

> Building the profile of an emerging ICT market with tremendous potential



{ title="foreword"}_

The ICT market is an area that is constantly growing worldwide and the demand for new talent to cover the available offerings does not seem to show any signs of slowing down.

This also holds true in the Greek context despite the long standing recession. According to the European Union's Joint Research Centre¹, in 2016, ICT professionals constituted **3.7**% of the total workforce across the EU's 28 state members, indicating a growth of **37**% over the previous decade.

Particularly in Greece, ICT specialists accounted for **1.4**%. Consequently, the possibilities for growth in the Greek developers market are immense, with reports² estimating a potential of up to 500,000 new job positions becoming available in Greece in the upcoming years.

The Developers in Greece survey ran by Tech Talent is the first of its kind, aiming at taking a snapshot of the current trends and characteristics in relation to the market of ICT professionals and presenting them to the wider public. We hope it can be used as a starting point to help developers gain insight on the ICT labor market in Greece and make informed choices regarding their career paths. At the same time, we believe it will be a valuable tool in the hands of employers, enabling them to stay informed on the qualities of the labor force they are hiring and the changes that emerge in terms of the skills, interests and priorities of the talent that is already available or is now entering the ICT market.

We inquired on a variety of topics and the data we gathered from the participating developers is very rich and in many areas extensive. We certainly did not manage to cover all aspects and potential of the data in this report. In the upcoming months our focus will be on continuing to bring new findings to the surface, and offer further analysis and discussion via Tech Talent's channels of communications.

- 1. EU's Joint Research Centre, Latest statistics on ICT sector and its R&D investment, https://ec.europa.eu/jrc/en/news/latest-statistics-ict-sector-and-its-rd-investment-available
- 2. Hellenic Professionals Informatics Society, CEPIS Research, https://www.hepis.qr/activity/erevna-cepis/

{ title="about Tech Talent"}_



Tech Talent is an online recruitment platform that aims to improve the process of matching skilled and qualified developers with employers, by bridging the gap between potential employees and companies.

Through its platform, Tech Talent seeks to cater the needs of both candidates and recruiters, and offer them an unmatched experience in terms of intuitiveness and effectiveness that adds true value to their respective objectives. We are developing a service that will enable recruiters in search of ICT professionals to quickly and innovatively distinguish the best candidates that fit their purposes, while at the same time allow job seekers to make the most of their skills by finding the optimum position for them.

Tech Talent is building the market's richest and most comprehensive pool of developers and software engineers. The overall objective is to create employment opportunities through the combination of massive participation to the program and process automation using online technologies and support by industry experts. Tech Talent's registering procedure requires candidates to upload detailed information about their skills in development and the respective levels of their expertise. We use this information to provide employers an efficient tool and a multi-tier service that helps them sort and identify candidates according to their needs and vacancies.

Traditional recruitment methods fall short of providing a curated, relevant and comprehensive list of potential talent to companies. Consequently, recruiting new talent becomes a struggle for growing companies, especially SME's and startups, that do not have adequate HR resources and access to talent. Even in the case of companies with established HR teams, recruiters can benefit by streamlining this process trough Tech Talent's services and acquiring access to a pre-curated and extensive pool of talent.

Tech Talent is a **project started and developed by Found.ation**, a leading technology and innovation enabling platform in SE Europe, acting as a startup hub, a digital transformation consultant for corporations and a tech education hive. In 2016 our team ran a survey in the ICT labor market and our findings brought to the surface the difficulties of matching individuals with high quality competencies to employers in the technology field. This led to the idea of creating a skills-based system to serve the requirements of all the parties involved in the hiring process. We entered this as a business idea in the Envolve Award Greece 2017 and we were among the winners of the year. We have since been continuously working on the Tech Talent platform and intend to grow it into an indispensable service in the hands of both developers and companies looking for talent in the ICT sector.



{ title="objective and rationale"}_

The aim of this national survey was to acquire a deeper understanding of the profiles of developers in Greece and the pertinent ICT industry. By gathering and analyzing the data in this report, we recorded and mapped the particular characteristics of the developers' experience, skills, needs, practices and priorities, and how these might correlate among them and correspond to the corporate parameters of their employers.

From our end, we plan to use this newly gained insight to improve the Tech Talent platform and services in order to provide the best possible solution for developers seeking career opportunities and companies looking to hire talented employees. The goal is to bridge the existing supply and demand gap in this evolving field.

Furthermore, by publishing this report we want to share our findings with companies active in the wider ICT

sector and specifically employers looking to hire software developers, with the aim of bringing the two ends of the labor market closer in terms of their understanding of the current circumstances and trends relating to developers in Greece.

{ title="methodology"}_

A freely available online survey was administered to participants via SurveyMonkey by sharing a dedicated web address link. The survey was live for a total of 63 days in the year 2018, starting on May 21th and ending on July 23rd. A sample of 1022 participants who successfully completed the survey was taken into consideration for the final analysis. The survey included a combination of closed-ended and rating scale questions, with a total of **30 questions** asked and the average completion time being 15 minutes. The collection and analysis of the data was conducted using a combination of SurveyMonkey's online tools and Spreadsheet applications.

> survey_profile_

Participants were recruited by utilizing a variety of online communication channels. A press release was published by our organization directed mainly at online press agencies, and a newsletter was sent to the email subscribers of Tech Talent, Tech Talent School and Found.ation. We shared posts on the social media accounts of the organization and its employees, on websites such as Facebook and LinkedIn. Finally we posted in Facebook groups for Developers and Wordpress and also made use of Facebook's advertisements feature to reach a wider audience.

Participants were informed in advance on the purpose of the study and were given the choice of completing the survey anonymously.

{ title="limitations"}_

This report is attempting to provide indications drawn from the collected data and their analysis, and not facts. We consider our findings to be representative

of the period surrounding the point in time that the survey was conducted in and additional surveys will be needed to measure future changes and make comparisons.

It should be taken in mind that there is a possibility of distortion as participants could be responding in a non-truthful manner for reasons such as protection of their personal data and social desirability bias. To mitigate this effect, we gave participants the option to respond anonymously to the questionnaire and questions relating to identifying data were not a requirement to complete the survey.

Due to the online nature of the survey, there was no way for us to respond to questions relating to the completion of the survey, which means the findings in some cases could be subjective to the participants' personal understanding of specific questions. To counteract this we made sure to provide as simple and straightforward questions as possible.



{ title="demographics"}_

{ h2="Place of residence" }

As one would expect, the vast majority of participants live in Attica (63.3%) with Central Macedonia (13.1%) being second, followed by the regions of Thessaly (3.4%) and Crete (3.3%).

It is worth pointing out that the percentage for Attica is much higher than what the general population distribution in Greece would suggest, since approximately 34% of Greece's population currently live in the Attica area³.

Nearly 5% of participants completed the survey while living abroad, which corresponds to reports of ICT workers migrating in the past five years, following the financial crisis.



^{3.} Hellenic Statistical Authority, 2011 Population-Housing Census, http://www.statistics.gr/2011-census-pop-hous

^{4.} ZDNet, 'It's a graveyard': The software devs leaving Greece for good, https://www.zdnet.com/article/its-a-graveyard-the-software-devs-leaving-greece-for-good

> general_findings { title="demographics"}_

{ h2="Willingness to relocate" }

60% of participants reported being willing to move to another place if they could find a job that suits their needs. These developers do not appear to be tied to a place, provided that the right opportunity comes along their way that matches their priorities.

