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ITEA 3 is a EUREKA strategic ICT cluster programme

Exploitable Results by Third Parties

11005 Empathic Products

Project details

Project leader:	Johan Plomp
Email:	johan.plomp@vtt.fi
Website:	http://www.empathic.eu – portal at http://portal.empathic.eu

Name: Affect TV		
Input(s):	Main feature(s)	Output(s):
▪ Depth camera skeleton information (OpenNI) ▪	▪ Calculates posture from skeleton ▪ Recognizes pre-configured activities ▪ Recognition of primary emotions	▪ Basic emotions ▪ Activities ▪ CSV with time stamps

Unique Selling Proposition(s):	▪ Recognition of activities and emotions from viewers watching TV in a living room based on posture from a depth camera.
Integration constraint(s):	▪ Windows 7 or higher, OpenNI, Kinect drivers, qkinectwrapper ▪ Optionally FaceReader and ProComp Infinity software
Intended user(s):	▪ User researchers
Provider:	▪ University of Hasselt
Contact point:	▪ Jan van den Bergh; jan.vandenbergh@uhasselt.be, Kris Luyten, kris.luyten@uhasselt.be
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: Affect TV2		
Input(s):	Main feature(s)	Output(s):
▪ Zephyr BioHarness3 via bluetooth ▪ Camera in Android device	▪ Computes mood of TV viewers from face and biosignal analysis	▪ Mood (neutral, bored, interested, amused)

Unique Selling Proposition(s):	▪ Mood detection in TV viewers by means of biosensors and built-in cameras
Integration constraint(s):	▪ Android device (4.x) with camera and Bluetooth ▪ Zephyr BioHarness Android API
Intended user(s):	▪ User research
Provider:	▪ University of Hasselt
Contact point:	▪ Jan van den Bergh; jan.vandenbergh@uhasselt.be, Kris Luyten, kris.luyten@uhasselt.be
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: Visual attention meter		
Input(s):	Main feature(s)	Output(s):
▪ Camera image of face	▪ Detection of level of attention of users watching a screen	▪ Level of attention ▪ Smiles ▪ Face detection

Unique Selling Proposition(s):	▪ Detection of attention and emotions of users watching a screen
Integration constraint(s):	▪ The data are sent to the metadata aggregator (POST HMTL - Format JSOM/YAML - EmotionML) ▪ Python & JavaScript implementations
Intended user(s):	▪ Video conferencing providers
Provider:	▪ Alcatel-Lucent
Contact point:	▪ Emmanuel Marilly, Emmanuel.marilly@alcatel-lucent.com
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: EmoLib		
Input(s):	Main feature(s)	Output(s):
▪ Camera input	▪ Detects emotion from face ▪ Robust for rotations and lighting conditions	▪ Scores for emotions: neutral, anger, contempt, disgust, fear, joy, sadness, surprise ▪ Rectangle containing face ▪ Facial landmarks ▪ Normalised facial image

Unique Selling Proposition(s):	▪ Library for facial expression recognition with normalisations for lighting conditions and rotations
Integration constraint(s):	▪ EmoLib depends on OpenCV and scikit-learn ▪ Linux, Windows, MacX **Hardware:** system with multi core CPU (Intel Core i3 or better) and at least 4GB of internal memory. ▪ **Camera:** webcam with a resolution of at least 640 x 480 pixels. ▪ **Lightning:** technology can be used in environments with various lightning conditions. However, performance of a system degrades when used under extreme lightning conditions such as extreme side lightning. Please make sure that the light is approximately equally distributed across the face. ▪ **Head pose:** although we use robust geometry normalization techniques, faces on near-profile head poses won't be detected correctly.
Intended user(s):	▪ **End users:** using products with in-built facial expression recognition ▪ **Third-party:** licencing the technology to other companies
Provider:	▪ Comland
Contact point:	▪ info@comland.si
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: FaceReader (BACKGROUND)		
Input(s):	Main feature(s)	Output(s):
▪ Camera image	▪ Recognizes facial expressions	▪ 6 emotions: happy, sad, angry, surprised, scared, disgusted and neutral ▪ Facial states ▪ Gaze and head direction ▪ Gender, age, ethnicity, facial hair, glasses

Unique Selling Proposition(s):	FaceReader is a program for facial analysis. It can detect emotional expressions in the face. It can identify six basic emotions: happy, sad, angry, surprised, scared, disgusted and a neutral state. Additionally, it can detect facial states (left and right eye open or closed, mouth open or closed and eyebrows raised, neutral or lowered), the test participant's global gaze direction and track the head orientation. FaceReader can also indicate the person's gender, age, ethnicity, the amount of facial hair (beard and/or moustache) and whether the person is wearing glasses or not. The software can also identify the subject.
Integration constraint(s):	**Operating system:** US English version of Windows 7 (32 or 64 bit Professional edition). **Computer – Workstation** Similar (or better) than the test workstation: Technical specifications Dell Precision™ T3500 Workstation (or its successor) Processor: Intel®Xeon Quad Core CPU, 2.8 GHz Internal memory: 6 GB Technical specifications Dell Precision™ M4600 laptop (or its successor) Processor: Intel®i7 Quad Core CPU, 2.2 GHz Internal memory: 4 GB. **Camera:** CCD webcam with a resolution of at least 640 x 480 pixels. We strongly recommend that you use a high-quality webcam. Simple web cams are not suitable. You can also use an IP camera or convert a webcam into an IP camera. If you choose the latter option, you need a program like webcamXP. **Internet connection:** If you are using an IP camera or converted a webcam into an IP camera and access it with internet, you need a fast internet

