

Proposal Evaluation Form



ECSEL Joint Undertaking

Electronic Components and Systems for European Leadership

Evaluation Summary Report - Research and innovation actions/Innovation actions

Call: H2020-ECSEL-2017-2-RIA-two-stage
Action Type: ECSEL-RIA
Proposal Number: 783200-1
Proposal Acronym: LADEWIFIN
Duration (months): 36
Activity: ECSEL-2017-2
Proposal Title: LARge pixel DEpth, Wide dynamic range large Fill-IN ratio CMOS camera.

N.	Proposer Name	Country	Total Cost	%	Grant Requested	%
1	Siliax	BE	137,500.00€	2.96	48,124.00 €	3.23
2	Caeleste	BE	1,762,136.00€	37.98	528,640.80 €	35.44
3	Fraunhofer	DE	854,345.00€	18.41	299,020.75 €	20.05
4	FCT/UNL	PT	454,445.00€	9.79	159,055.75 €	10.66
5	Optec S.p.A.	IT	325,000.00€	7	97,500.00 €	6.54
6	STIFTELSEN SINTEF	NO	543,210.00€	11.71	190,123.50 €	12.75
7	Eureca Messtechnik GmbH	DE	54,000.00€	1.16	16,200.00 €	1.09
8	IDEAS	NO	509,258.75€	10.98	152,777.63 €	10.24
			4,639,894.75€		1,491,442.43 €	

Abstract:

LARge pixel DEpth, Wide dynamic range & large Fill-IN ratio CMOS camera.

The purpose of LADEWIFIN is to reach minimum 2 world records in digital photography with a single sensor.

[REDACTED] to target a picture sensor featuring 180dB dynamic range, 23bits/pixel/colour/pixel depth, 99.99% global fill-in ratio, 1024x1024 pixels resolution, up to 30Hz frame rate with maximal compatibility with end-users requirements.

Maximum downwards compatibility with current products and technologies will also be provided.

[REDACTED]

Not only the sensor but also the optics, the data processing, assembly tools and every part of the camera will be redesigned from the base to match the extreme performances of the sensor.

Without any compromises about performances, the demonstrators will be produced and tested for colour visible light and x-ray medical radiology applications.

All applications involving highly contrasted pictures or movies are targeted.

Evaluation Summary Report

Evaluation Result

Total Score: [REDACTED] (Threshold 10)

Form Information

SCORING

Scores must be in the range 0-5.

Interpretation of the score:

- **0** – The **proposal fails to address the criterion** or cannot be assessed due to missing or incomplete information.
- **1** – **Poor.** The criterion is inadequately addressed, or there are serious inherent weaknesses.
- **2** – **Fair.** The proposal broadly addresses the criterion, but there are significant weaknesses.
- **3** – **Good.** The proposal addresses the criterion well, but a number of shortcomings are present.
- **4** – **Very good.** The proposal addresses the criterion very well, but a small number of shortcomings are present.
- **5** – **Excellent.** The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

Criterion 1 - Excellence

Score: [redacted] (Threshold: 2.5/5.00 , Weight: 100.00%)

The following aspects will be taken into account, to the extent that the proposed work corresponds to the relevant work plan topic description in the ECSEL MASP

Clarity and pertinence of the objectives and the expected results of the proposed work

The proposed project addresses the development of a large pixel depth image sensor (including optics & data processing) with some unprecedented characteristics [redacted]. The proposal has clearly identified ten (technological) objectives and addresses ECSEL program emerging technology topics (mainly subtopic 5 and 6). Although it is not explicitly described how the MASP application challenges are addressed, the technology domain has relevance for several of the Smart-X application domains. The targeted pixel depth and dynamic range would clearly position the image sensor on top of all commercial competitors.

Credibility (soundness) of the concept (what), including trans-disciplinary considerations, where relevant

The core concept lies in [redacted]. The proposal sketches [redacted], but lacks details on the required data processing aspects to realize a "camera". Only rather generic information about the two demonstrators ("complete camera" and "x-ray radiographic sensor") are provided.

The project scope includes many of the relevant technical aspects, from sensor architecture to lenses and packaging, and is therefore trans-disciplinary from a camera technology perspective.

