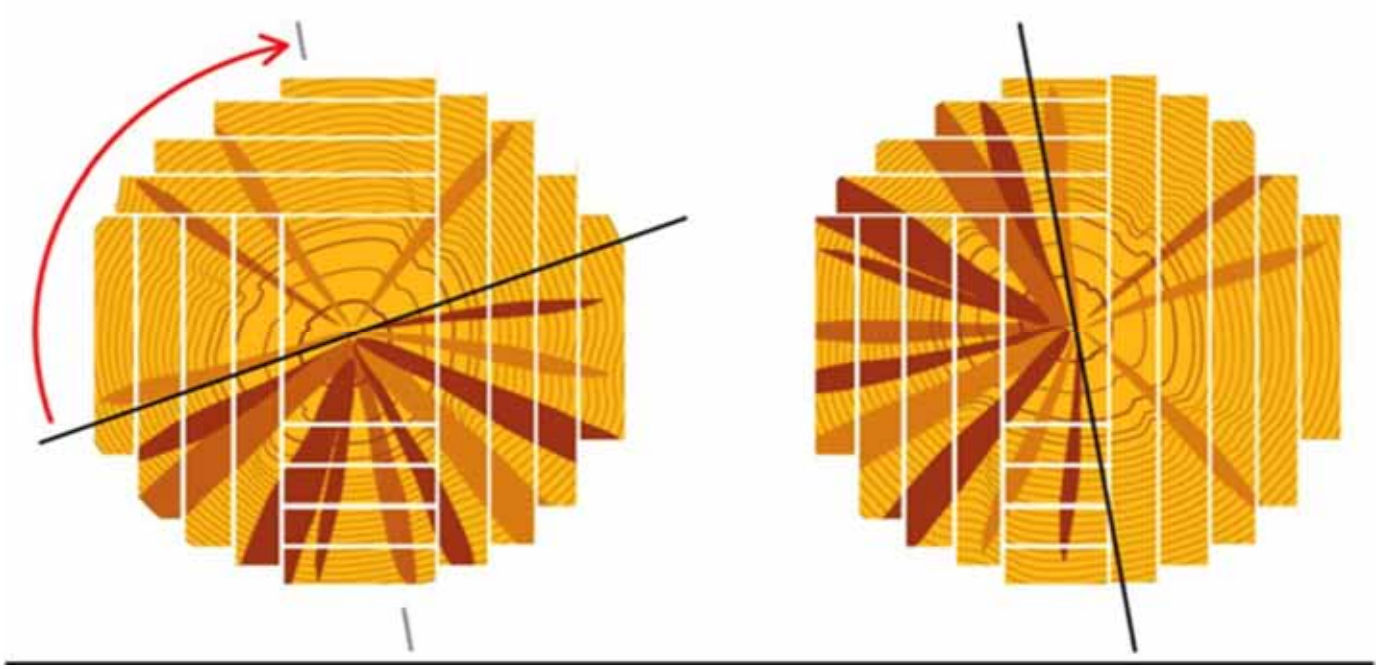
Yield maximization increases volume of sawn wood regardless of its value.



