

# xAffect - A Modular Framework for Online Affect Recognition and Biofeedback Applications

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MATEL Workshop

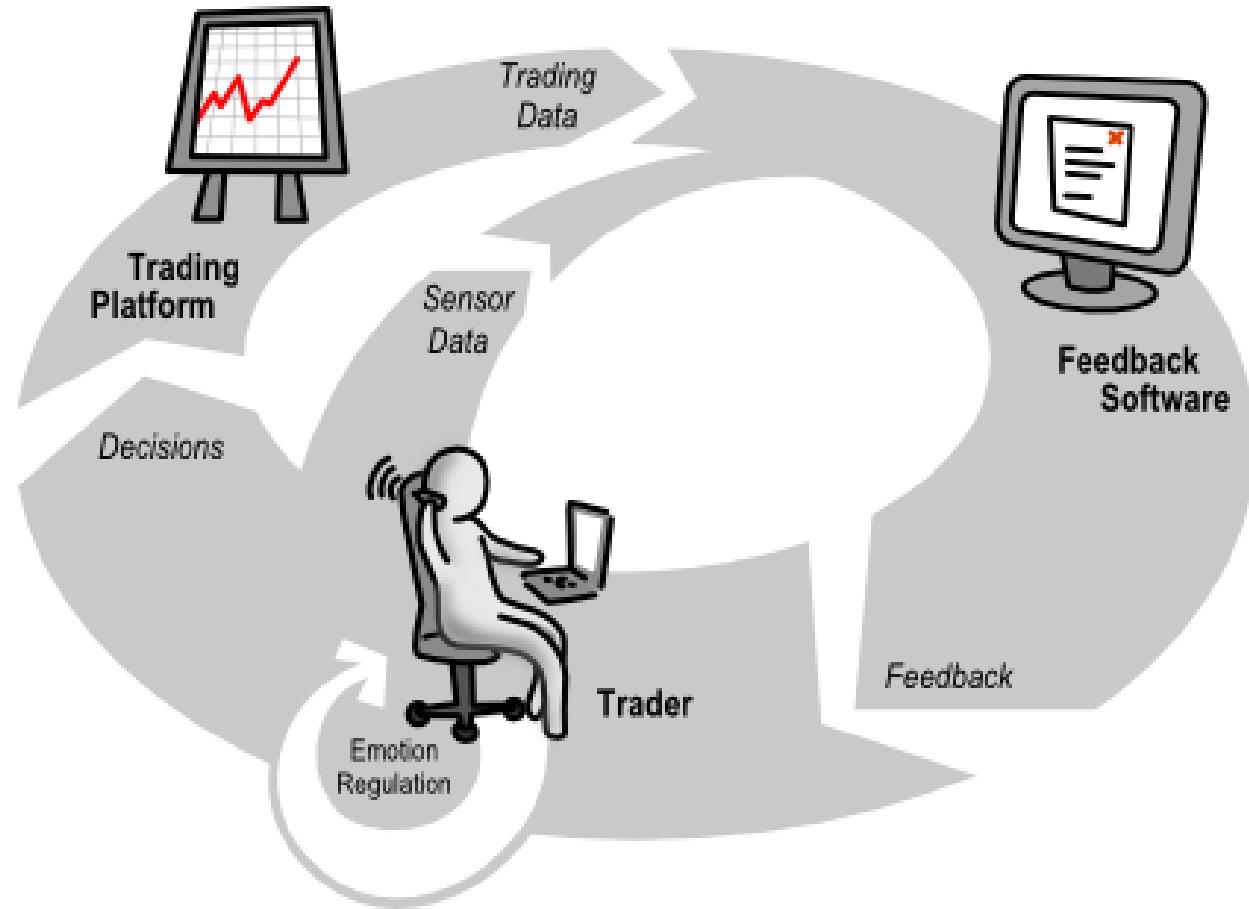
18<sup>th</sup> September 2012

# Agenda

- Background: xDelia Project
- Requirements
- Architecture
- Components and Configuration
- Examples



# xDelia-Project - Vision



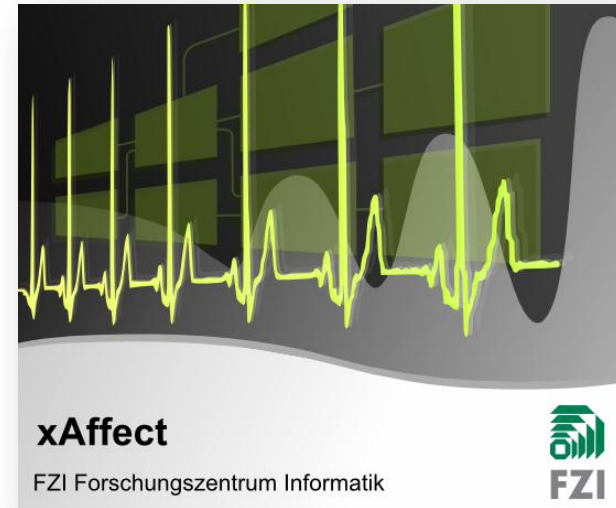
„Development of game and sensor based solutions to support financial decision making“