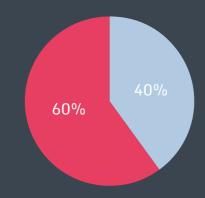
For the remaining 40% however having or finding a job in their current area of stay looks to be more important, as they would not consider relocating.

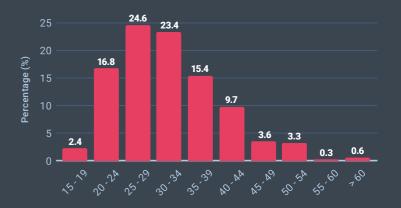
It's worth considering that 1 in 3 (33.2%) married developers is willing to change their place of residence, whereas in singles this is as expected higher (55.6%).

{ h2="Age groups" }

Nearly half (48%) of the developers completing our survey belong to the 25-35 age group. Moreover, 82.5% of developers are younger than 40 years of age.

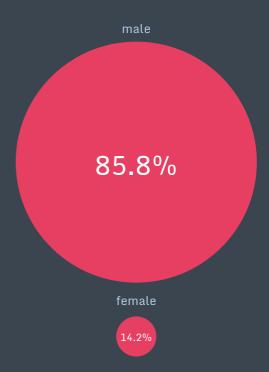
These findings strongly suggest a young working force that is active in Greece and bring to the surface the future potential this force encompasses.





> general_findings { title="demographics"}_

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{ h2="Gender" }
Greek developers in this survey were dominantly males (85.8%), with
  females accounting for 14.2%.
Even though the male to female ratio appears high and there is an ev-
  ident gender gap in terms on representation in the ICT field, it is
  noteworthy that in a survey ran in 2018 by StackOverflow, one of the
  biggest online communities of developers, only 6.9% identified as fe-
  males, whereas according to our findings that percentage is doubled
  in Greece<sup>5</sup>.
{ h2="Marital status" }
Nearly 75% of participants reported being single and 22.6% being mar-
  ried. 1.5% were divorced and 0.9% widowed.
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^{5.} Stack Overflow, Developer Survey Results 2018, https://insights.stackoverflow.com/survey/2018/#developer-profile-gender

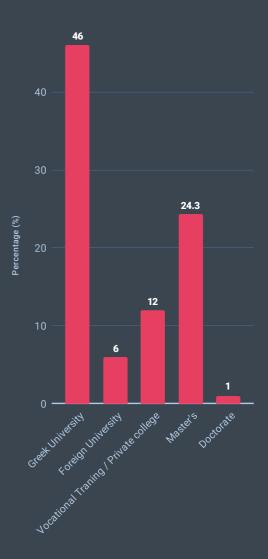
{ title="education_level"}_

Around 90% of developers in Greece have received further education or professional training following graduation from a secondary education.

Approximately 46% are graduates of Greek Universities and only 6% hold a Bachelor's degree from a foreign University. Another 12% come from public or private institutes of Vocational Training ("IEK") in Greece and private colleges.

1 in 4 developers has attained a postgraduate degree, with 24.3% completing a Master's and 1% a Doctorate's degree.

All these indicate an array of skilled and well educated individuals being available in the ICT sector and potential for improved integration into the relevant labor market.



{ title="employment_status"}_

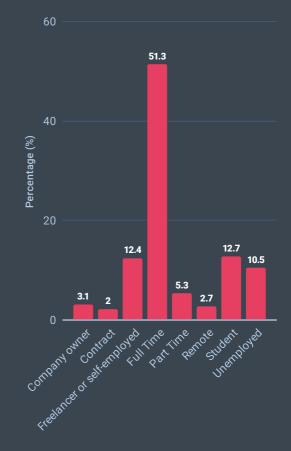
Half of the developers (51.3%) report being employed in full time positions, whereas 12.7% are students and 10.5% are unemployed.

The remaining 25.5% is split among freelancer or self-employed positions (12.4%), part time (5.3%), company owners (3.1%) remote jobs (2.7%) and under contract (2%).

Notably, the unemployment percentage among developers is almost half of the general unemployment percentage in Greece, which in July 2018 was at 19% 6.

Furthermore, if we exclude Junior developers, who are often students or people that are just entering the ICT labor market, the unemployment rate for the rest of developers (Intermediate, Senior, Lead) is remarkably low (4%).

One could argue that, at a time in which Greece struggles with financial issues on a sociopolitical front, this finding suggests developers have an advantage compared to the general population in terms of employment opportunities.



^{6.} Trading Economics, Greece Unemployment Rate, https://tradingeconomics.com/greece/unemployment-rate

> general_findings { title="employment_status"}_

{ h2="Salary" }

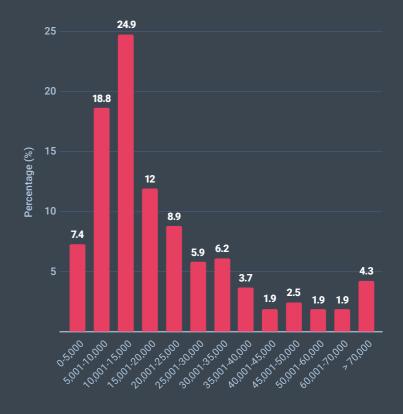
Only 7.4% of the developers working in full-time positions in Greece is paid under the minimum wage (€684 per month, adjusted for a 12 month period), with their annual income being up to €5,0007.

18.8% are paid €5,001-10,000, which is around Greece's minimum wage, whereas a quarter (24.9%) of participants are paid €10,001-15,000.

However, 48.9% of developers are paid more than €15,000. Specifically, a quarter (26.8%) gain an annual salary of €15,000 to €30,000, and 22.4% are higher earners with an annual salary of more than €30,000.

Excluding Junior developers, who are as we already mentioned just entering the market, the average salary is between €20,001 and €25,000.

It is worth pointing out that those living abroad earn on average €45,001-50,000.



^{7.} Eurostat, Monthly minimum wages - bi-annual data, http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=earn_mw_cur&lang=en

> general_findings_

{ title="employer_profile"}_

{ h2="Industry Type" }

One third of the developers (33.2%) are employed by Software companies whereas another 23.6% are working for companies in the Internet and Web Services industry.

These two sectors alone employ more than half (56.8%) of the developers in Greece.

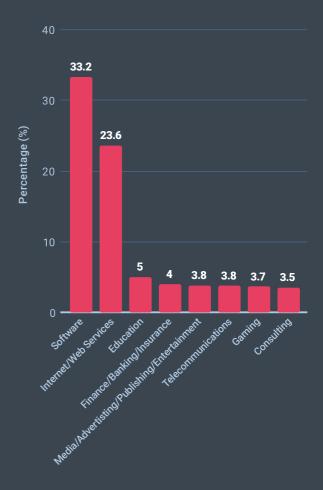
The remaining percentage is spread among companies in sectors such as Education (5%), Finance, Banking or Insurance (4%), Media, Advertising, Publishing or Entertainment (3.8%), Telecommunications (3.8%), Gaming (3.7%), Consulting (3.5%), etc.

{ h2="Company Size" }

The company's size is of great importance as it can often impact an employee's work environment, a team's culture and relationships and of course organizational structures and procedures.

In Greece, the overwhelming majority of developers are currently employed by SME's. Specifically, almost a third of participants (28.7%) are employed by companies with fewer than 5 employees, with a total of 54.5% working for companies with up to 19 employees.

