Internship Report (Jun 16- Sep 17, 2021)

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1. Abstract

This document serves to report my experience at my technical summer internship at BP Logix, Inc. under the mentorship of Gary Brown, VP of Engineering and the rest of the engineering team. I served the role of Software Development intern starting June 16th, 2021 till the date of submission of this report and will further work at BP Logix till September 17th, 2021.

2. Introduction

A technical internship from my past experience is a great opportunity to put to practice all the theoretical knowledge one learns in an academic setting to practical use. Even though we conduct research and build projects in school, there is a strong real-time perspective to gain in a corporate setting in an interactive environment as opposed to the isolated workspace one might learn in at school. An internship gives one more exposure to performance costs and risks, business profits and marketability of ideas, etc. In my opinion, this draws attention to the need for stronger industry-university collaborations. This is because all academic research is targeted towards developing novel methods to promote discoveries of new concepts and inventions whilst industrial research focuses on profit maximising, distributability based motives.

As a computer science student, I find it equally interesting to submerge myself periodically in both perspectives to gain well-rounded insight into core research as well as continuous application development and distribution and believe that both entities need each other to keep up with the growth and needs of society and financial markets.

This internship at BP Logix provided for me an in depth understanding on the workings of a company, their product which is a low-code business process management platform, the domain requirements of their customers which were mainly health and education during the term of my internship and how research is targeted towards growth and expansion with regular insights into marketing, implementation and product management.

3. Company background

BP Logix is a SaaS (software as a service), business process management company. Their product- Process Director is a low-code business process automation platform to build business applications that automate and improve an organisation's most critical management/business processes.

Within the industry of Business Process management software, BP Logix is a company that serves numerous domains, especially education and healthcare. Their product is robust, AI enabled and secure. They are HIPAA compliant and also have SOC-2 Type 2 as

well as SOC-3 compliance certifications. BP Logix since 2008 have come to become industry leaders, with multiple awards like Intellyx Digital Innovator Award - 2021, KMWorld 100 Companies That Matter in Knowledge Management, Bronze Winner Best in Biz Awards and KMWorld Reality Award Finalist.
As a company in my experience, I would say that BP Logix highly promotes cross team communication and inputs in a well planned, collaborative environment. As an intern I was given numerous opportunities to gain exposure especially in engineering but also significantly in other teams like implementation and product management based on my interests. Both my supervisor and the rest of the team actively encouraged questions and recommended specific activities and tasks to take on so I could build and improve on specifically planned skills.

4. Role description

a. Just to note, some specific tasks that were part of my duties were:
   - Go through the Processor Director training.
   - Create Form and Timeline based applications using Processor Director.
   - Take on small bug tickets.
   - Perform DevOps functions including build, installation and testing.
   - Run full test plan and clearly document findings on Confluence which is the documentation tool attached to Jira, which is Atlassian's scrum board web application.
   - Research new tools and technologies and present findings.
   - Participate and contribute in Engineering meetings.
   - Collaborate with other members on the Engineering team to produce software quickly and efficiently.

b. My evaluation was based on my performance with the following metrics; or perspectives rather:
   - Being a member of the Engineering team
   - Learning and participating in the Agile Scrum process
   - Taking part in Stand Up, Planning, Demo, and Retrospective meetings
   - Completing story points attached to Engineering related work items
   - Attending weekly reviews of your work and integrating feedback

5. Technical experience and skills developed

a. Chronologically, the tickets resolved so far:
   - Onboarding: Here there were a series of subtasks that I had to complete in order to get set up before I could start actually working on something. Some of these subtasks were:
     1. Go through Process Director training- which is a series of videos on how to set-up and use Process Director to make forms and form-based applications.
     2. Download and set up Visual Studio as the Dev platform, SQL

SSMS to connect to the database attached to the appdev pipeline and Openvpn to connect to the company VPN (since everyone has worked remotely since COVID 19).

3. Set up my Azure DevOps account and pull down code for the latest version of Process Director and obtain and validate licensing for my Process Director build.

- Document the set-up process for future interns on confluence:
    1. Since I'm one of the first interns this company has employed, it was decided that the set up process for Process Director in debug has many steps and it could be streamlined by documenting the process properly to make it easy for someone with less experience in DevOps.
    2. The approach was to set up a VM and redo the process so we know the exact steps in isolation to my current setup and document it along the way. I later published this document on the company forum.
- Resolve 2 bug tickets: Reproduce the bug, fix the associated code file, test the bug-fix, commit code changes to the repository and have the fix verified by someone else on my team. (in that order)
    1. One ticket was an illegal character error that popped up in one of the form actions that needed to be checked.
    2. Another ticket was about how one of the form tools was leading the application to hang in a very specific circumstance.
- Git migration: The company was originally using a centralized version control system for their code: TFVC. This worked fine but the company is quickly growing and expanding and are currently standardizing and optimizing all their tools and methods to compete with industry standards. This called for a migration of their code base from TFVC to Git. This was set up into an epic and broken down into tickets and assigned to me every sprint for a few sprints which I will lightly expand on below. This is the current epic I'm working on and will continue to do so till the end of my internship:
    1. Research how TFVC works
    2. Enumerate TFVC source control
    3. Research how Git works
    4. Research which Git SaaS platform to use
    5. Map each TFS type Function to Git type Function
    6. Copy/Import from TFS to Git, each type of function
    7. Update build pipeline to sync code from Git

b. Process Director: Just to lightly expand more on Process Director, besides the fact that it is a low code business process management tool, it has a few features that actively serve the following functions:
    - Simplifying compliance: They achieve this through the following features- User access permissions, FDA 21 CFR Part 11 certified electronic

signatures, Always-on audit tracking, Training certification validation and Authority checks.

