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Digital Education for Crisis Situations: Times when there is no alternative (DECriS)

# **INTERNSHIP FRAMEWORK FOR CRISIS SITUATIONS**

## **Report on Intellectual Output 6 – Apprenticeship Framework for Crisis Situations**

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## Executive Summary

This Report is a part of the Erasmus+ project *Digital Education for Crisis Situations: Times when there is no alternative – DECriS* (<http://decris.ffos.hr/>). DECriS project (number: 2020-1-HR01-KA226-HE-094685) started on 1 of March 2021 and ended on 30 June 2023.

The project is focused on innovative digital practices implemented in Higher Education Institutions (HEI) in the field of Library and Information Science (LIS), their relationship with digital education (DE) in general and the adoption of Open Education Resources (OER) in any learning situation, but with a special emphasis on crisis situations such as the COVID-19.

In this particular Intellectual output (IO 6) that was proposed under the title *Apprenticeship Framework for Crisis Situations*, DECriS project teams were focused on practices with regard to internship programs conducted or failed to be fully conducted during the academic years 2019-20 and 2020-21 when lockdown, semi-lockdown and other mitigation periods took place. It is important to note that, after carefully investigating the relevant literature, we decided to name IO6's main delivery as *Internship Framework for Crisis Situations*, as it was clear that the understanding of these two notions (apprenticeship and internship) is different in various settings and could also be used for many forms of practical work of students, school pupils and veteran students and participants of lifelong learning education who are obliged or stimulated to pass it. In our case, we investigated the students' field work – internship – usually a part of the curricula, during the lockdowns and semi-lockdowns caused by the COVID-19 pandemic. In the Literature Review chapter, we explained the linguistic, traditional and practical aspects of all notions related to the students' field work.

This Report presents the approach and results of several surveys taken with the goal of describing the current state of the internship practice in LIS schools' collaboration with the public and private sectors during the COVID-19 pandemic. The IO6 aims to create a framework/model for the proper adoption of policies, guidelines and principles that lead the HEIs and other educational institutions (for example, lifelong learning institutions) in the creation of successful internship programs (desirable as part of curricula) in crisis situations.

Therefore, our goals were in particular:

- to improve the quality of online education
- to advocate the advantages of the online and hybrid internship/apprenticeship programs
- to lower the level of disadvantages that were recognized during the COVID-19 practices related to the internship/apprenticeship programs

- to expand the possibilities for collaboration and knowledge exchange between Higher Educational Institutions (HEI) and the stakeholders that accept students for internship/apprenticeship programs
- to decrease the feeling of isolation that is common in situations like lockdowns
- to be used as an adaptive and flexible guideline
- to improve teachers' and students' participation in online classrooms, i.e., generate the appropriate level of engagement
- to offer a model that will facilitate the policy-making practices and executive plans for the online and hybrid internship/apprenticeship.

Project Consortium: the University of Osijek, Croatia (Coordinator); the University of Barcelona, Spain; the University of Hildesheim, Germany; the University of Library Studies and Information Technologies, Bulgaria, and the University of Zagreb, University Computing Centre, Croatia. Also, four associate partners, the University of Wellington, New Zealand, St. Petersburg University of Culture, Russia, the University of Sarajevo and the University of Mostar, Bosnia and Herzegovina were planned to participate, but besides St. Petersburg, other associate partners took part in reading and commenting drafts of this Report.

The focus of interest of this deliverable lies in the investigation of the ways and modes in which student internships are organized and managed from the perspective of students, teachers and institutions/companies who accept students for their internships. We started our research based on the assumption that with access to IT, online internship provides new opportunities for experiential learning. The concept of an online internship may sound relatively new, but the basic idea of performing tasks and gaining distance experience has a long tradition even before the age of the internet. As organizations and people have become more interconnected due to increased access to broadband and high-speed computing devices, telecommuting become an important part of the workplace. It is suggested that those who teach have a range of concerns, approaches and preferences for how educational programs might progress. During the COVID-19 pandemic, one of the most sensitive areas was how to organize students' internships when almost all public information institutions were (fully or partially) closed and private companies, therefore, had to organize work from home.

Permeating the research partners, they show that the processes of implementation of the practices have a wide range of results in different environments.

Research in Osijek shows that, at Archive, Library and Museum (ALM) institutions, all activities related to practice stopped and continued after the measures allowing direct contact

were established. In the IT sector, most companies have adapted and provided online internships that students have taken advantage of. From the students' point of view, the advantages of online internships were independent organization of time, the ability to work whenever they wanted, the comfort of their own home, faster access and communication, and from the companies' point of view, the advantages were flexibility, saving time, the possibility for the interns to dedicate themselves to their private and faculty obligations, comfort, easier organization, the possibility of self-organization and reduced risk of COVID-19 infection. Disadvantages from the students' point of view were the lack of human contact and socialization, prolonged waiting for an answer and problems in communication with the mentor, and the disadvantages were the lack of communication, the inability to get to know organizational, business, and ultimately, the human side of the company.

The University of Library Studies and Information Technologies, Bulgaria, conducted a combined study that showed efforts and results in organizing the apprenticeships of students of majors in library and information sciences and archival science. The obligatory practical work in the academic years 2020/2021 (summer semester) and 2021/2022 of the students was organized entirely online. Academic staff and students assessed this approach as satisfactory in this situation. A unique opportunity for additional, extracurricular internship was provided by the Ministry of Education and Science (MES), called "Student Internships - Phase 2". In the COVID-19 pandemic, the student internships were organized under the requirements of that initiative and they combined on-site practical training in a real work environment and online activities.

Since SRCE is not a higher education institution, it does not have students but accepts students from higher education institutions and vocational high schools for their practical work. SRCE is the main computing center and the architect of the e-infrastructure, covering both the University of Zagreb and the whole research and high education system. Furthermore, SRCE is the competence center for information and communication technologies, as well as the center for education and support regarding ICT applications. During the lockdown period, all activities related to practice stopped and continued after the measures allowed direct contact.

The results of the IO for Hildesheim showed that the internships were carried out mainly in companies and that their duration is highly influenced by the study program. The recruiting processes were highly digitalized. Students appreciated the flexibility of digital work and the independent way of working and learned to use a variety of tools. As the main disadvantages, the group of interviewed students sees the social disconnection and the lack of team cohesion.

Adaptation and acquiring the skills for interacting with digital tools was seen as tiring. As the improvement, the participation in short weekly team meetings was suggested.

The project partner from Barcelona indicates that the top priority at that time was to ensure that students could take the course and complete their studies. Since it was an emergency response, this was initially not the outcome of a general and previously well-planned shift by the Facultat d'Informació i Mitjans Audiovisuals de la Universitat de Barcelona, but a rather effective, pragmatically and a case-by-case adaptation to the pandemic as a result of the negotiation with each of the internship centers. A flexible internship model was chosen, with a preference for virtual internships, that allowed, to a certain degree, some complementary face-to-face presence if it was possible, because of the evolution to less severe pandemic conditions, thus following a more hybrid model as time went on. For instance, in the case of undergraduates, during the academic year 2020/2021, 36.3% of internships were hybrid and 36.3% virtual; for the next year, 2021/2022, 29.6% were hybrid and 14.8% virtual. Considering that, before the pandemic, almost 100% of the cases were face-to-face, it can be observed that in the year 2021/2022, despite the situation being much more normal, hybrid and virtual solutions were maintained. This is because the experience was generally rated positively by students, internship centers and teachers. Moreover, as the weeks went by, some organizational procedures and pedagogical criteria to manage the virtual/hybrid modes were consolidated, opening the possibility for the future of this type of internship in work environments, where teleworking was consolidated with the pandemic.

### **Keywords**

Apprenticeship; internship; library and information programs; COVID-19 pandemic; online internship; hybrid internship

## 1. Introduction

The present Report titled *Internship Framework for Crisis Situations* (Internship Framework) belongs to the Project's Intellectual Output 6 (IO6).

The internship practice in the COVID-19 crisis pointed out the problem of physical presence of students in organizations when most of them were closed or semi-closed because of the health restrictions. With this deliverable we would like to indicate the potentials of online internships not only during the COVID-19 crisis, but otherwise in growing DE challenges for HEIs. We have, in particular, in mind the online internships in the business sector, i.e., in private computer companies and the public sector (e.g., libraries, documentation centres, centres for information analysis) in the time of COVID-19 pandemic or similar crisis situations. We intend to analyse the practice at partner HEIs to learn about the models used (for example, on-boarding documents for newcomers at the workplace, his/her own individual plan tailored to his/her skills and knowledge, a mentorship and internship plan, organization of remote work with daily and weekly assignments, involvement in Slack and communication in groups within which their team is located, the exchange of experiences etc.). Examples, such as the experience of students from Osijek IS Department who were looking for jobs in computer companies in the city, regional, national and even international level, opened up a new issue of how to work during internships during the pandemic situations. Some practical examples are an incentive to design long-term, quality and cost-effective telecommuting solutions for students and graduates who have to do an internship, field work or apprenticeship during the time of crisis.

The main goal of IO 6 was to analyse how the European HEIs in the field of library and information science (LIS) responded to systemic and holistic change and transformation of students' internships during the complete or semi-complete lockdowns.

The COVID-19 lockdowns increased the intensity and risk of organizing well-being and work in a satisfactory manner, changed remote work conditions, and confronted workers with difficult personal situations and often ill-equipped telecommunication environments (Weinert & Weitzel, 2023). Such situations also relate to students who had to fulfil their obligations related to practical work in different information and computer institutions and companies.

During the *Conference on the Future of the Information Profession or How it Should Look Like in 2050* that was organised by the University of North Carolina at Chapel Hill in 2012, one of the notable presentations dealt with the changes in the entrepreneurial environment, e.g., how to prepare students to adapt to new challenges in a 'real working environment' (Jakopec, Aparac & Szombathelyi, 2022). In companies that cover the IT sector, these changes provoke the need

for new solutions. Although there could be many directions of change in the IT sector nowadays, “there can be little doubt that the information profession must change with it. Such change will be more than an academic exercise” (Goldstein, Rodrigues, 2012: 88). The COVID-19 pandemic has encouraged universities and the IT sector to become even more connected and pointed out new forms of cooperation in conducting student internships. One has to be aware of the fact that universities were preoccupied with the need to survive while fulfilling their basic goals in circumstances never seen before. The COVID-19 pandemic provoked various situations that required fast and straight answers.

For this IO, we found that the fourth goal, “Supporting the green and digital transitions” of the EC’s *Recovery and Resilience Plan* (17 September 2020) and EC’s *Digital Education Action Plan, 2021–2027* (30 September 2020), represents a solid basis for the investigations that could detect how the HEIs organized internships during the time of crisis, and how these can be improved in an online setting.

With the IO 6 deliverable, we indicate the potential of online internships not only during the COVID-19 crisis but otherwise in growing digital education challenges. We focused mostly on the internships in the business sector, i.e., in private computer companies, but also surveyed the public sector (e.g., libraries, documentation centres, centres for information analysis) in the time of the COVID-19 pandemic in order to learn about the models used (for example, on-boarding documents for newcomers at the workplace, a mentorship and internship plan, organization of remote work with daily and weekly assignments etc.). Examples, such as the experience of students from the Department of Information Sciences in Osijek who were looking for jobs in computer companies in the city, regional, national and even international level, opened up a new issue of how to manage internships during the pandemic situations. Some practical examples are an incentive to design long-term, quality and cost-effective telecommuting solutions for students and graduates who have to do an internship, and later on apprenticeship work in time of crisis and beyond.

