



## NEWSLETTER – N. 07 – March 2015

### OPEN PLATFORM FOR EVOLUTIONARY CERTIFICATION OF SAFETY-CRITICAL SYSTEMS

#### FINAL ISSUE

### The Project in a nutshell

**OPENCROSS** is a European large scale FP7 project ([www.opencross-project.eu](http://www.opencross-project.eu)). Its objective was to produce the first Europe-wide, open safety certification platform. It is hoped that this will reduce time & cost for (re)certification of safety-critical embedded systems, specifically in the Railway, Avionic and Automotive domains. Want to know more? Choose and download any public deliverable: <http://www.opencross-project.eu/node/7>

### EDITORIAL

The project has been running for 3.5 years now, and has just reached its completion in March 2015. This is the final Newsletter reporting major project results.

### OPENCROSS @ COMPLETION

AVIONICS

RAILWAY

AUTOMOTIVE

Industrial Application Contexts



## Beyond OPENCOSS

The project terminates on 31 March 2015, after 3 years and a half of intensive and highly cooperative R&D work.

We thank all project participants, all the 20+ members of the External Advisory Board and the project reviewers from the Commission for their constant support, direction and contributions.

But the OPENCOSS initiative is not over. On the contrary, it is now entering its full exploitation phase.

- An attractive video presenting the project results have been produced and will be circulated across industry.
- The next SAFECOMP 2015 conference will again include the satellite event SASSUR 2015, invented and organized by OPENCOSS.
- The OPENCOSS Platform and its associated tools (open source) are now part of the Polarsys platform (see below), which will secure long term longevity for the project's results.

What are the main lessons learned ?

Safety is a complex discipline, made even more complex by the Babel tower of different interpretations and variations in practice across the application domains. But we have proved that cross-domain concepts can be analyzed and extracted, and that it is possible to identify common concepts and languages for a culture of safety which encompasses all of the application domains.

We have also proved that safety demonstration (certification) can be performed in a more systematic and disciplined way. Properly designed tools may speed up the certification process and make it more consistent and repeatable. A new breed of tools have been invented with strange names, such as "Evidence Management" tool or "Compliance Management" tool, etc. These tools are aimed at safety assessors and safety professionals, and are designed to be integral part of a larger system development environment and platform such as Polarsys.

We can be proud of the results achieved, but we are fully aware that this is just the beginning. We want to create a



	<p>critical mass in Universities and Industry, addressing safety from a cross-domain perspective and addressing certification as a repeatable, systematic activity of safety demonstration which uses state-of-the-art methods, notations and tools, just as any other engineering activity does.</p> <p>And after that? A new challenge is to extend the same approach from safety to encompass security concerns within embedded safety-critical devices, including modern connected cars, trains, etc..</p> <p>Safety and security are companion and synergetic disciplines.</p>
<p><b>OPENCOSS joins Polarsys</b></p>	<div> </div> <p>During this last period, the most relevant, long term and strategic consortium exploitation action has been to formally join the Topcased/Polarsys initiative (that is, in turn, part, of the Eclipse initiative).</p> <p>Polarsys, originally funded by the French government mainly in support of its aerospace industry, is now a full European (and international) open-source initiative driven (and funded) by large customers such as Airbus, Thales, Ericsson, Continental, etc.</p> <p>Polarsys consists of an open source platform and a set of tools supporting system/software engineering for critical projects covering aerospace (Airbus, Thales, etc.), but also telecoms (Ericsson), automotive (Continental) and likely soon to include railway (see the confluence of Polarsys with the OpenETCS initiative, led by DB Deutsche Baan).</p> <p>After a joint event and stand organized in Toulouse at ERTS 2014, Polarsys was glad to accept the OPENCOSS tools integration as they consist of a unique new breed of tools (and methods) in support of safety certification, thus adding value to the entire platform.</p>



This alliance with Polarsys is a strategic exploitation action, at the project level, that provides a foundation and context for the individual partners exploitation activities. It will also secure a long-term impact and continuing visibility for OPENCOSS and may be the basis for further R&D activities.

