CMT305 Year in Industry (PGT)

Final Placement Report

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1. Placement Overview

1.1. *Company Overview*

IDBS is a leading provider of purpose-built software solutions to accelerate scientific research and innovation in the bio-pharmaceutical and life science sectors. With over 30 years of expertise, IDBS specialises in delivering cutting-edge technologies and unified software platforms that empower BioPharmaceutical organisations in optimising their workflows, enhancing data management, and facilitating collaboration at every stage of the scientific research journey - from data capture and analysis to reporting and sharing. These contributions are pivotal in speeding up the development of ground-breaking therapies.

A cornerstone of IDBS's product offering is the signature E-WorkBook, an advanced software platform that plays a critical role in integrating and contextualising data across the research and development continuum. This platform allows scientists to store, access, and collaborate on laboratory data within a unified system, greatly improving data integrity and usability. Building on this foundation, IDBS introduced Polar, the world's first BioPharma Lifecycle Management (BPLM) platform. Polar is a cloud-based system designed to address the challenges in process design, optimisation, scaling, and technology transfer, enhancing efficiency across biopharmaceutical development processes.

In the competitive landscape of biopharmaceutical and life science industries, IDBS holds its ground against rivals such as LabWare, PerkinElmer, and Biovia. Leveraging its pioneering BPLM platform and extensive industry expertise, IDBS has secured a significant market share and serves an impressive prestigious customer base, including Pfizer, GSK, Samsung Bioepis, Lonza, etc. As a part of Danaher, IDBS benefits from a vast network of strategic partnerships with other industry leaders like Leica, Molecular Device, Beckman Coulter, and Sciex. These collaborations enhance IDBS's ability to leverage cutting-edge science and technology, furthering its mission to improve quality of life through its contributions to biotechnology, diagnostics, and life sciences.

1.2. *Section/Department/Team Overview*

I am a member of 'Pathfinders', a feature team within the R&D Operation team at IDBS's Engineering Department. Our team focuses on developing and enhancing features that drive innovation and usability of IDBS's software solutions, specifically targeting improvements in

the bio-pharmaceutical and life sciences sectors. As part of the R&D Operation team, Pathfinders are pivotal in the strategic development of core products, particularly focusing on Inventory and Request - tools in E-WorkBook and Polar that are essential for managing and tracking laboratory resources and workflow. We are responsible for pioneering new features and refining existing ones to meet the evolving needs of our customers and to stay ahead of market trends.

Our primary activities encompass software feature development, user experience enhancement, and rapid resolution of customer issues. We employ agile methodologies to prototype, test and deploy developments swiftly, ensuring that new features meet the evolving demands of our customers and keep pace with market trends. Collaboration is central to our operations. We work closely with the Product and Customer Support departments to align our development goals with market demand and client feedback. Our 'show and tell' sessions with these departments ensure that our innovations are practical and meet user requirements, thereby enhancing customer satisfaction and loyalty.

The contributions of the Pathfinder have been instrumental in several key product updates and enhancements that have improved data and workflow management for our users. Notably, in collaboration with another feature team WOMMBLs, we successfully launched a new property management feature in Inventory, which the teams have prepared for over a year. This update, the biggest change in Inventory's 9 years history, has streamlined the tracking of laboratory resources, improved data accuracy, and enhanced operational efficiency. This initiative has had a profound impact on accelerating scientific research and discovery among our client base, demonstrating our team's critical role in advancing IDBS's mission. I was glad to be part of this initiative and contribute to its success.

1.3. *Placement Summary*

Being a software tester within the Pathfinders team, I play a crucial role in ensuring the quality and reliability of core software products, specifically focusing on Inventory and Requests modules. My responsibilities include designing and executing a variety of tests - exploratory, regression, and performance tests - to ensure that new features and updates function as intended and meet both functional and non-functional requirements without disrupting the existing system. Following up on the completion of test activities, I document and track testing outcomes by using Jira extensively, providing detailed feedback to the development team. In

cases where defects are identified, I work closely with the developers to troubleshoot and resolve issues prior to product releases. This close partnership is vital for maintaining the high standards of software quality IDBS is known for.

With the variety of responsibilities that I have in the software tester role, it is important to plan my time wisely and prioritise daily tasks to ensure an efficient and effective work approach. My day-to-day activities are heavily centred around effective communication and agile practices. Daily stand-up meetings keep the team aligned on progress and raise any obstacles, while swarming sessions with developers help me understand feature implementations and refine test strategies early in the development cycle. Post-testing, I conduct acceptance meetings with the product owner to ensure the delivered work aligns with customer expectations and to integrate any necessary feedback.

This role has honed my abilities in time management and prioritisation, essential skills for managing the complexities of large-scale software development projects. By engaging in continuous improvement cycles and agile methodologies, I contribute effectively to reducing risks and enhancing product functionality, preparing me well for a future career in software engineering.

