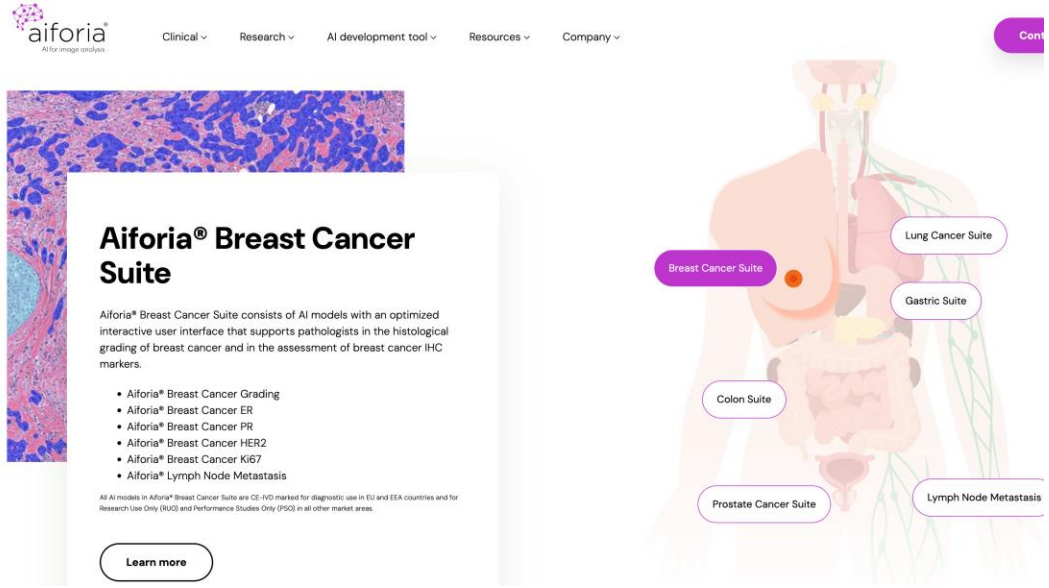
Tuomas Ropponen

Principal AI consultant

Kokemus:

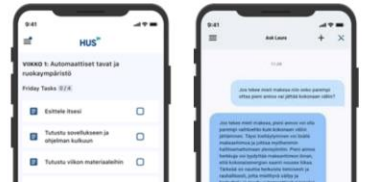
- Yli 20 vuoden kokemus tekoäly- ja ohjelmistotuotteiden suunnittelusta, toteuttamisesta ja tuotantoon viemisestä
- Yli 10 vuotta lääketeknologian tekoäly- ja ohjelmistopalvelujen kehitystä
- IVDR/MDR, ISO 13485, IEC 62304, ISO 27001, EU AI Act, GDPR/HIPAA, SOC 2

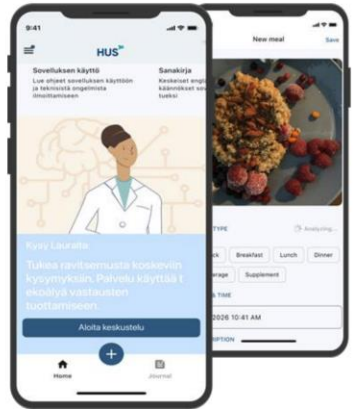
2005



Case HUS

Painonhallintatalon käytössä havaittu päivittäiseen valmennukseen tarvittavan ajan lasku **9 minuutista 3.2 minuuttiin**.





