Continuous Professional Development Handbook

A guide to professional development for Government Science & Engineering

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INTRODUCTION

Foreword by Sir John Beddington

In June 2008 I established Government Science & Engineering (GSE) as the professional community for scientist and engineers[i] in Government. This community has now several thousand members, whose skills are invaluable to effective administration of the UK.

But with this in place, the challenge is to ensure that our profession's collective skills and talents are harnessed and deployed in the most effective manner.

Yes, it is important to have a GSE workforce with appropriate technical ability and in-depth subject knowledge, however I believe it is not sufficient for the profession to simply wait and assume that that their abilities, expertise and knowledge will be used as a matter of course.

In order to have the greatest impact we need to work with the rest of the policy world on its own terms. We must understand the requirements of Ministers in terms of deadlines and the public handling of uncertainties, we must be wise to the political environment we work in and act appropriately, we must maintain our networks, and keep at the forefront of advancements in our discipline, and above all we must be confident, influential communicators, especially when evidence is being misinterpreted.

This handbook is aimed at members of the science and engineering profession who wish to maintain and further their skills and abilities, and work effectively in the civil service with visibility, pace, & relevance.

Sir John Beddington
Government Chief Scientific Adviser and Head of Science & Engineering Profession

[i] Encompasses science, technology engineering and mathematics (STEM) approaching them not as separate disciplines with discrete boundaries – but rather as a continuum of knowledge.

Introduction to the handbook

The purpose of this handbook is to set out the policy and practice of how GSE members should manage their professional development, enhance their performance, and achieve success.

Members of Government Science & Engineering (GSE), occupy a huge range of roles across the civil service. They may work on radiation health, brain electrophysiology, cloud physics, agricultural processing or many more of hundreds of different areas, all contributing to the successful running of modern government.

Despite the wide variety of member backgrounds however, we are able to think of GSE members' skills as being in two distinct groups. The first is the group of skills the GSE member needs to be a good **scientist** or **engineer,** whilst the second is the group of skills that the GSE member needs to be a good scientist or engineer in **government.** The same of course applies to technologists and mathematicians.

In terms of the first group, many scientists and engineers working in government are already catered-for in terms of career development by their home professional institutions or departments, however there is a large cohort of scientists and engineers in core 'Whitehall' departments who work at the interface between department policy makers and specialist communities in policy advisory roles (e.g. through fulfilling intelligent customer functions, or interpreting science & engineering in a policy context).

With well-targeted learning and development opportunities, this group of policy scientists and engineers is in a pivotal position to bring science to bear on government decision making.

This cohort requires a specific set of skills and knowledge to be able to operate in the policy environment they inhabit, which includes both specialist knowledge and policy making skills. To be effective they need to be professionally credible with both the science community and policy makers, and to have strong communication and networking skills so as to be able to act as intelligent customers and a communication bridge between the policy and specialist communities.

This document is aimed primarily at those GSE members in this group, however it can also be used by those scientists in other roles, and as a signpost to more specialist training via institutions where required.

Government Science & Engineering would like to thank Government Social Research, upon whose CPD handbook this document is based.

CONTINUING PROFESSIONAL DEVELOPMENT

What is Continuing Professional Development (CPD)?

CPD is the means by which GSE members will maintain and develop their knowledge and competence throughout their careers. It is about always seeking to increase your knowledge and improve your professionalism. It involves routinely reflecting on your learning and experience, and keeping up to date, and is the key to optimising your career opportunities.

CPD for GSE members needs to encompass scientific or engineering experience and knowledge as well as all civil service core competencies, skills and behaviours. As is clear from the diverse range of work carried out by GSE members, no two people's CPD will be identical but is likely to include:

- Self-management, but with support and encouragement from line management and peers;
- Reflection on your career aspirations and charting your progress towards achieving your goals;
- Seeking opportunities to broaden and test your knowledge and experience in a range of different job challenges;
- Continually reviewing your learning and adjusting your development planning.

Examples of CPD activities might include:

- On-the-job learning or development e.g. use of a particular statistical analysis package; preparing and giving a presentation; attendance and participation in expert advisory committees
- Formal qualifications
- Training courses
- Attending and presenting at conferences
- Attending and presenting at seminars (including, for example, seminars to colleagues within your own organisation)
- Membership of professional institutions
- Purposeful networking with other science and engineering professionals
- Reading and discussion of relevant books, journals and associated web materials
- Teaching/coaching others (e.g. the development and presentation of new/revised material, or to new audiences)
- Mentoring – either as a mentor or mentee
- Work shadowing
- Involvement in collaborative and/or corporate GSE initiatives
- Writing an article for a publication

The scope of what 'counts' as CPD has deliberately been set widely to recognise both the different needs of individuals at different stages of their career and personal preferences in methods of learning. However, it is essential that the activities you choose don't involve simply repeating existing knowledge or skills but rather refreshing knowledge/skills, and providing new insights, competencies or learning. CPD need not be costly – low cost options can be just as valuable as courses and conferences. Contact with colleagues and other professionals can also result in incidental learning. Informal/incidental learning can be formalised through reflection, evaluation and recording in a CPD log.

