bp-ICAM

Welcome Pack

Welcome

Professor Sarah Haigh (bp-ICAM Director) and Professor Sheetal Handa (bp-ICAM Associate Director) welcome you to the BP International Centre for Advanced Materials (bp-ICAM).

The bp-ICAM is a significant and long term $100m investment by bp with four world leading universities; the University of Cambridge (UoC), Imperial College London (IC), the University of Illinois at Urbana-Champaign (UIUC) and The University of Manchester (UoM). The bp-ICAM is based on a 'hub' and 'spoke' model with hub at UoM and spokes at UoC, ICL, UIUC and UoM.

The bp-ICAM has a goal to deliver value to all parties through research that advances fundamental understanding of materials science and application to address bp's strategic priority areas. The bp-ICAM is in its 8th year of operation and currently we have 32 active Research Projects ranging in size, over 60 researchers, over 70 academics and 42 bp Mentors involved in the Research Projects – so you'll be joining a very active, multidisciplinary and collaborative community. We are very much looking forward to working with you and hope that you will find your new position and engagement with the bp-ICAM rewarding.

We would like to draw your attention to the documents in this Welcome Pack. These are important key documents and guidance that underpin the operation of the bp-ICAM and will enable you to interact and work effectively and efficiently with the bp-ICAM community. Additionally the bp-ICAM SharePoint site (bp-ICAM SharePoint - Welcome) allows you confidential access to all the bp-ICAM Research Projects where you will find a wealth of information on the bp-ICAM.

Immediate Actions Kindly Requested

Please send your full contact details for use on the internal bp-ICAM Directory to the bp-ICAM Hub. Upon receipt of these items, the bp-ICAM Hub will arrange for your username and password to be sent to you, along with instructions on how to access the bp-ICAM SharePoint (Intranet site) and Isilon (Research Project data storage site).

Please take some time to look around the bp-ICAM SharePoint site and familiarise yourself with the bp-ICAM. The FAQ section, in conjunction with the contents of this Welcome Pack, will answer many of the initial questions that you may have. Do not hesitate to contact the bp-ICAM Hub if you have any questions or queries relating to your new role or the contents of this Welcome Pack. The bp-ICAM Hub team will be happy to assist you and we look forward to meeting and working with you in this exciting project.

Legal Notice on Data Protection

New General Data Protection Regulations (GDPR) accompanied by a new UK Data Protection Act came into force on Friday 25th May 2018. As a part of the bp-ICAM community, you will receive monthly newsletters and infrequent webinar reminders from our communications team via email. You may opt out of receiving these electronic communications at any time by emailing info@icam-online.org or using the 'unsubscribe' button at the bottom of all communications. All PIs and Co-Is on bp-ICAM projects will also be added to the Directory page of the bp-ICAM website which contains their name, organisation and email address. Again, you may opt out of appearing in this Directory by emailing info@icam-online.org.

Yours, Sarah Haigh and Sheetal Handa

Contents

Acronyms Used in this Welcome Pack

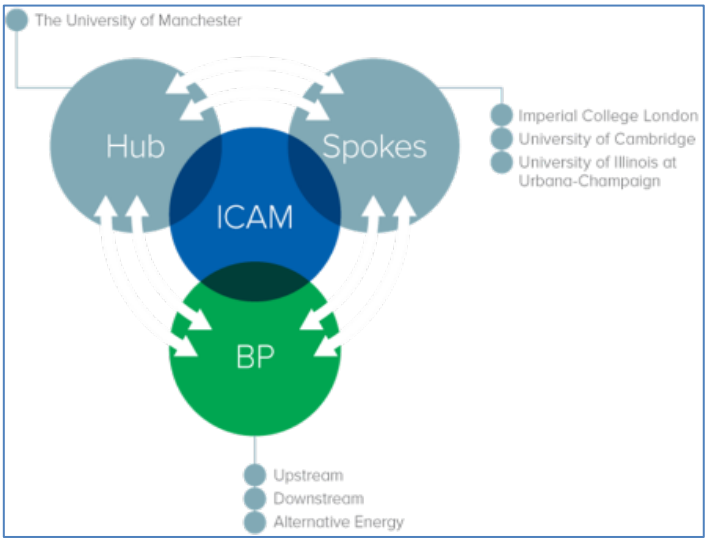
Acronym	Description
CLP	Classification, Labelling and Packaging
Co-I	Co-Investigator
EoY	End of Year Report
GB	Governance Board
GOO	Global Operations Organisation
GPO	Global Projects Organisation
HSSE	Health, Safety, Security and the Environment
IC	Imperial College London
IP	Intellectual Property
PDRA	Post-Doctoral Research Associate
PI	Principal Investigator
PMB	Programme Management Board
SPA	Single Point of Accountability
UoC	University of Cambridge
UoE	University of Edinburgh
UoL	University of Leeds
UIUC	University of Illinois at Urbana-Champaign
UoM	The University of Manchester

1. bp-ICAM – A Brief History

bp-ICAM A Brief History

The bp International Centre for Advanced Materials (bp-ICAM) is a partnership with 4 world leading universities which enables the application of advanced materials to energy challenges and through which bp is seeking to deepen its knowledge, broaden its capability base and develop new technologies in advanced materials.

bp has identified the critical role advanced materials play in every area of its business operations and the need to build knowledge and capability in this area. The bp-ICAM was launched in 2012 by bp to support building this knowledge and capability through undertaking fundamental and applied research to further the understanding and use of advanced materials for applications in the Energy industry, and beyond.



The bp-ICAM is built upon a *hub* and *spoke* model and brings together the strengths of four world-leading universities and bp's deep expertise in oil and gas to create an international centre of excellence in advanced materials research. The four university partners are the University of Cambridge (UoC), Imperial College London (IC), the University of Illinois at Urbana-Champaign (UIUC) and The University of Manchester (UoM).

Four World-Leading Universities

The *University of Manchester* is well renowned for world-leading expertise in the structural, smart coatings, imaging and characterisation and functional materials areas. This materials expertise is underpinned by The University of Manchester's capability in whole life design, materials performance in extreme environments, materials and environmental surveillance, and corrosion engineering.

The *University of Cambridge* makes key contributions to the bp-ICAM in a number of key areas such as the development of new alloys, smarter surfaces for anti-fouling, engineering and chemistry. The former exploit world class capability to design novel alloys capable of operating under demanding environments. UoC also has world leading expertise in surface science including state of the art modelling and surface analysis methods which are used to understand the surfaces on which fouling occurs and help to deliver novel mitigation strategies.

Imperial College London has distinctive expertise in membranes and other adsorbent technologies for separations, and has strong capability in the molecular modelling of materials across time and length scales. In addition, its skills in surface science and

characterisation, tribology, corrosion and earth science are supporting several bp-ICAM projects. Imperial is also a world class centre for the Non-Destructive Testing of materials.

The *University of Illinois at Urbana–Champaign* has world leading expertise in surface science, biosciences, materials characterisation, coatings, wear resistant self-organising materials, and materials that can autonomously indicate damage and heal themselves. It is developing new materials that have special value in improving the safe operation and reliability of components and systems where routine inspection is difficult.

