



SciLifeLab  
industry users:  
>100 yearly

## SciLifeLab user case: Industry

Diagnostics

# Development of algorithms to improve prostate cancer diagnostics

Spearpoint Analytics use AI compute and data sharing services available at SciLifeLab AIDA Data Hub to improve the diagnostic tools available for prostate cancer using AI and machine learning. The startup company Spearpoint Analytics develops an outcome-based analysis (PCAI – Prostate Cancer Aggressiveness Index) that predicts the severity of prostate cancer by analyzing microscopy images of tissue sections.

Desmoplasia and cytological changes, as well as glandular deformation, all known factors affecting prostate cancer risk, have been investigated in the past, but not in combination in a large-scale outcome-based way like the algorithm Spearpoint Analytics develops.

The algorithm must be validated at at least three to four different centers to release a product – the algorithm must be robust enough to cope with different conditions. “We need to better understand when the algorithm works well and when it does not. Furthermore, we need to build trust within the medical profession to introduce the technology into clinical use,” says Joel Hedlund, Head of Unit, AIDA Data Hub.



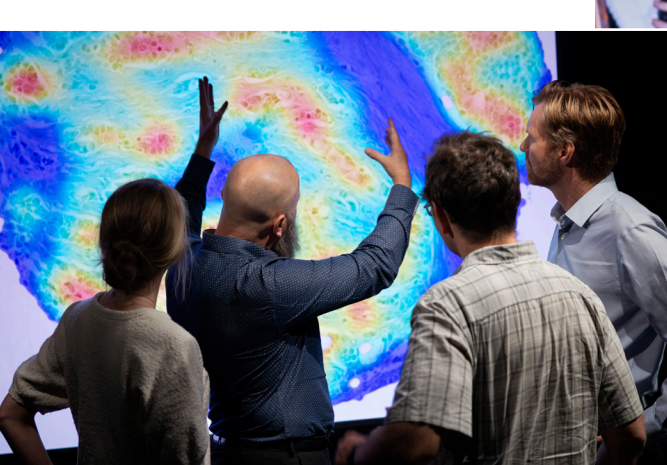
*We want to improve the analysis and develop a system that does not suffer from the subjectivity of today's analysis. The system in general use today (Gleason) was developed in the 1950's and analyzes the deformation of prostate glands in tissue samples.*

*With our approach, by training our algorithms directly against patient outcome rather than human labeling, the system is capable of adding more biomarkers available in the image. This way, we achieve a super-human performance of the analysis,” says Peter Walhagen, developer at Spearpoint Analytics.*



Curious to learn more? Access full case text through the QR code!

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AIDA Data Hub in Linköping.



## SciLifeLab infrastructure related to the case

AIDA Data Hub is part of the Analytic Imaging Diagnostics Arena (AIDA) and of the SciLifeLab Bioinformatics Platform (NBIS). AIDA Data Hub also leads Bigpicture infrastructure development. AIDA is coordinated by the Center for Medical Image Science and Visualization (CMIV) at Linköping University. AIDA Data Hub is funded by SciLifeLab.



*In cancer, early diagnosis and treatment is key for patient prognosis and survival. However, today, there is a shortage of pathologists and radiologists, and as a result, patients often have to wait longer than what is ideal for them.*

*Tools like those that Spearpoint Diagnostics develops are necessary to increase the survival of prostate cancer patients. Artificial Intelligence will help ease the work of pathologists – not replace them,” says Joel Hedlund, Head of Unit, AIDA Data Hub.*

### SciLifeLab AIDA Data Hub

We provide Data Sharing, Policy, Services, and Advanced Support in Secure System Design and AI Development for Swedish medical imaging research and innovation. The AIDA Data Sharing Policy provides guidance to researchers, describing best practices in handling and sharing medical imaging data for research in Sweden and other countries. Our DGX-2 Service is a secure compute resource for AI research on sensitive medical imaging data.

### AIDA Services

- AIDA DGX-2 Service - Compute system for AI training on sensitive personal data
- AIDA Nextcloud - Research data sharing
- AIDA PACS - Production grade clinical picture archive and communication system
- AIDA Wiki - Documentation
- AIDA GitHub - Code collaboration
- AIDA Chat - Support and discussion

### Get in touch!

[scilifelab.se/units/aida-data-hub/](https://scilifelab.se/units/aida-data-hub/)

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