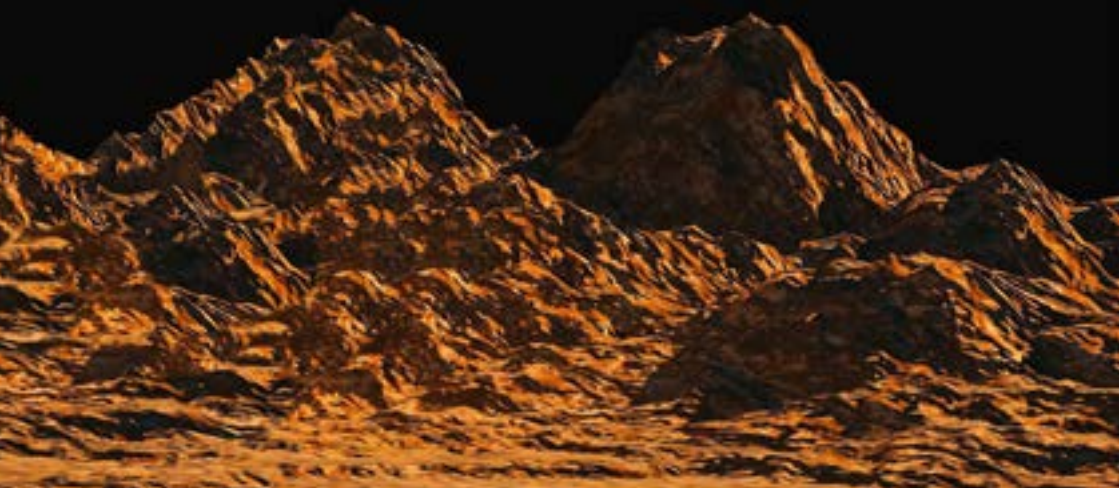
MeVis

Pioneers
are always one step ahead...

Support lung cancer screening
...with Veolity.

www.veolity.com

Early detection matters.



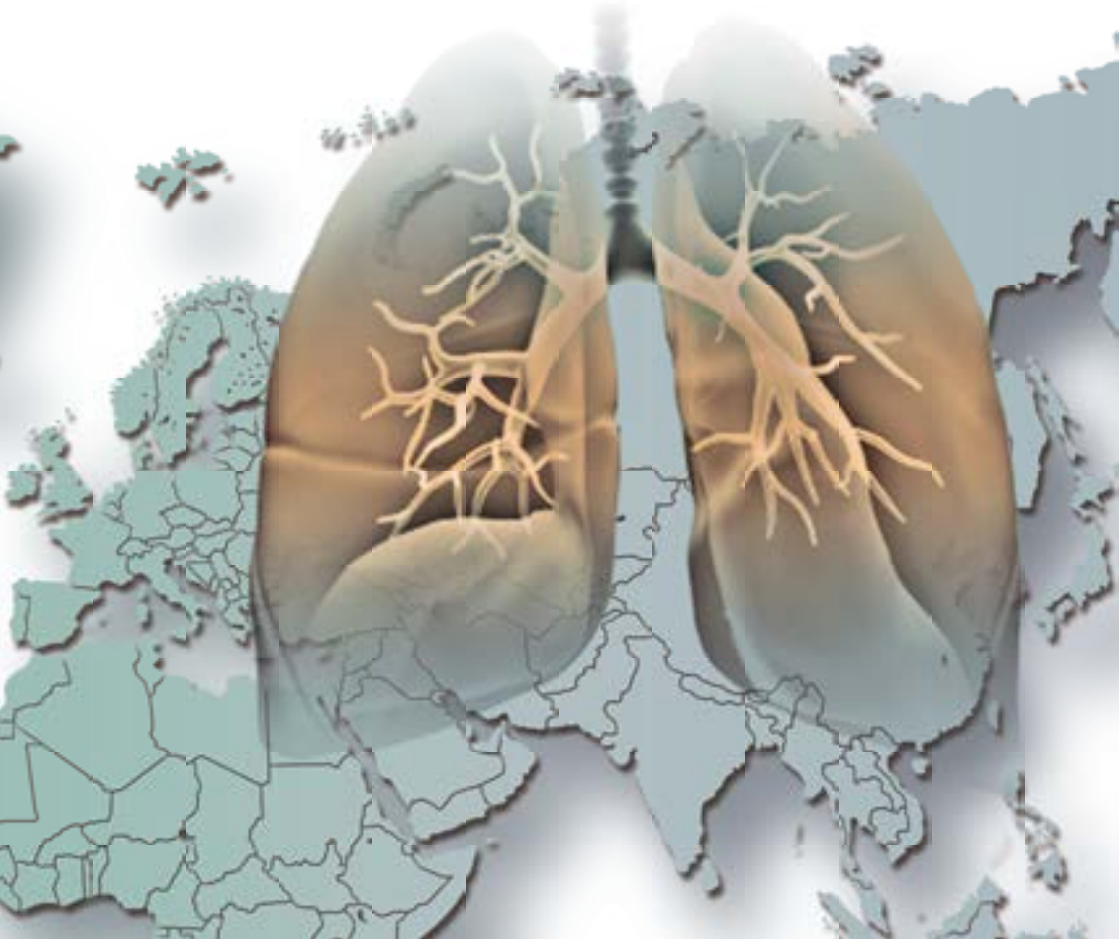
Early detection of lung cancer – how software can help you