It is obvious that HEIs had to continue their activities through online learning to cope with the pandemic outbreak. During the COVID-19 pandemic, students around the world were exposed to many challenges and changes with regard to how to conduct the approved programs and communications patterns between teachers and students who had to get creative, open to improvisations, flexible and ready to learn new forms of distance teaching/learning. Though less common than internships *in situ* (in different information institutions such as libraries, museums, archives, documentation centres, referral units, IT companies etc.), online internships



in LIS existed well before the COVID-19 pandemic, complementing the growing number of hybrid and online-only graduate programs. However, the COVID-19 pandemic circumstances caused a number of challenges for teachers who stepped up to ensure that all of their students were able to pursue meaningful learning experiences through online internships (Kobert, 2021). To be more precise, alternative ways began to be sought instead of face-to-face internships. One way was to organize online internships in these institutions/companies that were willing to accept students to work online. As libraries and other information institutions had to adapt to the new circumstances primarily by offering their services online and organizing work from home, they slowed down student admission activities related to internship programs until they found ways to do business during the lockdown. Business companies reacted faster but also encountered problems with monitoring student work in an online environment, providing assistance in cases where the students were not able to solve their duties on their own, how to get feedback from mentors and the like.

The leading HEI for this IO is the team from Osijek. Besides their comments and suggestions related to the draft versions of the research methodology, other partners conducted small-scale surveys in their local environments and contributed with their own experiences. The final version of the Internship Framework was prepared by the team from the University of Osijek with active participation from all partners.

Regarding the impact, we can expect that the proposed Internship Framework can help to improve existing practices of how to plan and manage internships/apprenticeships in times of crisis. The proposed Internship Framework can be applied to all HEIs that are interested in optimization of their existing practice.

The Report describes all the steps taken in order to fulfil the goals and objectives of the IO6, starting with the deep literature review and explaining the research methodology in detail. The results of the conducted survey significantly contributed to the proposal of the *Internship Framework for Crisis Situations*.

## 2. Literature Review

Južnič and Pymm (2016: 95) were among the few authors who pointed out that a substantial amount has been written about the role of industry placement and internships in preparing students for the LIS workforce, focusing on the outcomes for the student. Yet there appeared to have been less examination of the role and perceptions of the host organizations that enable such programs to function by providing the workplace, training program and supervision. The benefits that may accrue for the host would make giving a student a placement more than just a professional obligation; this may also offer real value to the employer.

It has been pointed out by Moran (2001) that librarians as supervisors to students and educators operate in their separate worlds and that there is too little interaction between them. Many librarians and other information professionals have little first-hand experience with library education after they graduate. They do not go back to the schools for alumni functions, and often their knowledge of what is happening in the schools comes to them second or third-hand. On the other hand, library educators have not succeeded in communicating well with the profession. Most do not have recent work experience in libraries or other information-oriented institutions or companies. They often move in new directions in the schools without fully explaining the rationale. Owing to limited resources, they have not been sufficiently responsive to some legitimate needs of the profession.

Another problem was detected in the context of addressing the difficulty of meeting the hourly requirement for an internship that is embedded into the curricula, given the constraints of online work. While affirming that the vast majority of those hours still needed to involve face-to-face interaction with students and supervisors based at various institutions/companies ready to accept students, some HEIs came up with a number of alternative activities that promote experiential learning to help students meet official requirements. These alternative activities include attending online conferences, developing skills to support remote work, and taking on small projects at local libraries, archives, private data analysis or computer companies outside of their regularly scheduled work.

The relative importance of work experience has been discussed in LIS education since its beginnings in the first schools, which were often criticized for being too focused on preparing students for specific librarian jobs while neglecting the socio-cultural and other circumstances within which libraries and other related institutions operate. Additionally, it is worth mentioning that the requirements of university communities in certain environments completely omit practical work from academic training. J. N. Berry (2005), who is in favour of student practice

being an integral part of academic programs in LIS, believes that students' internships "provide the only bridge between the theoretical and idealistic curricula and the practical and political reality of library work".

### 2.1. Terminological Dilemmas and Pitfalls

From the professional and scientific literature, it is visible that notions of 'internship' and 'apprenticeship', together with a number of other related terms, have been used interchangeably and do not always imply the same meanings. This applies in particular to differences within individual countries. According to Bird, Chu and Oguz (2015: 2), internships and field experiences provide learners with a chance to "immerse themselves in the daily routines of an information organization where they can experience the professional world, observe a variety of role models, and put theory and academic rigor into practice."

Coleman (1989: 22), who used the term 'practicum', defined it as "a relatively short-term, professionally supervised work experience offered as part of the school's curriculum and taken during the academic sequence." The term 'practicum' appears to be used as an umbrella term when referring to a "course or session of practical training, especially in teaching; a practical study, a research exercise (Huggins, 2017: 5). 'Practicum' is also seen as an opportunity to apply theoretical knowledge previously gained during the teaching/learning processes. It should be added that 'practicum' and 'fieldwork' are used interchangeably to signify what Coleman (1989) characterizes as practicums offered as part of the school's curriculum and taken during the academic sequence. For LIS and Information Science/s (IS) students the practicum is typically pursued in the library and other information and IT-related institutions/companies for the total experience or as a part of one course specially designed task. This concept of combining some level of practical experience with academic learning is widely accepted within a broad range of professional disciplines (Južnič & Pymm, 2017: 92).

Apprenticeship, not a common model in the United States (US), is a well-known and widely used system in some other countries, especially in Germany, for its culturally strong connections to vocational education and because it recurs to a long-standing tradition of craft training dating back to the Middle Ages (Deissinger and Hellwig, 2005: 313; Ratzek, 2006). Richard (2012) suggested though to redefine the notion of 'apprenticeship' in order to target it only at those who are new to a job or role that requires sustained and substantial training. In his concept the recognized industry standards should form the basis of every apprenticeship, which is not the case in many countries.

Another concept that refers to efforts to ensure an understanding of the work environment and work processes is known as Practice-Based Learning (PBL). Huggins (2017) pointed out that PBL has been a staple of the preservice curricula of LIS programs. While the status and importance of PBL continue to be debated in LIS education in the US, an increasing number of programs offer such experiences to students in the form of practicums, internships, fieldwork, service learning, or community-based projects.

Practice-based learning integrates the cognitive, psychomotor, and affective domains and is influenced by students' beliefs, values, and attitudes. Concept mapping has been shown to effectively demonstrate students' changing concepts and knowledge structures (cf. Mcnaughton, Barrow & Bagg, 2016).

Moreover, the terms 'internship' and 'apprenticeship' could be distinguished based on several characteristics, such as the length of time students spend in the hosting institution (internships are usually short term, 1 to 3 months, and apprenticeships are longer term, 1 to 3 years), structure (apprenticeships include a structured training plan, with a focus on mastering specific skills an employer needs to fill an occupation within their organization, while internships are not structured and often focus on entry-level general work experience), mentorship (apprentices receive individualized training with an experienced mentor who walks them through their entire process, while internships do not always include mentorship or include several supervisors depending on a specific supervisor's competencies) and credentials/credits (apprenticeships lead to an industry-recognized credential, and internships typically is recognized through program/course ECTS or other way of markings).

In the near past, a subset of experiential learning has developed a so-called 'service learning' approach. Instead of being a standalone experience like an internship or a practicum, service learning is embedded into standard course offer. Service activities are tied to specific learning objectives and are reflected upon throughout the semester in order to enrich student appreciation of course content. Through service and reflection, students gain a stronger sense of their personal and professional values and develop a stronger commitment to civic engagement (cf. Ball, 2008).

In this deliverable, we use the term 'internship' to cover a variety of approaches and models that are woven into the curriculum in order to allow students to connect the acquired theoretical knowledge and practice.

## 2.2. Research into the Internship Theory and Practice

As it was indicated in the 1990s, cognitive psychologists have pointed out that it is important to place instruction within “authentic” contexts that mirror real-life situations. They also argued that knowledge learned in academic settings does not necessarily transfer to non-academic settings (Ertmer & Cennamo, 1995). When incorporating student practice into the curriculum, care should be taken that educators understand the need to create meaningful problem-solving contexts that enable students to define, and subsequently solve, real-world problems.

LIS/IS schools as well as i-Schools routinely offer their students experiential learning opportunities such as internships/practicums. These courses are viewed as a means of introducing students to the realities of the workplace and of fostering a sense of professional identity and values. Although internship and other forms of practical learning have been a major component of LIS curricula in many countries,<sup>1</sup> in some settings, especially in the European university tradition, it has long been neglected, indeed even unacceptable, except in medicine and law, for example. Internships and various forms of practicums as part of the study programs in (L)IS have proved important not only to learning but also as a starting point for job seeking.

From the perspective of HEIs, there is broad consensus in Europe that internship and apprenticeship models can be an effective way of helping young people<sup>2</sup> make smoother transitions from education to employment environment and of addressing labour market imbalances. (Council of European Union, 2018).<sup>3</sup>

According to Južnič and Pymm (2016: 95), a number of studies focus on the outcomes from the student’s perspective, but it is obvious that there has been less examination of the role and perceptions of the host organizations that enable such programs to function. This can be explained by considering two fundamental reasons. Firstly, the concept of practicums is so deeply embedded in the concept of what the LIS curriculum should contain that researching its

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<sup>1</sup> Many LIS programs in European countries are nowadays bound by licensing requirements that involve a mandatory number of supervised work hours as a part of their internship program. For example, Carlos III University requisites for a bachelor’s degree is at least one hundred hours of internship in information units (Moreiro, 2001); Croatian (L)IS departments require from 60 to 240 hours of internship; in Slovenia, at the Department of Librarianship, Information Science and Publishing studies there is an obligation for undergraduate students to take 120 hours of practicum in hosting institution.

<sup>2</sup> The EU has produced a number of documents in the form of a ‘framework’ that relate not only to young people, but to all students who continue their schooling independent of their age. Cf. Council of European Union, 2018; ILO, 2017; ILO, 2023.

<sup>3</sup> There are many examples of funded internship programs such as the CERN Internship Program and Erasmus plus Internship program (for example. Enterprise-University Virtual Placement – EUUV), which aim to place students virtually in different organizations across national borders so that they can improve their skills and competencies internationally without leaving their country of residence (Vriens et al., 2010).

objectives may be seen as of little relevance – they are obvious. The other reason might be that the complex self-reflection needed for such research is not easy to attain.

The host institution has to provide the workplace, training program and supervision. The benefit for the host is the opportunity to monitor/observe how students work, how they cope and how responsibly they fulfil their tasks on the basis of which they can make a decision about their eventual employment. However, in crisis situations, host institutions have come up with some other goals that include the organization of the workload for their own employees and assuring the best possible network connections to be able to perform work from home and regular online meetings. In such a situation, some European and national bodies offered a kind of guidelines to assist HEIs in finding ways to successfully cope with new challenges.

For example, the Quality Assurance Agency for Higher Education (United Kingdom) issued on 18 January 2021 (updated 23 April) a document about the ongoing implications of the pandemic for placements and practice-based courses, including field work (QAA, 2021). As for the internship programs (including, for example, work in conservation and restoration labs, computer labs and eye tracking labs) it was felt that several challenges such as continued lack of access to specialist facilities or restrictions of social interaction during the pandemic had an impact on students demonstrating skills that are required to meet the intended learning outcomes of the course. However, HEIs needed to decide about some possible options that could help in overcoming challenges and finding the hosting institutions for students that could offer online internships.

As stated in a document published by the EU<sup>4</sup> “EU Internships and COVID-19<sup>4</sup>”, the European Commission did not plan to interrupt the mobilities, but rather adapt to the new restrictions and needs of social distancing. They added two specific methods for Erasmus students: Remote internships (Internships carried out entirely remotely) and Blended internships (Internships carried out partly remotely and partly in presence, when the security and logistical codes allow it).

