



Implementation of digital pathology in Denmark

Elisabeth Specht Stovgaard, MD, PhD, associate professor, Dept of Pathology, Herlev and Gentofte Hospital, Denmark

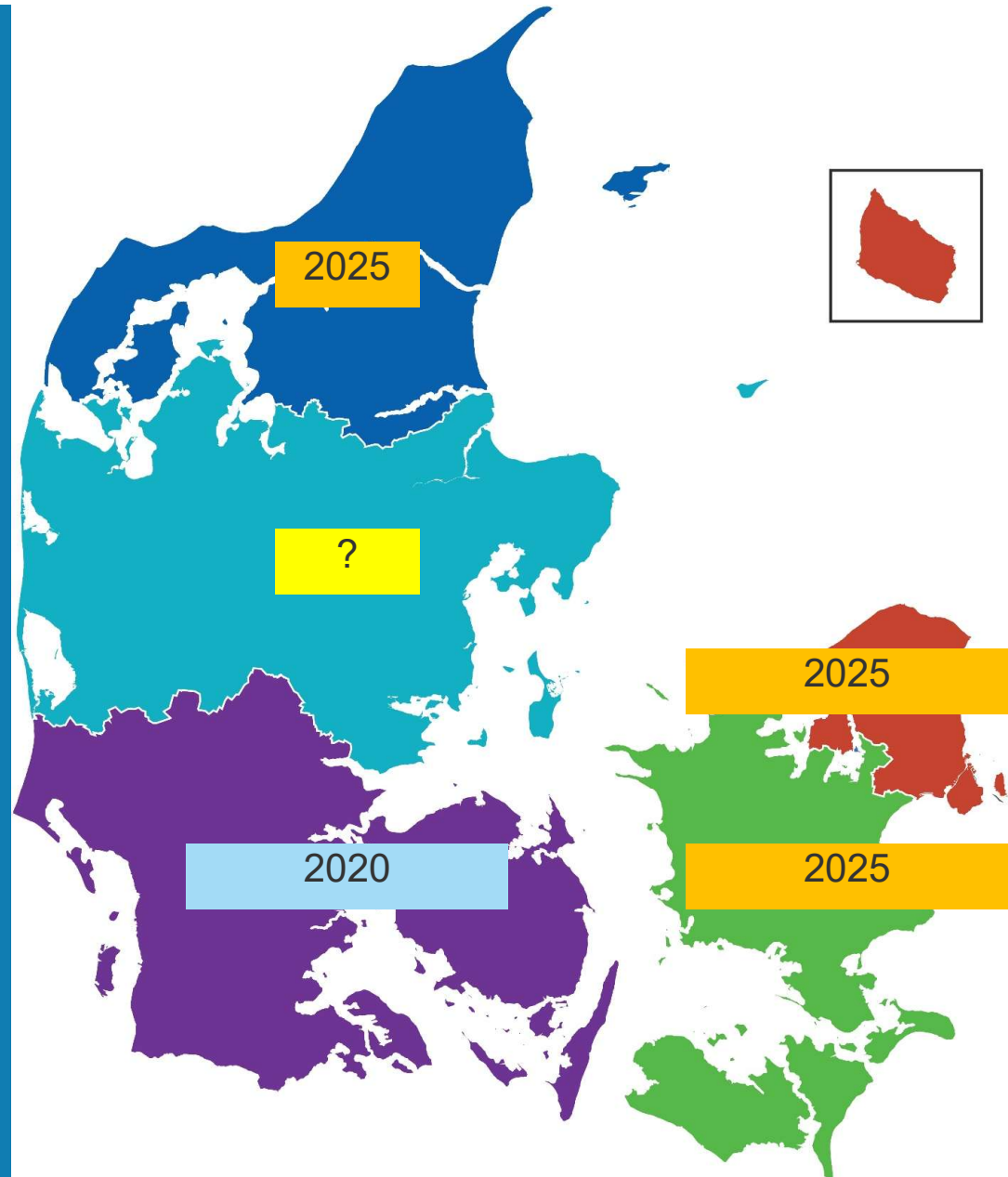


Disclosures

- Advisory board: MSD Denmark

A 10+ year process

- 2020: Southern Region fully digital
- 2020-2024: minor digitization projects in every region, decision to digitize Region Zealand and Capital Region finalized
- 2025:
 - Region Zealand, Capital Region and Northern Region of Jutland will be fully digital
 - Middle Region of Jutland: to be decided – one department fully digitized