What are the benefits of maintaining CPD?

Ensuring that GSE members are consciously updating knowledge and skills will lead to key benefits for individuals, their organisation, GSE and wider:

Benefits	Individual	Department or Agency	GSE and the wider S&E community
Has positive impact on job satisfaction, motivation and fulfilment	✓	✓	
Helps to continually refine specialist skills	✓		✓
Increases both generalist and specialist skills and capability within the organisation as a whole		✓	
Enhances productivity	✓	✓	✓
Promotes personal empowerment by encouraging individuals to take responsibility for their own development	✓	✓	
Enhances career prospects	✓		✓
Maintains and boosts collective profile and credibility as a profession within Government and can help engender greater confidence in science and engineering in Government	✓	✓	✓
Helps to bind GSE together as a community of practice and to build links with science and engineering professionals outside Government	✓		✓
Maintains and boosts the professional reputation and credibility of your organisation		✓	
Supporting CPD makes the organisation more attractive as an employer of scientists and engineers		✓	

CPD FOR GOVERNMENT SCIENCE & ENGINEERING

CPD and Professional Skills for Government

Professional Skills for Government (PSG) sets out the core skills expected of all civil servants regardless of profession.

Professional Skills for Government (PSG) is a long-term change programme designed to ensure all civil servants have the right mix of skills and expertise to enable their departments or agencies to deliver effective services. PSG also provides clarity about the skills that individuals need in order to develop and progress in the civil service, and access to more consistent opportunities to develop those skills. For more information about PSG, see http://www.civilservice.gov.uk/people/psg/index.aspx

In addition to core skills required by PSG, a set of specific, additional, skills which have been identified for GSE members are outlined in the Science and Engineering Skills Framework.

GSE members should review the Science and Engineering Skills Framework (alongside departmental and civil service skills and competence frameworks) before beginning to plan their Continuing Professional Development. The Framework can be found in Annex 1 to this handbook.

The Science and Engineering Skills Framework should be used by all members to plan their development, and by all line managers of GSE members to help appraise performance.

GSE members are also expected to adhere to the PSG core competencies for their grades. The PSG competency framework is also intended for use in development planning, appraisal and recruitment. However, your department may stipulate that you use a departmental competency framework. This is a perfectly acceptable option, as all departmental competency frameworks must also encompass the core skills requirements of PSG.

This concept and much of the content of the GSE CPD policy is consistent with that of the other analytical disciplines, for example the Government Social Research (GSR), Government Statistical Service (GSS) and Government Economic Service (GES), and the policy profession.

CPD Guiding Principles for GSE

The following principles have been agreed by Heads of Science and Engineering Profession (HoSEPs) and will be kept under review collectively by that Group:

a) Professional standards – the Skills Framework for Scientists and Engineers sets out what is expected of those working in GSE roles. In addition, all GSE members must adhere to the *core* skills requirements of PSG.

b) All GSE members are expected to take responsibility for structuring their own learning and development, and for keeping a record of their CPD.

c) A guideline of **100 hours**[2] CPD per year is encouraged for GSE members. The development should support the full range of GSE skills and competencies but we suggest GSE members aim to spend at least **a third of this time** on science and engineering related activities[3]. Ultimately, the **outcome matters more than the number of hours** undertaken.

d) All line managers of GSE members are expected to recognise CPD as a professional requirement of scientists and engineers in government.

e) GSE members should have the option of a senior scientist or engineer signing off their CPD and commenting on the quality of their science and/or engineer work.

f) GSE members will follow a range of career paths and the GSE community should be open to all people transferring to a science or engineering post from other analytical professions, from policy/operational delivery roles, and from inside or outside government, providing they can demonstrate the necessary skills.

g) The principles and policies set out in this Handbook will be reviewed every **2** years by the GSE Heads of Profession group.

[2] Learning on the job is encouraged and can be considered part of this total provided the activities help meet your development objectives. For example, this could include the provision of the secretariat function for Scientific Advisory Committees, or provision of briefing on a complex scientific or technical issue.

[3] This is a guide - Job holders and managers should discuss and agree with job holders an appropriate level of time to commit to science or engineering CPD, taking account personal circumstances, career aspirations and business needs. Sometimes also CPD will be undertaken outside normal working hours, for example, by attending evening seminars or weekend conferences.

