



DREAM

D6.12 – COMMUNICATION KIT – SECOND RELEASE

Project Information

GRANT AGREEMENT NUMBER	723699
PROJECT FULL TITLE	Driving up Reliability and Efficiency of Additive Manufacturing
PROJECT ACRONYM	DREAM
FUNDING SCHEME	RIA
START DATE OF THE PROJECT	01 Oct 2016
DURATION	36 months
CALL IDENTIFIER	H2020-FOF-2016
PROJECT WEBSITE	www.dream-euproject.eu

Deliverable Information

DELIVERABLE N°	6.12
DELIVERABLE TITLE	Communication Kit – Second Release
WP NO.	6
WP LEADER	BEWG
CONTRIBUTING PARTNERS	INSTM
NATURE	OTHER: Software, technical diagram, etc.
AUTHORS	Sara Attanà (BEWG)
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REVIEWERS	/
CONTRACTUAL DEADLINE	M18
DELIVERY DATE TO EC	30/03/2018

Dissemination Level

PU public.



Document Log

Version	Date	Author	Description of Change
1	29/03/2018	Sara Attanà	First Release

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY.....	4
2	INTRODUCTION	4
3	Communication Kit Update	5
3.1	Brochure – Second Release	5
3.2	Poster – Second Release.....	6
3.3	Roll up – Second Release.....	7
3.4	Project Presentation – Second Release	8

1 EXECUTIVE SUMMARY

The Public Communication Kit is a public instrument that can be used for communication/dissemination purposes without asking prior advice on contents; project partners are always required to inform the Communication and Dissemination Manager about the specific channel where the Communication KIT will be used (Event, articles, conferences, meetings, social media) and the contact details to be currently used is:

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The Communication KIT documents are available for free download from the Project Website at the following link: <http://www.dream-euproject.eu/download-area/>

2 INTRODUCTION

A first release of the communication kit has been developed at the beginning of the project according to Deliverable 6.11 – Communication Kit (First Release).

This first release comprises:

1. Agenda Template
2. Deliverable template
3. Logos, Backgrounds and Symbol
4. Leaflet
5. Poster 90x60
6. Roll-up 170x55
7. Press Release
8. Work Package Presentation Template

The First release of the Communication Kit provided some basic graphic elements that are intended to underline the visual identity of the project and to give a common graphic layout. These elements are the logo, the backgrounds, the symbol and the templates: they did not change in the second release of the Communication Kit.

3 Communication Kit Update

In the second release of the Communication Kit, the brochure, the poster and the roll up have been modified updating them with the first results of the project. Moreover, a project presentation with detailed reach results at M12 has been created.

3.1 Brochure – Second Release

DREAM brochure has been updated underlining the achievement of the prefixed KPI1, the new logo of the partner UTBv and adding social media project logos (see Figure 1).



Figure 1: Brochure – Second Release

3.2 Poster – Second Release

DREAM poster has been updated underlining the achievement of the prefixed KPI1, the new logo of the partner UTBV and adding social media project logos (see Figure 2).

Objective

The aim of DREAM is to significantly improve the performance of Laser Powder Bed Fusion of titanium (LPBF) components, and also, complementarily in terms of specific costs, material use and reliability, also using a Life Cycle approach, while producing work pieces with controlled and reliably increased fatigue life, as well with higher strength-to-weight ratios.

The motivation for the project is to go beyond the state of the art in laser-based Powder Bed Fusion by mastering all stages of the process chain, along the numerous industrial applications, the project is focused on components for prosthetic, aerospace and moulding applications, to optimize the process, respectively for titanium, aluminium and steel.

DREAM targets the development of a competitive supply chain to increase the productivity of laser-based Additive Manufacturing and to bring it a significant step further towards larger scale industrial use.