A life-threatening disease of global impact

Lung cancer is the most common cancer of all cancers with the highest mortality worldwide. In 2012, 1.8 million people developed lung cancer (13% of all new cancer incidences) according to WHO. 1.6 million died of the disease (19% death rate). In the U.S., the mortality even reached 27%, greatly exceeding the international average rate.

In most cases lung cancer develops unnoticed

Usually, first clinical symptoms appear only at an advanced stage, when successful treatment has become difficult. – Early detection is essential to have a positive impact on the course of the disease.



What are important aspects in the analysis of radiological image data?

"The best consistent quality must be guaranteed. Serious decisions depend on it. In diagnostics it is judged, what has been detected and assessed as pathological. It is not taken into account what was regarded as non-pathological. Radiologists must always balance responsibly: Does the evaluation result make a healthy person sick or does a pathological significant finding apply? "

Analyze radiological image data

In medical imaging various methods are used for early detection and evaluation of suspicious features. Radiologists review medical imaging data, such as x-ray or low-dose computed tomography (LDCT), in order to look for pathological findings, and to decide if further investigation is necessary.

Measure and segment lung nodules, and document reproducibly

Dedicated software for medical imaging supports clinicians in viewing and interpreting image data. Data processing runs continuously in the background while the radiologist can concentrate completely on his or her diagnostic tasks. With the help of software, the radiologist marks findings, measures them, and documents accurately.

Later on, this is important information for follow-up, when changes in pathological structures need to be assessed.

The feature CAD (computer-aided-detection) assists radiologists in examining medical image data. Lung nodules can be segmented automatically to identify regions for further analysis. Additional details are available, such as volume, diameter, density, and mass. Radiologists use these figures to verify their findings and to improve diagnostic quality.

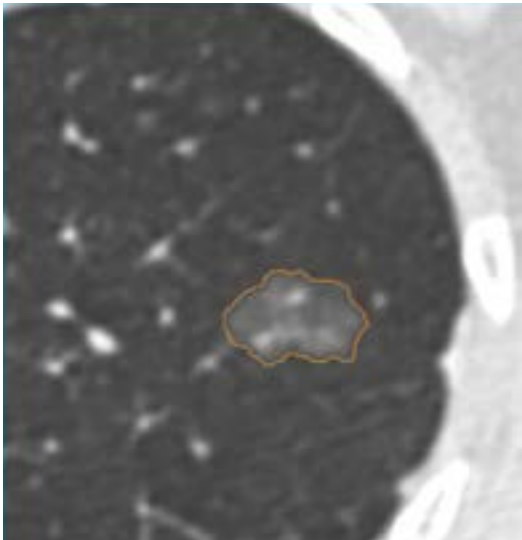
Interdisciplinary exchange of information

If diagnostics had been finalized and cancer was diagnosed, a tumor board will be consulted. It consists of medical specialists from various disciplines. They will give advice on treatment options to work out the best possible treatment strategy for the patient.