18.56% work in companies with 20-99 employees and the remaining 26.9% are employed by companies with more than 100 employees.



> general_findings_

{ title="skills"}_

{ h2="Core expertise" }

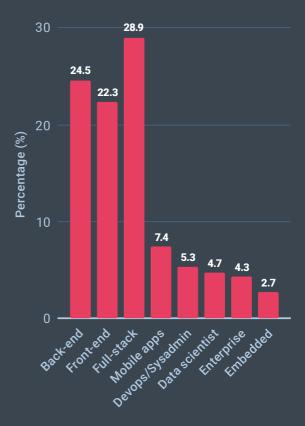
28.9% of participants report to be full-stack developers, with another 24.5% being back-end and 22.3% being front-end developers. Perhaps not surprisingly, this set covers 75.7% of the reported core expertise among developers.

Mobile, despite its huge popularity in the consumer market, is reported as a core expertise by only 7.4% of developers, and even lower percentages are found in emerging sectors such as Data Science (4.7%) and Embedded Systems (2.7%).

{ h2="Experience level" }

45.5% of developers reported being at Junior level in terms of experience, whereas the remaining percentage was almost evenly split among Intermediate level (18.7%), Senior (17.4%) and Lead (19.3%).

There is apparently a growing number of new developers joining the ICT labor market at Junior levels, which causes a higher urgency for more suitable ways to connect employees with employers and facilitate opportunities for advancement.



> general_findings { title="skills"}_

{ h2="Knowledge of coding languages and databases" }

The most popular skill amongst developers is HTML, with 73.3% of them reporting to hold at least a basic knowledge level. JavaScript comes second with 64.6%, followed by MySQL and CSS at 52.7% and 52.5%, respectively, and Java at 50.4%. A difference is observed here compared to the popularity of coding languages globally, where Javascript, Java and Python come first⁸.

In regards to the Basic knowledge level, Javascript (19%) and Java (18.6%) are the most popular. HTML (25.7%) and Javascript (25.4%) are what most developers report as having an Advanced knowledge level at, whereas HTML (36%), CSS (20.8%) and JavaScript (20.2) are what the majority holds at a Fluent level.

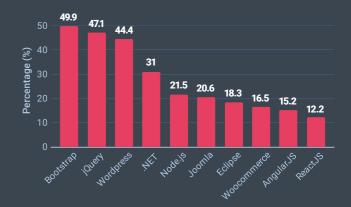


{ h2="Usage of platforms, frameworks and libraries" }

The most popular tool being used by developers in Greece, with half of them (49.9%) reporting to at least hold a basic knowledge level at it is Bootstrap. jQuery comes second with 47.1%, followed by Wordpress at 44.4, .NET at 31% and Node.js at 21.5%.

It is also notable that Bootstrap is the most popular tool being used across all knowledge levels (Basic 14.6%, Advanced 17.8%, Fluent 17.4%).

Overall, 15 different tools are reported by at least 10% of developers as being used, which demonstrates a level of diversification and variety among the experience in such tools by the developers in Greece.



8. Slash Data, Developer Economics, State of the Developer Nation 15th edition, https://www.developereconomics.com/reports/state-of-the-developer-nation-15th-edition

> general_findings { title="skills"}_

{ h2="Familiarity with software development practices and tools" }

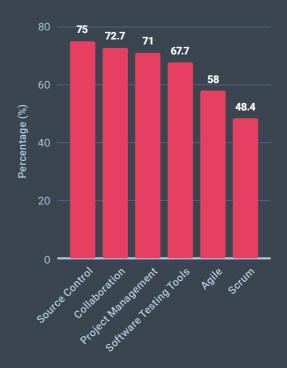
More than 70% of developers report being familiar with Source Control (75%), Collaboration (72.7%) and Project Management (71%) tools, whilst 67.7% are familiar with Software Testing tools.

However, developers in Greece seem to be less accustomed to popular approaches to software development such as Agile and Scrum, with 58% and 48.4% being familiar with them respectively.

{ h2="Operating System" }

The main Operating System used by developers in Greece is by far Windows (67.3%). Linux comes second at 19.8%, followed by Mac OS at 11.5%.

As one would probably expect, Windows is the main OS used, yet it is worth noticing that Linux has a significantly higher market share among developers compared to the general population (~2%), whereas Mac OS usage among developers is much closer to it $(-9\%)^9$.



{ title="volunteering_in_open_source_projects"}_

- It is very encouraging that almost 1 in 2 developers (47.1%) take the extra time to contribute to open source projects. This is a bit higher than the percentage (43.6%) reported on a global scale by StackOverflow's international community of developers¹⁰.
- 9. Net Marketshare, Operating System Market Share, https://www.netmarketshare.com/operating-system-market-share.aspx
- 10. Stack Overflow, Developer Survey Results 2018, https://insights.stackoverflow.com/survey/2018/#developer-profile-contributing-to-open-source

> general_findings_

{ title="job_seeking"}_

{ h2="LinkedIn profile" }

It is definitely praiseworthy that a large majority (69.8%) of developers care about their online professional presence and maintain updated profiles and CVs on LinkedIn.

{ h2="Ways of finding a job" }

A third (33.6%) of the developers found their current job via a job post. Finding a job through referrals from friends or family members appears to be another popular practice (25.8%), outlining the importance of personal connections. Similarly, almost one in five developers (18.4%) reports finding their current job through word of mouth.

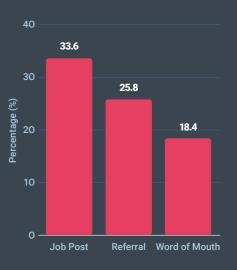
Getting hired from the use of recruiting agencies, even though a very common practice abroad, is scarcely used (6.1%) by developers in $Greece^{11}$.

{ h2="Showcasing skills in CVs" }

On a very hard to very easy scale, most developers seem neutral (37%) on finding it either easy or difficult to demonstrate their personal skills on their CV.

With a weighted average of 3.4%, the scale leans somewhat more towards the easy to very easy side, yet a total of 16.8% face difficulties and find it hard (11.9%) or even very hard (4.9%) to achieve this task.





^{11.} Ciett, Economic Report: The agency work industry around the world, https://www.weceurope.org/fileadmin/templates/ciett/docs/Stats/Ciett_econ_report_2012_final.pdf

> general_findings { title="job_seeking"}_

{ h2="Time spent to find current job" }

It is reassuring to observe that 3 in 4 developers (77%) did not spend more than 3 months to find their current job, with more than half (53.2%) actually achieving this within a month.

From another standpoint, 16.4% of developers struggled, as they spent 6 or more months to get their job.

This is not a percentage to be ignored and it is worth investigating further the difficulties this group comes across in the job seeking process.

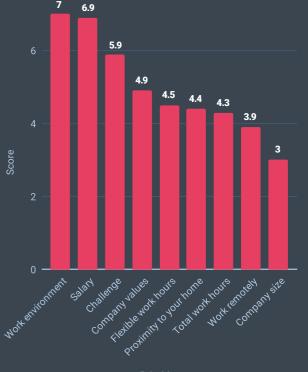
{ h2="Priorities of job seekers" }

Among a total of 9 choices, our findings suggest that developers rank the Work Environment as having the highest importance to them (7), followed closely by Salary (6.9) and the job offering them a Challenge (5.9).