2. Work Experiences

2.1. Work Experiences - First Half of the Placement

2.1.1. Work Impact

During the first half of the placement period, I was still exploring different approaches and gaining experience in the field of software testing. Fortunately, my team at IDBS was very supportive and provided me with various opportunities and autonomy to contribute to the work. A noteworthy example of a task I worked on during this time was executing performance testing for a critical new feature being developed. By conducting thorough performance testing on the newly developed API, I found out that although the time for executing the API was within our expectations, the aftermath of the API action (updating audit logs) significantly impacted the overall system performance, which had never been thought of during the implementation process. Following the performance testing, I documented and visualised the results of the test in the ticket, highlighting the limit of the current performance to foster further discussion in the team to consider potential optimisations and improvements.

This finding led to further analysis and collaboration within our team to optimise the auditing process and improve overall system performance. As a result, developers and the product owner in our team worked together to come up with an optimised plan to address the performance issue, which led to a new epic being created and prioritised for the next development sprint. Reflecting on this task, I recognise the significant learning curve I navigated and the vital support of my team. This experience not only highlighted the importance of performance testing in ensuring the overall system efficiency and stability but also demonstrated the essence of testing as an integral part of the development process, which is to test the boundaries of software and identify potential vulnerabilities or limitations that may have been overlooked.

This formative experience has instilled in me a thorough appreciation for performance testing's role in development. Understanding the ripple effects of new features on existing systems has prepared me to anticipate and mitigate similar issues in future projects. The ability to proactively contribute to system optimisations will be invaluable in my ongoing studies and professional endeavours, equipping me with a forward-thinking approach to problem-solving in test-driven environments.

2.1.2. Work Reflection

When I embarked on my journey as a software tester at IDBS, the initial challenge I encountered was transitioning from a straightforward mindset of merely ensuring functionalities to considering edge cases and potential vulnerabilities in the software. Not only because of the limited knowledge I had towards the product and the system as a whole, which led to the lack of sensitivity to potential issues and affected areas of the newly implemented features but also because my academic focus had been more on the development aspect and neglected the importance of thorough testing and quality assurance practices.

Identifying my limitations, I actively sought opportunities to learn and improve my testing skills and understanding of the product. For instance, I actively participated in the team's backlog review meetings where we discussed the scope of work and identified potential implementation and testing scenarios, which helped me gain a deeper understanding of the functionality and be able to consider wider scenarios and potential edge cases when designing test approaches and performing testing. Additionally, I sought feedback from more experienced

testers and developers, both in my team and in other teams, to understand their perspectives and learn from their experiences. Through this reflective practice, I recognised the need to align more closely with the test-driven development principle.

The evolution of my skills and the broadening of my understanding have fundamentally altered my approach to testing. Looking forward, I would place even greater emphasis on continuous learning and collaboration from the project's inception, ensuring a more proactive stance in QA processes. The lesson here is clear: a comprehensive perspective is not just beneficial but essential in test-driven development. Should I encounter similar circumstances in the future, I will invest more time upfront in understanding the system holistically and seek out varied feedback earlier in the process, all to underscore the role of quality assurance as a cornerstone of software development.

2.1.3. Supervisor Feedback

Following the company's practice, I frequently receive feedback from my line manager through our bi-weekly 1-2-1 meetings. During these meetings, my supervisor provides constructive feedback on my performance and suggests areas for improvement. As I navigated through my initial placement at IDBS, my supervisor observed my approach to the workload and my eagerness to deliver at the level of experienced professionals. While appreciating my diligence, the feedback I received was unexpected yet profound; my supervisor pointed out that my focus on delivering at the level of experienced professionals sometimes led me to overlook certain aspects of testing, such as considering edge cases. My supervisor advised me to moderate the pressure I was imposing on myself and not put too much pressure on myself to deliver at the same level as experienced professionals. He reminded me that as a student, my primary role was to learn and develop, and that I wasn't expected to shoulder the same responsibilities as my full-time colleagues. I should utilise the time in this placement period to learn from different experiences and perspectives, and to focus on building a strong foundation of testing skills.

Reflecting on this advice, I realised I had been setting exceedingly high expectations for myself, perhaps to the detriment of my learning experience. I was trying to prove my capabilities, but in doing so, I may have risked overlooking the invaluable opportunity to ask questions and absorb knowledge from those around me. I also realised I sometimes put too much effort into trying to solve the problem I encountered on my own and ended up wasting time researching but not coming up with the solution. I should seek an opinion from my colleagues and most of

the time they could provide me with an efficient solution promptly. The feedback was a pivotal moment, prompting me to reassess my approach to work and acknowledge the importance of seeking help and guidance when needed.

I took this feedback to heart, adjusting my mindset towards a more balanced, learning-focused work ethic. I began to actively seek clarity and guidance when needed, shedding any hesitance to ask questions. This not only improved my understanding of complex tasks but also fostered a healthier work environment for myself. By embracing this change, I have become more receptive to the learning opportunities presented during my placement, ensuring a richer and more beneficial experience. I now recognise the importance of pacing oneself and integrating learning with doing, a balance I intend to maintain in my future professional endeavours.

