IB is discovered, invented or conceived

- Identify IB method and/or technique and parameter
- Does the IB address an unmet clinical need or improve existing IBs?
  - Use existing data Yes
  - Do suitable data exist to evaluate the IB?
  - Acquire new data

Technical and biological performance quantified for multiple tumour–therapy pairings

- Biome and/or study design
- Refine IB and establish SOPs for clinical use

Precision
- Repeatability
- Reproducibility
- Bias

Availability
- Hardware
- Software
- Ethical approval
- Tolerability
- Regulation
- IP and licencing

Graded evidence ‘fit for purpose’
- Strength
- Specificity
- Effect gradient
- Temporality
- Consistency

Relationship to intervention

Technical and biological performance quantified for multiple tumour–therapy pairings

Cost effectiveness
- Scan cost
- Study design

Putative screening IB
- Establish if IB helps detect cancer in the patient population

Putative diagnostic IB
- Establish IB sensitivity and specificity, and effect on diagnostic accuracy

Putative predictive IB
- Establish IB–outcome relationship for tumour–therapy pairings

Refine IB and establish SOPs for clinical use

Precision
- Multicentre
- Reproducibility

Putative pharmacodynamic IB
- Establish biological validation for tumour–therapy pairings
- Establish SOP for trial use
- Achieve objective 1: IB incorporated into clinical trials

Screening IB
- Relate IB with incidence and estimate reduction in cancer mortality in trial

Diagnostic IB
- Does IB improve clinical diagnosis?

Predictive IB
- IB defines randomisation in trial and demonstrates improved outcome

Translational gap 1

Translational gap 2

Achieve objective 2: screening, diagnostic or predictive IB influences patient care