Factors such as Company size (3) and Work Remotely (3.9) are marked low in terms of developers' priorities when looking for a job.

{ h2="Seeking new opportunities" }

Developers in Greece are continuously looking for new challenges and opportunities, with 2 out of 3 (66.2%) participants reporting being active in seeking new job positions.



Priorities

> general_findings_

{ title="dietary_habits"}_

{ h2="Coffee consumption" }

According to our findings, most developers in Greece are regular yet moderate coffee drinkers, with a fifth of them (21.5%) reporting drinking 1 cup of coffee per day and an additional third (33.8%) drinking 2 cups. However, nearly a fourth of them (23.7%) do drink 3 or more cups on a daily basis, whilst another fifth (21%) does not drink coffee at all.

In comparison, 32% of Greece's general population drink 1 cup of coffee per day, with 35% drinking 2 cups, 15% 3 cups or more and 17% not being coffee drinkers¹².

/

{ h2="Food consumption" }

Pizza (33.3%) is the go-to choice among participating developers for increasing efficiency while coding, with the traditional greek souvlaki coming second at 26.7%.

Interestingly, 6% report opting for arguably healthier options, including salads, fruit, vegetables, and nuts.



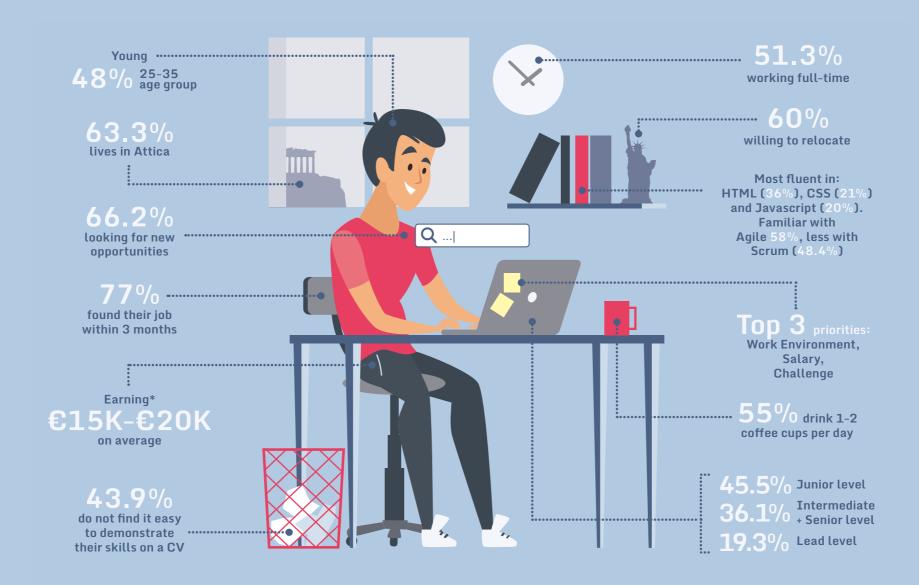




Having discussed the findings per question and theme in a descriptive manner, we can now proceed to distinguish and present the basic developer profiles and further investigate connections and relationships that emerge between our findings.

the_profile_of_a_developer_in_greece >

> the_profile_of_a_developer_in_greece_

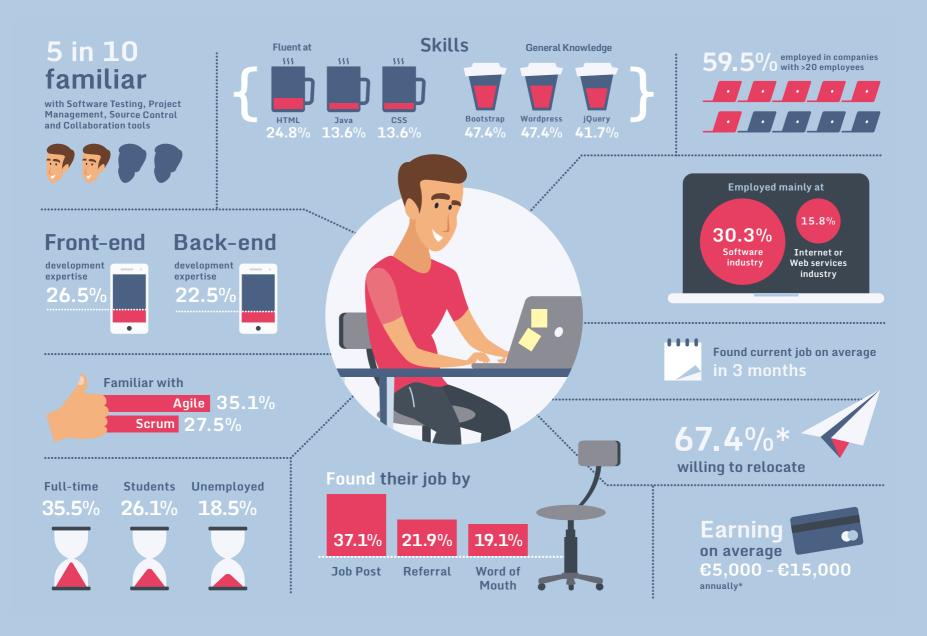


> the_profile_of_a_developer_in_greece_

- Based on the overall findings of the survey, we summarize here some interesting information on the profile of a developer in Greece.
- A developer in Greece is most likely living in Attica (63.3%), with Central Macedonia coming second by a large margin (13.1%), with the two provinces covering 3 out of 4 participants. **60**% of participants are however willing to relocate to another place if they come across a fitting job opportunity. They are mostly young (48% in the 25-35 age group), males (84.2%), who are single (75%), and half of them (52%) have graduated from a university.
- **51.3**% are working in full-time positions for companies, earning on average £15,000-20,000 on an annual basis. They are usually employed in the Software (33.2%) or Internet and Web Services (23.6%) industries, in companies with less than 20 employees 54.5%).
- In regards to their skills, they are mainly Junior developers (45.5%) with their core expertise being full-stack (28.9%) development, whereas 24.5% are back-end and 22.3% front-end developers.
- They are fluent in HTML (36%), CSS (21%) and Javascript (20%) and are accustomed to using

- Bootstrap (50%), CSS (21%) and Javascript (20%). What's more, participating developers are very familiar with Source Control (75%), Project Management (71%), Collaboration (72.7) and Software Testing (67.7%) tools. 58% of them are also familiar with software development methodologies such as Agile, yet half of them (51.6%) are not familiar with Scrum, 47% of developers are taking the time to contribute to open source projects and 67.3% are using Windows as their main operating system.
- A remarkable 66.2% report actively looking for new job opportunities and 69.8% have an up to date LinkedIn profile, but at the same time 43.9% do not find it easy to demonstrate their skills on their CV. Participants found their current job position mainly through job posts (33.6%) within an average of less than 3 months (77%), and their top 3 priorities in regards to their employment are Working Environment, Salary and being Challenged.
- A popular saying among developers is that they are able to turn pizza and caffeine into code, and this seems to hold true in the case of the Greek developer, who tends to drink 1-2 cups of coffee per day (55%) and prefers pizza (33.3%) over souvlaki (26.7%) for increasing code efficiency.

skills_and_employment_characteristics_ grouped_by_experience_level /



This group consists of developers with 0-2 years of experience and constitutes 45.5% of developers participating in this survey.

