

Lero is the Science Foundation Ireland Research Centre for Software (www.lero.ie)

Founded in 2005, Lero comprises more than **300 researchers across 11 institutions** (seven universities, newly formed Munster Technological University (CIT & IT Tralee) and three IoTs (DkIT, LIT, WIT).

Lero's research comprises three strands:

- Systems (addressing the question, What we build)
- Methods (addressing the question, How we build software)
- Context (addressing the question, For the world we want)

CodePlus is a highly interactive programme with a focus on increasing the number of female students choosing computer science in third level educational institutes. A worrying trend has been identified which shows a drop in female participation in computer science courses in recent years, highlighting the importance of initiatives such as CodePlus. It is vital to address this issue at secondary level education to ensure we as a society can achieve gender balance and diversity in the workplace. Other Lero led initiatives worth noting here include:

- [Scratch](#): an annual computer science programme that also encourages participation at both primary and secondary school which boasts a very high percentage of female participation.
- Introduction of coding to the Junior Cert and Leaving Cert curriculum (more detail below)

CodePlus is a partnership between UL, NUI Galway and TCD to enhance the existing CodePlus project, which has been running in TCD since 2015, and roll it out over a two-year period for national impact. It will take advantage of the fact that students, and schools, are now much more comfortable with on-line environments to extend the reach of the project. As mentioned above, the focus of CodePlus is on addressing the gender imbalance in the field by engaging female students in CS activities in order to help them make more informed choices about studying CS courses and pursuing careers in the field.

The project has developed since its inception and most evidently in the past 3 years has engaged over 1,000 secondary school girls in 20 hours of coding workshops. In addition, over 2,000 girls have attended career talks, given by female role models. These have taken place either in TCD, schools or on-site in the offices of technology companies. During this time period, **data has been gathered which indicates the project is having a statistically significant impact on a number of key attitudinal indicators which speak to girls' attitudes to CS.**

To date the geographic reach of CodePlus has been confined to the greater Dublin area; however this proposal is for a partnership, with Lero at the University of Limerick and NUI Galway, which would see the project rolled out over a two year period in the catchment areas of the partner institutions and thus **national rollout**.

The Trinity team will share its expertise in the areas of programme delivery, and research into programme impact, with the partners - each of which have track records in their own right in CS engagement. Lero was commissioned to write the short course in Coding specification rolled out at Junior Cycle Level and has conducted educational research around the rollout of professional

development for Leaving Certificate Computer Science (<https://lero.ie/epe/schools>) and runs the aforementioned Scratch programme; NUI Galway have a strong track record in technology enhanced learning and CS Education. The combined expertise of the three partners will facilitate enhanced programme content underpinned by a broadened ***national participation*** in the project.

In Ireland, participation in computing degrees, and subsequent careers, is much lower for females than for males, signifying a gender imbalance within this field. CodePlus seeks to address this imbalance by encouraging, facilitating and providing opportunities to teenage female students to engage with Computer Science. It will do this at a number of levels to enable them to make more informed decisions about further education courses and ultimately careers in this field.

The targets for the project engagement across the 3 institutions are ~10,150 girls over the 2 years.

Engagement:

	Year 1	Year 2
Direct Engagement (Target Number)	4700	5450

In Year 1, 300 students (100/institution) will participate in coding workshops of 20 hours duration. As these may need to take place on-line they will require a greater level of support than in a face-to face setting. This number will increase to at least 600 (200/institution) students in Year 2 – assuming face-to-face can take place. In Year 1 and Year 2, 4,000 students will participate in webinars designed in collaboration with companies to provide students information on CS courses and careers. These will be organised jointly by the 3 institutions and if feasible will contain speakers from a mix of companies in each webinar. In Year 1, company visits will be organised for 500 students (Cv19 dependent), increasing to 1,000 students in Year 2.

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