December 15th, 2025

Leuven, Belgium

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AI-Powered solutions

Unleashing the Full Value of AI in Intestinal Ultrasound

IBUS Industry Workshop | Dova Health Intelligence

15 December 2025, Leuven

Dr Michael Byrne, Solveig Johannessen & Robert Mendel

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Disclosures

- Dova Health Intelligence (previously Satisfai Health)
  - MB, Founder, Chairman, Shareholder;
  - SJ, CEO, employee, stock options;
  - RM, Senior AI/ML Engineer, employee, stock options
- Dova has a collaboration with Alimentiv
- Dova has a collaboration with IBUS
- DIGITAL and INOVAIT (Canadian Federal Grant) support for AI in IUS

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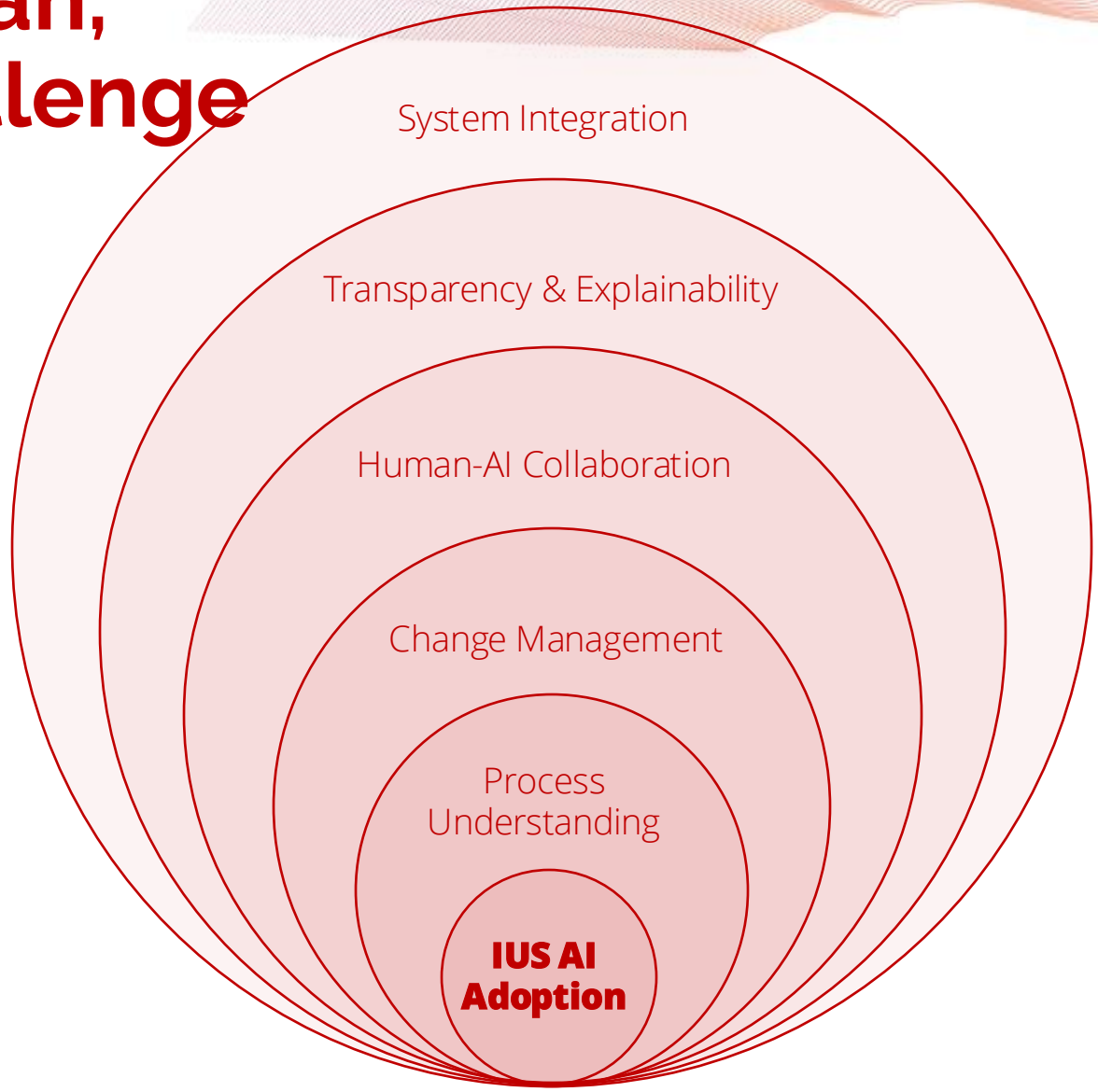
Adopting AI in IUS: A Human, Process and Systems Challenge

AI in clinical practice is not a simple transfer from human to machine. It changes how care is delivered and requires aligning people, processes, and systems.

