Spectralligence

Miniaturisation and simplification in Molecular and Atomic Spectroscopy

ITEA4

Project summary

Molecular and Atomic Spectroscopy is a set of technologies using the electro-magnetic spectrum to generate unique fingerprints of molecular structures, with applications in chemistry, medicine and environmental and safety services. Spectralligence will use AI to miniaturise and simplify Molecular and Atomic Spectroscopy technologies for greater affordability and usability by non-experts.
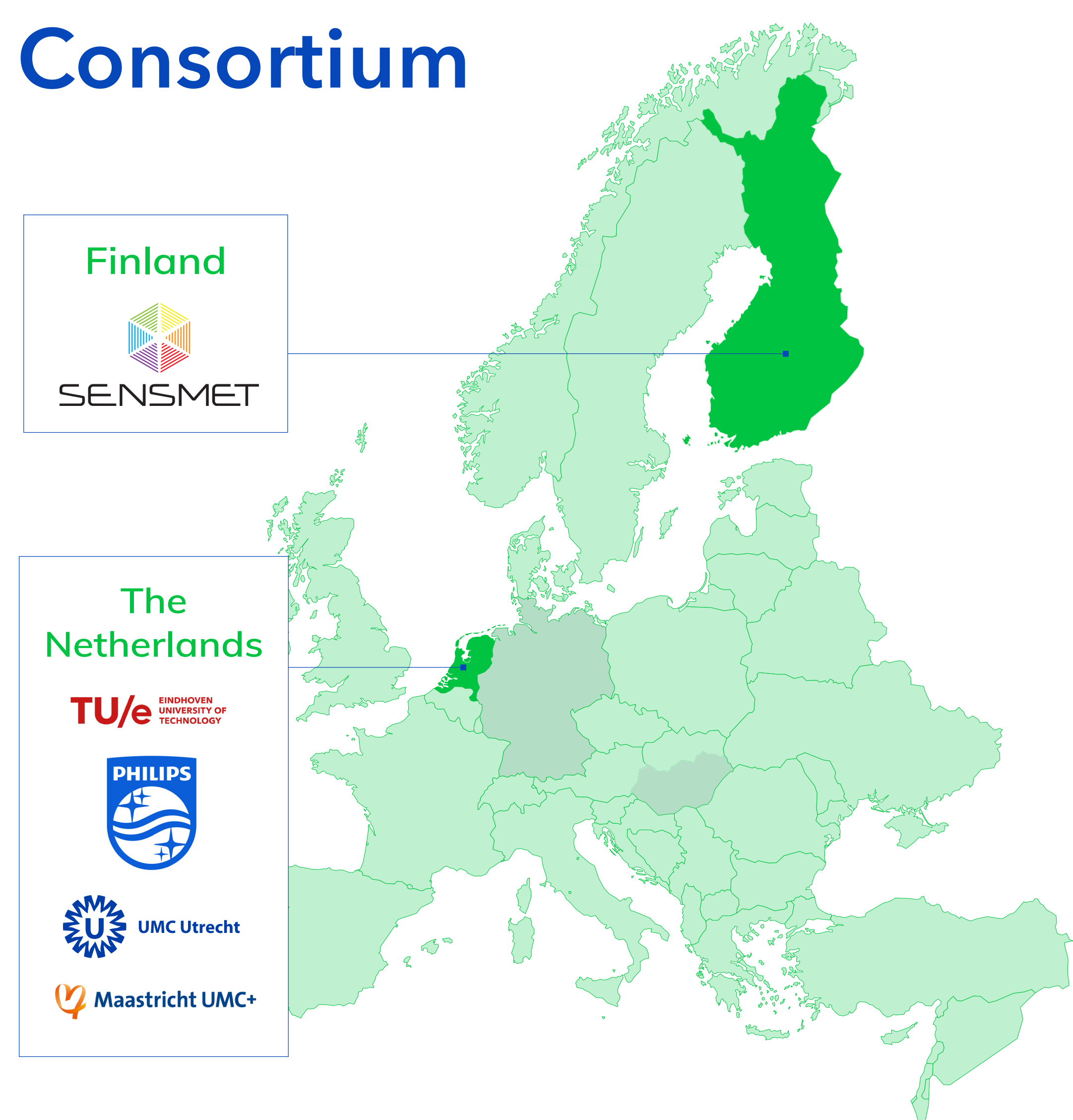
More info