Name: FaceReader (BACKGROUND)	
	connection for these set-ups to work. In the case of a converted webcam, the internet connection for both computers must be fast. ▪ FaceReader is currently not trained to work with very young children, below the age of 3. FaceReader 5 is not yet trained for analysis of children from East Asia and South-East Asia. FaceReader 5 works well with other children and East Asian and South-east Asian adults. Pose, movement and rotation of the test person are limited. The test person should stand or sit and look frontally into the camera (angle < 40°) FaceReader requires strict light conditions. The face should not be partially hidden, for instance by a hat or very heavy facial hair. It is also very difficult to classify a person's facial expressions when he/she is eating, because the person's hand covers part of the face when he/she puts food in the mouth and the muscles in the face move. - See more at: http://portal.empathic.eu/?q=products/face-reader#sthash.AVZSzMuD.dpuf
Intended user(s):	▪ *Psychology* — How do people respond to particular stimuli, e.g. in cognitive research. ▪ *Education* — Observing students' facial expressions can support the development of educational tools. ▪ *Human-computer interaction* — Facial expressions can provide valuable information about user experience. ▪ *Usability testing* — Emotional expressions can indicate the ease of use and efficiency of user interfaces. ▪ *Market research* — How do people respond to a new commercial's design? ▪ *Consumer behaviour* — How do participants in a sensory panel react to a presentation?
Provider:	▪ Vicar Vision
Contact point:	▪ Marten den Uyl, denuyl@smr.nl
Condition(s) for reuse:	▪ Proprietary, contact Vicar Vision
	Latest update: 09/07/2015

Name: VicarVision Retail Analytics		
Input(s):	Main feature(s)	Output(s):
▪ Camera images	▪ Measures viewing time and demographics of passers-by	▪ Interaction percentage ▪ Viewing times ▪ Visitors per hour ▪ Age, gender and emotions of viewers

Unique Selling Proposition(s):	VicarVision Retail Analytics gives retailers total insight in detailed customer demographics and customer behavior. This can be applied to optimize the storage layout, the product displays, and to evaluate and improve sales effectively. The system automatically measures the age of the audience and the male/female ratio in the store. With this information for each target group the attention and viewing time for specific products are visualized in graphic displays. The system can be operated easily from a tablet, smart phone, or laptop. For more information visit www.vicaranalytics.com
Integration constraint(s):	The analytics engine requires the following hardware: • **Computer:** VV Retail Analytics platform is based on VicarVision's FaceReader, so the same hardware requirements apply. FaceReader is not required though, as it is integrated in the system. • **Camera:** For optimal performance, the Microsoft Kinect 2.0 is preferred. The system can also run using only a basic RGB webcam, but with limited functionality The dashboard for output visualization has a web interface and is therefore platform independent.
Intended user(s):	▪ Retailers, e.g. shop, supermarket or department store owners ▪ Advertisement and marketing firms
Provider:	▪ VicarVision
Contact point:	▪ Marten den Uyl, denuyl@smr.nl
Condition(s) for reuse:	▪ To be negotiated, contact Vicar Vision
	Latest update: 09/07/2015

Name: FaceReader Online		
Input(s):	Main feature(s)	Output(s):
▪ Webcam image	▪ Analyze facial expressions of people in front of their computer from all over the world.	▪ Basic emotions ▪ Action Units ▪ Valence, arousal
Unique Selling Proposition(s):	▪ FaceReader Online is based on the FaceReader™ software that is used at over 300 sites worldwide, with the advantage that this version runs online on a website. ▪ Capturing emotions by analyzing facial expressions offers additional and objective insights into the impact, appreciation, liking, and disliking of products, websites, commercials, movie trailers, and so on. ▪ For more information visit www.facereader-online.com	
Integration constraint(s):	▪ The FaceReader Online analysis and related services run on in the cloud, on the Microsoft Azure platform. ▪ To use it, only a web browser and webcam are required	
Intended user(s):	▪ *Market research* — How do people respond to a new commercial's design? ▪ *Consumer behaviour* — How do participants in a sensory panel react to a presentation?	
Provider:	▪ Human Insight Services (a spin-off from VicarVision and Noldus IT)	
Contact point:	▪ Marten den Uyl, denuyl@smr.nl	
Condition(s) for reuse:	▪ Proprietary, contact VicarVision	
	Latest update: 09/07/2015	

Name: FaF – Facial Feedback		
Input(s):	Main feature(s)	Output(s):
▪ Camera image (still and video)	▪ Recognition of facial expressions	▪ Basic facial expressions: joy, surprise, disgust ▪ Eye blinking ▪ Head orientation