2.2. Work Experiences - Second Half of the Placement

2.2.1. *Work Impact*

Across my placement, I have been involved in a diverse range of testing activities and become more confident in my ability to contribute to the team using my professional knowledge and experience. One of the significant projects I worked on in the latter half of my placement was the launch of a new property management feature within the Inventory module, which our team has been working on over the past year. My role involved rigorous regression testing of the entire module to integrate new functionalities while maintaining the integrity of the existing system through a feature toggle. As we prepared for release, the removal of this toggle revealed the need for extensive updates to numerous workflows, presenting a challenge in updating and verifying an expansive suite of test cases.

This project taught me invaluable lessons in project management, particularly the importance of meticulous planning and proactive troubleshooting. Undertaking the responsibility to address broken regression tests, I not only honed my technical skills but also enhanced my ability to collaborate effectively under pressure. Our approach—prioritising crucial tests and working closely with developers to address discrepancies—was instrumental in navigating through the challenges posed by such a vast codebase. Despite the time constraints and the sheer volume of tests, our team's commitment to manual testing and critical issue identification ensured a smooth transition to the new system.

The insights gained from this experience have profoundly shaped my approach to software testing and project management. Understanding the critical balance between automated and manual testing, and recognising the strategic timing for shifting focus, are skills that will greatly benefit my future projects and career development. The successful launch not only underscored our team's resilience but also demonstrated the tangible impact of structured project management on delivering high-quality software solutions. As I continue my career, the ability to lead and innovate in complex project settings will be invaluable, especially in fast-paced, technology-driven environments.

2.2.2. Work Reflection

Continuing on the critical task I undertook during the second half of my placement, the experience of managing the regression testing for the Inventory module overhaul although has been instrumental in developing my professional skills and resulted well, the process was not without its challenges. In an effort to address all issues before the launch, I dedicated an entire week to this task, often working overtime each day. This approach, while well-intentioned, turned out to be less effective and more stressful than anticipated. Despite the hard work, the sheer volume of tests and the complexity of the updates required made it impossible to complete the task within the week. This experience underscored the impracticality of attempting to fix every test without setting clear priorities and time limits, which led to significant pressure and a rushed effort as the release date approached.

Reflecting on this experience, I recognise the importance of communication and collaboration within the team, especially when facing large and complex challenges. As an intern, I felt a strong responsibility to resolve issues independently, but this approach may have hindered more efficient solutions that could have been achieved with experienced input. This experience allowed me to understand my limitations and the balance between teamwork and individual contribution, I learned that discussing challenges openly with the team and seeking advice early on are crucial steps in managing large-scale tasks effectively. This would not only have alleviated the pressure but also enhanced the strategic handling of the task by prioritising critical test cases and distributing the workload more effectively among team members.

In future similar situations, I would advocate for setting realistic deadlines and clear stopping points for handling large-scale projects. Establishing these boundaries early in the process can

prevent inefficient use of time and reduce the stress associated with looming deadlines. Moreover, I plan to engage more proactively with more experienced colleagues from the outset, fostering an environment where collective problem-solving can lead to more efficient and effective outcomes. This approach will not only improve my own work efficiency but also contribute to a more collaborative team dynamic, ensuring high-quality results in a supportive, balanced work environment.

2.2.3. Supervisor Feedback

During a particularly intense release period, my line manager took notice of my dedication and hard work, commending my effort to excel in a technical field coming from a non-technical background. However, he also expressed concern about my work-life balance and the sustainability of my current work pace. He emphasised the importance of not only contributing to the team's success but also focusing on personal development, especially considering my internship status and future career aspirations in software development. This feedback was both a recognition of my hard work and a reminder of the broader perspective needed to truly benefit from my placement year.

Taking this feedback to heart, I began to reassess how I allocated my time between project tasks and personal growth opportunities. Recognising the truth in my manager's advice, I consciously balanced my responsibilities with learning initiatives, actively seeking resources and guidance for my development as a software developer. This shift involved setting specific times each week dedicated to learning new programming languages and development practices, which were essential skills for my desired career path. We utilised the O'Reilly Learning platform, which is provided by our company for free to employees, I signed up for a five-week Python Fundamental course actively applied the concepts through tutorials and practice. Furthermore, I engaged with software developers during swarm sessions, who were instrumental in deepening my understanding of system design by showing me real-life examples of how they design and implement new features during our sprint work. This approach facilitated a more comprehensive learning experience, enhancing both my skills and integration within the team.

