

PsyCris Psychosocial support in Crisis  
Management  
Final publishable summary report

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**PsyCris**

## Executive summary

Whether limited by national borders or affecting several countries, disasters always pose a challenge to affected individuals. PsyCris aims to contribute to the efforts to improve psychosocial support in a European context through a particular focus on crisis managers. Research and development in PsyCris are based on a multi-disciplinary approach, including methods from psychology, education sciences, engineering, sociology, and health sciences. The main product envisioned in PsyCris is the customized, web-based “Preparedness-Planning-Prevention” (abbr. PPP) platform that includes relevant results generated during the project.

The 10 partners of the consortium comprise universities, research centres, public bodies, small medium enterprises (SMEs), and stakeholder organisations from Germany (LMU, BayFOR; BSO), Spain (UGR; COPAO), Israel (CHC), Lithuania (KKP), Luxembourg (GSP), and Austria (UMIT; ISI), therefore aiming to integrate scientific research with the knowledge and experience of practitioners and stakeholders.

As PsyCris was terminated prematurely, not all goals could be reached. However, a number of important results were obtained that provide a sound basis for strengthening psychosocial support for crisis managers. PsyCris research was able to provide results on stressors and the amount of stress putting pressure on crisis manager. Based on these results, a Stress Assessment Battery was designed suitable for self-evaluation to be used by crisis managers themselves or in a blended learning environment. In this context a Stress Management Training has been developed and is ready for evaluation. An important part of our concept to enhance coping with stress for crisis managers was the development of a portable biofeedback device together with software, ready for use to help crisis managers prepare for disaster situation and to cope with stress. Additionally, we completed a computerized set of guidelines recommendations, the “PsyCris Strategic Recommendations for Psychosocial Support” available as online application, (please follow the link <http://www.pssmgmt.de/>).

Further results have been achieved to enhance self-help strategies for crisis management on a community level: A video “Help the people help themselves” was developed, designed to raise awareness of crisis situation, open the dialogue with the general public, and encourage people to think about what to do and not to do during these situations. It is especially useful to enhance self-help strategies in an educational setting lead by crisis professionals. Research on longer-term impact of crises and cultural aspects on societal, cultural and public health care resulted in insights suitable to enhance community resilience and health system performance. Contingency planning was given special consideration: The contingency plan we strongly suggest relies on the ability of present day crisis managers to develop and through the PPP platform to build informal social networks both within and outside the disaster agencies. Such networks are utilized to connect various types of auxiliary occupations that have a degree of psychosocial skills to be useful when large populations are traumatized due to a mass disaster. These networks not only provide needed manpower when mass disasters occur but a solid foundation for links across borders and different administrative approaches in dealing with trauma victims. Such social networks are a means to forge bonds between colleagues and fulfil an extremely important role as a communications conduit to gain the experience and advice from others in the network that our research has shown to be critical in decision making.

All these results and products are either already integrated or ready to be integrated into the envisioned PsyCris end product, the PPP-Platform (<http://psycris.bs-competencecenter.de/>).

## Summary description of project context and objectives

**Project Context:** Following a sharp decline in human made disasters and terrorist attacks in the last decades of the 20<sup>th</sup> century, the number of these events has been rising again in recent years (cf. <http://www.datagraver.com/case/people-killed-by-terrorism-per-year-in-western-europe-1970-2015>).

In addition, different regions in Europe are repeatedly affected by natural disasters. Therefore, there has been an increasing interest in the psychological burden of these events on individuals who experience these events and/or their aftermath. Crisis managers belong to the people who are highly affected by tragic events in a special way. They are repeatedly confronted with this kind of stress and consequently earn special consideration on how psychosocial help for this group could be augmented, as crisis managers are key personnel in overcoming the consequences and also are important multipliers within society.

Whether limited by national borders or affecting several countries, disasters always pose a challenge to affected individuals. PsyCris aims to contribute to the efforts to improve psychosocial support in a European context through a particular focus on crisis managers. Research and development in PsyCris are based on a multi-disciplinary approach, including methods from psychology, education sciences, engineering, sociology, and health sciences. The possibility of exchange amongst crisis managers is planned to be offered via a customized, web-based platform (PPP Platform) that includes relevant results generated during the project. The PPP-Platform is finished as a prototype while not all planned content could be integrated due to the suspension of the project.

The 10 partners of the consortium comprise universities, research centres, public bodies, SMEs, and stakeholder organisations from Germany (LMU, BayFOR; BSO), Spain (UGR; COPAO), Israel (CHC), Lithuania (KKP), Luxembourg (GSP), and Austria (UMIT; ISI). Stakeholders and end-users involved in this consortium are COPAO, GSP and KKP.

Research and development in PsyCris are based on a multi-disciplinary approach, including methods from psychology, education sciences, engineering, sociology, and health sciences. Together, they have aspired to or have achieved these goals:

- (1) Status quo analysis of psychological and medical support available during crises in European countries
- (2) Improvement of support strategies for affected persons, victims, and crisis managers
- (3) Enhancement of preparedness for major incidents
- (4) Development of intervention strategies designed to deal with stress and reduce stress-related disorders of crisis management personnel and authorities
- (5) Provide effective self-help strategies to communities affected by crises
- (6) Investigate the long-term psychosocial, societal, and cultural impact of crises, including the impact on public health care

### **Objectives:**

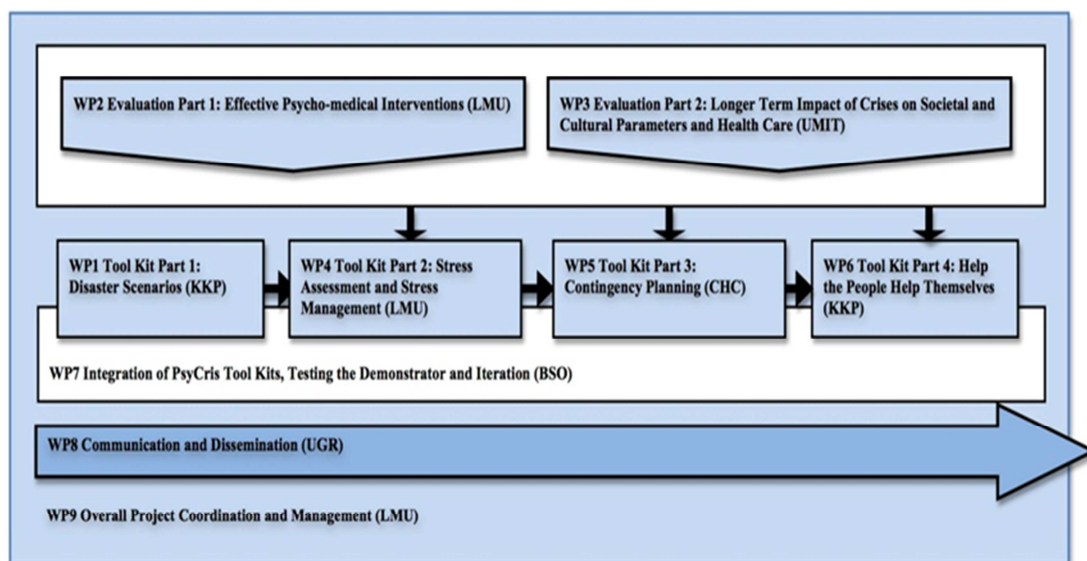
In the description of work (DoW), the aim of PsyCris was described as follows:

”... to develop and provide a roadmap as a bottom-up strategy to improve the psycho-social support infrastructure and the transnational cooperation of psycho-social emergency response services after a major incident in Europe. To this end, psycho-social tools will be developed based on the different types of disasters and also, if possible, be tested in various trials under real life conditions in close cooperation with relevant authorities, organisations, psycho-social emergency management forces and aid organisations. The direct involvement

of stakeholders, managers and end-users is just as essential as the concluding communication of recommendations based on the research results aimed at political stakeholders on a regional, national and European level. Lived experience and practice of psycho-social intervention and care, therapeutic reality as well as general (administrative) policy guidelines and legislation will be equally considered.

The PsyCris project will be executed over a 36-month period in three stages. The first stage is characterised by the concept development of three reference disaster scenarios. The opinion and comments of end-users will be included in this process. The actual needs of end-users will be carefully identified. This will ensure high quality user requirements specification and a realistic operational concept accepted by the end-users. An evaluation of effective psycho-medical interventions and of longer term societal, psychological and cultural impact of a crisis will be carried out. In the second stage, the development and design of the components of the PsyCris Tool Kits will take place. In the third stage, the various components (e.g. stress assessment, stress management, contingency planning, help the people help themselves) will be integrated in an overall PsyCris Tool Kit Demonstrator, which will be based on a comprehensive knowledge system (PsyCris Preparedness-Planning- Prevention (PPP) Platform). ... Finally, the effectiveness of PsyCris PPP Platform will be evaluated, once again involving end-users this process.”

### Plan of PsyCris WP's according to Annex I



The PsyCris project achieved to produce as the main product the **PsyCris Preparedness-Planning-Prevention Platform** (PPP-Platform), a blended-learning tool to enhance knowledge and competences of crisis managers as well as to foster European wide network building between crisis managers. Since the project's focus was on psychosocial support of crisis managers, core topics of the platform concentrated on awareness building of stress and burden during disasters and on methods and tools to reduce and to cope with stress during and after crisis.

