

newsletter

Shaping a European Advanced Displays Vision – The adria Roadmap

Six meetings, over 300 participants, a lot of voluntary work from experts – the adria roadmap on advanced displays taking also organic electronics into account is about to be published. In this edition of our newsletter we summarise on the benefits of our approach, the successes we have reached, the goals but also the difficulties we had, and the grand challenges ahead.



Which way to go? Roadmapping helps!

A wise person once said that “predicting the future is always like driving a car by looking into the rear view mirror only”. Discussing with a lot of people what you see in it and watching all the other cars alongside helps – that’s what roadmapping is usually about. And that is what we did for the **adria** roadmap: We have involved a great deal of the displays and organic electronics community and tried to check what others do or have done.

Why European roadmapping makes sense

The global photonics market is expected to triple in the next 10 years with displays becoming ubiquitous and driving this growth. Europe remains as the major innovator in displays and organic electronics and can position

itself to benefit from its Intellectual Property. However, the Europeans must continue to invest in their current position as a global player in advanced display technologies in order to stay competitive. Advanced displays is a global field. Technology roadmapping must consider Asia and the US. What is a “European roadmap” then? “Technology roadmapping emphasizing European strengths, building on European competence” is the answer we give.

The goal: common visions

To find common rules for future investment and strategies, industry academia, the European Commission, and national funding bodies have to focus on a limited set of research routes rather than redundantly funding the same research and under funding or missing other important technologies.

Hence **adria** has led a concerted campaign to champion advanced displays in Europe to which industry, academia and governments can align their future investment plans. We started by compiling a vision paper in early 2005 and moved forward with our roadmap, structured by application areas in which Europe has a leading role.

EC has reacted with the first call in their framework 7 work programme

The IST event in Finland revealed that a total of 63 M€ funding are available. Europe’s advanced displays and organic electronics community is encouraged to participate now in order to develop their technology and to make their product offerings fit for future markets.

Contents

- **Editorial: European vision adria roadmap**
- **Our roadmapping approach – tools and results**
- **A closer look at the details**
- **63 M€: first call in FP7 is out!**
- **Events calendar**

advanced displays
research integration action.

adria’s mission

is to strengthen the advanced display industries in Europe by creating a European platform for advanced displays research and technology



Information Society
Technologies

adria has been funded as a coordination action under the IST priority within the sixth framework programme of the European Commission

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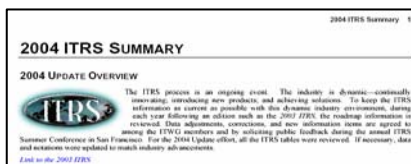
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The adria Roadmapping Approach – Tools and Results

Have you heard about the International Technology Roadmap for Semiconductors (ITRS) or “Moore’s Law”? Sure you have. This is what most people have in mind when talking about roadmapping. However, roadmapping is described in a number of ways, leading to everything from product roadmaps to business roadmaps.



Most well known roadmap: the ITRS

adria has from the very start advocated a structured approach based on proven techniques: We adopted the technology roadmapping procedure developed by Sandia National Laboratories in the US (<http://www.sandia.gov>) which says “Technology roadmapping starts with defining needs”. Contrary to semiconductors, advanced displays have very different sets of needs depending on the products they are used in.

Five application areas

Therefore, adria focussed on roadmapping five application areas namely: Automotive & Avionics; Mobile Communications, Industrial & Medical: Public Display, Advertising and Retail; and Consumer & Household. Our sources of information were twofold: discussions in meetings and available information or roadmaps published elsewhere. This process was complemented by interviews with experts. Another tool we have introduced is a web-based online roadmapping tool, which is ready to go but which has not been used extensively yet, because of the numerous meetings we had so far.

We embarked on the process laid down but soon found that the five application areas each discussed separately in the meetings were not producing uniform results. We found it vital to develop a

vision for the years 2015 and 2020 by using a scenario technique for each application area we considered in order to focus participants’ minds and avoid diversions.

From visionary products to required technology breakthroughs

Developing a vision of the future for each advanced display application area is not an easy task. To reach a more holistic picture we found it essential to adopt as a framework, major megatrends with respect to social (e.g. the aging society), environmental (e.g. sustainable growth), economic (e.g. 3rd world development) and other movements. Once the vision was agreed the products necessary to meet the needs derived from the visions were identified. Then the difficult task of assessing alternative technologies which might be evolved to meet the product requirements was undertaken. Finally, technology areas that would need a major breakthrough (“red brick walls” to be overcome) to meet the product specifications of the future were emphasized.

