ITonboard

Blended Remote Internships in IT companies

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ITONBOARD "IT community onboarding programme: vocational orientation for young people", an Erasmus+ project with support of the European Union

Onboarding in Remote Working Companies

A guideline for entrepreneurs, human resource managers and people in IT.

Internships are a great way to find young talents. Learn how to have successfull internships in a remote or blended remote environment.

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1 Introduction

With the concept of Blended Remote Internship, we entered uncharted territory. We collected parts of different worlds like pieces of a mosaic and thus connected Best Practice examples of IT companies on Remote Work, knowledge on internships in general, internships in the context of Erasmus+, experiences on e-learning and lastly on scholarships for online student projects.

On the topic of Remote Work we interviewed CEOs and employees of remote working companies.

- Kitconcept/ Germany — Tim Stollenwerk
- Six feet up/ USA — Chrissy Wainwright
- Syslab/ Germany — Alexander Pilz
- Niteo/ Slovenia — Nejc Zupan

We also conducted interviews with teachers and students in the participating countries, asking them about e-learning and blended learning.

Paul Roeland, the organizer of the Google Summer of Code for the Open-Source CMS Plone, explained the concept to us and told us about his practical experience with the Google scholarship for a worldwide online student project, in which students spend a summer co-developing open source projects.

To scientifically support our concept we were able to win over the business pedagogue Prof. Bernd Gössling from the University of Innsbruck, an expert in vocational learning, who drew our attention to important pedagogical aspects.

2 Foreword: Erasmus+ Project ITONBOARD

by Prof. Bernd Gössling

Up to now, internships have typically taken place at an office. Those who “go” to the internship physically change location. Learners leave the classroom to gain new experience, for example at a company workplace. In contrast, a remote internship, which takes place at a distance and where the interns stay at home, is hardly considered a real internship by many.

The common criticism of remote work placements is that there is a lack of opportunities for personal exchange, short walking distances to make arrangements or to get support for tasks that are being done independently for the first time; a lack of opportunities to feel part of the working community, a lack of space to share the experience of having done something together. This criticism could also be applied to remote work in general.

However, there are areas where remote working has been very successful for many years, especially in the IT sector. Companies with links to the open source community, which has always practised the remote working mode, are considered pioneers. Here, solutions have been developed to deal with the

disadvantages which remote working can bring. There are companies that, due to positive experiences with different variants of remote working and home office, have already dispensed with fixed offices and space for face-to-face work for many years.

If these companies offer an internship, the same applies to the interns as to all other employees: Workplaces in presence are not available, digital communication and cooperation tools are used for collaboration. Instead of ad hoc arrangements in the open-plan office, there are fixed times for conversations via video conferencing systems for daily coordination, the conversation at a colleague's desk is, among other things, replaced by digital communication channels for direct communication. Staff management takes place via fixed video appointments for personal discussions, project management via transparent work organisation, for example with agile methods such as Scrum. Spaces for interpersonal interaction are created through "blended" elements, i.e. long-term, compact presence phases in which there is space for team development, comprehensive agreements and participation in far-reaching decisions.

Where blended remote working functions, it is not just because of a technical matter, but part of a lived corporate culture that takes up the needs and requirements of employees. A blended remote internship can also become a rich work experience under such conditions.

This is where the ITonboard project comes into play. Experiences of companies that have been practising and developing innovative concepts for blended remote work for a long time are generalised and made available in a guideline to all those who, coming from a culture of presence work, want to further develop their corporate culture and work organisation in the direction of remote work. Thus, the project results are particularly relevant for those who have gained initial experience with remote internships as an emergency solution, especially during the lockdown phases caused by the pandemic, but are now unsure how they want to realign the relationship between working in presence and working remotely. In a very practical way, it is also discussed that common fears, such as productivity losses with remote work or negative effects of spatial and temporal flexibility on the employees themselves, do not have to come true.

It is about comprehensive issues that go far beyond the technical side of remote work and also address, for example, the design of work tasks in the internship, personnel management and corporate culture, the goals of an internship, the technical requirements as well as the already existing professional and interdisciplinary competences of the learners. The approaches developed in the ITonboard project are already relevant for many companies, especially in the IT sector, that simply cannot offer a face-to-face internship because they simply do not have a building to go to for work. A blended remote internship is not a makeshift solution here, but the counterpart to a presence internship in a presence company.

The project results are therefore exciting for all those who are responsible for questions of training and recruiting young people in an environment of blended remote work. For those who are concerned with realigning the relationship between face-to-face and remote work in their company, the results can be a

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stimulus to look at new internship models and to further develop their own internship supervision.

2.1 About the person

Bernd Gössling holds the endowed professorship for business education with a focus on vocational education and training research at the Institute for Organisation and Learning at the University of Innsbruck. He studied business administration and business education at the University of Paderborn and the University of Potchefstroom, South Africa. After graduating, he worked in business development at an IT company in Norway. He then became a research assistant in business education at the University of Paderborn, where he completed his doctorate with distinction in 2013. In the following post-doctoral phase, he became managing director of the Centre for Vocational Education and Training (CeVET) and took on substitute professorships for vocational and business education at the University of Osnabrück and at Leuphana University Lüneburg. Bernd Gössling researches at the interface of economics and pedagogy. His activities within VET research are directed towards core topics of business education with a special focus on in-company training, apprenticeship training, curriculum development and the change of VET institutions. The different research topics are linked by an interest in vocational teaching/learning processes and their didactic design. In his most recent research, he is investigating the implications of the digital transformation for methods and objects of VET, the connection between changes in the world of work and the qualification of skilled workers, as well as possibilities for innovation that arise for VET from the adaptations in the context of the COVID-19 crisis.

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3 What is Remote Work?

3.1 Definition

Since the pandemic, almost everyone of us has forcibly made the acquaintance of working from home. Private rooms were converted into offices ad hoc. Furniture was moved around, new desks and chairs put in place of comfortable couches. For the "home office" new laptops, headsets, monitors were ordered, communication and cooperation software such as Zoom, Google Meetings, Jitsi, Slack, MS Teams and so on were installed. And then we started working from home, because the analog work process was simply implemented one-to-one digitally.

That's not what we mean by remote work here!

Teleworking is a term that we already know from before the pandemic. From a labor law perspective, it describes regular work from home. This is in contrast to the home office, which is understood to mean occasional work at a different workplace than the employer's building.

However, this is neither about a classification under labor law nor an analysis of the "home office" as we got to know during the pandemic.

In the IT industry, especially in the open source world, working together using the latest web technologies across countries and continents has been an everyday habit long before the pandemic.