The PPP-Platform has been finished as a prototype (<http://psycris.bs-competencecenter.de/>). However, due to the premature termination of PsyCris some planned content could not be integrated, yet, as this would have been part of the tasks planned for the last months of the project.

## Description of the main scientific (S&T) results (max. 25 pages)

As the PsyCris project was terminated prematurely, not all goals could be reached. However, the project nevertheless produced a number of important results. A detailed description is provided below.

### 1. The PsyCris PPP-platform (WP7)

As the main product, the PsyCris project achieved to produce the **PsyCris Preparedness-Planning-Prevention Platform** (PPP-Platform, please follow <http://psycris.bs-competencecenter.de/> for access), a blended-learning tool to enhance knowledge and competences of crisis managers as well as to foster European wide network building between crisis managers. Since the project's focus was on psychosocial support for crisis managers, core topics of the platform concentrate on awareness building of stress and burden during disasters and on methods (tools) to reduce and to cope with stress during and after crisis.

The PPP-Platform has been finished as a prototype. However, due to the premature termination of PsyCris, some planned content could not be integrated, yet, as this would have been part of the tasks planned for the last months of the project. All PsyCris partners worked together to develop the PPP-Platform, not only the partners originally designated to participate according to the DoW.

The PPP is envisioned as an Internet based learning system that links problem-oriented workshops with periods of self-directed learning based on web-based trainings (WBT) in a blended learning environment. Additionally, it is designed to enable the communication within learning communities. Its main objectives are to offer material for the improvement of psychosocial support for crisis managers and to create an environment, fostering network building in crisis managers within a European perspective.

Within the PsyCris Project, various online and computerised tools have been generated including assessment, training and decision making tools. For example, these include interactive disaster scenarios, stress assessment questionnaires, training programs for biofeedback and stress management, guidelines for contingency planning and a platform aiming at transmitting efficient self-help strategies. These tools are integrated into a custom-tailored competence and knowledge system (PPP), which is designed in an e-learning and social blended learning arrangement by the company Blended Solutions (BSO).

It was originally planned for the PsyCris **PPP-Platform** to only integrate the results of WP1, WP4, WP5 and WP6 of the Project PsyCris, i.e. the disaster scenarios, the stress assessment and stress management tools, the contingency planning tools as well as the self-help platform. During the progress of PsyCris we decided to additionally integrate results from WP2, the Guidelines "PsyCris Strategic Recommendations for Psychosocial Support" and from WP3 (fact Sheets, worksheets).

Still, public learning is often reduced to the acquisition of expertise and specialist knowledge, skills and qualifications. It is important to note that competencies are also required. These are abilities which enable to solve problems in self-organized practice, the so called "self-organization dispositions" (Erpenbeck, J. and Sauter, W. 2007). To foster these abilities and transform them into competencies, accompanied blended learning is considered to be an appropriate tool.

In this context, the PPP-platform aspires to utilise and value the experiences and expertise of the managers themselves and to integrate experiences of crisis managers. Competence development of crisis managers may occur self-organized in the daily process of work. Taking advantage of these learning processes in the PsyCris blended learning concept, it is additionally tailored according to the learner's level (entry, advanced, expert). Every crisis manager plans, in cooperation with his or her tutor the

individual learning path to achieve a personal learning process. For that reason, a variety of communication and collaboration tools are offered to select and use according to their individual needs. The PPP will offer attractive content and learning opportunities that reflect the needs of the crisis managers to support and to improve psychosocial support in crisis management.

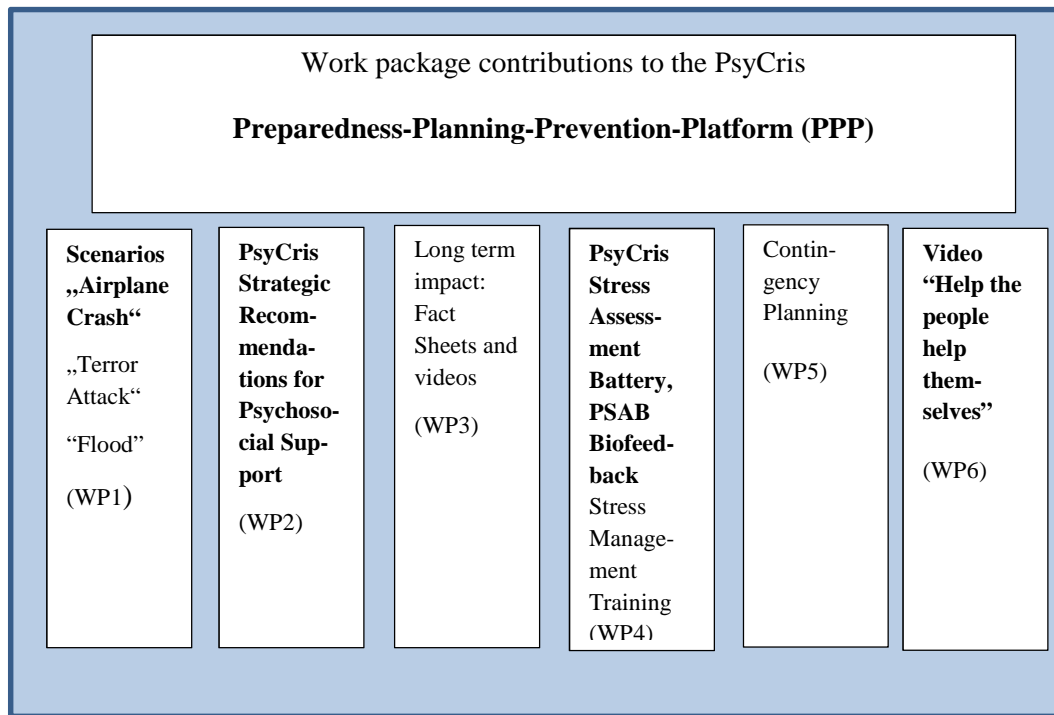
The **PsyCris PPP-Platform** was launched in a first version in September 2015 and subsequently extended with additional material until June 2016.

The need for exchange with peers and other stakeholders was expressed and confirmed by the interviewed crisis managers and our stakeholders (for these results see WP1). Thus, the PPP and the learning arrangement aim to include features to form specific communities for crisis managers and other experts with strategic responsibilities. Supplemented by modular tools integrating the scientific outcomes of all participating work packages, the PPP is designed to grow to an interactive community of practice (expert network) tailored to the needs of crisis managers.

Connecting crisis managers across Europe via such a common platform may contribute to the improvement of psychosocial support in crisis management. Effective communication on the challenges of crisis managers is only possible if confidentiality is maintained. Therefore existing open networks are not a substitute or an alternative for the PPP.

The PPP is ready for a professional integration into a competence development measure. However, experiences in learning processes and competence development of crisis managers could not be collected because of the suspension of the project. This was planned for the second half of period 3, which did not take place.

The tools stress assessment and stress management, contingency planning, recommendations, longer-term impact and biofeedback have all been implemented in the PPP-Platform. One of the three originally planned disaster scenarios, “Airplane Crash” is already available, and the “PsyCris Strategic Recommendations for Psychosocial Support” as well as the PSAB and the Biofeedback are ready to be used. The other components are developed at different stages and can be integrated with minor effort.



*Note: Finished contributions are highlighted bold.*

**Fig. 1 Work package contributions to the Preparedness-Planning-Prevention-Platform**

The following description of the work done in PsyCris work packages highlights the main results and explains the empirical research done for the development of the main products.

## 2. Disaster Scenarios (WP1)

### 2.1. Define and Develop Disaster Scenarios

**WP1** constituted the basis for PsyCris in several aspects:

Its first task, starting at the beginning of the project, was to discuss and to establish three disaster scenarios common in most of the EU countries. After doing research in data bases, consulting publications and exchange salient crisis situations, the partners experienced in their countries, it was decided to focus on three prototypical disasters, namely the Madrid terror attack on 11.03.2004; an Airplane Crash in Luxembourg in 2002 and the 2013 flood in Germany and Austria. During the course of the project all three scenarios chosen in 2013 turned out to be correct and highly prevailing, as similar situations have repeatedly occurred several times since the start of the project in the European Union.

The next step was to create a “screenplay” for each chosen disaster scenario, designed as PowerPoint presentations enriched with interviews, video clips and the like (for a detailed description see D1.1). These “screenplays” were designed to serve two main purposes. Firstly they were used as a starting point, as well as a basis for discussion during qualitative interviews with crisis managers, and secondly these “screenplays” (later on referred to as “case studies”) would be integrated into the PPP-platform as a learning tool to enhance competencies in crisis managers. Additionally they helped to establish and to intensify contacts with crisis managers, and served as a tool to focus the interviews on the topic psychosocial needs.

The completion of the three scenarios was accomplished and the files were made available on <http://psycris.eu/#project> (after registration). They are planned to be integrated in an improved version into the PPP-platform and are no longer accessible via the PsyCris homepage. This procedure constituted Milestone 1 “Disaster Scenarios” (“Setting up online presence of computerized online platform of screenplays suitable for workshop with end-users, practitioners and stakeholders as much as descriptions for screenplays which can be used.” DoW PsyCris, p.7)

Based on the expert interviews and the empirical work done so far, D1.2 “Status Analysis Report” was submitted to the EC. Both D1.1 and D1.2 have been accepted in their second version.