Innovation across Two Continents

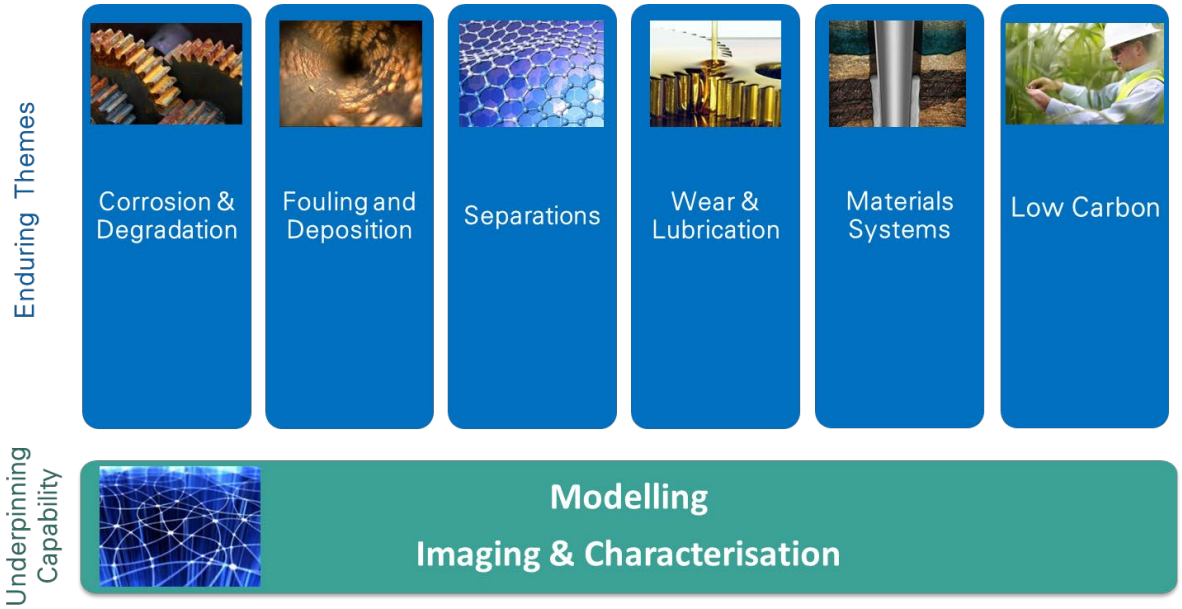
Collaboration is at the centre of the bp-ICAM working model. Teams across the five partners work seamlessly to address a range of global energy industry challenges. These challenges include operating in demanding environments, improving asset operation and supporting the development of advanced fuels and lubricants.

bp-ICAM has links to five EPSRC Centres for Doctoral Training (CDT). The CDTs are hosted by the UK partner universities, generating over 300 PhD students with a federal approach adopted for the running and sharing of materials related training. This gives access to developments in new materials and improvements in existing materials across multiple industrial sectors.

The bp-ICAM Research Portfolio

The complementary strengths of each partner have been blended into a focussed portfolio of research projects. Currently 32 bp-ICAM active Research Projects are being undertaken by 75 academics, 24 postdoctoral researchers, 41 PhD students and 42 bp Mentors.

Five primary research areas in material science and engineering have been identified by bp-ICAM as critical to bp's ability to find, develop and transport hydrocarbons – and to convert them into products for heat, light, power and transportation. These five research areas are referred to as 'Enduring Themes' and are; *Corrosion & Degradation*; *Separations*; *Wear & Lubrication*; *Fouling & Deposition* and *Materials Systems*. An important research enabler and the sixth research area is *Underpinning Tools* which supports the five Enduring Themes in the important areas of modelling and imaging & characterisation. A sixth Enduring Theme on Low Carbon has been launched in 2020 which will be key as bp transitions into an integrated energy company.


Enduring Themes
Corrosion & Degradation
Fouling and Deposition
Separations
Wear & Lubrication
Materials Systems
Low Carbon
Underpinning Capability
Modelling
Imaging & Characterisation

2. bp-ICAM Vision, Mission and Values

bp-ICAM Vision, Mission and Values

The bp-ICAM is pioneering, both in terms of its research ambitions and its partnership model. It brings together capabilities from four leading universities, with The University of Manchester (UoM) acting as the Hub and the Universities of Cambridge (UoC), Illinois at Urbana-Champaign (UIUC) and Imperial College (IC) as the Spokes.

The University of Edinburgh (UoE) and the University of Leeds (UoL) continue to work with the bp-ICAM Hub and Spokes as part of the "Surface Degradation in Demanding Environments" Prosperity Partnership Grant (ICAM56). These two universities have agreed to the bp-ICAM IP model with only very minor modifications in acknowledgement of the funding from the Engineering and Physical Sciences Research Council (EPSRC) and the university partners.

Research projects are delivered through a combination of individual and collaborative Research Projects, in order to leverage the extraordinary expertise that the bp-ICAM brings together.

Vision

A partnership between bp and selected universities to enable application of advanced materials to energy challenges.

Mission

- A step change in the understanding of materials impacting safety, reliability and performance across bp operations, enabling improved utilisation of existing, and access to new, resources.

- A benchmark for university industry partnerships delivered through an integrated, synergistic collaboration serving as a catalyst for deepening and extending the bp-ICAM network.

- A platform to access, convene and develop leading edge skills in the advanced materials field primarily for bp, but extending across the broader energy industry and associated supply chains.

Values

Innovation - Discovering and developing new and more efficient technologies and processes

Excellence - High standards of safety and technology management

Collaboration - Creating a community of common purpose and mutual trust

Capability - Building skills, capacity and infrastructure

Impact - Delivering solutions that make a real difference to bp and the industry

3. HSSE (including CLP & Cyber Security)

HSSE (including CLP & Cyber Security)

Introduction

Safety is the bp-ICAM's number one priority and our aim is to have no harm to people or the environment. The bp-ICAM aims to have:

- no incidents which have the potential for causing injury or damage;
- no injuries to staff or students engaged in bp-ICAM associated activities;
- no breaches of any applicable HSE regulations (including CLP regulations section below); and
- a positive safety culture and strong safety leadership.

HSSE and the bp-ICAM Membership Agreement

In signing up to the bp-ICAM Membership Agreement, your host bp-ICAM Partner, on behalf of all staff and researchers within it, has agreed to ensure that the work undertaken by staff and researchers in connection with the bp-ICAM will be conducted in accordance with generally accepted standards of good practice at the time. In addition to this, staff and students will be responsible for compliance with all safety and other applicable legislative requirements in force in the jurisdiction where the work is conducted.

Transfer of Staff or Researchers Between Partners

Should bp-ICAM staff or researchers attend premises under the control or in the possession of another bp-ICAM Partner for the purposes of the bp-ICAM, it is agreed that they must act at all times in accordance with the rules and regulations of the host partner and be adequately trained by the host Partner with regard to HSE.

HSSE Inspections & Reporting

Each Partner has the right to conduct inspections (or have inspections conducted on its behalf) of premises where its staff or researchers are visiting regarding HSSE or environmental issues. Currently the bp-ICAM Hub undertakes quarterly HSSE walkthroughs of the Hub office and a quarterly walkthrough of a bp-ICAM laboratory. One university partner laboratory is visited per quarter.

In addition to reporting under their local university HSSE policies, bp-ICAM staff and students should report all HSSE incidents and unsafe, unhealthy, or unsound environmental conditions or acts that occur or exist to your local HSSE representative and to the bp-ICAM Director, bp-ICAM Associate Director and as required by law or regulation, to any relevant enforcement agency. Please also ensure that staff and students record all HSE accidents/incidents/near-misses via the bp-ICAM quarterly reporting process.

Staff and students should make reasonable efforts to work together to assess and correct any concerns arising from the HSSE walkthroughs.