- Success depends on understanding real-world processes
- Clinicians need explainable AI, because they remain accountable
- AI adoption is a partnership, not a replacement



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Dual Value Track

Process Optimization

Reduce manual processes, remove inefficiencies, improve consistency and optimize throughput

Examples: Auto-capture, auto-documentation /calculation, workflow streamlining

Value: Improved margins, higher throughput, reduced callbacks, early financial gains

Easier to get quick wins and estimate financial gains

Assistive Intelligence

Elevate the physician's decision-making and support complex interpretation

Examples: Highlighting features, risk scoring, anomaly detection, validated standardized endpoints

Value: Expands access to affordable tool, reduces burden on specialists, scalable long-term value through improved clinical outcomes

More complex health economics modelling needed to estimate gains, but higher long-term yield

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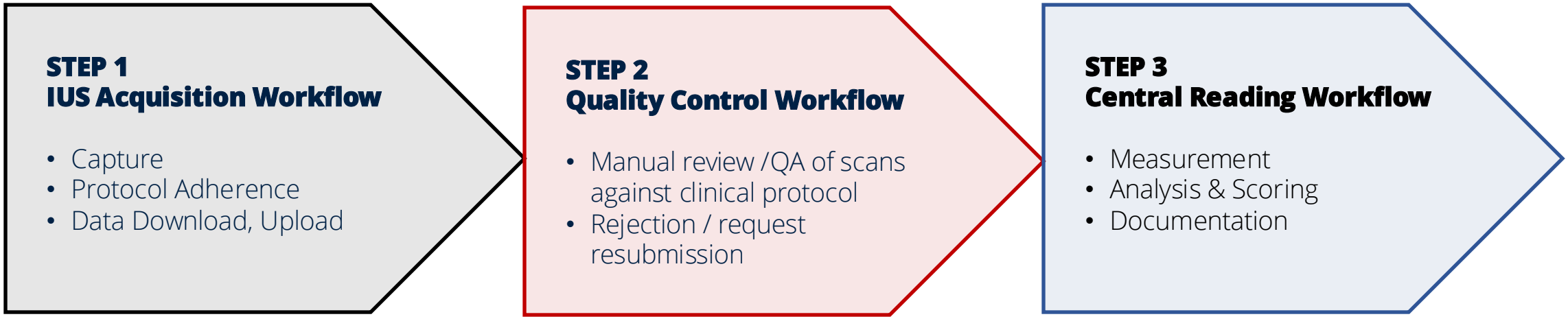
Example in Clinical Trials: Why Image Quality Matters First

Accurate AI starts with consistent image acquisition. Without it, everything downstream is at risk.



- Today a time-consuming and operator taxing method to capture IUS for clinical trials
- A manual QA workflow step is added to check for human mistakes at image acquisition
- That's where AI can help by improving image capture and QA to make the whole process faster, more reliable, and ready for assistive intelligence.

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Automation Impact — Clinical Trials

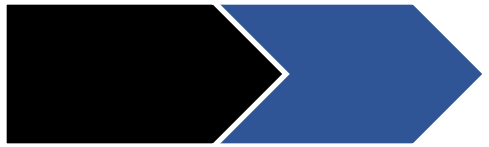
- Initial commercialization value and wins often come as value in process optimization and automation

- We still need to have the end state as our goal, where we see real clinical impact and systemic financial gains/improvements.