This change in approach not only improved my well-being by reducing the overwhelming pressure I had placed on myself but also enriched my professional skills more effectively than

before. By integrating learning into my regular workflow, I managed to enhance my contributions to the team with updated knowledge and fresh insights, thereby aligning my daily work with long-term career goals. The support from my line manager was crucial in this transition, providing both the encouragement and the resources needed to grow. I've also learned the importance of vocalising my goals, which has enabled colleagues with relevant experience to offer guidance and support. Moving forward, I intend to maintain this balanced approach, ensuring that my efforts in team projects enhance my personal development, preparing me for a seamless transition into a software development role post-internship.

3. Development of Core Competencies (soft skills)

3.1. *First Half of the Placement*

- **Use of tools standards, methods, applications - Experience in**

During the first half of my placement year, I have learnt to utilise different tools to help me with my daily tasks and make my work more efficient. In terms of task management, we have Jira to organise stories and provide clear instructions on different tickets. It makes our work allocation clearer and easy to follow each other's working processes. For testing tasks, we have Robot framework and RIDE for automation test scripts used in regression testing; and we have NeoLoad for performance tests, which is an easy-learning browser-based testing tool integrated with the CI/CD process.

- **Communication Skills - Experience in**

In terms of communication skills, working in a highly agile team has strengthened my communication between team members and across the teams. I effectively communicated with both technical and non-technical team members to ensure clarity in our testing processes. During my placement year, I had the chance to take the lead in the daily stand-up meeting of our team, and I kept the team updated on testing progress and any potential blockers. Additionally, working in a test-driven development environment, frequent interactions with developers helped me ensure alignment on requirements and timely resolution of issues, while I also improved my ability to explain complex technical issues to non-technical stakeholders like product owners.

- **Security, Privacy & Ethics - Knowledge of**

In terms of security, privacy and ethics, IDBS puts a strong emphasis on protecting customers' data and ensuring a high standard of integrity. At IDBS, I received comprehensive training on information security policies and procedures, emphasising the importance of data protection, confidentiality, and compliance with relevant regulations such as the General Data Protection Regulation (GDPR). My daily responsibilities included following the quality management strategy checklist. This procedure ensures that potential risks are handled and documented appropriately to consistently maintain a high-quality product. These practices have deepened my awareness of the integral role that security and privacy play in the realm of software testing and the broader industry landscape.

- **Time Management Skills & Approach to Work - Knowledge of**

With the flexibility to arrange my priorities for work and manage my own workload, I have started to develop my time management skills during my placement at IDBS. In corporate with the scrum methodology, I learned to segment my workload into manageable tasks and align priorities with sprint goals. Additionally, using Jira as a project management tool helped me monitor tasks and prioritise them based on risk, importance, and urgency. This visualising method enhanced our team’s efficiency and ensured a systematic approach to project completion.

- **Knowledge - Knowledge of**

My placement has expanded my knowledge of industry-standard QA practices and their importance within the software development life cycle. I gained a deeper understanding of various testing techniques such as unit testing, integration testing and regression testing, and able to choose from different approaches based on feature complexity and potential risks. For instance, for stories classified as medium to high risk, I developed new scripted tests and integrated them into our existing regression test suite to ensure ongoing system monitoring and integrity. Utilising this knowledge, I contributed effectively to our testing strategy by designing comprehensive test approaches and test cases. This has strengthened my decision-making ability, providing guidance on when and how to extend testing based on evolving needs.

- **Learning & Professional Development - Experience in**

Starting without prior experience in software testing, I actively sought out relevant training materials on YouTube and online tutorials on O’Reilly Learning platform to understand testing tools like Robot Framework. I also actively participated in knowledge-sharing sessions and

sought feedback from experienced colleagues to refine my testing strategies. My proactive engagement in learning not only expanded my technical skills but also enhanced my understanding of industry best practices. This continuous pursuit of knowledge has kept me updated with the latest industry developments, positioning me as a knowledgeable and resourceful team member, ready to tackle complex challenges and contribute effectively to our projects.

- **Autonomy - Experience in**

At IDBS, I was given a high level of autonomy as a software tester, taking personal responsibility for complex and high-risk tasks. For instance, I was given the opportunity to handle the update of regression and performance tests regarding a major update related to the third-party cookies policy of Google that affected communication with external services, despite lacking prior experience with the performance testing tool Neoload. This allowed me to gain new skills and showcased my adaptability, leading to a successful release. I planned and executed my own test strategies, prioritised my workload, and made independent decisions. While I was given to freedom to take ownership of tasks, I received regular feedback from my line manager and team to ensure I remained on track, balancing independence and mentorship as a placement student.

- **Influence - Experience in**

Although my work may not directly influence customer decisions, my role ensures we deliver high-quality software to enhance user experience and satisfaction. Through consistent communication with the feature team and the product owner, I influence our technical work via testing and reporting. A notable instance occurred when I once identified a performance issue with a newly implemented API that might cause user confusion and data duplication due to the delayed UI updates. By documenting the performance testing result and informing stakeholders, the team re-designed the workflow and added an epic for API performance improvements. This experience, despite my inexperience as an intern, shaped the team's strategies and work, giving me confidence to voice concerns and suggestions in the future, knowing my contributions are valued.