Classification, Labelling and Packaging (CLP) of Substances and Mixtures Regulation (EC) No 1272/2008

One particular EC regulation which we would like to draw your attention to is the CLP regulation (see CLP Regulations). Certain scientific research and development activities are subject to compliance requirements under the CLP regulation.

The CLP regulation does *not* apply to substances and mixtures which are not 'placed on the market' (i.e. supplied or imported) provided they are used in controlled conditions in accordance with EU workplace and environmental legislation.

The CLP regulation *does* apply if samples are 'placed on the market'. Sending samples from a university to another research institute or importing samples into the EU is considered as 'placing on the market'. The CLP regulation places the obligation to notify on the Manufacturer or Importer based in the EU.

A further briefing note on the CLP regulation (including a CLP Notification Process Flow diagram) is available upon request from the bp-ICAM Operations Manager.

Cyber Security

Digital or cyber security is a key element of HSSE for the bp-ICAM and is ever increasing in importance with the reliance on digital data and information. Much of the bp-ICAM research is commercially confidential. The bp-ICAM membership agreement refers to disclosed confidential information, stating that the receiving party should use at least the same standard of care as it uses for its own confidential information (Clause 22.4). Therefore, you have an obligation to maintain the confidentiality of bp and the bp-ICAM confidential information.

You are also required to follow your host bp-ICAM Partner's digital security rules, links to which can be found below next to your university's cyber security contact's details.

In addition, below are six digital security guidelines which have been shown to be simple but effective methods for cyber security and are considered good practice.

The six simple security good practices are:

1. ***Think before you click***
   Be vigilant for phishing emails, calls and other requests for information. Never click on links or open attachments in an email from an unknown source.

2. ***If you suspect it, report it***
   Report any suspected or actual security incidents without delay.

3. ***Classify your information and keep it secure***

Classify your information and understand how to protect it correctly so that confidential information is not leaked to unauthorised users. Understand the correct ways to keep IT equipment secure.

4. ***Maintain a clear desk and screen***
   Prevent your screen from being visible to unauthorised users and if leaving your desk unattended lock your screen. Lock away confidential documents and storage media when not in use.

5. ***Be discreet in public and online***
   Never share confidential or personal information with those who don't need to know it. Apply caution when travelling and remember that social media sites are also public places. Use email with caution and understand the appropriate use of your IT systems

6. ***Protect your passwords***
   Make sure your passwords are difficult to guess and never share them with anyone. Use a password management tool like PasswordSafe.

Key HSSE, Cyber Security Contacts and Further Local Information

Please refer to the bp-ICAM HSSE Steering Group members listed below or the individual HSE website pages referenced for information or guidance relating to your local safety arrangements. This group meets at least twice a year to discuss matters relating to the health and safety of staff and students participating in the bp-ICAM. The HSSE Steering Group makes reasonable efforts to identify and incorporate improvements relating to HSSE by adopting the highest operating and compliance principles from each Partner. Any unresolved issues regarding HSE are then referred to the bp-ICAM Governance Board for consideration.

bp - HSSE

Nicolas Armao, HSSE and OMS Manager, Group Technology
Email:- Nicolas.Armao@uk.bp.com
Web:- www.bp.com

bp – Cyber Security

Corneliu Buda, Molecular Modeler, Group Technology
Email:- CORNELIU.BUDA@bp.com
Web:- www.bp.com

UoM - HSSE

Patrick Seechurn, Head of Safety Services
Email:- Patrick.Seechurn@manchester.ac.uk
Web:- www.healthandsafety.manchester.ac.uk

UoM – Cyber Security

Tony Brown, Head of Information Governance at The University of Manchester
Email:- tony.brown@manchester.ac.uk
Web:- www.itservices.manchester.ac.uk/cybersecurity

UoC – HSSE
Margaret Glendenning, Senior Safety Advisor
Email: Margaret.Glendenning@admin.cam.ac.uk
Web:- www.safety.admin.cam.ac.uk

UoC – Cyber Security
James Knapton, Information Compliance Officer
Email:- dpo@admin.cam.ac.uk
Web:- https:/help.uis.cam.ac.uk/service/security/protection

IC – HSSE
Surrinder Johal, Director of Safety
Email:- S.Johal@imperial.ac.uk
Web:- www.imperial.ac.uk/safety

IC – Cyber Security
Robert Scott, Data Protection Officer at Imperial College
Email:- Robert.scott@imperial.ac.uk
Web:- www.imperial.ac.uk/admin-services/ict/self-service/be-secure/

UIUC - HSSE
Edward Torres Chainani, Safety Engineer
Email:- Echaina2@illinois.edu
Web:- www.drs.illinois.edu

UIUC – Cyber Security
Greg Gulick is Interim CIO Information Services at UIUC
Contact:- https://techservices.illinois.edu/office-cio
Web:- https://techservices.illinois.edu/security

4. Roles and Responsibilities

4.1 PI and Co-I

4.2 bp Mentor

4.3 Researcher

4.1 - PI and Co-I

Context

The bp-ICAM Research Projects are led by the Principal Investigator (PI), who in some cases is supported by Co-Investigators (Co-Is). The PI and Co-I roles along with the bp Mentor role (see Section 3.2) are critical to the overall success of the bp-ICAM research, it's relevancy to bp, the relationship with bp and the overall health and future of the bp-ICAM. The PI and Co-I are the 'ambassadors' for the academic community.

The Principal Investigator's (PI) *prime* responsibilities are three fold;

A. co-ordinate activities across the research project including those of any Co-Is and ensure all Co-Is are aware and adhere to their responsibilities;

B. to have a duty of care over research staff to ensure that they have an appropriate induction, are fully supported, trained and understand the relevant HSE requirements; and

C. to ensure production of those deliverables and reports defined by the relevant bp-ICAM contract to an appropriate quality, within the set timescales and within the agreed costs.

The PI reports to, and takes direction from the;

- bp-ICAM Directors for all aspects of the Research Project including IP, publication and research progress;
- bp-ICAM Operations Manager for administrative aspects of the Research Projects e.g. recruitment of research staff, submission of progress reports; and
- bp Mentor(s) and any specific bp Programme Manager identified for their research project.

PI & Co-I Responsibilities

The PI and Co-I have the following responsibilities:

1. preparation of the Research Project work plan and agree this with the bp Mentor(s) and bp;
2. maintaining close engagement with the bp Mentor(s);
3. scheduling and undertaking quarterly Research Project progress meetings in conjunction with the bp Mentor(s);
4. produce quarterly progress reports and the comprehensive full year report including updating posters in line with the reporting requirements and submitting these in a timely manner by the end of each calendar quarter via the bp-ICAM SharePoint;

5. plan, monitor and manage the research team's work, taking responsibility for the progress of the research and use of resources;

6. report any HSE issues and incidents immediately to the bp-ICAM Operations Manager and ensure that these are captured accurately on the quarterly report;

7. identify and advise the bp Mentors and bp-ICAM Materials Scientist and bp-ICAM Operations Manager *without delay* of any issues and risks associated with the research project;

8. advise the BP Mentors, bp-ICAM Materials Scientist and bp-ICAM Operations Manager of any proposed deviations from the Research Project work plan, recommending actions, and prepare any appropriate exception/variation plans in conjunction with bp/bp-ICAM staff identified;

9. ensure all Research Project data is regularly deposited in the Research Project's Isilon storage area;

10. identify sources of external funding to support bp-ICAM Research Project(s) and engage the bp Mentors, bp-ICAM Materials Scientist and bp-ICAM Grants Manager to support draft application;

11. report any leverage achieved from the bp-ICAM investment in a timely manner to the bp-ICAM Grants Manager and ensure that these are captured accurately on the quarterly report;

12. ensure researchers are recruited in a timely manner to avoid delays in the project progress and report progress in recruitment promptly to the bp-ICAM Operations Manager;

13. inform the bp-ICAM Operations Manager of any researchers (including any in-kind) working on the research project;

14. ensure all research staff are informed and kept aware of the obligations of confidentially, IP reporting and publication etc. under the bp-ICAM Membership Agreement;

15. fully participate in the bp-ICAM Annual Research Conference and other communication activities e.g., newsletters, lecture series, webinars etc. and encourage their research teams to do so;

16. report any potential commercialisation opportunities to the bp Mentor and bp's Technology Commercialisation Manager and ensure that these are captured accurately on the quarterly report; and

17. ensure all planned presentations and publications, external outputs etc. are submitted for approval to bp-ICAM via the agreed Publications Process (Section 6).

