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SWAN-iCare

Project Flier

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SWAN-iCare

Smart wearable and autonomous negative pressure device for wound monitoring and therapy

Contract Start Date: 1 September 2012
Contract Duration: 48 months

Project Partners:
EXODUS S.A. (GR, Coordinator), CEA (FR), CSEM(CH), UNIPI-CHE (IT), UNIPI-WHR (IT), CHURG (FR), EUROR (IT), HBIO (IT), EWMA(DK), ICCS (GR), S&N (UK), SWINN (CH)
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<table>
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<th>Name</th>
<th>Organization</th>
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### Revision History

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1 Executive Summary

As part of Work Package 9 there is a deliverable D9.2, titled “Project Flier” (M6), this report describes in detail the tasks that where completed to ensure that this delivery was completed successful.

The individual members of the consortium are pro-actively working together, sharing their knowledge, experience, skills and contacts to develop this new medical device. The requirements for the SWAN-iCare device are based on the specification within the project brief; this will be supported by feedback from patients and clinicians and will be developed to meet the demanding needs of a modern medical infrastructure.

The “Project Flier” is an activity to ensure that the messages relating to the objectives of the SWAN-iCare project can be presented in a common understandable way.

As we are only at the start of the pathway to a successful project, our next stages with the “Project Flier” is to address how we can improve both the flier and the message it is aiming to give to potential user of the SWAN-iCare device. We are currently discussing with a publishing design facility on how this can be achieved.

It must be realised that the requirements for a detailed comprehensive “Project Flier” is not a task that even though required to be completed by month 6 will not be addressed again during the project life cycle. It is currently proposed to review the flier at least twice a year with the aim to update with new information as the project progresses.

Informal updates of the information that could be included within the flier will occur at regular intervals in the future (approximately once a month), with formal reviews taking place at each consortium meeting. The outputs from these formal reviews will be used to update this document on a regular basis and be included within the flier as required.
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3 Introduction

SWAN-iCARE is an ambitious project which will provide a major leap forward in the management of wound healing, mainly diabetic foot ulcers (DFU) and venous leg ulcers (VLU) treatment. It aims at a next generation integrated autonomous solution for monitoring and personalized therapy of the foot and leg ulcers. Foot and leg ulcers are caused mainly by diabetes and vascular problems but are also due to a variety of diseases such as kidney disease, congestive heart failure, high blood pressure, inflammatory bowel disease and others.

The project relies on Information and Communication Technologies (ICT) enabled on body wearable, negative pressure device and allows for:

- accurate multi-parametric monitoring of the wound via non-invasive integrated micro-sensors measuring the condition of the wound and early identification of infection.
- adapted remote personalised two level therapy via non-invasive micro-actuators as a supplement to the negative pressure wound therapy

The data collection analysed by the clinic personnel is the basis for the decision and remote control of the therapy (by the clinical doctor) and future statistical analysis of multiple patients’ wound management and treatment, thus advancing the wound management science and practice. This closed-loop approach offered by SWAN-iCare project is expected to provide improved levels of care. This in turn will help support the patient’s health condition and potentially lowers the costs and need of hospitalisation which in turn will provide a positive impact on the patient and the health provider.

SWAN-iCARE novel idea focuses on the provision of pioneering two levels of treatment at home:

- A first level treatment based on a negative pressure device, which provides a moist environment, reduces bacterial colonization, localized oedema and dead space and promotes localized blood flow, granulation and epithelialization.
- A second level treatment based on a smart interface associated to the cartridge which will be at the direct contact of the wound in order to initiate, if necessary, the integrated micro-actuators.

For an overview of the SWAN-iCare system see Appendix #1

Swan-iCare Consortium Partners are:

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<th>Short Name</th>
<th>County</th>
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<td>CSEM</td>
<td>CH</td>
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<tr>
<td>Commissariat à l’Energie Atomique et aux Energies Alternatives</td>
<td>CEA</td>
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<tr>
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<tr>
<td>Exodus A. E.</td>
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<td>Università di Pisa</td>
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<td>University Hospital of Grenoble</td>
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### 3.1 Work Package 9 assigned efforts

#### 3.1.1 Table #1 each project partner has efforts in WP9

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<th>3</th>
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<tbody>
<tr>
<td>Participant short name</td>
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<td></td>
</tr>
<tr>
<td>Person-months per participant</td>
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<td>3</td>
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<td>2</td>
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<td>5</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>50</td>
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</tbody>
</table>

The aim of deliverable WP9.2 is to ensure that as a consortium we have a common message (via a Flier) that we can present at suitable conferences, technical meetings and workshops with medical and non-medical personnel.