To identify end-user requirements each partner involved in WP1 (KKP as lead, LMU, UGR, COPAO UMIT, CHC, and GSP) conducted qualitative interviews with crisis managers using the three screenplays. Additionally, the PsyCris team accompanied scientifically two major trials in Luxembourg and Austria. Both, the analysis of the interviews and the results of both quantitative and qualitative research during the trials constituted the basis for D1.3 “Based on trials: Awareness and knowledge about what end-users really need”. (D1.3 has been accepted in the first review).

This study was conducted by UMIT as lead beneficiary; LMU, UGR, KKP, CHC, GSP, COPAO and LMU contributed to the data collection, i.e. interviews with crisis managers; GSP, LMU and UMIT contributed to the organization of the trials (GSP) and data collection during the trials (LMU, UMIT).

### 2.2. Analysis of two large-scales exercises (WP1)

Two trials were analysed with the objective to identify end-user requirements. The first trial took place in Luxembourg where a school-shooting was simulated. The second trial occurred in Austria, where the scenario was a major fire emerging in a seminar hotel.

For both trials a quantitative survey was conducted. The objective of the quantitative survey was to get a deeper insight into the exercise itself (e.g., work environment, social support), experienced distress and constraints due to the exercise for crisis managers, teams and affected people as well as psychosocial support and care. For the survey standardized questionnaires were used: A 12-item General Health questionnaire (GHQ-12, Goldberg, 1972) and the “Kurzfragebogen zur aktuellen Beanspruchung” (short questionnaire on current strains) (KAB; Müller & Basler, 1993). Furthermore, demographic data and data related to the exercise per se were collected by items especially designed for this evaluation of the trial.

Additionally, the Austria trial was analysed with qualitative methods: observations, group discussions and guided interviews with nine crisis managers were conducted. For the trial the research staff members were educated for interviewing crisis managers and analysis standards were determined for observing the processes during the trial.

The participants were informed about investigations and ethical issues in advance. Informed consent forms and participant information sheets were handed over to the crisis managers participating on interviews.

Briefly summarized, the findings of the quantitative analysis of the GHQ-12 indicate that a large proportion of crisis managers and personnel is psychologically healthy, while a small portion of crisis managers and personnel have the potential, or rather are vulnerable, to develop and experience psychological problems. The findings of the evaluation revealed additional information about the psychological well-being of crisis managers and personnel. Findings from the KAB have shown that the exercise only resulted in small effects on subjects working in crisis management and psychosocial support concerning the experienced constraint and level of stress. Compared to these results the individuals participating by impersonating victims (GSP members, police cadets) seem to have been affected by the experience of the exercise. In this regard the question arises how the general population who has no knowledge or experience in handling a crisis, react to a specific event. The findings confirm the need to prepare psychosocial support and care for people involved in a crisis.

The results concerning the evaluation of the trial itself gave a diverse picture. The opinions regarding the realism of the evaluation differ and show the importance of designing high quality trials for the rescue teams. The evaluation of psychosocial support measures targeted to affected people found a considerably smaller percentage reporting the given support during the exercise a lot or rather extremely helpful.

The qualitative study gave an insight about the different factors that influence the crisis management and the psychosocial support. The coping with the disaster itself depends on the conditions such as infrastructure, capabilities and know-how of the individuals, the leadership capabilities of the crisis managers, the quality of the interactions between individuals and the participating organizations. One important result is the awareness of psychosocial support for the affected people. Different attitudes with regard to the time of delivery and chosen method of psychosocial support have been identified. The results of the group discussions have shown that individuals ask for different methods of psychosocial support that have to be respected in the supply. Different opinions have been identified concerning the provision of psychosocial support for crisis managers and rescue teams. The observations have identified several factors that can be categorized as preventive factors to reduce stress level and the need for psychosocial support.

The results of the Austrian trial have been presented at and published in the Proceedings of the 18<sup>th</sup> International Working Seminar on Production Economics held in 2014 in Austria (Raich, Adler, Kirschenbaum, & Duschek, 2014) that refers to disaster logistics. In 2014 one poster presentations was

conducted at EHMA – European Health Management Association (Plank, Raich, Adler, Duschek, 2014).

### **2.3. Requirement analysis in partner countries (WP1)**

In total 24 interviews were conducted in the partner countries (Luxembourg 4, Spain 8, Germany 2, Israel 3, Austria 3, Lithuania 4) by using an interview guideline with five open-ended questions with the objective to identify end-user requirements. Each WP1 partner analysed the interviews by content analysis. UMIT research team summarized and interpreted the results for the accepted Deliverable 1.3. Results show that many variables influence the crisis management and psychosocial support. Coping with a disaster by rescue teams as well as other people affected depends on the infrastructure conditions (e.g., organization, resources), capabilities and know-how of individuals (e.g., human resources), leadership capabilities of the crisis managers, quality of interactions between the individuals and teams (e.g., network, collaboration) and finally, communication and information availability and exchange. One important finding was that the absence or delivery in an inappropriate quality of the listed factors might cause additional stress levels for crisis managers, staff members of the rescue organizations and people affected.

The results of this study were presented at EHMA - European Health Management Association Conference in Birmingham in June 2014 (Raich, Adler & Duschek, 2014).

## 3. Effective Psycho-medical Interventions (WP2)

### 3.1. Intervention Methods and Meta-Analysis of Intervention Studies

The research done in WP2 also resulted in two successful deliverables that produced results and an online training contributing to an enhancement of psychosocial support for crisis managers.

WP2 focused on methods and tools for psycho-medical and psychosocial interventions for victims and intervention forces (esp. disaster managers) as well as for the larger community during and after a crisis situation, that is to say: Immediate / post-immediate psychosocial support (PSS). The results have been presented in Deliverable 2.1 and Deliverable 2.2, which were both submitted to the EC and accepted in April 2015 (Ref. Ares (2015) 1681420 - 21/04/2015), following the *ad hoc* technical review on 25. February 2015).

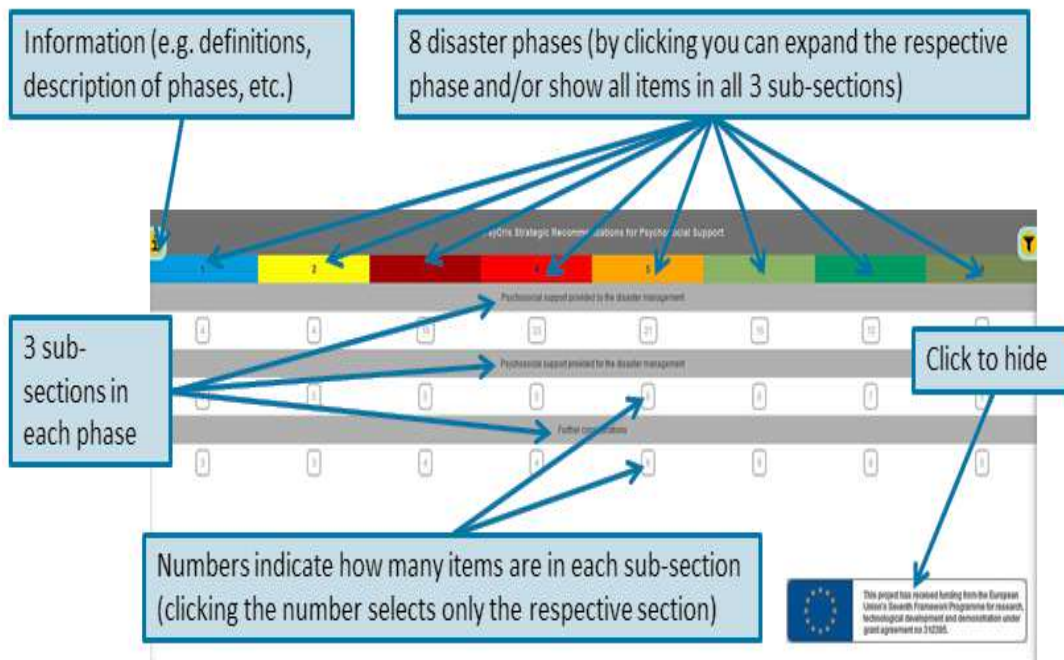
An in-depth investigation of the current situation in Germany concerning these matters formed part of the basis for further research (cf. T2.1). To investigate the requirements and conditions for preparing effective psycho-medical interventions following major incidents, we performed three systematic reviews on the latest research in these areas (cf. T2.2). The first meta-analysis focused on the epidemiology of Post-Traumatic Stress Disorder (PTSD), while the second looked at the effectiveness of psychosocial treatment. The third analyses systematically reviewed meta-analyses on pharmacological interventions. The results of these systematic reviews and meta-analysis revealed new insights and added significantly to our research objectives (D2.1). In addition, we expanded the scope of our research on current practices to the wider European context (cf. T2.4). Taken together, our research suggests large differences across European countries in regards to psychosocial support structures, however best practice models that could be recommended are the same across Europe.