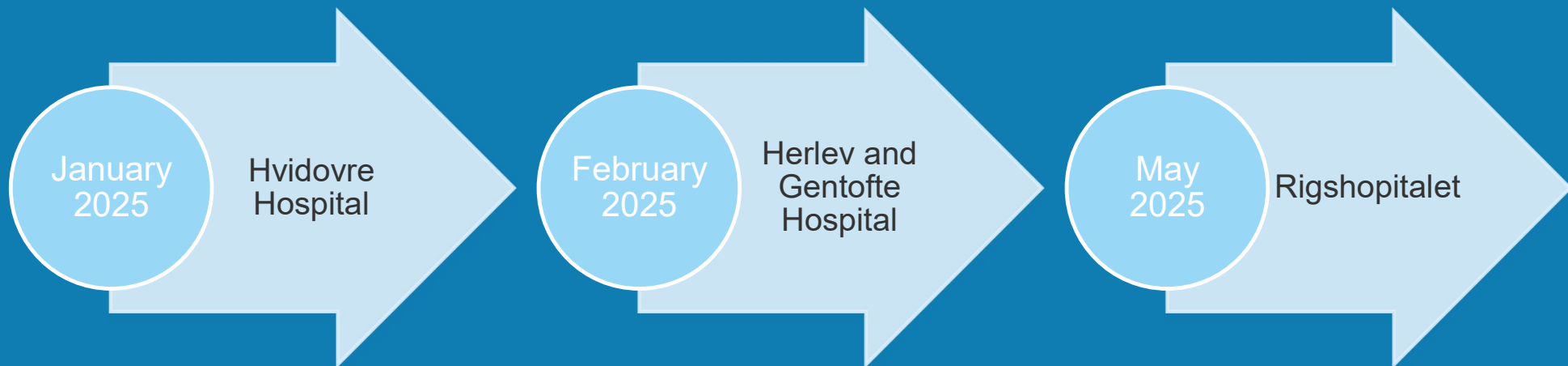


Suppliers

- Southern Region
 - IMS: Sectra
 - Scanners: Hamamatsu
- Region Zealand
 - IMS: Health Tribune
 - Scanners: Hamamatsu
- Capital Region
 - IMS: Sectra
 - Scanners: Leica
- Northern Region of Jutland
 - IMS: Health Tribune
 - Scanners: Hamamatsu



