LM Ericsson INFUSE case study

Contents

1. What is INFUSE? .......................................................... 2
2. Structure of INFUSE. ...................................................... 4
3. Why INFUSE was established? .......................................... 5
4. INFUSE Initiatives. ........................................................... 5
   4.1 Masters in Applied Software Engineering (MASE) .............. 5
   4.2 Ericsson Bursary ...................................................... 6
   4.3 Ericsson’s Intro to IT ............................................... 6
   4.4 Transition Year Work Experience ................................... 7
   4.5 Career Talks external ............................................... 7
   4.6 Business in the Community(BITC) .............................. 8
   4.7 Hackathons .......................................................... 8
   4.8 School visits on site ............................................... 8
   4.9 Ericsson Primary Introduction to Code (EPIC) .................. 9
5. What has been the impact of INFUSE? ............................... 9
   5.1 General Impact ..................................................... 9
   5.2 Women in Tech ................................................... 9
6. What has been the learning from the INFUSE project? .......... 10
7. Related links/Additional Information .................................... 11
8. INFUSE Long Term Future ............................................. 11
1. What is INFUSE?

The Ericsson Athlone INvesting in FUture Software Engineers or INFUSE is a range of initiatives that focus on creating enthusiasm and interest around Science and Math’s. In 2018/19 academic year, the Ericsson Athlone INFUSE program reached 4314 students, with an increased goal of reaching over 5500 students in 2019/20. INFUSE aims to create a desire for a career in Software Engineering and Technology at every age group while also promoting the Ericsson brand. Using the commonly known phrase, “If you can see it you can be it”, the INFUSE program gives students an insight into what a software engineer really does and aims to spark an interest by doing so. The INFUSE program believes that interacting with the students at a young age avoids the negative stereotypes of the career, especially for future female engineers.

The INFUSE Journey begins for students at the age of 10+, with site visits for primary school and continues through their secondary school education and then on to third level, where we have the Ericsson Bursary and MSc in Applied Engineering (MASE) program with Athlone Institute of Technology (AIT). INFUSE reaches students through a catalogue of initiatives ranging from onsite school visits to hands on coding activities, through to career talks and college bursaries.

As you can see in the graph below, in recent years the program has gained huge momentum and is reaching great numbers of students not just in Athlone but in the surrounding towns and counties.
Initially, INFUSE concentrated on just the local Athlone schools but as you can see by our sharp increase in students, we have now expanded to the surrounding areas, hoping to promote careers in STEM to as many students possible.

“While the introduction of Computer Science at Leaving Certificate, cycle is a positive development, the lack of visibility of ICT based careers is a severely limiting factor in attracting students to 3rd Level technology courses. The Infuse programme proposes to inform 2nd level students of the significant opportunities of a career in ICT.”

-Dr. Enda Fallon, Head of The Department of Computer Engineering, AIT
2. Structure of INFUSE.

INFUSE is a volunteer driven program with all activities run by Ericsson engineers who passionately believe in the future of Ericsson and STEM. Barbara Quinn is the Program manager and is responsible for the organization and running of all initiatives. Barbara is the driving force behind the vast increase of students engaged and is also a huge advocate for the Girls in ICT movement. Barbara is supported by Sinead O’Reilly who has made a substantial impact on the success of the INFUSE program. Sinead is
the lead in organizing the school site visits and also a significant support in the day to
day support needed for the hackathons and TY work experience.

3. Why INFUSE was established?

The aim for INFUSE is to create a consistent and sufficient pipeline of highly skilled graduates who want to work for Ericsson.

INFUSE was established to contribute to Ericsson’s local presence here in Athlone. The main reason being to create a long-term pipeline of STEAM graduates especially in the software engineering discipline.

Recruitment is perceived to be a future challenge due to the huge demand in industry for software graduates. Ericsson faces extreme competition from other industry leaders such as Google, Facebook, Intel etc. who already have front of mind position due to their market status. Ericsson, as a B2B company, does not have this advantage. With the marketplace being so ‘hot,’ recruitment of graduates and experienced hires is always a challenge. The aim of the INFUSE program is to create a funnel of local graduates who would choose to be part of the Ericsson Team, overcoming perceived future recruitment challenges and potential skills shortages.

Ericsson hope that through education they will enable local people to join the Ericsson team, while still maintaining their high standards in software engineering research & development. Through INFUSE, Ericsson aims to continue fulfilling its mandates in Athlone by creating 7 Patents per year. It’s Ericsson Athlone’s aim that new mandates from Ericsson global can be achieved by having a consistent local talent pool of software graduates who are up-to-date with cutting edge technology.

Through INFUSE’s partnership with AIT the aim is to create a “software hub” around Athlone that will attract as many high-level graduates and experienced engineer’s as possible. Ericsson’s partnership with AIT is a vital component to this aim, from AIT’s ability to upskill current Ericsson employees to producing new graduates who are in-the-know in relation to the most recent tech. The first step has already been taken in this regard by the launch of the Ericsson Masters in Applied SW Engineering that has led to 66 successful hires in the last 3 years.