4.2 - bp Mentor

Context

The role of a bp Mentor[1] is important to the success of the bp-ICAM research and it's relevancy to bp, the relationship with the academic community and the overall health of the bp-ICAM. The bp Mentor plays a critical role in supporting the exploitation of bp-ICAM research, acting as the key link in the handover of the bp-ICAM research outputs to the Business teams that will be responsible for deployment in bp - in effect the bp Mentor is an 'ambassador' for bp and acts as the 'champion' of the bp-ICAM research internally in bp.

To accomplish bp-ICAM's goals bp technical experts need to engage deeply with the bp-ICAM Research Projects to;

a) ensure the bp-ICAM research is aligned to business challenges;

b) transfer bp-ICAM research output into bp;

c) identify and support bp's subsequent exploitation of the research;

d) build and strengthen bp's capability in materials; and

e) identify candidates for recruitment into bp.

The need for this critical engagement was recognised with the establishment of the bp Mentor role to engage directly with the bp-ICAM Research Projects.

Each Research Project has at least one bp Mentor resourced from the bp technical community.

bp Mentor Responsibilities

The bp Mentor has the following responsibilities;

1. a commitment to at least fifteen days per annum to the project written into their MyPlan, including attending the bp-ICAM Annual Research Conference;

2. serve as bp's main contact for the academic team providing BP direction and context, staging quarterly research updates and reporting on project progress jointly with the PI/Co-Is;

3. provide a link to the bp Businesses to disseminate the project outcomes and support implementation in bp;

4. ensure bp-ICAM Segment Leads and senior managers are aware of the research and progress;

[1] *The bp Mentor is referred to as the 'BP Supervisor' in the BP-ICAM Membership Agreement.*

5. liaise with the bp-ICAM Materials Scientist to ensure that the project is on track flagging any concerns in a timely manner;

6. define the exploitation and implementation (including IP) strategy for the project (in conjunction with bp-ICAM IP Legal SPA and the BP Technology Commercialisation Team), highlight any new IP and support the BP Technology Commercialisation Team in identifying exploitation pathways and supply chain partners. Specifically, the bp Mentor will;

    a) ensure that the bp-ICAM project has a high level exploitation plan at the start of the project;

    b) within the 1st six months of the start of the Research Project develop in conjunction with the Technology Commercialisation Team, a detailed exploitation plan including; the business case identifying the source(s) of value; key contacts in the bp Business (e.g. GPO, GOO, Product Development Teams), how output will be validated by bp; bp Projects and Operations where the research can be deployed and timelines for such bp Projects and Operations to ensure alignment of research output with bp Project stage gates etc. Where exploitation will most likely be by an external party then the bp Technology Commercialisation Team will be included in detailed plan development;

    c) ensure that the implementation plan is approved by the relevant technical authorities and relevant leadership (e.g. Chief Engineers in Upstream); and

    d) provide a detailed plan of how the research output will be captured in a form that can be disseminated to the key contacts and transferred to the relevant teams for deployment either *internally* or *externally*;

7. review publication requests in a timely manner; and

8. identify opportunities for recruitment.

4.3 - Researcher

Context

As a bp-ICAM researcher, you will have the chance to work with other leading researchers in world-class facilities on industrially crucial problems. The bp-ICAM is a collaboration between four universities and bp, therefore, you will have access to equipment and expertise beyond those in your own institution. The opportunities available to bp-ICAM researchers are listed below along with the commitments all researchers are expected to fulfil during their bp-ICAM project.

Researcher Opportunities

- a bp Mentor who will be there to support your project and provide context on the bp challenge (see Section 3.2);
- opportunity for collaboration with researchers across the bp-ICAM, including the bp-ICAM Annual Research Conference which brings together BP staff, academics and researchers from across the bp-ICAM partnership;
- access to facilities and equipment at all four university partners; and
- potential for cross-university or industrial placements (subject to research needs and availability).

Researcher Responsibilities

As a bp-ICAM researcher you will have the following responsibilities;

- ensure that you understand and abide by the contract acknowledgement which you signed on joining your bp-ICAM project (including clauses on IP, confidentiality, publicity and warranty);
- follow IP Summary (see Section 7) when preparing publications or any other material for public display, including conference posters and presentations; and
- familiarise yourself with and adhere to local Health & Safety guidelines and complete all local training in this area.

Note that the commitments detailed above are in addition to the policies and procedures for all researchers at your university including, for PhD students, the requirements for progression and submitting a thesis. You should ensure that you are familiar with these regulations.

Personal Development

bp-ICAM has developed a *Personal Development* template which enables you to record your training e.g. in personal and transferable skills, professional development and HSE. It is also valuable to include personal development activities e.g. end of year assessments, study trips

or collaborations, presentations or publications etc. PhD students are required to use this template and keep it up to date. It is also available to PDRAs if they would like to use it. A copy is available on the bp-ICAM SharePoint site.

5. Research Project Reporting

Research Project Reporting

Introduction

The bp-ICAM portfolio of research[2] currently consists of a significant number of Research Projects of various size and duration, located at each of the four bp-ICAM universities. To maintain the success and health of such an extensive and complex portfolio requires robust and efficient processes to be in place for the reporting and evaluation of the individual Research Projects and the portfolio as a whole. The bp-ICAM also wants to ensure that the obligations on reporting are appropriate and do not place an onerous burden on those preparing such material and data or those who will be undertaking the review.

To this end the bp-ICAM has a simple reporting process in place that has a reasonable balance between reporting research progress and assurance that the work is proceeding on plan with the time the research team have to spend on the reporting itself.

Reporting Requirements

The reporting requirements for all bp-ICAM Research Projects are as follows:

Quarterly – For the first three quarters of the year (Q1-Q3) the bp-ICAM reporting requirements take a light touch approach. On the *last* day of each calendar quarter (for the first three quarters of the year) you are required to submit the following documents to the bp-ICAM Hub;

- Quarterly Meeting Update - each project needs to capture the discussions at the quarterly progress meetings between the bp Mentor(s) and the research team and an update on the milestones. A simple email update should be sent to info@icam-online.org, containing the following:
    - HSSE Update – Any activities, near misses or incidents in this quarter
    - Any technical highlights (*plus any that can be included in Group Research updates for bp*)
    - Updates on value to bp (*plus any that can be included in Group Research updates for bp*)
    - Project status against the agreed plan
    - IP/Publications discussion
    - AOB (*e.g., upcoming conferences, presentations etc.*);
- (*Q2 and Q4 only*) updated One Pager (*One Pager Template*).