{ title="core_expertise"}_

Junior developers have a slight preference for Front-end development (26.5%), but report being confident with Back-end (22.5%) and also Full-stack (20.2%) development. From the remaining options, Mobile Applications and Data Science are the areas where they are mostly skilled, both being reported by **8.1**% of them as their core expertise.

{ title="skills"}_

The most popular skill in this group is HTML, with 79.1% reporting having at least a basic knowledge level at it. Java (62.6%) and Javascript (61.3%) come next, followed by CSS (59.3%) and MySQL (49.7%). HTML (24.8%) is also the top skill developers report holding a Fluent knowledge level at, with Java and CSS both second with 13.6%. In regards to the platforms, frameworks and libraries they use, Bootstrap and Wordpress are the most popular, with 47.4% reporting having at least basic knowledge at each of them. jQuery (41.7%), .NET (27.5%) and Eclipse (26.2%) come next. More specifically, 11.25% report being most fluent in Bootstrap, 7.6% in Wordpress and 7% in jQuery, with Eclipse and Joomla following at 3.6%.

{ title="development_tools_and_methods"}_

A significant percentage of Junior Developers are familiar with tools for Software testing (52.3%), Project Management (52.7%), Source Control (50.7%) and Collaboration (46.7%). However the percentages drop when considering development approaches that are widely adopted by companies in recent years like Agile (35.1%) and Scrum 27.5%.

{ title="industry_and_company_size"}_

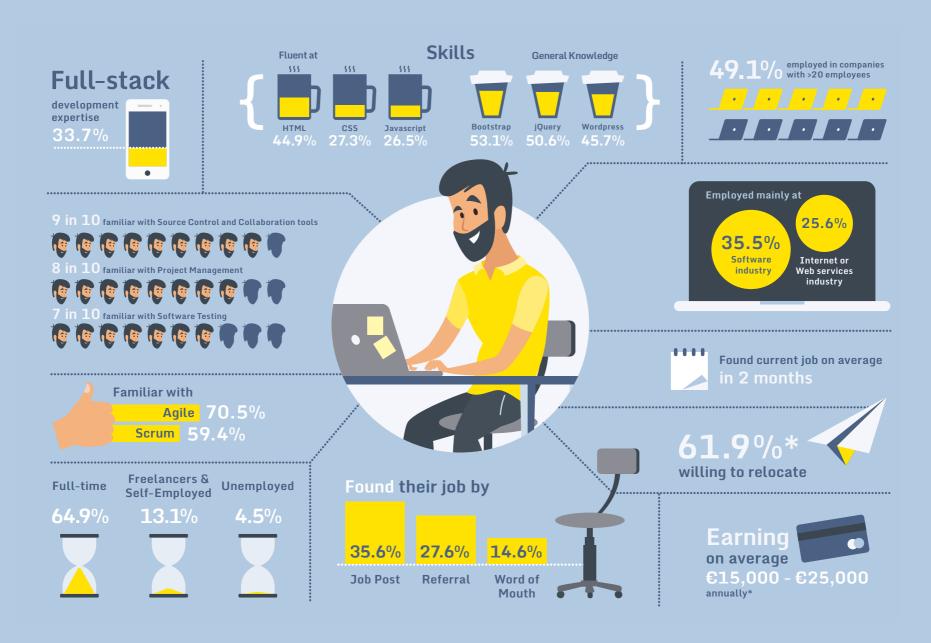
One third of Junior developers (30.3%) are being employed at companies developing Software and 15.8% at companies offering Internet or Web services. These are followed by companies in the Telecommunications (7.9%) and Education **7.1**% sectors.

Very small enterprises are the main employers of this group, as companies with less than 20 employees provide jobs to 59.5% of them, with 34.7% working for companies with fewer than 5 employees. Larger companies with 100 employees or more are also employing another 26.6% of developers.

{ title="employment_status_and_salary"}_

- A third (35.5%) of Junior developers are employed in full-time positions and a quarter (26.1%) are still students. Unfortunately, 18.5% of them are unemployed, which is a percentage a bit lower than the general unemployment in Greece (19% in June 2018).
- 87.9% from those employed in some manner are earning less than €15,000 on an annual basis. It is disheartening that nearly half of employed junior developers (48.6%) do not earn more than €5,000 and an additional 27.8% only earn an amount between €5,001 and €10,000.
- **37.1**% of them found their current job via a job post, making this by far the most popular way of searching for a job at this knowledge level, with Referral being at 21.9% and Word of Mouth at 19.1%.

skills_and_employment_characteristics_ grouped_by_experience_level /



This group consists of developers with 2-8 years of experience and constitutes 36.1% of developers participating in this survey, with 18.7% being at Intermediate and 17.4% at Senior level.

{ title="core_expertise"}_

Intermediate and Senior developers are mainly experts in Full-stack (33.7%) development. This is followed by 23.8% of expertise in Back-end and 18.9% in Frontend development. Evidently, as developers become more experienced, there is a shift in expertise from front-end development to back-end and ultimately full-stack development. There is also expertise in fields such as DevOps (7.1%) and Mobile (6.9%) among this group.

{ title="skills"}_

The most popular skill in this group is also HTML and Javascript is second, with developers reporting having at least basic knowledge level at them at 71.4% and 69% respectively. Compared to Junior developers, MySQL is at 60.8% (+11.1 units) and PHP comes into the picture at 56.3%, followed by CSS that drops by 8.3 units (**51**%).

Intermediate and Senior developers report being fluent at HTML (44.9%), CSS (27.3%), Javascript (26.5%), PHP (24.5%) and MySOL (19.6%). In this case, PHP and MySQL replace Python and Java from the top 5 skills which junior developers report being fluent at. Additionally, all percentages for each skill mentioned have increased by significant margins, which is to be expected as developers in this group have had time to acquire a much better understanding of the coding languages and databases of their interest or line of work.

Regarding the platforms, frameworks and libraries used, Bootstrap (53.1%) comes first in this group as well, followed by ¡Query (50.6%), Wordpress (45.7%) and .NET (29.4%). Node.js makes an entry with 25.7% to complete the top 5 list. Compared to Junior developers, ¡Query (23.3%), Wordpress (22.9%) and Bootstrap (20.4%) remain high as tools which Intermediate and Senior developers report being fluent at, yet .NET and Woocommerce now come next, each at **11.4**%.

{ title="development_tools_and_methods"}_

Nearly 9 in 10 Intermediate and Senior developers report being familiar with Source Control (87.1%) and Collaboration tools (88.4%). 81.5% in this group are familiar with Project Management and 71.2% with Software Testing tools. Agile (70.5%) continues to be reported as more familiar by a margin of 11.1 units when compared to Scrum (59.4%), even though familiarity in both has almost doubled compared to Junior developers.

The general increase in familiarity across all development tools and methods reported probably results from the higher involvement and raised responsibilities that developers of this group have into their projects and jobs, and possibly professional trainings they received in their companies.

{ title="industry_and_company_size"}_

Software (35.5%) and Internet and Web Services (25.6%) companies employ the majority of developers in this group. However, compared to Junior developers, the Gaming sector (5.3%) replaces Telecommunications as the industry that comes third in this list.

Companies with less than 5 employers (49.1%) continue to employ nearly half of Intermediate and Senior developers, even though there is a drop by 10 units when compared to the Junior developers group. The remaining **50.9**% is divided between large (29.1%) and medium (21.8%) companies.

