Dyson School of Design Engineering

Professional Development Review (PDR)

This should be conducted before the final tutor visit, and has been designed to give you an opportunity to sit down with your manager to discuss your progress and contributions across your placement, and help you think about the future (to empower you to both look back, and look forward). These reviews are common practice in industry, and typically happen once per year to review performance, discuss career aspirations, and agree objectives for on-going development. A typical PDR will involve two parts: a written self assessment completed beforehand, and a formal meeting with your manager in which you'll co-create a set of goals and summary of the discussion. For each you should think about the following:

- **Self Assessment:** Review your performance across your placement and explain what you've achieved. Consider both successes and difficulties. This is not about reporting on the work itself, but rather reflecting on what you have done overall and where you have learned or struggled. For example:
    - What have you learnt and/or gained in terms of knowledge, skills, or experience over the placement?
    - What feedback has been received from colleagues, stakeholders, line managers, etc.?
    - What particular aspects of work have been praised?
    - What challenges have there been and how have these been worked through?
    - Do you feel appreciated, valued, and supported?

- **Review Meeting:** Discuss your performance with your manager or mentor. This is a constructive two way discussion where you review the self-assessment together, discuss your past performance and future goals, and set objectives for achieving these. This should involve asking and answering questions such as:
    - What are your strengths?
    - What have you struggled with, and what are your areas for improvement?
    - How have you enjoyed the role, company and sector?
    - Where are the next steps in your career, and what will you need to do to get there?

For this assessment we have created the form that you will find in the next page. However, you do not need to use this if the company already has their own PDR (or equivalent system) in place. Either a corporate version or our Proforma are acceptable, and you only need to do one.

Please send the PDR to your placement tutor at least 2 days before the final visit for review.

DE4-IP2_PROFESSIONAL DEVELOPMENT REVIEW

Complete the sections below as directed. Further guidance on content and submission is available in the Placements Handbook Doc and the Assignment Outlines on Blackboard.

Student Name	Arnav Bhatia	***Company Name***	Bird Heritage Foundation
Placement Tutor	Billy Wu	***Division/Team***	App Development
Date of PDR	30/08/24	***Appraiser Name***	Geetanjali Nanda

1. Review of Placement Performance

Main column to be completed by the student first and then communicated to the appraiser which will complete the last column. The Professional Development Review (PDR) should be performed **at least 2 days before the final visit**.

The review uses the 5 categories of professional competencies defined by the UK's Standard for Professional Engineering Competence (UK-SPEC) to review your knowledge and skills gained. Be specific, and concise, using a bulleted list to highlight your achievements, outputs and activities. Give examples of what you have done and where you feel you have addressed the suggested considerations outlined (or any other relevant successes or difficulties related to that area).

Appraiser to review this with you at the PDR meeting and add comments in the far right (during or following the meeting). During the review meeting you may also be asked to amend your original comments in the central column.

Competence and Considerations	***Your Achievements, Outputs and Activities***	***Appraisers comments***
A. Use a combination of general and specialist design engineering knowledge to optimise the application of existing and emerging technology *Maintain and extend a sound theoretical approach to new and advancing technology* – identify the limits of own personal knowledge and skills, extend own technological capability, broaden and deepen knowledge through research and experimentation. *Engage in the creative and innovative development of design engineering technology* - identify constraints and exploit opportunities for the development and transfer of technology, promote new applications when appropriate.	*Maintain and extend a sound theoretical approach:* • *Identified knowledge gap in heritage tourism through on-site observations and user interviews* • *Rapidly acquired SwiftUI and Xcode skills, progressing from basic syntax to functional app prototype in 6 months.* • *Integrated multiple technologies: GPS, speech synthesis, and custom AI models* *Engage in creative and innovative development:* • *Developed AI-powered tour guide app for Humayun's Tomb Complex, addressing lack of affordable guides* • *Implemented geotagged triggers for context-aware AI responses, enhancing user experience* • *Designed fact-checking system, reducing AI-generated misinformation by 95%* • *Conceptualised AR feature for projecting 3D tour guide via smartphones* *Identify constraints and exploit opportunities:* • *Overcame limited on-site information by creating a scalable, AI-driven mobile solution* • *Proposed in-app ticket purchases with bulk rates, benefiting users and business*	Arnav has a strong and in depth interest and knowledge of his subject. Clarity on the vision of the intended product has been successfully translated into the app module delivered. His understanding of various tools, latest features and has been a value add for the project. Did on-ground research at the monument to understand gaps and presented the proposed plan to enhance the user experience. Collected Government approved verified historical facts and curated them in an interactive and engaging model for the end user. Proactively presented suggestions that make the app model better and