### 2.2.1. Internship Practice before COVID-19

Though less common, online internships in LIS existed well before the COVID-19 pandemic, complementing the growing number of hybrid and online-only graduate programs. E. Kobert (2021) discusses the practice of San José State University that offers courses exclusively online

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<sup>4</sup> <https://eng.eu4eu.org/eu4eutetestimonial/eu4eu-internships-and-covid-19-what-you-need-to-know/>

(since 2009), as well as student support for online internships. For libraries, hosting a remote internship program might be a viable option. N. Westbrook (2012) describes how to use free online tools, such as blogs, Google Tools and more, to recruit and manage interns or volunteers. For some LIS school students, the shift to online internships fits seamlessly with their career goals (Kobert, 2021).

The benefits of library internships and field experiences are well documented. When executed with thought, commitment and feedback, they fit the hallmarks of George Kuh's high-impact education practices, those that are especially effective in increasing student retention and student engagement (cf. O'Neil, 2010). For LIS graduate-level education, internships are important experiences or even graduation requirements, serving as a bridge between an abstract LIS curriculum and a concrete professional experience. The most common modality for these opportunities, at both the graduate and undergraduate level, is in person.

The benefits of internships, both in-person and online, are not limited to interns. Regular, structured interaction with students through internships can provide host institutions with a vital window into the student experience (Juarez and Blackwood, 2022: 83). However, the benefits can be also seen in the modernisation of the whole teaching process if the students' experiences from the real-work environment are included in the planning process e.g., being members of the participatory design team. Thus, we focus on several surveys that shed light on specific issues and offered some useful results.

Research conducted by Juznic and Pymm (2011) revealed generally highly positive responses toward a placement, internship or field experience from the perspective of students. In their comparative study, the results showed that over 80% of Australian LIS students already had more than one year of work experience in a library or related organization, compared with only 7% of Slovenian students. The other study of Pymm and Juznic (2014) which investigated the attitudes of host institutions brought in the responses from the supervising host institutions in Slovenia and Australia and proved that both sets of hosts expressed generally highly positive feelings about their placement role and activities.

Bird, Chu and Oguz (2011) conducted an extensive survey to reconceptualize internship opportunities globally, with regard to attitudes towards conducting practical work as a mandatory part of the academic curriculum and ways to implement it, offering a new model of 4 'I's (Intentional, Interconnected, Interdisciplinary and International). In a later study, the same authors (Bird, Chu, and Oguz, 2015) investigated the training of librarians as part of the LIS curriculum in the United States and in international arenas such as IFLA, with the support of

its Education and Training Section. As for the ALA Accredited programs, a review showed that in North American LIS programs internships were required in only 10 of 59 (17%) of these, except for students who intended to work in school libraries. In addition, only three of 59 (5%) programs explicitly stated that online or international experiences were available or encouraged. For comparison, in Europe which has adopted the principles of the Bologna Process (Ratzek, 2006), the internship requirements were more common. However, in 11% (5 of 44) of the countries that responded, the internship was elective, and in 23% (10 of 44), it was not offered as part of a master's program. At the master's level, the majority of respondents (89%) estimated that less than 25% of their students took the opportunity to practice when they volunteered, while only 7% said a high level of student participation was seen in optional internships (Bird, Chu and Oguz, 2015).

Martínez Arellano and Ortega (2012), who provided insight into the state-of-the-art relating to the internship in Latin America, argued that sometimes LIS education is essentially based in practice, due to the non-existence of an adequate theory, or that the existing theory is unrealistic to common library issues. They also noted that sometimes LIS education is highly theoretical, disconnected from the practice, apart from learning about how concepts can be put into action, and students are not able to give meaning and value to their learning.

With access to ICT, it became obvious that the online practice provides new opportunities for experiential learning. The concept of online practice may sound relatively new, but the basic idea of completing tasks and gaining experience remotely is more realistic. As organizations and people have become more interconnected due to increased access to broadband internet and high-speed computing devices, telecommuting is a large part of the workplace.

According to Vriens et al., virtual mobility can support work placements in a number of ways. Two main types dominated even before the COVID-19 pandemic: the fully virtual work placements and the virtual support for physical work placements, each of these vary according to the degree of integrating virtual components into the work placements and also depend on which actor is driving the process: higher education institution, student or employer. In the university-driven scheme, the process is initiated by the university typically as a result of specific requirements in the curriculum. In the company-driven scheme, the driver is typically the employer who wishes to enter into direct contact with students – potential future employees – and to contribute to their training. And, last but not least, is the student-driven scheme which is defined as a situation where the student's own interests and motives are in focus. Both types were present during the COVID-19 pandemic.



Kolb, Boyatzis, and Mainmelis (1999: 17) studied the Experiential Learning Theory (ELT) in several fields including Computer/Information Science. Their conclusions shed light on the possibilities that can be employed in internship programs in computer/software companies. Firstly, they recognized the need to study end-user software and end-user training, taking into account the individual differences in cognitive and learning styles; to examine the relationship between learning style, problem-solving and decision-making processes, online search behaviour, preference in computer training and computer-assisted instructions.

### 2.2.2. Internship Practice during COVID-19 Pandemic

The COVID-19 pandemic necessitated a large-scale shift to online work and learning. Therefore, more internships had to shift as well. Faculty at LIS schools have stepped up to ensure that their students are able to pursue meaningful learning experiences through online internships (Kobert, 2021). HEIs around the world had to continue their activities through distance learning and online courses to cope with this pandemic outbreak. One of the areas of higher education that was most affected by this unexpected situation was internship programs, and alternative ways began to be sought instead of face-to-face internships.

For students interested in public librarianship, being unable to serve patrons or work with collections in person means they have had to get more creative about the skill sets they can develop through online internships. At the same time, working virtually has presented opportunities for connecting with organizations where an in-person experience would not have been feasible (Kobert, 2021).

Kalová (2020) thought that, even in the situations such as the COVID-19 pandemic, LIS students must gain professional experience under often difficult conditions. On the other hand, libraries, in turn, should not lose the important input and new ideas that interns can provide because of the increased safety measures.

Public health guidelines and closures prevented many students from fulfilling internship and field experience requirements needed for graduation (cf. Juarez and Blackwood, 2022: 81). The pandemic intensified already existing challenges for students all over the World, especially for those coming from underrepresented communities. The pandemic also provoked a new situation in which students faced new social and economic barriers on top of their typical course loads and graduation requirements. Some met serious barriers to accessing the resources and services that they needed to complete their studies, especially those provided by campus libraries when offered in analogue documents and face-to-face services. The HEIs reacted

differently. In some countries, the host institutions quickly implemented solutions to continue serving users from a distance, from online instruction sessions to outdoor lockers for contactless equipment pickup, including the programs for students' internships or other modes of practical assignments. Others fell behind, not being quite able to react and reorganize their daily work which also put students in an awkward situation. As Juarez and Blackwood (2022: 82) reported, some US universities remained closed for some time, but libraries persevered. This perseverance stretched beyond typical library services and extended to other aspects of student success – in this case, online internships.

In the study conducted by Bayir (2021), the online internship program was presented and discussed. The program was conducted between 29 June and 24 July 2020, via the Zoom platform, and was designed in five modules, with detailed content information provided under each module. A total of 21 sessions were held and 32 library and archive specialists contributed to the program. The analysis of the survey results demonstrates that the majority of the interns who participated in the program preferred to have a face-to-face internship. However, they explained that this program was a valuable contribution to their theoretical learning as it was run by professionals from different information organizations. Moreover, the sustainability of the program is reviewed by taking into account its advantages and disadvantages.

Juarez and Blackwood (2022) were interested in learning how first-year students and incoming transfer students experience the library when they had not yet been to campus due to the pandemic restrictions. The results of the conducted studies showed that there are no simple answers and that the experience from one HEI does not map to another institutional environment. Not every internship hosting institution will have the capacity to accommodate an intern in a meaningful way, nor will it have digital-related projects with which an intern can assist. However, hosting an online internship is easier than one might think. The research question model presented in their article and designed by the intern herself is one that any library professional can replicate. According to their study, online internships are, by and large, easier to administer than it is the case with their in-person counterparts.

From the point of view of the host institution, the most important issue relates to the availability of adequate, reliable and flexible software and fast communication networks. Big IT companies have been providing the best possible technological solutions for hybrid and completely remote work options (see, for example, Microsoft News Center, 2022). These companies are also offering online internship programs for universities, individuals etc. (see, for example, internship programs at Google, GE, Dell Technologies).

### 2.3. Previous Work on the Topic of Framework Design

When planning the research as part of the IO 6, we tried to find the most suitable form for presenting the obtained results that can allow the understanding of the context and stimulate further reflections in similar research. In doing so, we studied the possible forms for the final presentation of the IO6 deliverable and decided to use the term ‘framework’ rather than ‘model’. Another important aspect is that there is more literature related to the models or frameworks focusing on apprenticeship than on internship. The framework approach seems to be more suitable because its interpretations leave a more flexible space for expressing what we consider useful for the wider community of interested colleagues.

There are some good examples of the proposed frameworks that relate either to apprenticeship or internship. P. Gopal (2011) describes the cognitive apprenticeship framework and specifies four dimensions for designing powerful environments, namely: content, method, sequence and sociology that can also be considered as valid for internship framework.

Ertmer & Cenna (1995) discuss a cognitive apprenticeship approach to teaching design, which incorporates elements of modelling, coaching, reflection, articulation and exploration. These elements and their features are embedded within three phases, e.g., orientation, situated training/learning and exploration, which suited our goals well.

Although the International Labor Association’s (ILO) research project (*Apprenticeship Development for Universal Lifelong Learning and Training – ADULT*) aims to generate new ideas and policy options to modernise apprenticeship systems for lifelong learning and decent work for youth, adults, and older workers, it can be considered an example of a new approach to the digital transformation of internship at HEIs as well (ILO, 2022).

The literature shows a whole range of practice organization models and frameworks, such as cognitive models (Dennen and Burner, 2008), collaborative models (Glaze and Hannafin, 2006), a technology-enhanced apprenticeship model (Gopal, 2011), an instructional design model (Ermer and Cennamo, 1995), value-added modelling and others. Due to the broader practice of self-learning concepts via online learning platforms (for example, Udemy Business, Skillshare, LinkedIn Learning, Coursera), literature defines a paradigm of new models for lifelong learning (Kanwar, 2019; Pearce, 2019). As stated in the documents of the International Labor Association (ILO) from 2021 and 2022, digital transformation provides opportunities but also barriers in the field of practical education that serve as preparation for future work.

Levi et al. (2019) discuss another important aspect for the improvement of students' achievements, e.g., value-added (VA) modelling that can be used to quantify teacher and HEIs' effectiveness. In their research, they analysed a number of empirical studies on VA modelling, focusing on modelling and methodological issues to identify key factors for the improvement of students' achievements. The impact of well-designed and managed internship programs in an online environment can be explored by using such a technique.

Another ILO's document has its value for designing the framework for quality internships, although it is also focused on apprenticeship programs. Its value is in the fact that it provides guidance on developing quality systems based on six building blocks, some of which can be considered useful for internship systems as well:

- meaningful social dialogue: quality internships form a bridge between the world of education and the world of work, based on social dialogue involving the social partners – employers and HEIs;
- clear roles and responsibilities: quality internships are built on the support and commitment of numerous stakeholders, who should have a clear understanding of their roles and responsibilities and who also have a common purpose, which ensures the coherence of the entire system;
- equitable funding arrangements: quality internships generate both costs and benefits for the public authorities, enterprises and apprentices themselves.
- strong labor market relevance: quality internships prepare young people for occupations and their participation in the labor market; and
- inclusiveness: quality internships are not just designed for one social group, and need to take positive action to increase diversity, improve reporting and accountability, incorporate a level of flexibility and enhance advice and support (based on ILO, 2017).