{ title="employment_status_and_salary"}_

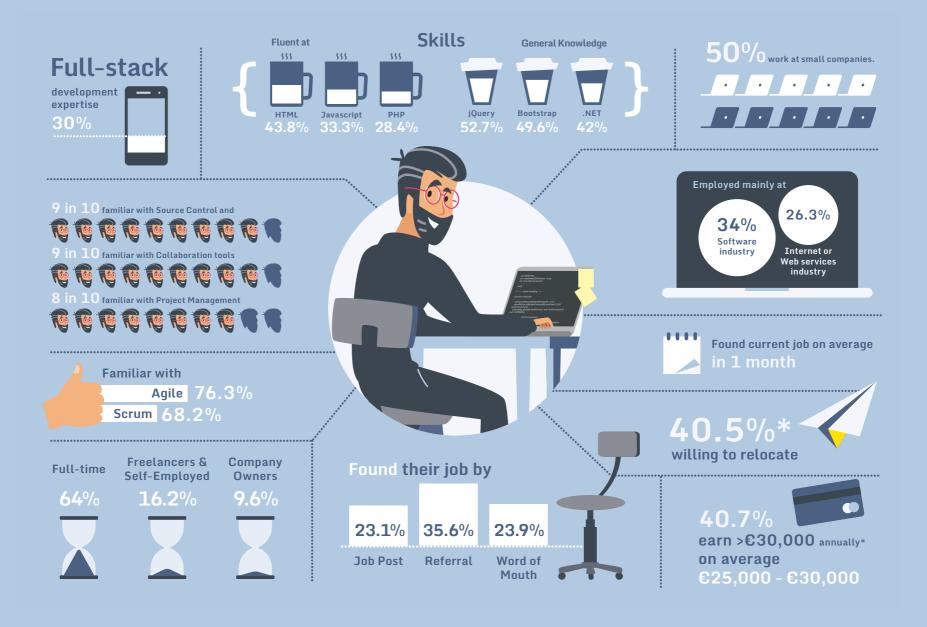
The full time employment (64.9%) of Intermediate and Senior developers is almost twice of that of Junior developers and the unemployment rate drops down to 4.5%. Freelancers and self-employed developers are now at 13.1% and new roles emerge in Company Owners and Remote work, each reported at 4.9%.

This group is expected to have higher salaries, but it is remarkable that 49.9% of them are still paid less than €15,000 per year, with **14.6**% even being paid fewer than €5,000. Yet, compared to Junior developers, there is a notable increase in developers earning

€15,000-30,000 annually (29.4%) and another 20.7% earns more than €30,000.

The percentage of developers finding their current job through job posts remains rather stable (35.6%), but there is an increase in Referral to 27.6% and a small decrease in Word of mouth to 14.6%. One could make the assumption that as developers build more connections in their field and occupation, the chances of them finding a job after being referred to it by a contact are much higher.

skills_and_employment_characteristics_ grouped_by_experience_level /



This group consists of developers with 8+ years of experience and constitutes 19.3% of developers participating in this survey.

{ title="core_expertise"}_

Lead developers' main expertise is Fullstack (30%) development. The trend of moving from Front-end (12.2%) to Backend (25.4%) development as developers become more experienced continues to exist. However the findings reveal that compared to Intermediate and Senior developers, there is even higher expertise in the Enterprise (11.7) and Devops (10.2%) fields.

{ title="skills"}_

For Lead developers, Javascript (64.2%) surpasses HTML (63.6%) as the skill that they report as having at least basic

knowledge level at. These are followed by PHP (63.6%), MySQL (42%) and CSS (40.7%). What is worth pointing out in this case is that, when compared to the Intermediate and Senior developers group, there is a significant decrease in the overall percentage of each popular skill that ranges from 4.8 units (Javascript) to 18.8 (CSS). In an attempt to justify this, one could argue that Lead developers usually contribute much less with actual coding in the projects they are involved, as their positions in companies are focused more on management and team leadership.

The skills that this group reports as being fluent at are once again HTML (43.8%), Javascript (33.3%) and PHP (28.4%). SQL (25.9%) is reported for the first time in the top 5 skills, followed by CSS (21.6%).

In relation to the platforms, frameworks and libraries used, jQuery (52.7%) replaces Bootstrap (49.6%) at the top, followed by .NET (42%), Wordpress (35.1%) and Node. is (21.4%). The order remains almost the same (jQuery 27.5%, Bootstrap 26%, .NET **22.1**%, Wordpress **13.7**%), in the areas where Lead developers are more fluent at, with the only change being Joomla (9.9%) replacing Node.js.

{ title="development_tools_and_methods"}_

In comparison with the Intermediate and Senior developers group, there are no significant changes in the familiarity of Lead developers on tools such as Source Control (88.5%), Collaboration (87.2%) and Project Management (83.5%). This could be an indication that most knowledge in them is gained at an earlier level.

There is however a noticeable increase again in the reported familiarity with methods such as Agile (76.3%) and particularly Scrum (68.2%). It is possible that as developers reach the Lead level and gain core positions within companies, they are increasingly more concerned with the procedures and the organization of the software development cycle.

{ title="industry_and_company_size"}_

The percentages of the main industries employing Lead developers remain at the levels of the Intermediate and Senior group, with Software at 34% and Internet and Web Services at 26.3%.

In comparison to the previous groups, the change is observed once again in the industry following these, and in this group it

is Finance, Banking and Insurance (6.7%). As discussed in the "Education levels. Salaries and Industry types" subsection, the Finance, Banking and Insurance sector offers the highest wages to developers, and this is worth taking into consideration when attempting to offer any explanation on the change.

Similarly to the Intermediate and Senior group, 50% of Lead developers are employed in small companies. Yet in this group there is an evident shift away from large companies (16.2%), towards medium companies employing 20 to 99 individuals. An argument could be made that in order to pursue higher positions in their careers, Lead developers move away from the very competitive environment of bigger corporations and into smaller companies willing to offer them core managerial roles.

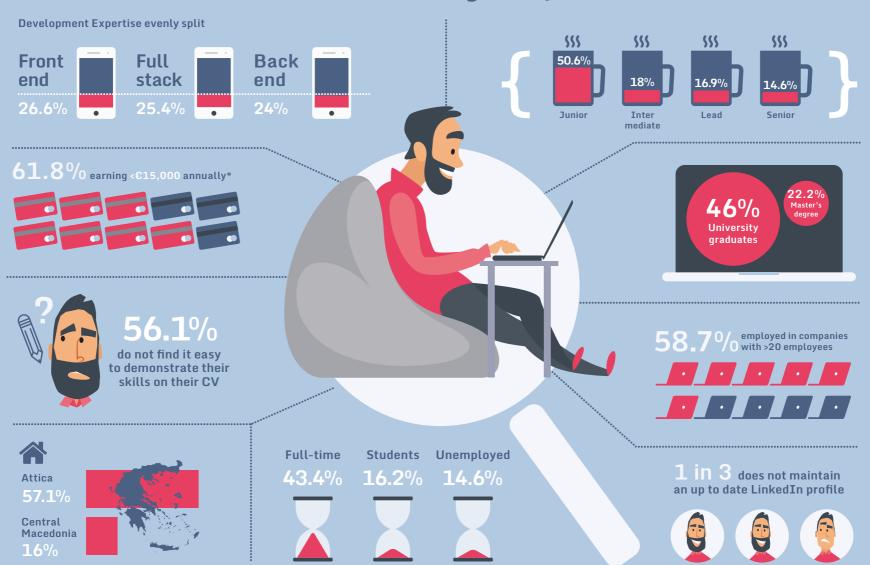
{ title="employment_status_and_salary"}_

Lead developers hold Full-time jobs at 64% of the reported cases and are Freelancers and Self-employed at 16.2%. Compared to the Intermediate and Senior developers group, the percentage of Owners (9.6%) is more than doubled; apparently as developers reach positions higher up the career ladder, they feel more confident to start their own businesses.