PRACTICAL STEPS TO A CPD PROGRAMME

PLANNING CPD

CPD is specific to the individual, and should be geared to both your short and longer-term career needs. Development plans are a common feature of performance management in the civil service. Wherever possible you should integrate the planning and appraisal of your CPD with your department's annual performance appraisal cycle, and this may involve using department-specific forms and tools.

You will also want to re-evaluate your learning whenever you start a new job. GSE members should assess their own needs and identify activities that will help to meet them using any suitable tools available. It may be helpful to focus on the competencies that are particularly relevant to your current post but also consider how you are going to maintain and develop wider professional skills, expertise and networks that may be necessary for your long term career development. Your line manager or a mentor from the science and engineering profession may be able to offer advice and guidance.

The following documents are a helpful starting point:

Skills Framework for Scientists and Engineers (Annex 1)
This document represents the skills framework for the Science and Engineering profession within the Professional Skills for Government (PSG) initiative. It outlines the job related professional expertise that scientists and engineers are expected to have at each grade and complements the core PSG skills.

Suggested techniques for self-assessment (Annex 2)
This will help you to evaluate your areas of expertise and core skills; and identity areas for improvement and skills gaps.

Example Development Plan (Annex 3)
A development plan allows you to think strategically about future learning opportunities.

No matter how long you spend planning your development, it is likely that unplanned activity will form a significant part of the CPD in any year. The important thing is to recognise this for what it is and to capture it as you go along.

PURSUING CPD ACTIVITIES

CPD is about the skills and competencies that you as an individual need to do a particular job to a professional standard and to develop your career. It is up to you to choose what CPD to undertake.

Some departments have little or no budget for formal training linked to CPD, but there are a range of inexpensive ways to meet CPD requirements, such as attending free internal seminars and conferences, organising work shadowing, taking part in mentoring schemes, involvement in projects outside normal duties, forming reading/study groups etc. Keep an eye on GSE member communications and other networks you are connected to for opportunities.

As stated in the CPD principles above, a total of 100 hours of CPD per year is expected for GSE members at every level, of which at least a third should be related to science and/or engineering activity. Members working alternative reduced-hour patterns (e.g. part-time, job-share) may choose to manage their CPD hours on a pro-rata basis if they wish.

A whole-career approach should be taken to CPD. It is recognised that in some years you may focus more on specifically science related skills, and others you may focus on other "soft" skills.

Remember that **the outcome matters more than the method or the number of hours undertaken.** Many activities can count as CPD as long as you can show that you have learnt something new and relevant from it. Work-based learning, self-directed learning and purposeful networking with professional peers can be just as valuable to your development as undertaking formal training courses and qualifications.

Relevant internal and external CPD opportunities

Government Science & Engineering: GSE members are able to access some internal activities that support GSE professional practice and community. This includes: an annual conference which brings GSE members together to discuss common issues; workshops which deal with specific subject matters such as handling with risk and uncertainty, or dealing with the media; a pairing scheme with the Royal Society, and various activities with the Royal Academy of Engineering. For more information about GSE opportunities please visit the relevant pages on the GO-Science website.

Civil Service Learning: Civil Service Learning (CSL) has replaced the National School of Government as the government's learning and development organisation. It offers a number of courses and resources relating to the core skills required by all civil servants and works with the specialist professions to develop learning and development opportunities tailored to their needs. More can be found on the CSL website.

Government Departments: each government department and agency procures its own learning and development. Check on your departmental intranet for advice on the opportunities available to you.

Professional institutions: if you are not currently a member of a professional institution, you may wish to consider joining, as they are a good route into a great many development opportunities. Some government departments and agencies offer financial support for membership. Professional bodies that are incorporated under Royal Charter

can be found here. If you do not wish to join, there are often options to join mailing lists so you are able to access each institutions public courses and events. Please see the section below on Professional Registration for more information about this.

If you have any suggestions for CPD activities that could be run for the GSE community then please contact the GSE secretariat at GSE@bis.gse.gov.uk as we would like to hear from you.

RECORDING AND REVIEWING YOUR CPD

Although there are guideline hours levels set out in this handbook for the amount of time you spend on development activities, CPD is not meant to be about how many boxes you tick on a form. What we do ask you to do is keep a record of what you've done and reflect on the practical benefits of your learning.

Some tips for recording CPD are:

- If you are a member of a professional body, check their requirements for recording CPD. If you aren't a member of a professional body you can refer to the example of a CPD log which is given in Annex 4 - GSE Learning and Development Record as a starting point for recording your CPD.

- Whether you write things down in detail, or simply record your key learning points, try to do it as you go along. This really helps when it comes to appraisal time or when preparing for job applications and interviews. Many professional bodies have CPD schemes that are backed by monitoring and compliance procedures so make sure you keep your records up to date.

- Don't forget that unplanned activity will also be a significant feature of your CPD Log - early formal planning will not pick this up. Remember to note the unplanned activity too.