Unique Selling Proposition(s):	▪ Facial expression recognition component
Integration constraint(s):	Depending on the binding various usage API were implemented. We have built wrapper in order to have the library deployed in various context: ▪ Android native application : A Java class wraps native calls to C++ functions - load a frame, set parameters, process the frame, retrieve metrics; ▪ Web browser: A WebSocket is wrapped around C++ code. Once the WebSocket receives the encoded image, the image is analysed and metrics are sent back as a JSON message. ▪ Stand-alone library: C++ functions that load a frame, locate the face, locate the eyes, normalize the face, evaluate the joy, evaluate the anger level, evaluate the surprise. ▪ Utilised OpenCV library (2.0+)
Intended user(s):	▪ Practitioners from various domains requiring user profiling and facial feedback
Provider:	▪ Lille University (CRIStAL, FOX)
Contact point:	▪ ▪ Ioan Marius Bilasco, marius.bilasco@univ-lille1.fr
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: Hesitation detection		
Input(s):	Main feature(s)	Output(s):
▪ Person coordinates and head angles for each video frame	▪ Detects hesitation based on the user's behavior in e.g. a shop	▪ Hesitation detected yes/no
Unique Selling Proposition(s):	Hesitation detection component recognizes hesitant (i.e., uncertain where to go) persons based on their motion trajectories and head turns. Recognition of hesitation is not instant: it requires tracking of a person for a few seconds before any conclusions can be made. On the other hand, motion-based hesitation detection does not require analysis of facial expressions and hence can be done from a distance and from a side view. Hesitation detection component takes as input trajectory data and head orientation data. Detection is based on calculating number of head turns and extracting several trajectory features, such as whether a person' direction and speed remain fairly constant or change, number of stops on the way etc.	
Integration constraint(s):	▪ Windows 7 ▪ Suitable tracking installation providing positioning and head pose	
Intended user(s):	▪ Retail customer analysis; shop keepers	
Provider:	▪ VTT	
Contact point:	▪ Satu-Marja Mäkelä, satu-marja.makela@vtt.fi	
Condition(s) for reuse:	▪ To be negotiated	
	Latest update: 09/07/2015	

Name: VTT People Tracker (BACKGROUND)		
Input(s):	Main feature(s)	Output(s):
▪ Inputs from one or multiple depth cameras	▪ Positioning of people ▪ Zone definition, entering and exiting zones, people count ▪ Hot spot definition ▪ Multiple computation nodes	▪ Positioning ▪ Zone presence and count ▪ JSON output to UDP socket.
Unique Selling Proposition(s):	People tracking refer to technology that can be used for monitoring human activities in some defined area, such as in rooms. The system consists of a depth sensor or multiple depth sensors that can measure the room and objects in the room and a computer that collects data from depth sensors, analyses the data by locating people from the sensor data and following the movement of the people. The analysed data can be transmitted to the visualization or cloud service for creating different people behaviour statistics based on the analysed data. The system can count people in room, track the movement of the people and count virtual line crossings. For example the system may count how many people have entered to the room from a specific door. People Tracker and Counter is an existing software implementation for interpreting depth sensor data for detecting, counting and tracking people in indoor premises. It produces reliable real-time information of: - Detection of people when they enter the monitored area or move into a different zone. - The monitored area can be divided into multiple zones and specific “hot spots” can be defined - Counting people when they cross zone borders. - Tracking and following people, when they move around the monitored area. - Analysis results can be uploaded to networked services - Tracking / location information can be communicated in real time using a socket interface. - Multiple computation nodes can be connected via network interface for connecting larger amount of sensors into a single monitoring system. - People Tracker is VTT background for ITEA Emphatic Products project and the implementation is background, owned by VTT.	

Name: VTT People Tracker (BACKGROUND)	
Integration constraint(s):	System is implemented on Linux (version 12.04 preferred) PC operating system and it requires multi core PC (Intel core i3 or better) for real time performance. Current implementation supports Asus sensors. Some specific libraries are required on Linux for running the SW (OpenCV , OpenNI, PCL).
Intended user(s):	People Tracker can be used in any application where knowing position of people in space in advantage; e.g. entertainment, HCI, healthcare, marketing, real-estate managing, robotics, surveillance, traffic.
Provider:	▪ VTT
Contact point:	▪ Satu-Marja Mäkelä, satu-marja.makela@vtt.fi
Condition(s) for reuse:	▪ To be negotiated
	Latest update: 09/07/2015

Name: TrackLab (BACKGROUND)		
Input(s):	Main feature(s)	Output(s):
▪ Tracking data from GPS or indoor tracking solutions	▪ Visualisation of tracking data ▪ Analysis of data including speed, distance, path, and statistics	▪ Log files ▪ Real-time feedback ▪ Integration with The Observer XT

Unique Selling Proposition(s):

TrackLab™ is a software tool for recognition of and analysis of spatial behaviour and the design of interactive systems. It allows you to work with any number of subjects, in any spatial context, tracked by any type of positioning system. With the increasing availability of different tracking technologies, TrackLab™ is the versatile workbench for all work on spatial behaviour. After deciding on the tracking system most suitable for the task, TrackLab™ lets you import the collected tracking data real-time as well as offline. The collected data can be visualized, processed and analyzed. Furthermore, you can create interactive systems based on the generated data, which is available real-time.

TrackLab™ included the following features:

- **Collecting data**

  Collecting location and movement data can be done in numerous ways. Every study and every application requires varying technical solutions. TrackLab is a flexible software tool that can handle input from different tracking technologies:

  - **Outdoor** — Outdoor tracking can be done in urban environments, agricultural fields or in nature. The most common tracking method for outdoor studies is GPS, although other tracking systems can be used as well. TrackLab supports any type of GPS receiver, taking advantage of data augmentation services (such as WAAS, PPS or EGNOS) if available. These systems offer you real-time or off-line information on the location and movement of your test subjects.
  - **Indoor** — Indoor tracking can be applied in settings ranging from a controlled laboratory to a real-life environment, from consumers in a supermarket to cattle in a farm. TrackLab supports a wide variety of indoor tracking solutions, including Ubisense™ ultra-wideband sensors and tags, EagleEye™ stereo cameras, the EthoVision® video tracking system, Wi-Fi tracking, and our vision-based PeopleTracker™ (as described in Section **Error! Reference source not found.**). Functionality differs strongly between tracking systems; some systems need tags or markers while

Name: TrackLab (BACKGROUND)

others do not, some systems work real-time while others work off-line.