## 3. DECriS Approach to Internship during COVID-19 Pandemic

### 3.1. Introduction

As stated in previous chapters, the internship/apprenticeship practice in the COVID-19 crisis also pointed out the problem of any kind of field work relying only on physical presence in organizations. With this deliverable, we would like to indicate the potential of online internships not only during the COVID-19 crisis, but otherwise in growing DE challenges for HEIs. Focus is on online internships in the business sector, i.e., in private computer companies, and the public sector (e.g., libraries, documentation centres, centres for information analysis), in the time of the COVID-19 pandemic or similar crisis situations. The intention is to analyse the practice at partner HEIs to learn about the models used (for example, on-boarding documents for newcomers at the workplace, his/her own individual plan tailored to his/her skills and knowledge, a mentorship and internship plan, organization of remote work with daily and weekly assignments, involvement in Slack and communication in groups). As several partners participated in the project, they had different experiences and they used different methodologies for research. They also have different data available in their environments. The volume of data and results vary from partner to partner. However, the results of all partners contribute to the final goal.

### 3.2. Research Methodology

#### 3.2.1. Introduction

Each project partner decided for themselves how to conduct research to contribute to the final goal of the IO6: the proposal of the *Internship Framework for Crisis Situations (Internship Framework)*. For achieving such a goal, a series of studies were conducted. As the IO6 lead partner, the University of Osijek carried out one pilot and two research studies; the University of Library Studies and Information Technologies, Bulgaria, conducted a combined study; the University of Hildesheim, Germany carried out two semi-structured interviews; SRCE, Croatia, took part in delivering answers to questions based on companies' perspective. The last two reports brought in the analysis of the curricular practices (students' compulsory internships) at the University of Barcelona, Spain.

The results were presented at DECriS Multiplier events; as research papers (published or accepted for publishing in international and local research journals); posters presented at domestic and international conferences; or short information for social networks.

### 3.2.2. Purpose, Goals and Objectives

The purpose of the conducted studies was to contribute to a better understanding of the value internships have for the quality of higher education, with special emphasis on internships during the COVID-19 pandemic.

The main goals were:

- To learn about the experience in organizing the internship programs before and during COVID-19 pandemic;
- To get as much information as possible about students' experience, about their opinion on online internships and to learn about their preferences;
- To learn about the attitudes towards internships in general. and online internships in particular; experiences the host institution had before and during COVID-19; future plans and preferences in organizing internships;
- To understand the reasons for policy-making bodies' intentions and activities.

To be able to fulfil the above-mentioned goals, four research questions arose:

RQ 1. What is the experience of the teachers responsible for the organisation of the internship and their attitude toward it?

RQ 2. What are the students' experiences, opinions and preferences?

RQ 3. How do supervisors in host institutions organize the internships in general, and during the COVID-19 pandemic in particular?

RQ3a How did local IT companies manage their work and student internships before the COVID-19 pandemic;

RQ 3b How did local IT companies organize student internships during the COVID-19 lockdown? and

RQ 3c What are the advantages and disadvantages of online student internships?

RQ 4. Are there any relevant policy-making documents, and if so, what do these documents recommend?

### 3.2.3. Approaches by All Partners

The leading HEI for this IO is the team from the University of Osijek, which detected LIS institutions partners in organizing students' placements during their internships, other forms of practical work during the study years and, in certain situations, apprenticeships as well. Former students were also contacted in order to communicate their experiences. After this initial phase, a draft was prepared stating which elements have to be taken into account when planning students' activities outside the university settings during the COVID-19 crisis and otherwise.

Other partners provided comments on the first and second drafts and included their own experiences. The final version of the *Internship Framework* was prepared by all partners under the guidance of the team from the University of Osijek.

Each project partner decided for themselves how to conduct research, e.g., what methods to apply in order to contribute to the purpose of the IO6: the proposal of the Internship/Apprenticeship Framework for crisis situations. To achieve the agreed goals, a series of studies was conducted.

The University of Osijek carried out three research studies: one based on the experiences of the teachers who are responsible for the organization of internships (pilot study); the second one, related to students' perspective; and the third one, based on IT companies' perspective of Internship/Apprenticeship. The aim of the research was to gather as much information as possible about where and when the students had their internships during the lockdown, how they perceived it and what was their experience with online internships.

The University of Library Studies and Information Technologies, Bulgaria, conducted combined studies: survey questionnaires for students and mentors and the analysis report method of official documents. Survey questionnaires for students and mentors were updated, but in general were based on the methodology developed by the team from Osijek (see, in particular, Jakopc and Aparac Jelušić, 2021).

Project partner, the University of Hildesheim, Germany, carried out two semi-structured interviews.

As the project partner that is not a higher education institution, SRCE,<sup>5</sup> Croatia, took part in delivering answers to questions based on several companies' perspectives.

The last two reports brought in the analysis of the curricular practices (students' compulsory internships) of the Bachelor's Degree in Information and Documentation of the academic year 2020-2021 and the academic year 2021-2022 and of the curricular practices (students' compulsory internships) of the Master Degree in Information and Documentation of the

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<sup>5</sup> The University Computing Centre (SRCE) has a long tradition in information and communication technologies. It was founded in 1971 within the University of Zagreb, the only Croatian university at the time, with the purpose of enhancing the implementation of information technologies in the academic community as well as in Croatia in general. Today, SRCE is the main computing centre. It provides concluding remarks about the surveys and is the architect of the e-infrastructure, covering both the University of Zagreb and the whole research and higher education system. Furthermore, SRCE is the competence centre for information and communication technologies as well as the centre for education and support in ICT application. SRCE now has 165 employees (srce.hr)

academic year 2019-2020 and the academic year 2020-2021 at the University of Barcelona, Spain.

The results were presented as research papers (published or accepted for publishing in international research journals); posters presented at domestic and international conferences; presentations at DECriS Multiplier events; or short information for social networks.

#### 3.2.4. Methods Used

As the leading partner for this IO, the Faculty of Humanities and Social Sciences, of the University of Osijek, conducted pilot research to identify relevant key participants and to gather data. Methods used for pilot research were analysis of secondary data (Student mentor reports, Faculty system data) and a semi-structured interview with teachers. In this pre-phase of the survey, teachers responsible for the organization of internships were asked to provide brief information on how the internship program was conducted during the COVID-19 lockdown. Teachers who are in charge of it in the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> undergraduate academic year keep records of internship plans and reports.

As the number of students and companies available for research was limited, and given that different companies adapted to the new conditions in different ways, it was decided to use semi-structured interviews as a primary research method for the second and third research question, and an online questionnaire for the first and third research question (RQ 1 and RQ 3). For the survey of students' opinions, experiences and preferences (RQ 2), an online questionnaire for students was designed and implemented. Given the situation with the lockdown and internships in various information institutions (libraries, bookstores, museums, galleries, IT companies), most students waited for their 're-opening' and only then went to perform their internship, respecting epidemiological measures. The method used for surveying the teachers' and IT companies' representatives was the semi-structured interview. In an IT competitive environment, it is difficult to expect the focus on a potential online questionnaire and obtain relevant results. Therefore, a semi-structured interview research method was chosen following some theoretical work on qualitative methodology (Given, 2006; Carlin, 2008; Maxwell, 2013; Silipigni Connaway and Radford, 2021). Our research questions were built on the presumption that IT companies could better adjust to the lockdown situation as they were practicing remote work even before the COVID-19 situation. Each interview was recorded, followed by transcription. The transcribed text was used for content analysis. The draft version of the questionnaire was distributed among partners for comments and suggestions.



The University of Library Studies and Information Technologies, Bulgaria, conducted combined studies: survey questionnaires for students and mentors and the analysis report method of official documents. Survey questionnaires for students and mentors were updated, but in general were based on the methodology developed by the team from Osijek (see, in particular, Jakopec and Aparac Jelušić, 2021).

Universitat de Barcelona, Spain, used analysis report methodology based on several official documents: “The teaching plan of the subject”, “The annual reports of the Practicum course of the Degree in Information and Documentation (ID) corresponding to the academic years 2020-2021 and 2021-2022”, “Satisfaction surveys of the students of the Degree in Information and Documentation who completed the Practicum during the periods of 2020-2021 and 2021-2022”, “Satisfaction surveys of the tutors of the internship centers that have received students during the 2020-2021 and 2021-2022 academic years”, “The student learning evaluation rubrics prepared by the tutors of the internship centers and the work notes of the subject coordinator on Bachelor and Masters’ degree level”.

Stiftung Universität Hildesheim, Germany, used the semi-structured interviews method. Two kinds of interviews were performed: with students involved in online internships and with companies’ representatives. Each interview was audio recorded and the transcripts of all recordings as well as coding are stored in the Puh,<sup>6</sup> a system in which SRCE enables users from science and higher education to store and share files on its storage systems, which is also available to researchers and scientists from abroad. The sample consisted of 15 students and 5 companies.

The University of Zagreb, Computing Centre (SRCE), Croatia, used a semi-structured interview with institutions’ directors in order to get input about their enrollment in internships during the pandemic.

### 3.2.5. Presentation of the Collected Data

In our analysis, we used the Codebook of data sources as follows:

- PSOS1 Project partner, the University of Osijek, carried out a study based on the students’ perspective (Jakopec and Aparac-Jelušić 2021),
- PSOS2 Project partner, the University of Osijek, carried out a study based on the companies’ perspective (Jakopec and Aparac-Jelušić 2023) of Internships/Apprenticeships in times when there are no alternatives.

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<sup>6</sup> Puh is a system in which SRCE (University of Zagreb Computer Centre) enables users from science and higher education to store and share files on its storage systems. It is also available to researchers and scientists from abroad.

- PSBG Project partner, the University of Library Studies and Information Technologies, Bulgaria, carried out a combined study showing the efforts of students of majors in library and information sciences and archival science at UniBIT, in internships under the "Student Practices" project, MES (Todorova, Eftimova and Genova, 2023).
- IR01 Project partner, Stiftung Universität Hildesheim, Germany, carried out semi-structured interviews with 15 students
- IR02 Project partner, Stiftung Universität Hildesheim, Germany, carried out semi-structured interviews with 5 companies
- RRS Project partner, Sveučilište u Zagrebu Sveučilišni računski centar (SRCE), Croatia took part in delivering answers to questions based on the companies' perspective (Jakopec and Aparac-Jelušić, 2023).
- ARB1 Project partner, Universitat de Barcelona, Spain, last took part in delivering the analysis report of the curricular practices (students' compulsory internships) of the Bachelor's Degree in Information and Documentation of the academic year 2020/2021
- ARB2 Project partner, Universitat de Barcelona, Spain, took part in delivering the analysis report of the curricular practices (students' compulsory internships) of the Bachelor's Degree in Information and Documentation of the academic year 2021/2022

Pilot research, which was a starting point for the proper design of the questionnaire, showed that libraries, museums and archives did not conduct online internships because of the state's health and safety codes (AZVO, 2020<sup>7</sup>; Recommendations, 2020<sup>8</sup>), while private companies adapted to the new situation and continued with internships in an online environment.

Three surveys conducted by the team from the University of Osijek included 3 teachers, 8 students and 18 IT companies' representatives. From the official documentation, it was also evident that a certain number of students did their internship programs online. In total, 8 students out of more than 100 students completed an online internship. Company directors, branch managers and human resources employees from a total of 20 companies were invited to participate.