Credibility (soundness) of the proposed approach (how)

The approach is described in Section 1.4 and describes sufficiently the main technological aspects ([redacted]). However, risks and current status of the technological approach is not sufficiently elaborated.

Extent that the proposed work is ambitious, has clear innovation potential, and is beyond the state-of-the-art

The proposal identifies the key (commercial) competitors, but does not address the current (scientific) state of the art. The project has a high ambition with respect to technical targets, aiming beyond all existing products from certain perspectives, and the scope is broad given the size of the proposed project. However, there are no references to recent state-of-art (research implementations, prototypes), and the existing products listed are not all recent (including products on the market since 2011) even though this is an area of rapid progress. The resolution of 1M pixels for a 29x29mm sensor seems low for many applications, and there is no motivation behind that tradeoff.

The project has a clear innovation potential.

Criterion 2 - Impact

Score: (Threshold: 2.5/5.00 , Weight: 100.00%)

Note: The following aspects will be taken into account

The extent to which the outputs of the project should contribute at the European and/or international level to: The creation and exploitation of the market potential and the gain of a competitive technology advantage (Impact from the beneficiary perspective)

The proposal sketches potential markets and applications for the proposed image sensor, but it fails to provide any quantitative information about the markets, analysis of the market implications of this specific project, and the potential exploitation. Statements such as "Two world records in digital photography ... guarantee a large contribution for the future of European electronics" remain without any justification. It is claimed that the proposed prototype will be suitable for a broad range of applications, but the potential limitations and key competitive aspects of these are not specified.

There is no cost assessment of the proposed approach, which is insufficient as some of the targeted areas are under cost pressure. It is mentioned that the unit price will decrease with industrial production volume, but this is only a generic statement which is true for all technologies.

Furthermore, it is not entirely clear which of the partners that will take the technology to a broad market introduction.

Overall, the targets can lead to a clear market potential and competitive technology advantage for the involved partners.

Strengthening Europe (by future employment and industrial investment) and the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets; and, where relevant, by delivering such innovations to the markets or introducing new technologies into the industry(Impact from EU perspective)

The technological advances of the proposed sensor could have some impact at the European level, but the proposal provides very limited information on these aspects. The ambition to target a European IPR positioning in an area dominated by USA and Asia is mentioned, but key for quantifying this potential relate for example to cost-aspects of the proposed technology and the tradeoffs and barriers for specific market segments which are not sufficiently elaborated. Some of the application areas, such as the automotive industry, are classical strong European industries, which could have a potential upside of the related companies. However, there are no representatives of such industries in the proposed consortium, which might limit the potential European advantage to early exploitation of the results.

Criterion 3 - Quality and efficiency of the implementation

Score: (Threshold: 2.5/5.00 , Weight: 100.00%)

Note: The following aspects will be taken into account

Coherence and effectiveness of the work plan

The proposed project is organized as a single iteration work plan with 3 technological work packages. The Gantt-chart provides a good overview on relations between different parts of the work plan. The work plan follows a technology design perspective, but the relation to application areas and use case demonstration is insufficiently described. In the project plan, it is a very short time period for the consolidated results to be validated against the two different application areas cameras and X-ray. Furthermore, there is no feedback from these to the technology design.

Adequate participation of large companies, SMEs, universities and research institutes

The consortium consists of 4 SMEs and 4 research organizations, but no large company. Very little information about the consortium and its key competence is provided.

The partners do not cover the complete value chain for key application areas, making it insufficiently clear which commercial partner will drive the market exploitation.

It is indicated that potential clients will be specifically prospected in certain areas, but these are not involved in the project.

Having no such end-user or customer partner in the consortium, validating the outcome from their perspective, might limit both the requirement setting initially in the project and the applicability and impact of the results.

Scope of the proposal

Status: Yes

Comments (in case the proposal is out of scope)

Not provided

Use of human embryonic stem cells (hESC)

Does this proposal involve the use of hESC?

No

If yes, please state whether the use of hESC is, or is not, in your opinion, necessary to achieve the scientific objectives of the proposal and the reasons why. Alternatively, please also state if it cannot be assessed whether the use of hESC is necessary or not because of a

Not provided

Overall comments

Not provided