Please use the *One Pager* template which indicates the bp-ICAM theme to which your project belongs. Please review previous *One Pagers* on the bp-ICAM sharepoint for guidance on the level of detail required. If you are unsure about this, please contact the bp-ICAM Materials Scientist for clarification.

[2] The research portfolio is categorised into 6 Enduring Themes supported by an Underpinning Tools capability (see Section 1 & 8)

Annually - For the 4th Quarter the bp-ICAM requires a comprehensive report on the progress of the research project. Thus by the 4th December you are required to submit;

- full annual project report covering activity for the full year, (*Annual Project Report Form*); and
- updated One Pager (*One Pager Template*).

Templates for each of these reports can be downloaded from the bp-ICAM SharePoint site. These need to be agreed with your bp Mentor in advance of submission to the Hub and be based on the quarterly research meeting which will take place between the bp Mentor, PI(s), Co-I(s) and the rest of the research team. The milestones should be extracted directly from your Research Project contract or amendments to your Research Project contract and additional milestones can be added as necessary.

All financial reporting is carried out separately on a quarterly basis by the bp-ICAM Project Accountant working directly with your university's financial team. However, if there are any issues/highlights associated with your budgets (e.g. delay in equipment procurement, recruitment etc.) then please highlight these in the quarterly and annual research reports.

ICAM56 - Prosperity – This project has different reporting requirements due to project complexity and meeting schedule. These have been agreed directly by the project PIs and mentors. For further information please contact the ICAM56 Project Manager.

Instructions for Submitting your Reports to bp-ICAM via the Sharepoint Site

- Go to the SharePoint login page at: bp-ICAM SharePoint – Home.

- If you are using a computer outside The University of Manchester's network, please log in using your University of Manchester IT Account credentials prefixed with **ds**

  E.g. Username: ds*your Manchester username*
  Password: **********

- Select **Shared Documents** in the left-hand menu, and then select the relevant folder.

- For reports and one pagers, click on **Research Programmes (ICAM Research Projects),** then your project, then **Reports and One Pagers**, which are sorted by year.

- Once you are in the relevant folder to upload, click on **Add Document**. There are two ways to add documents:

  - Click **Browse** and choose your files one at the time, or

  - Click on **Upload Multiple Files** then drag and drop from your computer into the box.

- Click **Ok** to add the files, then **Done** to exit the window. The files should then appear in the folder.

6. Publication Process

Publication Process

Context

The bp-ICAM will generate a significant amount of Intellectual Property (IP) and publications over its lifetime and for this reason it is critical that clear processes and approval mechanisms are in place to cover publications so as not to delay publication nor adversely affect any IP protection.

The operation of the bp-ICAM is under the terms of the bp-ICAM Membership Agreement which covers all aspects of IP and publication.

The permissions for publishing are different depending on whether the Research Project is a fundamental or an applied project. Thus for;

Fundamental Research Projects	The Academic Parties are each free to publish results subject to sharing drafts with bp *at least a month* prior to proposed submission for publication. bp can veto the inclusion of its confidential information. bp can require a reasonable delay (up to six months) if there is a need to patent, alternatively bp can request a similar delay to prevent potential damage to bp's commercial position. bp can publish with the relevant Academic Party's consent.
Applied Research Projects	The Academic Party has no right to publish. Publication can only be with the explicit written permission of bp.

Publication Process

Definition of a Publication

The bp-ICAM Membership Agreement defines a publication thus;-

> ***"Academic Publication"*** *means any public dissemination of Arising Information, including but not limited to any scientific or technical paper, conference proceedings, book or the making of any public presentation of Arising Information including transmissions via the internet or by any other electronic means and shall also include public use of the Arising Information for education and training purposes and use of Arising Information for the purposes of a student thesis or other student papers.*

Whilst publications are not specifically IP, they are a potential mechanism for losing valuable IP and the main aim of this broad definition is to prevent inadvertent loss of IP. Note this definition covers submission of papers, abstracts, talks and presentations, including internal talks and presentations etc.

The process for reviewing publications is detailed in the bp-ICAM Membership Agreement, with the bp-ICAM Programme Management Board (PMB) having responsibility to review the

proposed publications on behalf of the academics and bp. To simplify and expedite the process the PMB has delegated their publication review role to the PI(s) from each university involved with the Research Project from which the proposed publication originates, The bp Mentor(s), The bp-ICAM Materials Scientist and the bp-ICAM Associate Director. The following process for reviewing and approving publication has been agreed;

1. prior to submission of the publication request there is the option to forward a concept or draft of the proposed publication for input from bp, bp Mentor and Co-Is;

2. PI to circulate proposed draft to the bp-ICAM Materials Scientist and bp-ICAM Hub, bp Mentor and Co-Is ***at least 30 days*** **prior** to the proposed submission date. This is the formal request to review and the 30 days start from the date bp receives the formal request with the draft. Use the *Request For Publication* pro-forma which is available on the bp-ICAM SharePoint. A branded *Slide Template* is also available for your use;

3. bp will conduct a review of the proposed draft publication;

4. bp-ICAM will collate input;

5. bp, via the bp-ICAM Materials Scientist, responds to PI within 30 days of the formal request;

6. The bp response can take the form of either:

    a. bp approval (with or without non-binding technical/scientific suggestions);
    b. bp approval conditional upon the removal of bp data, which may require a delay of up to 60 days for further review and confirmation;
    c. requirement to delay publication for a period of up to 6 months to enable IP protection;
    d. request to delay publication for up to 6 months to protect bp's commercial interests; or
    e. rejection (in the case of Applied Research Projects only);

If approved proceed to next steps.

7. proposed publication submitted to appropriate publication route;

8. PI sends bp Mentor, bp-ICAM Hub and bp-ICAM Materials Scientist a copy of published document; and

9. bp-ICAM Hub archives published material;

A flow diagram for the publication process is included on page 32.