Consortium

Short name	Partnered Organisation	Country
INSTM (IIR)	Consorzio Interuniversitario Nazionale per lo Studio e lo Sviluppo di Materiali	Italy
EDM S.O.	Acciaierie Lombarde (Acciaierie)	Germany
UTBV (IIR)	Universitäts-Triebwerksbau Bochum	Germany
DEWID (IIR)	Deutscher	Germany
MIND4D (IIR)	D.C. MindFour D.O.L.L.	Germany
POLY-SHAP (IIR)	Polyshape S.A.S.	Germany
ADLERPH (IIR)	Adler Ortho Parts R&D LLC	Germany
IB (IIR)	IB S.p.A.	Italy
FERRARI (IIR)	Ferrari S.p.A.	Italy

Project

Title: Driving up Reliability and Efficiency of Additive Manufacturing
Acronym: DREAM
Call identifier: H2020-FET-2016
Topic: FET-3-2016; Photonics, Laser-based production
Funding scheme: Research and Innovation Action
Grant Management number: 723699
Duration: 36 months
Start Date: 1 Oct 2016
Estimated Project Cost and EU Contribution: €3,242,438.00
Project Website: www.dream-euproject.eu

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The Challenge

- Part modeling and topological optimization
- Raw material optimization to avoid powder contamination
- Process optimization, including innovations of the control software of the Additive Manufacturing machine to enable high throughput production
- Validation and Standardisation of the process on industrial components for three different materials (titanium, Aluminium, and steel)

Project

Part modeling and topological optimization
 Action on raw material
 Action on process
 Validation and standardisation

Business Cases

- Medium size prosthetic components (ADLER ORTHO PART)
- Lightweight automotive components (Ferrari)
- Mould Inserts (A.B. S.p.A.)

Project ambition

- Novel component geometry:
 - Part redesign by applying topology optimization/design for Additive Manufacturing
 - Lower cost, building time and part weight
- Use of improved and new raw materials:
 - Device to remove contamination from the raw material
 - Use of nanostructured titanium powders
- Superior process control:
 - Better control of the effects of laser parameters on melt track instability/cooling defects
 - Precise control of the heat input and augmented fatigue life
 - Innovations of Additive Manufacturing machine control software
 - Increase of productivity
 - Higher reliability

Innovation Target

- ADLER: 10% weight reduction, 20% shorter build time, 50% lower cost
- FERRARI: 10% weight reduction, 20% shorter build time, 50% lower cost
- A.B.: 10% weight reduction, 20% shorter build time, 50% lower cost

Logos: ADLER ORTHO PART, beWARRANT, eos, Ferrari, INSTM, MIND.4D, POLY-SHAP, A.B. S.p.A., TUBI, Technische Universiteit van Braunschweig

Figure 2: Poster – Second Release

3.3 Roll up – Second Release

DREAM poster has been updated underlining the achievement of the prefixed KPI1, the new logo of the partner UTBV and adding social media project logos (see Figure 3).