Ericsson Athlone has a goal of achieving a workforce comprised of 30% females by 2020. INFUSE aims to create equality of opportunity for girls in ICT. This has already begun by promoting STEM careers to girls in early education, through the promotion of the girls in ICT movement along with the efforts to breakdown the stereotype of software engineering being a male only career path. Through talks and continuous promotion by current female employees, along with the first “girls-only TY week” this coming year, INFUSE hopes to inspire young girls to pursue software engineering at 3rd level, contributing to Ericsson Athlone’s 2020 goal.

4. INFUSE Initiatives.

4.1 Masters in Applied Software Engineering (MASE)

LM ERICSSON offers a one-year, full-time Ericsson built Masters in Applied Software Engineering which will be free to participants and include a three-month paid internship with the company and a full-time permanent job as a software engineer in Ericsson on satisfactory completion. The material is built by Ericsson is delivered in the Athlone Institute of Technology. It offers an integrated approach to delivering end to end
software development skills. From computing fundamentals and software design to implementation and testing, the entire lifecycle of software development is covered. The programme focuses on the practical problem-solving skills required for software engineering. Programme participants will also gain an integrated and critical knowledge of the skills and technologies used in ICT product development today.

MASE is aimed at 3rd level students who have already completed an undergraduate degree in any field and have an interest in pursuing a career as a software engineer. It offers a unique opportunity for anyone to enter the fast-paced and exhilarating field of software engineering. The program is structured to enable graduates to ease into the workplace post-study. MASE is an integral part of Ericsson's graduate recruitment, accounting for 66 hires in the past 3 years.

4.2 Ericsson Bursary

The Ericsson bursary is awarded to local second level students based on their Leaving Certificate results. The student must be pursuing a computer science related degree at 3rd level. The recipient is awarded a cash sum each year of their course along with placement opportunities during the college summer holidays. The program has been successful in giving these students a view of the software engineering industry and is a valuable pipeline for Ericsson offering permanent employment for successful completion of their internship and college degree. In the future, the bursary aims to expand to schools who will be offering computer science as a Leaving Certificate subject in the midlands, as of now the bursary is open to students in the Athlone area who achieve specific grades in Leaving Certificate mathematics and pursing a software related course at 3rd level. The latter requirement will remain but when computer science begins as a Leaving Certificate subject Ericsson are hopeful that more people will begin pursuing software related 3rd level courses and the bursary will act as an added incentive.

4.3 Ericsson’s Intro to IT

Intro to IT is an initiative that focuses on supporting local secondary schools in their move to educating Computer Science at Leaving Certificate level, by teaching the teachers. The Intro to IT initiative focuses on teaching the basics of code to Secondary school educators who in turn pass the knowledge on in their classrooms. It has been revamped for 2019/20 with the aim to encourage further schools to become involved. Intro to IT provides secondary school students with the fundamentals of coding, allowing students to get a head start before 3rd level education.

Teaching the teachers is a high priority initiative. Although we're unlikely to ever hire the teachers their impact on the career decisions of current and future students is vital, along with this any investment made on educating teachers has the potential to be long-term. Teachers tend to remain in a school for several years along with each year having new incoming classes. Our aim for this initiative is that the teachers will continue teaching to their new classes and keep educating a new class each year.
As represented below, the projection for 2019/2020 is to double last year’s numbers. As you can see, the program began with 4 teachers from 3 local schools and has now jumped to a projected 25 teachers this upcoming year. It’s estimated that a further 800 students will receive a basic education in Python this year because of this program.

4.4 Transition Year Work Experience

This week-long classroom-based program is open to Transition Year students and will include a combination of programming, group project (using Agile methodology for software development) and introductions to a variety of technologies. Students complete a telecoms project using SCRATCH programming to further their knowledge in both writing code and what we do in Ericsson. During this week the students get to interact with their volunteer mentors, the Ericsson engineers, and learn about real life in this role.

Since beginning the TY program in 2016/2017 it has gone from strength to strength. In 2016/2017 the program began with one week and had 13 students enrolled. Now, 3 years later, it’s expected to run for 4 weeks with just over 90 participants.

4.5 Career Talks external.

INFUSE volunteers visit schools and provide career talks to classes that are interested in STEM. The aim here is to spark an interest in computer science prompting students to consider a career in technology. Career talks provide a fantastic opportunity for INFUSE volunteers to go back to their old schools and dispel the myths around software engineering, along with giving the students an opportunity to interact with industry. The popularity of the talks is represented in their mammoth uptake in past few years. Initially reaching 170 students, the talks are projected to reach over 1500 students in 2019/2020.
4.6 Business in the Community (BITC)

BITC is part of Ericsson’s Corporate and Social Responsibility but we don’t do it just because we have to, we do it because we want to.
We work closely with Ballymahon Vocational School to support the LCVP students in their journey towards work placement after school. Our staff love getting involved and helping local students through our CV and interview workshops, site visit and mock interviews.
BITC has gone from strength to strength almost doubling its student interactions from 23 to 42 annually. It provides a great opportunity for the students to get a helping hand from industry to give them an advantage before they move onto 3rd level or begin their search for work.