- Low coding skill requirement to use the platform is the core feature that makes Process Director a beneficial tool to invest in. They implement this as a feature through: Templates by role/use case, Pre-built workflow components, Low-code development and Customer support and training.
- Data Integration: Database applications (ERP, CRM, HRIS, & more), Microsoft Office Sharepoint, Document imaging software, Web services, Email servers and REST API.
- Agile Framework: Maintain digital accessibility standards, Build across departments on same infrastructure, Continuously improve with process insights and Integrate with homegrown or legacy applications.

c. Agile scrum: The workflow management system that the engineering team followed. The team used Atlassian's Jira. Some specific terms I was introduced to were:

- Epics: large tasks as a whole that are broken down into smaller chunks called tickets
- Tickets: the smallest unit of work that can be assigned to an individual. Some tickets can be linked to other tickets or have sub-tickets.
- Sprint: a two week work period, that is planned for and analysed in terms of performance and outputs
- Stand-up: is a daily quick meeting where all members of the team come together to report progress, discuss plans and announce each person's daily goals and any other quick or/and relevant information.
- Sprint pre-planning: This is a meeting where we get a large part of the plans down for the next sprint based on current progress and see how we can speed up on tasks that are still pending in order to finish them by the end of the sprint.
- Sprint Demo: This is an all-hands (optional) meeting that is open to the whole company where the engineering team presents, demonstrates, explains and resolves doubts regarding all the work and progress we've had this sprint. This serves as both an informational and performance analysis interaction.
- Sprint planning and Sprint review/ Retrospective: This is a meeting that is usually conducted right after in conjunction with the sprint demo where we analyze our performance every sprint and study the burndown chart for the sprint. We also make final sprint planning decisions based on the leftover work from the previous sprint and adjust our expected goals for the next sprint.
- Burndown-chart: it is a feature of a scrum management tool like Jira which plots on a graph the progress made by the team overall across the two week span based on when tickets get moved to review and completed from in progress (tickets when assigned go under the assigned column from where they move to in-progress-> under review->done).

- Monthly and yearly all-hands meetings: Since I was employed by BPLogix during the middle of the year, I had the opportunity to be a part of the mid-yearly, all-hands and was part of one monthly all-hands meeting. This is a meeting in which everyone in every department of the company comes together and reports progress and problems faced by each team to the rest of the company. It serves as a medium to encourage interchanging of ideas, commemorate good work and in general, discuss related opinions together.

d. Dev-ops: being a member of the engineering team, I was exposed to the general dev ops cycle. It is based on the concepts of continuous delivery (having a robust product that is never inaccessible or broken in the sense that it does not function as intended because of a lack of development and maintenance) and continuous integration (there is continuous growth, inclusion of new features and updation of old features). It involves analysing -> planning -> building -> testing -> verifying -> reviewing -> analysing and onwards as a cycle to implement the above.
e. Business and research meetings: During my time here I had the chance to silently participate in some business meetings which were all largely informative to me. I was present in some meetings where I could learn about company interactions with other companies about container technology, cloud management, front-end redesign platform decision discussions, third party API-integration software and how to implement it with our system, etc. I was privy to how the companies communicated with external parties and what kind of things they considered in some of these deals, how their priorities affected different decisions etc.

6. Soft skills

Of the many things I learned during my time at BP Logix, some of the core principles I learned were about good communication, planning, work ethic and actually being open to the fact that there's something new to learn everyday on the fly. Coming from an academic setting, I've been very deadline motivated all my life and I soon realised that is not how a business works. There are deadlines but especially since BP Logix is a small company, there were fairly significant expectations for me to work for on a daily basis. It sounds rigorous but it was very eye opening and honestly rewarding to be able to see myself working at that rate on a daily basis and be a part of the flow with all the smart and experienced people I was working with. It helped me really practice and incorporate a great work ethic that I needed in my life.

7. Conclusion

This internship at BP Logix was by far my most enriching internship experience. (I've done 4 before this). I was actively involved in significant work that actually went into the product development process and had so much flexibility and mentorship in my access to be able to really upgrade my skills and efficiency to match that of a good full-time employee. As much as one can read about or hear what that's like, it takes some real

experience to be able to see your career from that perspective and this document only really summarises the knowledge gained during this time spent with BP Logix.

8. Acknowledgements

I would like to acknowledge and thank my mentor Gary Brown for constantly making sure I was learning different things and seeing improvement on a daily basis and for all his advice on what it's like to be and how to go about doing well in the computer science industry. I would also acknowledge Zach, Chris, Greg, Ryan and Joby (as just a casual reference) who are the remaining members of the Engineering team who were incredibly supportive and helped me learn and understand most of the things I've mentioned in this document and were the main people I communicate my ideas and doubts with. I was also assigned a buddy, Francis from the implementation team who I would have weekly chats with to check up on each other and exchange ideas and catch up on each others' teams.
Lastly I acknowledge the CSE department and professor Leo Porter for enabling me and supporting me in this venture to gain some industry experience which has been significantly beneficial to my degree and career in the future.