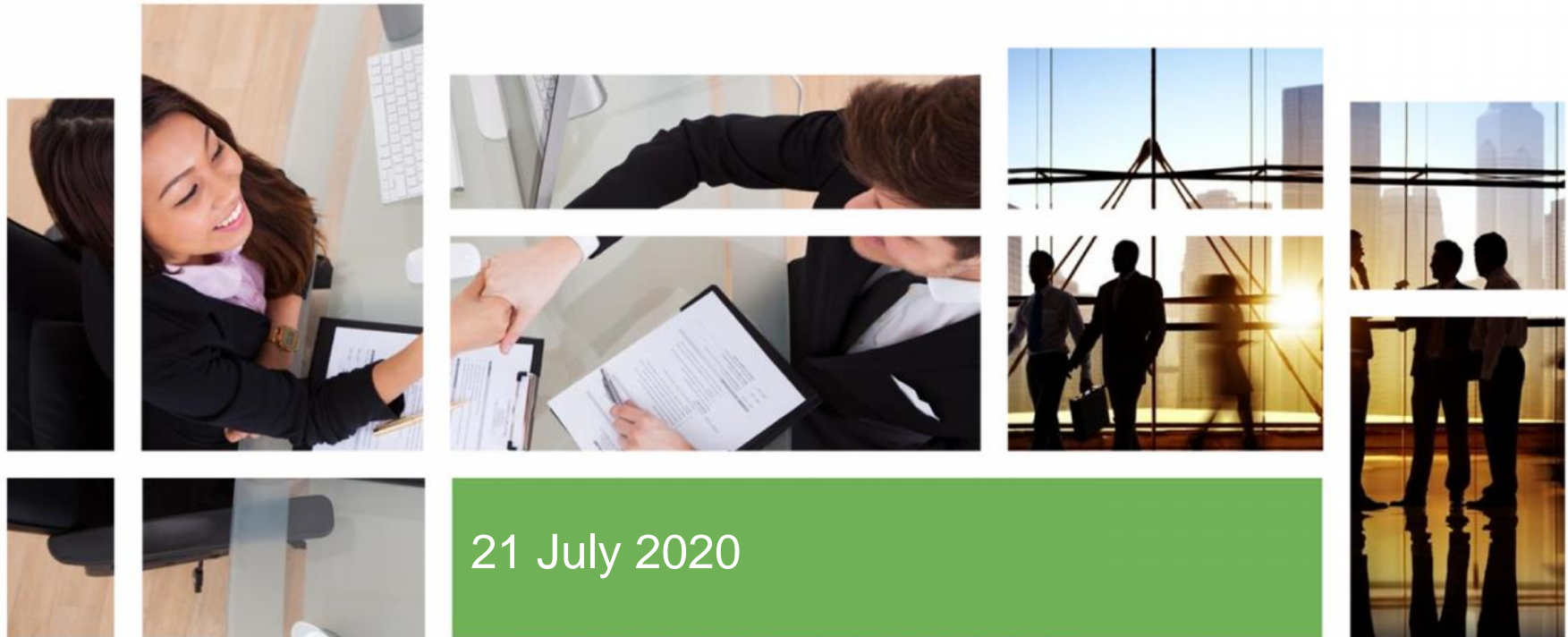


Mentoring Seminar



Welcome

Presenter: Neil Harvey BEng CEng FIChemE
Chief Process Engineer at OSL Consulting

hullgroup@ichememember.org



Slide 2

IChemE ADVANCING
CHEMICAL
ENGINEERING
WORLDWIDE

Agenda

Role of the mentor

Overview of Chartered application, requirements and assessment

Mentoring Process and rating candidate progress

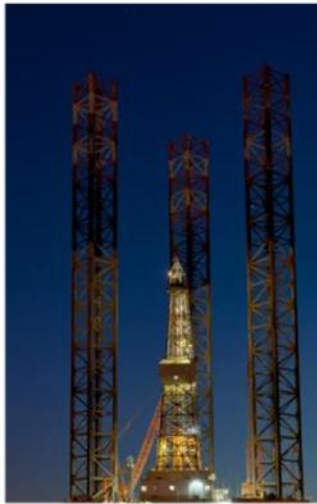
CV and C&C report - what assessors look for

“Framework for effective mentoring”

Summary and Q&A

Finish





Role of the Mentor

Role of the mentor

- A mentor's role is to counsel the trainee on technical, professional and personal matters in relation to the acquisition of sufficient training and experience to become a Chartered Member of IChemE

- It is anticipated that mentors will provide mentoring in these areas:
 - i. Supporting the mentee to gain the specific requirements to become a Chartered Chemical Engineer
 - ii. Providing advice to the mentee in their preparation of their Competence and Commitment (C&C) report and for the Professional Review Interview (PRI)
 - iii. Acting as a referee for their application for full IChemE membership and Chartered Engineer status
 - iv. Provide support for Technical Report/Interview (if required)



Mentors responsibilities

Mentors will need to fully understand:

- i. how the mentee can build and collect evidence of skilled competencies
- ii. how the mentee should plan their professional development
- iii. the IChemE requirements and procedures for Chartered membership application
- iv. if required, how to meet the academic formation requirements



Things to remember

Ownership and responsibility for learning remains with the trainee.