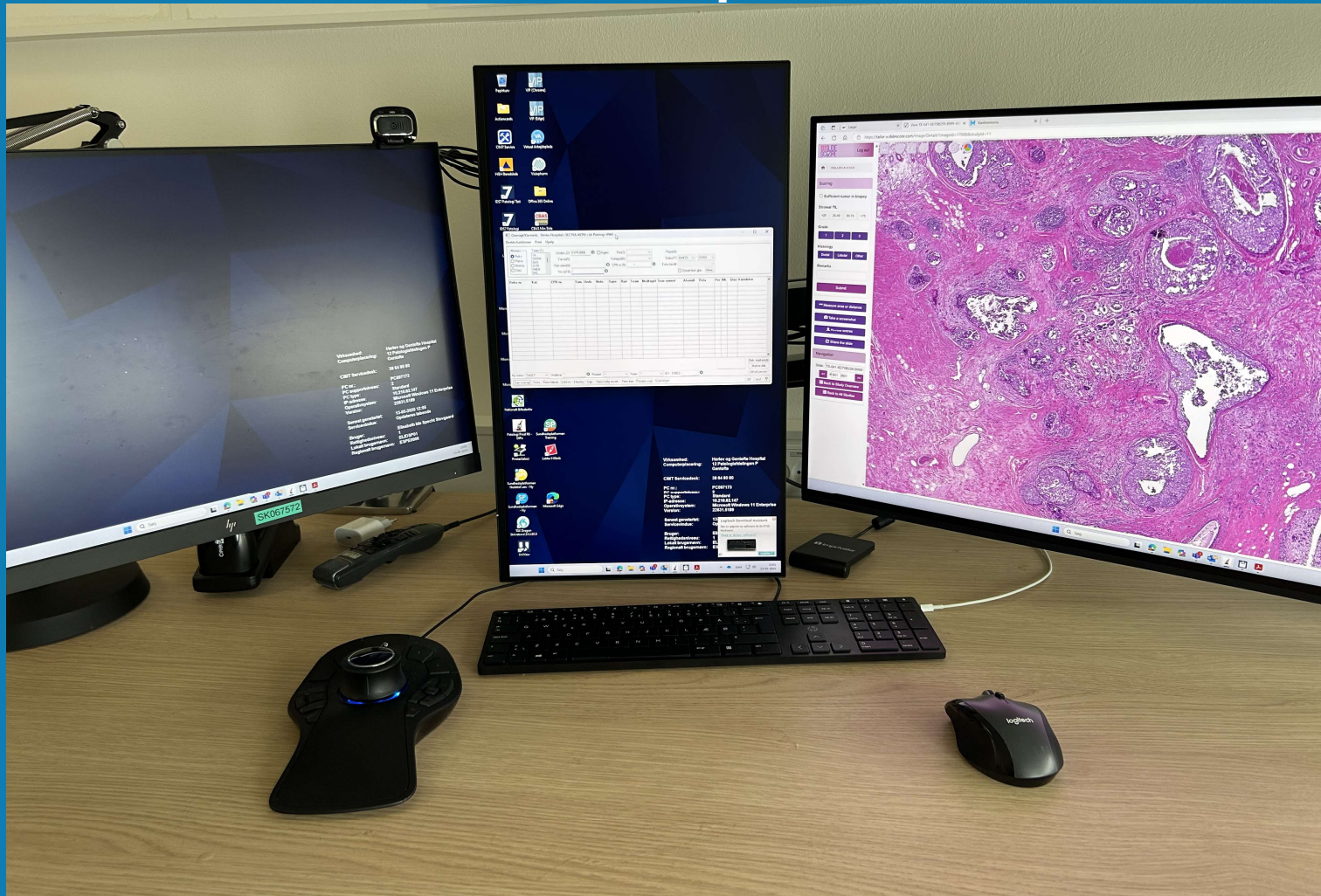
Capital Region – 2025 implementation



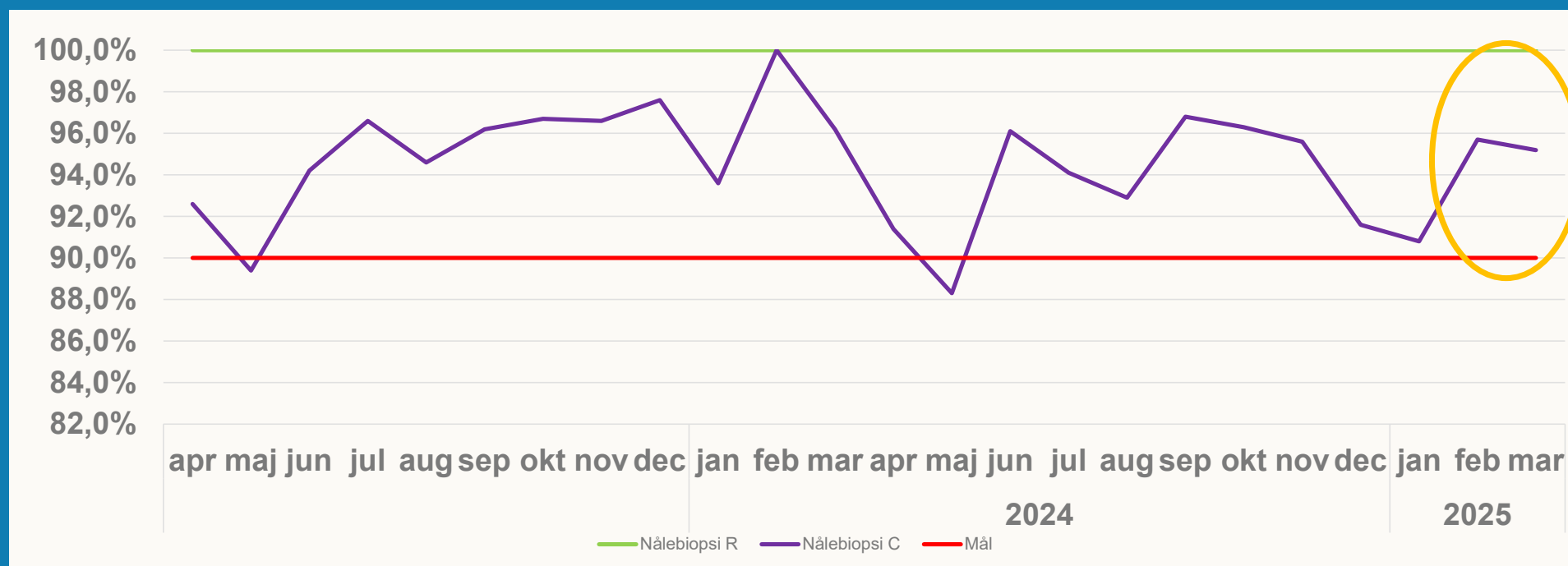
All departments will be going fully digital from day one

- all teams
- No period of dual diagnostics (slides and digital)