- **Complexity - Knowledge of**

The complexity of my tasks has encompassed a range of technical activities, and I have developed an understanding of how to investigate and resolve complex issues. Given the

company's history and software scope, it has been challenging to fully understand the entire system, especially when analysing failed automated tests to pinpoint root causes. However, through collaboration and leveraging resources such as IDBS Learning Center and Confluence pages, I managed to narrow down the investigation areas and identify improvement opportunities. This process honed my problem-solving skills and taught me to balance between independent research and seeking guidance, strengthening my overall approach to tackling complex problems.

3.2. *Second Half of the Placement*

- **Use of tools standards, methods, applications – Competent in**

During the latter half of my placement, I significantly deepened my understanding of IDBS's testing practices, allowing me to select suitable testing approaches and tools in line with our risk-based testing framework. I demonstrated my competence in leveraging tools, including Robot Framework, Playwright and Neoload. In particular, I mastered Robot Framework through projects such as updating the Inventory 24.3.0 regression test suite, which required a comprehensive understanding of the tool's capabilities and the test scope. Additionally, I managed the operational qualification (OQ) tests for the MongoDB upgrade and assisted the team's migration from Python2 to Python3. These tasks showcased my ability to handle complex technical challenges and implement testing process improvements to enhance efficiency and ensure compliance with the latest standards.

- **Communication Skills – Experience in**

I have noticed substantial improvement in my communication skills, particularly in conveying complex testing information clearly to both technical and non-technical audiences. During testing, I engaged in swarming sessions with developers to understand implementation details and conducted preliminary tests to identify potential defects early through frequent communication. Moreover, mentoring new joiners also honed my communication skills through structuring information accessibility and ensuring effective knowledge transfer. While I have become more proficient, I recognise the need to actively participate in meetings and speak up more frequently to express my thoughts and ideas. This will boost my immediate response capabilities and allow me to contribute more dynamically to discussions.

- **Security Privacy & Ethics - Experience in**

During my placement at IDBS, I deepened my understanding of the company's security procedures and policies, particularly through rigorous risk assessments conducted before processing each ticket. These assessments not only scrutinised technical aspects but also examined potential security and privacy implications, ensuring that new changes did not introduce system vulnerabilities or compromise customer data privacy. By employing a risk-based testing approach and rigorously testing security features such as authentication, authorisation, and input validation, I significantly enhanced my ability to integrate advanced security measures into our testing processes, strengthening my commitment to high security and privacy standards in software development.

- **Time Management Skills & Approach to Work - Experience in**

As I got familiar with the workflow and pace of projects, I gradually improved my time management skills during the placement. I learned to prioritise tasks based on their urgency and importance, and leveraged communication tools like Slack and Microsoft Teams to stay on top of deadlines and coordinate effectively with the team. Through proactive communication with other testers in our team, we spread the workload evenly and supported each other timely to ensure commitments were met. For example, when I submitted a pull request for updating the regression test suite, I posted on our testing Slack channel to request peer review, which not only expedited the merging process but also minimised delays, thereby enhancing the overall ticket cycle time and contributing to the team’s ability to deliver on schedule.

- **Knowledge - Experience in**

My role as a software tester deepened my knowledge of quality assurance and the software development life cycle. During the second half of the replacement, I was exposed to more advanced software testing techniques via involving in different projects such as MongoDB upgrade and Operational Qualification testing (OQ test). Additionally, I began exploring Playwright, a modern framework gaining traction in the automation testing field. By integrating Playwright into our release testing processes, I assessed its potential to enhance the efficiency of our automation test suite, thereby contributing to our team's ongoing efforts to adopt cutting-edge technologies that improve testing outcomes and software quality.

- **Learning & Professional Development – Experience in**

As I gained more experience, I enhanced my expertise in software testing and common practices, reaching a level of proficiency where I could contribute to the development of others

within the team. Building on the foundation I established in earlier months, I began to share my acquired knowledge and insights with new joiners, guiding them through the complexities of our testing processes and pointing out the right direction if they faced any blockers. I often hop on one-on-one calls to address their queries and provide hands-on support, I also create Confluence pages to record some common errors I have encountered and the steps I took to resolve them. By facilitating these learning opportunities, I not only reinforced my own understanding but also played a pivotal role in nurturing a culture of continuous learning and mutual support within our team.

- **Autonomy - Competent in**

Throughout my placement, I worked under general direction but with substantial autonomy, especially taking personal responsibility for the automation analysis. With the trust given by the team, I was able to independently plan, execute, and report on testing activities. A notable instance was during the Inventory release testing, when I identified and took ownership of addressing significant changes needed in the automation test suite. I created and managed a task within our sprint to meticulously document the work and track progress. Recognising the constraints of our release timeline, and understanding that not all changes could be completed on time, I proactively communicated the challenges to the team. I proposed a mitigation plan and a revised timeline that included transitioning to manual testing to ensure critical issues were addressed. This strategic approach not only demonstrated my ability to manage complex tasks but also my capacity to influence decision-making and contribute effectively to achieving our delivery objectives.