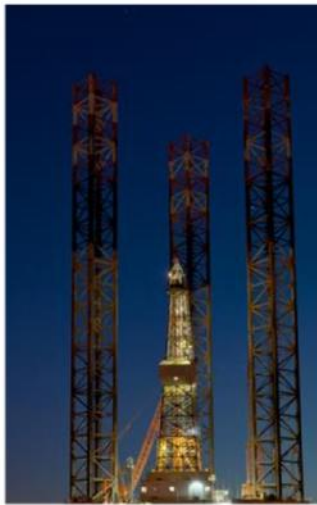
Agree on clear, short term training goals for the mentoring period.

The line managers role should be supported, not undermined.

Preparation is required for meetings with the trainee.

Ensure you have meetings with your trainee on a regular basis.

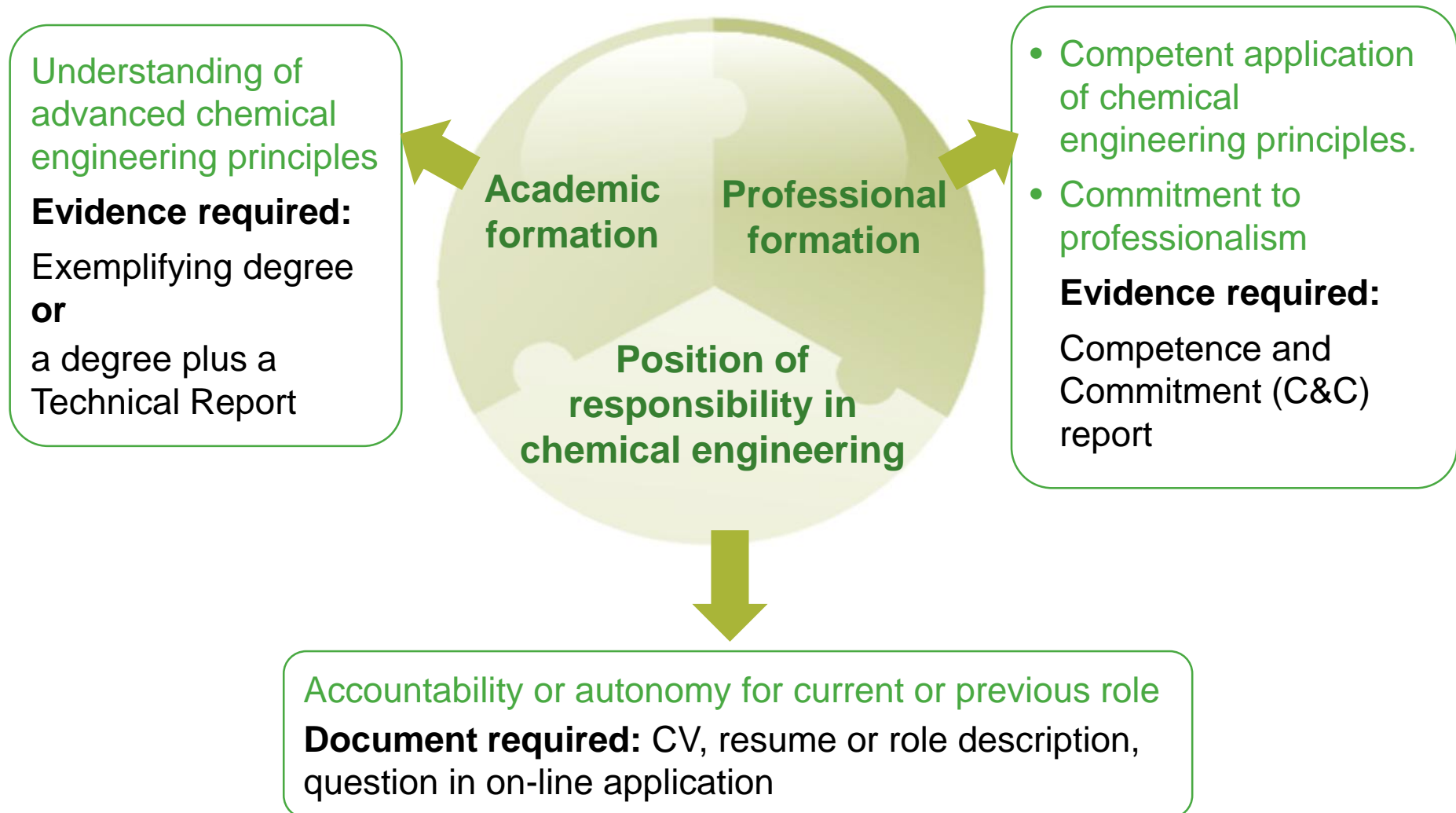




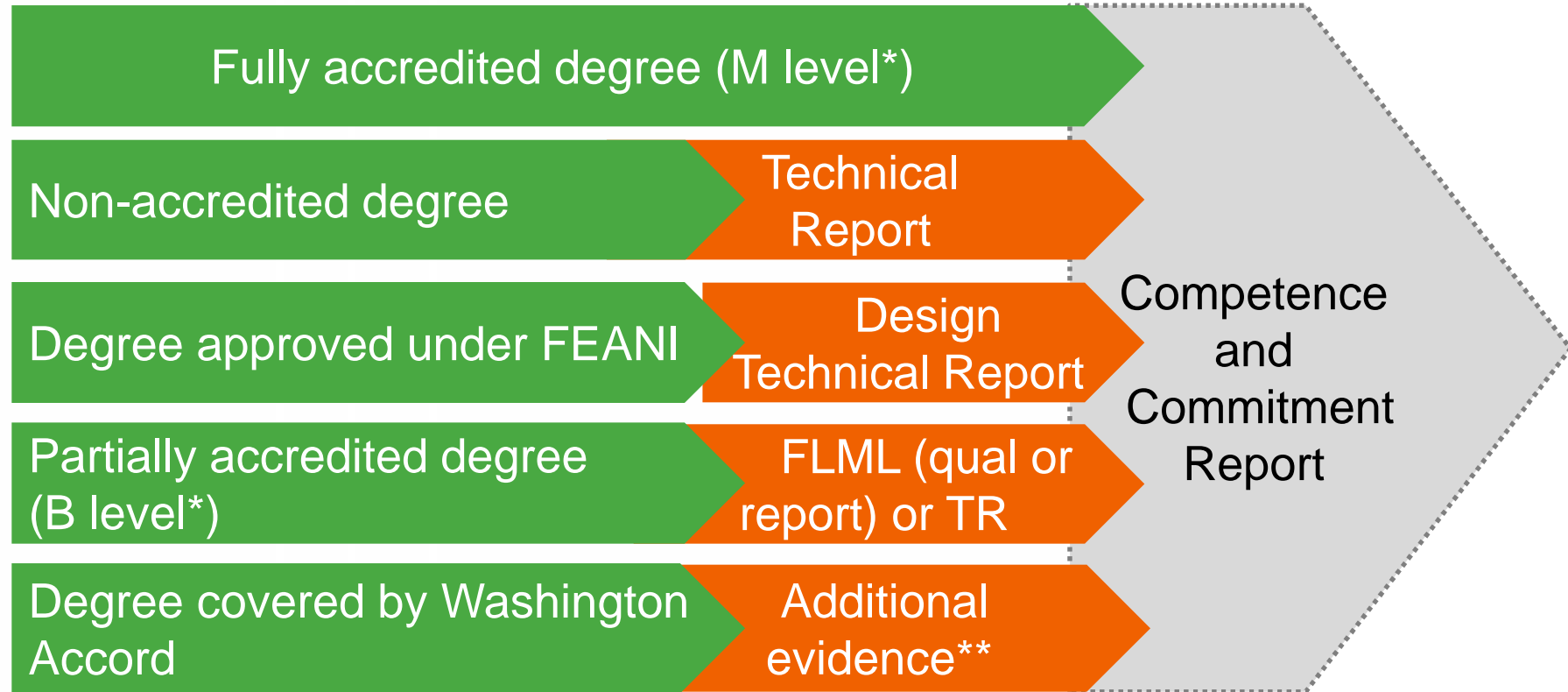
Overview of Chartered application,
requirements and process

Chartered application and assessment overview

Three distinct areas are reviewed, plus referee support:



Summary of routes to meet academic needs



* Pre-1999 B level accredited qualifications are usually treated as M-level - check

