



Proficiency Testing

Brian Brookman – Director, Proficiency Testing

Agenda



What is PT?

PT as a quality tool

PT & accreditation

PT – participation strategy

PT – selecting fit for purpose schemes



What is PT?

What is PT - Definition?



- **Definitions from ISO/IEC 17043**

Proficiency Testing

*“Evaluation of participant performance against pre-established criteria by means of **interlaboratory comparisons**”*

Interlaboratory comparison

“organization, performance and evaluation of measurements or tests on the same or similar items by two or more laboratories in accordance with predetermined conditions”

What is PT – primary aim

- The primary aim of proficiency testing is:

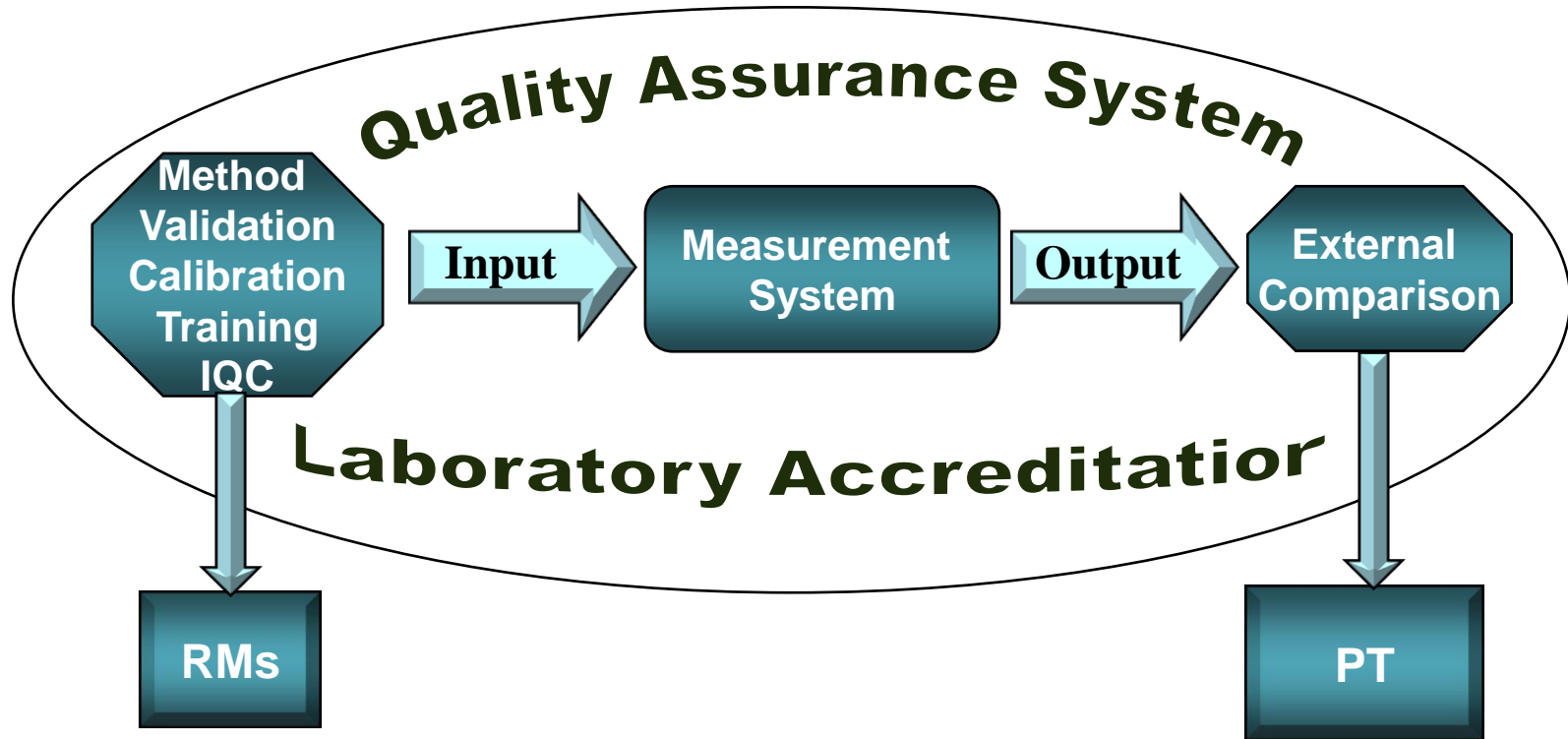
To provide the infrastructure for a laboratory to monitor and improve the quality of its routine analytical measurements

- A proficiency testing scheme provides laboratories with a framework for obtaining a regular independent assessment of their performance
- Proficiency testing schemes are sometimes known as external quality assessment (EQA)