A consistent and complete exchange of information between medical specialists including administration is essential for the continuous quality of patient care.

Which additional benefit offer select software features such as CAD?

"As the experience increases using the CAD system, it helps to get much more faster. Clinicians have a critical eye over the images, which is enhanced by using the CAD. It helps them to detect even small leasions which are easy to overlook. This improves diagnostic quality."



Benefit from combined expertise.

What are important aspects in the analysis of radiological image data at lung cancer screening?

"Radiologists are ethically committed to work as accurately as possible. At screening, this is even more important when early detection of lung cancer at risk groups matters."

Diagnostic data originating from different faculties, such as radiology and pathology, as well as different types of data acquisition must be joined in the patient's master file.

Digital interfaces are indispensible for this important task – they ensure communication and data exchange between the hospital's IT systems.

Medical imaging in serial radiological examination – lung cancer screening

In the U.S., LDCT lung cancer screening for high-risk groups is recommended for early detection of lung cancer since the beginning of 2015.

Accredited screening centers are eligible for reimbursement.

What makes screening different from single radiological examination?

From the radiologist's point of view, the screening context does not change diagnostics' defaults. But further requirements and additional tasks need to be added and will gain on greater significance subsequently. While the screening program continues, complexity of diagnosis is increasing; still high-grade diagnostic quality must be guaranteed.

Moreover, a screening program means constant patient follow-up which causes continuous increase of data volume.

In addiditon, workload for administrative tasks grows. Submitting data to the centralized *ACR Lung Cancer Screening Registry* is mandatory and required for reimbursement. It gets more time-consuming with more patients joining the screening program.

How much workload needs to be considered at screening?

"Usually only a few patients participate in screening at the beginning of the program, hence data volume remains quite moderate. Changes in workflow and extra effort to prepare, organize, and maintain a screening program is often underestimated."

Meanwhile, further tasks must be taken care of: Communication with the patient, handling of invation letters, and the communication between involved specialty departments must be organized and implemented. A suitable patient management system (PMS) for lung cancer screening facilitates all these processes efficiently.

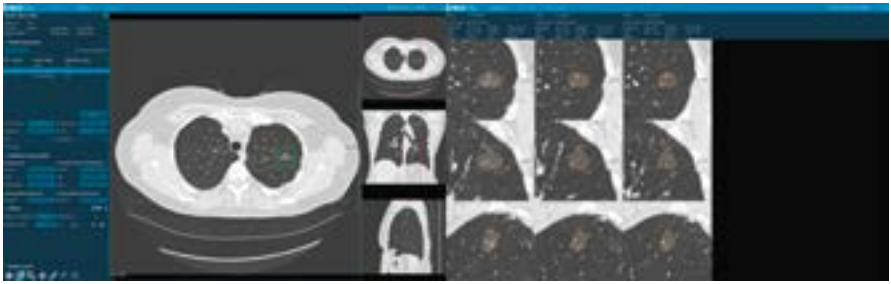
Perform complex follow-ups easily and efficiently

When it comes to screening, image-based diagnostics reach another level of considerable extent: Case numbers rise, follow-ups become more complex. At screening, it is much more difficult and burdensome to compare prior findings and assess changes in structures for further analysis over time.

What tasks are performed by the software?

"The radiologist is diagnosing, while the software is taking care of the complete data handling."

Dedicated software designed for screening addresses these challenges. It supports clinicians in facilitating diagnostic procedures. This means that he or she can concentrate completely on viewing and diagnosis.



Registration of prior studies is automated: Prior findings are automatically mapped to the current exam providing instant follow-up comparison.

Structured reporting for precise interpretation and comparison of findings

When diagnosing lung nodules, the radiologist applies standardized nodule classification critearia. The first standardized reporting scheme for lung screening is *ACR Lung-RADS*, which is fully supported by the software. Further country-specific standards will be integrated in the near future.

All the findings that are reported during the screening program are summarized in a single clear and concise report.