### 3.2. Recommendations for Disaster Managers (WP2)

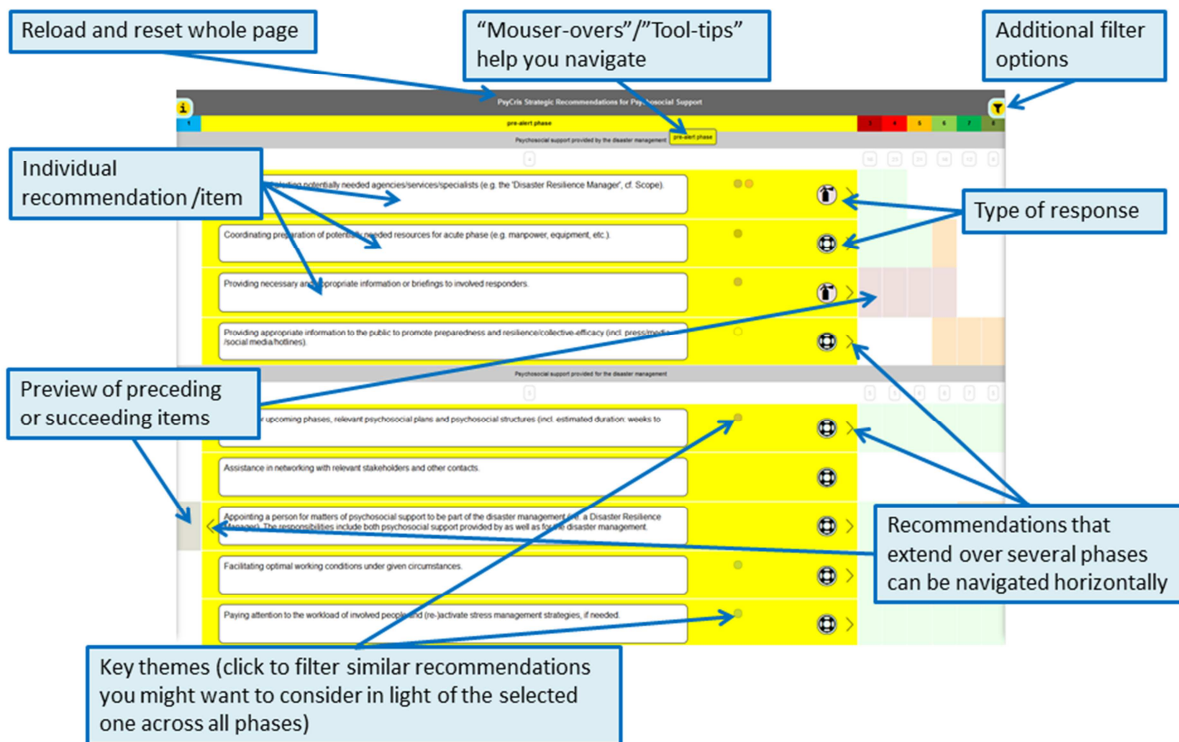
Additionally, we collected data for T2.3 and T2.4 via various methods, such as: further literature searches; explicit analyses of PTSD in responders and PTSD in Europe based on the meta-analyses; analyses of existing guidelines; expert interviews; a longitudinal study on the effects of debriefing; country profiles; or the observation of large-scale exercises for which further details are provided in D2.2 as well as below.

Building on our own results as well as existing evidence, which provided valuable insight regarding psychosocial support in crisis management, we set out developing a set of recommendations for disaster managers (included in D2.2). As an essential part of this development process, we also developed eight novel descriptions of disaster phases from a strategic perspective that consider psychosocial aspects. The process led to the formulation of the “PsyCris Strategic Recommendations for Psychosocial Support”, which were further developed into an online application (March 2015-December 2015), following the *ad hoc* technical review. The online application can be accessed via [www.pssmgmt.de](http://www.pssmgmt.de) or via the PPP platform.

The recommendations were then embedded into a blended-/social-learning framework for crisis managers that have been put on the PsyCris PPP platform.



**Fig. 2 Screenshot of the ‘pssgmt.de’ landing page including descriptions of the basic structure**



**Fig. 3 Screenshot of ‘pssgmt.de’ with expanded phase 2 including descriptions of the key features**

## 4. Longer-term impact of crisis (WP3)

**WP3** focuses on the identification of the longer-term impact of crisis with respect to societal and cultural parameters as well as on public healthcare. The WP3 consists of two tasks, T3.1 and T3.2. Below is an overview of the results of the single tasks, followed by a summary of the conclusions from both tasks.

### 4.1. Longer term impact of crisis on societal and cultural parameters

The pivotal theoretical concept chosen to analyse the impact of crisis concerning societal and cultural parameters was the term “social capital” in Robert D. Putnam’s sense (see Putnam 2000):

This concept states that high rates in volunteering and participation in associations is fostering citizenship as well as trust in institutions and other people. Well-established social capital indicates consequently social resilience contributing to recovering after disasters. In the context of crisis research this approach enables us to easily define basic societal capabilities helping to cope with disasters. An analysis of questions referring to social capital in the “European Social Survey” (ESS) gave us insights on sociocultural differences in the PsyCris partner countries (cf. D3.1)

Statistical analysis of topics measuring “social capital” in the “European Social Survey” and the answers to the additional questionnaire for the partners shows e.g. explicit differences in volunteering and participation in rescue and emergency organisations or fire brigades.

Participation in voluntary and charitable organisation varies widely in the partner countries. Lithuania differs especially in this aspect in comparison with the other countries. Yet, it was also shown that the economic circumstances in Lithuania are the most difficult. Differences in economics, social capital and therefore in social resilience matter in comparison of EU member states and consequently maintain different levels of coping during or after a crisis. Therefore, additional research on the impact of disasters on society, social capital and social resilience is worthwhile.

There are considerable differences in the admission of volunteers in the case of crises in our partner countries. Spain, Lithuania and Israel operate centralized and with regularly employed professionals; however Luxembourg, Austria and Germany rely very much on a decentralized organisation, working basically with volunteers. Knowledge on the organisational differences in the emergency and rescue system in different European countries might facilitate cross-border interaction.

Additionally, knowledge of cultural background is crucial for emergencies involving people from different nations. An example that has demonstrated this clearly was the terror attack in Madrid, where the various cultural and social backgrounds of the victims posed obstacles in providing adequate psychosocial support.

Information on socio-economic, cultural and societal differences needs to be taken into account to foster and optimise psychosocial support and the mutual understanding of differences between the EU member states. Overall, the insights and results received with the analysis of cultural and social longer-term impact of crises are valuable input to be used on the PPP-platform. Fact sheets to inform on these topics have been prepared for the PPP-platform.

### 4.2. Longer Term Impact of Crisis on Public Healthcare

The public health system refers to measures of groups to prevent disease, to promote health and finally, to prolong life among the population. In the context of disasters various public and private organized groups are involved in different time spans of disaster management and/or health services management (e.g., as preparedness phase, acute phase with immediate interventions and recovery phase with intermediate and longer-term interventions).

For this research decisions and actions with long-term impacts were analysed by conducting case studies that allow in-depth analysis to find answers regarding which kind of long-term variables as well as in which timeframe had an impact on the public health system. In total six case studies of past crises in project partners' countries were analysed by using a mixed-method approach, i.e. quantitative and qualitative data was collected to explain long-term impacts. A questionnaire was developed (for more details see D3.1.) that served as an analysis tool for each case study. Additional interviews with people who were involved in the management of the disasters were conducted to get further information (for more information please see D3.1).

Briefly summarized, for this task, long-term impacts have been identified in the structure and organization of the psychosocial support supply in general (e.g., the establishment of new organizations and units). In all presented case studies adaptations were observed concerning contingency and preparedness planning with long-term impact to improve the supply of psycho-social support for people affected (e.g., checklists, leadership, trainings, cooperation and coordination issues).

Long-term impacts on security and health protection refers to investments in infrastructure to improve the security in general, or to specific measures made to optimize processes to be better prepared for future disasters. Long-term impacts have been identified because of the adaptations observed in the field of information and communication strategies with the objective to provide the people affected, as well as the public and the rescue teams with the correct information at the right time. The provision of budget for research focuses on the objective of reducing risk and increasing safety for the population (Raich, Lorenzoni, & Stummer, 2016a, 2016b).

In short, the case study analysis focusing on long-term impact of disasters using a questionnaire approach in combination with the interviews with relevant system stakeholders provided us with insights into a disaster's long-term effects on the health care system with special focus on health system performance as well as security and health protection. The attribution of single long-term impacts to the categories "health system performance" and "security and health protection" has been proved as reasonable and gave a first systematisation of long-term impacts (Raich et al., 2015).

### 4.3. Conclusions

Outlined as an explorative study extending to very diverse subjects, our research conducted for D3.1 showed an array of significant results. However, the progress beyond state of the art is restricted to the topic of longer-term impact of crisis as a first sketch.

As shown in D3.1 there is a severe lack of research considering "Longer Term Impact of Crisis on Societal and Cultural Parameters and Health Care" in a systematic way. Isolated studies did prevail to date. Introducing the relevance of longer-term impact of crisis, defined as longer than 10 years, showed relevant outcomes and is therefore clearly an interesting contribution to crisis research.

We have identified significant long-term impact variables in conjunction with different time frames. The impact variables and time frames depend on the nature and extent of the disaster, affected people, existing infrastructure etc. As a result of the analysis, a standard definition of long-term impacts on health care system cannot be developed because of the different timeframes of measure. This fact does not allow comparative conclusions until now.