Some IT companies cultivated this mixture of location-independent software development and software development in a common place for themselves. We have conducted long interviews with IT companies that have developed and optimized work processes for decades in order to create a location-independent, high-quality and team-building work environment.

In the further course of the guide, this working environment is what we will use as our basis for an internship environment.

Blended Remote work in this sense means the use of work processes that have been developed and optimized for a location-independent, collaborative and team-building work environment and at the same time also schedule time and place for joint presence phases.

3.2 Experience – Best Practice Examples – interview with stakeholder

We had the opportunity to meet with companies that have specialized in Remote Work and thus gain insight into their extensive experience and expertise. Two businesses and their know-how are highlighted in the following.

The first business to be introduced is Syslab, a software developing IT-company with their headquarters in Munich, Germany. This, however, is now only a small office mainly used for administrative purposes, as their up to ten employees work remotely from homes all across Europe. Regularly they meet online to connect from Germany, Austria, Spain, Italy and Ireland to remotely work together. According to CEO Alexander Pilz it took over ten years to perfect this process of enabling Backend and Frontend developers to work from home and creating an

unique form of work- life balance. The concept works, as despite — or because of this — the company is thriving.

We asked how this could possibly work. How can you remotely reduce human communication, which is built on a long verbal and nonverbal evolution? Especially in software development lack of communication and misunderstandings between developers can lead to disastrous results. Which tasks still work well decentralized and remote and which do not? How can you create a team with decentralized employees and build trust? These questions and more were on our minds.

> "Every morning at 10am the Syslab team meets for about fifteen minutes on Jitsi. We rarely skip this meeting, only if something unexpected happens" says Alexander Pilz.

The company works with the SCRUM process model for agile software development and has adapted this method to its needs over the years. Thus, in addition to the daily meetings, there is a two-week Sprint (kind of controlling) with Planning, Retro and Review. The quality of the meetings is an important point for the boss.

> "We make sure that something comes out of a Retro. So it's not just hot air, but at least one task comes out in some form, which you then work on in the next Sprint. So in every Sprint there is also a slot where you can work on internal processes!"

Despite the short sprints of only two weeks, there is an internal review after one week to see how things are going, so that corrections can be made as soon as possible or work can be distributed differently. In addition to regular remote meetings of all employees, the company relies on Pair Programming and Pair Working in general.

> "Which means that knowledge is much, much better distributed" Alexander Pilz is certain.

One example is the weekly design call, in which frontend and backend developers work together in an intensive "make-up hour" for several hours.

> "Because we have found, the language of the designer and the language of the developer is complete disunity. Yeah, so you have to actually force those together. They are like two magnets with the same polarity. And that is where you have to make sure, first of all, that you create understanding, on both sides", Syslabs CEO explains.

But the most important meeting for the boss is the weekly one on one time with each employee.

> "I talk to each developer for half an hour every week. About everything that comes up. In other words, instead of having an open-doors policy, where anyone can interrupt at any time, which is not necessarily productive, everyone has a half-hour slot every week. And

> so you know when something is going on. You do not have to talk about it right away, but you know that I can raise and discuss this issue in those few days. That makes for a lot of understanding and a lot of opportunities to follow up. I would not want to do without that anymore!"

What about the interpersonal chatting at the coffee machine, we asked. In fact, the Syslab company has a chat room called the "coffee machine". There, employees can exchange ideas and talk about anything and everything. This room also includes a link to a video conference that you can press at any time and meet everyone who is in the room.

> "And if you are having lunch, you can sit together at the computer, chow down and gossip a bit," grins the boss.

Do the employees also meet in real life? We asked the company if there are attendance phases.

> "The coordination of real-life meetings is sometimes difficult", says the boss. "That is, planning such meetings for all our people is time-consuming. But once or twice a year we did it before COVID. We tried to get a Sprint (a real life meeting of Python developers) going where you can crack bigger nuts, which works much better if you can talk to each other a lot."

For Nejc Zupan's remote company Niteo (Slovenia), face-to-face sessions, or In-Real-Life (IRL) Meetups, as the Niteos call them, are an essential part of their blended remote process.

Similar to Syslab, Niteo began developing a sophisticated blended remote process more than ten years ago, also using SCRUM as a model. Unlike Syslab, however, developers from all over the world work together at Niteo — from Europe and America to the Middle East, India and Southeast Asia.

The work process at Niteo is similar to that of Syslab in many respects. But one special feature are the IRL meetups that take place twice a year (January and June). All developers are specially flown in by the company for a joint work/vacation week. While the Niteos used to meet in different locations from Bangkok to Marrakesh before COVID, the company now has its own vacation/work domicile on Lanzarote. The meeting serves on the one hand to discuss and clarify strategies and company issues within the team, and on the other hand to maintain friendships and personal contact. Attendance, however, is expected.

But the vacation feeling at the IRL meetings could paint a false picture of reality, as Niteo's remote work process is very sophisticated and efficient. Not for nothing do the Niteos proudly present their process in a publicly accessible manual on Github.

The Niteos work cycle runs fortnightly:

- It starts every second Tuesday with the Review — results and review of the work — and then continues on Wednesdays with the planning of the next two working weeks. Due to the size of the company, the meetings take place in a general video conference room and then in a separate chat room for each project.

- Every Monday and Thursday, a stand-up meeting is held for everyone via Zoom at noon sharp, followed by individual stand-ups per project. A separate task is added to the Monday stand-up meeting before the review on Tuesday. Developers are encouraged to offer each other help to finish tasks before the review. This is part of the company's motto.
- Every second Thursday (in the week of the SCRUM meetings) there is an exchange of developers with Lightning Talks and technical discussions (minimum of 60 minutes). This distributes the knowledge in the company and increases it in the sense of Open Source.
- In each quarter, the previous quarter is reviewed, reflected and the next is planned. There are three tasks for quarterly review and planning: partner meeting, quarterly review and all-hands meeting.
- The personal conversation with the boss or supervisor is essential in Niteo's remote work process. For example, every fortnight there is a personal meeting for each team member with a senior in "coffee house style". The conversation takes place via Zoom or by phone. "Catch up meetings", it is called at Niteo.
- In addition to the regular mandatory meetings via Zoom, there is ongoing communication via Github Notifications. These should be checked by all employees every day. The instant communication runs via Slack.

Depending on demand and regional possibilities, the individual members meet once or twice a month at local conferences or for lunch. It is amazing how the work processes are similar despite different developments, so that basic principles can be developed from them.

3.3 Digital Infrastructure

Since the 1980s, many new tools have been developed for collaborative, location-independent software development and communication, especially in and for the Communities. From simple text-based chat to distributed source code versioning, collaborative project management tools and video conferencing software to today's consolidated software solutions that integrate several of these sub-areas.