The physician will be able to follow suspicious regions through time, allowing for an easy evaluation of even subtle changes.

Lung cancer screening –
A high degree of complexity

TASKS
Organize & administer
Register
Communicate & inform
Archive
Take image captures
Take tissue samples
Analyze & diagnose
Define & advice treatment
Define & advice follow-up

PARTIES INVOLVED
Risk groups & patients
ACR Registry
Interdisciplinary medical team
Administration personnel
IT specialists
Reimbursement facilities

RECOURCES INVOLVED
IT infrastructure
Medical devices
Financial budget

Prepare for screening workflow before patient numbers will increase.

Optimized for lung cancer screening workflow.

A consistent high-grade quality in diagnostics – from single LDCT examination to screening

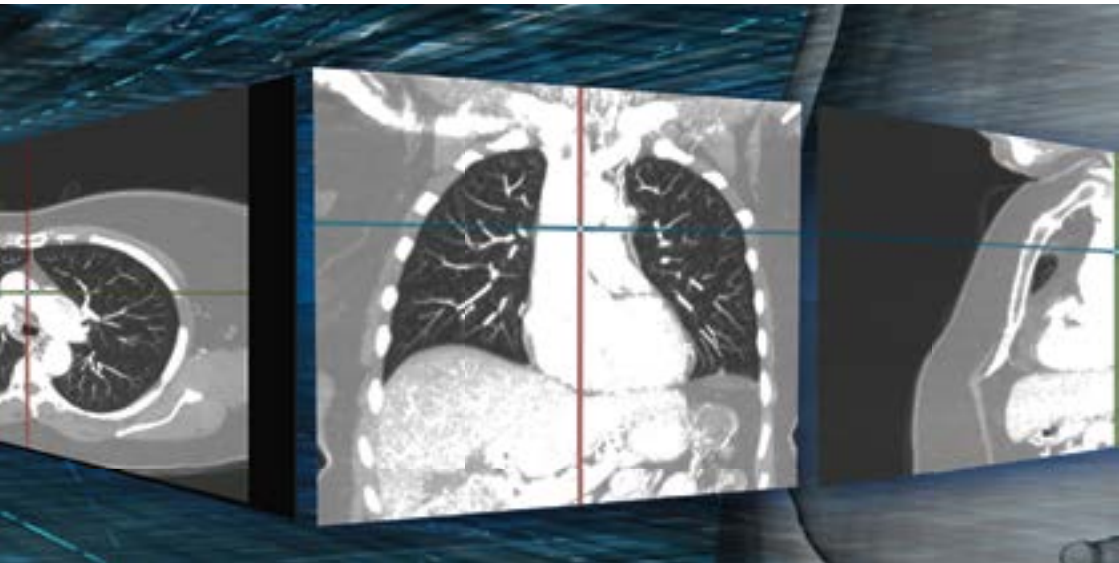
Software being developed for screening sets new standards for the next generation of image data analysis in medicine.

How does image-based software supports radiologists at screening?

"At screening, many LDCT studies are created over a long period of time. Information of these images is automatically assigned. This helps the radiologist to evaluate pathological findings consiberably."

All important CAD functions are integrated and available at any time – regardless of the patient numbers. CAD functions are essential components in medical imaging; now they become applicable to screening.