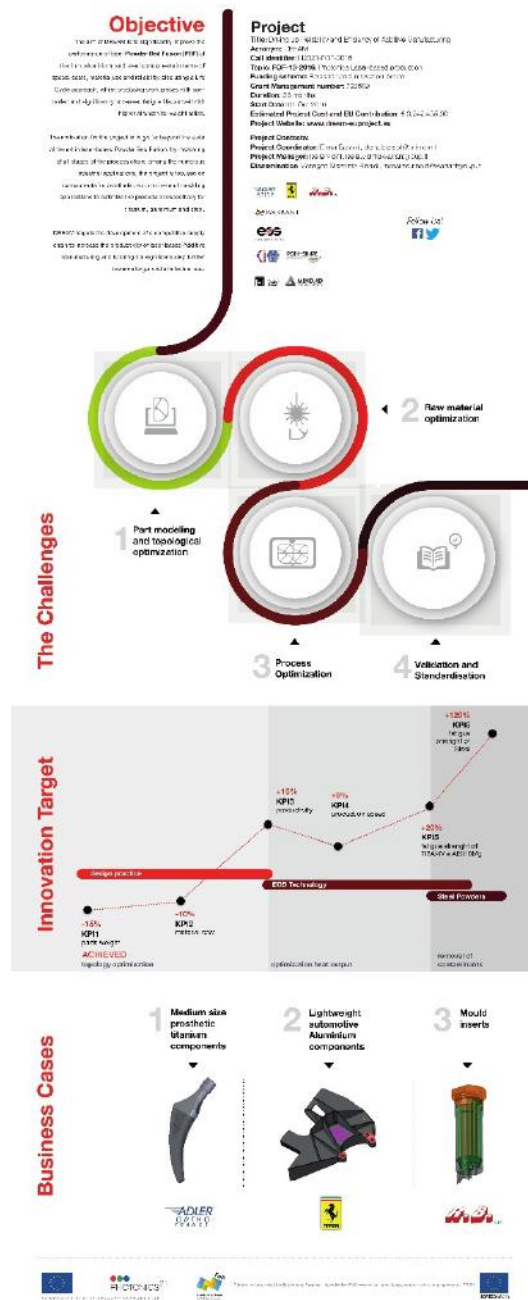
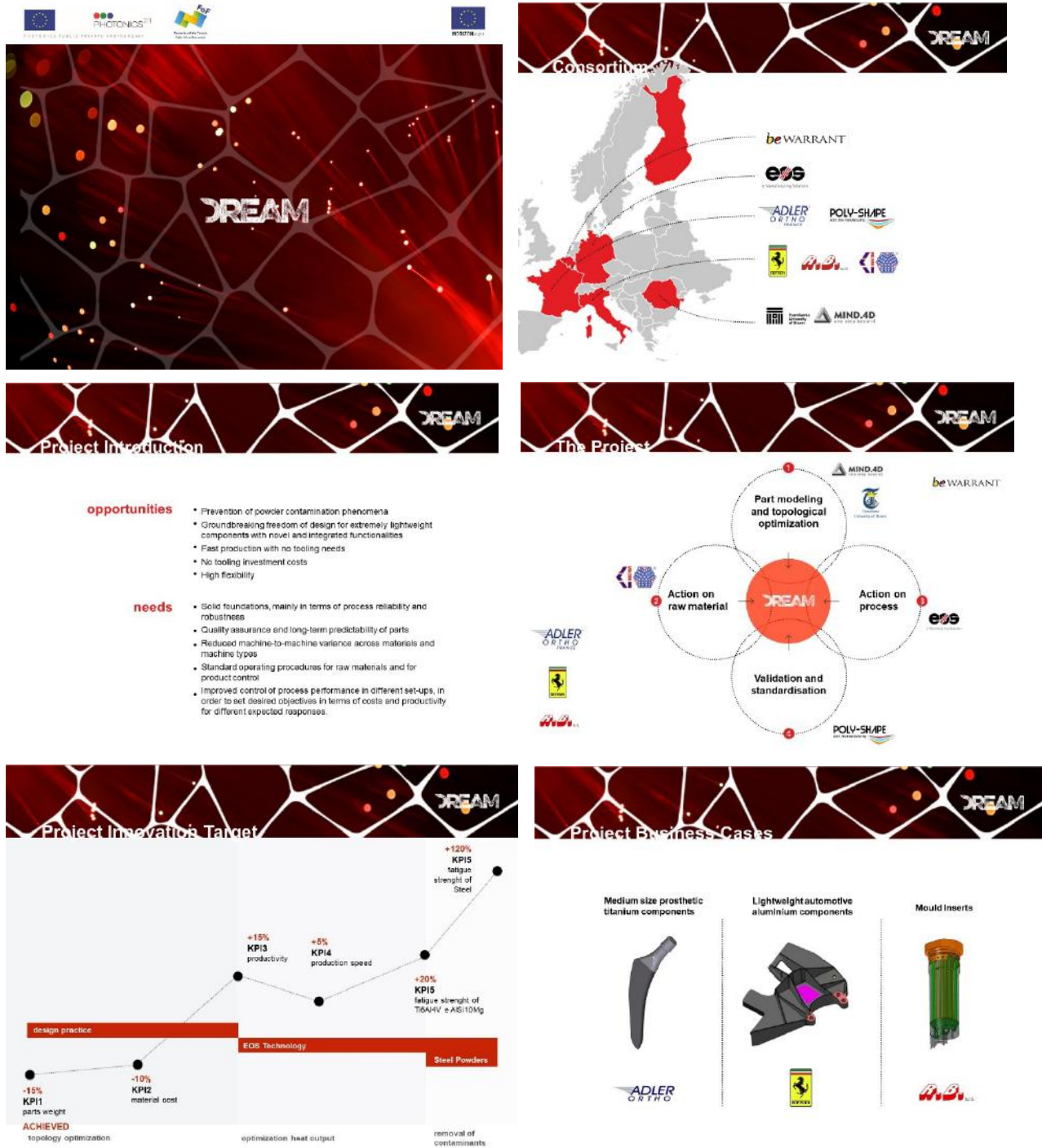