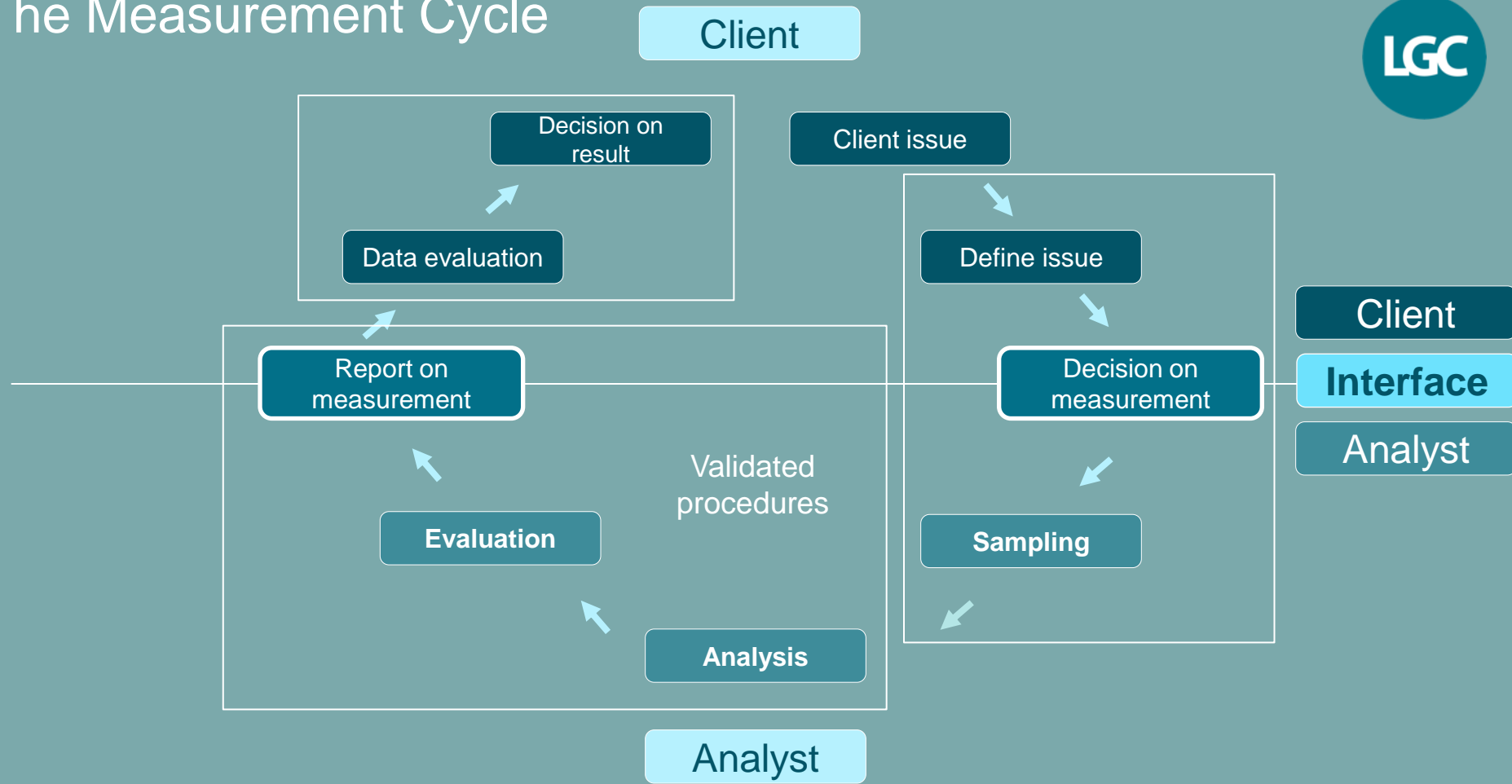


PT as a quality tool

Quality Assurance System



The Measurement Cycle



Types of PT



- Various types of PT available – based on one of more elements of four different categories:



Qualitative
Quantitative
Interpretive



Pre-measurement
Measurement
Post-measurement

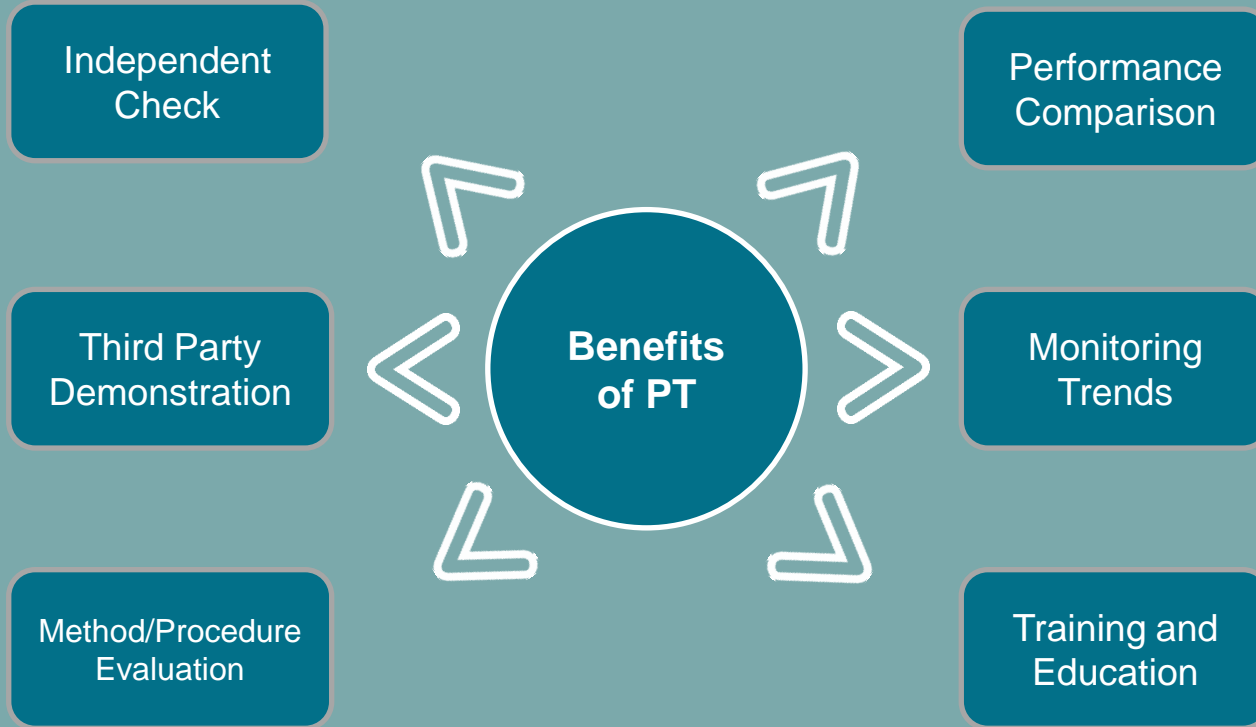


Sequential
Simultaneous



Single
Continuous

Benefits of PT to laboratories





PT & accreditation

Laboratory accreditation – ISO/IEC 17025



The laboratory shall monitor its performance by comparison with results of other laboratories where available and appropriate. This monitoring shall be planned and reviewed and shall include, but not be limited to, either or both of the following:

a) Participation in proficiency testing

NOTE: ISO/IEC 17043 contains additional information on proficiency tests and proficiency testing providers. Proficiency testing providers that meet the requirements of ISO/IEC 17043 are considered to be competent.

b) Participation in interlaboratory comparisons other than proficiency testing

Laboratory accreditation – ISO 15189



The laboratory shall participate in an interlaboratory comparison programme(s) (such as an external quality assessment programme or proficiency testing programme) appropriate to the examination and interpretations of examination results. The laboratory shall monitor the results of the interlaboratory comparison programme(s) and participate in the implementation of corrective actions when predetermined performance criteria are not fulfilled.

NOTE The laboratory should participate in interlaboratory comparison programmes that substantially fulfil the relevant requirements of ISO/IEC 17043.

Accreditation of PT providers



- **ISO/IEC 17043**
- **General requirements for the competence of testing and calibration laboratories**
- **Split into**
 - Technical requirements
 - Management requirements
- **3 Informative Annexes:**
 - A: Types of proficiency testing schemes
 - B: Statistical methods for proficiency testing
 - C: Selection and use of proficiency testing

ISO/IEC 17043 – the requirements



• Technical Requirements

- Personnel
- Equipment, accommodation and environment
- Design
- Choice of method or procedures
- Operation of PT schemes
- Data analysis and evaluation of results
- Reports
- Communication with participants
- Confidentiality

• Management Requirements

- Organisation
- Management system
- Document control
- Review of requests, tenders and contracts
- Subcontracting services
- Purchasing services and supplies
- Service to the customer
- Complaints and appeals
- Control of nonconforming work
- Improvement
- Corrective actions
- Preventive actions
- Control of records
- Internal audits
- Management reviews

PT - Participation Strategy

Strategy of PT participation

- **All laboratories need to develop an adequate PT participation strategy**
- **A laboratory should decide on an appropriate level and frequency of participation**
 - Level: number of specific proficiency tests in which to participate
 - Frequency: How often the laboratory will participate in each of the specific test identified
- **This will be specific to the laboratory's circumstances**
- **Guidance provided by the European co-operation for Accreditation (EA) EA-4/18: 2010**
 - Referenced in ILAC-P9: 2010