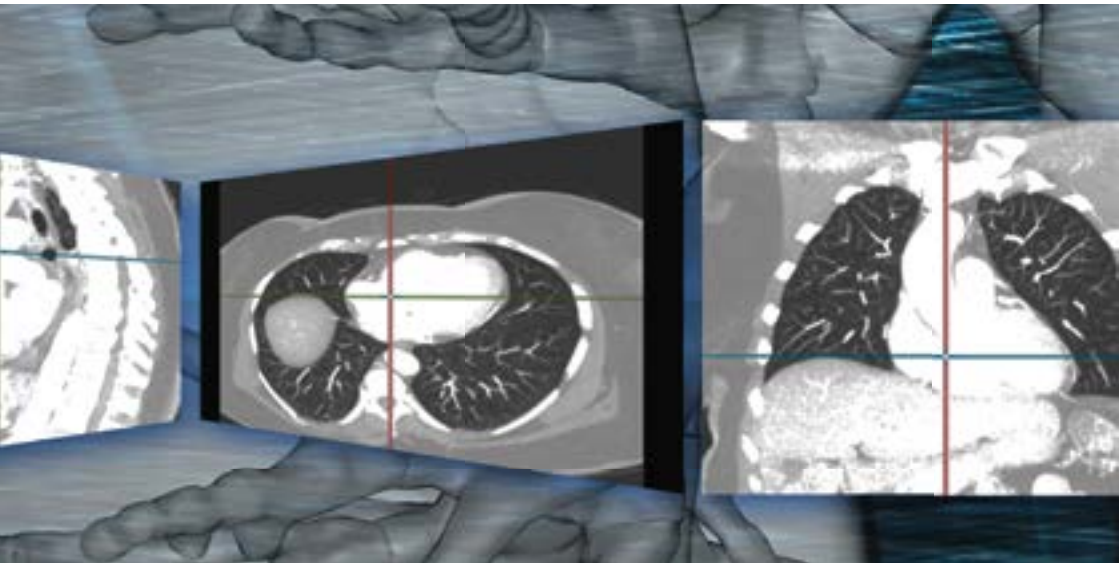
Performance gets more important with growing number of cases. Complex tasks demand augmented lung CAD software to be suitable for screening purpose.



Optimized for lung cancer screening workflow.

Planning must be conducted with an eye to the future, screening workflow considered at the very beginning. – These are essential preconditions for a consistent quality assurance. Last but not least, a screening center must work cost-efficiently; and it competes with other institutes in terms of quality. It is a challenge to shift from a few occasionally occuring cases to complex screening examinations with persistent high number of cases. This change happens seamlessly and efficiently with software optimized for screening and its workflow – for the best possible patient care.

The United States are international pioneers in the field of lung cancer screening programs. State-of-the-art software development made in Germany supports them.



Benefit from combined expertise.

1. Analyze, exchange and transmit patient data | *Patient management system (PMS)*

- Efficient handling of *ACR Lung Cancer Screening Registry*

  Database analysis: patient tracking, data validation, CMS reimbursement

  Verify patient eligibility and patient consent

  Integrate relevant patient data from other sources with interfaces

  (e.g. pathology, medical imaging, PACS, voice recognition tools)

2. Include imaging components optimized for screening | *Veolity*

- Improve diagnostic quality:

  Compare prior findings, identify regions for further analysis with CAD, double-click for automatic nodule segmentation, and summarize characteristics in one clear report throughout all studies according to reporting standards, such as *ACR Lung-RADS*. Connectivity to your PMS and PACS via interface.

3. Include decision and follow-up processes | *Patient management system (PMS)*

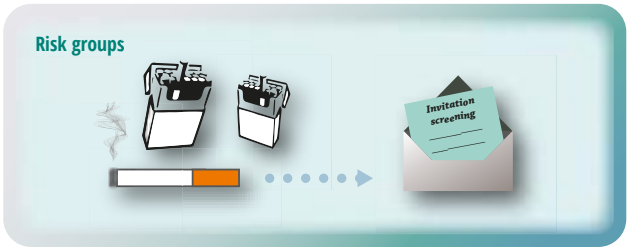
- Support shared decision making

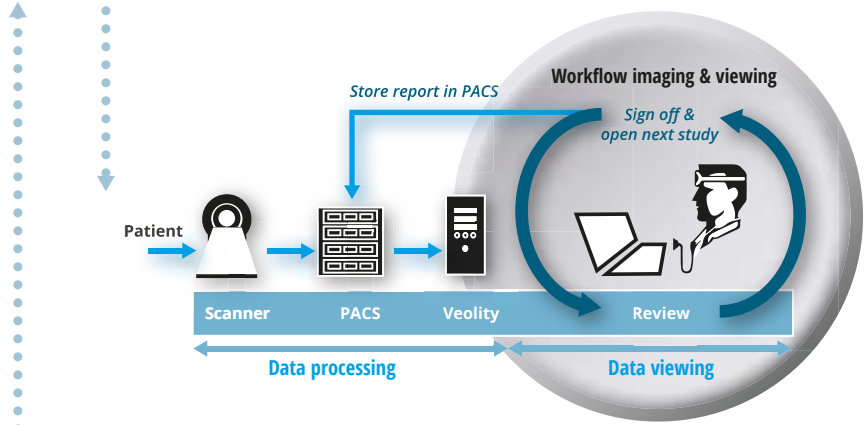
  Handle patient management and follow-up recommendations