	• *Implemented AI-driven suggestions for nearby attractions as alternative to disruptive ads*	wholesome from the visitor and stakeholder perspective.
B. Apply appropriate theoretical and practical methods to the analysis and solution of design engineering problems *Identify potential projects and opportunities* - establish and help develop solutions to meet users' requirements, consider and implement new and emerging technologies, enhance design engineering practices, products, processes, systems and services. *Conduct appropriate research and undertake design and development solutions* - identify and agree appropriate research methodologies, allocate and manage resources, develop the necessary tests, collect, analyse and evaluate data, prepare, present and agree design recommendations. *Manage implementation of design solutions, and evaluate their effectiveness* -implement design solutions, taking account constraints and concern for safety and sustainability, determine the criteria for evaluating the design solutions, evaluate the outcome against the original specification, actively learn from feedback on results to improve future design solutions and build best practice.	*Identify potential projects and opportunities:* • *Conducted secondary market research to identify gap in heritage tourism sector* • *Performed primary market research through surveys and user-based testing at Humayun's Tomb* • *Created user personas and customer profiles to guide solution development* • *Developed business plan considering emerging technologies and market trends* *Conduct appropriate research and undertake design and development solutions:* • *Designed and implemented user flow maps and system diagrams to visualize app structure* • *Conducted competitor analysis to identify unique value propositions* • *Iterated on prototypes based on user feedback and usability testing results* • *Developed full-stack application, integrating AI, GPS, and user interface components* • *Created UI designs optimised for accessibility and user engagement* *Manage implementation of design solutions, and evaluate their effectiveness:* • *Implemented iterative design process, continuously refining features based on user feedback* • *Conducted real-world prototype testing at heritage sites to evaluate app effectiveness* • *Achieved 40% increase in historical knowledge retention compared to unguided visits* • *Designed for accessibility, including voice control and high-contrast colour schemes* • *Actively incorporated team feedback to balance ambition with practical constraints* • *Prioritised essential features for initial release, deferring advanced features for future iterations*	The first phase of the project was to get the facts and understand the market requirement and competition. Analysed the details by meetings with monument officials and visitors were undertaken to arrive at the proposed plan for the app. Usage of various tools to address the gaps & provide historical information in an interesting manner has been achieved. Has kept in mind the diverse culture and population of India – has made the app with the multilingual functionality. Regular testing of the app features with the team was done for feedback and improvements The phase 1 of the project as planned has been delivered as per timelines.
C. Provide technical and commercial leadership (This doesn't have to be just about leadership, can be about all forms of interaction with colleagues, clients, managers etc.) *Plan for effective project implementation* - review factors affecting the project implementation including safety and sustainability considerations, ensure necessary resources are secured, negotiate the necessary	*Plan for effective project implementation:* • *Independently managed entire app development process due to lack of iOS developer on team* • *Utilised on-the-job learning and self-guided methods to overcome technical challenges* • *Optimised resource use by repurposing existing hardware (e.g., older computer displays)* • *Managed API usage to stay within budget, optimising token count and using lighter models*	Managed the end-to-end implementation of the project with passion and guidance from the team. Functioned within the company resources and used solutions to ensure the project progress was as per the defined timeline.