- After you have completed a development activity, try to discuss with your manager/mentor how you will use the learning. You can then review/evaluate your learning and the application of it with your manager/mentor/Head of Profession as appropriate three months after, or at mid/end-year reviews.

- If your manager is not working in a science or engineering role you may need to identify and build a relationship of professional accountability with a senior colleague who has appropriate expertise and can discuss/comment on your science or engineering-specific learning. Review by a third party working in your profession can also be a source of additional advice, helping to challenge your thinking and give a sharper focus to your development plans.

- Progression does not need to involve promotion – gaining new skills, broadening your experience or deepening your experience in a particular policy area or analytical skill may suit you better at your current stage.

MAINTAINING SUPPORT FOR YOUR CPD

The guideline 100 hours of CPD per reporting year can be looked at another way – it is also a vehicle for requesting time to spend on development and to formally recognise those work activities which contribute to your CPD. If your line manager is not also a GSE member, be clear with them from the start of your management relationship about your professional background and CPD principles and policy. Point them to this Handbook for further details. It is possible that they will also be a member of a professional community with similar guidelines.

As outlined above, your line manager will play an important role in helping you set your development goals and evaluate your learning and performance. This is a key requirement of the people management core skill. Line managers themselves should have a work objective that describes their role in supporting you. If your line manager is not also a GSE member, ask them to help you identify someone with appropriate expertise and who may be able to comment on your learning from your CPD activities. There may be others working in your branch/Directorate who are suitably qualified even if they are not in your own line management chain. If you have problems identifying an appropriate person, contact your Head of Profession for advice.

Heads of Science and Engineering Profession (HoSEPs) are responsible for championing the GSE CPD policy for members in each department/organisation. They are involved at a strategic level in identifying learning and staffing needs for the GSE community in their organisations.

If you don't know who this is for your department, contact GSE at GSE@bis.gsi.gov.uk.

PROFESSIONAL QUALIFICATIONS

Professional qualifications are available in both science and engineering to members of relevant professional bodies. They indicate that an individual's professional competence in a given discipline has been assessed, and they have attained the standard required for admission to the national registers at the appropriate level. Going through the process of becoming chartered can help focus your professional development and develop your personal networks through the relevant professional body. As well as providing recognition for your professional expertise and qualifications, achieving chartered status can boost your employability, earning power and credibility amongst your professional peers.

CSci (Chartered Scientist)

CSci represents, a single chartered mark for all scientists, recognising high levels of professionalism and competence in science, and giving an assurance of current competence through mandatory revalidation. All those working in the practice, application, advancement or teaching of science can become CSci with the appropriate combination of qualifications and experience.

For more information please visit the website.

Whilst the Science Council is the licensing body for CSci, individuals will need to pursue chartership through the professional institution that is relevant to their background and work. A list of professional institutions can be found here[4].

CEng (Chartered Engineer), IEng (Incorporated Engineer), EngTech (Engineering Technician) and ICTTech (ICT Technician)

Registration for any of these professional engineering qualifications is open to any engineer or technician who can demonstrate the required professional competence and commitment at the appropriate level. The categories have been developed to provide a progressive registration structure. The titles are protected by civil law and CEng is one of the most recognisable international engineering qualifications.

For more information please visit the website.

Whilst the Engineering Council is the licensing body for these professional engineering qualifications, individuals will need to pursue registration through the professional institution that is relevant to their background and work. A list of professional institutions can be found here[5].

[4] http://www.sciencecouncil.org/content/our-members
[5] http://www.engc.org.uk/about-us/our-partners/professional-engineering-institutions

Professional registration and Government

Many GSE members working in policy roles related to science and engineering may be thinking that professional qualification registration is not relevant for them as they are not working in 'traditional' research or analysis jobs.

This is absolutely not the case and the licensing bodies recognise that those working in policy have an equally valid claim regarding their competence level as a scientist or engineer.

If you would like to pursue professional qualification, when you begin planning your course of CPD, be clear with your professional institution about the kind of science or engineering you are doing and ensure that they endorse the activities you are undertaking. You may wish to refer them to this handbook if you feel it would be helpful.

If you encounter any difficulties in having your development activities accredited by your awarding body, GSE would like to hear from you at GSE@bis.gsi.gov.uk.

CPD CASE STUDIES

Aattifah Teladia, Pesticides and Veterinary Medicines Policy, Senior Scientific Officer (temporary promotion), Chemical Safety Division, Food Standards Agency

1. What is your scientific or engineering discipline?

I am chemist by background and studied Pharmaceutical Chemistry at Queen Mary, University of London

2. What types of CPD activity have you undertaken over the past year?

I have undertaken a whole host of CPD activities over the past year, from attending Government Science and Engineering Network conferences to development activities in my job role, such as putting together and managing a small team to complete a piece of work – previous to this I had little management experience.