Predictably, **40.7**% of Lead developers earn more than €30,000 annually and **30**% earn between €15,000 and €30,000. Interestingly, almost a third of them (29%) earn less than €15,000 on an annual basis.

In contrast with the Junior developers and Intermediate and Senior groups, Referral is the most common method through which Lead developers report having found their current job. There is an increase in Word of mouth (23.9%) as well, with Job posts following at 23.1%.

Of those seeking for a job:



This is an attempt to build a profile of developers that are actively looking for a new job position based on the data of this survey, and point out the most noteworthy relevant findings.

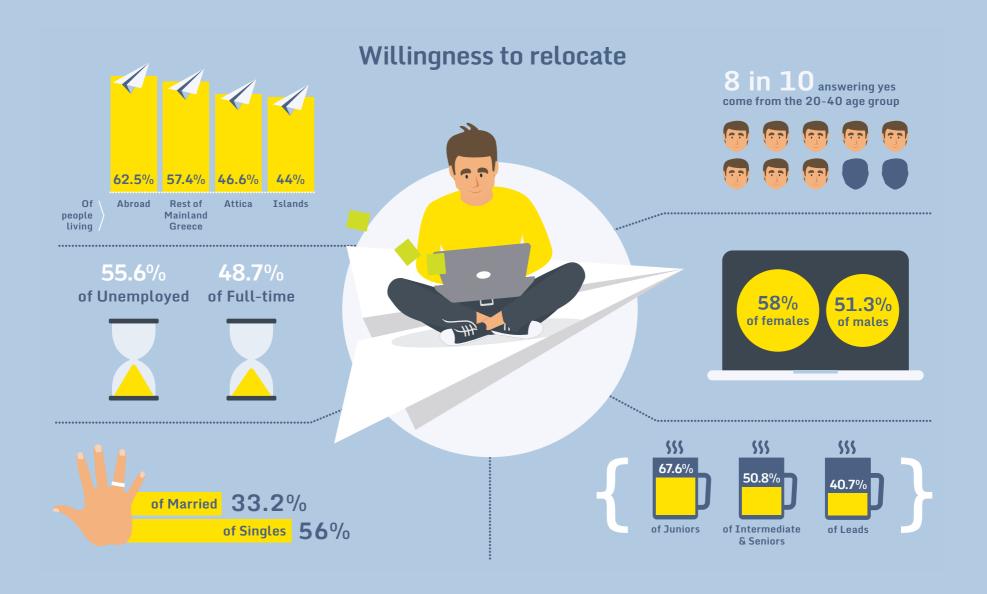
The majority of them are living in Attica (**57.1**%) and Central Macedonia (**16.0**%), while 58.7% work for companies with fewer than 20 employers. It is intriguing that the highest percentage among them are already holding Full-time positions (43.4%) and that the lowest are Part-time (5.1%) and Remote 2.8% workers. Students at 16.2% and participants who are unemployed at **14.6**% are certainly to be expected.

Similarly, it is not a surprise that people at lower annual salaries are those who are more interested in finding a new job, with **61.8**% of them earning less than €15,000 per year. In accordance with the general distribution of developers among industries, the majority of them are currently employed at Software (28.2%) and Internet and Web Services (23.4) companies.

22.2% of them are holders of a Master's degree, whereas 46% are university graduates (AEI 23.8%, TEI 21.7%). These are followed by 12.5% that come from a Secondary/tech educational background.

In regards to their core expertises, the top 3 are almost evenly split among Front-end (26.6%), Full-stack (25.4%) and Back-end (24.0%) development, followed by Mobile applications at 6.7%. Half of developers report being at a Junior (50.6%) experience level, 18% at Intermediate, 14.6% at Senior and 16.9% at Lead. Even though the majority here are less experienced developers, there are individuals across all levels available in the job market for companies looking to recruit new talent.

Finally, it is noteworthy that nearly 1 in 3 developers looking for a job does not maintain an up to date LinkedIn profile (31.6%) and that among unemployed people that percentage is 42.3%. Additionally, **56.1**% do not find it easy to demonstrate their skills on their CV.



Among the developers that are willing to relocate, the highest percentage, perhaps not surprisingly, originates from those that currently live abroad (62.5%). This could be attributed either to the fact that they are looking forward to returning to Greece, or to them being more accustomed to moving between countries and places.

The least willing to relocate to a new place due to a new job opportunity are developers living in the Greek islands (44%). An argument to justify this would be that people living in the islands have slightly different priorities that come with their chosen lifestyle. Developers from Attica, who are the group represented the most in this survey, are reporting being less willing to move (46.6%), which is 10.8 units less compared to the Rest of Mainland Greece 57.4%

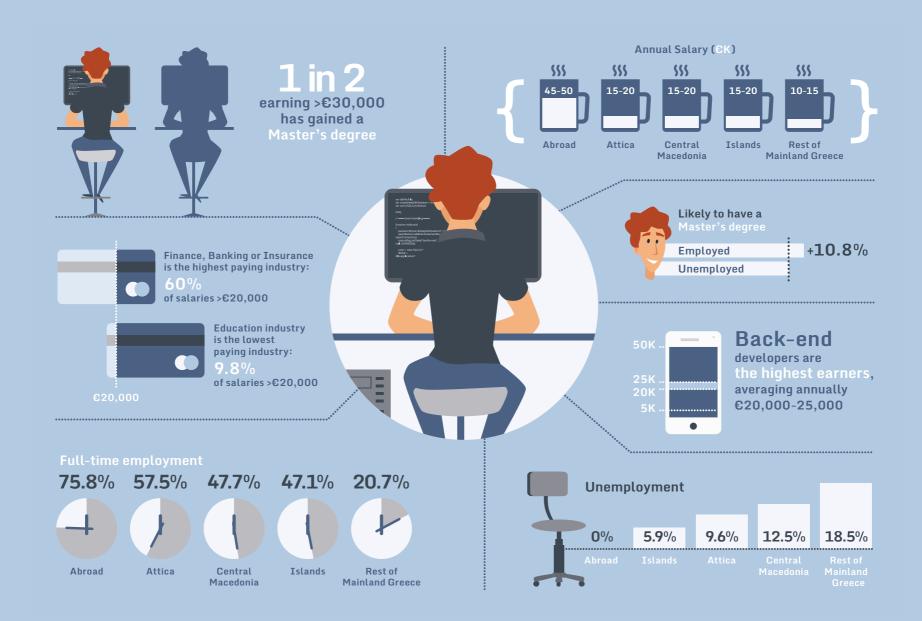
77% of developers willing to relocate come from the 20-40 age group, with the 25-30 year olds being responsible for 25.7% of the total participants responding positively to this question. This is the age group who are just graduating from universities and perhaps completing their post graduate

degrees, and have probably not settled yet to a permanent residence. Additionally, married developers are by far less likely to change their place of residence (33.2%) compared to single (56%).