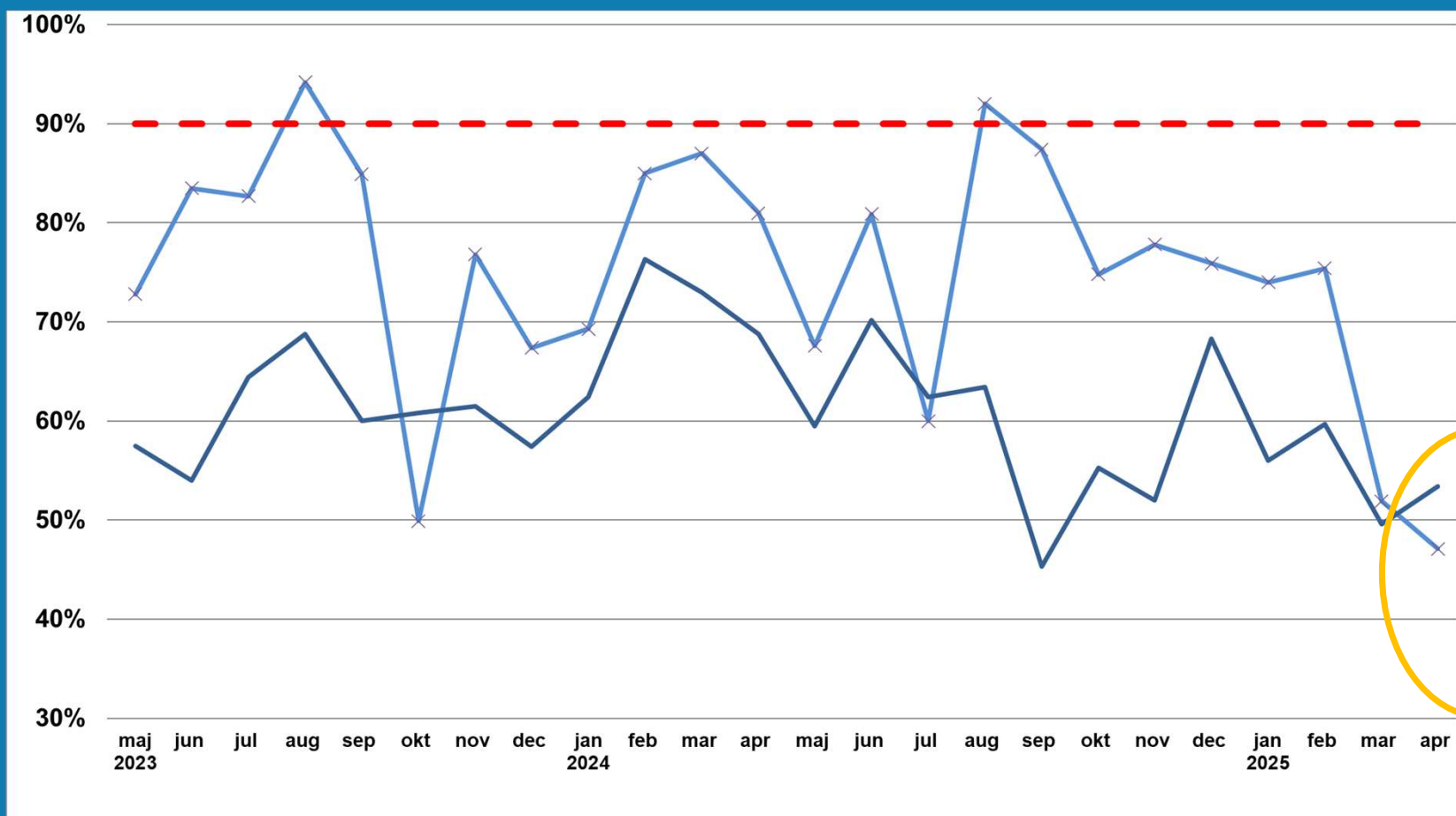
Setup



Needle biopsies – time to diagnosis



Surgical specimens





Assessment of the prerequisites and consequences of implementing digital pathology

Minne Line Nedergaard Mikkelsen

- Southern Region of Denmark
- 4 departments – questionnaires before, during and after implementation
- 2 departments – 3 interview rounds – before, during and after implementation
- Turnaround times registered before, during and after