Deliverable WP9.2 has a single element:-

- Project Flier,

(It should be noted that there is a separate deliver D9.4 “Project Flier M24”)

The following section provides a more detail on the approach which was followed:
4 Project Flier

4.1 Background Information

During the initial meetings of the consortium members the requirements for what the project flier would and would not include were discussed at length. As a result of these the discussions the decision was made to at this early stage of the project include information which had already been published within the project documentation, but not to include any information relating to the consortiums aspirations or very early testing. A concern was raised by a number of the consortium members that it would not be advisable to publish information that could not be fully supported by proven evidence.

A small group of consortium members consisting of individuals from, CEA, Exodus, UNIPI, EWMA and Smith & Nephew took away the action to review both other European Sponsored Project Fliers and Fliers they had produced for their own organisation.

The output from this group was the decision that the Swan-iCare project flier would be based on a Tri-folded double sided colour printed A4 sheet. The trifold option has the advantage that it is presented as a mini brochure which is actual an A4 sheet size, if can be easier to display as it can be stood up, and are easy to carry, pass around, placed into a suitable place like a bag or a pocket, it also stands out from a single printed sheet of paper.

In line with the requirements to only use information that had previously been published the decision was taken to base the flier on the four main aspects that the SWAN-iCare project revolves around.

- The Patient
- Society and Healthcare
- Medical Science
- ICT Science and Business

These were underpinned by the expected advantages to both the Medical (Clinicians) and Nonmedical (Patient) groups.
4.1.1  Fig #1 Front Page

SMART WEARABLE AND AUTONOMOUS  
NEGATIVE PRESSURE DEVICE  
FOR WOUND MONITORING AND THERAPY

This research is supported by the European Commission  
under the 7th Framework Programme.

Project No 317854
4.1.2 Fig #2 Inside Pages

**What is SWAN-iCare?**

SWAN-iCare is an ambitious project which will provide a major leap forward in the management of chronic wounds, mainly diabetic foot ulcers (DFU) and venous leg ulcers (VLU). It aims at a next generation integrated non-invasive solution for monitoring and adapting personalized therapy of foot and leg ulcers. At the core of the project is the fabrication of a conceptually new wearable negative pressure device equipped with capability of remote monitoring via wireless technology (ICT). Such a device will allow clinicians and patients to:

- **Clinicians**
  - Never miss the wound healing process without patient attending a clinic. Provide both wound diagnostics and treatment in a single device for diabetic foot ulcers (DFU) and venous leg ulcers (VLU).
  - Access of real-time quantitative data to monitor wound healing.
  - Earlier identify potential infections in order to minimize cost and risk to patient safety.

- **Patients**
  - Personalised treatment to meet their individual needs.
  - Improve the quality of life with the reassurance that their condition is being remotely monitored.
  - Reduce their dependency on clinic visits.

**SWAN-iCare revolves around four aspects that can be summarised in the following:**

**Patient**

- Continues efficient monitoring of wound parameters at the patient's home.
- Personalised and improved therapy initiated by the physicians remotely and adapted to the daily measurements.
- Faster wound healing due to the early identification and therapy of potential problems.
- Wound deterioration can be identified early and acted upon, thereby leading to reduced morbidity and amputation rates.
- Reduced need for hospitalisation, better quality of life with better mobility, more comfort and less stress.

**Society and Healthcare**

- Reduced need for hospitalisation results in reduced healthcare costs, and better therapy for an increased remotely monitored number of patients.
- Less stress for patient and family, reduced travel time, and reduced hospital stay.
- Better care for patients living in remote geographical places.
- Lower nursing involvement allows for more patient treatments.
- More intelligent and effective prescription leading to faster wound healing, thus lower healthcare costs.

**Medical science**

- New ways of patient monitoring by correlating continuous measurements not available before.
- Continuous objective measurement contributing to evaluation of wound progress, and treatment effectiveness.
- New remote therapeutic approaches with innovative products.
- New potential for research by correlating measurements and outcomes of multiple patients when these become available in the future.

**ICT Science and Business**

- Novel solutions incorporating multidisciplinary research providing services of unparalleled quality.
- Fresh business models in the wound management market and close business relationships between the various disciplines and between the players of the potential value chain in the wound management market.
- Reinforced leadership and innovation in the area of convergence of information-ICT systems, gained by knowledge and skills and improving the competitiveness of the involved industries.
### Project Members

SWAN-iCare brings together multidisciplinary European research teams for the development of a product addressing real business opportunities. As demonstrated by the industrial partners involved, who are major players in the current wound management markets.

<table>
<thead>
<tr>
<th>Project Member</th>
<th>Country</th>
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<tbody>
<tr>
<td>EXODUS S.A</td>
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<tr>
<td>UNIVERSITY HOSPITAL OF GRENoble</td>
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<td>HAEMOPHARM BIOFLUIDS</td>
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### How To Find Out More

SWAN-iCare started in September 2012 and will last for four years. For more information please visit the SWAN-iCare website or contact the project Co-ordinator.