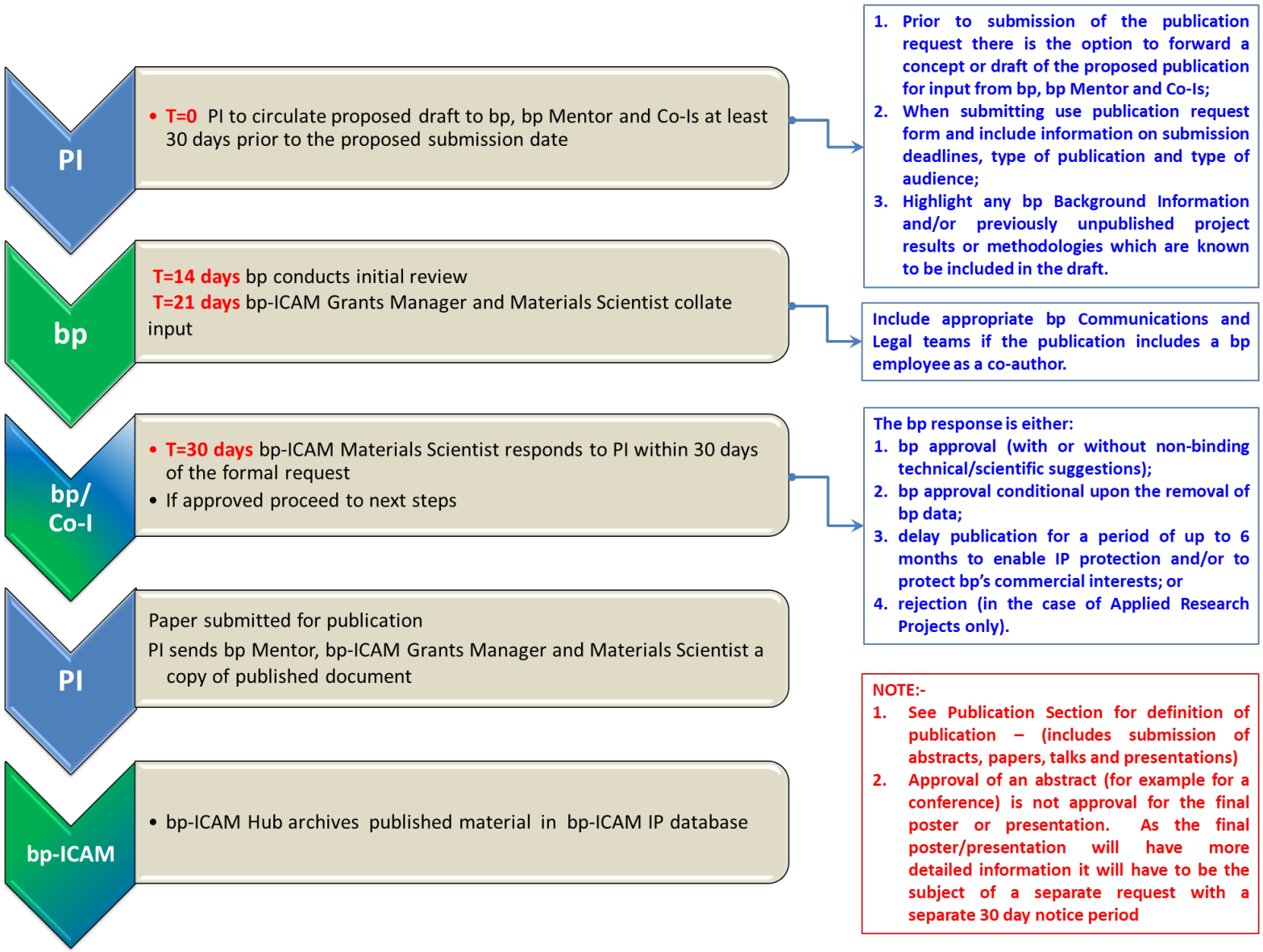
Important Notes:

- Approval of an abstract (for example for a conference) is ***not*** approval for the final poster or presentation. As the final poster/presentation will have more detailed information it will have to be the subject of a separate request with a *separate 30 day notice period*.

- Each Academic Party involved in a collaborative Research Project will have prior notice of proposed publications connected with that collaborative Research Project, via their PI.

- Summary publication list shared with PMB as part of the EoY Report.

Publication Process



7. IP Summary (including involvement of third parties)

IP Summary (including involvement of third parties)

Context

bp (via its Group Technology function) together with four Academic Parties (the universities of Manchester, Imperial, Cambridge and Illinois), have entered into a 10 year collaboration agreement to establish an International Centre for Advanced Materials research (the "BP-ICAM"). BP's Group Technology anticipates making a funding contribution of $100million over this period, with BP businesses able to contribute additional funds by calling off their own research projects. bp-ICAM uses a hub and spoke model with the University of Manchester ("UoM") as the Hub. The bp-ICAM Hub office at UoM provides facilities for bp and UoM staff, working together, to administer the bp-ICAM. The bp-ICAM has been further extended by an additional five years to 2027.

Purpose

The intent of this note is to outline the agreed IP position for the bp-ICAM. This is a high level summary and so does not reflect *every detail* of the IP terms and conditions. Please read the BP-ICAM Membership Agreement and/or contact your legal advisors for further details. Academics and researchers at each of the universities should be aware that the IP arrangements for the bp-ICAM override the usual arrangements for disclosure, protection and ownership of IP which are contained in any policy documents at their institutions, and this is the case for all their work with the bp-ICAM. It is therefore important that BP, academics and researchers engaging with the bp-ICAM take time to acquaint themselves with this summary of the IP position, and address any questions they may have to their local advisors. For BP or UoM queries concerning the operation of the Hub, please consult the BP-ICAM Hub Agreement and/or discuss with your legal advisors.

Projects

bp-ICAM Research Projects are designated as either "Fundamental" or "Applied". bp has enhanced IP rights to Applied Research Projects compared with Fundamental ones. There is no fixed definition of these terms and the parties need to agree the designation of each particular project prior to the project start. The intent is that Fundamental projects (comprising ~75% of bp-ICAM spend) comprise basic research into scientific principles underlying advanced materials, whereas Applied Research Projects (the remaining ~25%) are more likely to involve development and/or testing of particular products/processes for specific potential applications in bp. However, these are effectively just short-hand terms for stating which set of agreed IP terms will apply and a key consideration for any new Research Project will therefore be whether the parties agree to designate it as being Applied or Fundamental.

Research Projects are submitted in response to a call for proposals. Proposals are reviewed by the bp-ICAM governance bodies (Programme Management Board and bp-ICAM Board) and if approved will be called off using template Contract, Budget and Project Plan documents. See Clause 9 for further details about Project Selection.

The correct bp-ICAM templates **must** be used to propose and to call-off bp-ICAM projects.

Project costs are as per pre-agreed rates for the Academic Parties based on the nature of the participating academics and with pre-agreed overheads. Each Academic Party's eligible cost breakdown is confidential to it and is set out in a side letter with bp dated 13th December 2012. These are being renegotiated and will be updated in Q1-20. The individual side letters between bp and the Spoke universities were updated and signed off in January 2019 and are now in operation.

Project Management

Research Projects are managed by a Research Project Management Team comprising the Academic's PI and a bp Mentor[3] (see Clauses 10 and 11).

[3] *The bp Mentor is referred to as the 'BP Supervisor' in the BP-ICAM Membership Agreement.*

Default meeting and reporting requirements are set out for Research Projects, including quarterly calls and quarterly brief written updates, an annual -monthly detailed formal project reviews and reports and requirements for final reports (see Clauses 11.3 and 14)[4]. Bespoke arrangements can be agreed within call-off contracts.

bp Field Definition

The BP-ICAM Membership Agreement contains a definition of bp's "Field", indicating the business areas of the company. Within this Field, bp has enhanced rights in respect of ownership and rights to exploitation for IP. bp's Field is the exploration, production and exploitation of hydrocarbon reserves to produce oil and gas, the refining of oil to produce fuels, lubricants and other derivative products and the manufacture and distribution thereof, petrochemicals, biofuels and other sources of renewable energy including wind and solar power, carbon capture and storage and such similar or related activities as comprise the normal operations of the bp group from time to time, such similar or related activities to be discussed and agreed in good faith and specifically identified in the Contract for the relevant Research Project.

It is a broad definition of bp's business, but note the option to agree additions/clarifications by mutual agreement prior to the start of a given Research Project (i.e. in the Contract calling-off that particular Research Project).

IP from Applied Research

bp owns *all* the Arising IP from Applied Research Projects. The use or publication by the Academic Parties of the Arising IP from Applied Research Projects is not permitted without bp prior consent, which bp can give or not give at bp's absolute discretion.

Use outside bp's Field – If a use of Applied IP arises outside of bp's Field then bp has the sole right to exploit it, subject to paying the relevant Academic Party a 20% share of any profits from doing so. This profit sharing does not apply to bp's exploitation inside the Field where all profits are retained by the company.

IP from Fundamental Research

Arising IP - the relevant Academic Party owns the IP and bp has an exclusive, royalty free licence in bp's Field.