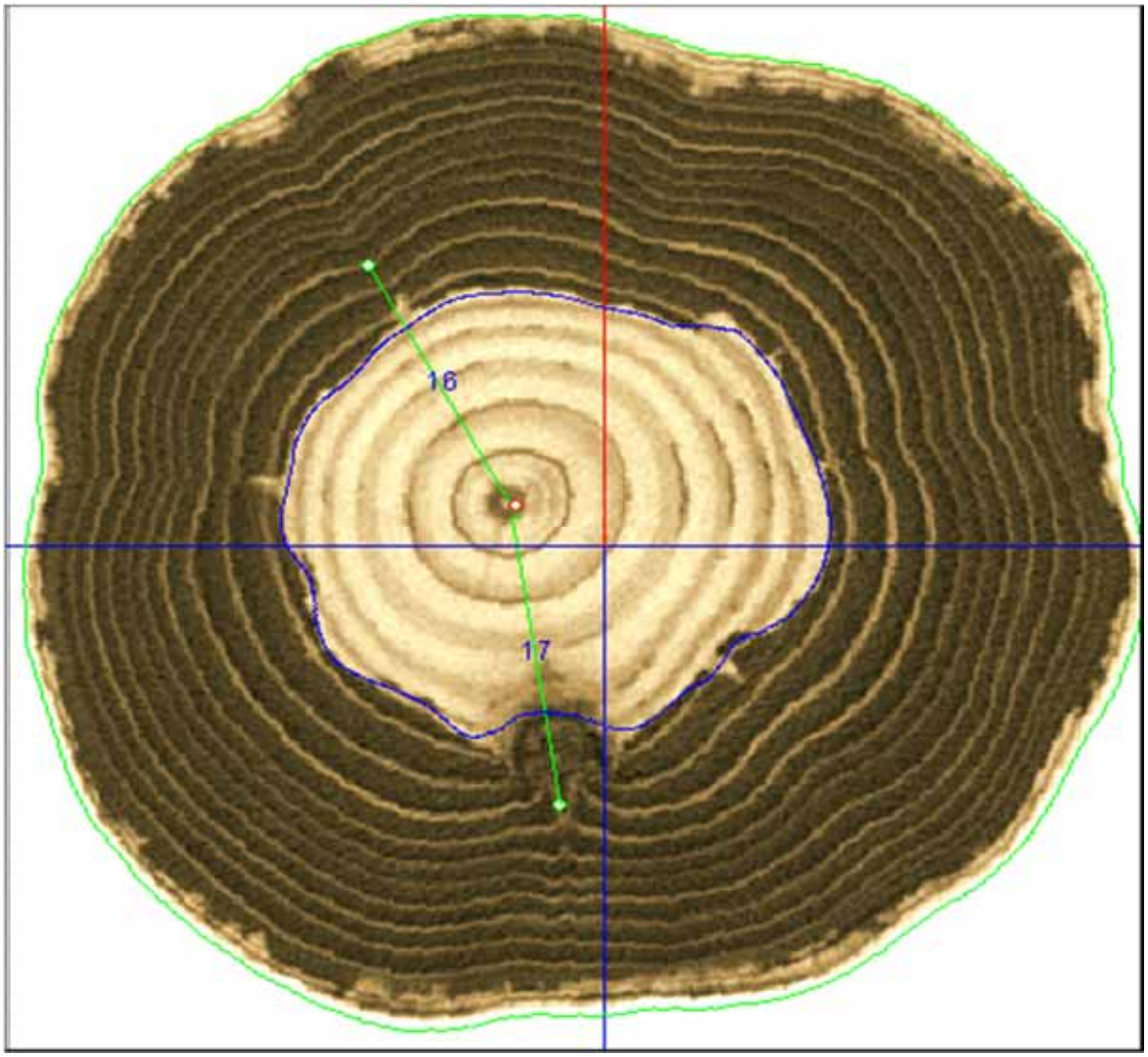
Value optimization increases the overall value of production regardless of its volume.

CT.LOG

FROM VOLUME (YIELD) TO VALUE (OPTIMIZATION)