contractual arrangements with other stakeholders (client, subcontractors, suppliers). *Plan, budget, organise, direct and control tasks, people and resources* - ensure that variations from quality standards, programme and budgets are identified, and that corrective action is taken, gather and evaluate feedback, and recommend improvements. *Bring about continuous improvement through quality management* - promote quality throughout the organisation and its customer and supplier networks, direct project evaluation and propose recommendations for improvement.	*Plan, budget, organise, direct and control tasks, people and resources:* • *Developed and adhered to project timeline and roadmap for app development* • *Managed project costs, keeping OpenAI API usage under £2* • *Implemented structured learning plan, including completing "Hacking with SwiftUI" course* • *Maintained daily interaction with employees for feedback and guidance* • *Kept regular meetings on Fridays with Mrs Geetanjali and team to review progress and changes* • *Balanced project ambitions with organisational constraints through iterative development* *Bring about continuous improvement through quality management:* • *Established weekly presentation schedule to demonstrate updates and gather feedback* • *Implemented feedback loop for continuous refinement of app features and user experience* • *Proactively sought diverse perspectives from potential users at heritage sites* • *Proposed innovative solutions to conflicting stakeholder preferences (e.g., AI-driven recommendations instead of banner ads)* • *Extended problem-solving beyond assigned project, optimising colleague's laptop to extend device lifespan*	Arnav enrolled himself for a few courses for self-learning before starting the project which evidently shows his commitment to achieve his goals. Preparation, analysis and implementation of the planned modules have been his strength. Regular update and brainstorming sessions were an interesting platform for learning for all of us. He has contributed with positive solutions and ideas & extended support to the team as and when required.
D. Demonstrate effective interpersonal skills *Communicate with others at all levels* - lead, chair, contribute to and record meetings and discussions, prepare communications, documents and reports on complex matters, exchange information and provide advice to technical and non-technical colleagues. *Present and discuss proposals* - prepare and deliver presentations on strategic matters, lead and sustain debates with audiences, feed the results back to improve the proposals. *Demonstrate personal and social skills* - know and manage own emotions, strengths and weaknesses, be aware of the needs and concerns of others, be confident and flexible in dealing with new and changing interpersonal situations, identify, agree and lead work towards collective goals, create, maintain and enhance productive working relationships, and resolve conflicts.	*Communicate with others at all levels:* • *Actively participated in organisational discussions beyond immediate project scope* • *Simplified complex concepts for non-technical colleagues during presentations* • *Conducted weekly meetings to demonstrate app updates and brainstorm improvements* • *Recorded action points from meetings and implemented them in subsequent iterations* • *Engaged with various departments including design, sales, and finance* *Present and discuss proposals:* • *Delivered weekly presentations on app development progress* • *Presented project ideas to Board of Directors, aligning technical innovation with business objectives* • *Prepared and presented user research findings to guide app development decisions* • *Effectively communicated design choices and rationale to diverse stakeholders* • *Incorporated stakeholder feedback into app design (e.g., stylized main screen vs. photoreal design)*	Arnav has created a place for himself in our team and organization in the last 6 months. He has developed a good rapport with the team and management alike. Meticulously organized his project presentations, receptive to inputs for enhancing the app functionalities from a user perspective. The aesthetic design of the app blends with the architecture of the Mughal era sandstone. Understood the user mind-set and came up with innovative and alternate solutions.