3. What was the most valuable CPD activity you have undertaken in recent years?

Most memorable was facilitating at the GACS (General Advisory Committee for Science) Horizon Scanning workshop. I really enjoyed this experience and it was good to see my work making a direct contribution to how the workshop was reported and outputs shaped. It also gave me an opportunity to learn about the horizon scanning procedure, at a high level and gain a different perspective on the Food Standards Agency and its work. Acting as facilitator allowed me to increase my knowledge and confidence and specifically develop people management, communication and leadership skills.

4. What's been the most challenging aspect or biggest barrier to planning or undertaking your CPD?

The biggest barrier without doubt is balancing the responsibilities of your job to make time for CPD activities, but with a bit of planning it should be possible.

5. What advice on CPD would you offer colleagues?

I would recommend actively getting involved in activities that can be classed as CPD as part of your current role. I found that these helped significantly in my development.

Dipak Valand, Building Services Project Manager (pay band 4), Department for Transport

1. What is your scientific or engineering discipline?

I am a Mechanical Design Engineer and I have also studied a Masters in Medical Engineer at Imperial College, (I was formerly a member of the IMechE)

2. What types of CPD activity have you undertaken over the past year?

I have been involved in a number voluntary activities organised through STEMNET.
I have been responsible for representing Department for Transport at a careers day at an inner London secondary school. This was an excellent opportunity to network and promote some of the great work my department does. It was nice to be able to discuss

options with the school children and their parents. It was also useful to get an idea of how they perceived engineering. I was asked to present Engineering as a career option to a greater London all girl school. I needed to liaise with the careers head and a number of teachers to prepare the material and due to its success we have agreed that this should be a regular thing as we all got something from the day.

3. What was the most valuable CPD activity you have undertaken in recent years?

The work via STEMNET, I feel has been the most memorable and valuable, as it opens up a lot more avenues of thought. I am also working on a voluntary Heath Care Project in my local community and that has proved valuable in terms of dealing with new people from different disciplines at different levels. I did this at my expense.

4. What's been the most challenging aspect or biggest barrier to planning or undertaking your CPD?

As with most things both time and money are the biggest hurdle.

5. What advice on CPD would you offer colleagues?

Make sure you find the right people and plan your CPD path and continually monitor yourself. Have a mentor and also maintain contact with others at the same level as you.

Eur Ing Robert Falk, Senior Engineer, Range 5 (SPTO), International Vehicle Standards, Department for Transport

1. What is your scientific or engineering discipline?

I am a mechanical engineering graduate of the Aberdeen University and the University of the Witwatersrand in South Africa.

2. What types of CPD activity have you undertaken over the past year?

Courses to improve my effectiveness to the Department, participating in work-related technical visits; attending work-related conferences and in areas of general interest; offering my services as an expert (on a team-building course organised by the Maritime and Coastguard Agency).

3. What was the most valuable CPD activity you have undertaken in recent years?

Career Development Course – how to develop the road map of how I got to where I did, identifying the decision processes in getting there, and identifying my core transferable skills. I was a guinea pig for DTI (now BIS) when they "road tested" the course. This was the first course provided by an employer in which I had participated that concentrated on the individual and not what the company could get out of the individual.

4. What's been the most challenging aspect or biggest barrier to planning or undertaking your CPD?

The attitude of the employer to training. In three jobs that I held in private industry over 14 years, the first "rubbished" the training given which questions why send staff on the course in the first place, the second refused me ½ day release, and the third gave no

training at all. Government, both here and overseas, have been very good by supporting relevant and interesting CPD.

5. What advice on CPD would you offer colleagues?

Keep at it, and keep a note of what training you have undertaken, either to reinforce previous activity, or not to duplicate it by enrolling on a course that sounds different but is actually the same as one already attended. If you are a specialist with no subordinate staff, try to get on to courses relating to man-management. If involved in European negotiations learn or improve a foreign language, for example, through the Victoria Language Club. Engage in CPD to a level that lets you register with the professional body in your field of expertise.

ANNEXES

Annex 1 - Science and Engineering Skills Framework

Introduction
This document represents the skills framework for the Science and Engineering profession within the Professional Skills for Government (PSG) initiative. It outlines the job-related professional expertise that scientists and engineers are expected to have at the following levels:

- SCS Pay Band 1
- Grade 7/Grade 6 (Range 10/11 equivalent)
- HEO/SEO (Range 7 – 9 equivalent)
- EO (Range 5 and 6 equivalent)
- AA/AO (Range 2 – 4 equivalent)

This should be read in conjunction with your Department's guidance on PSG. Further information can also be found on the PSG web site, http://psg.civilservice.gov.uk/.

