Mechanical details:

The size is similar to a tennis ball.

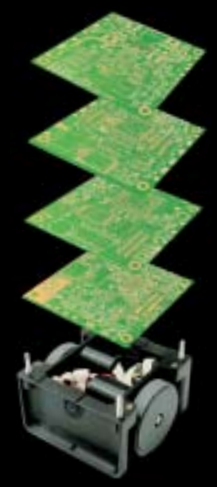
Length:	75mm
Width:	75mm
Height with electronic:	75mm
Wheel diameter:	46mm

Weight of the robot:

Without batteries:	340g
With batteries:	450g

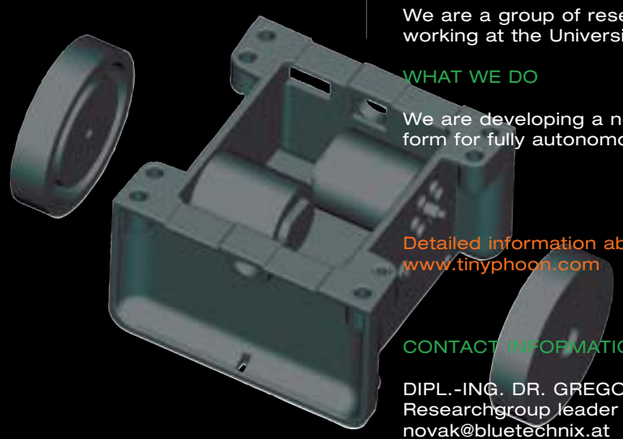
Specification of the two PWM controlled DC Motors:

Output power:	4.05W
Speed up to:	8000rpm
Stall torque:	21.2mNm
Magnetically encoder:	512ppr
Maximum speed:	2.54m/s (almost 10km/h)
Maximum acceleration:	5m/s² (From 0 to 2.5m/s in less than 0.3s)



Built in Electronics:

40MHz 16bit XC167 automotive controller
100MHz 32bit Etrax Linux PC on chip
600MHz 16bit Blackfin DSP
> 64Mbyte of SDRAM
Stereo audio input and output
2 Full color VGA digital camera
640x480@30fps
320x240@60fps
2 Bluetooth wireless interfaces
1 Wireless video interface
CAN bus on each board
100Mbit Ethernet
USB host controller
Compact flash interface for 1Gbyte HDD
Additional sensors: Compass, Gyro, Acceleration, Motor Encoder



Tinyphoon

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WHO WE ARE

We are a group of research engineers and students working at the University of Technology in Vienna.

WHAT WE DO

We are developing a next generation reference platform for fully autonomous and standalone robots.

Detailed information about Tinyphoon is found at www.tinyphoon.com

CONTACT INFORMATION

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INTRODUCING THE WORLDS MOST POWERFUL AND SMALLEST
SOCCER PLAYING ROBOT

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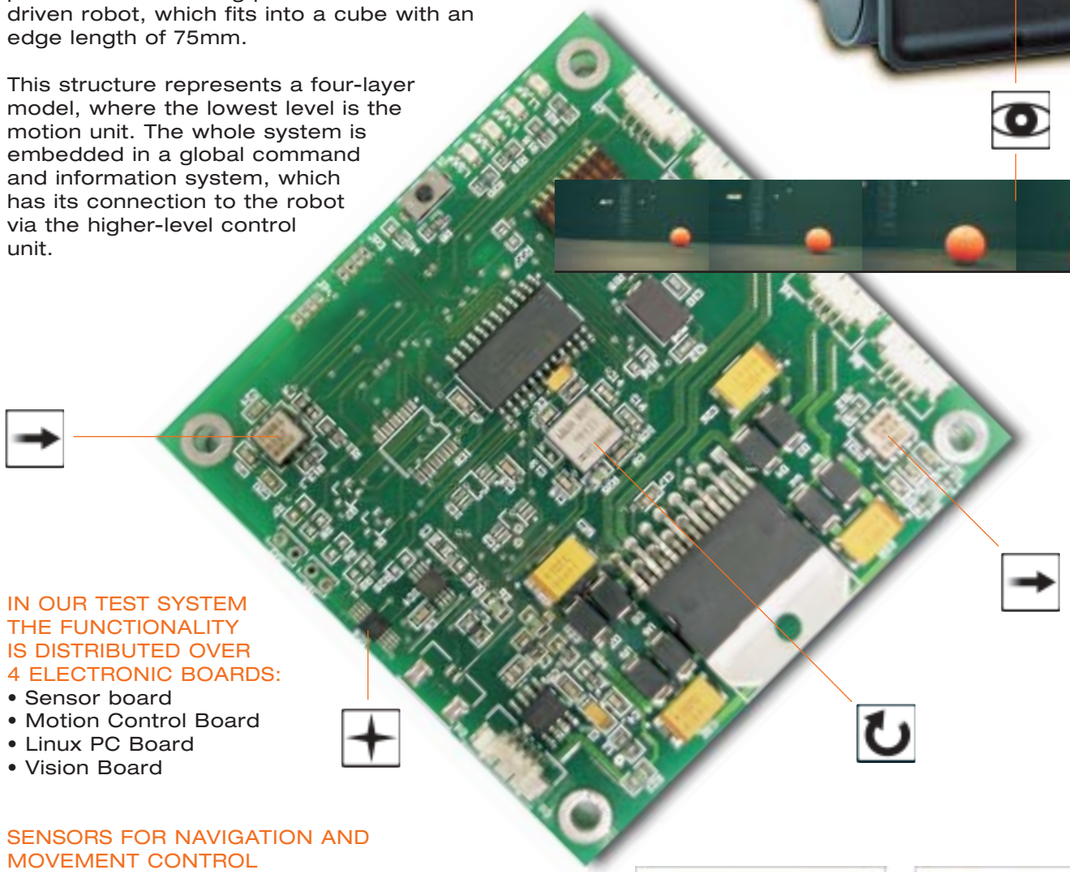
INTRODUCING THE WORLDS MOST POWERFUL AND SMALLEST SOCCER PLAYING ROBOT

Our new concept for autonomous mobile robots simplifies its construction by a modular design. Like the architecture of a PC it supports the integration of several existing components. Similar to the plug and play principle robots can be assembled with additional components, which are linked via a bus system, in order to extend or modify the robot's functionality. For the communication between these components a communication and configuration language is being developed. This concept can be applied to different mechanical platforms. Our testing platform is a two-wheels driven robot, which fits into a cube with an edge length of 75mm.