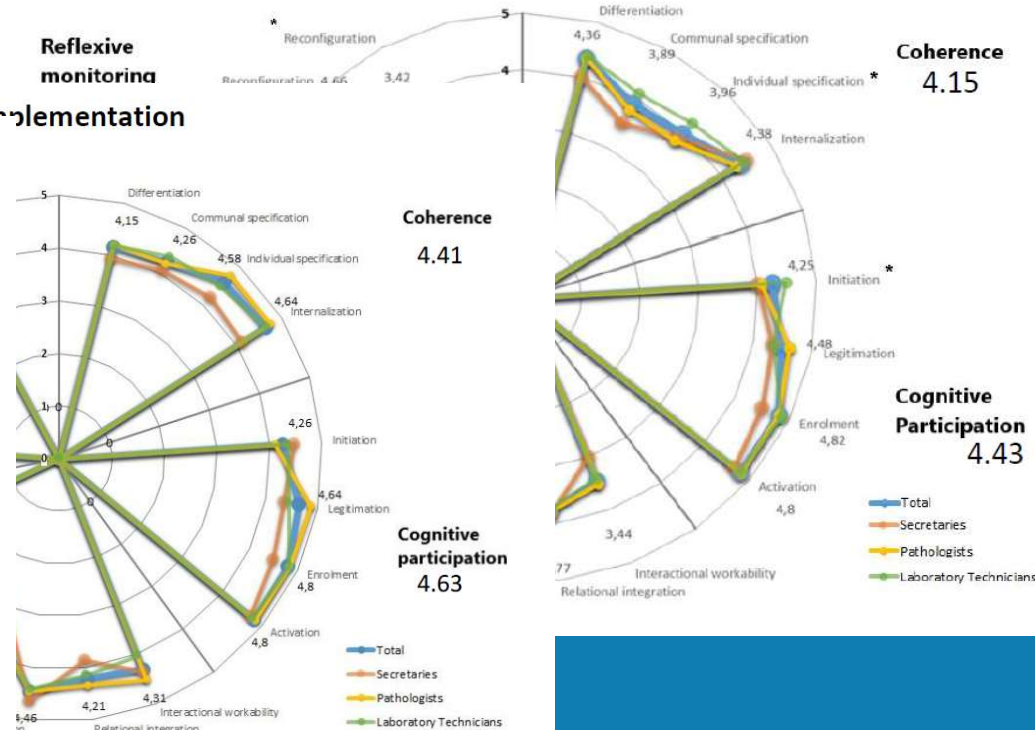
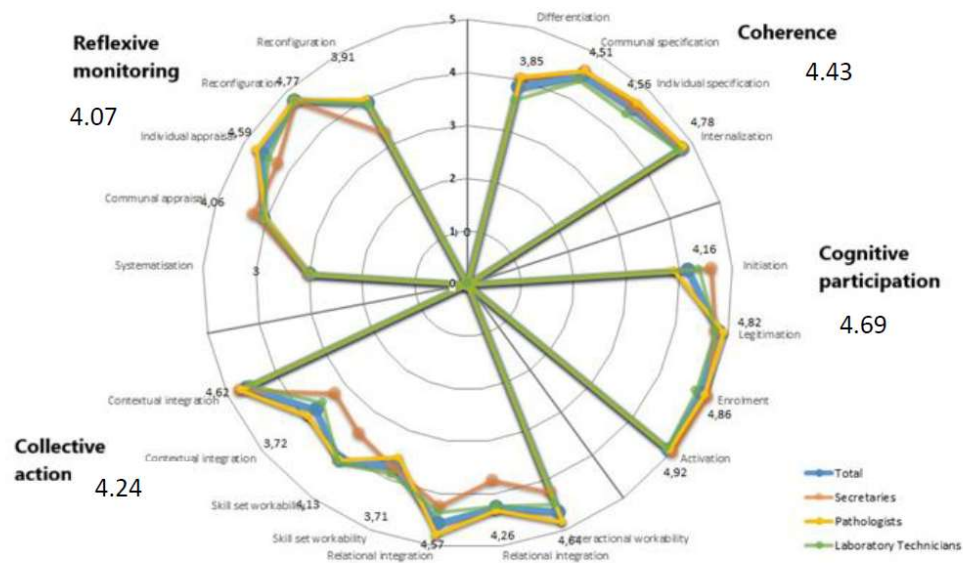
The implementation process