** Washington Accord requirements can vary based on graduation year and University attended



Professional formation requirements

- **Professional**

- Sufficient experience and training in the elements within the C&C form (based on Engineering Council's UK-SPEC)
- No set minimum period (but typically 4-5 years post graduation experience)
- Be in (or have held) a responsible position
 - Take responsibility for own actions, does not need to be a line manager

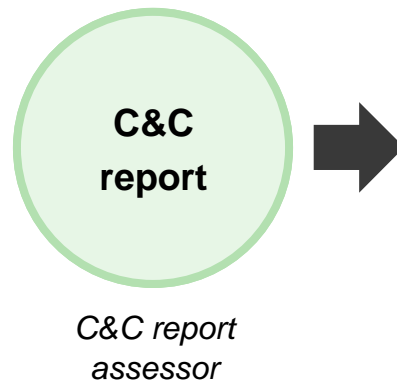
- **CPD**

- Have a CPD process in place, complete with plan
- Be formally recording, reflecting and reviewing on their CPD activities



Chartered Application Process

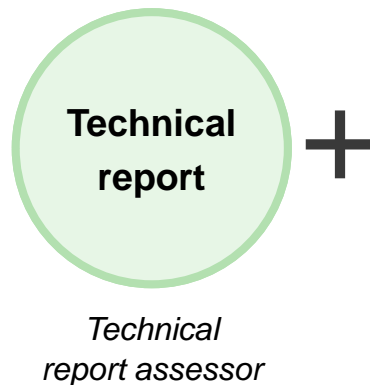
Candidates **with** exemplifying degrees