- **Influence - Experience in**

In my quality assurance role within the feature team, I significantly influenced both internal and external stakeholders by ensuring our software consistently met required standards and specifications. During the second half of my placement, I was introduced to Operational Qualification (OQ) testing. I took on the responsibility to review and revise our existing OQ test suite during the MongoDB upgrade project. As this customer-facing automation test was unfamiliar to our team, I actively communicated with product team member to better understand and run the OQ tests. I also conducted OQ tests for all patches used by our customers prior to the actual release. This proactive approach not only strengthened customer trust in our product releases but also established OQ testing as a standard component of our release protocol, enhancing the integrity of future Inventory releases.

- **Complexity - Competent in**

The scope and complexity of testing activities gradually increased throughout my placement, enhancing my understanding of the software development lifecycle and diverse testing challenges. I managed complex testing activities across modules like Inventory, Requests, and Launchpad, using my analytical skills to deconstruct software systems into testable components and develop precise test cases. On the automation front, an exmaple was the challenge arose during the release of a new property management feature, involving data template updates, understanding AWS test environments setup, and extensive test analyses. These experiences sharpened my technical skills and significantly advanced my professional growth as a software tester.

4. Development of SFIA Professional Skills (hard skills) – TEST

4.1. *First Half of the Placement*

During the first half of placement, I focused on developing my competencies in software testing, aligning with the SFIA 'TEST' skill at Level 3 and aiming to achieve an overall Level 4 in the second half year. Here is how I have achieved each criterion of the level:

> *Designs test cases and test scripts under own direction, mapping back to pre-determined criteria, recording and reporting test outcomes.*

As a quality assurance engineer, understanding the functional and non-functional criteria of software is a critical step before designing test cases and scripts. For instance, in testing the new API feature, I designed a comprehensive test approach that included exploratory testing (manual testing), scripted testing, regression testing and performance testing, in which the scope of testing was defined by the risk assessment we conducted before the implementation stage. Each test case was mapped to the pre-established criteria, which we call the “condition of satisfaction”, to ensure the new API feature met the ticket’s requirements for data integrity, security, performance, and user experience.

During this testing process, I meticulously documented all outcomes and anomalies directly in the relevant Jira ticket for improved traceability and transparency. This documentation was crucial when we identified a performance loophole during the exploratory testing phase, as the

issue was clearly recorded in Jira and easily accessible to the team. This facilitated quick and effective remediation.

> *Participates in requirement, design and specification reviews, and uses this information to design test plans and test conditions.*

Before designing test cases and steps for each story or ticket, it is important to fully grasp the functional and non-functional requirements of the software. This ensures our testing approach aligns with customer needs and minimises the likelihood of missing edge cases. I actively participate in our weekly backlog review meetings and the bi-weekly sprint planning sessions, where we discuss the requirements of stories, the scope of implementation, and the testability of new features with the product owner. Additionally, I keep frequent communication with developers, and for more complex tickets, I participate in initial swarm testing to better understand the software's architecture and identify potential implementation issues. This collaboration prevents defects from slipping through and reduces the chances of returning stories due to defects found during later testing stages.

The insights gained from these discussions allow me to craft comprehensive test plans that address both functional and non-functional specifications. This proactive involvement allowed me to anticipate potential issues and design test conditions that are both thorough and relevant.

> *Applies agreed standards to specify and perform manual and automated testing. Automates testing tasks and builds test coverage through existing or new infrastructure.*

With the company’s quality management strategy, we follow specific guidelines and standards to determine the appropriate testing procedures, guided by the ‘Definition of Done’ checklist. This ensures our testing activities align with the company policy and best practices. Adhering to these standards, which are directly tied to risk assessments we conducted before test planning, I specified and executed both manual and automated tests.

For instance, I contributed to creating a new suite of automated test scripts for a newly created feature page using Robot Framework. These automated tests cover from component verification to end-to-end user workflow checks, enhancing test consistency and reliability. By

automating these tasks, we reduced testing time significantly while improving test execution precision and catching potential issues in existing systems, particularly during the release phase.

Analyses and reports on test activities, results, issues and risks.

Throughout the testing process, I conducted detailed analyses of test activities, especially for regression testing result reports, and compiled comprehensive reports that outlined all test results, highlighted critical issues and assessed potential risks. Defects are raised accordingly if required. These reports are shared with the feature team, product owner, and stakeholders to ensure transparency and facilitate effective decision-making.

In addition to assessing the system's potential risks and issues, the analysis process also helps in identifying areas of refining in the test script itself. By utilising TARA, the company's automation testing report system, we effectively analysed the number of failed tests and used screenshots to understand their causes and areas of failure. This often revealed the need to update test scripts to accommodate recent changes in the software, enabling us to address issues promptly and prevent further regressions.