If you are using live data input, you can start a new track using a remote control app on a tablet. This makes it possible to work with the system semi-automatically, so that during an experiment it is not necessary to have anyone next to the computer.

- **Importing and visualizing data**

  TrackLab allows you to import location data in real-time and offline, depending on the tracking technology and the layout of your data. Once data has been collected, tracks can be visualized on a map within the software, both bitmaps (e.g. floor plan of a building) and geographical maps (OpenStreetMap). The software allows you to visualize tracks of multiple objects simultaneously. Visualizations include various trajectory styles and heatmaps. Furthermore the software offers track smoothing and can automatically remove outliers, improving the quality and reliability of your data. In addition to importing location data, TrackLab can also import and visualize all sorts of external data such as accelerometer data or manually-scored events.

- **Analysis**

  TrackLab provides you with a range of relevant statistics for analysis of location and movement, including various speed and distance variables. Statistics can be calculated for complete tracks or for specific zones or movement classes. The analysis parameters include distance and time (distance moved, speed), location (time in zone, distance to point), path shape (heading, turn angle, meander) and movement behaviour (speed based classification).

  Within TrackLab you can define regions of interest, to compute zone-related statistics or to automatically detect when a subject enters or leaves a specific zone. Besides detecting spatial events movement classifiers can be defined, e.g. to automatically label behaviour as standing still, walking and running based upon the speed of the subject.

  If you create zones, you can calculate all the statistics for whilst subjects were in the zone. For instance, how fast was the shopper moving when he was in front of the bakery counter? Or what was the

Name: TrackLab (BACKGROUND)	
	meander of the horse whilst it was fora-ging? You can also create intervals according to a variety of other criteria. - **Real time feedback** Events related to zone-related behaviour or user-defined movement classes can be saved in a log file or sent out in real-time, for example to a smartphone. This real-time feedback allows you to directly gain insight in the location and movement of the test subjects, furthermore it allows you to use this information as input for external applications. You can for example present stimuli or trigger evens based on the location and movement of your test subject. TrackLab™ is background for the ITEA Emphatic Products project and the implementation is background, owned by Noldus Information Technology.
Integration constraint(s):	TrackLab™ has been developed for Windows 7. Although TrackLab can run on both Windows XP and Windows 8, limited testing has been done on these platforms. The minimum system requirements for TrackLab are: - A PC with windows 7 installed - 1 gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor - 1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit) - 1 GB available hard disk space - Internet access. Without a network connection registration will become much harder and it will not be possible to use the OpenStreetMap servers for background images Additional requirements to use certain features: - TrackLab is designed to work with multicore processors. If your processor supports multiple cores, the application will work much faster - If you plan to work with very large tracks or with a large amount of tracks than more memory will definitely help.
Intended user(s):	TrackLab™ is a general tool for the analysis of spatial behaviour in an indoor or outdoor environment. Application domains include among others consumer behaviour research, visitor behaviour studies, spatial cognition, behavioural ecology, and wildlife or farm animals.
Provider:	▪ Noldus
Contact point:	▪ info@noldus.nl

Name: TrackLab (BACKGROUND)	
Condition(s) for reuse:	Perpetual and temporary licenses are available, pricing depends on specifications of the use cases. For license information contact info@noldus.nl.
	Latest update: 09/07/2015

Name: Viewpoint Adaptive Display		
Input(s):	Main feature(s)	Output(s):
▪ People tracker input (JSON over UDP, see earlier)	▪ Adapts content of a display according to position of the user	▪ Adaptive content on display

Unique Selling Proposition(s):	Viewpoint Adaptive Display is a user interface (UI) concept for large screens or displays where the content adapts based on the distance or physical position of the user. It is an extension to People Tracker SW (cf. Section 2.5). The main idea behind the viewpoint adaptation in UI is to e.g. display more details in content as the user gets closer to the display and is able to read more text. Viewpoint Adaptive Display tool also supports fast prototyping different UI realisations depending on the user's physical position on the front of the display. By intelligently unifying the content and position of the user we can create vast amount different informative and playful possibilities to display content in large screens. The UI is created with HTML5 page that has real-time input from people tracker and its hot spot feature. The hotspots can be defined in the graphical user interface of People Tracker in to the "floor map" view. The changes in hotspot are read in to the message broker in real time, which makes the tool also a very quick for testing out different concepts for UI that depends on physical position of the user. The tool currently supports 5 different hotspots from People Tracker and 5 different content views to UI. The Distance Adaptive UI tool is in its early prototype phase tool.
Integration constraint(s):	▪ VTT People tracker input needed
Intended user(s):	▪ Public display operators, digital signage
Provider:	▪ VTT
Contact point:	▪ Satu-Marja Mäkelä, satu-marja.makela@vtt.fi
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: People Behaviour Tool		
Input(s):	Main feature(s)	Output(s):
▪ VTT People tracker input (JSON via UDP, see earlier)	▪ Analysis of tracks covered by people in sight. ▪ Classification of customers, prediction of point of interest	▪ Customer segmentation ▪ Daily summaries ▪ Points of interest

Unique Selling Proposition(s):	People Behaviour tool provides algorithms for segmentation and classification of trajectories provided by the VTT people tracker. The tool contains reasoning methods to analyse the characteristics of the tracks in XY space based e.g. behaviour models obtained on the walking. Currently methods support: ▪ Classification/segmentation of the customers ▪ Predicting next the point of interest ▪ Summary of daily motion
Integration constraint(s):	▪ Relies on VTT People Tracker
Intended user(s):	▪ Retail, health care, public spaces
Provider:	▪ VTT
Contact point:	▪ Satu-Marja Mäkelä, satu-marja.makela@vtt.fi
Condition(s) for reuse:	▪ To be negotiated
	Latest update: 09/07/2015

Name: SATI – Sentiment Analysis for Textual Information		
Input(s):	Main feature(s)	Output(s):
▪ Text	▪ Detection of emotion from texts	▪ Sentiment and emotions in EmotionML format

Unique Selling Proposition(s):	This affective component manages to retrieve the sentiment (positive, negative, neutral) and the emotion (joy, sadness, fear, surprise, disgust, anger) that is conveyed by any kind of text and to return it in EmotionML format. English is the preferred language for the text, however it is possible to use SATI on other languages (supported languages: Bulgarian, Czech, Danish, Dutch, Estonian, Finnish, French, German, Greek, Hungarian, Irish, Italian, Latvian, Lithuanian, Maltese, Polish, Portuguese, Romanian, Slovak, Slovenian, Spanish, Swedish). The API can be called for a given text and it then returns the sentiment/emotion conveyed by this text, or it can be setup to listen for tweets containing a given keyword, and it then returns the sentiment/emotion conveyed by the first found published tweet in real time.
Integration constraint(s):	Depends on tree-tagger for the emotion analysis. A version not relying on tree-tagger is under discussion. The API specification can be found at: http://talc2.loria.fr/empathic/
Intended user(s):	▪ Social media and blog analysis, other text providers
Provider:	▪ Loria
Contact point:	▪ Alexandre Denis, alexandre.denis@loria.fr
Condition(s) for reuse:	Open source license GPL v3
	Latest update: 09/07/2015

Name: Sentiment Analysis and Emotion Detection on Twitter		
Input(s):	Main feature(s)	Output(s):
▪ Tweets	▪ Sentiment and emotion detection from tweets	▪ Visualised sentiment and emotions

Unique Selling Proposition(s):	A mobile application for iOS and Android based on the SATI API (http://portal.empathic.eu/?q=products/sati-api). Available on the Apple Store: https://itunes.apple.com/fr/app/sati-mobile/id923851700?l=en&mt=8 Available on GooglePlay: https://play.google.com/store/apps/details?id=fr.loria.synalp.satimobile
Integration constraint(s):	Based on SATI API (http://portal.empathic.eu/?q=products/sati-api) iPhone 4s, 5, 5s, 5c, 6, 6 plus iOS 7, iOS 8
Intended user(s):	▪ Twitter users
Provider:	▪ Loria
Contact point:	▪ Alexandre Denis, alexandre.denis@loria.fr
Condition(s) for reuse:	▪ Free
	Latest update: 09/07/2015

Name: Voice Emotion Analysis		
Input(s):	Main feature(s)	Output(s):
▪ Voice audio recording in .wav format	▪ Detection of emotions from human voice	▪ Emotion on two dimensions (valence and intensity) ▪ Textual percentage tables

Unique Selling Proposition(s):	Project affective component's goal is to use intonation and emotion in human voice extraction methods to examine individual's experiences and disposition toward new food product introduction to consumer market.
Integration constraint(s):	MATLAB 32/64 bit 2010a or later version of Windows XP/7/8. Public standard voice emotions database (Berlin) used. No special requirements, possible Matlab license restrictions. Noise removing from voice files procedure is necessary.
Intended user(s):	▪ Food companies. ▪ Food research institutes. ▪ New product developers. ▪ Consumers research. ▪ Food market research.
Provider:	▪ Vilnius University (represented by Kaunas Univ. of Technology)
Contact point:	▪ Vaidotas Adomaitis (vaidotui@gmail.com), Grazina Joudeikiene (grazina.joudeikiene@ktu.lt)
Condition(s) for reuse:	▪ To be negotiated
	Latest update: 09/07/2015

Name: Sentient		
Input(s):	Main feature(s)	Output(s):
▪ Heart rate	▪ Emotion from heart rate	▪ Emotion label
Unique Selling Proposition(s):	SENTIENT is a physiological emotion recognition solution. SENTIENT technology estimates the emotional valence from the instantaneous heart rate values in real-time. This technology is offered as a standalone tool (android application) to monitor, record and visualize emotional valence and also as a java component or a web API that allows integration into 3rd party applications or services. See demonstration video at http://www.youtube.com/watch?v=NdY2BAvWapc	
Integration constraint(s):	Sentient component offers an API for emotion recognition from heart rate measurements both as a web service and as a java library. The API specification can be found at http://sentientapi.tecnalia.com. The smartphone application requires Android 2.1 or greater versions. The library requires Java SE 6.	
Intended user(s):	• *Advertising* - Measure the emotional response of your customers to adverts and optimize your investment in promotional campaigns. • *Politics* - Find it easier for you as a campaign strategist to identify, adjust and even enhance the elements that may influence the voting intentions. • Society - Manage and measure your stress levels or those of your customers with our mobile application. • Health - Assess the emotional state of patients with severe communication disorders including autistic and disabled individuals and prevent situations that put their physical integrity at risk.	
Provider:	▪ Tecnalia	
Contact point:	▪ Manuel Montejo, ventures@tecnalia.com	
Condition(s) for reuse:	▪ To be negotiated	
	Latest update: 09/07/2015	