For more details on Polarsys see its web site:

(<https://www.polarsys.org/>)



**THE CONSORTIUM**

**A STRONG AND REPRESENTATIVE EUROPEAN TEAM**

Main Figures	
Duration:	42 months
Budget:	~ME 11,79
EC contrib:	~ME 8,44
Total Effort:	968 PMs
Consortium:	17 partners - 9 countries →3 Manufacturers →1 Certif. Body →5 Solution Providers →3 Consultancy →2 Universities →2 Research

  

AdaCore	FR
ALSTOM Transport	FR
Altreonic	BE
ATEGO France	FR
ATEGO UK	UK
Centro Ricerche FIAT	IT
HPDahle	NO
IKV++	DE
INSPEARIT	FR/NL
INTECS	IT
Parasoft	PL
RINA	IT
SIMULA	NO
<b>TECNALIA R&amp;I (Coordinating Partner)</b>	<b>ES</b>
THALES Avionics	FR
Technical University of Eindhoven	NL
University of York	UK



## THE EXTERNAL ADVISORY BOARD (EAB)

The main task of the EAB External Advisory Board has been to provide strategic guidance and support to the OPENCOSS Consortium in order to ensure that eventually the results will meet the project objectives.

### External Advisory Board members:

- Airbus, France
- AIST, Japan
- BAE Systems, UK
- CAF, Spain
- Deutsche Bahn (DB-Netz), Germany
- EADS/Eurocopter, France
- EADS/IW, UK & Germany
- Eclipse, Europe
- ERA, Europe
- Flanders Drive, Belgium
- NASA, USA
- Renault, France
- RFI – Italian Railway Network, Italy
- Ricardo, UK
- SafeTrans, Germany
- Thales Railway, Austria
- TÜV Rheinland, Germany
- Verocel, USA
- Volvo, Sweden

More about EAB and its role: <http://www.opencoss-project.eu/node/27>.



**FULL  
PAPERS  
LIST**

**Challenges for an Open and Evolutionary Approach to Safety Assurance and Certification of Safety-Critical Systems**, Huáscar Espinoza, Alejandra Ruiz (TEC), Mehrdad Sabetzadeh (SIM), Paolo Panaroni (INT), Nov 29 - Dec 2, 2011, Hiroshima, **WOSOCER 2011** (International Workshop on Software Certification, satellite event of ISSRE 2011, the IEEE International Symposium of Software Reliability Engineering)

[PDF](#)

**A harmonized multimodel framework for safety environments**, Xabier Larrucea (TEC), Paolo Panaroni (INT), Jun 25-27 2012, Vienna, EuroSPI<sup>2</sup> Conference 2012

[SpringerLink](#)

**Towards a Case-Based Reasoning Approach for Safety Assurance Reuse**, Alejandra Ruiz, Ibrahim Habli, Huáscar Espinoza, Sep 25, 2012, Magdeburg, Workshop on Next Generation of System Assurance Approaches for Safety-Critical Systems (SASSUR), 31st International Conference on Computer Safety, Reliability and Security (SAFECOMP 2012)

[SpringerLink](#)

**Towards a Model-Based Evolutionary Chain of Evidence for Compliance with Safety Standards**, Jose Luis de la Vara, Sunil Nair, Eric Verhulst, Janusz Studzizba, Piotr Pepek, Jerome Lambourg, Mehrdad Sabetzadeh, Sep 25, 2012, Magdeburg, Workshop on Next Generation of System Assurance Approaches for Safety-Critical Systems (SASSUR), 31st International Conference on Computer Safety, Reliability and Security (SAFECOMP 2012)

[SpringerLink](#)

**An Unified Meta-Model for Trustworthy Systems Engineering**, Eric Verhulst, Bernhard H. C. Sputh, Sep 25, 2012, Magdeburg, Workshop on Next Generation of System Assurance Approaches for Safety-Critical Systems (SASSUR), 31st International Conference on Computer Safety, Reliability and Security (SAFECOMP 2012)

[SpringerLink](#)

**A Preliminary Study towards a Quantitative Approach for Compositional Safety Assurance**, A. Ruiz, H. Espinoza, F. Tagliabo, Sandra Torchiaro, Alberto Melzi, 15-17 October 2013, Cardiff, 21st Safety-Critical Systems Symposium

[IET TV link; ACM Library link](#)



**Supporting the Verification of Compliance to Safety Standards via Model-Driven Engineering: Approach, Tool-Support and Empirical Validation**, Rajwinder Kaur Panesar-Walawege, Mehrdad Sabetzadeh, Lionel Briand, May, 2013, Journal of Information and Software Technology, Volume 55, Issue 05

[DOI](#)