SCAN ME

https://spectralligence.eu/

Consortium

Finland
SENSMET

The Netherlands
TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY
PHILIPS
UMC Utrecht
Maastricht UMC+

Project duration
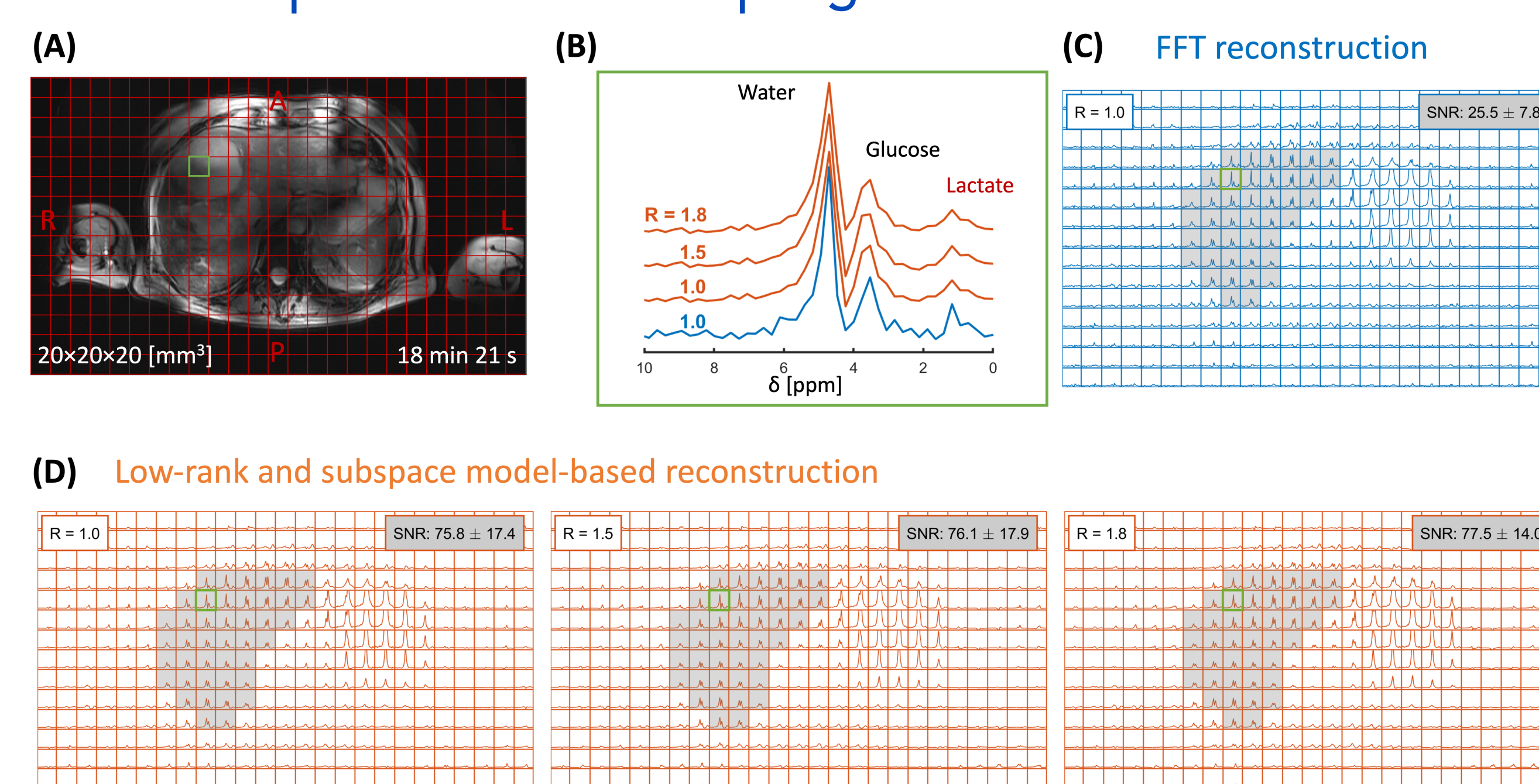
November 2021 - October 2024

Unique Selling Points

> Single-click AI auto-tuning reduces calibration lead times from weeks to hours for AES water analysis