Who is it for?
This framework should be applied to staff working in science or engineering posts, this usually encompasses posts where professional qualifications and experience are directly relevant to the work being undertaken. The framework is also applicable to staff who classify themselves as falling within the Science/Engineering PSG group or those who consider science or engineering to be their career 'anchor'.

Using the Framework
The primary audiences for this document are departmental Heads of Science and Engineering Profession (HoSEPs), Human Resources (HR) sections, and those responsible for implementing PSG within departments and their agencies. It is expected that these groups will use the framework and associated descriptors to establish standards and criteria that are applicable in their areas. The framework may also be of interest to individual scientists and engineers.

In producing local guidance it is expected that HoSEPs and HR sections will modify the examples as appropriate. For ease of reference a high level description of each competency is provided. HoSEPs and HR sections may choose to include these descriptors in local guidance but verbatim duplication of this text is not required. It is, however, essential that any local guidance fully reflects the context and spirit of this text.

Staff at or aspiring to SCS Pay Band 1 should be able to demonstrate all of the skills described for Grade 6/7 as well as the additional skills outlined on page 9.

Science and Engineering Skills Framework

Competency	High Level Description
Maintain and develop expertise	Holds suitable qualification(s) and undertakes continued professional development where appropriate, seeking learning and development opportunities. Ensures work is of high quality and supports government decision making. Manages information and knowledge appropriately.
Application of technical knowledge	Demonstrates understanding and application of fundamental scientific/engineering principles. Able to evaluate and question other sources of evidence and contribute to the overall robustness of the evidence base. Understands the business need/relevance of work undertaken by the department. Takes an innovative approach to problems/issues, and understands the importance of Horizon Scanning to inform strategy, develop research plans, etc.
Statutory requirements	Understands and complies with the statutory (and non-statutory where applicable) requirements. These requirements may arise from, legislation, voluntary codes of practice or quality assurance processes etc.
Networking and influencing	Ensures that the profession has a high profile within and across departments. Able to form links to ensure that "joined up" advice can be provided. Maintains effective links with scientists, engineers and policy makers, both within and outside of government.
Stakeholder management	Understands who may be affected by the results of their work and in what way. Ensures that scientific and engineering activities add value to the overarching objectives of the field. Builds trust and positive relationships with diverse stakeholders.
Communicating with impact[6]	Communicates technical/specialist information to non-specialists clearly, concisely and persuasively. Provide objective and balanced advice, ensuring any limitations are understood.

Pay Band 1	
Apply a wide understanding of the science and engineering base	Act as an effective interface between board level management and the science and engineering community. To champion the profession more widely, through identifying areas where science and / or engineering can contribute to an organisation's aims; highlighting how the profession's intellectual skills associated enhance the strategic and decision making abilities of senior management and boards.

[6] Communication is also a Core Skill in the PSG Framework

Secure, maintain and develop relevant technical expertise	
G7/G6/ SCS PB1	• Maintains up to date scientific / engineering knowledge • Explains the nature and significance of relevant scientific and engineering issues to diverse audiences • Publishes research in respected journals • Actively undertakes Continuing Professional Development (CPD) • Supports and develops others to sustain and build their technical expertise
HEO/SEO	• Identifies appropriate sources of information to support their work (e.g. appropriate journals and colleagues) • Presents at events/conferences • Undertakes pro-active research (anticipating where things might go, rather than how to solve the current problem) • Is an active member of the scientific/technical community • Takes a questioning and critical approach to existing methodologies • Seeks expert guidance from colleagues at any level • Has a broad knowledge of the science/technology involved across their project/programme area can evaluate other's work and link between projects
EO	• Researches issues through appropriate media, e.g. internet, journals etc. • Actively pursues CPD where appropriate • Identifies the strengths and weaknesses of the data and research in their specific field. • Is aware of what colleagues are doing
AA/AO	• Holds the appropriate level of academic and professional qualification relevant to the job • Undertakes appropriate training to develop technical knowledge • Identifies and follows relevant procedures, processes and methods • Collates relevant technical data and information accurately