Furthermore, Junior developers (67.6%) are the most willing to relocate, followed by Intermediate and Senior at 50.8%. Only 40.7% of Lead developers are interested in relocation however, perhaps because they are most probably at an older age and have already settled at a permanent place to live.

The fact however that female developers (58%) are 7% more likely to report being willing to relocate compared to males (51.3%) might reveal some underlying gender related factor that is worth further investigating in the future.

In regards to employment status, unemployed people are more likely to report willing to relocate (55.6%) compared to full time workers (48.7%). One would expect the difference here to be much higher, with people seeking a job being more eager to move to a new place, provided that they find a position that suits them.



The factor that stands out in the survey's findings when considering education, both in terms of employment status but also of salary amount, is the possession of a Master's degree. In comparison with unemployed developers, those being employed full time report having attained a Master's degree after completing their university studies at 10.8% higher percentage. Similarly, there is an observed increase of the likeliness of possessing a Master's degree as the amount of the annual salary becomes higher; at €0-10,000 salary this percentage is at 13.1%, 27.4% at €10,000-20,000, **40.4**% at €20,000-30,000 and 47.7% for salaries higher than €30.000.

The highest paying industry among developers participating in this survey is Finance, Banking or Insurance, with 60% of salaries being higher than €20,000. Only 38% of the salaries in Software companies and 30% in "Internet or Web Services" are above this amount, with the "Education" sector having the lowest paid earners with just 9.8% being paid over €20,000.

Back-end developers are the highest earners among participants in this survey with an average of an annual salary at €20,000-25,000. Full-stack developers come next, at €15,000-20,000, and the lowest earners are front-end developers at €10,000-15,000.

In terms of annual salary, of those employed full-time, developers in Attica, Central Macedonia and the Greek Islands do not demonstrate any noteworthy changes compared to the average developer in Greece, earning around €15,000-20,000. However, developers living in the Rest of Mainland Greece are paid less (~€10,000-15,000), whereas those living abroad are paid significantly more, averaging €45,000-50,000 on an annual basis. Moreover, fulltime employment varies depending on the area of residence. For those living abroad it is very high (75.8%), followed by Attica (57.5%), Central Macedonia (47.7%) and the Islands (47.1%). The lowest percentage is found in the Rest of Mainland Greece, with only 20.7% being full-time employers.

In regards to the unemployment rate, in Attica it is reported at 9.6%, it is higher in Central Macedonia at 12.5% and lower in the Islands at 5.9%. It is worth noting that unemployment is **0**% for developers living Abroad and the highest percentage is found in the Rest of Mainland Greece at 18.5%.

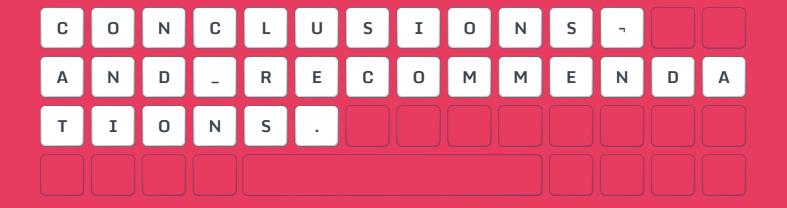
For the vital 15-24 age group, the unemployment rate reported by developers in this survey is **10.7**%, much lower than the general rate in Greece¹³ (44.5%), with 50.8% at that age being students. For the 25-29 year olds, unemployment rate is at 15.9%, which is half of the general population rate (31.1%). Moreover, the unemployment percentage (8.4%) among developers of the 30-44 age group is a bit more than a third of the that of the general population (20.4%).

Taking in mind the findings from all participants, it appears that junior developers use Windows (73.8%) over MacOS (5.3%), whereas Intermediate, Senior and Lead developers tend to sometimes prefer MacOS (16.8%) over Windows (63.6%). One possible explanation for this could be that the low salaries of junior developers do not allow them to spend the extra money on purchasing hardware running MacOS, which is usually significantly more expensive. Linux usage is across all experience level groups around 20%.

At the same time, developers coding on Linux systems are much more likely to contribute

to open source projects (59.5%), followed by MacOS at 46.1% and Windows at 43.1%. Apparently people already familiar with an open source operating system such as Linux tend to adopt the general values of sharing and reciprocity and spend more effort in contributing back.

Volunteering to open source projects is an admirable practice that enables developers to publicly demonstrate their coding expertise, learn new skills, collaborate with international teams and build a good reputation among other developers; all of which are qualities that are highly rated by many employers in the ICT sector.



> conclusions and recommendations

There is a vibrant community of developers in Greece, with members spread across all experience levels, possessing diverse skills and coming from different educational and socioeconomic backgrounds.

The demand for talent in the ICT industry tends to exceed the supply, which means that companies hiring should have an array of options available to choose from in terms of developers and their characteristics. The large percentage of Junior level developers observed participating in this survey fuels the market with new talent and indicates a healthy growth of the field in Greece. This increasing number of new and skilled developers can act as a catalyst for attracting new investments in software development and other related industries.

The ICT sector is undoubtedly an area that will continue to evolve on a worldwide scale and be increasingly more relevant both to our society and our economy; we should strive to take advantage of this potential

at an official level. For this to have any meaningful and measurable impact, there needs to be a more systematic and strategic political approach aiming at bringing change to the greek ICT landscape and populating the struggling economy via it.

Targeted suggestions emerging from the findings of this survey include:

Urging, especially Students and Junior developers, to follow paths in rapidly evolving fields such as Mobile, Data Science, Internet of Things (IoT) and Embedded Devices.

Informing developers on the current trends in software development and newly created opportunities from modern technology in the digital era, like Remote work.

Offering professional training to developers on widely adopted methodologies and frameworks for software development, such as Agile and Scrum.

> conclusions and recommendations

Funding internship programs which introduce new talent that is just exiting universities to the enterprise and business sectors and make this transition smoother and more effective.

Prompt students at all educational levels to take part in mentored programs such as Google Summer of Code (GSoC), that offer opportunities to code for open source projects and gain valuable experiences on working collaboratively and effectively on an international scene.

Providing incentives at a government level

for private capital and enterprises to invest in the software development sector. particularly in regions outside of Attica, following the example of other success stories from countries such as Ireland, Estonia, Belarus, etc.

Training developers on caring more about their online professional presence, the usage of

professional tools such as LinkedIn and the impact these tools can have on their careers.

Supply the means to initiatives that aim at inspiring females, especially young girls, to show interest in coding and breaking the traditional stereotype of a male dominated ICT field.

Invest more in SME's and Startups who are reported as the major employer across all knowledge levels of developers participating in this survey. To learn more on the startup ecosystem in Greece, make sure to check Found.ation's report:

http://thefoundation.gr/startup-report/

Organize events focusing on innovation and digital entrepreneurship, to sparkle the interest in more developers to become founders and starting their own projects and businesses.

> conclusions_and_recommendations

To conclude, the need to hire new talent from enterprises and smaller companies exists and so does the willingness to seek for new job opportunities on behalf of the developers. What seems to be lacking and encompasses significant potential for improvement is the matching process involving both ends of the labor market. This is exactly the sweet spot where innovative initiatives such as Tech Talent could have a game-changing impact.

Tech ralenz

{ www.techtalent.jobs }



Bridging the gap between developers and companies