Before implementation

Reflexive monitoring

During implementation

After implementation





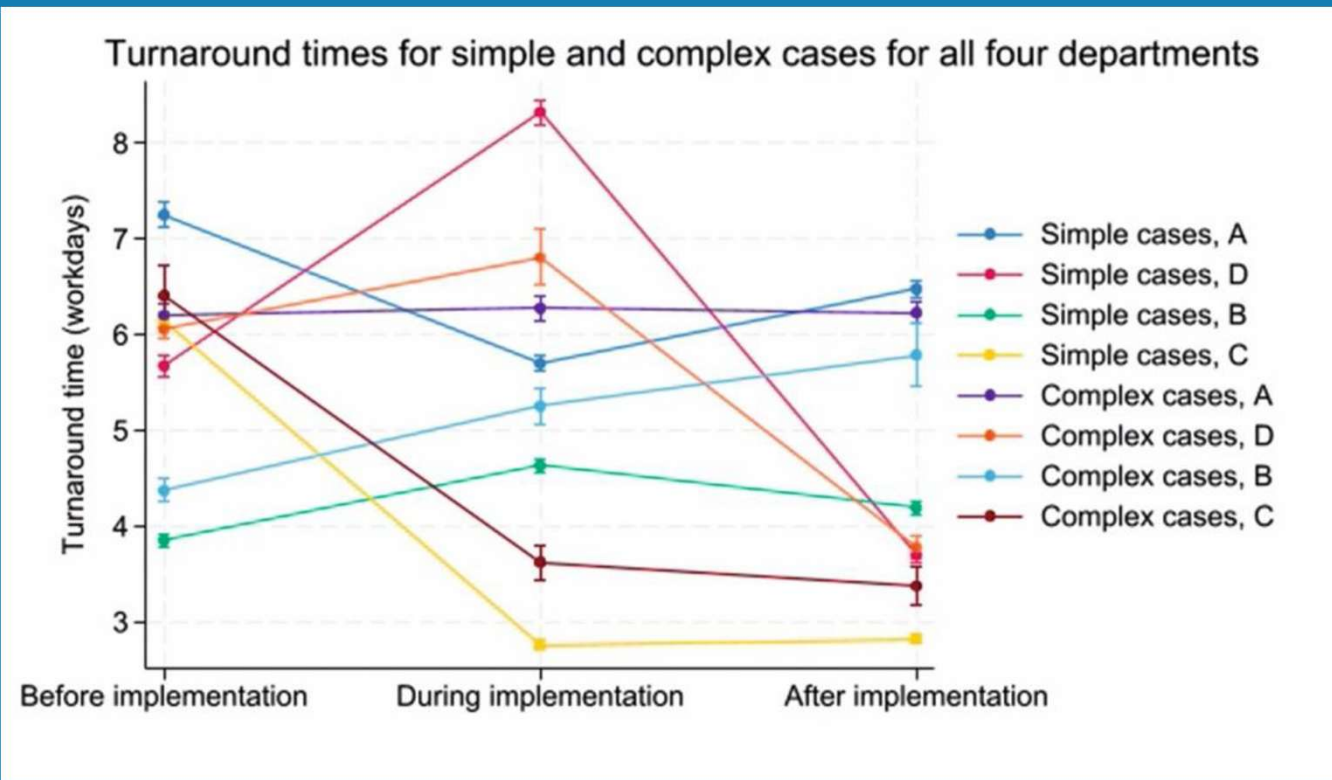
The employees must maintain faith and trust in the project throughout the implementation

Information, information, information

- **Value:** Employees must see the value of DIPA
- **Early introduction:** Introduce test system ahead of implementation, as few technical problems as possible
- **Timeline:** Visual implementation schedule
- **Training**
- **Ambassadors:** Enroll employees with positive interest in DIPA
- **Diversification:** Different implications for professional groups, their routines and workflows