**Website:** www.swanicare.eu  
**Co-ordinator:** EXODUS SA  
**Address:** Estiat Str. & 73-75 Messogion Av., 115 26 Athens, Greece  
**Telephone:** +30 210 7450320  

**Work Programme Objective:** Smart Components and Smart Systems Integration (6) Micro-Nano Bio-Systems  
**Total budget:** 8,079,179 €  
**Funding:** 6,113,999 €  
**Call identifier:** FP7-ICT-20011-8
5 Conclusions

In conclusion, this document covers deliverable 9.2 Project Flier, as stated earlier the flier will require to be updated as the project progresses, new fliers may be tailored towards particular groups, doctors, patients, care providers, technical bodies etc. but will be produced to ensure a common message is presented to the reader so underpinning the aims and goals of the SWAN-iCare project.

The project flier is one of the critical pieces of information that underpins the dissemination activities highlighted within deliverable D9.5.

Informal updates of the information that could be included within the flier will occur at regular intervals in the future (approximately once a month), with formal reviews taking place at each consortium meeting. The outputs from these formal reviews will be used to update this document on a regular basis and be included within the flier as required.

6 Bibliography

7 Abbreviation

- DoW: Description of Work
- DFU’s: Diabetic Foot Ulcers
- VLU’s: Venous Leg Ulcers
- EU: European Community
- USA: United States of America
- RoW: Rest of the World
Appendix #1.1 Enlarged Flier

**How To Find Out More**

SWAN-iCare started in September 2012 and will last for four years. For more information please visit the SWAN-iCare website or contact the project Co-ordinator.

- **Website:** www.swan-icare.eu
- **Co-ordinator:** EXODUS SA
- **Address:** Estias Str. & 73-75 Messogion Av., 115 26 Athens, Greece
- **Telephone:** +30 210 7450320

**Work Programme Objective:**

Smart Components and Smart Systems Integration
(b) Micro-Nano Bio-Systems

- **Total budget:** 8,076,170 €
- **Funding:** 6,113,999 €
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*This research is supported by the European Commission under the 7th Framework Programme.*

Project No 317894

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- **EXODUS SA**
- **UNIVERSITY HOSPITAL OF GRENoble**
- **COMMISSARAT A L’ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES**
- **CSEM Centre Suisse D’ELECTRONIQUE ET DE MICROTECHNIQUE SA**
- **EUROPEAN WOUND MANAGEMENT ASSOCIATION**
- **EURORESEARCH**
- **HAEMOPHARM BIOSFLUIDS**
- **INSTITUTE OF CODACOUGATIONS AND COMPUTER SYSTEMS**
- **SMITH & NEFHEW WOUND MANAGEMENT**
- **SWISHNOV**
- **UNIVERSITA DE PISA**
What is SWAN-iCare?

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Clinicians
- Remotely monitor the wound healing process without patient attending a clinic. Provide both wound diagnostic and treatment in a single device for diabetic foot ulcers (DFU) and venous leg ulcers (VLUs).
- Access of real time quantitative data to monitor wound healing.
- Earlier identify potential infection in order to minimise cost and risk to patient safety.

Patients
- Personalised treatment to meet their individual needs.
- Improve the quality of life with the reassurance that their condition is being remotely monitored.
- Reduce their dependency on clinical visits.

SWAN-iCare revolves around four aspects that can be summarised in the following:

Patient
- Continuous efficient monitoring of wound parameters at the patients home.
- Personalised and improved therapy initiated by the physician remotely and adapted to the daily measurements.
- Faster wound healing due to the early identification and therapy of potential problems.
- Wound deterioration can be identified early and acted upon, therefore leading to reduced morbidity and amputation rates.
- Reduced need for hospitalisation, better quality of life with better mobility, more comfort and less stress.

Medical science
- New ways of patient monitoring by correlating continuous measurements not available before.
- Continuous objective measurement contributing to evaluation of wound progress, and treatment effectiveness.
- New remote therapeutic approaches with innovative products.
- New potential for research by correlating measurements and outcomes of multiple patients when these become available in the future.

Society and Healthcare
- Reduced need for hospitalisation, results in reduced healthcare costs, and better therapy for an increased remotely monitored number of patients.
- Less losses due to patient remaining away from work.
- Less burden over the relatives and carers who may help and support the patient.
- Better care for patients living in remote geographical places.
- Lower nursing involvement allows for more patients treatments.
- More intelligent and effective prescription leading to faster wound healing, thus lower healthcare costs.

ICT Science and Business
- Novel solutions incorporating multidisciplinary research providing services of unparalleled quality.
- Fresh business models in the wound management market and closer business relationships between the various disciplines and between the players of the potential value chain in the wound management market.
- Reinforced leadership and innovation in the area of convergence of Bio-micro-ICT system, gained by knowledge and skills and improving the competitiveness of the involved industries.
8.3 SWAN-iCare system overview