CT.LOG



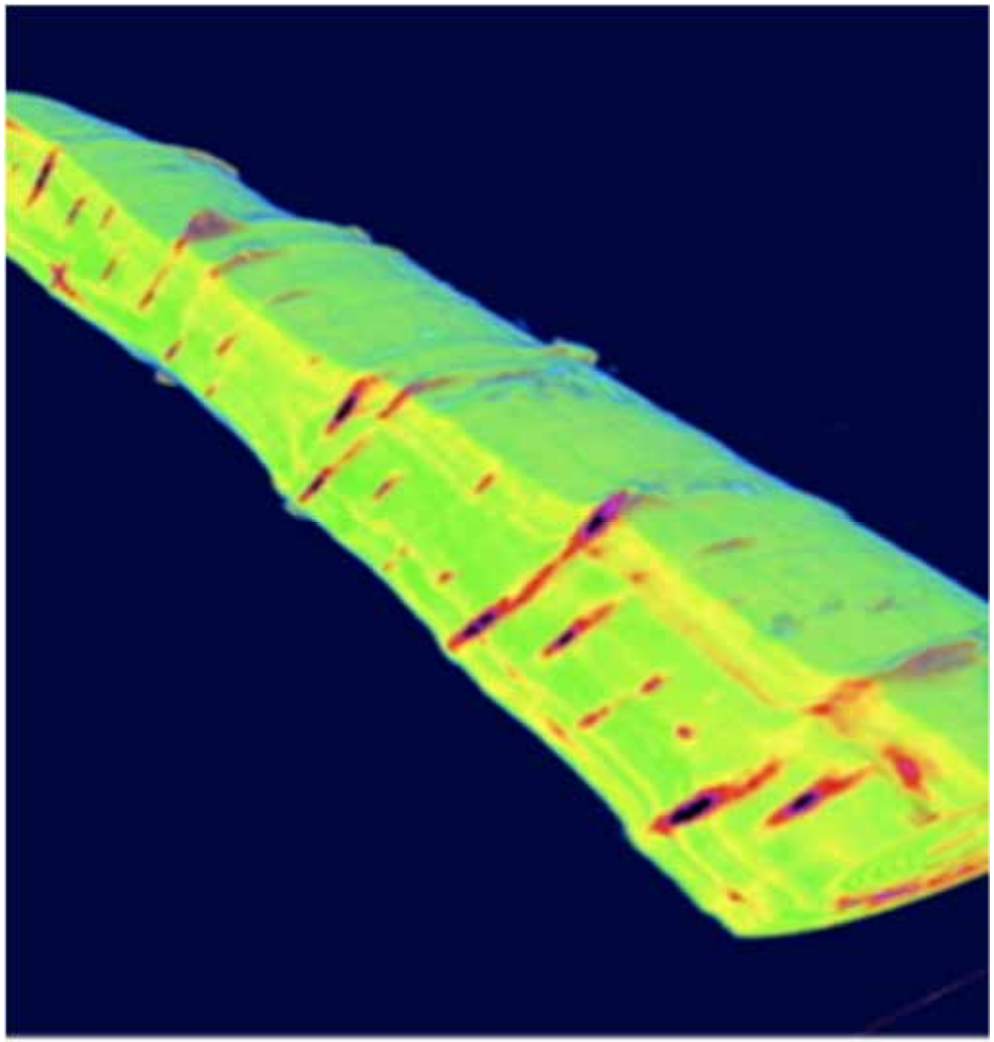
FROM VOLUME (YIELD) TO VALUE (OPTIMIZATION)

Virtual breakdown:

- intermediate products and
- final products

Grading of digital products for

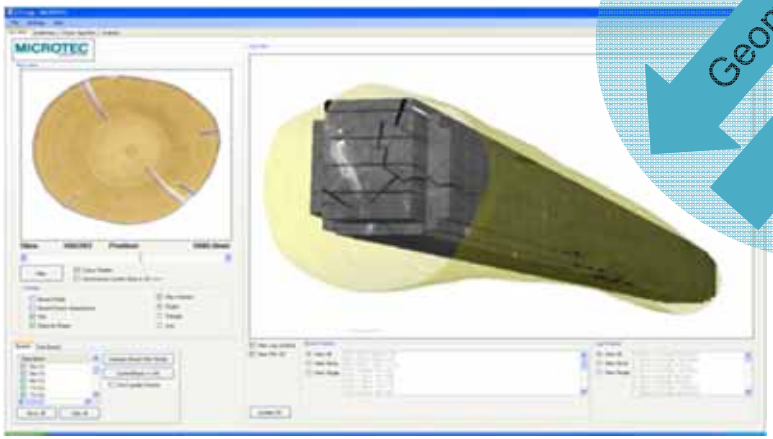
- volume
- quality
- value



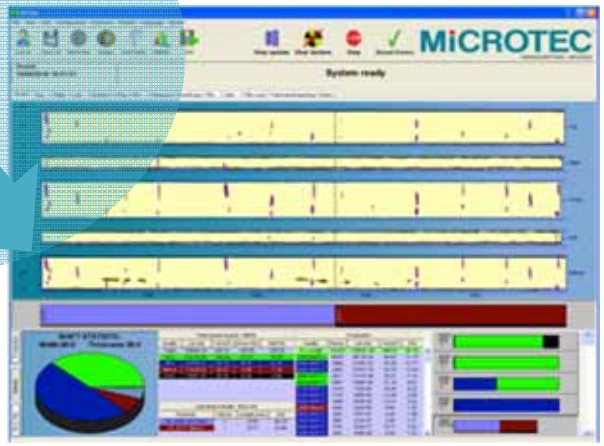
CT.LOG

CT.LOG

MAXiCUT



GOLDENEYE



Geometry

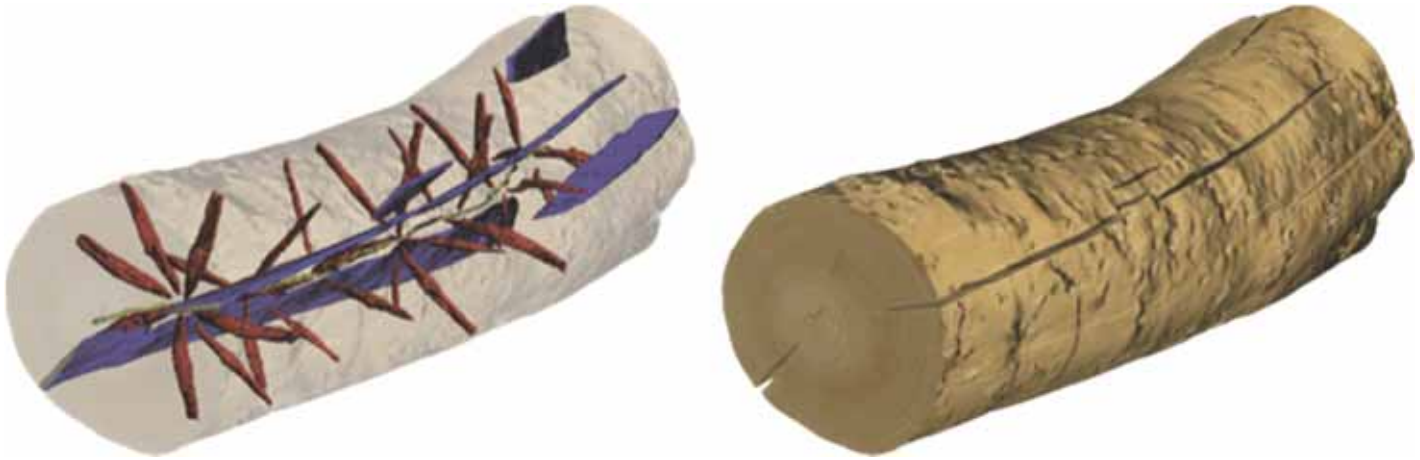
Cutting pattern

Virtual Boards

Value

In an iterative process MAXiCUT generates Cutting-Patterns from the Geometric Data provided by CT.LOG. The Optimization software generates the maximum value Cutting-Pattern considering the single board grading obtained from GOLDENEYE via the virtual cutting software of CT.LOG.

VALUE OPTIMIZED BREAKDOWN DECISIONS



CT.LOG

WELCOME TO A NEW ERA OF WOODWORKING

Worldwide availability for
soft and hard wood

Shipping globally starting 2012

Limited annual production volume.

www.microtec.eu BRIXEN VENEZIA · LINZ · VANCOUVER · MELBOURNE

MiCROTEC
INNOVATING WOOD

Thanks for
your kind attention.

Christian.schatzer@microtec.eu