# Example: Inducing Arousal

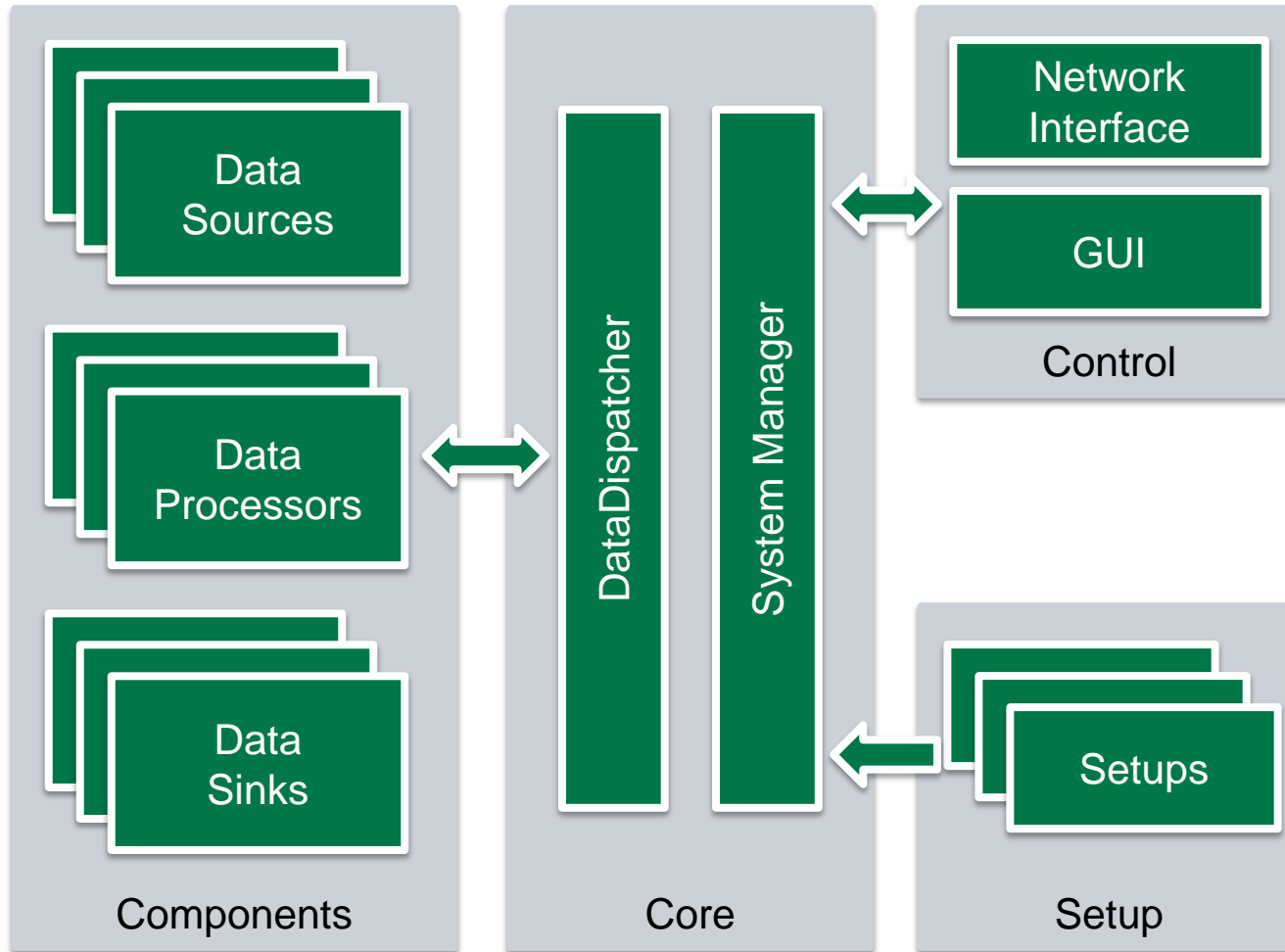
The word 'Affect' is written in a white, cursive-style font on a dark grey background. A bright green horizontal line with a slight gradient and a wavy, undulating path crosses through the middle of the letters, starting from the left and ending with a soft fade on the right.