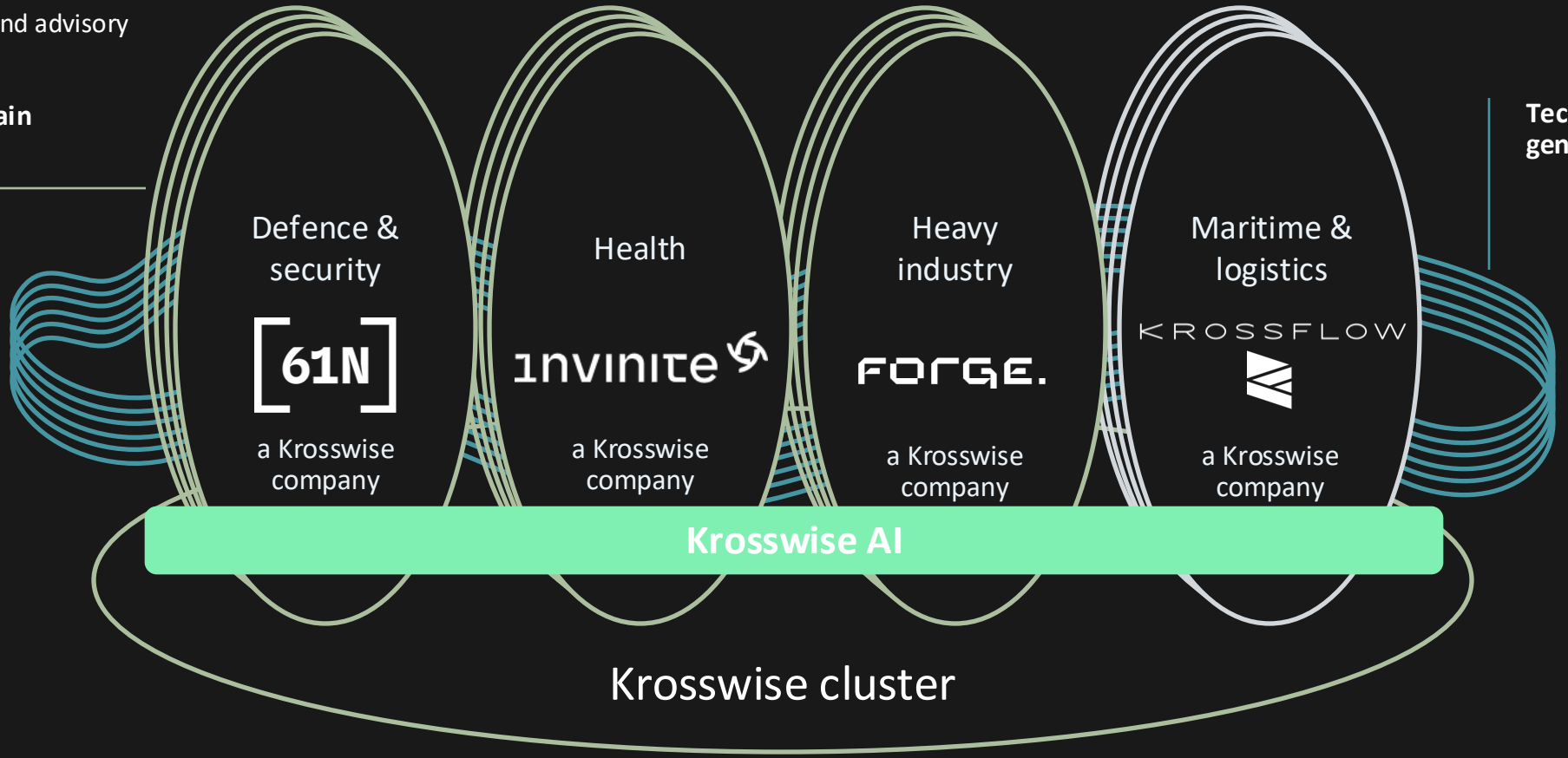
What is Krosswise?