Name: Keystroke analyser		
Input(s):	Main feature(s)	Output(s):
▪ Keystrokes as observed in a PC or laptop	▪ Detects emotional states and stress indicators from typing behaviour	▪ Emotions on two axes (valence, arousal), stress level
Unique Selling Proposition(s):	Keystroke dynamics may help in the realization of a truly adaptive user interface. It is an emerging field in affective computing and its central idea is to detect emotional states with changes in individual typing rhythm. Challenges in keystroke dynamics are, for example, different typing contexts (e-mail vs. code editor), languages used by a person (native vs. foreign language), different typing skills, different keyboards, etc. At present we aim to distinguish the degree of three emotional states: displeasure-pleasure, sleepiness-arousal, high stress - low stress.	
Integration constraint(s):	▪ Key stroke logger (with scrambling) requires Java and a windows 7 (or higher) environment. ▪ Matlab implementation of analysis	
Intended user(s):	Possible application domains are adaptive user interfaces, stress monitoring and monitoring changes in cognitive function of the elderly.	
Provider:	▪ VTT	
Contact point:	▪ Mikko Lindholm, mikko.lindholm@vtt.fi	
Condition(s) for reuse:	▪ To be negotiated	
	Latest update: 09/07/2015	

Name: QoS Probe		
Input(s):	Main feature(s)	Output(s):
▪ Network connectivity API	▪ Detection of network issues and generation of affective messages	▪ Affective messages

Unique Selling Proposition(s):	This probe analyses the characteristics of the network connection of the user; depending on various parameters (bandwidth, stability, jitter, packet loss, security, ...) it will trigger messages to help improve the user experience of the applications using this connection.
Integration constraint(s):	Currently: Python 2.7; Linux kernel 3.10+. But it's a moving target. Works on Ubuntu 14.04 LTS.
Intended user(s):	▪ Users benefiting from UX feedback
Provider:	▪ CityPassenger
Contact point:	▪ Vincent Renardias, vrenardias@citypassenger.com
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: Empathic RGB LED lighting actuator		
Input(s):	Main feature(s)	Output(s):
▪ Emotion (From the Sentient platform)	▪ Changes colour based on the emotional (stress) level of the user	▪ Coloured light
Unique Selling Proposition(s):	This component consist on a RGB LED light actuator that on the one hand, actuates over the environment as a regular lighting, and on the other hand this can be automatically controlled by the events of the system (like receiving an important calendar event on the smartphone or an important notification that should be notified to the user at home, like an smoke alarm). The LED Lighting actuator works with the same paradigm as the Notification LED of many android Smartphones. The lights of the room where the user is in starts tilting in a specific colour depending on the type of event: Red, (if a very important event is taking place), Blue, Green, White... This actuator also integrates the non-intrusive paradigm for not disturbing the user if he/she does not want to. The component can be integrated with emotional devices such as Sentient, getting the Valence and stopping a running notification if the user is in a stressed state.	
Integration constraint(s):	I3B and Tecnalia EMS UDP communication message protocol. Raspberry Pi, LED Light controller, LED strips	
Intended user(s):	▪ Users in a home or office environment	
Provider:	▪ I3B	
Contact point:	▪ David Martin Barrios, d.martin.barrios@ibermatica.com	
Condition(s) for reuse:	▪ To be negotiated	
	Latest update: 09/07/2015	

Name: 5.1 Softkinetic end-to-end 3D gesture recognition solutions		
Input(s):	Main feature(s)	Output(s):
▪ Depth sensor camera input	▪ Detects 3D gestures including fingers and hand	▪ Detected 3D gestures

Unique Selling Proposition(s):	SoftKinetic® designs, develops and markets 3D, time-of-flight technology such as 3D CMOS sensors, cameras and embedded modules (DepthSense®), 3D gesture recognition middleware and tools (iisu®) for both long and short range games and applications.
Integration constraint(s):	The iisu® Software Development Kit (SDK) is a complete platform for gesture development and deployment, offering both finger and full body skeleton tracking on Windows, Linux (short range only) and Android (long range only) operating systems. *Hardware requirements*: iisu® supports most 3D depth-sensing cameras on the market including the DepthSense® 325 (DS325) and the DepthSense® 311 (DS311). It automatically loads the appropriate device driver for the camera you wish to use, and transforms its proprietary 3D signals into a standardized format. *Calibration needs*: The latest version of iisu® offers automatic and transparent scene calibration for long range applications. It provides clear distinction between the user and objects in the scene.
Intended user(s):	With an optimized CPU footprint, SoftKinetic's solutions are perfect for embedded platforms, as well as personal computers, consoles, set-top boxes, and smart TVs.
Provider:	▪ Softkinetic
Contact point:	▪ Ilse Ravyse, IRavyse@softkinetic.com
Condition(s) for reuse:	One middleware, two versions: **iisu Free** – a single-user, fully featured, free version of iisu® – gives you a full three months to check out iisu's capabilities. **iisu Pro** gives you an unlimited, fully featured licensed version for commercial use, for up to four users, with optional extras. Both versions are available for download from www.softkinetic.com. iisu and DepthSense® cameras are fully integrated and optimized for best performance and quality. The cameras are priced between $249 and $299 (prices on 1 August 2014) and can be purchased from

Name: 5.1	Softkinetic end-to-end 3D gesture recognition solutions
	www.softkinetic.com/store. Interested companies with commercial projects in interactive interface design for laptops, smart TVs and car infotainment should email us at sales@softkinetic.com for product information or B2B business opportunities.
	Latest update: 09/07/2015