Level of PT Participation



- **Consider areas of technical competence based on:**
 - Measurement technique e.g. ICP-MS, GC-MS
 - Property to be measured e.g. PAHs, Fat, hardness
 - Products to be tested e.g. soil, milk, human serum
- **An area of technical competence may encompass several products, properties and/or measurement techniques**
- **The laboratory must be able to demonstrate equivalence within each area of technical competence**

Level and frequency of PT participation



- Important to consider a number of different aspects

- **Other QA measures implemented:**

- Use of CRMS
- Comparisons by independent techniques
- Participation in validation or characterisation studies
- Use of internal QC measures
- Other laboratory comparisons

- **Level of risk:**

- No measurements undertaken
- Turnover of technical staff
- Staff experience/knowledge
- Known stability/instability of measurement technique
- Significance and final use of data

- Different types of PTs can be used
- Difficulty of PT participation e.g. technical characteristics of the measurement, low number of laboratories etc
- Legislative requirements for frequency of type of participation

PT - selecting fit for purpose schemes

Selection factors

Test Item:

- Matrix (real/simulated)
- Parameters
- Concentrations

Distribution:

- Dates available
- Frequency
- Flexibility

Participants:

- National/International
- Language
- Methods



Results:

- Deadlines
- Reporting mechanism
- Statistical approach

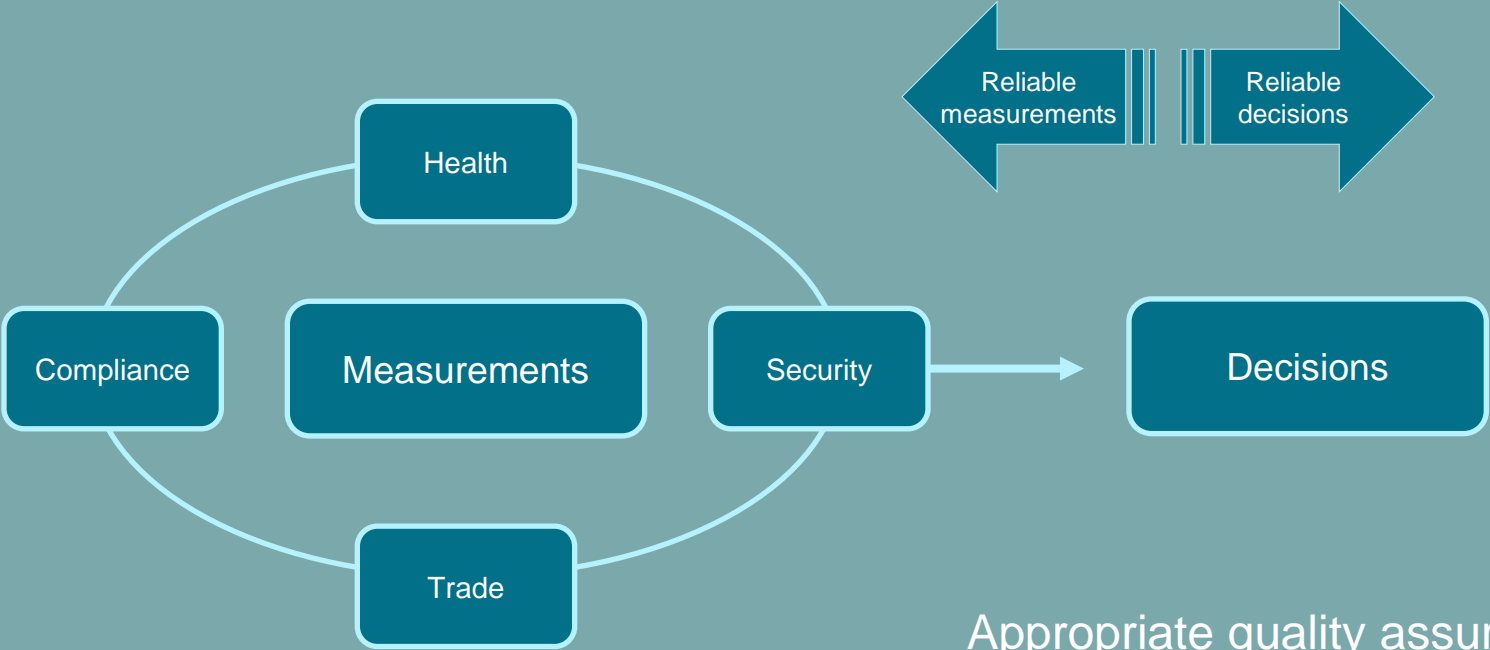
Reports:

- Speed
- Information/Language
- Format

PT Provider:

- Experience
- Scope
- Competence

Measurements



Appropriate quality assurance system is essential

PT – Drives laboratory quality



Questions?

Thank you!