Many identified long-term impacts are the results of reflective analysis of operations and results and learning circles (because of inadequate outputs in the past).

The chosen holistic approach helped us to better understand the undertaken or missing reactions in terms of disaster response. Based on the learning experiences of the case studies we are able to evaluate key strategies and measures in crisis management from a health care system perspective. "Social

capital”, as a concept to analyse the social impact of crisis as well as to clarify the socio-structural differences within the partner countries proved to be a promising approach to be used in a long-term perspective of crisis evaluation. Our analysis demonstrates the prominent long-term impact of crises on improvements within the public health system as well as on societal and cultural parameters and is therefore able to contribute to a better preparedness.

The analysis of the case studies has revealed the variety of direct and indirect impacts major incidents can have on population health and health systems. The identification of indirect effects often results from a learning process subsequent to a post-disaster analysis of inadequate management decisions and strategies or insufficient system performance.

Our analysis regarding T3.1 as well as T3.2 highlights the prominent long-term impact of crises on improved preparedness (see Raich, Lorenzoni, 2017). This is an overarching result of D3.1 which is also integrated into further deliverables and the PPP-platform.

## **5. Stress Assessment and Stress Management (WP4)**

In **WP4**, four empirical studies on stress and stress management among crisis managers were completed, and a prototype for an easy-to-use, portable biofeedback system was developed; a cognitive behavioural stress management training program, tailored to meet the specific requirements of crisis managers, was also completed. Three of the empirical studies aimed to analyse crisis managers’ stress burden, specific sources of stress (stressors), available coping strategies and particular needs regarding stress management interventions. Interview, questionnaire and psychophysiological methods were used for this purpose. While these studies contributed to basic research in the field, they also aimed to provide knowledge relevant to the advancement of training tools to optimize crises managers’ capacity to efficiently deal with work-related stress. In the fourth study, a biofeedback based stress management program developed for use in crisis management was evaluated using a randomized controlled design.

Three of the studies (Haus, Adler, Hagl, Maragkos, & Duschek, 2016; Janka, Adler, Fischer, Perakakis, Guerra, & Duschek, 2015; Janka, Adler, Brunner, Oppenrieder, & Duschek, in press) have been published in journals in the field. In the following, a summary of the studies, as well as of the newly developed stress management training tools, is provided. Results are more comprehensively described in Deliverables D4.1 and D4.2, as well as in the journal publications. (For the journal publications see attached pdf files in the final report section of Participant Portal).

### **5.1. Stress and stress management in European crisis managers: A qualitative interview study**

This qualitative interview study aimed to explore European crisis managers’ stress levels, stressors and coping strategies, as well as their requirements concerning stress management interventions and techniques. For this purpose, semi-structured, guideline-based interviews were conducted with 31 crisis managers in Luxembourg, Lithuania, Spain, Austria and Germany. The interviews were partly based

on the three disaster screenplays developed in WP1. The resulting data were analysed with the text analysis program GABEK®, using network graphs. The results of the analysis are reported in detail in Deliverable D 4.1. Derived recommendations regarding stress management training are outlined in Figure 16 of this Deliverable (“Requirements of crisis managers and derived recommendations”, p. 65).

Briefly summarised, the crisis manager sample reported high demands and various sources of stress, including event-related stressors as well as group-specific, occupational stressors, such as responsibility for decision making, justification of failures, or dealing with press and media. While possibilities for control were perceived as limited during large-scale missions, organisational and peer support played an important role in mitigating mission-related stress. Effective stress management strategies were reported as being crucial to ensure successful crisis management, and a need for more comprehensive stress management training was emphasized. The results of the analysis were considered within the context of the development of stress management training tools.

The study was conducted by LMU; in addition GSP, UGR, UMIT and KKP contributed to the interviews. Results of the study have been published within as a book chapter (Haus, Adler, & Duschek, 2016) and in the *International Journal of Emergency Services* (Haus, Adler, Hagl, Maragkos, & Duschek, 2016). The results also form part of the doctoral thesis of Mirjam Haus at LMU.

## 5.2. Stress in crisis managers: A psychophysiological analysis

This psychophysiological study aimed to investigate bodily and subjective aspects of stress in crisis managers. For this purpose, 30 crisis managers, recruited in the Federal State of Tyrol (Austria), were compared with 30 Austrian mid- and high-level managers from other disciplines (i.e., economy, industry, education and public administration), in terms of bodily stress reactivity and self-reported stress and health status. Various experimental stressors were used to investigate psychophysiological stress reactions, including visual and acoustic stimuli resembling stressors specifically related to major incidents and crisis management, as well as non-specific stressors (Bradley & Lang, 2007; Lang et al., 1997). Furthermore, cognitive stress was induced via a mental arithmetic task (Dedovic et al., 2005). Bodily response parameters comprised electrodermal activity (EDA) and heart rate. Respiratory sinus arrhythmia (RSA) was assessed as a psychophysiological marker of bodily stress level and stress-related disease risk (Berntson et al., 2016; Bylsma et al., 2014; Thayer et al., 2010). Subjective stress burden, health status and recovery resources were quantified using the Perceived Stress Questionnaire (Fliege et al., 2005), the Questionnaire for Recuperation and Strain (Kallus, 1995) and the Zerssen Symptom Checklist (von Zerssen & Petermann, 2011). Information on various health behaviors was also obtained.

Crisis managers exhibited markedly smaller EDA and heart rate responses, during exposure to crisis-related and non-specific stressors, than did managers from other fields. They also demonstrated a trend towards higher RSA values, suggesting a slightly lower bodily stress burden and improved general health status (Bylsma et al., 2014; Thayer et al., 2010). Furthermore, crisis managers scored lower on the Perceived Stress Questionnaire and Zerssen Symptom Checklist. Results from the Questionnaire for Recuperation and Strain indicate a more positive recuperation-strain-balance and higher level social support among crisis managers. Finally, the crisis managers reported higher physical activity and lower alcohol consumption.

As the first psychophysiological analysis of stress in crisis managers, the study provided evidence of increased bodily stress tolerance, lower subjective stress and physical complaints burden, and improved recovery resources among the crisis managers. More effective behavioural and cognitive cop-

ing strategies, more positive health behaviours and higher levels of social support may account for their lower stress levels, in addition to the processes of professional selection. Improved stress resistance in crisis managers may limit vulnerability to stress-related performance decline, and facilitate preparedness for major incidents. In addition to the scientific knowledge gained in the study, some of the experimental stressors compiled within its framework were used in the biofeedback system developed for crisis managers (cf. 5.5 of this report).

The study was accomplished by UMIT, where UGR contributed to the study design, experimental setup and analysis of psychophysiological data. Its results have been published in the *Journal of Behavioral Medicine* (Janka et al., 2015). Details are presented in Deliverable D4.2, and in the journal publication.

### **5.3. Stress and stress management in crisis managers: A comprehensive questionnaire study**

This trans-European study explored crisis managers' perceptions of stress, stress reactivity, coping strategies, self-efficacy, and mental (post-traumatic stress, anxiety, depression) and somatic health symptoms. A set of validated questionnaires (i.e., the PsyCris Stress Assessment Battery, PSAB) was compiled for this purpose and pretested in a sample of 29 German crisis managers. The battery included the Impact of Event Scale-Revised (Weiss & Marmar, 1997), Patient Health Questionnaire (Spitzer et al., 1999), Job Content Questionnaire (Karasek et al., 1998), Perceived Stress Questionnaire (Levenstein et al., 1993), Perceived Stress Reactivity Scale (Schlotz et al., 2011), Brief-COPE (Carver, 1997) and C-LEAD Scale (Hadley et al., 2011). In addition to quantification of stress and symptom burden, the study aimed to identify risk factors (e.g. maladaptive coping styles or patterns of stress reactivity) of stress-related disorders. Moreover, its results were used to develop a short version of the PSAB, as an online stress assessment tool, via the PPP Platform.

Data were collected from a sample of 86 crisis managers (29 from Spain, 19 from Germany, 14 from the United Kingdom, 6 from Austria, 4 from Luxembourg, 3 from Lithuania, and 10 from other countries). A control group was also acquired, consisting of 91 participants holding a leadership position at the Department of Public Order in Munich (Germany). In addition to the group comparison, questionnaire data obtained from crisis managers were compared with normative data; regression analyses (for the identification of predictors of health symptoms in crisis managers) were also conducted.

The results of the study are presented and discussed in detail within Deliverable D4.2. In short, crisis managers exhibited normal depression and anxiety symptom scores, and reported an overall lower symptom burden than the control group. However, as compared to the general population, they showed slightly higher levels of somatic complaints and posttraumatic stress symptoms. The analysis concerning job-related stress and stress reactivity revealed lower levels of both among crisis managers vs. controls. Regarding potential risk factors for poor mental health in crisis managers, dysfunctional coping, perceived stress, and, to a lesser extent, lower levels of crisis leader self-efficacy, contributed to the prediction of mental health among crisis managers.