Name: 3D Avatar		
Input(s):	Main feature(s)	Output(s):
▪ Primary emotions in MPEG 4 standard (or EmotionML)	▪ Displays an avatar of choice with the selected emotion	▪ Animated avatar
Unique Selling Proposition(s):	The 3D avatar is designed to render realistic human facial expressions from emotion analyzers. This component is based on the WebGL technology that allows displaying the 3D avatar in a web browser without the requirement to install specific software. The current version supports the 6 primary expressions defined in the MPEG-4 standard: “Joy”, “Sadness”, “Anger”, “Fear”, “Disgust” and “Surprise”. By interpolating between the neutral face and one of the 6 primary expressions, the strength of the expression may be adjusted. Moreover, this method is not limited to expressions between the neutral face, and the primary expressions. It allows rendering expressions estimated between two primary expressions. The 3D avatar is compliant with the EmotionML technology and thus could render expressions from emotion analyzers that implement this message format.	
Integration constraint(s):	• A web browser compliant with HTML5 and WebGL technologies (client-side). • Jetty server and Java (server-side). Emotion analyzers must send emotional state messages in the YAML/JSON or the EmotionML format.	
Intended user(s):	Emotional feedback. Human facial expression rendering.	
Provider:	▪ Télécom SudParis	
Contact point:	▪ titus.zaharia@telecom-sudparis.eu	
Condition(s) for reuse:	▪ To be negotiated	
	Latest update: 09/07/2015	

Name: Activity Monitor		
Input(s):	Main feature(s)	Output(s):
▪ People tracker input (trajectories)	▪ Scores activity based on people tracker input	▪ Activity score, motion time, speed, hot spots

Unique Selling Proposition(s):	Activity monitor analyses trajectories in the monitored area within certain time window (e.g., a day), estimates total motion time and distribution of locations and compares pattern of the current time window with average behaviour during past time period. Based on this comparison, it calculates activity score: positive scores denote more active motion than usually, and negative scores denote less activity than usually. Activity score for a day and motion time for night are then displayed in the monitor GUI along with graphs displaying same data during past period. If an activity score of a day falls below certain threshold, this day is considered abnormally inactive, and the caregivers are alerted.
Integration constraint(s):	▪ Depends on People Tracker ▪ Software requirements: Windows 7 ▪ Calibration needs: In order to detect an illness, an illness detection threshold should be defined based on application needs or ground truth (if available).
Intended user(s):	Elderly monitoring, smart environments
Provider:	▪ VTT
Contact point:	▪ Satu-Marja Mäkelä, satu-marja.makela@vtt.fi
Condition(s) for reuse:	▪ To be negotiated
	Latest update: 09/07/2015

Name: Metadata aggregator		
Input(s):	Main feature(s)	Output(s):
▪ Emotional input in JSON/YAML EmotionML format	▪ Storage and merging of emotional information	▪ Access to emotion history

Unique Selling Proposition(s):	The Metadata Aggregator is the database storing the output data of the analyzers (face, gesture, emotion, gaze, voice prosody, tweet, etc...). By providing the capability to combine information coming from different analyzers or by providing this information to other "higher-level" analyzers, the metadata aggregator provides a better comprehension of the environment and then enables to take decisions adapted to the situation. It consists on a server and APIs aggregation metadata coming from sensors, devices, platform enablers and analyzers. Applications, reasoning engine, sensors and devices can get these aggregated data for use.
Integration constraint(s):	▪ Web based HTTP POST / GET SUBSCRIBE mechanisms. Format JSON/YAML – EmotionML
Intended user(s):	▪ Aggregates metadata of emotion information
Provider:	▪ Alcatel-Lucent
Contact point:	▪ Emmanuel Marilly, Emmanuel.marilly@alcatel-lucent.com
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: Complex Multimedia Reasoning		
Input(s):	Main feature(s)	Output(s):
▪ Emotional values	▪ Reasoning on emotional and attention values	▪ High level decisions

Unique Selling Proposition(s):	Based on Hidden Markov Model (HMM) reasoning, our video orchestration engine dynamically mixes different audio/video input streams, based on videoconference content analysis (audio/video events metadata), evaluation of the participant's attention and data coming from various empathic analyzers (emotion detection, gesture, gaze,...).
Integration constraint(s):	HTTP GET / POST / Subscribe mechanism or direct implementation in the video conferencing system.
Intended user(s):	▪ Video conferencing system
Provider:	▪ Alcatel-Lucent
Contact point:	▪ Emmanuel Marilly, Emmanuel.marilly@alcatel-lucent.com
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: On Track: Shopper Behaviour Monitoring		
Input(s):	Main feature(s)	Output(s):
▪ Trajectories from People Tracker	▪ Derives traffic statistics, draw rate and dwell time from trajectories	▪ Traffic, draw rate and dwell time ▪ Points of interest

Unique Selling Proposition(s):	On Track service is based on the People Tracker technology (http://portal.empathic.eu/?q=products/people-tracker). The service provides real time information from the point of sales performance by indicating
	- Traffic (number of persons)
	- Draw rate (people entered in the point of interest area)
	  ○ Peak hour and off-peak hour
	- Dwell time (time people spend in the point of interest area)
	  ○ Peak hour and off peak hour
	The point of interest area is defined separately for each case.
	http://ontrack.vtt.fi/

