PolyNet

# PolyNet Response to the SRA OLEA 2009

During the NOE PolyNet last General Assembly in Eindhoven, 30th September and 1st October 2009, the group of Polynet partners hold a session to analyse the Strategic Research Agenda presented recently by the established "OLAE Industrial Governance Board". As suggested by this Board, PolyNet is glad to contribute to the final version of the SRA through the following remarks which summarize the PolyNet expert discussions:

The SRA document is well documented and complete. For each of the five Topics, used to describe the OLAE application fields, the Research Priorities are precisely exposed and reflects well the needs in terms of research challenges.

First major remark concerns the **Topics "Electronics" and "Integrated Smart Systems" (ISS),** where it should be pointed out that Large Area Mass Production Processes are the key to enable the production of large-area low-cost electronics systems. As a consequence, these production processes should not be restricted to one industrial answer, being the Roll-to-Roll printed solutions (as appears now from the document). Many institutes and industries have shown that Sheet-to-Sheet and Carrier based processes are also efficient production schemes for large area flexible high throughput processing which lead to more complex designs with high production yield, a key parameter for production cost. Furthermore, even tough printing techniques are very promising, one should not restrict the OLAE only to such processes. High-throughput photolithography, laser ablation, evaporation and other techniques show potential results for OLAE and are already used in other mature industries ( PCB, displays ). Furthermore these technologies have been applied to OLAE during the last years and within EC FP6 and FP7 projects proofing very well their suitability for organic electronics and ISS fabrication. Therefore we need to consider a technology platform where different fabrication modes are available and can be adapted to the need of the different R&D disciplines and the later applications. Important is to ensure the comparability of such different technology or fabrication modes by integrating them in a platform with combined bench-marking as this is proposed in several European Projects. The question whether roll-to-roll or fast sheets is furthermore not really applicable, because it is in the most situations and for the most applications always the question when to cut the basic substrate rolls into sheets for further processing. This point always depends on the needed performance, the target cost of the application and on the production volume planned.

PolyNet's view is therefore that a portfolio of production processes will be necessary to address the needs of the OLAE applications from low density-low complexity circuits for very low cost applications to the higher density-complexity circuits for high added value flexible applications (Analog circuit for sensors, display drivers, …)

The second point to notice is that the **"Electronics" topic** is very generic. It will nurture all the other OLAE segments and has substantial room for progress towards future emerging applications (3D interconnected circuits, distributed designs comprising redundancy, …). These opportunities are underestimated in the actual SRA document both in terms of short term product needs and long term innovation opportunity.


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On the other hand the **"Integrated Smart Systems" topic** is also rather generic. It covers even a larger field then OLAE, including basic components (energy functions, all range of sensors, small displays, lighting, actuating functions…) but as well all the necessary integration steps on flexible foils (interconnection, bonding, passivation, packaging specific system design …). In this perspective, the "ISS" topic is also underestimated in the actual SRA document, especially because this topic will nurture the first industrials applications and will have a major impact on the employment and Return on Invest for the European Community.

The importance of these two topics is reflected very well in the overview on market expectations given in figure 6 (SRA OLAE p. 52).

The third remark concerns the **"Display" topic**. There is no doubt that there is a large world market for all kinds of organic display. Europe has a strong position in the development of (amongst others) OLED materials, OLED process optimization and production equipment for organic devices. Although Large area display manufacture is dominated by the Far East, and Small companies formed in Europe through venture capital have, in the majority of cases, been acquired by large companies outside Europe particularly in the Far East. These domains represent for Europe a substantial part of the value chain and represent also a substantial part of the IP.

In order to keep these parts of the organic display value chain in Europe, Europe needs continued support towards new display: materials, technologies and processes, comprising the full display process for innovative displays concepts. This is the only route enabling the continued IP generation in the display domain and only in this way, Europe can keep the parts of the value chain in which it has a strong position in Europe. Moreover, this will foster new innovative display concepts and new dedicated display products in, for example, hand-held, signage, packaging and clothing-based applications.

**Distribution of proposed Budgets for each topic area in FP7 and FP8**

To reflect these remarks and the Market expectations, we suggest the following EC budget distribution:

**The budget for Integrated Smart Systems is proposed to be equal to the budget for Lighting.**
**The budget for Electronics is proposed to be equal to the budget for OPV.**


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