The knowledge gained from the study was used (in combination with the findings from the interview study) for the development of stress management training tools. Moreover, based on the results of the statistical analyses, the most important constructs (and their respective questionnaires) were selected for the online stress assessment tool on the PPP Platform. This tool was designed to serve as an introductory assessment for stress management training. It is available in both English and German and can be filled out anonymously by any interested individual involved in crisis management (<http://psycris.bs-competencecenter.de/portfolio/tool-2-stress-prevention-training/>). An algorithm for

the analysis of the PSAB was programmed, providing the participants with feedback about their individual results (compared to reference values or cut-offs) on completion of the battery. The study was conducted by LMU, where all PSYCRIS partners were involved in data acquisition.

#### **5.4. Biofeedback training in crisis managers: A randomized controlled trial**

Using biofeedback, it is possible to objectively measure and simultaneously visualize psychophysiological parameters indicating states of bodily stress and relaxation. Individuals undergoing biofeedback training improve their awareness of these states and learn how to manipulate them at will (Schwartz & Andrasik, 2005). Biofeedback has been successfully applied as a method of stress control, for example, in groups including health-care professionals, soldiers and police (Bouchard et al. 2012; Lemaire et al. 2011; Weltman et al. 2014). Within the PSYCRIS framework, a biofeedback training program was developed to meet the specific requirements of crisis managers. It aims to improve self-control of the bodily arousal (indexed by EDA) that occurs in response to stressful events experienced at work, particularly in the context of disaster relief operations (see above).

The present study aimed to empirically test the effectiveness of the newly developed program in reducing stress burden. It used a randomized controlled design, in which 36 crisis managers were assigned either to a biofeedback training or waiting list control group (the latter group was given the opportunity to participate in the training after the 3-month observation period). The study was conducted in a multi-centre setting; training was carried out in Austria, Germany and Luxembourg. Trainers were non-professional members of PSYCRIS partner organizations, supervised by experts from UMIT and ISI. The Perceived Stress Scale (Cohen et al., 1983) was used as the main instrument to evaluate changes in stress burden. It was presented at the beginning (pre-test) and end (post-test) of a 5-week training period (10 training sessions of EDA biofeedback), and then again 2 months later (follow-up).

The study revealed a marked reduction in subjective stress burden following biofeedback training, which remained stable at follow-up (2 months after completion of the training). In contrast, no changes in stress burden were observed in the control group. The findings demonstrate that biofeedback training for crisis management is an effective method of stress control that may help to reduce vulnerability to stress-related performance decline and stress-related disease. The study confirmed that the present biofeedback procedure might be successfully undertaken in a semi-professional context, in conjunction with support from experienced experts.

The study was directed by the UMIT team; trainers were educated and supervised by members of UMIT and ISI. Twenty-six of the participating crisis managers were recruited and trained by the UMIT team; the remaining ten were recruited and trained by GSP personnel. The study is described in more detail in the publication, which is currently in press in *Applied Psychophysiology and Biofeedback* (Janka et al., 2016).

#### **5.5. Biofeedback-based stress management: Hardware and software designed for crisis management**

As a stress management training tool a biofeedback system, including hardware, software and manuals, was developed and produced, tailored to meet the specific requirements of crisis managers (c.f. Deliverable D4.2 for details).

The training software program PsyTrain was designed by ISI, with input from UMIT and LMU, and programmed by ISI across several iterations that incorporated feedback from consortium members, stakeholders and external experts. PsyTrain enables stimulus presentation, and processing and filtering of the EDA signal (as well as visualization and recording thereof). The training program comprises 11 different, 45-min training sessions aiming towards the acquisition of stress control in crisis managers. The training program has been designed to be provided in the blended learning format, supported by a biofeedback trainer who instructs and guides the learner in person, or via internet-based communication. A training curriculum is also available to ensure state-of-the-art training.

Regarding biofeedback hardware, ISI has developed the prototype of a small and easy-to-apply (portable) biofeedback device (PsyRelax). The system is comprised of a measurement unit and finger sensor (Multisensor), and enables EDA biofeedback, as required for the present purpose. Previous plans for the device also included skin-temperature and heart rate measurement, but these parameters were not included in the final prototype. According to pilot studies conducted together with UMIT, EDA provides a simple and effective training parameter that can be successfully used in a semi-professional context. Therefore, this parameter alone has been implemented, to ensure usability of the end product and to limit production costs.

The integration of the initial biofeedback training version, on the PPP Platform, was completed by ISI and BSO. Information about the biofeedback training is provided there and the Psytrain software and manuals can be downloaded by the user (<http://psycris.bs-competencecenter.de/portfolio/tool-4-ten-ways-to-throw-apple-pies/>).

Ethical approval for the biofeedback system was obtained from the Research Ethics Commission of UGR, confirming that the system complies with all necessary ethical considerations, in all settings and contexts where it is to be used (i.e., supervised and non-supervised application).

## **5.6. Stress management in crisis managers: A cognitive behavioural training program**

The cognitive behavioural stress management training was developed by UGR, with support from LMU, in the blended learning format and in accordance with the results of the empirical research delineated above. The 6-week training program includes face-to-face meetings and/or webinars, with an expert acting as a trainer, in addition to self-guided online training. Following a competence-based approach, numerous exercises are provided to ensure praxis-transfer of the acquired knowledge. Learning is based on direct instruction by the expert and delivery of relevant information, tools and strategies through the PPP Platform. Content is presented in the form of videos, short texts, checklists, downloadable PDFs, interactive exercises and reflection exercises. Communication tools include a chat function, forum and blog.

In the first kick-off meeting/webinar, learners receive an introduction from an expert on the stress management training program for crisis managers. The expert accompanies the learners throughout the entire learning process. Together with the expert, learners define their personal learning objectives according to their work-related interests and needs. Learners with similar learning objectives form learning partnerships, which work together and support one another during the training process. In a second meeting/webinar, learners have the opportunity to discuss their progress with the expert and work on strategies to integrate the acquired stress management skills into their daily work routine, and into crisis situations, to foster competence development. After 6 weeks, a third meeting/webinar takes place, to evaluate learning progress and develop an action plan regarding how the developed stress management skills can be integrated in the long-term after training.

The content of the training is provided in the form of three modules: in Module 1 (*Psychoeducation*), participants are comprehensively informed about stress and coping, and their impacts on health and performance. Module 2 (*Emotional Skills*) aims to empower learners to recognize stress response patterns and situations triggering these responses, in themselves and in their team. Furthermore, specific coping strategies are taught and tested. In Module 3 (*Leadership and Communication Skills*), learners identify, evaluate and improve their own leadership styles. In addition, communication strategies, i.e., conflict resolution techniques, team communication and communication with victims and their families, the media, and bystanders, are taught in this module. (For the modules see attached pdf files in the final report section of Participant Portal).

## 6. PsyCris Contingency Planning (WP5)

**WP5 (CHC):** Contingency plans have traditionally been instituted under the assumption that the original plan would not be applicable in extraordinary circumstances. For the most part such contingency plans have focused primarily on the physical engineering or technical infrastructure and rarely on the human factor. In the case of PsyCris, the basic infrastructure are composed of individual skilled professionals who may be crisis managers or auxiliary professionals tasked to deal with various levels of trauma in emergency situations – especially mass disasters involving large populations. Therefore, the critical infrastructure in developing a contingency plan needs to focus on providing a reliable pool of manpower and associated resources. This will enable disaster agencies to be able to deal with large numbers of diverse population and organizations tasked with both immediate and long-term effects of disaster related trauma. It is for this reason that the contingency plan focused on providing crisis managers with the tools – through guidelines – with alternative means of dealing with mass disasters and large affected populations.

Our research has shown that in order to deal with large scale trauma due to mass disasters, the manpower and resources presently available are sorely inadequate. To fill this gap would require re-evaluating the priorities in disaster organizations to massively increase psychosocial crisis managers. The requirements for such a decision would involve massive funding and training, which would only be implemented over a long period of time. Until this can be implemented, we sought an alternative cost-effective contingency plan as a means to fill this gap as well as utilize its basis to leverage a broad segment of potential psychosocial skilled individuals for both present and future mass disasters.

The contingency plan we strongly suggest relies on the ability of present day crisis managers to develop and through the PPP platform to build informal social networks both within and outside the disaster agencies. Such networks are utilized to connect various types of auxiliary occupations that have a degree of psychosocial skills to be useful when large populations are traumatized due to a mass disaster. These networks not only provide needed manpower when mass disasters occur but a solid foundation for links across borders and different administrative (legal) approaches in dealing with trauma victims. Such social networks are a means to forge bonds between colleagues and fulfil an extremely important role as a communications conduit to gain the experience and advice from others in the network that our research has shown to be critical in decision making.

As we pointed out in delineating the "Guidelines", the development of such networks requires in-place crisis managers to spend minimum time, effort and financial resources. The "pay-off" is not only having a network that can be utilized for small or large scale disasters that require immediate short term actions but also putting the right type of manpower (skills) at those places most needed. As these networks are outside the formal bureaucratic agencies, they are very likely to be able to respond more quickly and provide the type of help most needed in contrast to numerous constraints found in formal disaster agencies.

Taking this all together, it shows again the need of a PPP type tool as a means to incorporate two major critical parts embedded in our proposed contingency plan: a training tool for psychosocial crisis managers themselves as well as a potential recruitment tool for reserve PSS providers through utilizing a social network approach. For the design and testing of the tool, the issue is not quite whether PSS managers would use it for their own purposes to hone their skills, but whether it would or could be used for training purposes of additional resources that would fulfil the gap in need for both short and long term needs.