Condensing the red brick walls in each application area summarises the Grand Challenges in the advanced displays field until 2020. Thereafter

Precision image-guided therapy	2015	2020
Resolution/file size #	40 MP/ 100 MB	120 MP/ 400 MB
Frames/sec	15	60
Level of 3D	Virtual	Full ¹
Size (diagonal inch) (or head mounted micro)	24	24
Time of use without eye fatigue	4 hrs	8 hrs ²

Training	2015	2020
Resolution/file size #	10/40	20/80
Frames/sec	15	60
Level of 3D	Virtual	Full ¹

Brick walls example in medical displays

research agendas for the present can be suggested. And that’s what we have done for the European Commission’s Framework 7 programme discussion.

Please visit our forum at www.adria-network.org/forum to find comprehensive material about roadmapping tools and our results.

6 Meetings packed with information

adria held 6 meetings open to the European advanced display and organic electronics community, between February 2005 and September 2006, approximately every 3 months. The venues were moved around Europe starting in Amsterdam and moving to Manchester, Paris, Munich, Frankfurt. The papers were open for final validation in Tampere. Over 300 individuals attended the workshops indicating that co-ordinated Pan-European events held quarterly



would be well received. Although these meetings had roadmapping as their primary subject the participants praised them also as an excellent opportunity to network.

The basic format of the meetings was a plenary session followed by breakout working groups. Each plenary featured talks from a number of industry experts. Participants have access to all of them. We have collected a subset available for the public at www.adria-network.org/presents.htm. The talks already represent an excellent series covering a lot of aspects of our field.

Partnerships and other roadmaps

First of all, we have received a great deal of help from partnerships with projects in the organic cluster (e.g. IP PolyApply, NoE 3D TV and others), and associations like the UK Display and Lighting Network (UKDN), OE-A, or the SID. It was also indispensable that companies and institutions have sent their experts and were ready to support us with their knowledge and time. We sincerely thank the community for this commitment.

There were also a number of sources of general advanced display and related roadmaps we employed to feed into our paper. Of course, we watched up-to-dateness carefully. Here are examples:

The Optoelectronics Industry Technology Development Association of Japan (OITDA) published a graphical summary of their displays roadmap in 1997. Their time horizon was 2015 and it is interesting to note their predictions against actual progress over the last 8 years. The United States Display Consortium (USDC) have also published comprehensive papers. The 2002 “FPD Production Cost Savings Roadmap” of SEMI Japan with predictions until 2010 gave us a good basis for future display parameters and manufacturability. Another very useful paper was the roadmap recently worked on by the Organic Electronics Association (OE-A). Other roadmaps we have utilised are focused

on particular applications or markets.

In the commercial field companies such as Philips, Siemens, Nokia, Bayer, ContiTEVES and many more publish roadmaps. A number of their visions have been presented at **adria** roadmapping workshops. Detailed information is generally more difficult to come by for obvious “Company Confidential” reasons. Hence while benefiting from the company visions generously presented at **adria** workshops, it has been necessary to delve deeper into products and technology performance when writing the papers.

Thus we believe that the **adria** road

A Closer Look at the Roadmap Details

The contents of the adria roadmap

The introduction gives an overview on advanced displays products and markets today, also based on the findings of the **adria** competence mapping reports (published seperately). The **adria** roadmapping approach and its implementation are described. The roadmap then seperates into eight scenario papers following the application areas introduced. They form the core of the roadmap. Each scenario paper is a roadmap in itself. All scenario papers have the same structure as outlined above and reveal red brick walls as a conclusion. We then summarise the brick walls, and forecast on impact and implementation of our findings.