TRADITIONAL WORKFLOW

Capture QA Central Read (Analysis, Measurement, Documentation)

AI POWERED QA



Capture + QA Central Read

AI END TO END

Capture + QA + CR

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Quality Assessment Need

Journal of Crohn's and Colitis, 2021, 609–616
doi:10.1093/ecco-jcc/jjaa216
Advance Access publication October 24, 2020
Original Article

OXFORD

JCC

Original Article

Expert Consensus on Optimal Acquisition and Development of the International Bowel Ultrasound Segmental Activity Score [IBUS-SAS]: A Reliability and Inter-rater Variability Study on Intestinal Ultrasonography in Crohn's Disease

Kerri L Novak,[a] Kim Nylund,[b,c] Christian Maaser,[d] Frauke Petersen,[e]

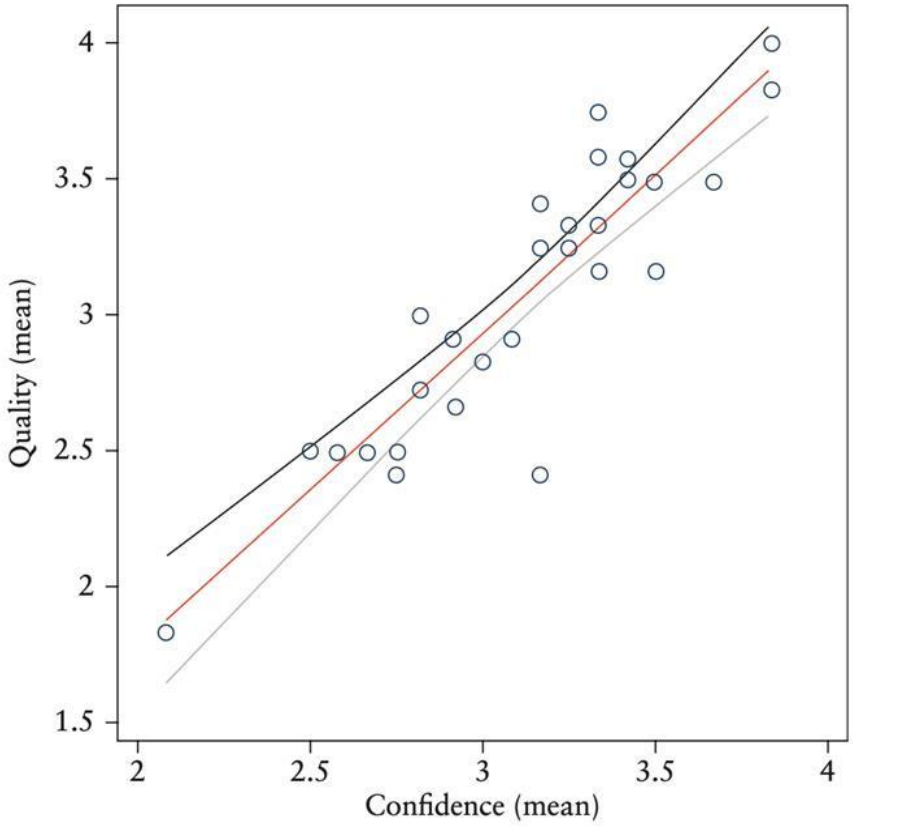

Figure 2. The association between scan quality and rater confidence. Quality and confidence scored on a 5-point Likert scale. Red line is the linear association, grey lines are confidence intervals.

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Current AI Solutions in IUS

CPH IBD GAIN CPH

AI-BUS: Artificial Intelligence Bowel Ultrasound System

Jakob Karrer[1] & **Jonatan Ruiz-Molsgaard**[1], Bjørn Leth Møller[1], Johan Burisch[2,3,4], Gorm Roager Madsen[2,3], Klaus Theede[2,3], Johan Fremberg Ilvemark[2,3], Bobby Lo[2,3], Bulat Ibragimov[1] & Trine Boysen[2,3,4]

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UNITED EUROPEAN GASTROENTEROLOGY ueg week

Transforming IUS Interpretation: **Integration of AI Models in Intestinal Ultrasound Imaging**

Dan Carter, Gal Ashkenazi, Oshrit Hoffer
Sheba Medical Center, Dept. of Gastroenterology, Ramat Gan, Israel
Gray Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel
Afeka, The Academic College of Engineering, Tel Aviv, Israel