**Nuanced term-matching to assist in compositional safety assurance**, Katrina Attwood, Philippa Conmy, May 19, 2013, San Francisco 1st International Workshop on Assurance Cases for Software-intensive Systems (ASSURE 2013)

[PDF \(preprint\)](#)

**Extracting Models from ISO 26262 for Reusable Safety Assurance** Yaping Luo I, Mark van den Brand, Luc Engelen, John Favaro, Martijn Klabbers, and Giovanni Sartori, 12-13 June 2013, Pisa 13th International Conference on Software Reuse

[SpringerLink](#)

**Making Software Safety Assessable and Transparent** Risto Nevalainen, Alejandra Ruiz, and Timo Varkoi, 25-27 June 2013 Dundalk, 20th EuroSPI<sup>2</sup> Conference 2013

[SpringerLink](#)

**A Review of Traceability Research at the Requirements Engineering Conference**, Sunil Nair, Jose Luis de la Vara, Sagar Sen 15-19 July 2013, Rio de Janeiro 21st IEEE International Requirements Engineering Conference

[IEEE Explore](#)

**On the Use of Goal Models and Business Process Models for Elicitation of System Requirements**, Jose Luis de la Vara, Juan Sánchez, Oscar Pastor, 17-18 June 2013, Valencia (Spain) 14th Working Conference on Business Process Modeling, Development, and Support (BPMDS'13)

[SpringerLink](#)

**Classification, Structuring, and Assessment of Evidence for Safety, a Systematic Literature Review** Sunil Nair, Jose Luis de la Vara, Mehrdad Sabetzadeh, Lionel Briand 18-22 March 2013, Luxemburg 6th IEEE International Conference on Software Testing, Verification and Validation (ICST 2013)

[DOI](#); [IEEE Explore](#)

**SafetyMet: A Metamodel for Safety Standards**





J.L. de la Vara and R.K. Panesar-Walawege

29 Sep - 4 Oct, 2013, Miami

ACM/IEEE 16th International Conference on Model Driven Engineering Languages and Systems (MODELS 2013)

[SpringerLink](#)

### **Specifying a Framework for Evaluating Requirements Engineering Technology: Challenges and Lessons Learned**

J.L. de la Vara, D. Falessi, and E. Verhulst, July 15, 2013, Rio de Janeiro

3rd IEEE International Workshop on Empirical Requirements Engineering (Empire 2013)

[IEEE Explore](#)

### **Dealing with Software Model Quality in Practice: Experience in a Research Project**, J.L. de la Vara and H. Espinoza

July 29-30 2013, Nanjing

1st International Workshop on Quality and Measurement of Software Model-Driven Developments (QUAMES 2013)

[IEEE Explore](#)

### **Conceptualisation of Industrial Safety Assurance Activities: Towards Computer-Aided Certification**

Katrina Attwood, Fabien Belmonte, Laurent de la Beaujardière and Andrea Paris, March 2013, International Workshop on Model-Based Safety Assurance 2013

### **The role of the safety-case lexicon in cross-domain translation: the OPENCROSS project**, Katrina Attwood, Dec 5, 2013, London

Independent Safety Assurance Group/Safety-Critical Systems Club Workshop 'Transferable Safety - fact or fiction?'

[PDF](#)

### **Cross-domain systems and safety engineering: is it feasible?**

Eric Verhulst, Jan 17, 2013, Brussels

Flanders Drive seminar: Functional Safety in the Vehicle Industry

[Altreonic link](#)

### **A Preliminary Study towards a Quantitative Approach for Compositional Safety Assurance**

A. Ruiz, H. Espinoza, F. Tagliabo, Sandra Torchiaro, Alberto Melzi

Feb 5-7, 2013, Bristol, 21st Safety-critical Systems Symposium

[IET TV link](#)

### **ARRL: A Criterion for Composable Safety and Systems**

**Engineering**, Eric Verhulst, Bernhard Spath (Altreonic), Jose Luis de la Vara (Simula), Vincenzo de Florio (University of Antwerp)

Sep 24-27, 2013, Toulouse



2013 Workshop on Next Generation of System Assurance Approaches for Safety-Critical Systems (SASSUR), part of the 32nd International Conference on Computer Safety, Reliability and Security (Safecom)

[PDF](#)