4.7 Hackathons

Hackathons consist of 1st and 2nd year students (secondary schools) coming into Ericsson to learn the basics of computer coding through HTML/CSS. Through mob-programming, groups of four students use our newly pedagogically designed HTML/CSS packs to create their own website. Each group is paired with an Ericsson volunteer who mentors the group. Students take a real sense of pride in the website as they start with no prior coding knowledge and leave with a fully functioning website in a couple of hours.
Hackathon participation has also seen a dramatic rise since 2016/2017 when around 83 students participated. After the re-design in 2017/2018, the number hiked to 646 and has increased in a linear fashion until this year where its estimated 690 students will be involved.

4.8 School visits on site

As part of this initiative primary and secondary school students come onsite and see firsthand what Ericsson do and what it's like to work in a state-of-the-art software campus. Ericsson have an emphasis on getting as many school visits as possible during the school year. In 2016/2017 site visits ran approximately once a month now there is at least one site visit during every school week. Meaning each school year over 700 school children come through the Ericsson doors and are given a taste of what software engineering entails.
Their visit includes:

- Ericsson – Who are we?
- Intro to telecoms presentation
- Day in the life of a Software Engineer
- Tech trends presentation from current employees
- Tour of the site
- Data center tour
4.9 Ericsson Primary Introduction to Code (EPIC)

Ericsson Primary Introduction to Code (EPIC) is a brand-new program that has been designed and launched for the current school year (2019/2020). EPIC aims to introduce young children to the fundamentals of computers and coding. The students are educated on the aspects such as “what a computer does”, computer literacy along with some very basic coding with Scratch and Micro:bits. This is focused on primary school students from the ages of 10+

5. What has been the impact of INFUSE?

5.1 General Impact:

Since 2017, INFUSE has skyrocketed, and this is duly reflected in the growing figures below. This increase has amounted to 1100%, going from 498 students engaged in 2016 to 5665 predicted in 2020. INFUSE is conscious that as we grow, it’s important to ensure each student still receives the attention that they require and deserve. That’s why INFUSE are always looking for new volunteers. We place huge value on the great support the program receives from the engineers at Ericsson Athlone, without whose help the INFUSE program would not be possible.

5.2 Women in Tech

As part of INFUSE, we strive to encourage girls to become involved in software engineering. As you can see by the numbers, INFUSE has had continued success
year on year, encouraging more girls to become involved in the program. Not only have INFUSE seen the success at primary and secondary level but the MASE program has taken great strides in terms of woman in Technology. Last year alone of the 22 MSc’s hired, 41% were female and of the top 10, 7 were female, a tremendous achievement as the INFUSE program continues to dispel the stereotypes around software engineering.

6. What has been the learning from the INFUSE project?

Many of the kids had an inaccurate stereotype of what software engineering is in their minds that had been created and fueled by the media. We found that the debunking of this stereotype to be the biggest hurdle. Once the students realized that it was an accessible career, a lot more thought was given to STEM and software engineering. Initially INFUSE began with TY weeks but soon it became clear that TY was too late, many students already had their minds made up regarding 3rd level and had chosen their Leaving Certificate subjects. It was decided to begin targeting students at a younger age before they make their minds up.

At the beginning of the program much of the material was text heavy and often students would get lost quickly. It was decided a hands-on approach would be more appropriate and mob-programming along with additional activities throughout each of the initiatives were added. The revamped Hackathons are a prime example of our continuous improvement. Now instead of being totally text based after completing several steps, each group are given various games or software engineering related puzzle to complete. These games reinforce the concepts the students encounter in the previous material.

Another learning would be many of the initiatives held numerous assumptions in relation to the student’s computer knowledge and ability, some of whom had little or no experience using a computer whatsoever. Because of this INFUSE pedagogically improved many of the initiatives and re-launched them this year.
This process received fantastic help by summer intern who was part of the CWIT STEAM teacher internship program. This intern helped to marry the teacher’s perspective with the engineering knowledge something that previously had been a struggle. Meaghan pointed out many vital points that any engineer might never see as a problem. For example, large group sizes and students requiring more iterations for difficult concepts. These and many more problem points have since been addressed and the relaunched initiatives are proving to be a bigger success than ever.

To date, all our re-launched programs have been a huge success. The general feedback from the students and mentors is enormously positive.

7. Related links/Additional Information

INFUSE has been nominated for Women in Tech – Advocate of the Year awards 2019 and has received an IBEC technology award – Initiative of the Year award in 2017 for the successes of the program.

8. INFUSE Long Term Future

While Ericsson is committed to delivering on the INFUSE program for the foreseeable future, the demands for the local community and education sector will outstrip our capacity to deliver on the program. Ericsson are looking forward to reinforcing our partnership with AIT and supporting them where possible. Ericsson would also encourage the Department of Education and the general educational sector to focus more on Teacher education in the STEM areas, especially computer Science.