October 6, 2025, Berlin

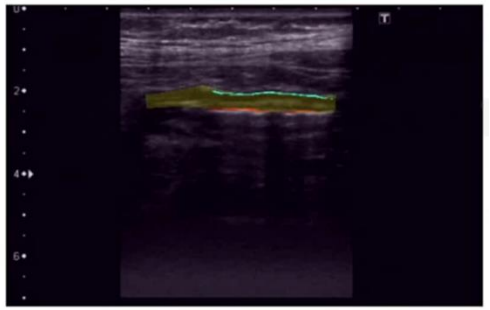
SAMSUNG

CPH IBD GAIN CPH

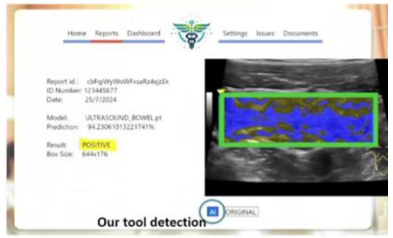
Results: Segmentation

Segmentation evaluation

Measurement found in region of interest in 98% cases



An AI-Assisted Ultrasound for Enhancing Accuracy and Efficiency in Inflammation Detection



ueg

V7

HERA W10

V8

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AI for IUS — Product Principles

01

Addresses key needs across both clinical practice and pharma research

02

Supports the full workflow, from image capture to enhanced decision support

03

Designed to be device-agnostic, enabling broad adoption across clinical environments

04

Delivers explainable AI; aligned with regulatory expectations, builds trust, education & keeps the clinician in the loop

05

Unlocks advanced data capabilities for enhanced assistance in diagnostics, monitoring, and research

06

Integrates as a dual modality IBD platform with AI endoscopy system

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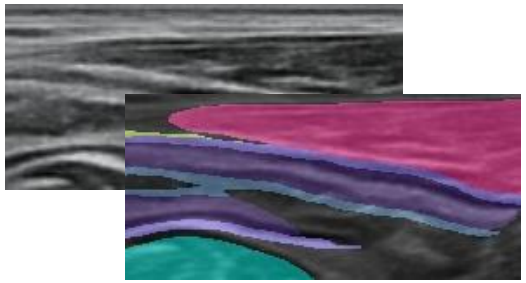
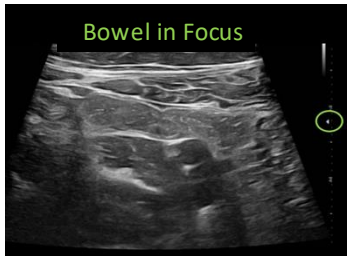
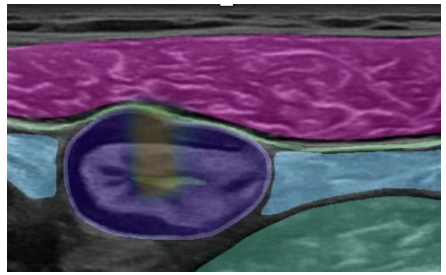
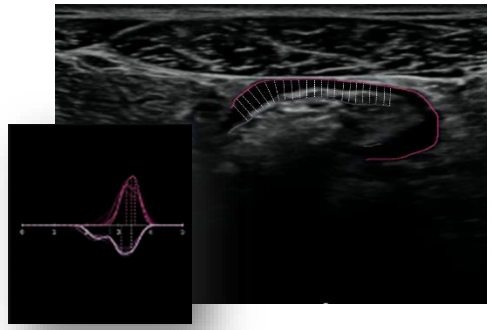
DovaSound Feature Targets

The following features are in development for DovaSound









Precision Anatomy Segmentation

Delineates anatomical layers, including differentiation between the inner and outer bowel wall.

Automated Quality Assessment

Protocol driven QA of baseline requirements & detects if bowel anatomy is identifiable across all cineloop frames.

Intelligent Measurement

Automatically selects optimal frame and location to assess, quantifying structures like Bowel Wall Thickness and Submucosa Index.