Chronologically, the tools developed from the early 70/80s:

- In the early days there were only IRC (Internet Relay Chat), news (NNTP), e-mail (only the latter survived until today),
- Common source code management and versioning, in early days CVS, then SVN, Mercurial, today GIT,
- Bulletin boards, forums,
- Issue tracker, project management software,
- Various other text chats,
- Voice chat (1:1, then N:N),
- Integrated web platforms on top of source code management software (Gitlab, GitHub, Bitbucket, ...),
- Video chat, screen sharing, video conferencing,
- Virtual whiteboard as well as Kanban tools,

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- Consolidated communication tools (Slack, Discord, …), Continuous Integration (CI) and Continuous Delivery/Deployment (CD),
- The mentioned integrated web platforms then consolidated more and more of the features (issue tracker, project management, Kanban boards, CI/CD, …),
- Deployment got more virtualized (Docker, Kubernetes),
- This then led to the job description of DevOps,
- One-Stop-Shop.

Nowadays, digital collaboration tools can be roughly divided into:

- Shared source code management and issues trackers like Gitlab, Github and Bitbucket with Jira
- Communication tools for direct video conferencing like Zoom, Jitsi or BigBlueButton
- Consolidated communication tools like Teams, Slack or Discord
- Project management tools such as the many Kanban boards
- Whiteboard collaboration tools for design, content-related or software-architectural planning and brainstorming, like Miroboard or Figma

3.4 Remote Work Process — Conclusion

The work processes of Syslab and Niteo are showing many parallels, although both companies have developed and optimized their processes independently of each other over decades of experience.

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- The general process of software development takes no longer than 14 days.
- Every 14 days, the results of the previous 14 days are presented and discussed together in remote conferences and the planning for the next 14 days is done.
- Every other day during the process there is an obligatory Jour Fix “Standup Meeting” via the conference tool.
- In addition, there is also Gitlab or Slack for ad-hoc contacts with the obligation to also view news and changes on a daily basis.
- Independent of the general procedure, personal discussions, so-called “catch-up meetings”, take place between the employees and the boss or senior partner at weekly or bi-weekly intervals.
- The “design call”, in which frontend and backend developers meet to exchange ideas, is obligatory in some companies.
- Optionally, there can also be developer sessions, in which the developers are given time for technical exchange in the form of short presentations called “lightning talks”.
- In addition to the remote process, there are regular or ad hoc mandatory presence phases to discuss strategic decisions, facilitate exchange and for team building.

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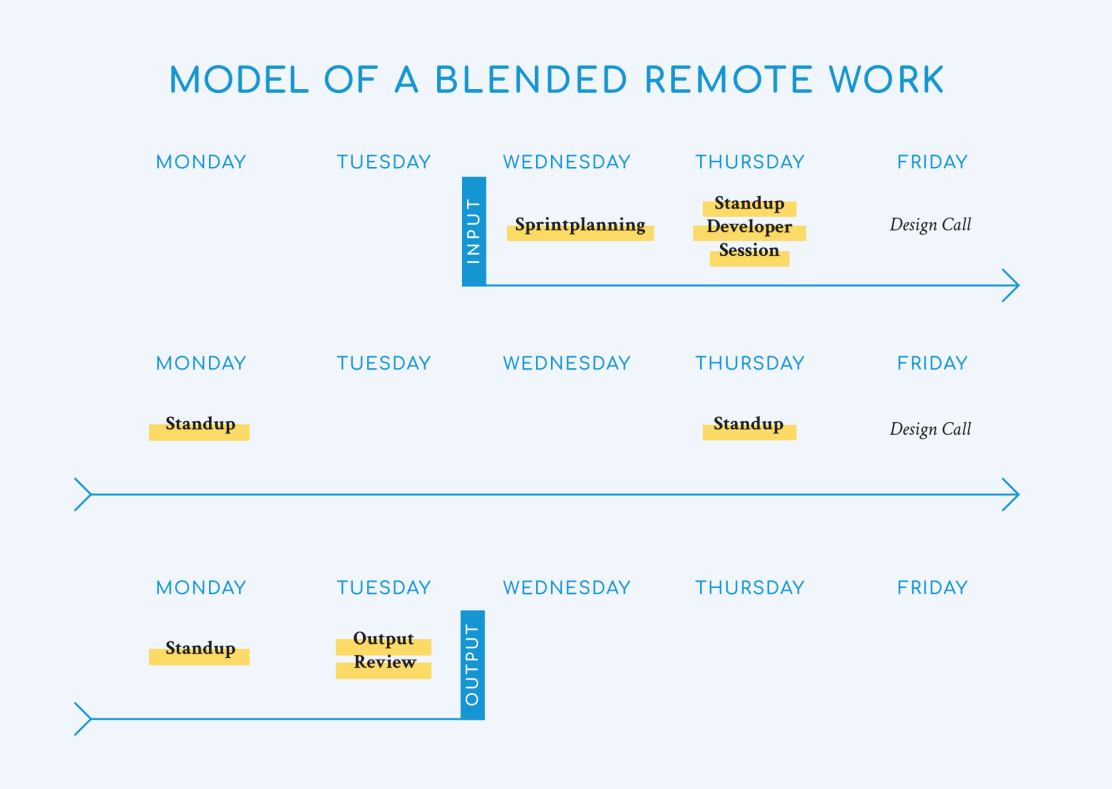

Figure 1: *Model of a blended remote work*

4 Why offer an internship?

4.1 How are companies positioned that have had positive experiences with internships?

This guide is intended to help entrepreneurs to integrate interns into their work organization, particularly through the blended remote work process. Therefore, we have dealt with the question of possible problems.

How can companies be persuaded to take on interns? What are the fears of companies when dealing with interns?

External experts from the field of IT and open source culture met at the Multiplier Event in the Wildschönau. This gave us the opportunity to clarify these questions with experts and entrepreneurs in the context of a workshop.

We chose the method "The Six Hats" by Edward de Bono and looked at the risks, problems, skepticism, criticism and fears of IT companies which make the start of a blended remote internship process difficult.

Using Ishikawa's cause-effect diagram method, we mapped out the causes of problems and their interdependencies. We identified the causes based on their probability and urgency. This task was challenging for all participants.

We developed solutions and measures for the problems prioritized beforehand. The problems, which were outlined in the document, are briefly summarized in the following.

Priority 1:
There is no general obligation for IT companies to offer internships to young people for career orientation. There is also no reward in the IT sector for taking on interns or apprentices as there is in other sectors. One measure, for example, would be that vocational orientation/training companies are given preference in public tenders. The group found that the solution is beyond our control and also beyond the scope of the Erasmus Plus project. However, it should at least be mentioned.