### **From Safety Integrity Level to Assured Reliability and Resilience Level for Composable Safety Critical Systems**

Eric Verhulst, Bernhard Sputh, Jose Luis de la Vara, Vincenzo de Florio  
November 2013, Paris, ICSSEA

[PDF](#)

### **ARRL: A criterion for compositional safety and systems engineering: A normative approach to specifying components**

Eric Verhulst, Bernhard Sputh, November 2013, Pasadena

[ISSRE 2013](#)

[IEEE Explore](#)

### **Towards a multi-view point safety contract**

Alejandra Ruiz, Tim Kelly, Huascar Espinoza, 24-27 September 2013, Toulouse

Proceedings of Workshop SASSUR (Next Generation of System Assurance Approaches for Safety-Critical Systems) of the 32nd International Conference on Computer Safety, Reliability and Security

[PDF](#)

### **Adequacy of contract grammars for component certification**

Alejandra Ruiz, Huascar Espinoza, Tim Kelly

24-27 September 2013, Toulouse

32nd International Conference on Computer Safety, Reliability and Security

[PDF](#)

### **Safety Evidence Traceability: Problem Analysis and Model**

Sunil Nair, Jose Luis de la Vara, Alberto Melzi, Giorgio Tagliaferri, Laurent de-la-Beaujardiere and Fabien Belmonte

April 7-10, 2014, Essen

20th International Working Conference on Requirements Engineering: Foundation for Software Quality ([REFSQ 2014](#))

[PDF](#)

### **Extracting Models from ISO 26262 for Reusable Safety Assurance**

Yaping Luo, Mark van den Brand, Luc Engelen, Martijn Klabbbers, Giovanni Sartori, 2013

[Springer](#)

**Safe and Secure Software Reuse**, Lecture Notes in Computer Science  
Volume 7925, pp. 192-207

[SpringerLink](#)



## **From Conceptual Models to Safety Assurance**

Yaping Luo, Mark van den Brand, Luc Engelen, Martijn Klabbers  
2013

[SpringerLink](#)

**Conceptual Modeling**, Eric Yu, Gillian Dobbie, Matthias Jarke, Sandeep Purao (eds.), pp. 195-208

[SpringerLink](#)

## **A Modeling Approach to Support Safety Assurance in the Automotive Domain**

Yaping Luo, Mark van den Brand, Luc Engelen, Martijn Klabbers  
Aug 6, 2014, Springer  
Progress in Systems Engineering, pp. 339-345

[SpringerLink](#)

## **Metamodel Comparison and Model Comparison for Safety Assurance**

Yaping Luo, Luc Engelen, Mark van den Brand, 2014, Springer  
Computer Safety, Reliability, and Security, pp. 419-430

[SpringerLink](#)

## **The use of Controlled Vocabulary and Structured Expressions in the Assurance of CPS**

Katrina Attwood, Philippa Conmy, Tim Kelly  
Jun 23, 2014, Paris

Challenges and New Approaches for Dependable and Cyber-Physical  
Systems Engineering (De-CPS 2014), part of Ada Europe 2014

Ada User Journal,  
Vol. 35, N. 3 Sep 2014

## **An Extended Systematic Literature Review on Provision of Evidence for Safety Certification**

Sunil Nair, Jose Luis de la Vara, Mehrdad Sabetzadeh, Lionel C. Briand  
July, 2014, Elsevier (North-Holland)

[Information and Software Technology](#), Volume 56, Issue 7

[ScienceDirect](#)

## **Current and necessary insights into SACM: An analysis based on past publications**

Jose Luis de la Vara, Aug 26, 2014, Karlskrona

[IEEE 7th International Workshop on Requirements Engineering and Law \(RELAW 2014\)](#)

[DOI](#)

## **Quantifying Uncertainty in Safety Cases Using Evidential Reasoning**

Sunil Nair, Neil Walkinshaw, Tim Kelly



Sep 10-12, 2014, Firenze  
Proceedings of SAFECOMP Workshops 2014, pp. 413-418

DOI

**Supporting the verification of compliance to safety standards via model-driven engineering: Approach, tool-support and empirical validation**

Rajwinder Kaur Panesar-Walawege, Mehrdad Sabetzadeh, Lionel Briand  
2015, Elsevier (North-Holland)

[Information and Software Technology](#), accepted December, 2014

DOI

**Systematic Application of ISO 26262 on a SEooC**

Alejandra Ruiz, Alberto Melzi, Tim Kelly, Mar 9-13, 2015, Grenoble

[Design, Automation and Test in Europe 2015 \(DATE<sup>15</sup>\)](#)