Overall, we propose that developing and building an informal social network of both professional and auxiliary psychosocial skilled persons from within existing disaster agencies is a cost-effective European wide approach for a generic contingency plan for psychosocial support in case of mass disaster involving large populations. To enhance this potential, it is critical to take advantage of the PPP platform being developed in the PsyCris project.

## 7. Help the people help themselves (WP6)

**WP6 (KKP):** In order to answer the question posed in T6.1, what kind of support is available in your own country and in the other participating countries to “Help the people help themselves”, KKP took the following measures:

KKP sent a standardised questionnaire to the contributing partners that was designed to identify mechanisms of support for programs fostering “help people help themselves” during disaster in each participating country. The concept that motivated these questions was based on the theoretical framework of community resilience.

We analysed literature to define the concept of community resilience, to discuss key factors of community resilience, and to identify key resources of community based help together with its challenges and limitations of community based help.

The answers given by the partner to this small survey were used to identify the real experience examples of how people helped themselves during and after disasters. We identified 6 success stories from Spain, Luxembourg, Germany, Lithuania and Latvia.

The success stories were the real experience examples of crisis management with people who took part in disaster management before they were on service and on a voluntary basis. The ideas of what makes the stories successful and how to draw lessons out of them were discussed with each contributing partner and the structure of success story was developed. The analysis of success stories provides some insights of how the support mechanism could be created based on existing experience. (see D6.1, p. 25). All cases reveal the quick response actions to the immediate needs of affected people. Needs were identified and met. We observed spontaneous reactions with hardly any preparation in the success stories analysed (see D.6.1, 24). There are a lot of lessons reflected in each experience, but there was no formal effort from the institutions in the different countries to collect the actionable and relevant knowledge (D.6.1, p.24). The criteria of action ability and applicability were used to describe the success stories with a common focus on practicality. It was planned to use the results as a tool for the PPP learning platform.

As very limited or no mechanisms of helping people help themselves were found in all participating countries (T.6.1) it appeared that we were investigating an absent phenomena. None of the partners participating in the expert survey reported national-level programs for helping people help themselves in crisis situations.

Focus group meetings with end-users representatives were held in Lithuania and Spain to explore the participants’ experiences in creating initiatives in helping people themselves. The content in the form of presentations and focus groups was analysed and results were used as additional material for the development of guidelines on what people can do to help themselves in a disaster, which would be integrated into the PPP Platform. The focus groups in Lithuania were organised in a successful conference, which made an impact on many projects planned later for community resilience.

For T6.4, the video “Help the people help themselves”, a video tool featuring a 5 minute film on how

to use community resources for self-support, accompanied by guidelines, suitable for international internet users, was produced and validated.

The Video Tool link was sent to end-users for evaluation in Luxembourg and Spain by GSP and COPAO, respectively.. To ensure comprehension of the tool in a primarily Spanish speaking country, COPAO translated the original questionnaire from English to Spanish as well as the audio of the video for subtitling. The tool was finally validated by GSP and KKP responses, since feedback from the Spanish crisis managers was insufficient to yield conclusive results.

This tool was to be integrated into the PPP learning platform.

We found that no mechanisms of “how to help people help themselves” were being elaborated in the communities of the partner countries. Crisis management systems and support mechanisms in general did not include direct influence on the general population to increase its ability to timely recognize and flexibly react to crises. Even though there are efforts to inform the public about possible threats and crisis, the efforts to foster the ability of people to cope with the crisis autonomously - so to say by themselves - are very limited. Disaster preparedness and crisis management plans highlight the view of the general population as “object” to be managed, rather than “subject” that is able to manage itself flexibly.

We identified the following elements suitable to support help people help themselves (D.6.1, p.34):

- positive attitude towards an initiative,
- volunteering work,
- publicity,
- social network,
- acknowledgment,
- facing the obstacles.

To summarise the significant results of WP.6, the self-help activities were validated and specified, how non-existent support of the helping people help themselves mechanism could be created based on accumulated experience from previous disasters. The guidelines and recommendations are completed (D.6.1, p 45) The Video Toolkit for part 4 “Help people help themselves” is prepared for end-users (D.6.2, p 20) to realise the importance of safe and coordinated self-help and the animated Video tool kit, with comments and instructions on how to use it, is ready for the international users. The focus groups in Lithuania were organised in a successful conference, which made an impact on many projects planned later for community resilience.

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## **The potential impact, main dissemination activities and exploitation of results (max. 10 pages)**

(including the socio-economic impact and the wider societal implications of the project)

### ***The potential impact of PsyCris***

The continued relevance of PsyCris's objectives can be seen in several ways. For one, with an increased number of cross-border disasters throughout Europe, PsyCris addresses a critical need for a continued and substantial increase of psychosocial support in crisis management. Secondly, it has focused on the role of psychosocial support in stress management at the crisis management level as a means of reducing stress and leading to more effective decision making. The prototype of the web-based "PPP Platform" already includes the relevant research results for the community of crisis managers as a basis to support stress management and to offer adequate psychosocial support.

Connecting crisis managers across Europe, including their insights on the effectiveness of particular interventions via such a platform, would be an important step forward in crisis management. We also assume that our research will contribute to further involvement of health & public authorities, policy makers and supervising authorities and to inform them about needs in psychosocial support.

To date, our results suggest a critical need for a continued and substantial increase in psychosocial support for crisis managers to mitigate the short and long term impact on an increasing larger number of affected persons. As an initial step a set of strategic recommendations for psychosocial support in disaster management has been formulated. Work on longer-term impact has discovered a need for better disaster health assessments. The current investigation of societal capacities seems to be a promising avenue for further research and feasible approaches regarding psychosocial support in different crisis scenarios. This aspect has also been vital in seeking to improve ways in which people can help themselves. Here, our results suggest that capacities, like community resilience are lacking recognition by crisis managers. We approached this issue by developing numerous pieces of informative material for crisis managers and affected persons, including recommendations on how to involve local groups of people. For situations involving a large number of people, we are investigating the issue of contingency planning with the aim to extend existing structures by involving informal social networks among potential psychosocial support providers. Thus, the overall aim is to improve psychosocial support intended for the crisis management in Europe as well the measures provided by them. Only if they get the best possible support can they deliver the best possible results for the respective communities. The expected impact in terms of economic and social benefit to society in general are hopefully also seen in the savings that can be expected in terms of health costs involved in the care and rehabilitation of those involved in disaster incidents.

## **Main dissemination activities**

### ***Exploitation of results***

The exploitation of results now is only possible in a restricted framework (articles, possibly using PSAB, biofeedback device, stress management training, guidelines recommendation program could partly be used within other contexts).

Due to the suspension and finally termination of PsyCris the PPP-platform prototype could neither be tested with stakeholders and end-users nor be distributed in this first version. The envisioned founding of an exploitation company is not possible under these circumstances.

In the following a compilation of main dissemination activities will be presented. Further activities are listed in the periodical reports of the WPs and are documented in more detail at [www.psycris.eu](http://www.psycris.eu) under „news“.

### **Workshops and trainings**

A number of workshops and trainings with crisis managers were conducted by the partners where Psycris was introduced. Additionally, results of different WPs were presented and discussed with stakeholders.

Major activities in this context were:

- COPAO gave a workshop with focus on psychological intervention in the context of the derailment in Santiago de Compostela in 2014.
- In May 2014 LMU, ISI and GSP organized two workshops on the topic “stress-management for crisis manager” at the „Bundeskongress Notfallseelsorge und Krisenintervention“.
- In 2015 UMIT conducted a Leadership Training for crisis managers with focus on psychosocial services within the Red Cross in collaboration with the Red Cross in Upper-Austria. By using the scenario „Airplane Crash“ the participants discussed the challenges and tasks for crisis management with special focus on psychosocial support.
- UMIT was invited in 2014 by the Universidad Internacional Menéndez Pelayo to present the “EU Framework for cross-border Health Emergencies” at the Seminar “Emergency and Health Emergencies” in Santander. In this context PsyCris and some insights on the project have been presented. Participants, who were all active in the field of disaster management/ health emergencies, have all been highly interested in the EU framework for cooperation in cross-border health emergencies.
- In 2014 a delegation of ten people from the team for incident aftercare (ENT) of the Federal Agency for Technical Relief (THW) Bremen / Lower-Saxony met from June 26th to 30th with the Groupe de Support Psychologique (GSP) for an expert exchange in Luxembourg where LMU also informed them about PsyCris.

### **Long nights of research and European Researchers night**

In 2014 and 2016 UMIT has participated at the long night of research in Austria to inform the public about research activities at universities. The research team offered biofeedback measures to visitors and gave insights into the diverse PsyCris activities. In 2014 PsyCris was presented by UGR at the European Researchers Night in Granada.

### **Stakeholder Conferences, Final Scientific Conference**

In 2015 Kitokie projektai (Lithuania) organised the conference “Help people help themselves” in Vilnius. One of the purposes of this conference was to screen and identify non-formal organisations that could be included in formal crisis management structures. The 58 participants were active members from various social initiatives in organisations, communities and the general society in Lithuania. Some of the initiatives represented were institutionalised, while others consisted in non-formal activities networks.

COPAO, PsyCris partner and important stakeholder in the field of psychosocial help in crisis and for crisis managers was in charge for the final conference, which was to take place in May 2016. The preparations started in autumn 2015.