Priority 2:
The personnel effort for supervision is very high in the blended remote internship. Many good solutions and suggestions were found in the group for this problem, which we elaborated on in our guide.

Priority 3:
There are concerns about what tasks can be expected of interns. There were discussions about how and at what level requirements can be placed on interns. The discussions led us to the realization that the term internship is too broad in the minds of entrepreneurs and HR managers. Often, an internship intended for career orientation is mixed up with those for work experience or career deepening, although the requirements and expectations with career-orientating young people are completely different than with an experience or deepening internship.

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4.2 What types of internships are there?

There are several ways to differentiate between types of internships:

- On the one hand, internships can be discerned according to the modality — online, hybrid (blended), face-to-face.
- Furthermore, if you can look at the trainees level of training, the internship serves as a career orientation or to deepen content that has already been learned in school or studies.
- In addition, you can make a distinction between compulsory and voluntary internships. A type of internship that is becoming more and more popular is the internship abroad, here too you can find all modalities, as internships for professional orientation are also becoming increasingly popular abroad.

Until before the COVID-19 pandemic, the only known form of internship for many companies and training companies was physically in the office. The usual length of the internship ranges from 3 weeks to a maximum of 6 months. More and more companies are now offering internships with a hybrid model. Unfortunately, there is still not very much empirical data on the efficiency and benefits of this type of internship.

However, since increasing digitization and teleworking will remain a component of our work culture, even without COVID-19, it is certain that internships can be offered in various modalities in the future. In the case of internships that are to take place abroad, where one of the learning objectives is also intercultural competence, it can be assumed that many things cannot be conveyed in a purely online model.

Unfortunately, there is not yet a great deal of experience and only very few empirical research results on the efficiency and benefits of this type of internship. One of the few exceptions: SKELTON, DAVID. “Blended learning and supervision of distance internship and project students.” New Zealand Association for Cooperative Education 2013 Conference Proceedings. 2014

4.3 Why it is so important to offer internships

Computer science is a novel discipline that is subject to very rapid change. What is the latest state of the art today will be long out-dated tomorrow.

The working world, processes and approaches to software development are constantly changing. There are now many educational institutions that specialise in the needs of training future computer scientists. However, it can be seen that from the creation of the curriculum to the actual teaching, it is not possible to keep up with this rapid change.

For the majority of the people, computer science is a closed book that they not only cannot understand but also often do not want to understand.

In addition, the cliché of the computer scientist as a oftentimes male introvert sitting in the basement, a “nerd”, is also a deterrent for many, especially female, career starters.

Even though some computer scientists like to intentionally convey this “cherished” image, it does not correspond to reality. Especially in the open source

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communities cooperation, togetherness and communication are a must in the production of software.

All this communicates to the outside world is a distorted and incomprehensible image of the different professions involved in software production.

This is exactly why it is so important that communities and IT companies open their doors and offer young people the opportunity to gain impressions in the real world of IT.

> "If I am someone who is still on the way to finding my own career ideas, then an internship is always a great opportunity to move forward in the process of career orientation. Because in order to find out who I actually am and what I want to do and what my professional ideas are, learning at school is not enough. I also have to learn in other fields of life." says Prof. Bernd Gössling

Many young people have little practical experience with or understanding of it, as they often only hear about their parents' professions from stories. They can hardly imagine anything about them. Young people need internships for career orientation and understanding of professional practice. T herefore, it is advisable to let trainees participate. This can happen in the form of own projects or by supporting existing teams. Independent work is encouraged and teamwork is learned. Content-related work comes first. This is easy in the remote internship, as the typical "intern tasks" such as making coffee and copying are not required here.

4.4 ITONBOARD Expert Interviews

At our multiplier event in August 2021 we carried out expert video interviews with Fred Van Dijk, available on the ITONBOARD Youtube channel under `https://youtu.be/YkyNqrHdn1w` and Paul Roeland, available on the ITONBOARD Youtube channel under `https://youtu.be/hpvB3kWeeKo`.

5 How? Important principles of a BLENDED REMOTE Internship

5.1 Didactic principles in a blended learning environment

5.1.1 Definition

Instead of the common definition "combination of face-to-face and online learning", a different criterion of demarcation should be used for definition: The combination of synchronous and asynchronous learning. This reading creates greater flexibility for the entire blended learning concept. Accordingly, face-to-face events are no longer absolutely necessary.

5.1.2 Didactic concept

Openness of the blending learning concept there are several equivalent concepts, e.g.

Figure 2: *Online elements before face-to-face learning,ex.:*

Figure 3: *Online elements after face-to-face learning, ex.:*

Figure 4: *Online elements interacting with face-to-face learning, ex.:*

The unanimous opinion is that the respective online-offline share is not so important. More crucial is the pedagogical design, pacing and sequencing of activities with the aim of creating a coherent learning experience.

The following premise should be taken into account:

> "Blended learning arrangements require much higher competencies from learners than is the case in traditional learning environments. Learners have been used to leaving the control of learning processes to teachers since childhood. They must design many functions themselves that were previously controlled and monitored by the teachers." Prof. Bernd Gössling

