

# UNIT SIG report

**Krishna Murthy Penukonda**  
**CAPE-OPEN 2014 Annual Meeting**  
**Mörfelden, Germany**  
**September 10<sup>th</sup> & 11<sup>th</sup>, 2014**

# Outline

- **Report Period: Oct 2013 till Sep 2014**
- **Key responsibilities**
- **Members**
- **Published Errata & Clarifications for Unit Operation specification**
- **Progress on Petroleum Fractions specification**
- **Objectives for 2014/2015**

# Responsibilities

- **Maintain and publish the standard**
- **Respond to issues raised by developers and users**
- **Prioritize registered issues and give recommendations on solutions**
- **Promote and support the use of the CAPE-OPEN interface for Unit Operations**

# Unit SIG Members

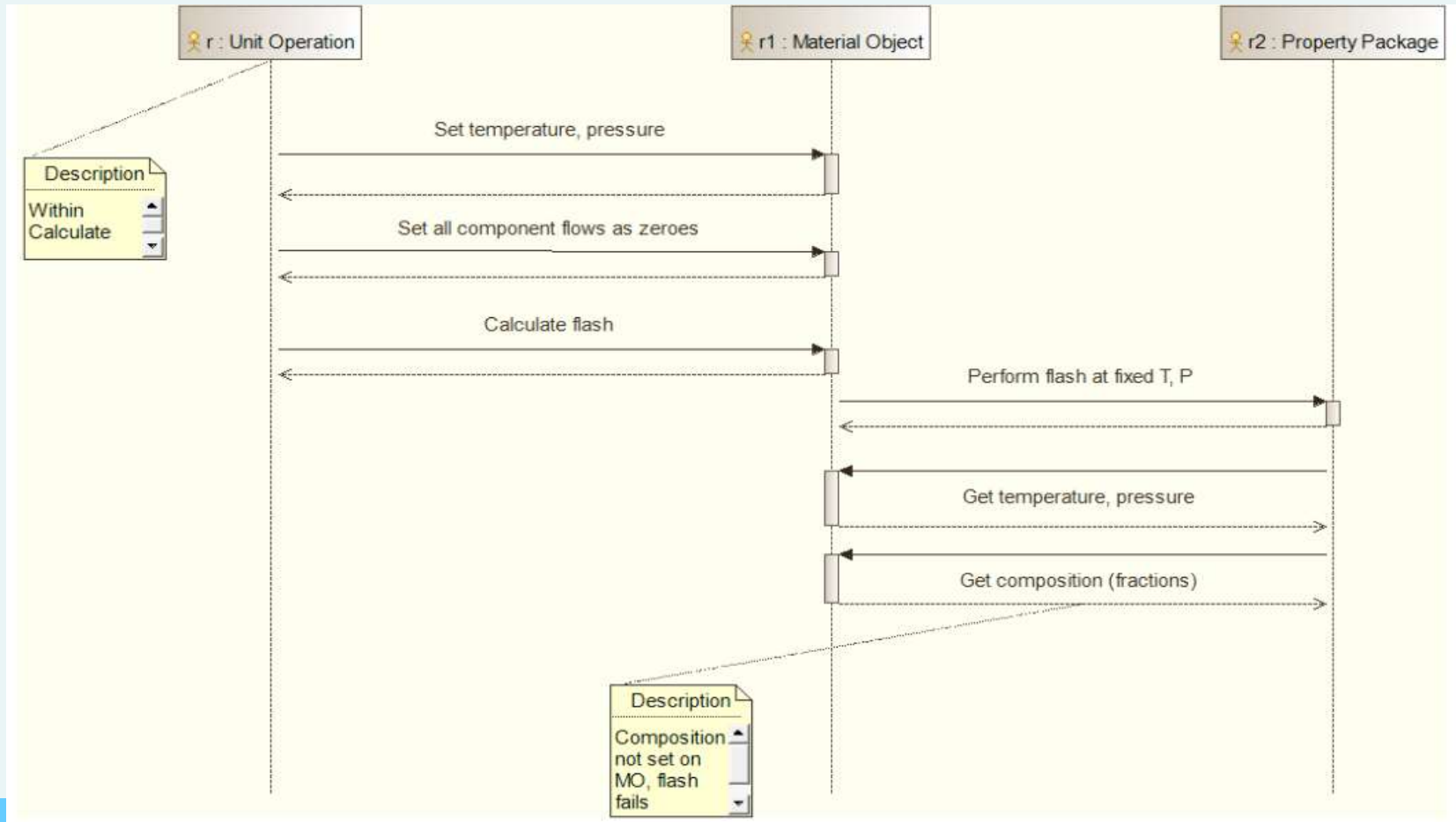
- **Members:**
  - **Krishna Murthy Penukonda (Schneider Electric)**
  - **Richard Baur (Shell Global Solutions)**
  - **Jasper van Baten (AmsterCHEM)**
  - **Didier Paen (RSI)**
  - **Alain Vacher (Prosim SA)**
  