Hyper-Measurement

Generates measurement distributions across multiple frames, capturing anatomical and disease variation holistically

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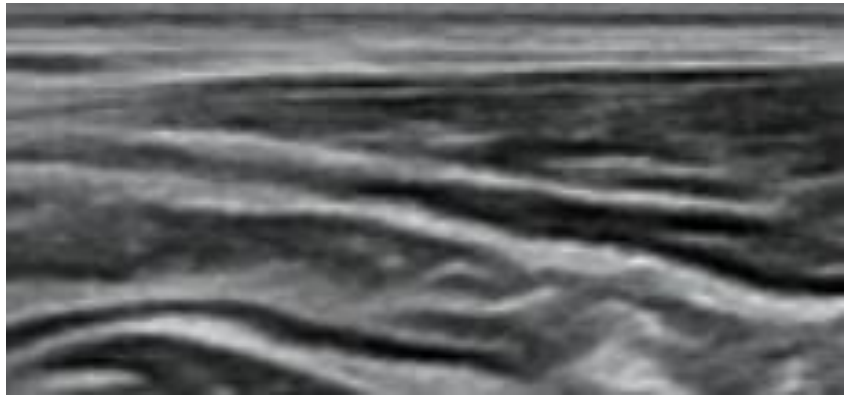
Precision Anatomical Segmentation

VALUE

- → Visual feedback to operator for identifying anatomy and explaining results.
- → Improve the quality and consistency of readings across operators.
- → Reduces interpretation variability; a key barrier to scalable deployment of IUS



- Highlights key anatomical landmarks and areas of interest.
- Delivers precise delineation of anatomical layers, including differentiation between the inner and outer bowel walls.
- Builds a foundational understanding of an image to derive all downstream measurements from.

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Automated Quality Assessment

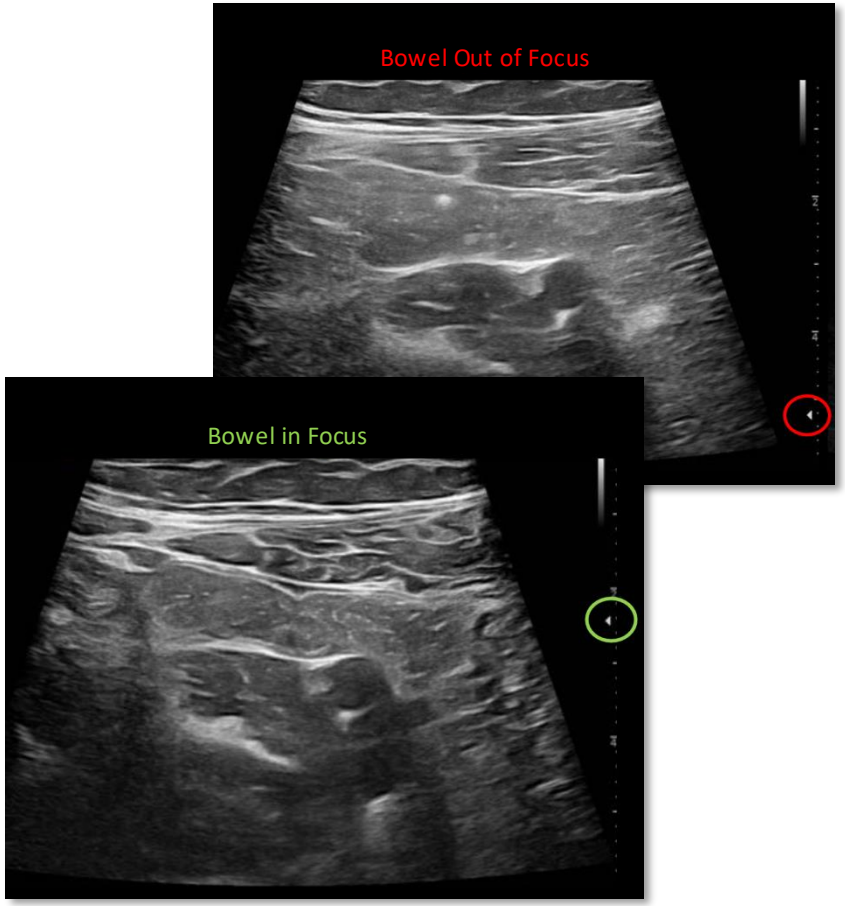
VALUE

→ Improves scan quality and reduces nondiagnostic studies.