4.2. Second half of the placement

As I gained more experience and confidence in working as a software tester approaching the end of my placement year, I continued to develop my competencies in software testing, aligning with the SFIA 'TEST' skill at Level 4 and some Level 5 criteria. Here is how I have achieved each criterion of the level:

Selects appropriate testing approach, including manual and automated testing.

As I gained a deeper understanding of the whole automation test framework through my placement experience, I was able to leverage my knowledge to enhance the testing process and build upon the existing test suites to improve coverage and efficiency. When designing test approaches for different stories, I carefully considered the nature of the requirements, the complexity of the components involved, and the potential risks associated with the changes.

For less complex tasks such as straightforward user interface (UI) changes or simple bug fixes, I often opted for manual exploratory testing, which allowed me to quickly validate the

functionality and user experience without the overhead of writing new automated tests. Conversely, for more complex features or components with a higher risk profile, I advocated for a combination of manual and automated testing. Automated tests were particularly valuable in ensuring the reliability and consistency of the application's core functionality, as they could be easily re-run during subsequent development iterations. Combining my knowledge of the automation test suites, I could effectively analyse and determine the necessity for new automated scripts to address new requirements or update and retire existing ones as needed. This approach ensured that our testing practices were both robust and adaptable, aligning with the evolving needs of the project.

> *Provides authoritative advice and guidance on any aspect of test planning and execution. Adopts and adapts appropriate testing methods, automated tools and techniques to solve problems in tools and testing approaches.*

Throughout my placement, I have developed the ability to offer advice and guidance on creating and executing comprehensive test plans. Drawing upon a solid foundation in testing methodologies, I am able to adopt and adapt various testing methods and techniques with Robot Framework to effectively address and solve challenges within our testing processes. My responsibilities include not only planning and executing detailed test plans but also critically evaluating and providing constructive feedback on test approaches and pull requests devised by other testers. This collaborative approach enhances our team's overall testing strategies and ensures adherence to best practices.

Furthermore, my growing expertise has allowed me to assist colleagues in troubleshooting issues encountered during test execution or system setups. Whether it's resolving problems with automated test scripts or refining system configurations, my ability to guide peers through complex testing scenarios is a testament to my growing expertise. This capability not only improves our project outcomes but also strengthens the reliability and efficiency of our testing environment, making it more robust against potential faults.

> *Measures and monitors applications of standards for testing. Assesses risks and takes preventative action.*

My responsibilities as a software tester also included the continuous monitoring and measurement of our testing activities against defined quality standards and industry best practices. With the integration of testing tools and continuous integration (CI) pipelines, our team is consistently informed of the outcomes of daily automated test runs via Slack channels and monitor the system for any regressions or performance failures. I have honed my skills in interpreting these results to swiftly identify and diagnose issues. A specific example includes addressing and resolving performance test failures in Neoload, where I collaborated closely with developers to implement timely solutions.

Additionally, for changes or new features made by our team, we will conduct detailed risk assessments to identify potential areas of concern and plan appropriate mitigation strategies. We also inform the related parties to avoid any false alerts or surprises when the changes come in. This proactive approach to risk management has allowed us to stay ahead of potential problems and ensure the stability and reliability of our application.

> *Analyses and reports on test activities, results, issues and risks, including the work of others.*

Analysing and documenting test result are key responsibilities as a software tester. Throughout my placement, I have developed robust reporting and documentation practices to ensure transparent communication and effective decision-making within our team. I document outcome in Jira tickets, including support evidence such as screenshots, logs and API responses. For complex scenarios, I also created Confluence page to outline the steps and outcomes. These comprehensive reports keeps project stakeholders informed and provide critical insights that enable the development team to identify issues and determine effective responses, while serving as references for future work.

A worth mentioning case could be for performance enhancement ticket, it is crucial to record system performance before and after implementation to understand the impact. On several occasions, the data I created was used and referenced in broader forums, such as engineering town halls and show and tell sessions, providing compelling evidence of the improvements achieved through our team's efforts. This practice of thorough documentation and reporting has underscored the value of my work, ensuring that all team members have access to necessary

data to understand the full impact of changes, fostering a culture of accountability and continuous improvement.

5. Relating Theory to Practice

5.1. *First Half of the Placement*

During my CMT313 Software Engineering module, we explored various project management methodologies, including Waterfall, Agile (with both Scrum and Kanban), and others. While the Waterfall method provided a linear, sequential approach, Agile methodologies like Scrum and Kanban emphasised flexibility and iterative progress. In a group project, we opted for Kanban as our project management method, which allowed us to visualise our work, manage flow, and make process adjustments in real-time based on current workloads. This contrasted with Scrum's structured sprint cycles and predefined roles, offering a different perspective on task management and team collaboration.