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<sup>7</sup> During the summer of 2020, the National Agency for Science and Higher Education (AZVO) conducted a study that aimed to investigate challenges for HEI during the pandemic and social isolation, focusing on experiences and needs of teachers and students (cf. AZVO, 2020). In order to better understand the depth and breadth of the pandemic's impact on the study and teaching experience, the Agency for Science and Higher Education collected answers to the questionnaire designed to cover certain aspects of work and study during emergencies and personal experiences of participants in HEIs. The covered period was from March to July 2020.

<sup>8</sup> *Recommendations for teaching in HEIs in the period of the COVID-19 disease pandemic with the application of anti-epidemic measures* (cf. Recommendations, 31082020) related to teaching (lectures, seminars and consultations) and to the implementation of exams at HEIs (universities, polytechnics and colleges) during the COVID-19 disease pandemic. Each HEI was invited to develop and publish guidelines for conducting exercises as a special form of higher education with diverse content and forms. HEIs were also asked to continue to strive in order to maintain the quality of studies in accordance with the criteria prescribed for study programs in the procedures of initial accreditation or re-accreditation processes.

For implementation of the tasks of Intellectual output 6 (IO6), the team of University of Library Studies and Information Technologies, Sofia, realized 2 online surveys with students (15 respondents) and mentors (8 respondents).

The curriculum of Library and Information Science specializations named Library and Information Management, Archival Studies and Documentary and Library and Information Sciences and Knowledge Development at the Faculty of Library Studies and Cultural Heritage at the University of Library Studies and Information Technologies (<https://www.unibit.bg/>) includes mandatory 100 hours of practical training in a real work environment during the summer semester of the third year of study for undergraduate students. In the academic years 2020/2021 and 2021/2022, because of the COVID-19 pandemic, all the measures and lockdown periods, new approaches for remote organization of students' practice were required. In accordance with the instructions from the Ministry of Health Affairs, Ministry of Science and Education and Orders by the Rector of the University of Library Studies and Information Technologies and the Dean of the Faculty of Library Studies and Cultural Heritage, the practical work in the academic years 2020/2021 (summer semester) and 2021/2022 of the students was organized entirely online. Under the guidance of a lecturer, students carried out learning tasks related to improving their knowledge of applying online information search strategies to assigned problems and precisely form bibliographic references. In virtual classrooms (Google Meet), students presented their individual assignments to the entire course and participated in discussions. Online lectures and meetings with library specialists and practitioners were also organized during the training period. Online demonstrations of digitization and restoration activities enriched the interaction of students with experts from practice. The possibility of discussions with representatives of cultural institutions was met with interest by the trainees. This was the remote format for taking the practical classes as a mandatory component in the summer semester of the 3rd year of study in a period of crisis situations, because of the pandemic of COVID-19. Academic staff and students have assessed this approach as satisfactory in this situation. However, it should be highlighted here the unique opportunity for additional, extracurricular internships provided by the Ministry of Education and Science (MES), called "Student Internships - Phase 2", with a period of implementation 13 January 2020 – 12 May 2023. This initiative is an opportunity for 44,000 students to successfully go through on-site practical training (practice) in a real work environment. It is in line with the policy in the field of higher education of the Ministry of Education and Science, aimed at strengthening the link between education and business and providing the necessary staff for the

dynamically changing modern labor market. The practice is open to all current students from 43 universities in Bulgaria, including the University of Library Studies and Information Technologies. In the COVID-19 pandemic, in the academic years 2020/2021 and 2021/2022, students' internships were organized under the requirements of that initiative and combined on-site and online activities.

Universitat de Barcelona, Spain, contributed with two reports: Analysis report of the curricular practices (students' compulsory internships) of the Bachelor's Degree in Information and Documentation of the academic year 2020-2021 and the academic year 2021-2022 and Report of analysis of the curricular practices (students' compulsory internships) of the Master's Degree in Information and Documentation of the academic year 2019-2020 and the academic year 2020-2021. Reports are the result of analysis of the teaching plan of the subject, the annual reports of the Prácticum course of the Degree in Information and Documentation (ID) corresponding to the academic years 2020/2021 and 2021-2022, two satisfaction surveys of teachers and students of the Degree in Information and Documentation who completed the Prácticum during the period of 2020/2021 and 2021/2022, the student learning evaluation rubrics prepared by the tutors of the internship centres and the work notes of the subject coordinator that include a diary of follow-up of the centre assignments, as well as the comments of the academic tutors of the Bachelor's Degree and annual reports of the Curricular Practices of the Master's Degree in Digital Content Management (hereinafter, MGCD), prepared by the subject coordinator, evaluation reports from professional tutors, student assessment reports and correspondence maintained with tutors and students during internship monitoring on master's degree.

Project partner, Stiftung Universität Hildesheim, Germany, carried out two semi-structured interviews. Each interview was audio recorded and the transcripts of all recordings as well as coding are stored in the Puh. The sample consisted of 15 students and 5 companies.

As the project partner that is not HEI, SRCE, Croatia, took part in collecting<sup>9</sup> answers to questions-based questionnaires used to investigate companies' perspective (see Jakopec and Aparac-Jelušić, 2023) with the centre director.

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<sup>9</sup> Research report SRCE (available at <https://puh.srce.hr/s/k3oYbZWjfS8ejZb>)

### **3.2.6. Analysis and Discussion of Data**

#### *3.2.6.1. The University of Osijek*

Findings of the student questionnaire (PSOS1) conducted by the team at the University of Osijek show students use different channels of online communication, as well as different types of interviewing processes for being chosen by the host institution. Based on a particular subfield, participants use different tools for solving a given problem and reporting to their mentors. Mentors put an effort into overcoming a gap in mentoring and adjusting their communication to new circumstances. Students appreciated the flexibility of online internships in terms of working hours and professional and personal connections that they gained despite being socially isolated. A disadvantage of internships during the lockdown is a lack of more communication and lectures, as well as the desire that the practical part of the internship itself is live, or at least, hybrid in nature. Libraries, bookstores, museums and galleries waited for their 're-opening' to be able to continue with internship programs, respecting epidemiological measures. IT companies did their internship programs online. The application and selection process mostly consisted of three rounds: a test of intellectual abilities, an interview with a human resource manager and a technical interview with the team leader. Students participated in a variety of tasks tailored to the specifics of the work they performed: design, "frontend" development, "backend" development, iOS and databases. They used a variety of tools, aids and applications: Visual Studio Code, Figma, Slack, React, MySQL, XCode, Udemy, Sketch, Adobe Color Wheel, Unsplash and Pexels, Github and Sourcetree, Dribbble, Google Play, Node, Google Meet and Skype. Students identified the following advantages of online internships: independent organization of time, the ability to work whenever they wanted, the comfort of their own home (which makes the atmosphere more relaxed) and faster access and communication (mentors immediately see via the split-screen what the students had made) on one hand, and the disadvantage of online internships on the other: lack of human contact and socialization, prolonged waiting for an answer and problems in communication with the mentor. Data analysis shows that students want more communication and lectures, practice itself should be live or at least hybrid, fewer people on the internship, requiring better knowledge of students and that performance should be adjusted to students. The flexibility of online internships is the most appreciated feature among students. The results of the survey highlighted the invaluable professional and personal connections that they gained despite being socially isolated.

Findings of companies' studies (PSOS2) show that the well-established cooperation with local IT companies was interrupted in 2020 by the COVID-19 lockdown and semi-lockdown. In that

situation, teachers and IT companies' managers tried to find out the proper ways in which students could fulfill their tasks online or through hybrid models. Companies are thinking about continuing to perform online or through hybrid models, and it is clear to them that one of the answers is a well-defined and regulated model of internships in the online environment. Data analysis shows that in 12 out of 18 IT companies, the employees had the possibility of remote work before the COVID-19 pandemic; 6/18 IT companies accept interns who were engaged exclusively online during the full lockdown. Only 1/18 IT companies claim that they did not have enough resources (people and time) within the company to conduct students' internship programs. Overview of the tools used during the virtual internship is as follows: 7/18 IT companies use Slack; 5/18 IT companies use MS Teams; other used tools are: Zoom, Google Meet, Skype, Jira, Google Hangouts, G-Suite tools, Discord, e-mail, Notion, Asana, GitLab, AccessSoft, OnTime, Forms, phone calls, Rocket Chat, Confluence and SharePoint. Results of that study show that the advantages of virtual internships are flexibility, saving time, the possibility for the interns to dedicate themselves to their private and faculty obligations, comfort, easier organization, the possibility of self-organization and reduced risk of COVID-19 infection. However, there are other two-thirds of them that see more negative sides of the implementation of virtual internships, among which are a lack of communication, missing the opportunity to learn about organizational, business, and ultimately, the human side of the company.

#### *3.2.6.2. The University of Library Studies and Information Technologies, Sofia, Bulgaria*

Findings of a combined study (PSBG) among students and mentors show that a unique opportunity for additional, extracurricular internship was provided by the Ministry of Education and Science of Bulgaria (MES), called "Student Internships - Phase 2". It is in line with the policy in the field of higher education of the MES, aimed at strengthening the link between education and business and providing the necessary staff for the dynamically changing modern labor market. The findings of the student survey show that in the pandemic period, the internship practice was conducted both in person and online using the following tools – "Student Internships - Phase 2", Project platform, Google Meet, emailing, National Library platform and MS Office software. The training practice in person was carried out in compliance with the pandemic measures and some of the interns reported that their apprenticeship period was entirely online. The ratio of replies related to the prevalent forms of internship either face-to-face or online is 8 to 6, with only 1 example of a hybrid mode. The respondents point out that they performed various training tasks during their internship period, such as working with

library units and electronic databases; preparing and creating bibliographic references; searching in the National Library “St. Cyril and Methodius” databases etc. The survey shows that 53.3% of the students think that there are advantages to doing an internship online and 57.1% of students think that there are disadvantages to conducting an internship online. The most obvious disadvantages stated by the students include lack of personal contact with the mentors and interaction with the readers, lack of opportunity to observe the workers there, to learn from their mentors etc. The recommendations given by the respondents are mainly in terms of enlarging the scope of the internship settlement, extending the internship period to at least half a year, and the opportunity to be more present in the real working environment. Regarding the mentor part of the study, although they were quite busy, they managed the training of their interns when there was a good organization. All the mentors express a successful cooperation between the institutions and the interns, which leads to the enhancement of their practical skills for working onsite. Despite the restriction measures during the COVID-19 pandemic period, the training processes were conducted mainly on-site. At the same time, a part of the training activities was carried out remotely. Phase 2 of the project affirms the opinion of the respondents that the internship program must be performed as field work. It is still necessary to improve the conditions of student internships during crisis situations by enhancing the cooperation between the universities involved and the participating employers, the online activities and holding educational campaigns.

#### *3.2.6.3. The University of Barcelona, Spain*

Reports on bachelor's and master's degrees from the University of Barcelona (ARB1 and ARB2) discuss the analysis of curricular practices, also known as the Practicum, in the Degree in Information and Documentation (ID) program at the University of Barcelona. The analysis was based on various sources of information, including the teaching plan, annual reports, satisfaction surveys of students and tutors, student learning evaluation rubrics, and work notes of the subject coordinator (bachelor's degree) and evaluation reports, and student assessment reports (master's degree).

In the case of the bachelor's degree, the perspective of the faculty reveals that the COVID-19 pandemic had a significant impact on the Practicum. Initially, a flexible model combining virtual and face-to-face internships was adopted to ensure students could complete their studies. Seminars and activities were moved to virtual platforms, and closer support and communication were provided to students and centre tutors. Despite the challenges, the academic objectives were achieved, and a hybrid model was embraced in subsequent years. The perspective of

internship centers highlights their adaptability to changing circumstances. Centres proposed various internship modalities, such as 100% virtual, hybrid, or group-bubble arrangements, depending on their capabilities. The use of technology platforms like Meet, Teams, and Zoom facilitated communication and task management. Overall, the evaluation of the internship experience by centre tutors remained positive. The text also includes the perspective of students, who faced difficulties in finding suitable internship centres. Students who participated in virtual internships experienced isolation and the challenges of understanding an unfamiliar work context. However, student satisfaction surveys indicated that academic tutors provided adequate support, and students felt reasonably integrated into the centres.