In preparation for this Conference, COPAO and UGR:

- Had 12 meetings regarding planning, program development and organization
- Developed the Conference program and presented it to the Consortium at the General Assembly in Israel on November 11<sup>th</sup>, 2015.
- COPAO had one-to-one meetings with each Partner to obtain their input on the presented program. Suggestions were taken into consideration and the program was modified.
- Invited Marc Stein to be the moderator for the round tables
- Contacted participants for the round tables, scientific presentations and producers of additional material that could complement the findings of the PsyCris project
- Created invitations and invitation lists (including end-users, heads of services, political figures and policymakers)
- Scouted venues for the Conference and made the final arrangements/reservations
- Scouted Catering and solicited quotes
- Scouted hotels and blocked room reservations
- Researched technical needs and options (what was needed, what could improve the conference) and requested quotes for instant translators, tablets for the interactive workshops, etc.
- Met with heads of services and political leaders to recruit support for the project and participation in and dissemination of the Conference.

This event would have also been the start of dissemination for the PsyCris products, especially the PPP-platform.

## Articles in peer-reviewed journals

- Haus, M., Adler, C., Hagl, M., Maragkos, M., & Duschek, S. (2016). Stress and stress management in European crisis managers. *International Journal of Emergency Services*, 5, 66-81.
- Janka, A., Adler, C., Brunner, B., Oppenrieder, S., & Duschek, S. (in press). Biofeedback training in crisis managers: A randomized controlled trial. *Applied Psychophysiology and Biofeedback*.
- Janka, A., Adler, C., Fischer, L., Perakakis, P., Guerra, P. & Duschek, S. (2015). Stress in crisis managers: Evidence from self-report and psychophysiological assessments. *Journal of Behavioral Medicine*, 38, 970-983.

## Book chapters and other articles

- Adler, C., & Sauter, W. (2017). Kompetenzentwicklung von Krisenmanagern – Ein Modell zur kompetenzorientierten Entwicklung von Führungskräften im Netz (*Competence development of crisis managers*) In J. Erpenbeck & W. Sauter (Eds), *Handbuch Kompetenzentwicklung im Netz. Bausteine einer neuen Lernwelt/ Handbook competence development in the network* (pp. 489-505) Stuttgart: Schäffer/Poeschel.
- Raich, M., & Lorenzoni, N. (2017). Herausforderung für im Katastrophenmanagement tätige Personen. In *Bevölkerungsschutz*, Special Issue Psychosoziales Krisenmanagement, Vol. 1, p. 30-31.
- Haus, M., Adler, C. & Duschek, S. (2016). Crisis management organisations and (psycho-social) support – challenge and future perspective. In J. Zelger & J. Müller (Eds.), *GABEK as a learning procedure for organizations* (pp. 147-170). Innsbruck, Austria: Studienverlag.
- Raich, M., Adler, C., Stühlinger, V., Lorenzoni, N., & Duschek, S. (2015). Impact of major incidents on health system performance, security and health protection. In C. A. Brebbia (Ed.), *Sustainable*

*development* (p. 1111-1121). WIT Press Transactions on the Built Environment, Vol 168. DOI 10.2495/SD150962

Raich, M., Adler, C., Kirschenbaum, A., & Duschek, S. (2014). Disaster Logistics: The effectiveness of contingency plans during disasters and the role of human behaviour. In R. W. Grubbström & H. Hinterhuber (Eds.), *International Working Seminar on Production Economics Proceedings*, Volume 3, (pp. 381-392).

## Bachelor, Master and Doctoral Theses

Meyer, J. (2017). *Strategic recommendations for psychosocial support*. Ludwig-Maximilians-Universität München (Doctoral Thesis).

Haus, M. (2016). *Stress and stress management in European crisis managers. A multi-method approach*. Ludwig-Maximilians-Universität München (Doctoral Thesis).

Leitinger, E.-M. (2016). *Identifizierung von Langzeitauswirkungen von Katastrophen auf das Public Health System am Beispiel des Gletscherbahn-Brandes in Kaprun*. UMIT Hall (Master Thesis).

Paulhuber, M. (2016). *Langfristige Auswirkungen von Naturkatastrophen auf das Public Health System am Beispiel der „Jahrhundertflut“ von 2002 in Mitteleuropa*. UMIT Hall (Bachelor Thesis).

Heiter K. (2015). *Identification of long-term effects of the London bombings in 2005 on the public health system*. UMIT Hall (Bachelor Thesis).

Herke, A. (2015). *Langzeitauswirkung der Nuklearkatastrophe von Tschernobyl auf das Public Health System*. UMIT Hall (Bachelor Thesis).

Schrettl, L. (2014). *Die Rolle und Bedeutung von Information und Informationsmanagement im Rahmen der Entscheidungsprozesse bei Katastrophen*. UMIT Hall (Bachelor Thesis).

Taatz, L. (2014). *Analyse der Einflussfaktoren auf die Zusammenarbeit von Einsatzkräften am Beispiel der präklinischen Versorgung von Patienten bei einem Großschadensereignis*. UMIT Hall (Bachelor Thesis).

Apel, D. (2013). *Medical, psychological and psychosocial interventions after major incidents and mass trauma: A systematic review and meta-analysis on PTSD epidemiology and treatment outcome*. Ludwig-Maximilians-Universität München (Master Thesis).

## Congress Contributions and Poster Presentations

Janka, A., Adler, C., Brunner, B., Oppenrieder, S., & Duschek, S. (2016). *Biofeedback training in crisis managers: A randomized controlled trial*. 12. Tagung der Österreichischen Gesellschaft für Psychologie, Innsbruck, Austria 31.03.- 02.04.2016 (Oral Presentation).

Raich, M., Lorenzoni, N., & Stummer, H. (2016a). *Long term impacts of disasters on the public health system*, 9th European Public Health Conference, Vienna 2016, 09.-12.11.2016 (Oral Presentation).

Raich, M., Lorenzoni, N., & Stummer, H. (2016b). *Long term Impacts of Natural Disasters on Public Health Systems*, 6th International Disaster and Risk Conference IDRC Davos 2016, 28.8.-01.9.2016 (Oral Presentation).

Adler, C., Meyer, J., Sauter, W., Hagl, M., & Raich, M. (2015). *First steps in the development of an Internet-based Learning Platform for strategic crisis managers*. Short Paper – Track 9 Community Engagement, Proceedings of the ISCRAM 2015 Conference – Kristiansand, May 14-27.

- Janka, A., Adler C., Fischer, L., Perakakis, P., Guerra, P., & Duschek, S. (2015). *Stress in crisis managers: Evidence from self-report and psychophysiological assessments*. 9. Workshopkongress für Klinische Psychologie und Psychotherapie, 14.-16.05.2015 (Poster Presentation).
- Raich, M., Adler, C., Stühlinger, V., Lorenzoni, N., & Duschek, S. (2015). *Impact of major incidents on health system performance, security and health protection*. Presented at Disaster Management Conference 2015, Istanbul, Turkey 20.-22.5.2015 (Oral Presentation).
- Raich, M., Stühlinger, V., Lorenzoni, N., Adler, C., & Duschek, S. (2015). *Long-term Impacts of Disasters – Implications for European Public Health Systems*. Presented at Annual Conference of European Health Management Association (EHMA), Breda, the Netherlands 15.-17.6.2015 (Oral Presentation).
- Plank, S., Raich, M., Adler, T., & Duschek, S. (2014). *Crisis managers' response to large scale incidents: Social identity implications*. EHMA - European Health Management Association Conference, Birmingham/Great Britain, 24.-26.06.2014 (Poster Presentation).
- Raich, M., Adler, T., & Duschek, S. (2014). *Experiences and attitudes of crisis managers concerning psycho-social support systems during and after disasters in Europe*. EHMA - European Health Management Association Conference, Birmingham/Great Britain, 24.-26.06.2014 (Poster Presentation).
- Raich, M., Adler, T., Kirschenbaum, A. & Duschek, S. (2014). *Disaster Logistics: The effectiveness of contingency plans during disasters and the role of human behaviour*. International Working Seminar on Production Economics Proceedings, February 24-28, Innsbruck/Austria (Oral Presentation).

### Address of the project public website, links to EU compliant repositories

**<http://psycris.eu/>**

Journal articles and conference papers are published to the project's website (<http://psycris.eu/>) and to the Zenodo EU affiliated open access repository (<https://zenodo.org>). A complete list of these publications can be accessed at the PsyCris Zenodo community: <https://zenodo.org/collection/user-psycris>. Importantly, research works hosted at the Zenodo repository automatically appear at the OpenAIRE repository (<https://www.openaire.eu>), European Union's large-scale initiative to promote open scholarship. Interoperability between the Zenodo and OpenAIRE repositories with EU infrastructures makes all PsyCris publications automatically retrievable also through the project's profile page at CORDIS (<http://cordis.europa.eu>).

The project's profile page at OpenAIRE can be accessed at:

<https://www.openaire.eu/search/project?projectId=corda::95141bf8b846db55b96d9485f53c0bba>

The project's profile page at CORDIS can be accessed at:

[http://cordis.europa.eu/project/rcn/109098\\_en.html](http://cordis.europa.eu/project/rcn/109098_en.html)