Apply scientific / technical knowledge	
G7/G6/ SCS PB1	• Applies knowledge experience and skills effectively, providing innovative solutions to problems • Works effectively on cross-cutting projects and establishes positive links with other professional streams • Understands longer term and strategic issues related to the projects and programmes • Understands the business need of the work the organisation undertakes • Identifies and assesses risk, can respond effectively to unforeseen situations • Ability to exploit the outcomes of research
HEO/SEO	• Identifies what questions need to be asked rather than just answering questions that are presented • Makes quality assessments and reviews scientific/engineering content of programmes of work • Appraises, advises and makes decisions on measurement approaches , trialling, design etc • Identifies future potential direction for programmes and long term implications and issues • Guides contractors and staff on appropriate methods for specific projects • Identifies and chooses between different methodologies, proposes new approaches to projects and programmes • Identifies links from broader areas and new technologies • Gives guidance on technical standards
EO	• Understands and objectively applies basic scientific/technical principles e.g. gathering information, building evidence, analysing information, evaluating the validity of a technique, design an experiment, define a theory. • Conducts effective literature searches • Answers questions on their specific area • Makes decisions on how to conduct work within their specific tasks • Understands technical papers and manufacturers leaflets in the area • Makes suggestions on the running of the project • Ensures their work receives appropriate peer review
AA/AO	• Demonstrates a knowledge of fundamental scientific, technical and mathematical concepts, practices and procedures • Records results in the appropriate reporting format • Operates and maintains equipment safely and in accordance with instructions • Ensures that work meets set requirements and is reviewed appropriately • Identifies when results are unexpected or do not fall within expected parameters, refers to appropriate colleagues

Understand and comply with the statutory (and non-statutory) requirements of my current role	
G7/G6/ SCS PB1	• Understands how and why the requirements are relevant to their role • Understands and explains what needs to be done to satisfy these requirements • Understands the role of regulators and can explain this to colleagues • Ensures the organisation complies with the necessary requirements • Works in accordance with appropriate quality assurance procedures • Comments on weaknesses and / or limitations in existing or proposed laws or regulations
HEO/SEO	• Knows some of the detail of the statutory (and non-statutory) requirements • Makes junior colleagues aware of the existence of standards. • Raises awareness of ethical standards within scientific and technical application. • Monitors others' compliance • Defines, promotes and challenges standards
EO	• Is aware that the standards exist and follow these and know where to find the detail if necessary. This includes Health and Safety, quality management procedures, and procedures, protocols and regulations
AA/AO	• Is aware of and can follow appropriate standards for their work (e.g. Health and Safety)

Communicating with impact	
G7/G6/ SCS PB1	• Communicates impartial technical advice clearly and concisely • Communicates technical advice clearly to both analysts and non-analysts, including limitations of the advice (e.g. in the absence of complete data) • Performs a 'linking'/translating role between the profession and policy makers, or other professionals. • Clearly explains the significance of technical / specialist issues (e.g. risk) • Synthesises information from a number of specialists to support decisions
HEO/SEO	• Provides objective and balanced advice • Presents effectively to a critical audience • Advises colleagues, clients and technical audiences across the project area, sharing appropriate information

	• Manages commercially sensitive enquiries, passing on controversial and political issues as appropriate • Is aware of organisational policy issues when giving advice • Defines and produces technical and other reports for client and user groups • Handles politically sensitive and controversial enquiries, knowing when to refer to more senior colleagues • Communicates the interaction between science and policy in lay terms, dealing appropriately with any conflicts between policy and client needs
EO	• Provides objective and balanced information • Provides factual answers to questions relating to your work and advise senior colleagues on this work • Identifies when a question has controversial / political/commercial implications and handles appropriately • Produces brief technical documents and first drafts of reports, making decisions about what is included • Is sensitive to the boundaries of non-technical audiences and tailors advice and training accordingly • Presents credibly to diverse audiences
AA/AO	• Explains clearly the processes and methods used in their work to colleagues and managers • Provides general advice on technical issues to internal customers, knowing when to refer queries to more experienced colleagues

Networking and influencing	
G7/G6/ SCS PB1	• Forges positive links with counterparts in organisations within the UK and overseas • Establishes a role within existing networks • Establishes previously unmade links between multiple networks • Uses professional bodies to facilitate communication
HEO/SEO	• Proactively represents their work e.g. at international conferences • Is aware of the extent of the potential networks and develops their own networks as appropriate across disciplines and beyond technical and end users • Develops technical and non-technical networks nationally and across government, industry and academia. • Knows the key technical experts internationally in their specific areas of work

EO	• Communicates with colleagues to share ideas and increase awareness of what they are doing • Builds relationships with clients and other stakeholder contacts (e.g. manufacturers' representatives) specific to their area • Identifies the right people to direct queries to and uses others' contacts • Makes contacts with others working in the same field via conferences, training sessions, industry events etc. • Effectively networks with technical and end users
AA/AO	• Is aware of others' roles in the team and can explain how these roles link together • Develops a support network to help complete their technical/scientific training/ qualifications • Identifies the right people to seek advice from • Networks effectively with internal colleagues