PDF

**Evidence Management for Compliance of Critical Systems with Safety Standards: A Survey on the State of Practice**

Nair, S., de la Vara, J.L., Sabetzadeh, M., Falessi, D, Apr 2015, Elsevier  
Information and Software Technology 60: 1-15 (2015)

DOI

**Controlled Expression for Assurance Case Development**

Katrina Attwood and Tim Kelly, in Mike Parsons and Tom Anderson (eds),  
Engineering Systems for Safety: Proceedings of the 23rd Safety-Critical  
Systems Symposium, Bristol UK, 3rd-5th February 2015 (Safety Critical  
Systems Club, 2015), pages 143 - 166.

**Accepted for publishing:**

- H.Lin, J.Wu, Y.Luo, M.G.J.v.d.Brand, C.Yuan, L.Engelen: **A Systematic Approach for Safety Evidence Collection in the Safety-Critical Domain** This paper is collaborated with BeiHang University.  
Accepted by IEEE SysCon 2015. The topic focuses on safety evidence collection in the Avionic domain.
- A.K.Saberi, Y.Luo, F.P.Cichosz, M.G.J.v.d.Brand, S.Jansen: **An Approach for Functional Safety Improvement of an Existing Automotive System** This paper is collaborated with TNO (Netherlands Organisation for Applied Scientific Research).  
Accepted by IEEE SysCon 2015. The topic focuses on functional safety improvement in the automotive domain.
- H. Altinger, S. Siegl, Y. Dajsuren, F. Wotawa: **A Novel Industry**



**Grade Dataset for Fault Prediction based on Model-Driven Developed Automotive Embedded Software.** The 12th Working Conference on Mining Software Repositories (MSR 2015), Florence, Italy, May 16-17, 2015. This paper is in collaboration with Audi (Germany). This paper shares automotive dataset which delivers novel static model safety metrics to provide insights on fault prediction.

Just submitted:

- Y. Dajsuren, E. Bouwers, A. Serebrenik, H. Altinger, M.G.J. van den Brand: **Defining a Subsystem Balance Metric for the Simulink Models.** (in preparation) This paper is in collaboration with SIG (Netherlands) and Audi (Germany). It tailors and evaluates a subsystem balance metric for the automotive domain.

Submitted to 10th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering <http://esec-fse15.dei.polimi.it/industry.html>.

- Y. Dajsuren, M. Olszewska (Plaska), H. Altinger, A. Serebrenik, M. Waldén, M. G.J. van den Brand: **Complexity Evaluation of Simulink Models.** (in preparation) This paper is in collaboration with Åbo Akademi University (Finland) and Audi (Germany). It proposes the complexity metrics suite for Simulink and evaluates it in the automotive context.

Submitted to 31st International Conference on Software Maintenance and Evolution (ICSME2015) [http://www.icsme.uni-bremen.de/cfp\\_industry.php](http://www.icsme.uni-bremen.de/cfp_industry.php)

You can also visit the project web site to see the full list of published papers:

<http://www.opencoss-project.eu/node/7>

In addition to these papers the consortium was successful in organizing a special issue of IEEE Software Magazine dedicated to safety critical software. An internal section (a side box) was dedicated to OPENCROSS.

IEEE Software is probably the most prestigious magazine for software professionals.





<p><b>KEY EVENTS</b></p>	<p>The System Safety Symposium is an annual meeting of safety specialists organized in the UK by the Safety Critical Systems Club.</p>
<p><b>SYSTEM SAFEY SYMPOSIUM BRISTOL 3RD-5TH FEBRUARY 2015</b></p> <p><b>ORGANISED BY SCSC SAFETY CRITICAL SYSTEM CLUB</b></p>	<p>This year's meeting was held at the Marriot Royal Hotel, Bristol, UK and attracted an audience of some 150 safety professionals, mainly from the UK, the US and mainland Europe (Germany, Austria and France were particularly well-represented). Although there were a few academic participants, the majority (by a ratio of 9:1) were industrialists, drawn from a wide variety of safety domains, including transportation, energy and defence.</p> <p>OPENCROSS was represented in two distinct events at the Symposium.</p>  <p>Katrina Attwood (University of York) gave a presentation to the meeting as a whole. The presentation was entitled 'Controlled Expression for Assurance Case Development' and opened with a summary of OPENCROSS as a whole, the consortium and the objectives of the project, before moving on to present work from WPs 4 and 5, centering on the Automotive Case Study.</p> <p>The argumentation and vocabulary metamodels were described and explained, with links to the standardization work the project has been involved in with the OMG. Case study examples from automotive, focusing on the CCL</p>



metamodel – standard vocabulary model (ISO 26262) – project model structure were presented, centering on the reuse of assurance information and argumentation associated with a braking subsystem.