Maintaining bp's exclusivity in bp's Field is subject to bp paying the patent costs in the relevant country (see Clauses 18.8 and 19.5) and is also subject to bp using diligent and reasonable efforts to exploit any Arising patents in bp's Field within 3 years of the date of patent grant (see Clause 19.9).

The relevant Academic Party can use the IP for academic research and teaching purposes and can exploit outside of bp's Field. The parties must discuss collaborative exploitation, but the Academic Party controls any such exploitation. The Academic Party must share 20% of profits (including equity in any new spin out company) with bp (see Clauses 19.3 & 19.4). If any new spin-out is created, the Academic Party must try and obtain an option for bp to invest up to 50% as part of any future funding round of that spin-out.

Publication – the Academic Parties and bp are each free to publish results subject to sharing drafts at least a month prior to proposed publication. Parties can veto the inclusion of their confidential information. bp can *require* a reasonable delay (up to six months) if there is a need to patent, alternatively bp can *request* a similar delay to prevent potential damage to bp's commercial position, even if not patenting.

[4] *These are different to the obligations in the BP-ICAM Agreement and have been adopted from the 1st year of operation of the bp-ICAM*

Arising IP Summary

Arising IP From:	Inside the bp Field	Outside the bp Field
Fundamental Research Project	Academic Party owns and bp has exclusivity. If IP is patented, this exclusivity is subject to payment of patent costs and due diligence efforts.	Academic Party owns / controls. 20% share of profits to bp, and bp has an option to invest in any spinouts.
Applied Research Project	bp owns / controls absolutely. No revenue sharing with Academic Party from exploitation by bp.	bp owns / controls. 20% share of profits to Academic Party from exploitation by bp.

Background IP

Use for Projects - Each party (whether or not involved in the particular project) grants a royalty free licence of Background IP solely for use in bp-ICAM projects.

Use for exploitation – Each Academic Party grants to bp a non-exclusive licence to Background IP required by bp for the use/development/commercialisation of the Arising IP from any bp-ICAM Research Projects. This is subject to a negotiated fair and reasonable annual royalty capped at £25,000 / $40,000 per Patent Family per year (see Clauses 17.5 and 17.6).

Background IP means IP owned by, or licensed to, a Party prior to the date of the Membership Agreement, and *includes* IP developed subsequently from activities carried out outside of the bp-ICAM, subject to third party rights.

Academic Parties have the right to exclude registered IP (such as patents and designs) from Background IP provided that this is identified and specifically disclosed in the Contract as being unavailable prior to the start of the relevant Research Project. It also excludes patents & designs which postdate the relevant Contract and which are subject to third party rights at the time their relevance is first ascertained. See Clauses 9.4, 17.4 and 17.7.

Patenting Activities

All parties to a Research Project must promptly notify the others of potentially patentable Arising Information (Clause 18.3).

The Parties are to collaborate reasonably on the protection of all Arising IP, including by sharing drafts, patent office correspondence and proposed amendments. Also by giving reasonable consideration to other's comments, giving updates on the status of patents and applications and notifying others regarding any challenges to, or infringements of, Arising IP (Clause 18.10).

bp has 6-months to notify an Academic Party if bp is prepared to pay patenting costs for IP arising from Fundamental Research Projects. bp subsequently not paying such patent costs reduces bp's exclusive licence in the bp Field to a non-exclusive licence (Clause 18.3).

bp can step in and acquire patents for Arising IP in bp's name if an Academic Party unreasonably delays filing or subsequently wishes to abandon IP (Clause 18.4).

The bp-ICAM Board may agree practices from time to time concerning the protection of Arising IP in accordance with the agreement (Clause 18.11).

Confidentiality & Publication

All bp-ICAM related discussions are protected by confidentiality, including pre-Contract discussions concerning proposals for potential new Research Projects. Confidentiality lasts for the term of the bp-ICAM plus 5 years. See Clause 22.

No special marking or labelling of documents is required for confidentiality to apply, however use of good practice by labelling sensitive information as “Confidential” and adding the owning party’s name is highly recommended.

Only use another bp-ICAM Members’ Confidential Information for the purposes of bp-ICAM. Consult your legal advisors prior to making any other proposed use of such information (including use of Arising IP) and prior to disclosing such information to any parties outside the bp group and outside of bp-ICAM.

Only publish Arising Information from a bp-ICAM Research Project after following the publication procedure in Clause 23.

Third Party Involvement

In some cases, we may need to involve third parties with bp-ICAM Research Projects, for example to provide data and/or samples for use in a project. The suggestion of third party involvement may come from the third party themselves, from the academic researchers, or from bp.

In all cases, each approach must be discussed at the outset with the team consisting of the appropriate bp Mentor, the relevant PI, bp’s Technology Commercialisation Manager and Commercialisation Team, the relevant Academic Party’s contract support, bp IP Legal and the bp-ICAM Associate Director, before any third party is involved in any way in any bp-ICAM project and specifically before any proposed exchange of samples and/or data is committed to.

bp and the relevant Academic Party each need to properly understand and agree the terms under which any third party becomes involved with any bp-ICAM project, including the terms on which any data and/or samples are exchanged.

Any agreement that may be needed with a third party should be discussed first between the relevant Academic Party and bp. The basic structure of the agreement (including whether or not bp is to be a party to it) and the key terms can then be discussed and agreed between us prior to involvement of the relevant third party in any detailed negotiations. bp can provide template NDAs and data sharing agreements on request for use in such circumstances.

A template “Third Party Contact Request” sheet is available on the bp-ICAM SharePoint and should be completed and submitted to commence consideration of any third party interaction with a bp-ICAM project. This template will be available as a separate document.

8. Research Project Close Out Process

Research Project Close Out Process

Context

bp-ICAM Research Projects vary in size, complexity and duration. In order to capture the research output and lessons learned, and to manage exploitation activities, a simple Project Close Out Process has been developed.

The objectives of this process are to:

- capture the research outputs and identify benefits to bp;
- ensure that bp is able to pursue exploitation of the research after the project completes;
- identify future research opportunities including opportunities for leveraged funding;
- review the performance of the Research Project and capture lessons learned, including HSE;
- identify any remaining funds; and
- ensure that provision has been made to address all remaining issues and risks, with follow-on actions.

bp-ICAM Research Project Close Out Process

When a Research Project is coming to its expected end or if the Research Project will be terminated before this date, the following process will be followed.

Preparation for Project Close

1. the PI/Co-Is and bp Mentors are engaged *at least* twelve months prior to the Research Project end date or planned early termination date to consider post Research Project close out implications;
2. *at least six months prior* to the Research Project end date or planned early termination date the PI is provided with the *Project Close Out Report* template by the bp-ICAM Hub;
3. PI/Co-Is and bp Mentors review implementation and IP strategies, propose extensions and/or new Research Projects for approval by the bp-ICAM Boards and clarify any on-going support that may be required up to the Research Project end date;
4. *at least four months before* the Research Project end date, the PI provides a draft *Project Close Out Report* and a detailed expenditure report, including all planned expenditure up to the Research Project end date from the relevant institution finance team. For multi-university Research Projects, the PI for each University should submit a separate expenditure report;
5. *prior* to the close out meeting, the bp-ICAM Materials Scientist and bp Mentor review the draft *Project Close Out Report* and agree an agenda for the close out meeting with the PI. bp and the bp-ICAM Project Accountant review the detailed expenditure report(s). The

bp Mentor and PI are accountable for organising the close out meeting which should include sessions to cover all sections in the *Project Close Out Report*, including a discussion about the proposed use of any remaining funds;

6. *between one and three months prior* to the Research Project work programme's end date the PI, Co-Is, bp Mentors, bp Materials Scientist and the appropriate bp-ICAM Upstream/Downstream Segment Lead hold a Research Project close out meeting to agree actions and ensure that work plans are in place to deliver any outstanding deliverables;

7. the PI updates the draft *Project Close Out Report* with the output from the close out meeting and resubmits to the bp Mentor and bp-ICAM Materials Scientist for approval;

8. bp reviews the report and ensures that follow up actions and outstanding deliverables have been met prior to the Research Project work programme's end date. The *Project Close Out Report* is returned to PI for amendment if required; and

9. the bp Mentor approves the report which signifies completion of handover of all Research Project outputs (knowledge, software, data and final expenditure report). This should be completed before the contracted end date.

