innovative health initiative

PROBE
PATIENT RELEVANT OSTEOARTHRITIS ENDPOINTS USING BIG DATA EVALUATION

# Real-World OA Data in Federated Research


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## FACTS & FIGURES

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| Start date: | 01/12/2025 |
| End date: | 30/11/2030 |
| EU funding: | 13 999 883 € |
| Industry contribution: | 13 231 500 € |
| Contributing partners: | 4 797 500 € |
| GA number | 101219324 |
| Project website: | ihi-probe.eu |
| Social media: | LinkedIn: @PROBE_IHI |

## CHALLENGE

Osteoarthritis (OA) affects more than 530 million people worldwide, yet **no disease-modifying treatment exists.** Existing endpoints — X-ray joint space narrowing, visual analogue pain scales — fail to reflect patients' daily experience or predict individual treatment response.

Overcoming this requires large-scale, multimodal real-world data combining patient-reported outcomes (PROMs) and objective activity data, federated across multiple countries while respecting national GDPR constraints. No single centre holds sufficient breadth and depth to build the robust, patient-anchored predictive models OA research urgently needs.

## APPROACH & METHODOLOGY

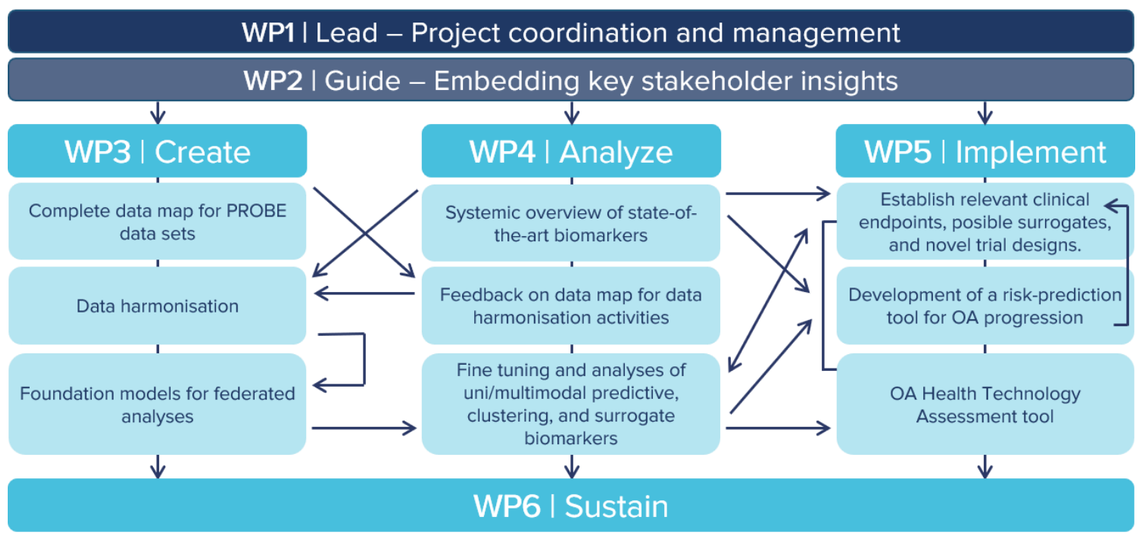
PROBE builds a **federated data infrastructure linking heterogeneous OA datasets** — population cohorts, clinical trials, and Real-World Evidence registries from across Europe. Data stays locally behind safe firewalls; only AI model parameters are exchanged. WP4 applies machine learning to derive multimodal predictive models, patient stratification algorithms, and surrogate biomarkers.

**Cascador/moveUP** contributes longitudinal PROMs, wearable activity data, and AI modelling expertise into this federated system. WP5 translates the outputs into novel trial designs, OA risk-prediction tools, and clinical decision-support tools, validated with regulatory and HTA partners.




## RESULTS

PROBE's expected outputs include validated patient-relevant OA endpoints grounded in real-world data, AI stratification models matching individual patients to optimal treatment pathways, and decision support tools ready for integration into future clinical trial design (WP5).




1 **Validated Endpoints** — Patient-relevant OA outcomes

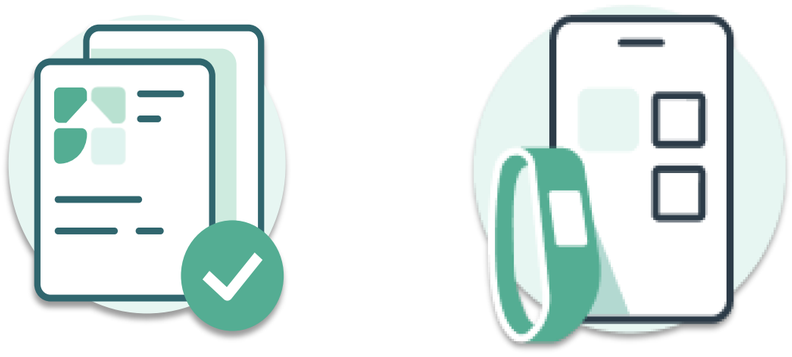
2 **Patient Stratification** — AI-matched treatment pathways

3 **Decision Support Tools** — Clinical & trial integration

## VALUE OF IHI COLLABORATION

PROBE unites 14 academic medical centres, universities and research institutes from 11 countries, patient organisations, regulatory bodies, and pharmaceutical companies. Each partner contributes what others cannot: hospitals provide deep clinical cohorts and care pathways; universities bring biostatistical and endpoint expertise; industry adds corporate trial data, AI capacity, and regulatory knowledge. IHI's public-private model creates a 360-degree view of OA that no purely academic or purely commercial consortium could achieve.

**Cascador/moveUP's** regulated ePRO and wearable platform provides real-world patient data; in return, moveUP accesses rigour, scale, and interdisciplinary depth — a cross-sector collaboration that IHI enables.



## CAREER IMPACT

My PhD (2020) gave me foundations in study design and outcome measurement. At Cascador/moveUP I extended this into deploying digital health in hospitals, applying AI to wearable sensor and PROM data, and building a real-world OA database of 100,000+ patients.

PROBE added a dimension previously out of reach: working inside an international consortium with biostatisticians, clinical trialists, regulatory experts, and patient groups — developing federated governance and coordination skills no single institution offers.

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