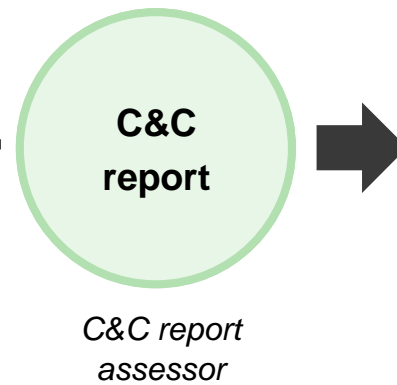
Decision



Candidates **without** exemplifying degrees



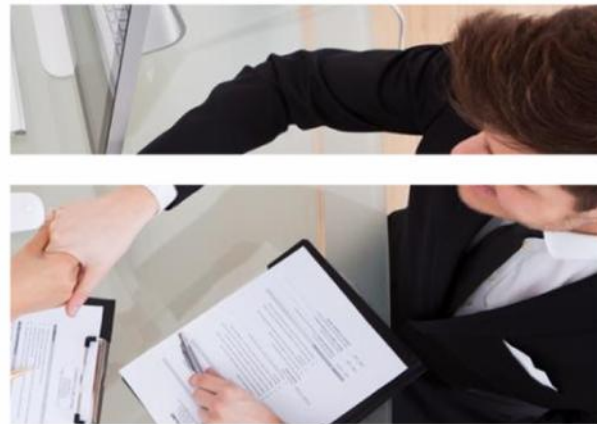
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+



* Not required for 'design focussed' technical reports



Mentoring process and rating candidate progress

Mentoring process and activities

- Initial meeting (face to face if at all possible, typ. 1-2 hours)
 - Understand situation / review work / experience so far
 - Check / confirm pathway (e.g. academic requirements)
 - Create initial plan, timeline – set expectations
- Regular meetings (~quarterly, typically 1 hour)
 - Review progress since last meeting
 - Assess progress towards meeting academic requirements (if needed)
 - Assess gaps to professional requirements (use scoring system for C&C report sections)
 - Agree actions before next meeting (short and long term)



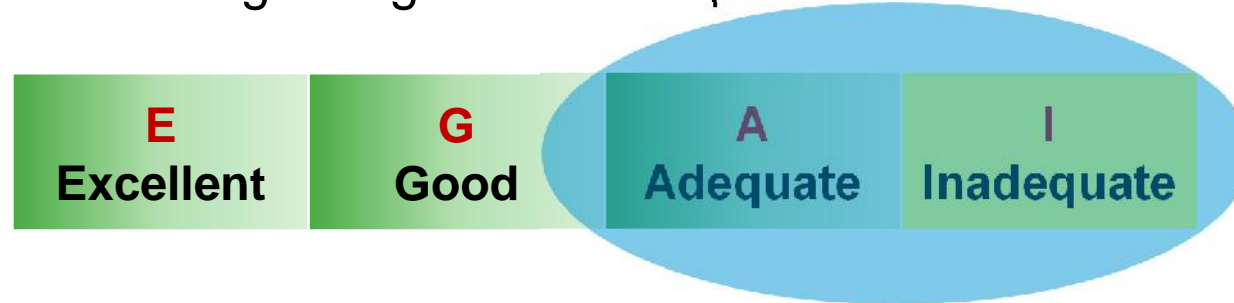
Mentoring process and activities

- Closer to application time
 - Identify best examples for each C&C section
 - Review of C&C report (Initial part draft of C&C report / full draft)
 - Review of additional technical evidence reports if needed
 - Practice for interview(s)
- Mentors should maintain their knowledge of requirements and process
 - Look out for articles in TCE and other communications from IChemE
 - Consider becoming an interviewer or assessor
 - Attend local member group events



Rating competence used by assessors

General assessment grading levels for reports and interviews



- ✓ The scale permits assessors and interviewers to make judgements of strengths and/or mastery of the chemical engineering discipline
- ✓ Candidates should achieve **at least Adequate (A)** in every category

See Handout 1: C&C report assessors form



Assessing mentees progress and competence

From inadequate to adequate

Suggested rating of how a competence could progress from Inadequate to Adequate.

Inadequate



Awareness	The area has only been touched on by the trainee. Does not perform the activity.
Knowledge	There has been some training undertaken or experience gained in the area, but more is required. Performs the activity with significant direction/supervision. Performs only routine and predictable tasks.
Experience	Evidence of competence demonstrates good coverage, but the candidate needs either a little more experience or training, or the opportunity to operate at the required level. (The required experience, training or opportunities should be described). Little or no individual responsibility.
Skill / Ability	Evidence of competence demonstrates adequate coverage and meets the standard required for a Chartered Chemical Engineer. Performs the activity in a range of contexts; supervision only required in more complex circumstances; some individual responsibility or autonomy.