Regarding the master's degree, the MGCD is a two-semester program aimed at training professionals in digital content management. From the faculty perspective, the role of the Subject Coordinator includes various tasks, such as preparing the teaching plan, establishing contacts with internship centres, managing the selection and assignment of positions, and coordinating with the Master's Coordination Committee. Different internship modalities were included: online, hybrid, and face-to-face, which were changes made due to the COVID-19 pandemic. The report provides insights into the activities developed by students in different academic years and the options available to them when the internship could not be completed as planned.

#### *3.2.6.4. Stiftung University Hildesheim, Germany*

Findings of semi-structured interviews carried out with students in Hildesheim (IR01) regarding the application process show that several applicants mentioned challenges in finding internships during the COVID-19 pandemic, with companies facing resource limitations or not accepting trainees. Some applicants mentioned networking or referrals to secure an internship opportunity. Different companies had variations in their specific application processes, including forms to fill out, attaching CVs, or answering specific questions. Overall, the internship application process commonly involved online submission of applications, followed by initial interviews conducted via online platforms or phone calls. Additional rounds of interviews or tasks were sometimes included. Communication throughout the process was mainly through email or phone calls, with confirmation and offers also provided by these means. The COVID-19 pandemic had an impact on internship availability, with some applicants finding opportunities through networking or referrals. Interviews put emphasis on technical tools used for online internships rather than applications, systems, and digital tools. Some respondents mentioned being provided with the necessary technical aids by the company, such



as laptops, headsets, external screens, docking stations or external displays. The specific technical aids used varied slightly among respondents, with some using only a laptop, while others utilized multiple devices and accessories. In general, the most common technical aid used during the internship was a laptop, which served as the primary work tool. Headsets were frequently used for calls and meetings, with some provided by the company and others used those of personal preference. External screens, keyboards, and mice were mentioned by a few respondents as additional aids for better visibility or comfort. Phones were used for communication and feedback discussions in some cases. The provision of technical aids varied, with some companies offering necessary equipment to interns. As for answers about the greatest advantages, the advantages of online internships included comfort and convenience, flexibility and independence, improved work-life balance, professional development, integration, and collaboration, expanded opportunities, cost and time savings, and the development of remote work skills. Overall, online internships were seen as valuable experiences that offered unique benefits in the current work environment. Disadvantages of online internships included limited exposure to the work environment, difficulties in establishing strong connections and integration, challenges in communication and collaboration, reduced social interaction and team integration, feelings of isolation and loneliness, distractions and delayed responses and blurred work-life boundaries. These factors highlighted the importance of personal interactions, informal communication and a sense of belonging that can be more challenging to achieve in a remote work setup.

Findings of semi-structured interviews carried out with companies' representatives (IR02) show that overall, the availability of remote work or work-from-home options before the COVID-19 pandemic varied across the companies interviewed. Some had limited remote work arrangements, while others had established practices in place. The pandemic brought about a significant shift in work arrangements, with more companies embracing remote work as a result. Companies' point of view regarding the selection process for internships varied among the companies interviewed. Some had formal interview processes, while others had more flexible and individualized approaches. Factors considered during the selection process included a good fit for the team, skills, professional suitability and the relevance of the course of study. The technology-based tools and apps used during internships varied among the companies but correspond to previous findings. Video conferencing tools such as Skype, Teams, Zoom, Meet, and Webex were commonly used for communication and collaboration. Collaboration and planning tools like Jira, Confluence, BigBlueButton, and Wikis were

employed for documentation, task management and information exchange. Microsoft Office and Slack were also mentioned as useful tools. Telephone communication was still valued for certain tasks. Companies' representatives see the advantages of an almost purely online internship in different ways. Common advantages included the ability to work remotely, flexibility in scheduling, cost savings, and the opportunity for students to participate, who may not have been able to do so otherwise. However, there were also drawbacks related to building connections, corporate culture and spontaneous collaboration.

The disadvantages of an almost purely online internship highlighted challenges related to building connections, limited exposure to different aspects of the company, technical difficulties, inability to learn about office dynamics and culture and reduced engagement compared to in-person experiences.

#### *3.2.6.5. The University of Zagreb, University Computing Centre – SRCE*

The report from SRCE (RRS) indicates that, according to the director's resolution, there was the possibility of a procedure where each employee could submit a request in writing in certain situations to work remotely for a certain period. The director would then confirm it by a formal resolution, allowing the employee to work remotely. Therefore, this possibility did exist in the SRCE's statute. Furthermore, the student practice is defined in the Instructions for Student Practice. SRCE has defined what that procedure should look like, how it should be organized, the student engagement plan, the announcement for practice and so on. Most of the time, there is not such a large number of applicants that would make it necessary to have a selection process, so, usually, all interested students are accepted. The practice lasts for as long as they need it. For vocational students, it is about 40 hours, and for university students, according to the referral, usually 60 or 80 hours. All of them come with a letter from their higher education institution, which states the subject/course of the practice and how many hours should be conducted. Occasionally, they would also state the exact time frame the practice should be completed in, but most often they only write the number of hours. Mentors are SRCE employees, experts in their field – the exact position of the mentor is not strictly defined, but rather the expertise of the employee and the knowledge that they can impart. The tasks for the practitioners depend on the subject for which they receive the referral, mostly in programming, library tasks and education. When talking about fully remote work, there is not much to say, when SRCE's employees are all online together, using modern digital technologies that enable them to work efficiently online. Used tools were those for online meetings, communication was via Slack, regularly and email. The tools used to enable collaboration were Wiki, Jira, Git etc.

Only the electrician must be physically present in the office always, so, it differs based on the type of work. All other positions do not have to be physically present.

### 3.3. Concluding Remarks about the Surveys

The COVID-19 pandemic has had a significant impact on the internship process, with a shift towards online or hybrid models due to quarantine restrictions. The number of online and hybrid models of internship grew during the COVID-19 pandemic. For comparison, in the year before the COVID-19 pandemic, an online internship or part of an internship was done by zero students. The difference between IT companies and public information institutions could be justified by the faster adaptation of IT companies to the changed circumstances and by the growth of the IT sector (Jakopec, 2020), as well as their need for employment of new, young and skilled staff. The pandemic multiplied the use of information technology, which was on the rise even before the pandemic.

Students appreciate the flexibility of online internships in terms of working hours and the professional and personal connections they made, despite the lack of human contact and socialization. The use of various communication tools and applications such as Slack, Google Meet, Skype and Zoom enabled remote collaboration between students and mentors/companies during the internships. IT companies quickly adapted to the restrictions imposed by the pandemic and replaced face-to-face practice with an online one, using a range of tools and platforms for communication and task management. Students express a desire for more real-time communication and instruction during online internships, as well as a preference for face-to-face meetings or hybrid hands-on activities. From the point of view of other stakeholders in the implementation of practical training, the practice centres and mentors had to adapt to the changing circumstances, and some of the adaptations were virtual, hybrid or group arrangements to ensure the continuation of the practice. The availability of telecommuting options varied among companies before the pandemic, but more companies embraced telecommuting arrangements because of not being able to work directly at company premises. Advantages of online internships included flexibility, time-saving, work-life balance, and development of remote work skills, while disadvantages included limited exposure to the work environment, difficulties in communication and collaboration and reduced social interaction. The internship application process generally involved online applications, initial online interviews and subsequent rounds of interviews or assignments, with communication primarily via email or phone calls. The use of technical aids during online internships varied, with laptops being the most common tool, along with headsets, external displays and keyboards for better

visibility and comfort. Recommendations for improving online practice include extending internships, expanding the scope of internship activities and strengthening cooperation between universities and employers. The importance of personal interactions, informal communication and a sense of belonging was highlighted as the greatest challenge to overcome in a remote work environment. Overall, the findings highlight the adaptability and resilience of both students and companies in facing the challenges brought by the pandemic. While online internships offer certain advantages, such as flexibility and expanded opportunities, efforts must be made to address limitations in terms of communication, socialization, and exposure to the work environment.

## 4. Proposed Framework

### 4.1. Introduction

When research is conducted or is being planned in order to produce a useful document on a given topic, the approach is basically defined by two key concepts. These are the framework and the model. The framework provides the overall structure of the project while the model explores the specific methodology of the research.

When we decided to work on the framework that suits best the needs of those who are involved in planning the LIS students' internship programs, we were aware of the fact that our framework was built on the research approach as we studied the literature on the topic and conducted several studies. However, the research frameworks vary and the most common types of research frameworks include: Conceptual framework; Theoretical framework; Methodological framework; Analytical framework; and Empirical framework. These are just a few examples of the types of research frameworks that researchers can use.

We intended to propose a conceptual framework to give an overall picture of the possible courses of action when planning and conducting students' internship programs in a time when there are no possibilities to perform *in situ* activities. To be able to do so, it was necessary to review the literature that explains the logic and systematic drawing of the ideas behind the concepts of 'framework', as well as to base our proposal on the results of surveys taken by all the DECriS partners. Our conceptual framework focuses on presenting the connectivity amongst all aspects of planning of how to conduct internships in times of crisis when there is no alternative.

### 4.2. The Internship Framework

The proposed Framework defines the **key concepts of internship**, suggests **relationships between them**, and discusses **relevant theories** based on the literature review, e.g., theories and practices. As it is widely accepted, the conceptual framework describes the state of known knowledge, usually through the literature review and conducted studies on a certain topic; identifies gaps in our understanding of a phenomenon or problem; and outlines the methodological underpinnings of the research project (Varpio, Aschenbrener and Bates, 2017). According to Maxwell (2013), it is constructed to answer two main questions: "Why is certain research important?" and "What contributions might these findings bring to what is already known?" We added a third value of such a framework, that is, to assist those who might find themselves in similar situations when trying to solve a problem. In our case, this relates to the

attempts aimed at finding the best approach and methodology for the planning, design, implementation and evaluation of internship programs in crisis situations.

We are aware of the fact that a concept of the framework can be seen from various perspectives, including how to organize the structure of ideas and concepts that are involved when wishing to describe the coherence and ease of the way the proposed framework is communicated to other people. Furthermore, the design of a framework can also be considered as an overview of the concepts and practices involved in a certain/particular project as the performance and tasks of the plan to be prepared according to the general direction given by the framework.

To be sure that the proposed *Framework* fulfills its purpose, it is necessary to conduct the same or similar research in other social and/or business environments in order to prove that all relevant facts were taken into account. A comprehensive model of internship in times when there is no alternative could contribute to a better understanding of the needs, procedures and possible outcomes of the desired programs.

In circumstances of crisis when people cannot have direct contact, life must go on but under changed conditions. The same rule applies to internship activities. As research has shown, one of the ways to solve research activities is to postpone them until the conditions for direct contact are met. Such a way can be justified by the fact of not being prepared and being unprepared for the newly created conditions. The proposed framework intends to define the identified stakeholders and their interrelationships, redefine standard processes and define the use of tools so that internship implementation activities continue smoothly in the newly created conditions.