There was a lively question-and-answer session following the presentation: questions focussed on the desirability and feasibility of defining generic vocabularies for safety-critical domains. In general, feedback on the presentation was very positive – both within the session and in conversations and references from other presentations later in the Symposium. Katrina received feedback from the organiser of the session (Safety Team Leader from CGI) some days later, in which he said: “I thought your presentation was very interesting and important.”

The OPENCOSS project also had a stand at the Exhibition associated with SSS. The stand was manned by staff from the University of York, and was on display for the two main days of the conference. There was also an evening event held in the exhibition area, in which conference participants were encouraged to visit the display stands and discuss the project with staff. Katrina Attwood and Tim Kelly were on hand to answer participants’ questions about OPENCOSS, and presented the project to interested safety practitioners. Previous newsletters were also available in hard copy for people to take away. Again, the project was well-received – several people asked for links to the website, in order to consult project publications, and one person offered support for tool validation in future iterations, if needed.



## DISSEMINATION MATERIAL



The following material can be downloaded from the OPENCROSS Web site ([www.opencross-project.eu](http://www.opencross-project.eu)):

- Flyer (also called brochure, fact-sheet, leaflet)
- Project web site
- Position Paper (also called “white paper”)
- Press Release (issues at project kick-off)
- 2 Roll-Up Poster
- Short Presentation
- Long Presentation
- Final Presentation (at project closure)
- A video for industrial presentation
- This Newsletter (June 2012 to March 2015), and previous ones





# OPENCROSS



**OPENCROSS  
WEB SITES  
AND  
ON THE  
SOCIAL  
NETWORKS**



Project Web site: [www.opencross-project.eu](http://www.opencross-project.eu)

Cordis: [http://cordis.europa.eu/projects/rcn/100775\\_en.html](http://cordis.europa.eu/projects/rcn/100775_en.html).

The project is also visible as a LinkedIn professional group with currently 205 members (+25 in a few months), and on Twitter and Facebook. Join us!



## A LOOK INTO THE FUTURE

At the project start, more than 3 years ago, we invented in this same Newsletter a story about intelligent cars, capable of leaving drivers and passengers at the Theatre entrance and finding parking autonomously.

The story was placed hypothetically on 2025, but the progress in this area is so fast that it is already close to full-scale industrialization.

For the project closure we have adapted the story slightly: Mr. Adam has an appointment in his company's new building.



On the way to the meeting, he is fully absorbed in preparing his speech, since his car is in self-drive mode. Thanks to an elaborated stereoscopic vision system, the car is keeping an appropriate distance from other vehicles and respecting all road signs.

The car is finding the best route thanks to an incorporated navigation system, enriched with real-time traffic information.

Cars also communicate with one other and with the road to assure the maximum flow of information and the highest level of safety.

On arrival, Mr. Adam talks to his car, asking it to self-park after leaving him at the entrance. The car will later send a message to his mobile phone: *"I have safely parked at Sunset Street, 224. I am 15 minutes away from you on the current traffic conditions."*

Towards the end of the meeting, Mr. Adam "calls" the car on his mobile phone, asking it to come and pick him up.



He just has time to exchange pleasantries with his colleagues, and the car is waiting in front of the main entrance. The doors open as he approaches, thanks to keyless sensors. Mr. Adams, tired, jumps into the car.

“I see you are tired Mr. Adams. Do you want me to drive?”  
“Yes, please”.

“I see you “sad” Mr. Adams. Have you had problems with your boss again? Do you want to talk to me about that ?”.

The last feature is not in the plans of car makers (at the moment) but it is just a revised implementation of the famous Eliza programs so popular at MIT in the 70s (<http://en.wikipedia.org/wiki/ELIZA>). Now with speech interfaces this old software may have a second life!

The most tangible expression of our future is not “flying cars”, but always more intelligent, safe and secure cars.