The right didactic concepts

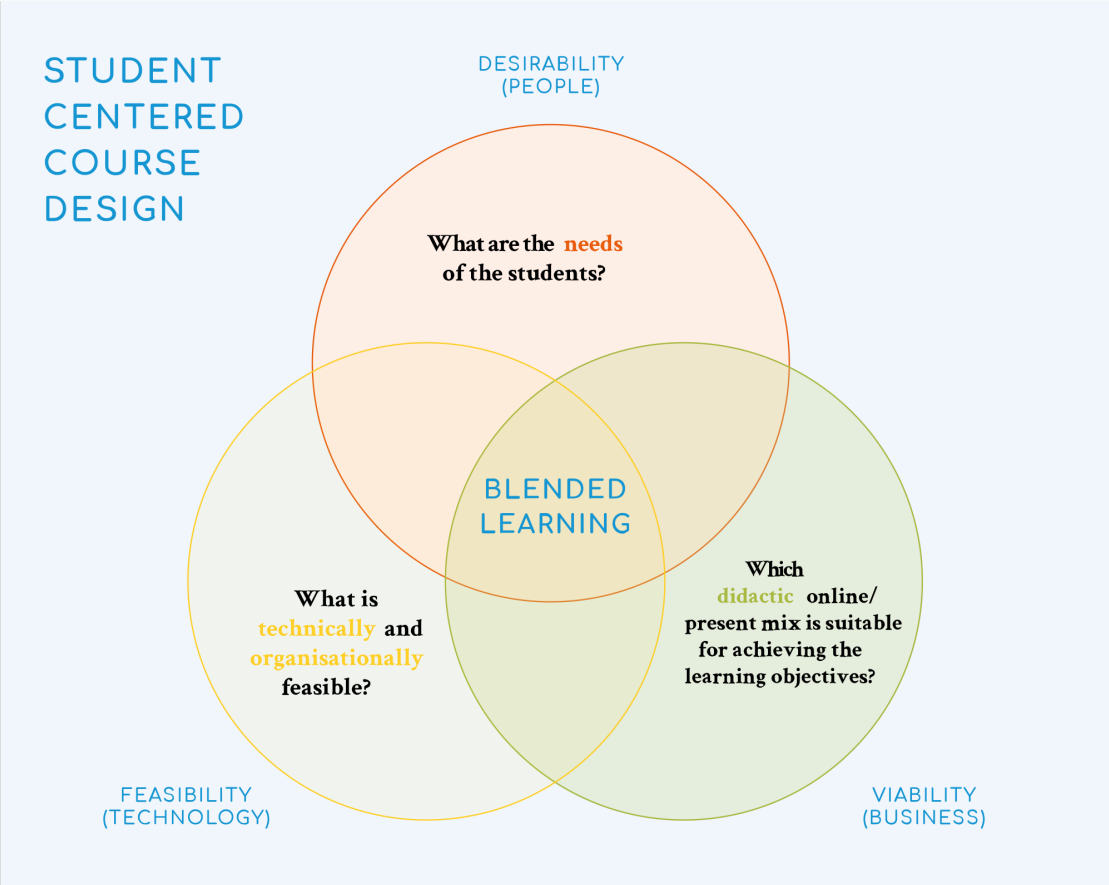

Figure 5: *The right didactic concepts depend on the following considerations:*

Questions that go hand in hand with this:

a Strategic connection:

- Linking the internships to company goals
- Comparison of the target groups with the corresponding requirements

b Analysis of the target group:

- Who is the learning offer aimed at? (Number of people, gender, age, regional distribution, mobility, access to media, previous experience, previous knowledge).
- Prior knowledge of e-learning and digital media
- Main interests, motivation
- Subjects/modules and practical relevance

c Analysis of the infrastructure:

- Premises
- Availability of tools and learning platforms
- Technical and (media) didactic support for online offerings

d Analysis of the initial situation:

- Qualification, content-related competence orientation and focus

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- Possibility of integrating further support structures (e.g. e-tutor programme)
- Time capacity and the expected workload

e Analysis of the project objectives:

- What is hoped for with the use of media?
  - Increasing effectiveness/efficiency
  - Increasing flexibility
  - didactic innovation
  - new forms of learning
  - interlocking of knowledge transfer and knowledge management

f Analysis of learning organisation, content and objectives:

- Which contents are to be conveyed with which goal?
  - Declarative knowledge
  - Procedural knowledge
  - Contextual knowledge
- Structure/method: How should the offer be didactically prepared?
- Learning organization: How should the course be organized?

On the basis of this: Preparation of course concepts with course content, literature references and overarching learning objectives.

This can look like this, for example:

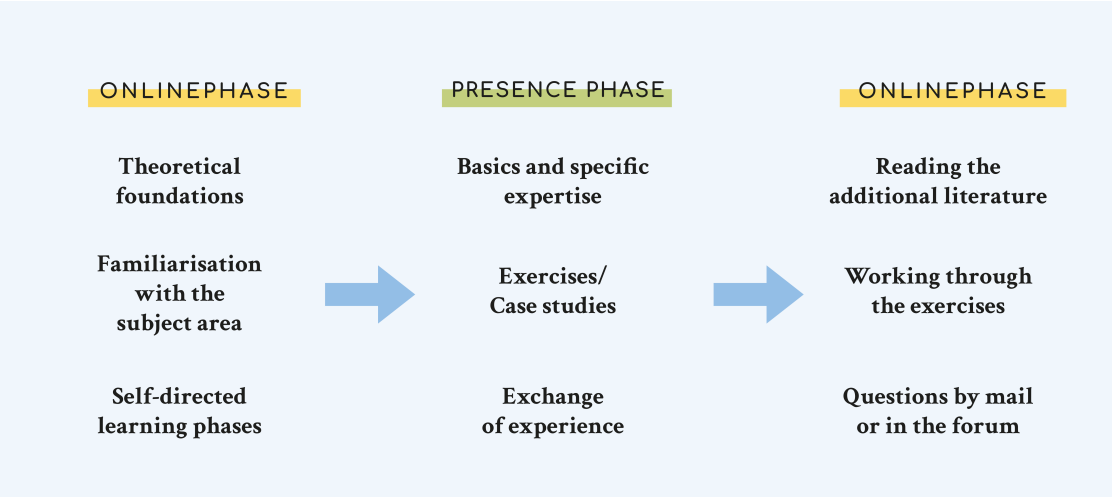

Figure 6: *Phases of an example course concept*

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Possible Course Concepts — Blended Learning:

Course concepts

- Flipped Classroom: Theory is taught asynchronously via interactive presentations, videos and tests. Subsequent application synchronously
- Group puzzle: Each group member is given the task of working individually on a specific part of an overall topic online. Afterwards, each group member reports to their group in presence what they have learned.
- Learning tandems: Learners come together in groups of 2 or 3 and work together on their learning process. They exchange online learning content in presence and help each other.
- Problem based learning: Imitate problematic situations with online simulations. Discuss the experience in presence.
- Taboo: Give a presentation on a topic relevant to the internship using online presentations and lashcards.

5.2 The limits of Blended Remote Internships or Blended Remote Work

An internship in an IT company where remote worked is standard and there are well thought out work processes to go with it, it is a wonderful opportunity for young professionals to get to know a new and very promising working world.

A company that has little experience or has not yet been able to adapt its process to the remote environment will find it very difficult to integrate an entry-level employee. This leads to frustration on both sides.

> "So if remote work is an emergency solution, e.g. for a limited time, but the actual work, which one should get to know through an internship, is structured differently, then I get to know the emergency solution and not the reality." Prof. Bernd Gössling

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As mentioned above, presence phases for software development have a long tradition in open source culture. Anyone who has ever been to a sprint or hackathon knows the great joy when the developers can embrace each other at the welcome. Friendship — community — family. This familial atmosphere is not only important for the cohesion of communities but also for the team building of remote companies. It is undeniable that newcomers to the profession should experience this.

There is a deficit in the social component. In the office, spontaneous conversations often take place while drinking coffee, fetching water, etc. These natural conversations fall away remotely. Here, internal chat rooms or virtual hangouts can be created to aid integration. This, however, can be difficult if you have never seen any of your colleagues IRL (in real life).