Adequate

Recording core competencies

Example trainee's 'diary' leading to Chartered application

	IChemE Competence & Commitment Form	Company Training Manual	Candidate Training & Experience	Mentor's Assessment
A 3	Creativity and innovation: developing your own ideas to produce new solutions, new designs and new technological approaches:	Undertake a performance improvement project at a manufacturing site.	Undertook a mass and energy balance on the TEA production line. Identified losses of both heat and process water in pre-heating the reactor. Installed a collecting sump and pump to allow the hot water used for pre-heating to be returned to the hot water tank recovering both process water and heat energy. Savings have been estimated at £3000 pa with a payback of 1½ years.	3 This project project has given candidate → a good grounding in the area of heat recovery. She now needs to build on this and we have identified a larger and more complex project at Newcastle factory. A Mentor 20/11/04

Clause from
IChemE C&C report

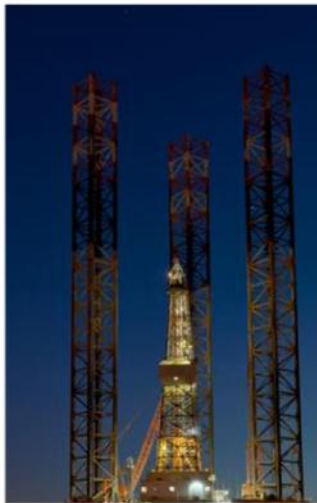
"Mapped" clause from
Company Training
Document

Candidate's Training
and Experience

Mentor's
comments and
ratings 1-4

Clause number from
IChemE C&C report





CV and C&C report
What assessors look for

CV

- It is not a refereed document, and will not be assessed.
- Can help assessors to understand the candidate's career background
- May contain additional clarification to examples in the C&C report, or
- Supporting detail that doesn't fit within the word count of the C&C report i.e. project titles/names, acronyms, dates, size and type of equipment, cost of the projects, budgets etc.

- List your professional skills and background clearly and concisely
- Avoid business jargon
- Mention only work the applicant has completed
- Write in the first person
- Do not include photograph or contact details



C&C report

Purpose is to demonstrate **professional formation** via competent application of chemical engineering principles and commitment to professionalism.

Candidates are required to provide satisfactory evidence in ALL the following areas:

Section A

Practical application of chemical and general engineering knowledge & understanding. *Depth*

Section B

Ability to handle wider implications of work as an engineer. *Breadth*

Section C

Interpersonal, leadership and communication skills.

Section D

Commitment to high standards of professional and ethical conduct.

Section E

Commitment to professional development. *Plan-Do-Review-Record*

C&C Report – what is ‘evidence’?

- Real life specific examples of what mentee have experienced in their career – avoid general generic bland statements
- Need to describe the details of the work that mentee performed (e.g. calculations), and not the history of the example itself
- Mentees should always ask themselves for each example in sections A and B:

‘Did I need a chemical engineering degree to do this?’

“What knowledge have I demonstrated here?”

“Is this the best example I can offer to showcase my chemical engineering knowledge?”

- if candidate is not in ‘core’ chemical engineering role, will need help to find and explain the chemical engineering aspects work they are doing and minimise “general” engineering skills / knowledge



C&C Report key points

Candidates, in consultation with Mentors, also need to:

- **Put evidence where it belongs:**
 - Assign training and experience to correct sections of the C&C Report.
- **Consider the assessor/interviewer:**
 - Assessors/interviewers can come from any background
- **Write clearly and in singular first person**
 - Ensure that the reader can understand from the text what they have done.
- **Ensure a balanced use of words from start to finish**
 - 15 “sub-sections”, 3000 words 200 words per sub-section



Section A

Ability to apply chemical engineering knowledge to practical situations

Five sub-section in Section A, look for evidence in:

- i) Applying theoretical and practical methods to **identifying or defining** a problem, opportunity or project.
- ii) **Combining ideas** and contributions from different people and disciplines to arrive at appropriate engineering, technical or scientific solutions.
- iii) Creativity and innovation: **developing own ideas** to produce new engineering, technical or scientific solutions, new designs and new technological approaches.
- iv) Scientific or technical **evaluation and optimisation** against the given requirements.
- v) **Planning and execution** of projects
- vi) Others

Section A

Ability to apply chemical engineering knowledge to practical situations

What report assessors look for:

- Adequate competences and application of chemical engineering principles.
- Shows depth in examples with explicit reference to principles/theories
- 'Scenario requirements' have been met

What candidates need to do:

- One main example per sub-section & supplement with 1-2 examples briefly described or perhaps 2 more equal examples
- Set-up each situation – briefly
- Explain the chemical engineering principles **you** used in your examples
- Highlight how the examples show how **you** met the scenario requirements
- **C**ontext, **A**ction, **R**esults
- Keep within word count limit



Example of evidence – Section A

I was a member of a process team that was responsible for the detailed design of a seawater treatment. We developed a control scheme to achieve the required specifications. We also implemented shutdown systems that would be activated on control parameters going beyond design limits. The seawater system comprised

- Filters.....
- Etc..

I was responsible for hydraulic calculations and mass balances to size certain components. I developed P&IDs and process philosophies and communicated them to others. I represented the process design at the HAZOP study which reviewed the design and evaluated problems that may represent risks to personnel or equipment, or prevent efficient operation of the system.

What an assessor 'sees'

I was a member of a process team that was responsible for the detailed design of a seawater treatment. We developed a control scheme to achieve the required specifications. We also implemented shutdown systems that would be activated on control parameters going beyond design limits. The seawater system comprised

- Filters.....
- Etc..

I was responsible for hydraulic calculations and mass balances to size certain components. I developed P&IDs and process philosophies and communicated them to others. I represented the process design at the HAZOP study which reviewed the design and evaluated problems that may represent risks to personnel or equipment, or prevent efficient operation of the system.