→ Reduces callbacks, eliminates manual workflow steps, early financial gains

AUTOMATED QA CHECKS

- All segments and orientations captured
- All data ready for central reading
- All cineloops correctly labelled and meeting minimum protocol requirements
    - Indefinable anatomy (bowel, mesentery fat) for adequate duration
    - Clear stratification of bowel walls
    - Identifiable measurement location
    - If CDS detected, adequate overlap with bowel
    - Adequate duration, file format (DICOM), and resolution
    - Cine correctly labelled (segment annotation + orientation label)
    - Artifact notes (note any reverberation, movement, shadowing)



Images Courtesy of IBUS: *'How to Optimize Image Acquisition' Noa Krugliak - Cleveland*

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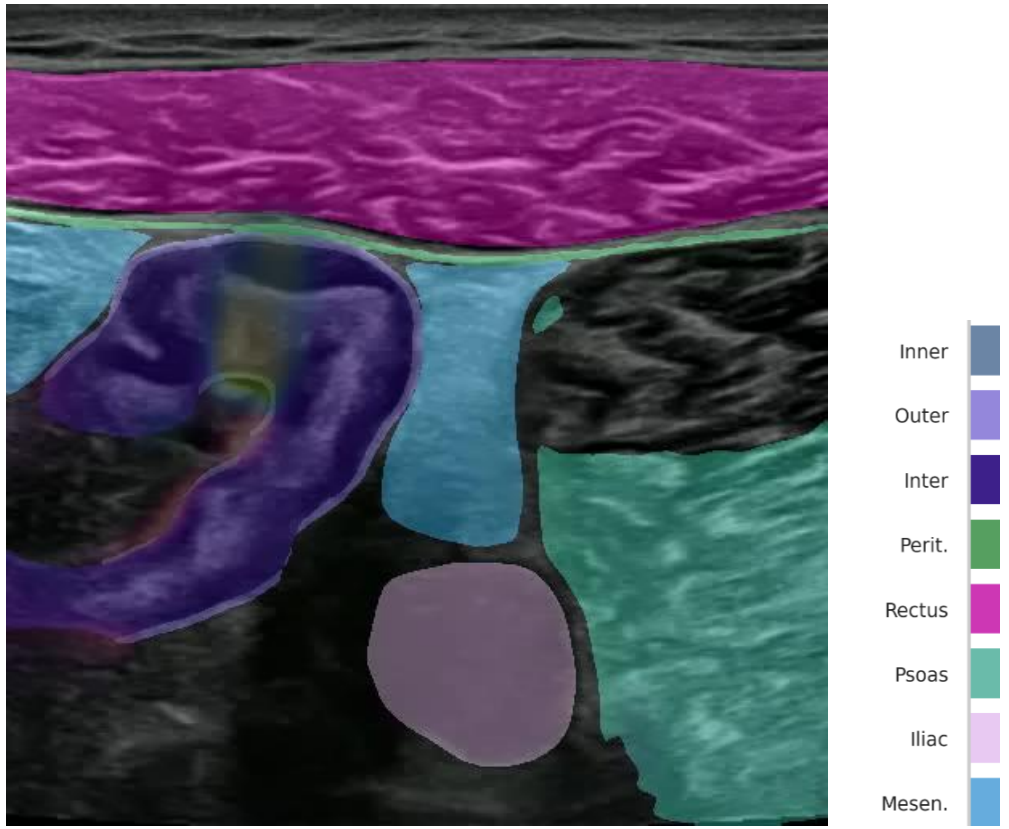
Intelligent Measurement

VALUE

→ Generates reproducible, auditable measurements aligned with clinical & regulatory standards, unlocking potential for AI-IUS endpoints

→ Enables shift from qualitative to quantitative interpretation, supporting disease activity assessment.

- Finds the best location and frame to take measurements from and quantifies structures like Bowel Wall Thickness (BWT), Submucosa Index (SMI), and more.
- Grading mesentery fat and detecting CDS
- Calculates standardized scores using frameworks like IBUS-SAS for consistent reporting and easy documentation.