5.3 Communicating the philosophy of free and open source software and the responsibility of being a software developer

Many people associate free and open source software with programmes that can be used free of charge. Young people are often familiar with the term community, but very few associate it with open source. The cliché of the nerd obscures the diversity and culture of open communication in open source communities. What makes open source strong is not isolation but the community of developers. Digital communication tools are used to connect with each other across the borders of countries, cultures and continents, to exchange knowledge and to create something together.

It is important to introduce interns to open and helpful communities and to show them the colourful world of people behind the software.

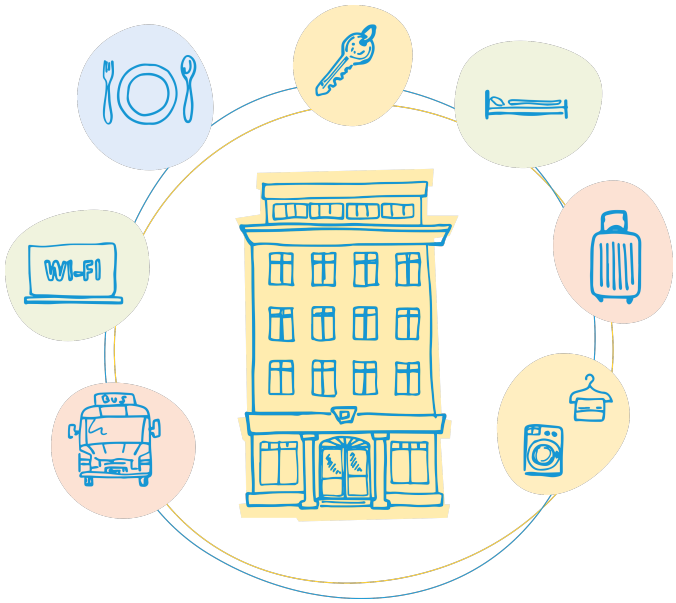
To appeal to more women and girls, it is important to show that communication, community and collaboration are an essential part of software development. The work of a software developer is not lonely and you are not on your own.

You do not create software for yourself or for the machines, but rather it has a manyfold benefit for people.

> “Code that programmers write does not exist in a vacuum. Software …always relates to people, …” Ao.Univ.Prof. DipIng. Dr.techn. Peter Purgathofer, TU Wien

The culture of the open source community and the sense of responsibility as a software developer for society must be conveyed during the internship.

6 Model of a BLENDED REMOTE INTERNSHIP



6.1 Before the internship

6.1.1 Find the right intern

Diversity is an important point to consider. In many young people there is a lot of interest and openness towards learning new things, even if they have no previous experience in the area. In general, the job advertisement should address a diverse audience, so that the company then receives a variety of applications. Such a broad spectrum of inputs and perspectives can be extremely benefitial. The difficulty is to show for example female interns that IT is not only something for stereotypical “nerds”, but that there is much more to it. Girls traditionally tend to go into social and creative professions. So you have to show that as a developer you can offer both social and creative aspects as well.

6.1.2 Determine the right period

A remote internship can be especially good for those who already have experience in the field or in remote work. However, there are interns who still find it difficult to work independently. In such cases, there should be good onboarding, adapted to the individual learning pace of the intern so that tgey are not overwhelmed. Onboarding should be taken seriously, perhaps at the same time as other new staff/interns start, so that you feel part of the company. If there are no other interns, of course, give special consideration to the intern as they are not permanent employees but mainly interested in learning.

6.1.3 Tips on the application process and important legal and social information

There are 27 different training systems in the European Union, which were analyzed and categorized in the working paper 1 (22/2014) of the European

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Center for the Promotion of Vocational Training (CEDEFOP). The paper found that the training systems can be divided into four different clusters.

The four groups of training systems in Europe:

Group 1
Countries with learning units/ training modules and a credit point system, e.g. Spain, Ireland, Luxembourg, Romania

Group 2
Countries with learning units/ training modules and no credit point system, e.g. France, Poland, the Netherlands

Group 3
Countries without learning units/ training modules and predominantly dual /company-based initial training, e.g. Austria, Germany, Liechtenstein

Group 4
Countries without learning units/ training modules and predominantly full-time school-based initial vocational training, e.g. Czech Republic, Greece, Lithuania

The differences between the various training systems can give a company an insight into how extensive the competencies acquired are and what can be expected of an intern. In addition, it can provide information about whether an intern: has more theoretical or practical experience and can therefore estimate which tasks can be entrusted to them.

When working with the interns, it is advisable to draw up a checklist before the internship begins so that everyone involved knows what to expect and when. There should be a partnership agreement in which the mobility partners agree on what the interns should learn. It should be divided in learning units and the possibilities of assessing the learning outcomes stipulated. For example, a small project of your own could be made here. If the interns come from the dual system, i.e. they are in dual training, the internship can be included directly in the training contract

Furthermore, a learning agreement should be made between mobility partners and the interns; this is signed by all those involved. The intern documents their activities and the acquisition of skills.It is important that in a company that accepts an intern, a mentor/ supervisor provides who takes care of the learner. This person has a variety of important functions and thus contributes to the success of the remote internship.

- Presentation of the individual departments or colleagues.
- Make sure that the learning objectives and their content are adhered to.
- Accessibility also outside of team meetings.
- If desired, consultation with the teaching staff of the school / sending company.
- Deciding which projects / tasks the intern can be trusted with.

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- For a blended remote internship, it is also important that the presence phase(s) are well coordinated. For example, if a company works predominantly remotely, the intern should also work remotely.
- When presential meetings take place, the interns should also attend personally. If the teams only meet sporadically in person, it is important that you help the intern with the transfer and accommodation.
- If a company has a physical office in one place, it should be clarified whether the intern can get into their own desk in the office or whether the internship is more of a rotative one. As a result, a stay abroad can be planned.
- If the internship is intended more in the sense of a job rotation, then it must be planned exactly in which team the intern is at which point of the internship and which part takes place remotely and which part takes place onsite.
- If there are longer or regular presence phases because the team does not work 100

6.1.4 Questions about accommodation in the face-to-face phase

The question of accommodation begins with the age of the participants. Minors should preferably be accommodated by host families, to better assist their integration as well as to keep an eye on them. Adults usually opt for shared apartments or holiday apartments. Many destinations have providers who offer such accomodations: In Madrid e.g. AirbnB, Accommadrid, Citylife, Aluni.net, PYR solutions, Madrid easy. When choosing an apartment, the internship company should definitely grant any help necessary. As already mentioned, accommodation should either be considered for the entire period of the internship or only for the attendance phases.