- 110 actual vs 52 'evidential' words

This is where a good CV helps!

Section B

Ability to handle wider implications of work as an engineer

What report assessors look for:

- Breadth of experience and knowledge across range of activities in **Health & Safety**, **Sustainability/Environment** and **Commercial/Economic**
- Evidence of experience in structured process hazard identification activities (industry or research) in B(i)
- Understanding process safety as opposed to personnel safety in B(i)

What candidates need to do:

- Perhaps 3 strong examples in each sub-section – typically more in section B(i)
- Very brief introduction
- Explain **what** you did and **why** you needed to do it – what is the issue / consequence being addressed?
- Show you understand the implications of what you do and how constraints affect decisions

Section C

Interpersonal, leadership and communication skills

What report assessors look for:

Focus on accountability, as candidates do not need to be in management roles.

Explicit demonstration of skills and techniques and how selected & tailored for the situation

Ability to interact with range of individuals (discipline and level)

What candidates need to do:

- Give 2-3 examples in each sub-section (show breadth and range)
- Always give specific examples.
 - *'I'm a team player as I have worked in a number of teams'* **is not evidence**
- Show how you tailored your approach for each example (selection and use of skills and tools/techniques)
- Explain how you work/interact with other people
- There are 3 main modes of communication, verbal, written and graphical. All should be covered in C(iii)

Section D

High standards of professional and ethical conduct

What report assessors look for:

- Reasonable level at which candidates are operating and making decisions.
- Evidence of principles and standards that govern day to day work
- Activities that support/promote the profession
- Ensure that moral and ethical obligations as an engineer are covered.

What candidates need to do:

- Demonstrating you can take decisions as a responsible engineer – ‘Integrity’
- Explanation of standards that you apply in your day to day business (tech & non-tech)
- What you do to maintain your knowledge and experience
- Activities supporting and promoting the profession
- Identify an ethical dilemma they have faced as an example



- Royal Academy of Engineering: Engineering ethics and philosophy ([Weblink](#))
- Engineering Council: Statement of ethical principles ([Weblink](#))
- IChemE: Professional ethics ([Weblink](#))



Section E

Continuing Professional Development (CPD)

- From 2017, in line with Engineering Council requirements, IChemE have been checking a random sample of Chartered Members and Fellows' CPD records annually.
- Non-chartered members not currently sampled – tested at the point of application for chartered membership
- Applicants show they can meet specific key requirements of CPD Policy:
 - Identify CPD needs and create plan
 - Carry out CPD activities and identify benefits gained
 - Maintain records of their CPD plan and activities
- C&C report Section E updated in 2018 to allow for demonstration of meeting these requirements



Section E

Continuing Professional Development (CPD)

What report assessors look for:

- Candidate owning their CPD learning and development – identification of needs and development of a realistic plan
- **Focus on the learning outcomes**, not just attendance of training courses.
- Review and recording of activities (including ad-hoc / on-the-job)

What candidates need to do:

- Previous CPD (1-2 years)
 - Describe how CPD (all types) is recorded
 - Key experience / activities / training undertaken and explanation of benefits gained (not just training courses)
- Future CPD (next 1-2 years)
 - Explaining how you identify and decide on development needs (what and why) & how turned into a plan
 - Give examples of current development objectives and purpose
 - Describe activities needed to achieve development objectives
- Some CPD examples [here](#).

Outcomes from C&C report assessment

Only four possibilities:

CEng Route Recommendation:	
Competence and Commitment Report meets requirements of IChemE's regulations	<input checked="" type="radio"/>
Request Second Opinion	<input type="radio"/>
Request candidate to amplify Competence and Commitment Report	<input type="radio"/>
Request candidate to resubmit Competence and Commitment Report	<input type="radio"/>

Meet requirements - The C&C assessor can ask the PRI interviewers to probe any “borderline” topics

Amplify - specific Sections where we look for more details. C&C assessor will provide detailed written feedback on the improvements required which will be passed on to the candidate.

Resubmit - rewrite significant elements, or whole of the report



C&C report writing process

- At a suitable point encourage candidate to think about drafting their report
 - when almost all sub-sections deemed to be 'adequate'
 - 'harder' sub-sections - A(iii) and D(ii) most often cause concern with mentees
- Often beneficial to get them to draft a few sub-sections (e.g. A(i), B(i) and C(i)) for review, before drafting the full report
 - make sure they get the different styles, levels of detail right first (see later slides)
- Once they are on the right track, they should draft all sections A-D and review
 - leave section E until last