Based on the literature overview and conducted research, we identified the following stakeholders:

1. Student / Pupil / Lerner / Apprentice -> Gainer of practical experience
2. Company / Institution / (Political, Charity) Foundation -> Practical experience provider
3. Faculty / College / School -> Formal education institution
4. Other (Government and Regulatory Bodies, Professional Associations and Industry Organizations, Researchers and Evaluators, Health Institutions (for health insurance), Employment Office, Statistical Office and other interested parties)

In addition to the stakeholders, the literature review and research results identify the following key terms and concepts:

1. Internships / Apprenticeships

2. Mentor / Practice Manager inside the Company or Institution or (Political, Charity) Foundation / Tutor / (Subject) Coordinator
3. Communication
4. Tools, aids, and applications
5. Application process for the internship (incl. application, interview, task)
6. Equipment

Regarding the identified stakeholders, terms, and concepts, it is necessary to take into account the following considerations:

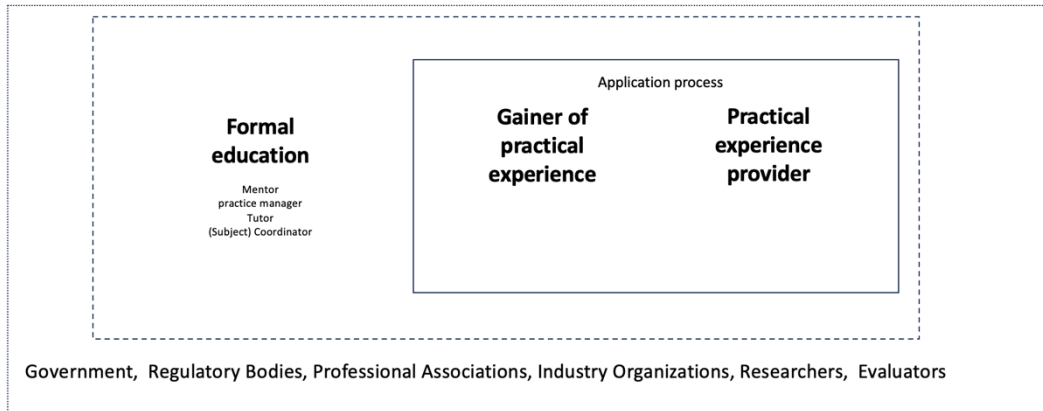
- Although there are various types of stakeholders that take part in internship programs, HEIs must provide a list of desirable organizations to carry out a particular type of practical work for students and to sign a contract with them. Having in mind that today's students can use different educational tools to learn/improve their IT skills (via Online Learning Platforms such as Udemy, LinkedIn Learning, Coursera and others), it is particularly important to plan the internship program according to their needs.
- Although the process of internship within formal teaching programs needs to be carefully planned and well organized, during the absence of direct contact and the eventual impossibility of conducting activities due to health problems, the waterfall model where activities take place sequentially should be rejected and the agile model of conducting activities should be embraced.
- Each stakeholder and identified term should add value to the process of going through the practical acquisition of experience.

To visualize identified stakeholders and terms (Graph 1), each part of the framework must be enabled by hardware equipment, communication tools, aids, and applications. The focus of the framework should be gainers and experienced providers of practical work experience, primarily established via the application process. Such a need for the internship could be a part of formal or informal education that is under the regulation of government, professional associations or industry organizations, while the scientific research component could be accomplished by researchers and/or evaluators.

Equipment [hardware] | Communication tools, aids, and applications

Equipment [hardware] | Communication tools, aids, and applications

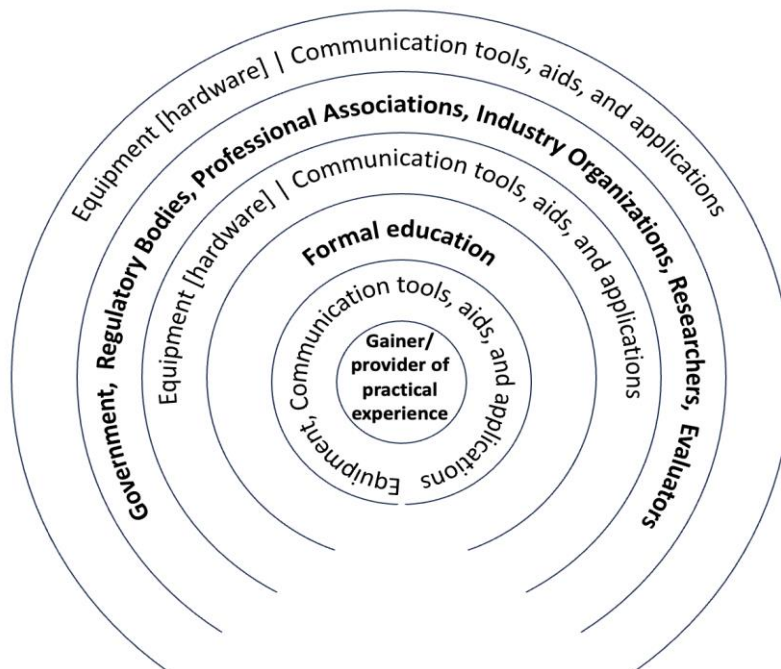
Equipment [hardware] | Communication tools, aids, and applications



Equipment [hardware] | Communication tools, aids, and applications

Graph 1 Visualization of the identified stakeholders and terms

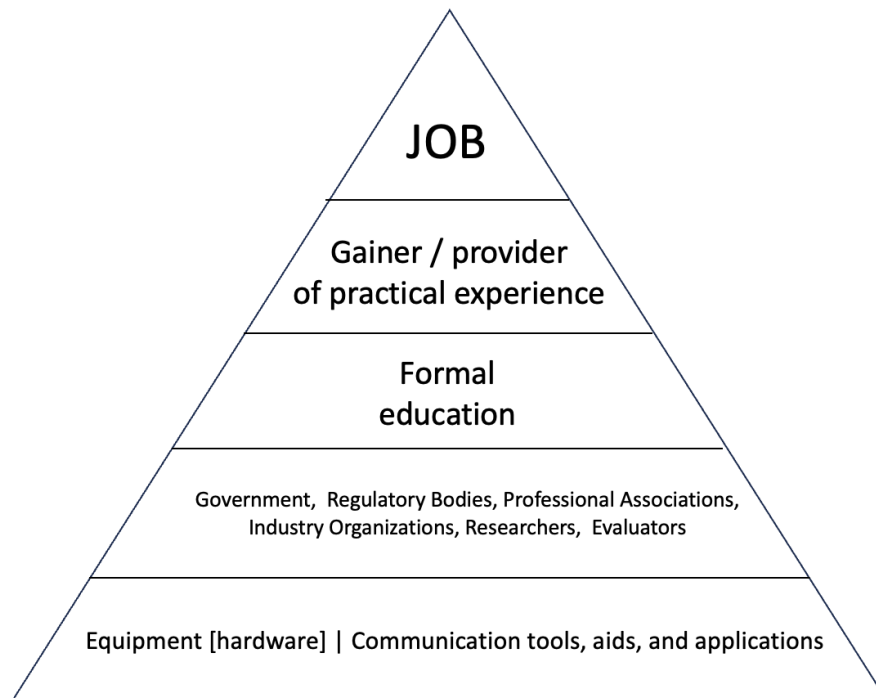
Such a visual presentation does not present the importance of hardware equipment, communication tools, aids and applications, so a better visual presentation (Graph 2) would be as follows.



Graph 2 Visualization of the importance of hardware equipment, communication tools, aids and applications



Another way of visualizing the identified stakeholders and terms is based on Maslow's hierarchy of needs (Graph 3) because we want to emphasize that basic pre-requirements are equipment (hardware), communication tools, aids and applications.



Graph 3 Visualization of the identified stakeholders and terms is based on Maslow's hierarchy of needs

A key difference in conducting online internship activities during the non-face-to-face period is that all activities must be supported by some form of information technology. According to literature sources, processes and documents can be clearly distinguished, but their realization could (and in a certain number of cases was) be realized without the support of information technology. Thus, referrals for internships issued by institutions of formal education could be printed on paper, signed, and delivered by mail or in person. The same behavior characterized the rest of the documentation or process. In addition to health measures, one of the reasons why certain practical experience providers have not embraced an online internship is that they were not prepared to leave the “paper-based” mode of operation. The pandemic has set information technologies as a basic assumption for the development of any activities.

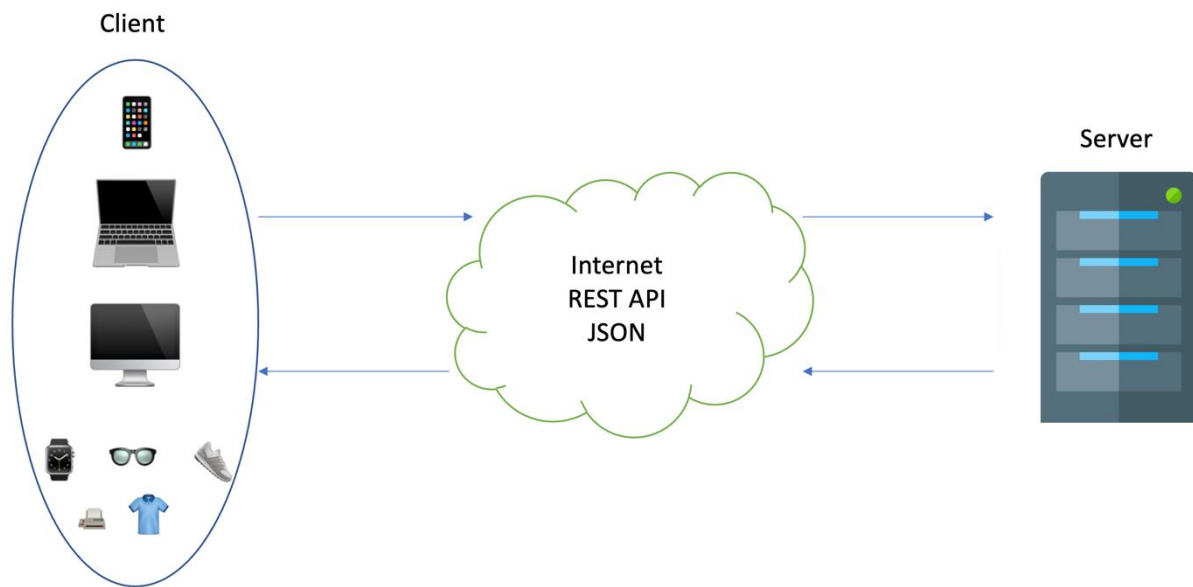
The development of information technology in the previous period led to the fact that, at the time of the beginning of the COVID-19 pandemic, there was a high level of presence of technical equipment among end-users. The very existence of the devices is only a prerequisite

for the use of tools, aids and applications that will support the specifics of conducting internship activities. End-users in the context of the dominant architecture of information systems are clients, while the same architecture also defines the term 'server'. This component (the server) is exactly what was missing before the pandemic. We are not referring to physical hardware components, we are referring to an information system on such physical hardware. As the pandemic came suddenly and quickly, adaptation was needed; there was no time to think and define a system that would unite all the necessary stakeholders, terminology, concepts and processes in one place. Instead, using their client computers, stakeholders used available generic services (email, project management systems, communication tools, code repositories etc.). There is a need to define the functionality of a complete information system that would support all online internship activities.

As this research is focused on LIS HEI institutions with an extension to the field of information technology, it is not possible to predict all the specifics that other sectors bring, but it is possible to establish a conceptual framework of the future information system that will provide fundamental support to key activities while thinking about its expansion to meet the specifics of an individual sector.

#### 4.3. Implementation Possibilities

The given conceptual framework can come to life in the implementation phase only through the architecture of the information system that should be created based on the given framework. Therefore, it is proposed to develop an information system based on a distributed architecture that will enable a complete set of data in one place (server) with the possibility of connecting different client applications that will be used by end-users. Instead of using different generic services (email, project management systems, communication tools, code repositories etc.), all data related to the implementation of internship activities should be in one information system. The proposal is to use the principles of distributed systems development with a REST API interface and JSON lightweight data-interchange format for client-server communication. In this way, the maximum openness of the system is achieved, so that client applications adapted for a specific interface (mobile, web, GIU, CLI or wearable) can be developed for individual specific parts to adequately support individual activities. Such a generic architecture is shown in the following Graph 4.