> Fast and accurate clinical MR spectroscopy for the non-expert through AI/ML classification and quantification

> AI/ML enabled denoising and super-resolution for clinical non-proton MRI (e.g. ^{23}Na)

Environmental: single-click AI-based absolute spectral calibration
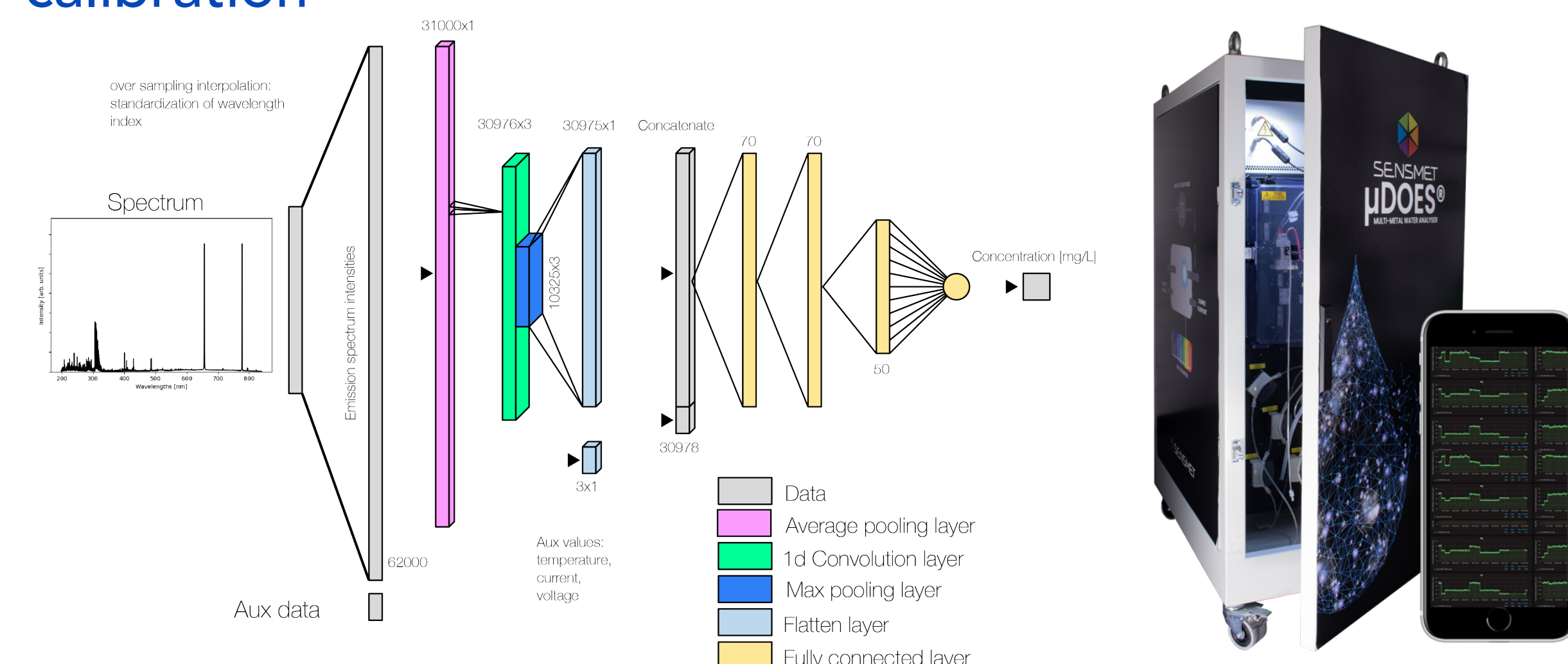
Medical: accelerated Deuterium Metabolic Imaging of Liver Metastasis at 7T Using Low-Rank and Subspace Reconstruction with retrospective Undersampling

(A) 20×20×20 [mm³] 18 min 21 s

(B) Water, Glucose, Lactate R = 1.8, 1.5, 1.0 δ [ppm]

(C) FFT reconstruction R = 1.0 SNR: 25.5 ± 7.8

(D) Low-rank and subspace model-based reconstruction
R = 1.0 SNR: 75.8 ± 17.4
R = 1.5 SNR: 76.1 ± 17.9
R = 1.8 SNR: 77.5 ± 14.0

Contact

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BUSINESS FINLAND

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