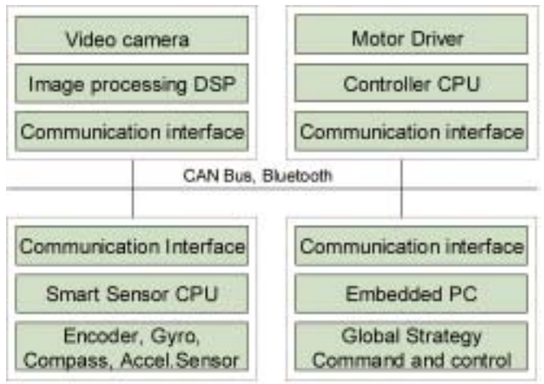
This structure represents a four-layer model, where the lowest level is the motion unit. The whole system is embedded in a global command and information system, which has its connection to the robot via the higher-level control unit.



IN OUR TEST SYSTEM THE FUNCTIONALITY IS DISTRIBUTED OVER 4 ELECTRONIC BOARDS:
- Sensor board
- Motion Control Board
- Linux PC Board
- Vision Board

SENSORS FOR NAVIGATION AND MOVEMENT CONTROL

- Compass (Navigation)
- Gyro Sensor (improved curve keeping)
- Acceleration Sensor (ABS, ASR, ESP)
- Encoder (velocity control)
- Camera (goal recognition)



HIGH TECH MODULAR PLATFORM

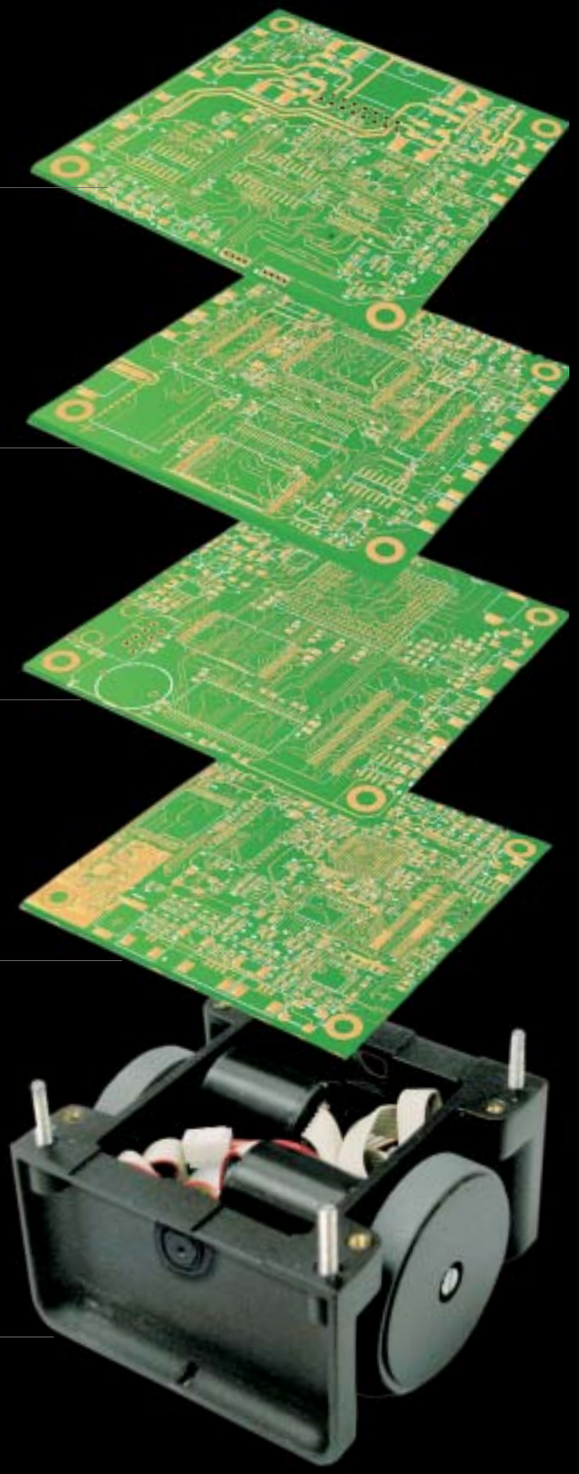
SENSOR BOARD
- Acceleration Sensor
- Gyro Sensor
- Yaw Rate Sensor
- Motor driver

MOTION CONTROL BOARD
- Based on xc167 of Infineon
- Sensor Fusion
- Navigation and Motion Control
- Bluetooth Communication

LINUX BOARD
- Based on an ETRAX chip
- Bluetooth Communication
- Higher Level Strategy
- Higher Level Communication

VISION BOARD
- Based on a Blackfin DSP of Analog Devices
- Vision System (Detection of Ball, Goal Positions and Obstacles)

MECHANICAL PART
- Fiber-reinforced plastics chassis
- DC – Motors with magnetically digital encoders
- Digital CMOS video camera of Omni Vision for Vision System



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