> If an intern decides to spend a partially remote internship in its entirety at the destination, it should be ensured that the integration into the team takes place, as a young person in another country without daily contact to colleagues can quickly become frustrated and lonely.

This, however, depends on the company culture: Are there also meetings outside of work? Can you work flexibly from home and from the office? If there are only occasional meetings in the team and most of the work takes place remotely, the accommodation should be more of a short term, e.g. in a hotel/ Arbnb. If other employees also travel from further away, one could try to find accommodation close to them.

6.1.5 Questions about the requirements for remote work

Technical requirements

In the age of mobile phones, it can be assumed that the technical skills of children and young people in dealing with mobile phones, tablets and computers are generally high. The younger generation is way ahead of the older one, especially when it comes to the use of collaboration and social media tools.

The internship provider should be aware of this in the first interview. The question of the technical requirement also depends on the area of application in the IT company. In project management, it is the use of communication and organizational programs. In the front-end development, it is already below the user interface. Until tThe programming of the machine is the focus of backend development. In any case, the intern needs suitable computer and software equipment.

Growing up playing video games might have inspired some people to learn how to program and thus realize their own game ideas.

The question of the specific technical requirements depends individually on the area of application of the company and on its technical system.

Clarify in advance which tools are already known in your digital infrastructure and give the interns access to the tools as quickly as possible so that they can familiarize themselves with them.

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Soft skills in remote work

Affinity for IT and previous knowledge of open source among students can be an advantage. An interest-test can help here.

Communication Skills
Team meetings every week or fortnight and "daily stand-ups" several times a week are just as important in remote internships as smaller meetings at roadblocks. The intern must also be able to talk openly about problems so that they do not get stuck and thus get frustrated. An open error culture is common practice in open source.

Independence
It is important to create an understanding, encouraging environment in which interns feel comfortable and learn how best to organize themselves and manage tasks in a home office.

Self-Discipline
Between the daily stand-ups or the weekly remote meetings, interns need to manage their own time to work and stick to their plan.

> "It takes communication skills and also a bit of discipline. Holding a meeting every week or twice a week at the same time. And in between there has to be a lot of communication, punctuality and a certain amount of self-discipline are important for all of that. You have to end each day with a check "What I did today" because then it is clear that something happened. Of course, something can always go wrong, but you should communicate that directly." Paul Roeland

Depending on the internship, accompanying e-learning / blended learning is generally a good option. With e-learning facts about work processes can be explained and discussed. However, when it comes to more comprehensive processes, blended learning is more promising. Is it now only about technical knowledge or is it about concrete skills and ability?

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6.2 Meanwhile

6.2.1 Welcome, introduction to the company

At the beginning of a remote internship, the first day should serve as an introduction and getting-to-know day. Here, all contact persons and the company are briefly introduced. In the next step, the main people responsible for the internship should explain the exact procedure and explain the individual tasks. It is a good idea to clarify any unanswered questions right at the beginning of the internship and to give the intern the feeling that they are being well looked after right from the start. After the introductory and getting-to-know-you day, the internship should start in terms of content. Here it is important to signal to the intern that they are in a valued and respectful environment and need not be afraid to ask questionbs.

6.2.2 Information about the work processes

The remote work process and the digital infrastructure are essential for a remote business. The process and the digital tools are no different than elsewhere, but they are used much more intensively. The remote work process is more demanding and timed at short notice with online meetings for planning, management, controlling, reviews and retros. The digital infrastructure is far more extensive. It is therefore very important to introduce the interns well to the process and to instruct them in the use of the digital infrastructure.

- When the company has documented its work process, give it to your interns to read in advance.
- If your company already has an onboarding process for new employees, use this and refine it for the internship.
- If your senior partners have regular personal conversations with the individual employees, use this opportunity for your interns every two to three days.
- If this is not used in your remote company, you should definitely think about it for team building in your company.

6.2.3 Maintaining motivation — Accompanying feedback

Feedback is very important. The more remote work the more feedback conversations. Criticism from the intern can also help improve the internship program

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for the future. As a mentor you need to manage expectations of all the colleagues. What is the intern able to do? What not, where do they need help? What can they do alone? Which tasks can they master independently?

It is important that the intern not only sees their own tasks but rather sees the whole of the company. That is why the company should actively work on overcoming the boundaries between colleagues and interns so that the intern has the chance to have a good look at the company.

- How do I address whom?
- What is the dynamic of the team?
- How do I talk to customers?
- Can I take part in a customer meeting?

6.3 Afterwards

6.3.1 Final Interview

At the end of the internship, it is important to have a final reflective interview with the intern. At this point it is essential to reflect on the internship in general and especially on the learning effect for the intern. For the further personal as well as professional development of the intern, space to express themselves freely in order to generate as much self-reflection as possible and to receive honest feedback is necessary. On the part of the receiving institution, the extensive feedback and the personal experiences of the intern will allow them to develop and improve their competencies.

6.3.2 Certificate and/ or internship certificate

After the trainee has completed their internship in the framework of an Erasmus+ mobility, they has the possibility to receive a Europass Mobility certificate. This is a document in the framework of Erasmus+ KA1 to officially document and have recognized the acquired experience, achievements and skills. This is completed by the sending as well as the receiving institution at the same time. If the trainee wants to receive the Europass Mobility as a recognition of achievement, they must ask the sending partner (e.g. the school or institution organizing your traineeship) to register with the National Europass Center in your country. After that, the sending and the receiving organization have to fill in all the relevant documents. Afterwards, the trainee will receive the certificate in digital format.

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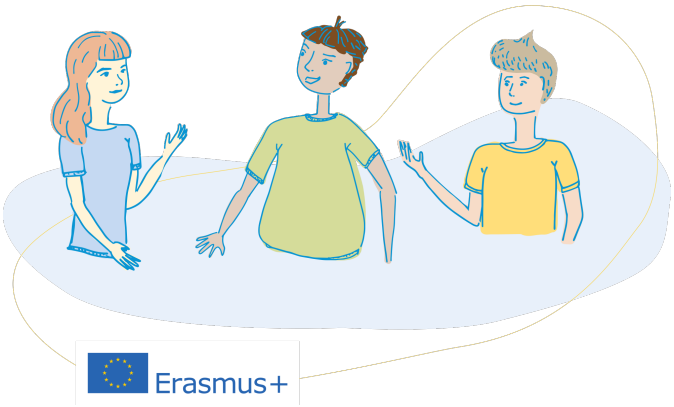
6.4 An internship abroad as part of Erasmus+



Completing an internship abroad as part of Erasmus+ provides many positive experiences that can have a lasting impact on further professional training. The trainee has the opportunity to network on the European labor market, create a uniform and EU-recognized CV and exchange information with other job applicants through various Erasmus+ support portals (Europass.eu, Eurodesk.eu, Eures.eu). With these tools, the applicants can apply with their skills, interests and knowledge simplified in different EU associated countries. Besides, there are other advantages of using these tools, by simplifying the general search for training offers and qualifications. Personalized offers are suggested to the trainee and there are unified digital tools to present oneself in the best possible way with one's qualifications. There are also articles, reports and news about learning and working in the EU.