In my placement at IDBS, I was immersed in a Scrum development environment, starkly different from my academic experience with Kanban. During each bi-weekly sprint, the daily stand-ups, sprint planning, and retrospective meetings of Scrum were a shift from Kanban's continuous flow and less structured format. Practically applying Scrum, I engaged in a more regimented, time-boxed approach, where each sprint had a set of deliverables and goals, fostering a focused and goal-oriented work environment. This practice allows my team to stay aligned and get frequent feedback from stakeholders, ensuring rapid delivery of business value.

Reflecting on both methodologies, I observed that while Kanban provided greater flexibility and a continuous delivery model, Scrum facilitated a more disciplined structure that can be particularly beneficial in managing complex projects with defined phases and deadlines. The daily Scrum meetings ensured consistent communication and immediate troubleshooting, which were less formalised under Kanban during my academic project. The experience underscored the adaptability of Agile principles but also highlighted that the choice between Scrum and Kanban should be driven by the project's nature and team dynamics. Personally, I found the Scrum approach to be more aligned with my working approach, as it provided clear goals, regular feedback, and a structured framework for collaboration. The practical application of Scrum during my placement not only enhanced my understanding of its benefits and

challenges but also taught me the importance of selecting the right approach based on specific project requirements and team environments.

5.2. *Second Half of the Placement*

During my CMT313 Software Engineering module, I explored a variety of testing theories and concepts that are fundamental to quality assurance in software development. This included understanding the distinctions and applications of functional and non-functional requirements, as well as different testing strategies such as black-box, white-box, and grey-box testing. Each of these concepts was discussed in terms of their theoretical relevance and potential impact on ensuring software reliability and performance. These theories provided a structured framework for thinking about how various aspects of software testing could be approached systematically to cover all necessary facets of a software application.

Throughout the whole placement year, I had the opportunity to apply these theoretical concepts in a real-world setting, particularly in the context of developing and testing a new property management feature within the Inventory module. For example, functional requirements guided the creation of specific test cases designed to verify each function of the new feature as specified by the requirements document. Non-functional requirements, such as usability and performance, were assessed through grey-box testing, where I had some insight into the internal workings of the application but focused primarily on output and user experience, this can be done by exploratory testing. This hands-on application of both black-box and grey-box testing techniques allowed me to see the direct impact of these strategies on identifying and resolving potential issues.

This practical experience reinforced my understanding of the theoretical aspects of software testing and enhanced my ability to choose appropriate testing approaches based on project context and requirements. Moreover, being able to explain these approaches boosted my confidence and helped establish my credibility within the team. Looking forward, I can now appreciate the importance of integrating theory with practice in my ongoing professional development, which will benefit me as I continue to encounter complex testing scenarios and strive to implement effective strategies to ensure software quality and user satisfaction in future projects. This also strengthens my foundation for my aspiring career as a software developer, where I have the awareness of software requirements to implement new features cautiously and minimise defects.

6. On-going Professional Development

My career aspiration is to transition from a quality assurance engineer to a software developer. Working as a software tester has significantly contributed to this goal by providing a comprehensive understanding of the software development life cycle (SDLC), especially through the test-driven development (TDD) practice. This role has deepened my appreciation of the importance of testing in delivering high-quality code and strengthened my ability to design testable and robust software solutions, skills that are not only crucial for any developer but will also be instrumental in my upcoming dissertation project and future career endeavours.

In terms of Core Competency, the communication skills and time management skills I gained during my IDBS placement will benefit my upcoming dissertation project, which emphasises collaboration and meeting deadlines under time constraints. Through working in a scrum environment, I honed my time management skills by regularly participating in sprint planning and scope discussions, prioritising work to reach a balance of different development aspects range from front-end, back-end, technical task to testing work. These skills will directly transfer to my dissertation project's 12-week timeline, where I must complete extensive tasks ranging from research to implementation. Moreover, my improved ability to communicate effectively has been crucial in the scrum environment at IDBS. I have learned to articulate clear agendas, pose relevant questions, and solicit constructive feedback through the 1-2-1 meetings with my workplace manager, which will be vital in managing communications with my dissertation supervisor, and ensure that I stay on track with my research and make progress promptly.

Looking forward, the experience I have cultivated as a software tester will be invaluable in of software development career. The SFIA Profession Skills in testing have equipped me with the necessary skills to excel in the field and contribute to the development of high-quality software products. For instance, my expertise in test design and execution helped me develop an all-rounded mindset as an aspiring software developer, to consider the potential risks and defects when implementing new features or making changes to existing software architecture, and consider taking prevention measures when needed. Additionally, my experience in agile development methodologies, such as working in sprints and participating in daily stand-ups, has provided me with a solid foundation for agile development methodologies and collaboration, which are highly sought after in the tech industry.

7. Confirmation and Approval of Work-Based Supervisor

On behalf of IDBS, I Kemal Yimaz confirm that to the best of my knowledge, the information in this report is accurate. I also confirm that this report does not contain any confidential information of the kind that should not be seen by employees of Cardiff University or any other UK-based university.