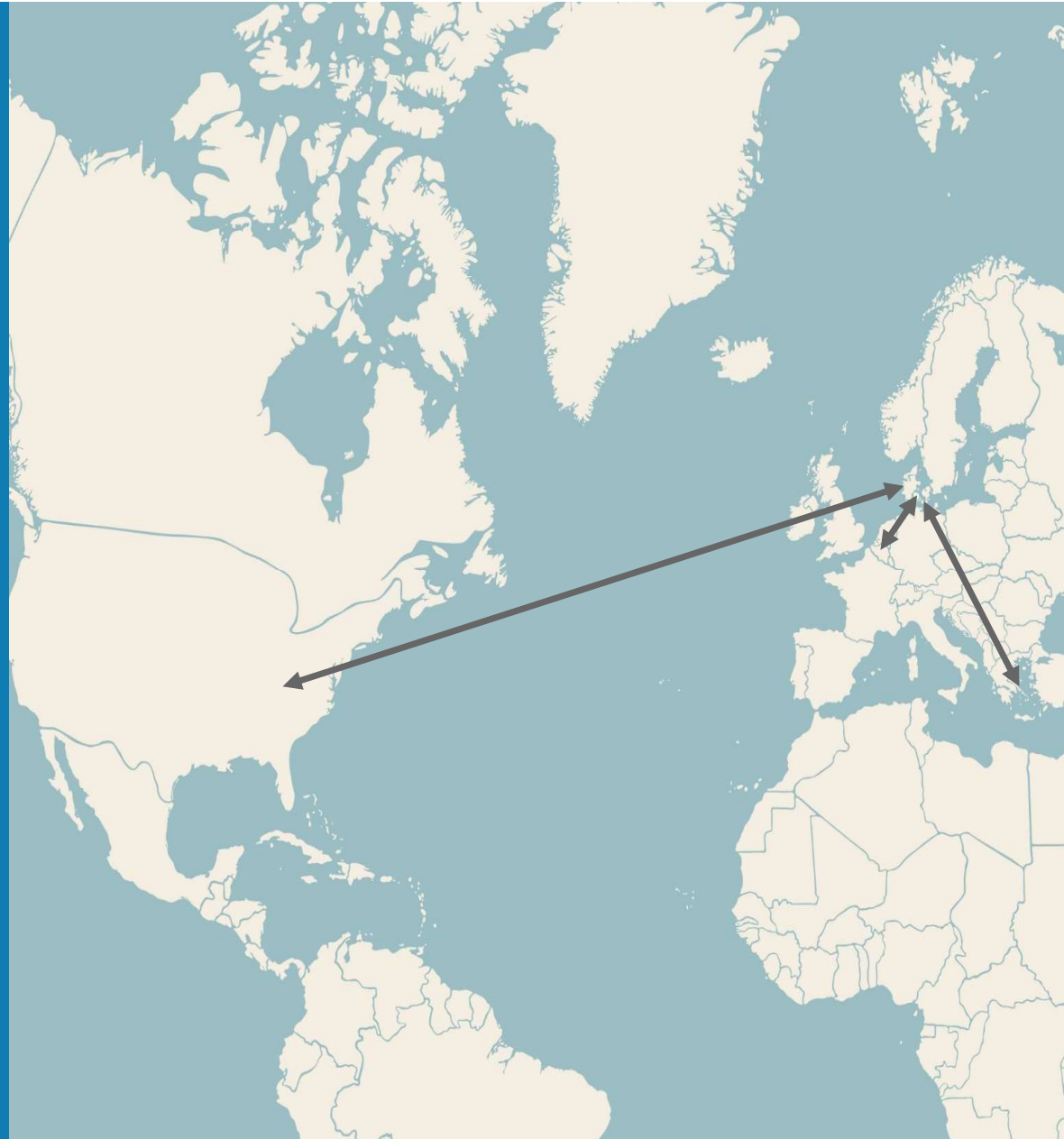
Turnaround times

- Smaller departments experienced shorter turnaround times after digitization
- Both doctors and lab technicians were more satisfied with the implementation process in smaller departments



Reaping the benefits of digital pathology

- Consultation and outsourcing
 - National and international
- Working from home
- Education
 - National educational sessions
 - Knowledge banks



FORETRUKNE

Uddannelseslæge Jacob Reimer

0 Igang

Behandles

0 MAKS 1 GL-SK

Makro

Mamma

0 Rutine 0 Haste/pakke

Godkendte svar (6 md)

19 Sandra 47 Janina 30 Mindaugas

Dagens case

14 GAS 13 GYN 23 HUD 4 LUN 1 MAM 7 URO

Colon-video

Lungecases

ALLE ARBEJDSLISTER

Systemarbejdslistes

Rollearbejdslistes

MDT Vejle

Patolog Vejle

Fælles casedatabase RSyd

GAS nedre

GAS øvre

GYN

HUD

Neoplasi

Nonneoplasi

HÆM

Knogle-bløddede

LUNGE

MAM

Mandlige genitalier inkl. prostata

Neoplasi 68 patienter, 68 undersøgelser

	Beskrivelse ↑1	Kommentarer	Status	Beskrivelse udløber (n...	Beskrivelse udløber (i...	Henvisningsnu...	Dato og klokkeslæt
3							
1							
0	Apokrin cyste/apokrint hidroc...					ANONTJNH7H...	09-05-2022, 09:...
0	Atypisk dermatofibrom med e...					ANONMFG9G...	23-08-2022, 12:...
0	Basocellulært karcinom af mo...					ANONTFJN7J1...	26-06-2024, 08:...
164	Benign adnekstumor, syringof...					ANON4I1T7J1FP	28-06-2024, 09:...
62	Blue naevus					ANONM1TH7...	09-05-2022, 11:...
	Blue nævus					ANONPLJUE16F	30-08-2023, 14:...
10	Bowen sygdom					ANONCV933H...	16-03-2022, 09:...
4	Chondroidt syringeom (Mixe...					ANONHJMM6I...	22-05-2023, 12:...
	Cylindrom, uvis om benign ell...	Der er tale om en gentagen recidi...				ANONE7FHAJ...	30-07-2024, 10:...