Understand the needs and constraints of stakeholder communities	
G7/G6/ SCS PB1	• Understands who will use their work and for what purpose • Understands who may be affected, either directly or indirectly, by the results of their work • Recognises the role and interests of stakeholders, e.g. Other Government Departments, statutory bodies, pressure groups and members of the public • Balances conflicting demands made by stakeholders (including issues of time, cost, risk and performance) • Ensures that technical advice takes account of appropriate stakeholder issues • Takes account of the political / policy / operational impact of issues
HEO/SEO	• Understands how the project fits into the broader programme • Uses stakeholders to identify relevant issues • Is aware of what other organisations are doing in the field and how their own projects relate to them • Considers the practical utility of the project/policy to give an objective view • Proactively makes suggestions about how science/technology can be deployed to assist the stakeholder • Understands the fundamental political aspects of the project and programme • Understands the overarching aims, goals, drivers etc. of the stakeholders and gathers customer requirements • Understands issues at the organisational, European and international level. • Anticipates changes in stakeholders' aims/goals/needs/funding
EO	• Gathers sufficient information from/about stakeholders to be clear about their technical requirement • Understands the point of their part of the project • Gains the attention of their specific stakeholder audience • Builds trust with end users
AA/AO	• Identifies when there may be difficulties in meeting customer or colleague requirements and seek appropriate advice • Understands how their role relates to the work of the team

Pay Band 1 only

Apply a wide understanding of the science and engineering base	
PB1	• Understands how science and engineering fit into the wider work of the department / agency • Has broad knowledge of research paths and funding streams • Promotes the advantages of scientific / engineering intellectual skills (e.g. problem structuring, data analysis and presentation, management of technical risk, etc.) and highlights how these will strengthen departmental boards and decision making • Works in and alongside different areas of the science and engineering base (e.g. academia, industry, government agencies, government departments and international organisations) • Has created or developed an area where a science or engineering work programme is contributing to the objectives of the department / agency
G7/G6	N/A
HEO/SEO	N/A
EO	N/A
AA/AO	N/A

Annex 2 - Suggested techniques for self-assessment

Self-assessment is usually carried out at the start of your performance year, or at the start of a new job. It is not about assessing what you have done, but where you need to develop. Self-assessment and analysis will enable you to build an effective foundation upon which the goals and objectives of your CPD can be developed. It will assist you in defining the following:

- Your areas of expertise and core skills;
- Areas for improvement and skills gaps;
- Future learning opportunities.

Self-audit of your skills

A self-audit helps you to identify current skill levels, where you need to improve and what your priorities for action are. It is important to think specifically about your current and required skill levels. This process allows you to identify your development needs by considering how your current levels of skill and competence measure up to those required by your job role. You will have had an opportunity to think about prioritising your development needs. It will also help you to look retrospectively at your level of professional competence.

You could use a table format such as:

Skill area	Required skill level	Current skill level	Priority (high/medium/low	Applicability (or why it's required / what's the gap)

You should assess yourself against the GSE Professional Skills Framework and either the PSG Core Competency Framework or departmental core competence frameworks, when carrying out your assessment (including higher level competences, if you aspire to be promoted).

Swot Analysis of your skills

A SWOT Analysis is a well-known business tool, but it is also useful in thinking about your CPD. It is an effective way of identifying your strengths and weaknesses, and of examining the opportunities and threats you face.

Strength - What are the things that I do well?
Weaknesses - Where are the things I do less well?
Opportunities- What possible new opportunities are there for me?
Threats - What can stop me from pursuing these opportunities?

Using your Personal Development Plan

Once your learning and development needs have been identified the next stage is to prepare a plan to meet the requirements. A Personal Development Plan (PDP) is an integral part of most departmental performance management processes and helps you to organise your development. It will structure the development process linking with your career plans and deliver through your CPD. A PDP is a dynamic tool and can change

throughout the development period. Any unanticipated learning should also be recorded on your PDP.

Reflecting on your progress is an important step following any learning activity, as it enables you to evaluate and consider whether you have met your objectives. It also provides an effective way of identifying further development needs. Key questions to ask yourself in evaluating your CPD activities:

- Have I met my objectives?
- Has my learning been effective?
- How am I going to implement my new knowledge?
- Has my performance improved as a result of my learning?
- If it did not meet your target – was it unrealistic? Did you choose the wrong learning activity?
- If so, re-define the target or choose a different activity to help you meet your original development requirement.
- If your development needs have altered, this should be considered as input into your next self-assessment, in order to create a new development plan.

Annex 3 – Example Development Plan

TOTAL HOURS OF CPD PLANNED				
		unit/department:		
Grade:		**Appraisal year:**		
Learning goals/development area identified – what do you want/need to learn?	**Action/activity proposed - what will you do to achieve this?**	**What will be your success criteria? E.g. impact on you/your work**	**What resources or support will you need? Who else needs to be involved?**	**Target dates for review and completion no. of hours to be spent on activity**
Research and analysis skills, knowledge and experience				
Other skills, knowledge and experience				

Annex 4 - GSE Learning and Development Record

Name	
Organisation	
Covering the period	

Number of hours	What you did	Why	Lesson learned	How have/will you use this?	Comments from line manager/mentor/Head of Profession

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