The “summary graphs”

Of course each application area can have more than one product of interest identified by the workshop participants. The most challenging area in this respect has been consumer and household where we had to look for common features of 9 product areas from intelligent packaging to games. The amount of data gathered from the workshops and through desk research by the **adria** partners is vast. The data included current performance, required environmental performance, estimated perfor-

Conference announcement

Big Displays 2007  SOCIETY FOR INFORMATION DISPLAY

The commercial future of large electronic displays and digital signage networks

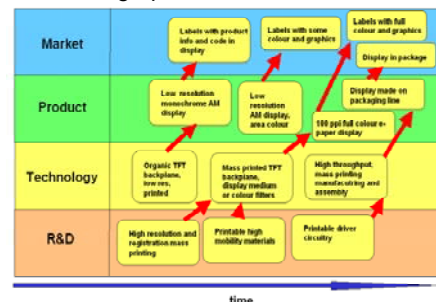
22.-23. March 2007, London, UK

Huge growth is forecast for the digital signage and out-of-home electronic media markets. This event brings the industry together to address the issues, share ideas and build better relationships. Early Booking Discount - book before January 23 and claim a £100 discount.

<http://www.bigdisplayevent.com>

maps present a unique basis for defining the direction of European advanced display development in applications that Europe can enter and secure major market shares.

mance of key parameters of the products of the future and alternative technologies which might deliver the products. Hence it has been decided to summarise the findings graphically also to emphasise interdependences. The example below is for the retail application and shows how mass printing R&D finally enables labels with full color and graphics:



The same has been done for all other application areas and product categories. The visions for 2015 and 2020 are shown as logical steps from the past and current displays. In deriving this vision market trends were considered.

Avionic displays as an example

As an example the airline cabin was not considered in isolation but against the background of the passenger’s lifestyle when not traveling. Hence the trends in home entertainment and portable equipment capabilities were considered.

Economic effects were also taken into account: the trend in taxis to provide advertising to their customers was seen as an offering which "low cost" airlines might consider and hence increase the market size of commercial cabin displays.

The products to deliver the vision naturally have to take into account the space and information distribution aspects of an airline cabin, hence both Head Mounted Displays and foldable, flexible displays are considered to provide the ultimate "reality" display. The alternative technologies for these products are assumed and the "red brick walls" identified which might stop the products' introduction in the required timescale.

Our simplifying graphic representation helps those wishing to enter the supply chain from component supplier to Inflight Entertainment System integrator and in doing so produce an appetite for R&D in this application area. **Find out more in the original paper!**

IST FP7 Launch in Helsinki: 63 M€ Ready First Call Published December 22, 2006

4.500 delegates from all over Europe joined the official launch of the IST in the EU Commissions 7th Framework Programme in Helsinki on November 21-23, 2006. In session 7B, 63 M€ funding were announced for the first call for organic electronics and display systems (Objective IST 2007.3.2)

Marc Boukerche, principal scientific officer in the ECs IST-G2 unit, chaired the session and reported on highlights of FP7 for our field. **Meanwhile, on December 22, 2006, the first call for IST has been published. The deadline is May 8, 2007.** A follow-up event of IST2006 will be held in Cologne, Germany, on February 1, 2007: a good opportunity for information and the formation of project consortia. More can be found at <http://cordis.europa.eu/fp7/>

The **Photonics** area (including OLED) will be part of call 2 (May/June 2007).

We will link extracts of the work programme with instruments and expected results for this call at adria-network.org. **The adria competence mapping has been set up to facilitate your partner search. We encourage you to try!**

Conference announcement

ELECTRONIC DISPLAYS 2007
The application event in Europe
13.-14.02.2007, Nuremberg, Germany

Held for the 21st time, this event is the established networking platform for engineers, developers, researchers, users, distributors and manufacturers and covers all display technologies. In parallel the **EMBEDDED WORLD trade show** enables direct contacts to display-related companies from soft- and hardware to distribution and system integration.

<http://www.electronic-displav.de>

Events Calendar

January 25 - 26, 2007	ITC07/ SID-MEC Spring Meeting 2007 Rome, Italy
February, 1, 2007	IST event 2007 (German EU presidency) Cologne, Germany
February, 13 - 14, 2007	Electronic Displays and Embedded World Nuremberg, Germany (see box above)
March 22 - 23, 2007	Big Displays 2007 London, UK (see box on p3)
April 11 - 13, 2007	Finetech 2007 trade fair Tokio, Japan
May 20 - 25, 2007	SID 2007 Symposium, Seminars and Exhibition Long Beach, California, USA

For updated information see www.adria-network.org

A consortium of six partners – industry and academia networks themselves – provide the adria platform services:

