SETTING THE SCENE:

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Bridging the Innovation Gap –

Precision Cardiology for the Next Decade

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Co-funded by the European Union

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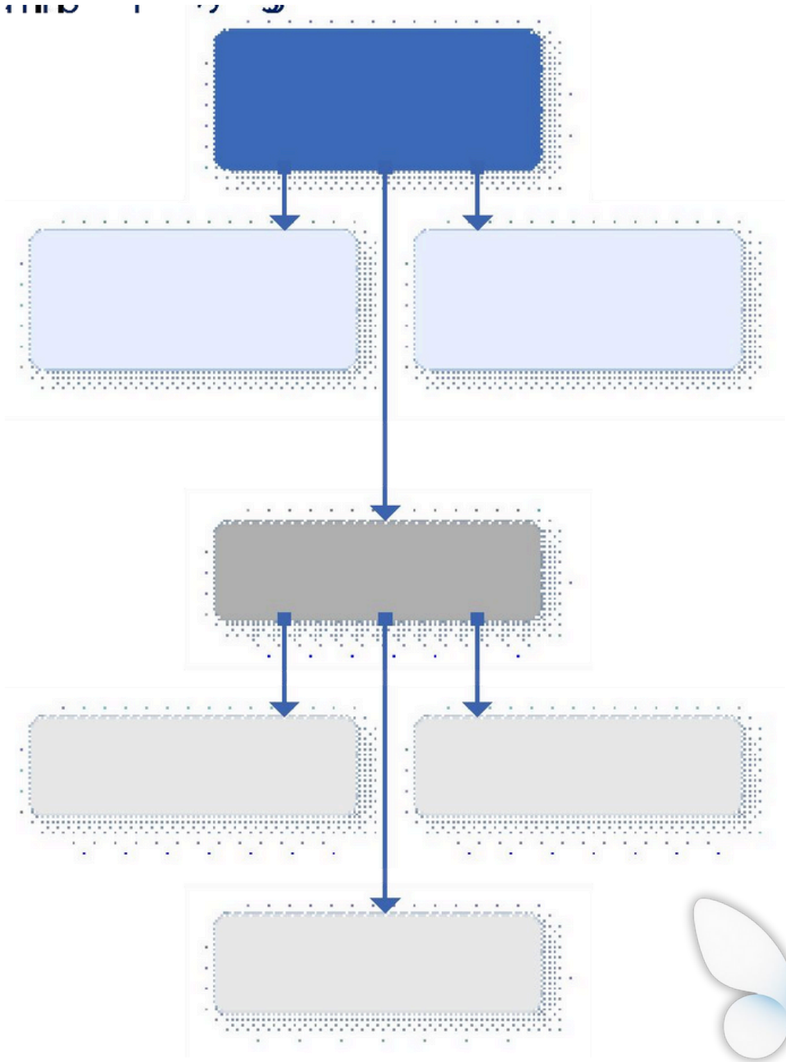
Current challenges in CVD

- Enormous burden to healthcare
  - Leadingcauseofdeath worldwide.
  - Increasingprevalence, mainlyduetoagingpopulation
- Studies creating evidence for treatment (and prevention) excluded many patients
- Current treatment often follows a 'one-size-fits-all' model why is this a problem?
  - Probably significant heterogeneity in treatment response
  - Growing burden of multi-morbidity and complex patient profiles
  - Healthcare costs demand more targeted, efficient strategies
  - Personalisation is apreference ofpatients
- Innovation–implementation gap that must be bridged.



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What is precision medicine in cardiology?

- Use of genetic, biomarker, imaging, clinical, behavioural, and environmental data
- Stratify risk, guide interventions, and optimise outcomes for each individual.
- Example in cardiology: Identifying patients at highest risk for heart failure progression *and* tailoring therapy accordingly.
- Benefits:
  - Improved patientoutcomesandqualityof life
  - Reduced unnecessary interventions
  - Better resource allocation

<u>Visual</u>:
Clinical symptoms
Simple diagnostics
Guideline-based care

<u>Hidden</u>:
Genetics
Biomarkers / omics
Deep Imaging
Behaviour
Environment

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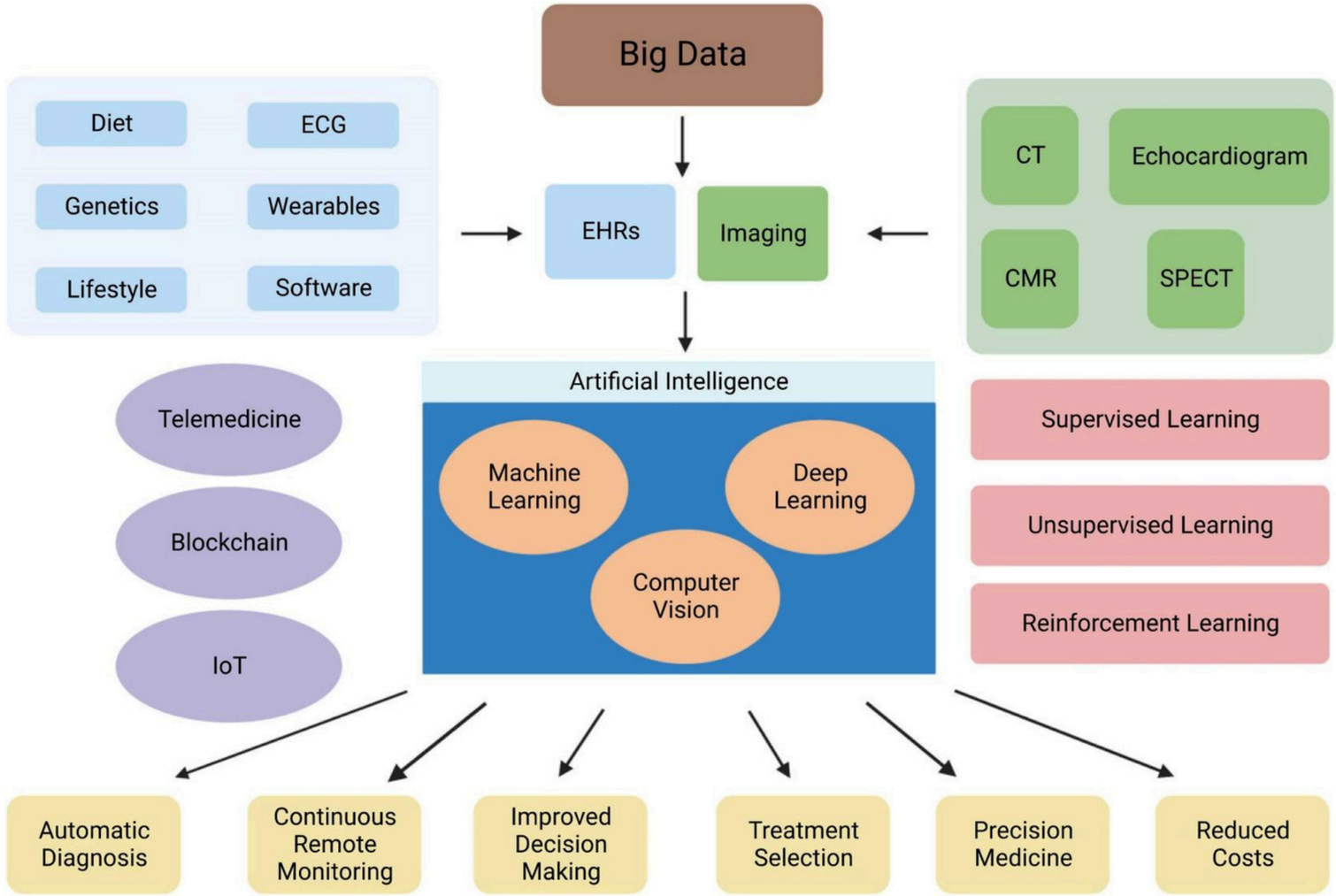
(Potential) role of AI in Cardiology



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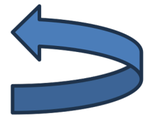
Karatzia et al. Front Cardiovasc Med 2022; 9: 945726

Framework for implementing precision

Cardiology

- **Data infrastructure**
  - **Interoperable, standardised,high-quality datasets**
  - **GenerativeAI modelsmay also deal with unstructured datasets**
- **Advanced analytics**
  - **AI/MLintegratedintoclinical workflows.**
- **Clinical decision support**
  - **EmbeddedinEHRsystems, supporting clinical decisions**
- **Patient engagement**
  - **Shared decision-making digital self-management / self-treatment**
- **Governance & ethics**
  - **Privacy, equity, regulation.**
- **Evidence generation**
  - Robusttrialsandreal-world validation



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Individualised CARE FrOm early Risk of CardioVascular Disease to established heart failure

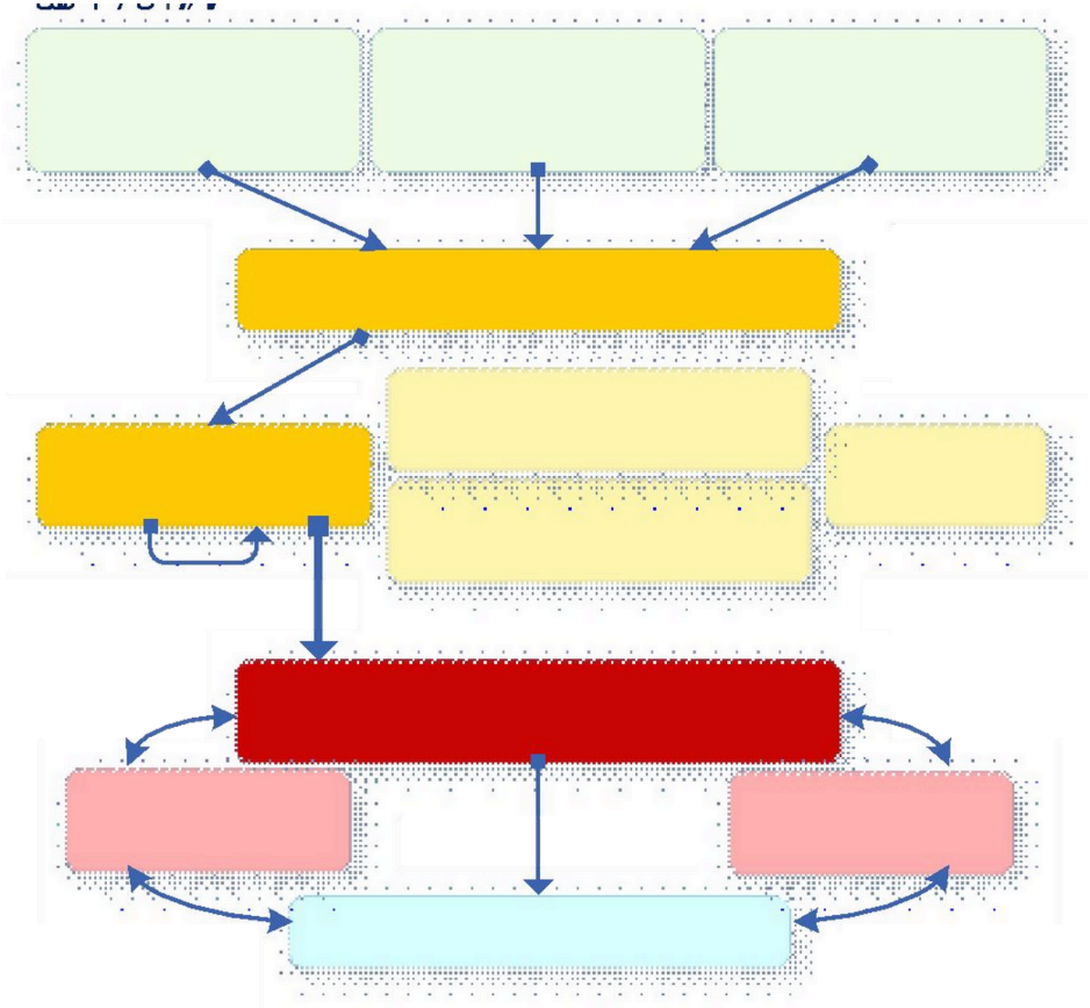
Hans-Peter Brunner-La Rocca, coordinator

iCARE4CVD is a collaboration of 38 partners with total budget of >22M€

www.icare4cvd.eu

innovative health initiative
efpia European Federation of Pharmaceutical Industries and Associations
Vaccines Europe
COCIR Advancing Healthcare
EuropaBio The European Association for Bioindustries
MedTech Europe from diagnosis to cure
Breakthrough T1D™ Formerly JDRF
Co-funded by the European Union

iCARE4CVD as case study



Aim: **AI-driven, patient-centred precision medicine in CVD in Europe.**

Federated data infrastructure across multiple countries and cohorts.

AI-based advanced diagnostics, risk prediction and prediction of treatment response**.**

Prospective validation in intervention trial

Integration into care pathways with patient-facing tools.

Co-created with patients, clinicians, and industry.

Brunner-La Rocca et al. Eur Heart J 2025; 46: 2139