130 senior experts

- SW development and Ops
- AI & Data
- Consulting and advisory

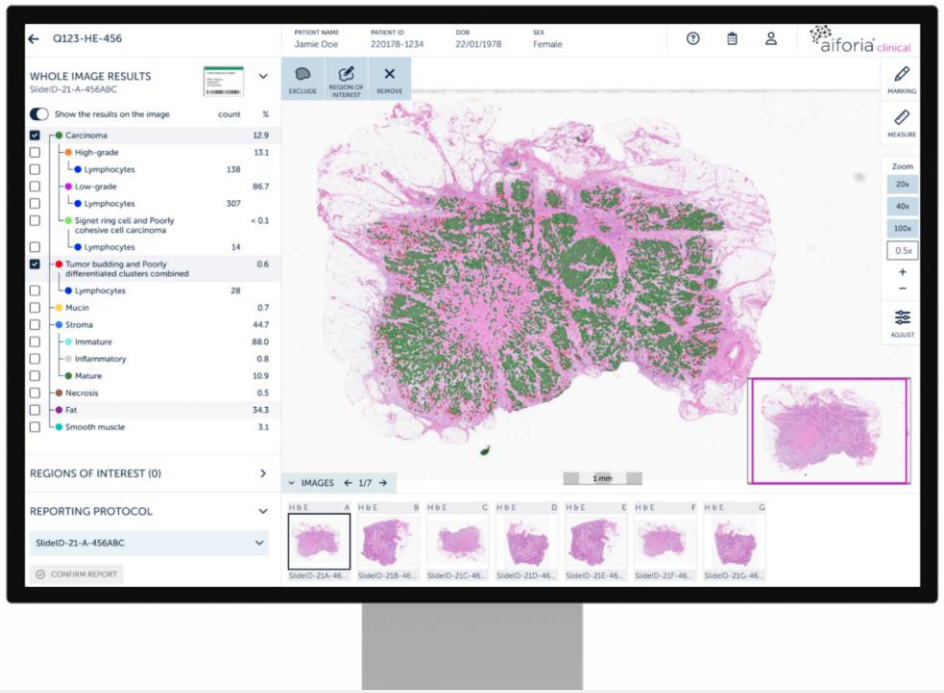
Industry domain specialisation

Technology generalisation



AI hyödyt

- Parantaako diagnostiikka?
- Tehostaako toimintaan?
- Saadanko annettua oikeaa hoitoa oikeille henkilöille?
- …



Development and validation

Prognostic AI model identifies different tissue characteristics in colorectal cancer patient samples, and combined with two other clinical parameters, it produces a colorectal cancer recurrence risk score.

- **Dr. Rish Pai from Mayo Clinic** trained a highly advanced AI model for detecting multiple pathologic features of colorectal carcinoma. He used **Aiforia® Create** end to end by annotating all the training data himself.
- QuantCRC was verified and validated in Aiforia® Platform using whole slide images and against reviews by independent pathologists from **eight different hospitals**.
- The effectiveness of the AI model has been demonstrated through retrospective analysis in **multiple independent patient sample cohorts**[1–3].

1. Pai et al. (2022). Quantitative Pathologic Analysis of Digitized Images of Colorectal Carcinoma Improves Prediction of Recurrence-Free Survival. Gastroenterology, 163(6), 1531–1546. https://doi.org/10.1053/j.gastro.2022.08.025

2. Pai et al. (2021). Development and initial validation of a deep learning algorithm to quantify histological features in colorectal carcinoma including tumour budding/poorly differentiated clusters. Histopathology, 79(3), 391–405. https://doi.org/10.1111/his.14353

3. Wu et al. (2024). Improved Risk-Stratification Scheme for Mismatch-Repair Proficient Stage II Colorectal Cancers Using the Digital Pathology Biomarker QuantCRC. Clinical Cancer Research, 30(9), 1811–1821. https://doi.org/10.1158/1078-0432.ccr-23-3211

Datan laatu

Medallion-arkkitehtuuri: data jalostuu vaiheittain käyttökelpoiseksi

1 Pronssi

TALTEENOTTO

- Raakadata lähdejärjestelmistä

2 Hopea

PUHDISTUS

- Puhdistettu ja yhdenmukaistettu data

3 Kulta

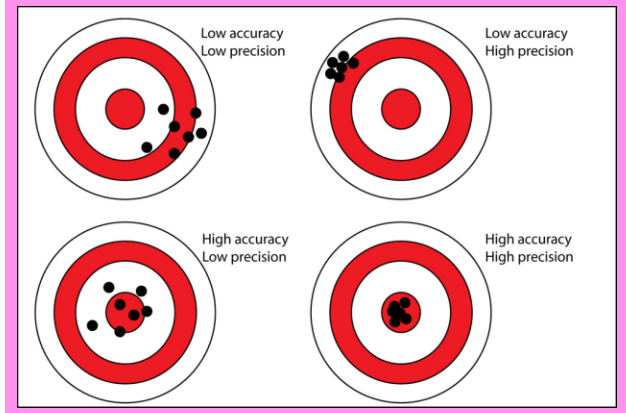
JALOSTUS

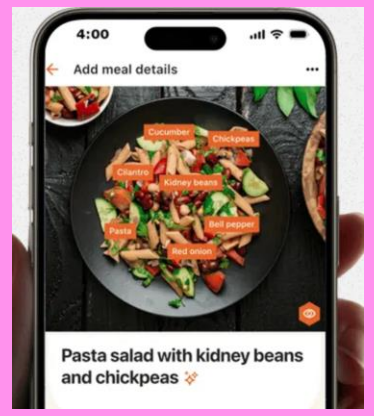
- Liiketoiminnan käyttöön jalostetut tietotuotteet
- Kuratoitu, dokumentoitu ja hyväksytty

Table 4 | Interobserver concordance of pathologists' interpretations of melanocytic skin biopsy lesions. Pairwise comparison of interpretations by 187 participating pathologists in phase 1. Diagnoses for all possible ordered pairs of participants reading the same glass slide are included*