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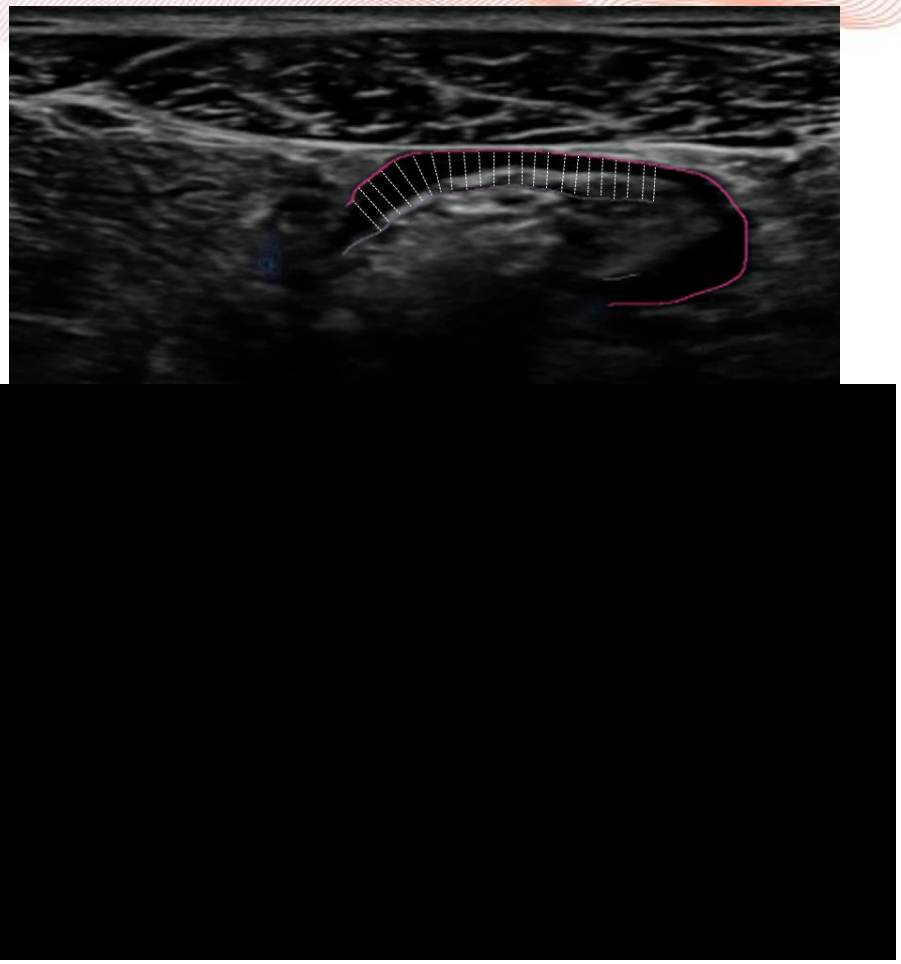
Hyper Measurement

VALUE

→ Generates reproducible, auditable measurements aligned with clinical & regulatory standards, unlocking potential for AI-IUS endpoints

→ Enables shift from qualitative to quantitative interpretation, supporting disease activity assessment.