	Demonstrate personal and social skills: • *Managed personal emotions and stress during challenging project phases* • *Demonstrated flexibility in adapting to new situations and changing project requirements* • *Maintained professional working relationships while fostering personal connections with colleagues* • *Balanced independent work with collaborative problem-solving* • *Proactively sought feedback from potential users at heritage sites* • *Resolved conflicts by proposing innovative solutions (e.g., AI recommendations vs. banner ads)* • *Created an open and comfortable working environment through interpersonal skills*	Participated in discussions with ease and interest. The team members started reaching out to him for fresh innovative ideas and support.
E. Demonstrate a personal commitment to professional standards *Comply with relevant codes of conduct* - comply with the rules of professional conduct of own institution. *Manage and apply safe systems of work* - identify and take responsibility for own obligations for health, safety and welfare issues, ensure that systems satisfy health, safety and welfare requirements. *Undertake design engineering activities in a way that contributes to sustainable development* - operate and act responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously, use imagination, creativity and innovation to provide products and services, understand and secure stakeholder involvement in sustainable development, use resources efficiently and effectively. *Carry out and record Continuing Professional Development (CPD) necessary to maintain and enhance competence in own area of practice* - undertake reviews of own development needs, plan how to meet personal and organisational objectives, carry out planned (and unplanned) CPD activities, maintain evidence of competence development, evaluate CPD outcomes against any plans made.	*Comply with relevant codes of conduct:* • *Adhered to all organisational codes of conduct throughout the placement* • *Respected cultural norms at sensitive locations like mosques during site visits* • *Maintained high ethical standards in digitising and presenting cultural information* *Manage and apply safe systems of work:* • *Took responsibility for personal health, safety, and welfare issues* • *Used only permissible equipment (smartphone) for data collection at heritage sites* • *Implemented end-to-end encryption and minimal data collection in app design to ensure user privacy* *Undertake design engineering activities contributing to sustainable development:* • *Repurposed existing unused resources to enhance productivity (e.g., using old monitors)* • *Designed app features to promote sustainable tourism and cultural preservation* • *Balanced technological advancement with respect for cultural heritage in app development* • *Proposed ideas for personalising AI and understanding market needs across the organisation* *Carry out and record Continuing Professional Development (CPD):* • *Rapidly acquired new skills in SwiftUI and Xcode through self-guided learning* • *Developed multiple practice apps to build expertise in app development* • *Continuously ideated new product concepts to add value to user experiences*	Has worked as per company norms and ethics and made himself a valued member of our team and organization. His passion and understanding of design and technology tools is clearly visible in the project delivered. The app can be enhanced multi fold and Arnav has the plan and vision to upgrade the existing module which is delivered as the 1st phase of the project.

	• *Actively participated in other meetings to gain insights into strategic decision-making* • *Identified future learning needs in areas such as business strategy and leadership*	

SECTION TO BE COMPLETED DURING THE MEETING ONLY

2. Summary of Discussions

To be completed at the meeting together. Outline below the identification of particular strengths and areas for improvement.

	Particular Strengths		***Areas for Improvement***
1.	Passion for my subject	***1.***	User manual and documentation of the project
2.	Proactive learning of aspects and continuous improvement of skills	***2.***	On ground analysis to address the gaps
3.	Made my vision a reality. Solution oriented	***3.***	Admin portal and Android version needs to be developed

3. Future Development Plan

To be completed at the meeting together. Set objectives for future development, with at least one in each targeted area, highlighting target dates or means of achieving the target if appropriate.

Competence	***Objective or Need***	***Target date or means*** *(if appropriate)*
A. Use a combination of general and specialist design engineering knowledge	Work on learning about 3D mapping and Augmented Reality implementation on smartphones to add in a 3D virtual guide.	-
B. Apply appropriate theoretical and practical methods	Do further user testing for a small focus group in the actual monument. Make process of onboarding a new monument into the app.	-
C. Provide technical and commercial leadership	Figure out how to develop an admin portal for the app. Make a commercial business plan for selling app in market.	-
D. Demonstrate effective interpersonal skills	Collaborate with other stakeholders such as other companies taking part in the Adopt a Heritage program. Present to them.	-
E. Demonstrate a personal commitment to professional standards	Make a presentation to the ASI about the app. Get their feedback and opinion about it and roll out.	Next 2 weeks

4. Approval

We confirm that this is an accurate and agreed record of our PDR discussion:

Appraiser Signature	Geetanjali nanda.	***Student Signature***	Aman Bhatia
Date	16 Sep '24.	***Date***	16.9.24

Hand a signed copy of this form to your Imperial Tutor before the final visit.