Graph 4 Architecture of the information system that would be created based on the given framework

The general functionalities that the server-side of the information system should include are working in multiple languages (enabling support for student exchange and diversity in general) and working with multiple roles that have different permissions over multiple modules consisting of multiple programs. These implementations of many-to-many connections enable the future adaptability of the system to some new circumstances that we cannot predict today. As one gainer of practical experience can enroll in an internship with many practical experience providers in his development path, the system should enable the gainer to review all activities with all providers. The same applies to practical experience providers; they should have an overview of all completed internships within their organization. Storing data in one place for these two key stakeholders can then also serve other stakeholders (formal education, government and regulatory bodies, professional associations and industry organizations, researchers and evaluators, health institutions (for health insurance), employment offices and other interested parties) who, through the system of roles and permissions, would have access to the data that belongs to them according to the regulations. The system itself should not strictly define processes and documents (e.g., application, practice log, confirmation) but should enable templates for modelling processes and documents. The template mechanism would enable the definition of standard processes and documents (e.g., application, practice diary, confirmation) but also enable the future adaptation to the specifics of individual sectors.

The entire system should enable internship activities to be carried out in an online environment but also make the entire process fast and efficient. Most of the documentation circulating online

today, which increasingly represents relevant legally binding documents, is not properly certified (signed). For many years, there has been a concept of a digital signature based on verified issuers by states. The process of regular digital signing of any document is not simple enough for everyday use, so in most cases, the important process of digital signature is reduced to placing an image of the signature in the document. Such a method presents the danger of its abuse. If people act in good faith, such a method of operation is generally accepted, but still legally unsafe. In the long term, in the online world, documents of all stakeholders should be digitally signed. Conceptually speaking, legal formal satisfaction of the concept of the digital signature of a document must be a fundamental part of the system.

We observe the task of implementing the proposed conceptual framework in state bodies that support teaching processes but also play a role in the development of the market and entrepreneurship on the one hand, or companies from the private sector on the other hand, that see the possibility of profit in the future based on usage charges to different stakeholders of the system. The suggestion when developing the system is to use the information technologies available in the open-access form. The fact is that the selection of specific information technologies for the implementation of defined functionalities will be up to the team of people who will develop the system itself.

## 5. Conclusions

Approaching the challenge of setting up a proposed framework for practices regarding internship programs in situations where direct contact is impossible, we first consulted the available literature. It is evident that the initially defined term, ‘apprenticeship’, is not sufficiently applicable for justified reasons. Therefore, we chose to use the term ‘internship’. As the pandemic commenced in the entire world at the same time, previous works on the topic talk about conducting online practice as an alternative to direct contact. In order to find answers to the research questions, the partners in the project applied the methodology of their choice but they followed the basic objectives of the project.

As IO 6 lead partner, the Faculty of Humanities and Social Sciences, University of Osijek, carried out two research studies that were presented at domestic and international conferences and published in international proceedings and journals. The first study was focused on students’ perspective (Jakopec and Aparac-Jelušić, 2021), the second one on companies’ perspective (Jakopec and Aparac-Jelušić, 2023) of internship/apprenticeship in times of COVID-19 pandemic. Study shows that, from the students’ point of view, the advantages of online internships were the independent organization of time, the ability to work whenever they wanted, the comfort of their own home, faster access and communication, and from companies’ point of view, the advantages were flexibility, saving time, the possibility for the interns to dedicate themselves to their private and faculty obligations, comfort, easier organization, the possibility of self-organization and reduced risk of COVID-19 infection. Disadvantages from the students’ point of view were the lack of human contact and socialization, prolonged waiting for an answer and problems in communication with the mentor, and disadvantages were the lack of communication, missing the opportunity to learn about organizational, business, and ultimately, the human side of the company.

An online internship is becoming a more equitable way to expose students to the LIS practice than a traditional internship does. Although students and educators do not know what campus life will look like after the pandemic, we can agree that it is surely different right now, especially in times of crisis such as COVID-19. IT companies as hosting institutions can lean into that difference and retain COVID-19 side effects, like online internships, that will better support diverse students’ needs. The IT sector has shown tremendous inclination towards profitability. The products and services that come from this sector have been an integral part of our lives for many years. The pandemic only emphasized this dependence on technology and thus enabled the business world in the IT sector to gain even stronger dominance. Therefore, it is not

surprising that one-third of surveyed employers are willing to completely change the usual (on-site) way of implementing internships to the online way of implementing it, whether there is an immediate need for such a way or not. However, there are other two-thirds that still reflect on the broader context and see more negative sides of the implementation of online internships and, while allowing part of the implementation of internships online, still want the interns to get to know both the organizational, business, and ultimately, the human side of the company. Before setting up the model itself, it is necessary to conduct the same or similar survey in other social and/or business environments in order to be able to take into account all relevant facts based on the obtained data and set up a comprehensive model of performing internships at times when there is no alternative.

In the case of the Project partner Universitat de Barcelona, Spain, the top priority at that time was to ensure that students could take the course and complete their studies. Since it was an emergency response, this was initially not the outcome of a general and previously well-planned shift by the Facultat d'Informació i Mitjans Audiovisuals de la Universitat de Barcelona, but a rather effective, pragmatically and a case-by-case adaptation to the pandemic as a result of the negotiation with each of the internship centres.

A flexible internship model was chosen, with a preference for virtual internships, that allowed, to a certain degree, some complementary face-to-face presence if it was possible because of the evolution to less severe pandemic conditions, thus following a more hybrid model as time went on. For instance, in the case of undergraduates, during the academic year 2020-21, 36.3% of internships were hybrid and 36.3% virtual; for next year, 2021-22, 29.6% were hybrid and 14.8% virtual. Considering that before the pandemic almost 100% of the cases were face-to-face, it can be observed that in the year 2021-22, despite the situation being much more normal, hybrid and virtual solutions were maintained. This is because the experience was generally rated positively by students, internship centres and teachers. Moreover, as the weeks went by, some organizational procedures and pedagogical criteria to manage the virtual/hybrid modes were consolidated, opening for the future the possibility of this type of internship in work environments where teleworking was consolidated with the pandemic.

Therefore, the virtual modality is here to stay, despite the preference for face-to-face or even a hybrid modality in the new flexible approach consolidated after the pandemic. The choice of the modality, especially in the case of hybrid internships, clearly favours students and centres since it allows them certain freedom in organizing and managing their time and tasks, making it compatible with the rest of the semester's subjects. It is important to note that this new

internship model, which provides for greater flexibility, is a reflection of the professional reality of the sector; internships are an immersion in a professional environment that has also changed with the pandemic.

The results from the University of Hildesheim, Germany, showed that the internships were carried out mainly in companies and that their duration is highly influenced by the study program. The recruiting processes were highly digitalized. Students appreciated the flexibility of digital work, the independent way of working and learned to use a variety of tools. As the main disadvantages, the group of interviewed students sees the social disconnection and the lack of team cohesion. Adaptation and acquiring the skills for interacting with digital tools was seen as tiring. As an improvement, participation in short weekly team meetings was suggested. Findings from mentors' survey from the project partner the University of Library Studies and Information Technologies, Bulgaria, show that, despite the restriction measures during the COVID-19 pandemic period, the training processes have been conducted mainly on-site. At the same time, a part of the training activities has been carried out remotely. Phase 2 of the project confirms the opinion of the respondents that the internship program has to be performed as field work. It is still necessary to improve the conditions of student internships during crisis situations by enhancing the cooperation between the universities involved and the participating employers, the online activities and holding educational campaigns.

In conclusion, the process of conducting student practices during crisis situations is still developing, but at the moment all the mentors claim that their performance is the most successful when conducted on-site. Remote work will be possible when everything is digitalized. It seems that the hybrid model has still not found its place in the training of interns and is not widely accepted and used.

Findings from the students' survey from the University of Library Studies and Information Technologies, Bulgaria, show that 53.3% of the students think that there are advantages to conducting an internship online and 57.1% of students think that there are disadvantages to conducting an internship online. The most obvious disadvantages stated by the students include the lack of personal contact with the mentors and interaction with the readers, lack of opportunity to observe the workers there, to learn from their mentors etc. The recommendations given by the respondents are mainly in terms of enlarging the scope of the internship settlement, extending the internship period to at least half a year and the opportunity to be more present in the real working environment.

As seen in the report, the University of Zagreb, the University Computing Centre, Croatia, following health guidelines, did not conduct internship activities during lockdown but their role as the competence centre for information and communication technologies as well as the centre for education and support in area of ICT applications should be crucial in the implementation of the proposed way for the implementation of the framework.

As mentioned in the proposed framework, HEIs must provide a list of desirable organizations, so there are only three mandatory stakeholders. That's HEI, the gainer of practical experience and the practical experience provider. The organization of time for conducting internship activities is changing as well; the waterfall model where activities take place sequentially should be rejected and the agile model of conducting activities should be embraced. Regarding all other stakeholders or terms, they should be part of the framework only if they add value to the process of going through the practical acquisition of experience. Otherwise, they should not be a part of the framework, especially if they are there simply to satisfy the form.

#### *Self-criticism and final thoughts*

As for the task of establishing the framework, we believe that the job is well done, but on the human side, perhaps we should slow down, value human contact and not force the automatic implementation of frameworks that would benefit technology more than humans. As we move into an era where powerful computing in the hands of large corporations will be able to effectively solve many problems for people, perhaps we should not leave absolutely all parts of life in the hands of computers. The pandemic has changed the way of educating, working and life in general. On the other side, reduced direct contact was a good answer to health safety and some of these new habits have remained after the pandemic. If this is a good consequence of the health restrictions, remains to be seen in the future. We incorporated IT as a fundamental prerequisite of the framework. Therefore, research by psychologists and sociologists with an emphasis on the impact of technology on human life is necessary.



## 6. Appendix

Main Recommendations
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The proposed Framework could serve as a basis for the planning and managing the whole process of students' internship, depending on the needs of a particular HEI expressed in the curriculum as well as on each student's needs that come out of his/her previous IT skills.

With the high level of technical availability, high-speed internet access and wide range of services and tools, all stakeholders should consider creating open access (open source) system for the implementation of the proposed framework.

LIS institutions should organize the online mode when the direct contact is impossible, in the same way as IT and other institutions/companies, which are embracing the requirements and possibilities offered in a growing digital environment.

There is a need to create a meaningful social dialogue: quality internships form a bridge between the world of education and the world of work, based on social dialogue involving the social partners – employers and HEIs;

There should be clearly defined roles and responsibilities of each stakeholder involved: quality internships are built on the support and commitment of numerous stakeholders, who should have a clear understanding of their roles and responsibilities and who also have a common purpose;

There is a need to address equitable funding arrangements: quality internships generate both costs and benefits for the public authorities, enterprises and students themselves;

There should be clearly stated a strong labor market relevance: quality internships prepare young people for occupations and their participation in the labor market;

There is a need to emphasize the importance of inclusiveness: quality internships are not designed to be conducted every year in the same way; the outcomes need to be evaluated and incorporated in revised versions of the plan in order to produce optimal results.

It is important to take positive action to increase diversity, improve monitoring and accountability, as well as to incorporate a level of flexibility and enhance advice and support.

It is recommended to develop an information system based on a distributed architecture that will enable a complete set of data in one place (server) with the possibility of connecting different client applications that will be used by end-users.

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