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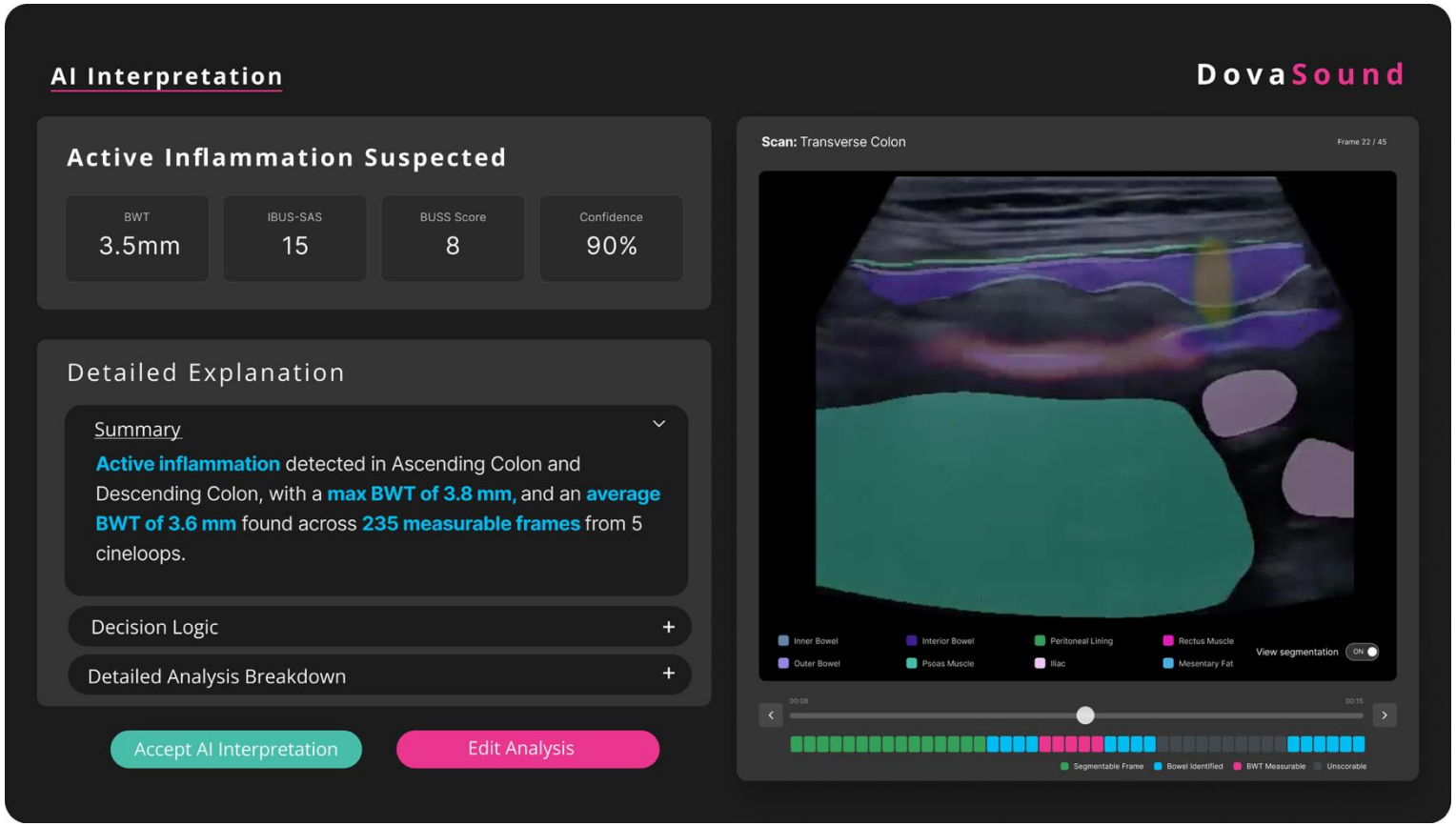
IBD Assessment with AI Powered IUS

Explainable reporting will ensure that the physician understands why the system flagged the region, see the underlying data, and have the ability trust or override the decision based on clinical judgment.

Identifies and measures bowel wall thickness (BWT) from ultrasound cineloops & flags an area as “suggestive of active inflammation.”

Includes a confidence metric and short note summarizing the logic

Supports manual editing, ability to audit analysis pathway and manual over-riding to ensure the clinician is in control



The system highlights the exact frames used for measurement.

Displays the numerical value of BWT and compares it to an established threshold for disease activity.

Overlays visual segmentation boundaries showing the inner and outer bowel wall layers.

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Aligning with Regulatory

FDA's Good Machine Learning Practice (GMLP) principles and related EU AI guidance

Regulatory Principle	DovaSound Application
Transparency	Displays annotated frames with AI overlays (e.g., bowel wall segmentation), showing exactly where and how measurements were taken.
Human Interpretability	Provides numeric measurements, threshold references, and confidence scores to support interpretation.
Auditability	Maintains logs of decisions and inputs used in each case, including image data, timestamps, and AI outputs for future review.
Human-in-the-loop	Enables physician review, override, or confirmation of AI results, supporting clinical responsibility and legal accountability.
Risk Mitigation	Highlights if measurements were taken from poor-quality frames (e.g., due to motion or artifact), prompting clinician verification.

Use Case: AI flags abnormal Bowel Wall Thickness (BWT) in an ultrasound scan for IBD monitoring.

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Discussion Prompt

What would it take for your team to trust and adopt AI-powered IUS in practice?

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Thank You!

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