  Reporting

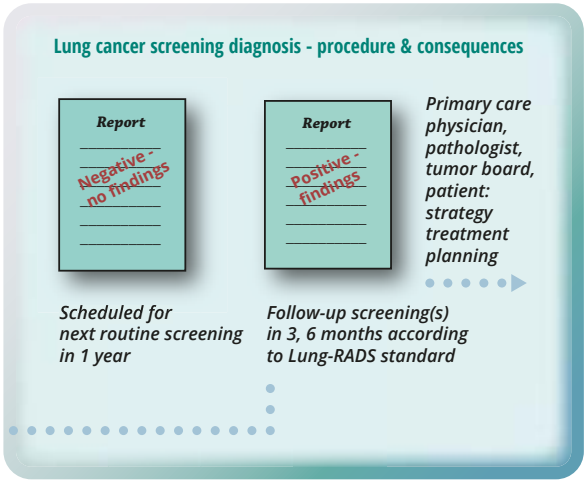
Abbreviations:
PMS – Patient management system
PACS – Picture archiving and communication system
CAD – Computer-aided detection

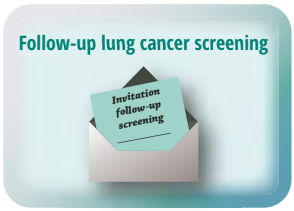
Optimized for lung cancer screening workflow.





Physisians can fully focus on viewing and diagnosis as data processing is automated.





Benefit from combined expertise.

Support lung cancer screening ...with Veolity.

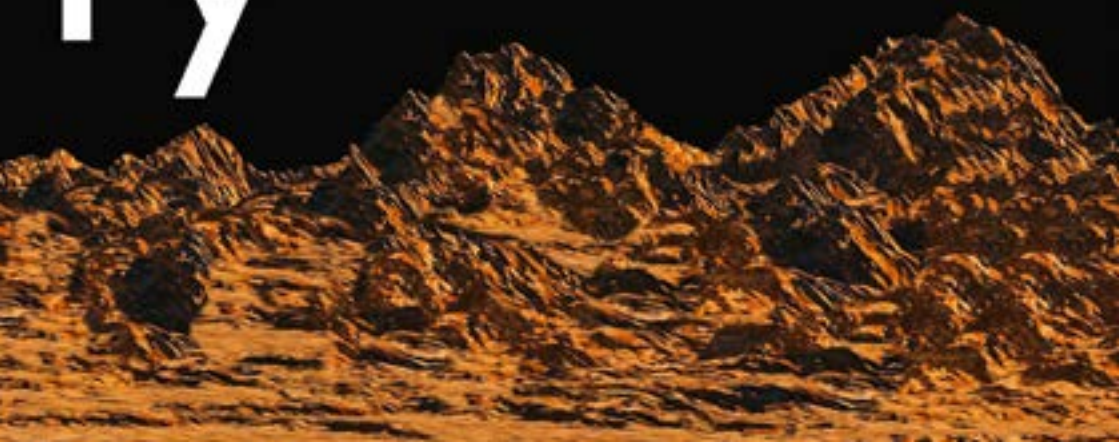
Maintain best diagnostic quality throughout all studies from the very beginning of your lung cancer screening program.

Be prepared in time for gradually increasing data throughput within your ongoing lung cancer screening program.

Support your patients with the best means available.

For the benefit of your patients' health.

ty



MeVis Medical Solutions AG
Caroline-Herschel-Str. 1
28359 Bremen
Germany

Phone +49 421 22495 0
Fax +49 421 22495 999
marketing@mevis.de
www.mevis.de

www.veolity.com

Veo-1.4-630-003-00