First pathologist's interpretation	Second pathologist's interpretation						Interobserver concordance % (95% CI)
	Class I	Class II	Class III	Class IV	Class V	Total	
Class I	**64 122**	15 082	11 223	2993	1773	**95 193**	71 (69 to 73)
Class II	15 082	**10 366**	11 028	3974	1903	**42 353**	25 (22 to 27)
Class III	11 223	11 028	**31 326**	12 675	4494	**70 746**	45 (42 to 47)
Class IV	2993	3974	12 675	**22 334**	8854	**50 830**	46 (43 to 49)
Class V	1773	1903	4494	8854	**50 926**	**67 950**	77 (75 to 79)
Total	**95 193**	**42 353**	**70 746**	**50 830**	**67 950**	**327 072**	55† (53 to 56)

Numbers of interpretations with agreement are emboldened.
*Average pairwise agreement is an unweighted average across all participant pairs. The number of first pathologist interpretations for a given diagnostic class varies across pairs. Concordance rates are influenced by case composition, which included larger proportions of cases in classes II-V than would typically be encountered in practice. There are 6814 distinct order participant pairs ×48 case interpretations per pair yielding 327 072 interpretations.
†Average κ for interobserver agreement across all participant pairs is 0.42.

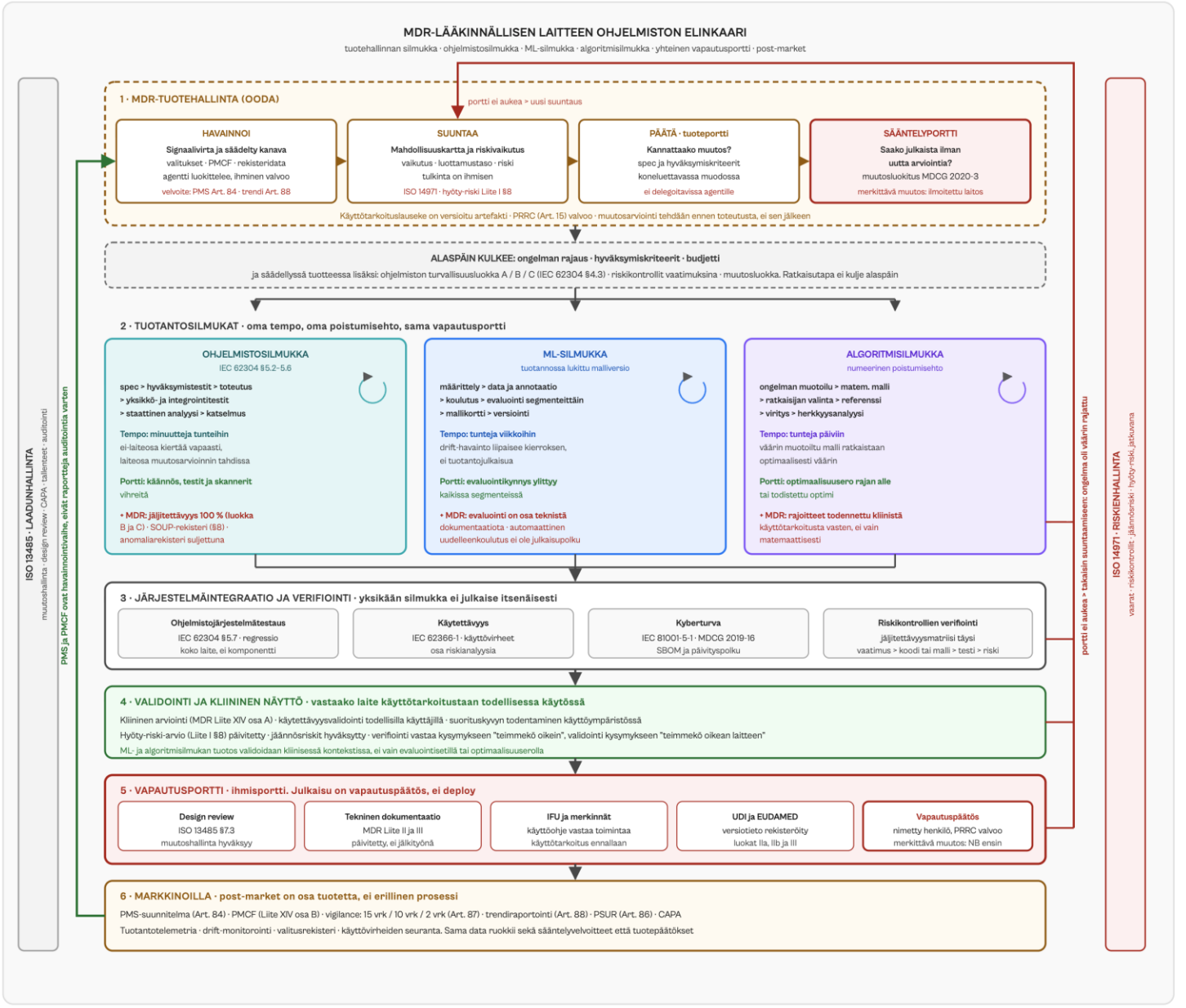




https://pubmed.ncbi.nlm.nih.gov/28150389/

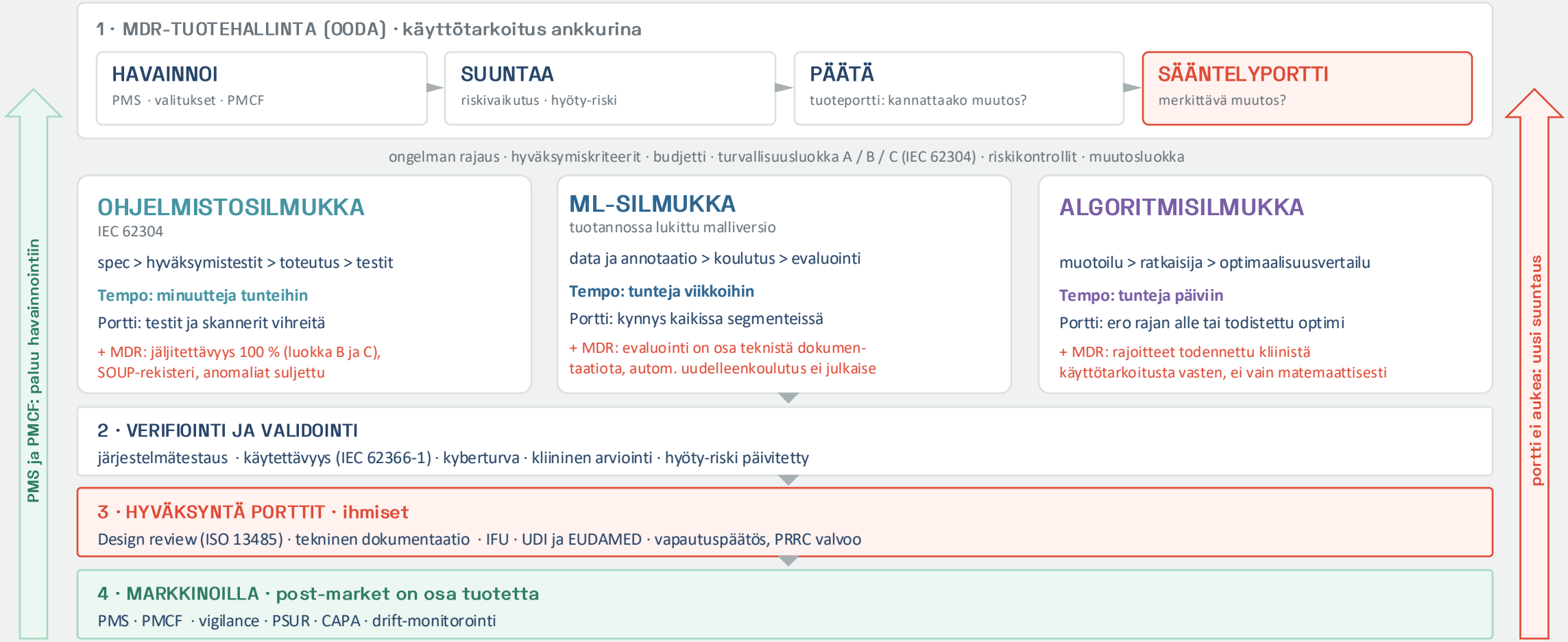
MDR-laitteen ohjelmiston elinkaari ja tekoäly avusteinen kehitys

Systeemi ajattelu



MDR-laitteen ohjelmiston elinkaari, yksinkertaistettu

Tuotehallinnan silmukka ohjaa, kolme tuotantosilmukkaa toteuttavat, yhteinen vapautusportti päättää



Yhteenveto

1. Luotettava ja todella korkealaatuinen datapohja. Monesti tekoäly tuotteet vaattii 10x parempaa laatua kuin raaka diagnostinen data on.
2. Regulaation huomioiminen osana tuotteen tekoäly avusteista kehitystä
3. AI -mallin toimivuuden seuranta ja hallinta tuotannossa
4. Ajantasaisuus: Jatkuvasti kehittyvien mallien tuominen mukaan regulaatio ja testaus huomioiden

Kysymyksiä?