- **Join? Contact Krishna Murthy Penukonda**

# Errata & Clarifications for Unit Operation specification 1.0 (Version 1.0.0013)

- **Errata:**
    - UC-015: Check Unit
    - Validate method description
  - **Clarifications:**
    - UC-001: Add Unit to Flowsheet
    - UC-015: Check Unit
    - UC-018: Save Flowsheet
    - UC-020: Retrieve Flowsheet
    - Port Collection
    - Material Objects with zero flow (\*)
    - ICapeUnitReport (\*)
- (\*) Discussed in more detail

# Errata & Clarifications for Unit Operation specification 1.0 (Version 1.0.0013)

- Material Objects with zero compound flow.
- Problem: Flash fails if all the compound flow rates are zero



# Errata & Clarifications for Unit Operation specification 1.0 (Version 1.0.0013)

- **Material Objects with zero flow**
  - **Recommendation:** The Flowsheet Unit specifies either
    - both overall composition and total flow, or
    - overall compound flows:
      - at least one compound flow is non-zero and positive.
  - Outlet material streams with zero flow rate must be defined by setting the overall total flow to zero and by a valid overall composition.
  - Setting all zero values for overall compound flow is not permitted.
  - A valid composition must be provided so that the state of the material stream may be set (may be obtained from any inlet stream)

# Errata & Clarifications for Unit Operation specification 1.0 (Version 1.0.0013)

- **Clarifications:**

- **ICapeUnitReport**

- **Issue 1:** Formatting reports can be expensive. For a Unit included in a recycle loop, report content may not be required at intermediate recycle calculations
    - **Recommendation:** If formatting of a report requires significant computational effort (note that formatting numbers is potentially expensive), it should be postponed until ProduceReport.

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# Errata & Clarifications for Unit Operation specification 1.0 (Version 1.0.0013)

## ▪ ICapeUnitReport

- Issue 2: Reports produced by *ICapeUnitReport* are text reports and there is no common consensus on how to render these reports. This makes difficult for UOs to produce reports that contain data formatted for example in columns.
- Recommendation 2a: Pertains to plain text reports
  - 2a.1 on PME: fixed-pitch fonts are to be used by PME
  - 2a.2 on PME: CR and CR/LF are equivalent
  - 2a.3 on PME: all printable UNICODE characters are allowed.
  - 2a.4 on PME: no limitation on the length of a report

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# Errata & Clarifications for Unit Operation specification 1.0 (Version 1.0.0013)

## ▪ ICapeUnitReport

### ▪ Recommendation 2a:

- 2a.5 on PME: no limitation on the line length of a report. PME should avoid breaking or wrapping lines.
- 2a.6 on PMC: CR should not appear without LF; LF may appear by itself
- 2a.7 on PMC: the PMC avoid control characters (page break, form feed, back space). TAB is avoided in reports; instead space characters should be used to align data.

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# Errata & Clarifications for Unit Operation specification 1.0 (Version 1.0.0013)

## ▪ ICapeUnitReport

- In addition to plain-text reports, various formatting protocols could be envisioned for reports in order to enhance reporting. Rather than defining a formatting protocol proprietary to CAPE-OPEN, it is decided to adopt a widely used and open format protocol (HTML) for which standard rendering software components are available.
- Recommendation 2b: Pertains to HTML reports
- Reports formatted as HTML can only be used if this functionality is supported by both the PME and the PMC.
- If HTML contains links to external objects (such as images, movies, etc...), it is the responsibility of the PMC to manage the life cycle of these objects

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# Errata & Clarifications for Unit Operation specification 1.0 (Version 1.0.0013)

## ▪ ICapeUnitReport

### ▪ Recommendation 2b:

- 2b.1 on PME: PME advertises support for HTML format by NamedValue “HTMLReportSupport” on ICapeCOSEUtilities.
- 2b.2 on PMC: PMC must not provide reports in HTML format unless the PME accepts this format.
- 2b.3 on PME: PME should detect that a report is formatted as HTML. In this case the report starts with a DOCTYPE declaration as follows: `<!DOCTYPE html>`
- 2b.4 on PMC: HTML reports must begin with a DOCTYPE declaration as per requirement 2b.3.

# Petroleum Fractions specification

- **Started the review of Petroleum Fractions specification.**

# Objectives for 2014/15

- **Publish Petroleum Fractions specification**
- **Publish dynamic standard specification**
- **Look for expertise on equation oriented unit operations**