# Goals and Requirements

- Modular middleware for biofeedback applications
- Integration of different sensors
- Handling of different data types (stream data, discrete data, events)
- Data logging and management for ex-post analysis (raw and meta data)
- Easy extensibility (integration of additional sensors and algorithms)
- Flexible combination of components using setups (Reconfigurability)
- Flexible interfaces



# Architecture



# Components integrated into xAffect

## Data Sources

- ekgMove
- Varioport-e
- Pressure mouse
- Marker button
- Timer
- Signal generator
- Unisens Reader
- MIRROR API

## Data Processors

- ECG → R-peak
- R-peak → HR
- HR → Arousal
- HR → HRV
- HR + PPG → PTT
- Mouse button press
- EDA

## Data Sinks

- Unisens logging
- Signal visualization
- Interface for auction game
- Interface for space investors
- Unisens streaming
- MIRROR API

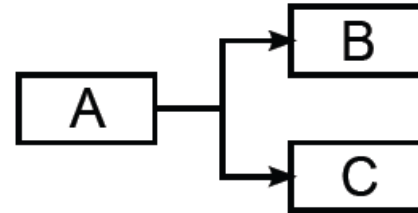
# Setup

Connecting the pieces and define the dataflow:

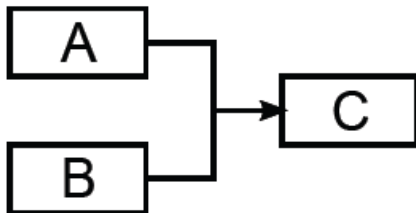
(a) Chaining



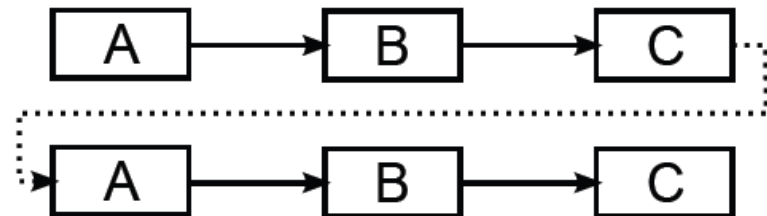
(b) Parallel processing



(c) Data fusion

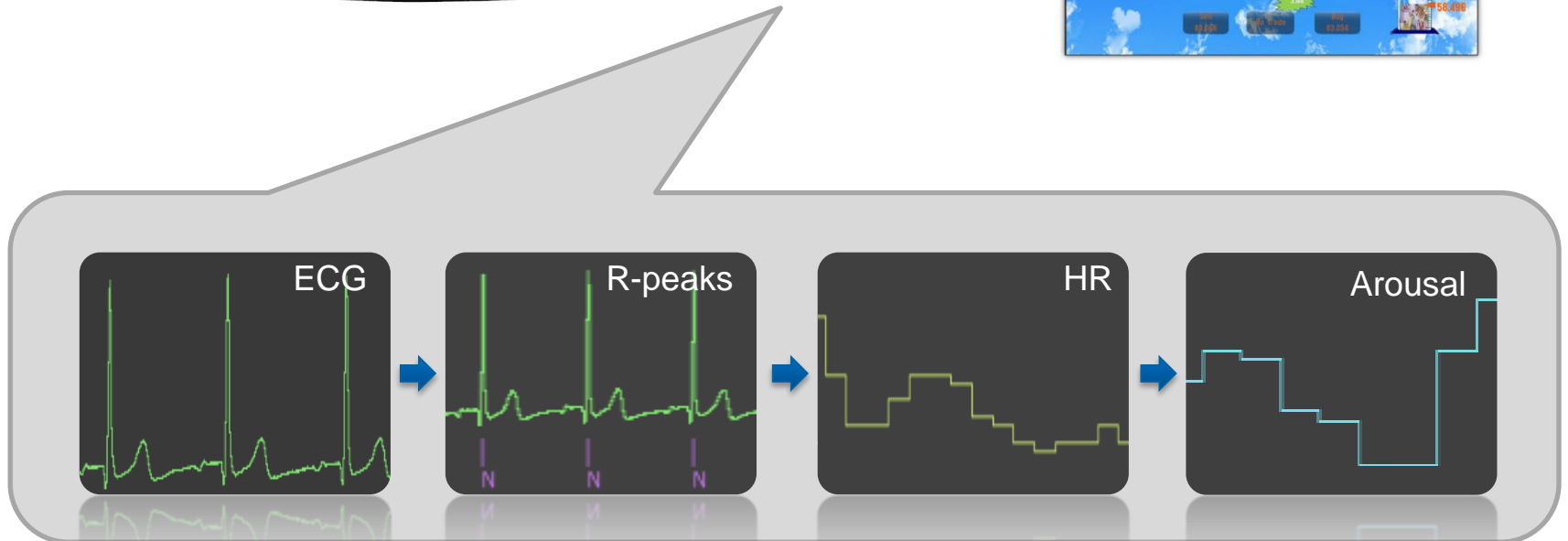


(d) Distributed processing





# Setup for the Auction Game



# Auction Game



# Summary

- Middleware to receive, process and submit sensor data for biofeedback applications
  - Connects sensors to 3rd party applications (e.g. learning interventions)
  - Computes biofeedback information from physiological signals
  - Stores sensor data for further analysis
  - Available open source (original BSD license)
  
- Outlook: xAffect in a box
  - Hardware and software comes preconfigured
  - First prototype on Google Android

# Thank you



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