Undersøgelsesliste

Filtrer

ON82OM6I1LH
05-2023 01- HE 0102

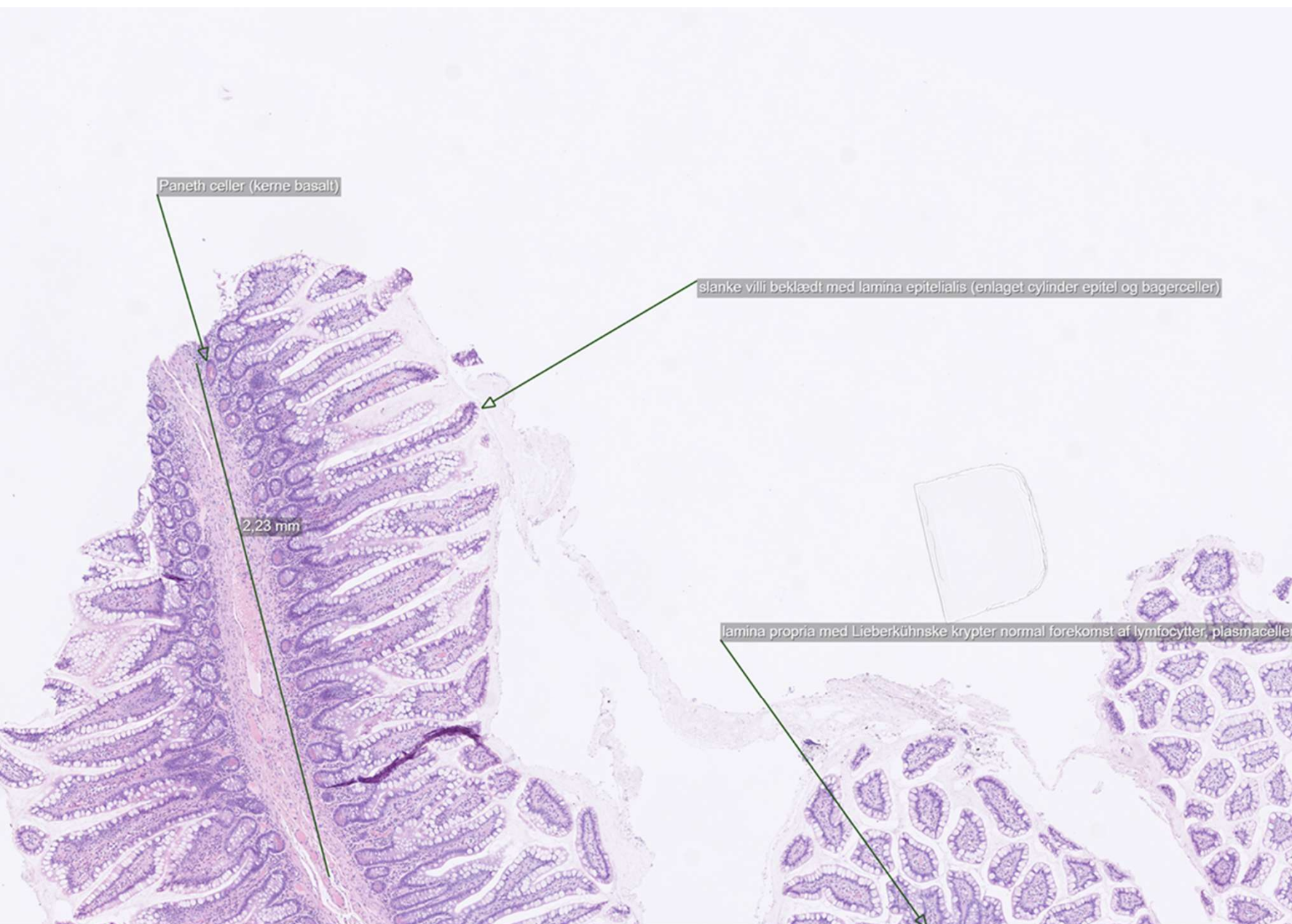
0,5/44x



82OM6I1LH 0102







Anmærkninger

Oprettet af

Kun favoritter

Alle

Fra Til

0102, 01- HE	ileum
0102, 01- HE	colon
0102, 01- HE	Paneth celler (k...
0102, 01- HE	slanke villi bekl...
0102, 01- HE	mikrovilli på ov...
0102, 01- HE	lamina propria ...
0102, 01- HE	lamina muscula...
0102, 01- HE	tela submucosa...
0102, 01- HE	plexus submuco...
0102, 01- HE	tunica muscular...
0102, 01- HE	plexus mesente...
0102, 01- HE	tunica serosa
0102, 01- HE	laminal epitheli...
0102, 01- HE	mikrovilli
0102, 01- HE	krypt
0102, 01- HE	lymfoid follikel
0102, 01- HE	lamina propria
0102, 01- HE	plasmacelle
0102, 01- HE	lymfocyt
0102, 01- HE	lamina muscula...
0102, 01- HE	ganglieceller (M...
0102, 01- HE	tela submucosa
0102, 01- HE	Auerbach plexus
0102, 01- HE	eosinofil granul...
0102, 01- HE	enteroendokrin ...
0102, 01- HE	2,23 mm

Artificial intelligence

- Estrogen receptor and HER2 evaluation – implemented
- Implementation projects
 - Quality surveillance
 - Lymph node metastasis detection
 - HER2 calibration for ultralow classification
 - Invasive cancer detection
 - Ductal carcinoma in situ vs invasive carcinoma decision tool



Challenges for the future of digital pathology in Denmark

- **Economy**
 - Storage
 - Equipment e.g. screens, scanners etc.
- **Compatibility** across regions of Denmark
- **Accreditation**
 - Screen requirement and maintenance
 - Pathologist training
 - Validation of digital vs light microscopy
- **Implementation of AI solutions**
 - Price
 - Data security
 - Systems integration