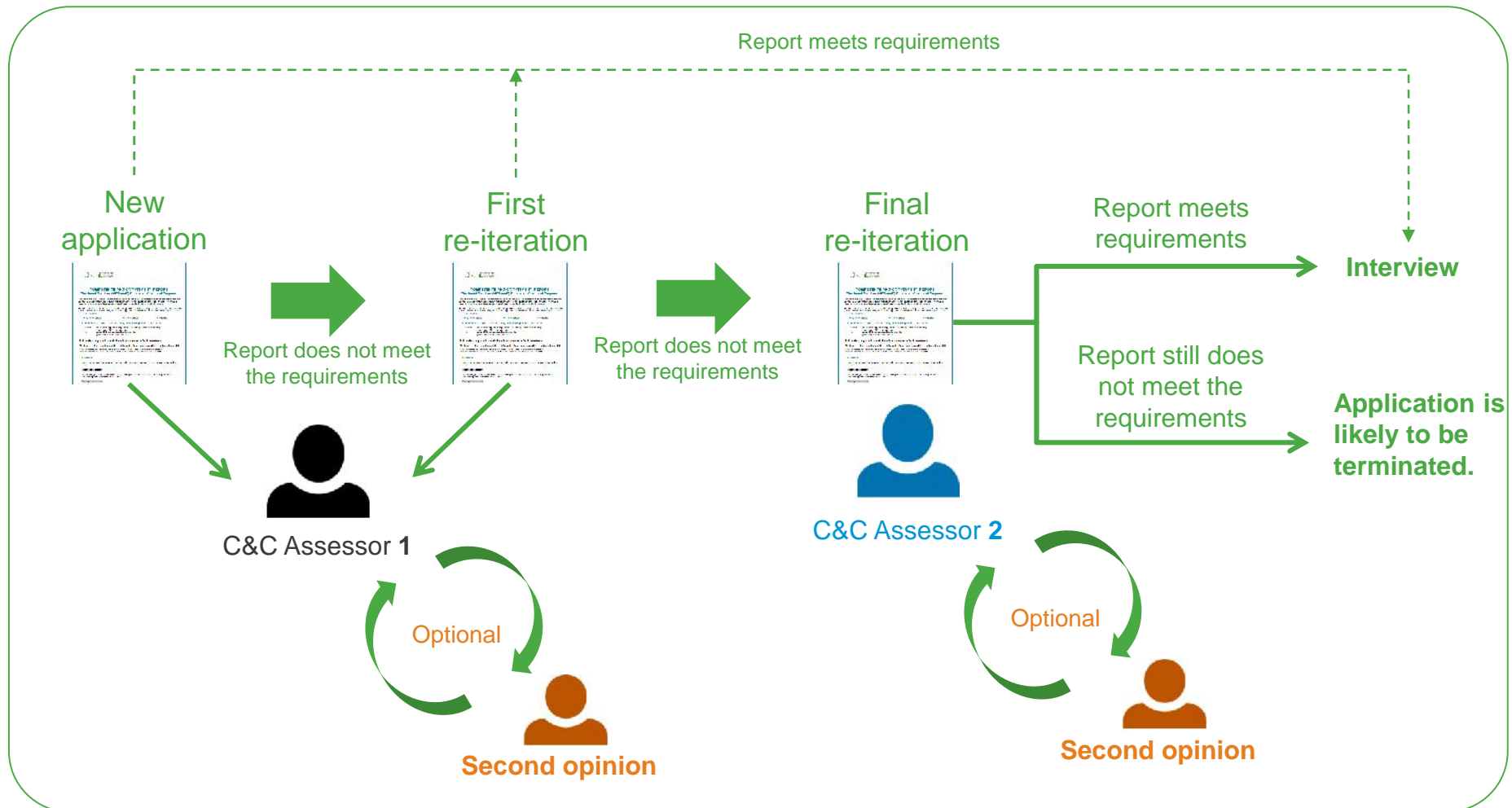
C&C report writing process

- Stick to the word count - overly long reports will be immediately returned without review to be rewritten.
- Mentees often need support with this:
 - First draft – write as you think/say – get all key points and information down – don't worry if too long
 - Second draft – reduce word count if needed (meet target, add more examples) – remove 'non-value adding' words & phrases
- Check candidate can answer online application question:
 - *How do you think the role/roles you have had demonstrate a position of responsibility in chemical engineering?*



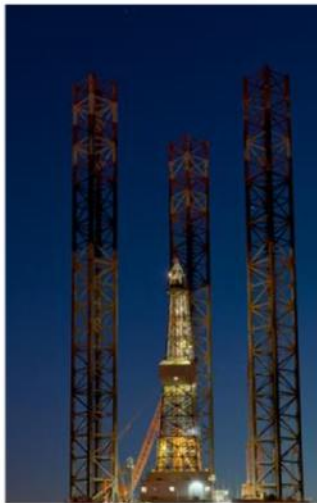
C&C report assessment process

Applications are limited to a **maximum two iterations** only. A different report assessor will be asked to assess the third and final reiterated report.



Common C&C report pitfalls

- ✘ Insufficient challenging/complex science/engineering examples provided in Section A
- ✘ Incomplete evidence of competence so that the candidate's role and actions are unclear, and use of the passive tense e.g.: "*I was told that...*" "*We did ...*" "*I was involved with...*"
- ✘ General business type examples provided in Section A, or only examples that demonstrate the application of common sense
- ✘ Exaggeration or pomposity (unlikely scenarios or levels of responsibility assumed)
- ✘ Experience presented versus enclosed CV - are they consistent? (e.g.: understating of experience or fabrication of a role taken)
- ✘ Poor use of language, report not proof-read prior to submission. Acronyms not explained! (candidates whose first language is not English may not write perfect English, but the content must be understandable. Mentors should be advising on correct English usage in such cases.)



