Importance of Collaboration – the CPACT Example

Professor David Littlejohn
Centre for Process Analytics and
Control Technology
University of Strathclyde



Manufacturing Challenges in the Chemistry-using Industries



- Digitisation Industry 4.0
- Commercial advantage through optimising efficiency and business-leading innovation
- Shorten the timeline of the innovation supply chain – from discovery/invention to impact
- Accelerate through the TRLs



Role of Collaboration



- Challenges are often complex and require expertise across disciplines
- Challenges are often similar in different companies
- Collaborations can help in different forms:
 - end-user and technology vendor
 - end-user and end-user
 - end-user and academic



In-process Measurements for Optimisation and Control



- Multi-disciplinary (e.g. process chemistry; measurement and data sciences; engineering)
- Crucial for economic, safety and environmental reasons – core feature of petrochemical plants for several decades
- Recognition of the need for better collaboration resulted in CPACT
 - between companies; within companies
 - across disciplines; with academia



CPACT



- Formed in 1997
- Industry Academic club; Industry led
- Companies from across sectors
- End-user and technology vendor
- Common desire to advance knowledge and application of industrial process analysis and control technologies
- Measurement techniques; data analysis; process optimisation and control



Centre for Process Analytics and Control Technology



cpact is the leading network for companies seeking advice and research on all areas of process performance monitoring and control





CPACT Member Companies































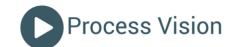
























CPACT University& Research Institute Members







Imperial College London





















CPACT's Themes



- Research & Development
- Conferences & Networking
- Technology Transfer
- International Collaborations
- Expert Training









CPACT is a "Club"



- Access to expertise across 26 industrial member companies and 12 Universities and Research Institutes
- Training and KE are key benefits
- Focus remains on analytical measurement, data analysis and performance monitoring





CPACT support for training



Networking, Training and Skills Development –

Webinars; Courses & Workshops; Research Days; Conferences

cpact Website - Access to a dedicated web site with 'members only' section containing webinars, presentations, software and other resources





CPACT Training Courses

University of Strathclyde Science

- Process spectroscopy
- Introduction to design of experiments (DOE)
- Introduction to chemometrics
- Data analysis, data mining, data modelling
- Process performance monitoring (Multivariate Statistical Process Control)
- Multi-block, multi-set, multi-level and data fusion methods
- Introduction to process control
- Process control for chemists and pharmacists
- PAT, multivariate data analysis and Lean Six Sigma
- Software sensors



Recent CPACT Webinars



- Fluorescence suppression by (instantaneous) shifted excitation
 Raman difference spectroscopy
- Strategies and tools for Variable Selection in spectral profiles that combine interpretation with maximum predictive performance
- Multivariate Hyperspectral Data Visualisation and Classification of Tea Products
- Multispectral Fiber Sensing for Remote Process Control
- Parameters in Mathematical Models and How to Treat Them
- In-line Raman in Real Life Biotech and Industrial Manufacturing
- Statistical Analysis Methods



Additional Benefits of CPACT



- Talent Pool Well trained recruits from a pool of multidisciplinary researchers
- Feasibility studies –
 Members get free shortterm feasibility studies
- APACT Conference series
 APACT 19 in Chester,
 29 April 2 May





CPACT Feasibility studies



Feasibility studies could be based on a wide range of questions, for example:

- Assessing a new instrument or instrumental method for process applications
- Compare different data analysis methods for particular applications
- Literature evaluation to assess the current status of a developing technology relevant to process analysis or process control



Role of PC&TG



- Stimulate pre-competitive collaborations
- Form Focus Groups where there are perceived gaps
- Hold Workshops involving technology vendors as well as end-users and academics
- Provide training courses and webinars where required
- Symposia on Hot Topics
- Facilitate learning across sectors
- Create Communities of Practise





It's good to Collaborate

Thanks for listening Questions?