Figure 3: Roll up – Second Release

3.4 Project Presentation – Second Release

A project presentation with general project objectives has been created at the beginning of the project. This presentation has been updated underlining the achievement of the prefixed KPI1 and with some detailed reached results obtained at M12 by WP2 and WP5 (see Figure 4).



Project Results M12

CONTAMINANT IN RAW MATERIAL: DETECTION AND QUANTIFICATION
Successful combination of characterization techniques

PRELIMINARY ENVIRONMENTAL EVALUATION
20 femoral stems production with gas atomized powder

M12 Results: Contaminant in Raw Material

DETECTION AND QUANTIFICATION

FLOW RATE (a) – SIZE DISTRIBUTION (b)

Sample	Corey Funnel (ASTM B96_L6) [ppm/100g]	Hall Funnel (ASTM B213_L9) [ppm/50g]
T64	11,78(9)	30,7(1)
T64+0.2% TiC	7,86(7)	37(3)
T64+0.5% MS1	11,5(7)	30,2(2)
T64+0.5% ZrO2	12,3(2)	33,7(5)

XRD

Reference: T64
 • T64+TiC: significantly different
 • T64+ZrO₂: slightly different
 • T64+MS1: NOT different

M12 Results: Contaminant in Raw Material

DETECTION AND QUANTIFICATION

M12 Results: Preliminary environmental evaluation

SEM-EDS + STATISTICS ON DATA

Powder	Controlled Contamination	Possible Contamination Source	Calculated Contamination (statistics)
T64	None	None	0.00 w%
	0.5 w% ZrO ₂	Breakage of ceramic recoater blade or contamination from AM machine	0.34 w%
	0.5 w% M31	Breakage of the steel recoater blade or contamination from AM machine	0.40 w%
	0.2 w% TiC	Contamination through slaving equipment, tools, gloves or AM machine that are previously used with Ti64.	DETECTED through

Functional unit: 20 femoral stems production in 1 cycle with EOS M290 machines.

System boundaries: from cradle to grave.

Impact assessment method: modified IMPACT 2002+, quantifies damage in 5 categories: Human health, Climate change, Ecosystem quality, Resources, Human health, indoor.

Damage unit of measure: Point, average impact in a specific category caused by a person during one year in Europe.

20 femoral stems production with gas atomized powder

Total Damage: 5,72E-1 Pt.

M12 Results: Preliminary environmental evaluation

M12 Results: Preliminary environmental evaluation

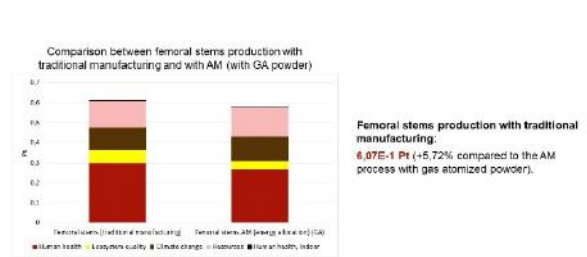
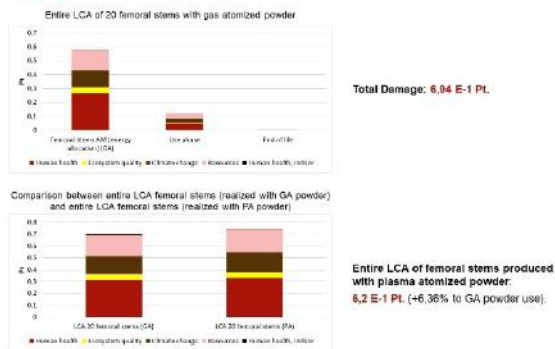


Figure 4: Project Presentation – Second Release