Application process steps

Application and assessment process



Election Panel Decisions

- 1. Elect to Full Member of IChemE and award Chartered Engineer status*
- 2. Confirm the proposal from the TRI/PRI interviewers for a TRI2/PRI2*
- 3. Defer the candidate for a short duration to gain additional/missing experience*
- 4. Defer the candidate – request a new application as/when ready to do so.*

Candidates are informed promptly of the decision taken, with an explanation of the deferral if applicable.





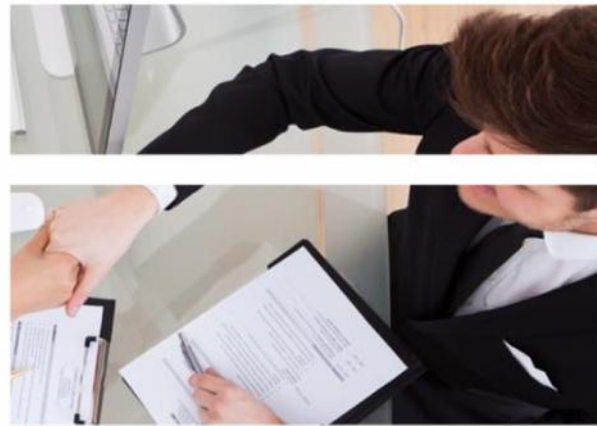
Standards Panel

The Standards Panel is a sub-committee of the Professional Formation Forum (PFF) with specific responsibility for overseeing the standards applied to the admission, readmission to and transfer of Members within the Membership Roll; together with specific responsibility for overseeing the standards applied to all the professionally qualified grades of membership and their respective registrations.

Mission

To ensure that the Institution applies and maintains demonstrably consistent standards in admitting or reinstating candidates to, or transferring members within the Membership Roll





Framework for Effective Mentoring

Framework for effective mentoring

General instructions

Mentoring guidelines

Framework

C&C report tips



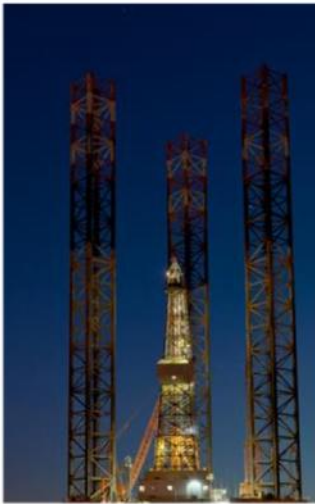
Framework for effective mentoring

Competence & Commitment requirements	Mentee's achievement through work-based learning	Mentee's achievement through training courses	Mentor Rating	Mentor's Comments	Mentor's Signature
A: Evidence of applying your knowledge and understanding to practical situations:					
<u>A1: applying appropriate theoretical and practical methods to identify or define a problem, opportunity or project.</u>	Provide all the work-based activities which are relevant to the development of this competency	Provide all the training courses that helped you develop this competency further	Use the scroll down menu to rate the specific competency	Would you rate the competency as adequate? If not, provide comments e.g. future plans, prioritise future activities.	Provide suitable identification of future activities
	1	1			
	2	2			
	3	3			
	4	4			
<u>A2: combining ideas and contributions from different people and disciplines to arrive at appropriate engineering, technical or scientific solutions:</u>	Provide all the work-based activities which are relevant to the development of this competency	Provide all the training courses that helped you develop this competency further	Use the scroll down menu to rate the specific competency	Would you rate the competency as adequate? If not, provide comments e.g. future plans, prioritise future activities.	Provide suitable identification of future activities
	1	1			
	2	2			
	3	3			
	4	4			
<u>A3: Displaying creativity and innovation: developing your own ideas to produce new engineering, technical or scientific solutions, new designs and new technological approaches:</u>	Provide all the work-based activities which are relevant to the development of this competency	Provide all the training courses that helped you develop this competency further	Use the scroll down menu to rate the specific competency	Would you rate the competency as adequate? If not, provide comments e.g. future plans, prioritise future activities.	Provide suitable identification of future activities
	1	1			
	2	2			
	3	3			
	4	4			
			Use the scroll down menu to rate the specific competency	Would you rate the competency as adequate? If not, provide comments e.g. future plans, prioritise future activities.	Provide suitable identification of future activities



Framework to record, assess and plan your activities





Summary

Summary

CV and C&C report

- Recommend to prepare a CV specifically for application
- Assign training and experience to correct sections of the C&C Report.
Good evidence in using chemical engineering principles to solve problem,
e.g.: **C**ontext, **A**ction, **R**esults
- Be succinct and use active voice

Interviews

- Be familiar with your own work!
- Need to provide a sound technical/academic understanding of the broader implications of your own work.
- Knowing what you don't know.



Mentors remember....

1. Identify gaps in experience and advise on potential ways to fill them.
2. Explain and build content of C&C report with mentees from Day 1.
3. Advise on correct allocation of experience within the report.
4. Advise on correct use of language

One of Mentors job is to do their best to get the candidate through Chartered application– so gather as much information as possible.

Mentor resources online: <https://www.icheme.org/mentoring>



Questions?
Thank you!

hullgroup@ichememember.org



Slide 48

IChemE ADVANCING
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