Integration constraint(s):	▪ Dependent on VTT People Tracker Hardware requirements: - Sensor: Asus Xtion Pro - Utilite PC Calibration needs: - One sensor setup by autocalibration
Intended user(s):	Sales analytics, retail, smart spaces, branding, exhibition organizer.
Provider:	▪ VTT
Contact point:	▪ Satu-Marja Mäkelä, satu-marja.makela@vtt.fi
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: Video Conferencing – WebRTC Gateway		
Input(s):	Main feature(s)	Output(s):
▪ Audio, video and data streams	▪ Allows rich multimedia applications on the web	▪ Multimedia Web application
Unique Selling Proposition(s):	WebRTC is a free, open project that enables web browsers with Real-Time Communications (RTC) capabilities via simple JavaScript APIs. The WebRTC components have been optimized to best serve this purpose. WebRTC offers web application developers the ability to write rich, real-time multimedia applications on the web, without requiring plugins, downloads or installs. Its purpose is to help build a strong RTC platform that works across multiple web browsers, across multiple platforms. ALBLF provides a specific WebRTC gateway and APIs dedicated to the Empathic Video Conference PoC. The ALBLF WebRTC server (SFU) enables the aggregation and management of video streams related to videoconferences. A video conferencing web/application server with different client implementations is provided.	
Integration constraint(s):	Works only with web browser supporting the HTML5 and WebRTC technology.	
Intended user(s):	▪ Video conferencing, other multimedia services	
Provider:	▪ Alcatel Lucent	
Contact point:	▪ Emmanuel Marilly, Emmanuel.marilly@alcatel-lucent.com	
Condition(s) for reuse:	▪ To be negotiated	
	Latest update: 09/07/2015	

Name: UMNIVERSE-Emerge platform		
Input(s):	Main feature(s)	Output(s):
	▪ Information management and real-time collaboration	

Unique Selling Proposition(s):	UMIVERSE-Emerge is a platform for information management and real-time collaboration.
Integration constraint(s):	For the Web Client: a good GPU. THE FOLOWIING IS ONLY IF YOU WANT TO INSTALL YOUR OWN APPLICATION For the server or desktop: 1 GByte RAM For the Android version: 512 MByte RAM For the J2ME: 64 MB RAM For the AppEngine: none ▪ Integrates THREEJS 3D framework and CAL3D skeleton animation. All software is already integrated namely a proprietary OODB engine
Intended user(s):	▪ Distant learning; students
Provider:	▪ ISMT (originally by FADO)
Contact point:	▪ Francisco Reis, franciscoreis@ismt.pt
Condition(s) for reuse:	▪ Currently only R&D – to be negotiated
	Latest update: 09/07/2015

Name: Empathic Instant Messaging		
Input(s):	Main feature(s)	Output(s):
▪ User interaction	▪ Enhances instant messaging with emotions	▪ Emotion enhanced messaging

Unique Selling Proposition(s):	Empathic Instant Messaging application that offers different ways to participate: - You can share a comment or ask a question - You can rate others' contributions so the most important ones gain presenter's attention - You can just read what is going on - You can answer polls - You can share how you feel/moods about the meeting Presenter gets feedbacks & analytics
Integration constraint(s):	Dependencies with a core IMS infrastructure (IP Multimedia SubSystem) and enterprise databases.
Intended user(s):	▪ In conjunction with the video conferencing system
Provider:	▪ Alcatel-Lucent
Contact point:	▪ Emmanuel Marilly, Emmanuel.marilly@alcatel-lucent.com
Condition(s) for reuse:	▪ To be negotiated

Latest update: 09/07/2015

Name: Wonderboard – Enterprise Digital Signage		
Input(s):	Main feature(s)	Output(s):
▪ Interaction	▪ Digital signage solution for enterprise communication	▪ Comprehensive information provision
Unique Selling Proposition(s):	Dynamic. Engaging. Unique. Wonderboard can be seen as the next generation digital signage solution. Leveraging the most recent web technologies it goes beyond and proposes an information presentation platform designed to collect information and present it to teams in a contextual and meaningful way. Wonderboard is dedicated to any employee from corporate, real-estate, communication or marketing organization, which needs an efficient communication platform for the enterprise or for a specific event. Wonderboard is ○ based on social approach to exchange information, blending: ○ internal information (messages from employees, photos, team to team content/context, machine-to-screen information, …), ○ external information (from Twitter on customizable topics, maps and traffic, transports…), ○ official information (from the corporate communication department, …). ○ appealing and dynamic but also fully and easily customizable ○ open with interfaces to add specific content ○ scalable from Enterprise to the individual http://www.getwonderboard.com	
Integration constraint(s):	▪ Chrome navigator	
Intended user(s):	▪ Enterprise communication	
Provider:	▪ Alcatel-Lucent	
Contact point:	▪ Emmanuel Marilly, Emmanuel.marilly@alcatel-lucent.com	
Condition(s) for reuse:	▪ To be negotiated	
	Latest update: 09/07/2015	

Name: Iedereen Beroemd 2nd screen applications		
Input(s):	Main feature(s)	Output(s):
▪ User interaction	▪ Allows for emotional feedback provision during TV show	▪ Statistics on emotional feedback
Unique Selling Proposition(s):	This iPad and Android tablet application is a free application for watching items of the Iedereen Beroemd TV-show on-demand. You can tag emotions onto content after watching is. This combined votings of all users could then be used to filter the items of the show according to emotional response.	
Integration constraint(s):	The software is only available for IOS and Android devices. Not for other operating systems.	
Intended user(s):	▪ Viewers of the Iedereen Beroemd TV show in Belgium	
Provider:	▪ VRT	
Contact point:	▪ Mike Matton, mike.matton@vrt.be	
Condition(s) for reuse:	▪ Free	
	Latest update: 09/07/2015	