Following Research Project Contracted End Date

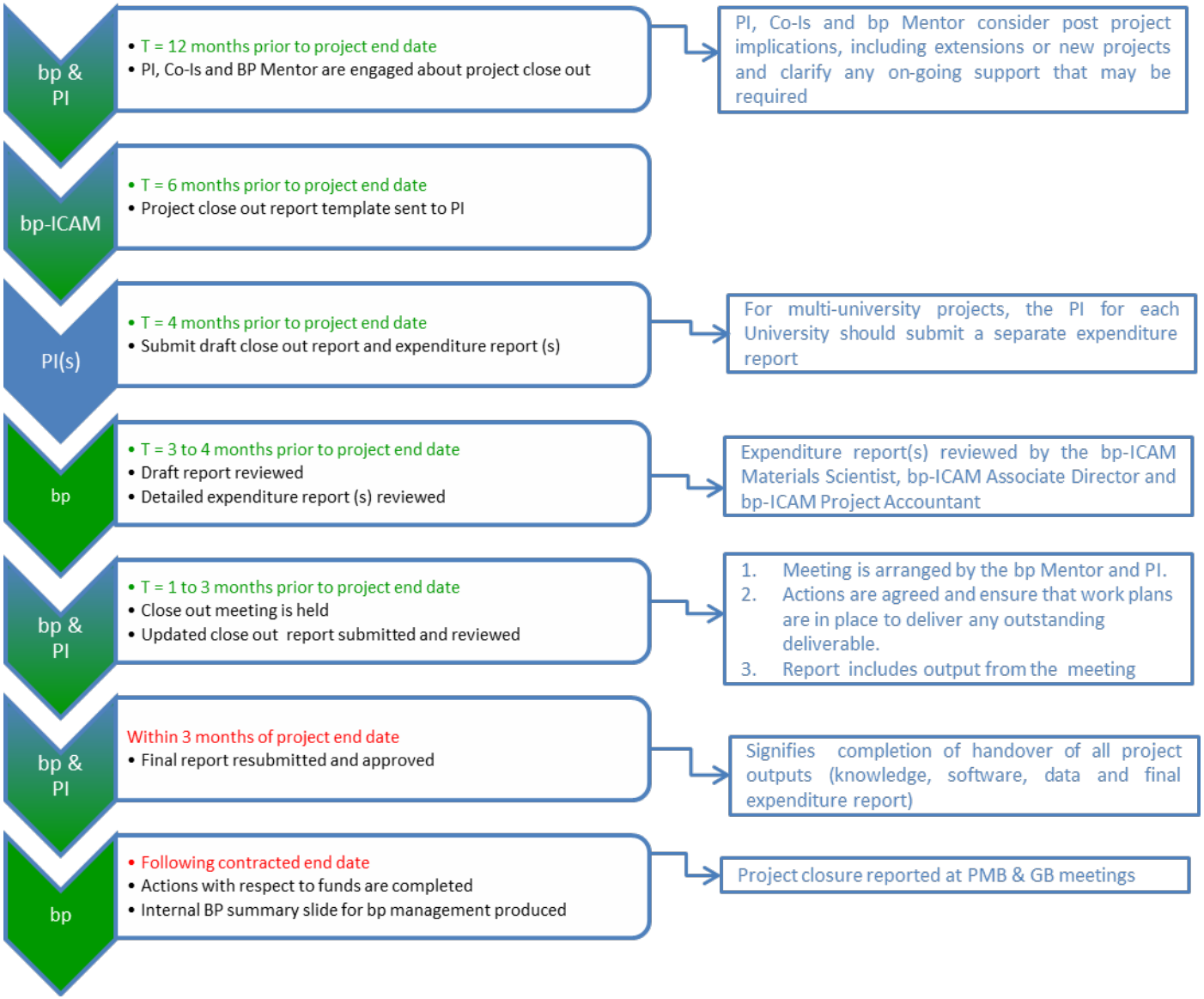
1. the bp-ICAM Materials Scientist and the bp-ICAM Project Accountant undertake agreed actions with respect to remaining funds;

2. the bp Mentor and the appropriate bp-ICAM Upstream/Downstream Segment Leads produce internal BP summary slide; and

3. the closure of the Research Project is reported at Project Management Board and Governance Board meetings by the bp-ICAM Materials Scientist.

A flow diagram for the Project Close Out Process is shown on page 41.

bp-ICAM Research Project Close Out Process



9. Location of Templates

Location of Templates

The following templates mentioned throughout the Welcome Pack in *italics* can be found on the bp-ICAM SharePoint site:

- *Personal Development*
- *Quarterly Report Form*
- *One Pagers Template;*- Research Projects are categorised under the six **Enduring Themes** of*;*
    - Fouling & Deposition
    - Separations
    - Corrosion & Degradation
    - Wear & Lubrication
    - Materials Systems
    - Low Carbon

  and an **Underpinning Tools** capability which consist of Research Projects undertaking research into
    - Imaging & Characterisation; and/or
    - Modelling

- *Exemplar One Pager*
- *Annual Project Report Form*
- *Request for Publication*
- *Slide Template*
- *Third Party Contact Request*
- *Project Close Out Report*

To access the templates go to the SharePoint login page at: : bp-ICAM SharePoint – Home.

If you are using a computer outside The University of Manchester network, please log in using your University of Manchester IT Account credentials prefixed with **ds**

E.g. Username: ds*your Manchester username*
Password: **********

Select **Shared Documents** in the left-hand menu, then select the "*Welcome Pack Templates*" folder.

10. Key Contacts

Key Contacts

Some of the key bp-ICAM contacts involved in the processes described in this Welcome Pack are listed below and are correct at May 2021.

Professor Sarah Haigh — Sara.Haigh@manchester.ac.uk
Director

Professor Sheetal Handa — Sheetal.Handa@uk.bp.com
Associate Director

Dr Mandar Thakare — Mandar.Thakare@bp.com
Programme Manager

Dr Aldo Guiducci — Aldo.Guiducci@uk.bp.com
Materials Scientist

Tracy Amass — Tracy.Amass@manchester.ac.uk
Operations Manager

Serina Khan — Serina.Khan@manchester.ac.uk
Management Accountant

Dr Julia Viladoms Claverol — Julia.Viladoms@manchester.ac.uk
Grants Manager

Dr George Miller — George.Miller@manchester.ac.uk
Communications and Marketing Officer

Line Lormain — Line.Lormaintran@bp.com
P.A. to the Associate Director

Hilde Hambro — hh463@cam.ac.uk
Part-time Administrative Assistant (UoC)

Kasia Kmieckowiak — K.Kmieckowiak@imperial.ac.uk
Part-time Administrative Assistant (IC)

Erica Malloch — EMalloch@illinois.edu
Part-time Administrative Assistant (UIUC)