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7 BLENDED REMOTE INTERNSHIP — Conclusion

7.1 What are the most important influencing factors in the implementation of a remote internship?

Influencing Factors

- Only do a remote internship if it is authentic, i.e. if the company works remotely on a regular basis.
- Independence: There should be good on-boarding here, adapted to the individual learning pace of the intern so that they are not overburdened.
- The social component of the internship experience: participation in the team, participation in team meetings, the team dynamics, participation in client meetings, and synergies between the different departments/teams.
- Good preparation and goal setting by all involved.

7.2 Which tasks/work methods in the internship are feasible remotely and which are more useful in a physical place of work?

Tasks/work methods in the internship

- The relationship between remote/face-to-face depends on how the company lives remote work for all its employees.
- Depending on the type of placement, free e-learning may be offered (Expertise)
- Parts of the on-boarding can take place online (Company Info)
- Language course, if desired/needed

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7.3 What are the most important characteristics that determine success and failure?

important characteristics

- Preparation of the mentor
- Preparation of work colleagues
- Regular feedback, both in the online and in the face-to-face phase
- Accompanying the work with a complementary online course
- Support for trainees with questions and problems
- Attractive/ varied tasks

7.4 What elements should a remote internship include?

elements of an internship

- Creating an understanding work environment.
- Learning how remote work “functions” (how to organize myself)
- Participation in all areas
- Integration into the team and the company
- Creating a checklist and a learning agreement
- Create a mentor network in which the interns’ closest companions can exchange ideas.

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8 Afterword by Paul Roeland

A changing landscape The last few years have seen dramatic changes, some of which are still playing out. A global pandemic plunged much of the world into working and learning from home, without good preparations in many cases. At the same time, important social movements found their voices, from #MeToo to #BlackLivesMatter.

The turmoil is far from over. Supply chains remain unpredictable, record numbers of people are displaced by war and other causes. Economies that are on the rebound see themselves confronted by personnel shortages. All against a backdrop of an intensifying climate crisis that requires fundamental changes into how society is organized.

While all of that may seem a bit ambitious to reflect upon in a study on how to better organize blended internships for IT firms, I firmly believe that ignoring these wider aspects would be a mistake. Being a successful undertaking is more and more defined by how employees feel about working there, and the values of an organization play a direct role in attracting and retaining talent.

Basic plumbing The sudden move to remote learning and working from home worked out differently for different people, and it also laid bare that without proper care some people are at a disadvantage. For example, some school students found it difficult to find a quiet place to work, as they were living in cramped conditions with their families, had to share laptops and a shaky internet connection with their siblings, or had to take care of relatives. For a blended internship to work, it is important to realize these differences in circumstances and to take action where necessary. That may mean lending a laptop, camera and headset, or even making sure that an appropriate working place is available either at school or at a co-working facility if one cannot be found in the intern's home situation.

Diversity is... diverse We have also learned that diversity is much more than a tick box on gender in a report. Some people that didn't do very well in a traditional office or school setting flourished; most notably for some forms of neuro-diversity. They could concentrate better, be less overwhelmed by noise and other distractions and therefore both performed and felt better. On the other hand, video-conferencing proved harder for some people who, for cultural or other reasons, relied much more on non-verbal communication. Just "doing a round" on a conference call does not ensure that those people will voice their concerns or bright ideas; one should have alternative means of engagement available. As our societies become more culturally diverse, sensitivity to these issues is not a 'nice-to-have', it's vital to the long term viability of a company.

Social bonds, but with boundaries Most organizations have settled on more than one form of communication. For onboarding, but also for maintain-

ing team cohesiveness, standard meetings are not enough. It is also important to have one-on-one conversations with mentors, co-workers and managers. And a social 'watercooler' or 'coffee-machine' replacement, where people can exchange freely. Yet all these forms of communication can also lead to extra pressure, the feeling that you have to be available and reachable 24/7. So setting and respecting boundaries is just as important; stepping outside and taking a walk can be a really productive thing to do.

Make the most of shared time When the time is there to meet face to face, that should be used as effectively as possible. Hybrid forms where a majority of the participants are in the same room, but a few are online, have shown to be less effective for the online ones. So, try to bring everyone together face to face, and if that is not possible split the time in real face to face time, and an online meet-up where everyone (including the ones on location) is behind a laptop, to maintain an equal footing.

Trust and engage Especially in IT, we rely on people that can think creatively and can self-motivate. Or, in other words, people that we can trust to do their job. Now, of course that does not mean a hands-off approach; internships are meant to build up that capacity in young people, and should not assume that they already fully developed it. Regular check-ins are essential; they should focus on identifying obstacles and offering ways to overcome them rather than as a means of control.

Embrace different experiences From medical sensors that don't deal with different skin tones to NASA having no clue how many tampons women astronauts would need for a three day trip, the history of technology and design is littered with cases that show how a team composed of only able-bodied white men does not lead to solutions that work for everyone. Multiple viewpoints lead to better solutions, and companies that manage to leverage these viewpoints will have a competitive advantage.

Enjoy the ride While we all still have to learn how to embrace new ways of working, going on that journey can be really rewarding in and of itself. Engaging with young people may involve you realizing that "we've always done it like that" isn't the best justification for continuing certain practices — explaining the reasoning behind them may actually lead to productive changes. Circumstances may have changed, so use it as an opportunity to take a systematic look at how you do things and how they can be improved.

Most of all, in a future filled with challenges, we as IT firms, open source communities but also as humans, just cannot afford to let any talent go to waste. While establishing an internship programme may not have a 1:1 correspondence towards you hiring those exact interns, it will help in bringing about a culture that has better onboarding, better communications and a stronger team.

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8.1 About the person

Paul Roeland is a longtime activist working on the intersection of human rights, technology, and social change.

He is working as the Transparency Lead for the Clean Clothes Campaign, a global network dedicated to improving working conditions and empowering workers in the global garment and sportswear industries.

He is also on the Board of the Open Apparel Registry, which aims to map every facility in those industries.

Paul is also a long-time board member of the Plone Foundation, and is active in various Open Data and Open Source communities. He also trains worker rights activists in digital security and privacy.

He is known to strike up a conversation with almost every cat he meets on the street.

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9 License and legal information