# FTKL- Tagung 2011 – ARDUINO

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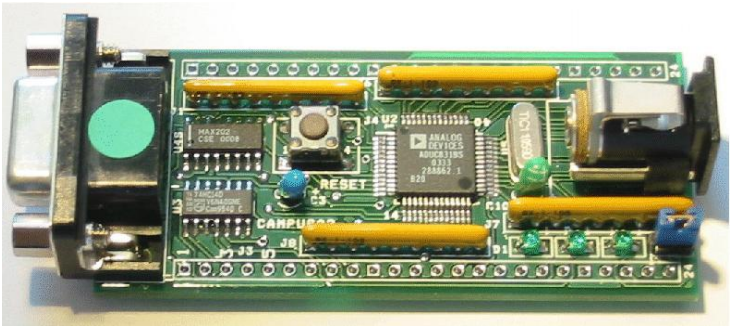
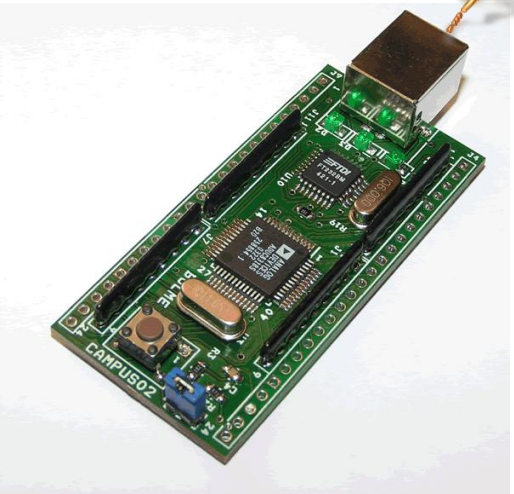
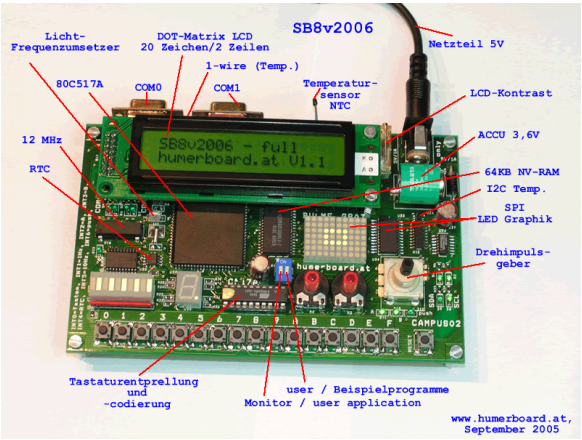



2003 - €51



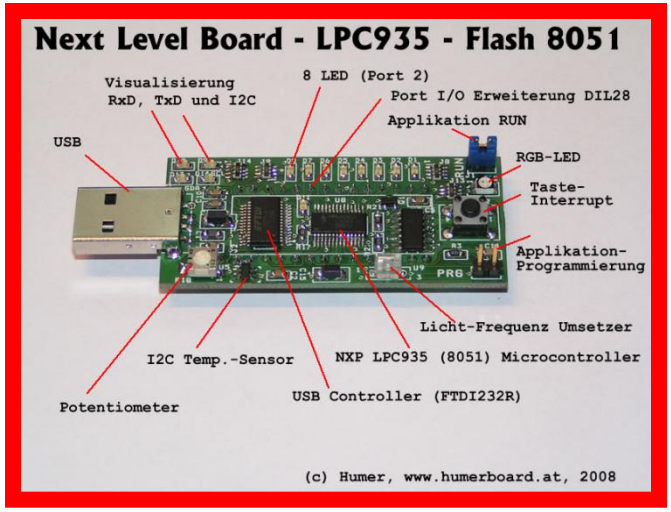

## Hist. Entwicklung MC-Boards

2006
€51




2002
€200

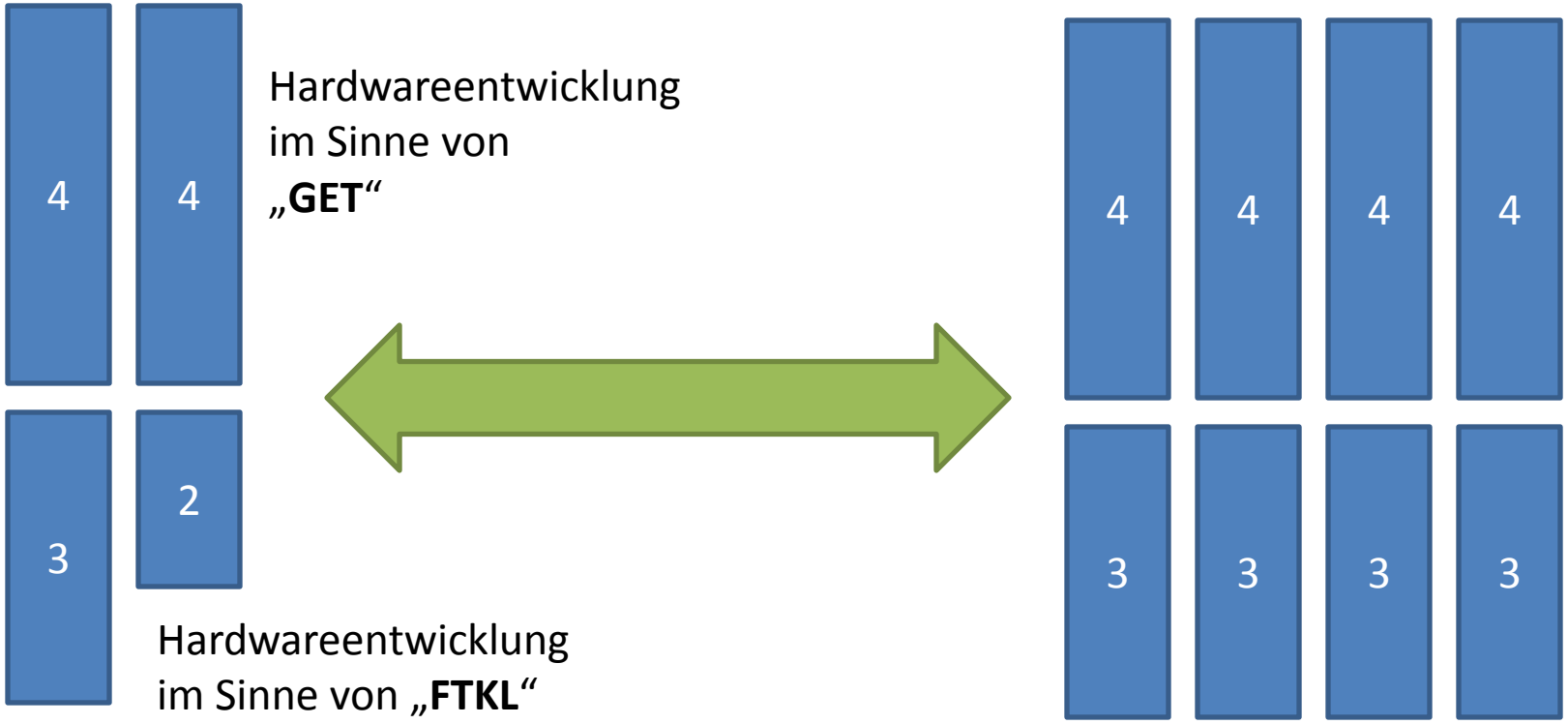
2009
€19

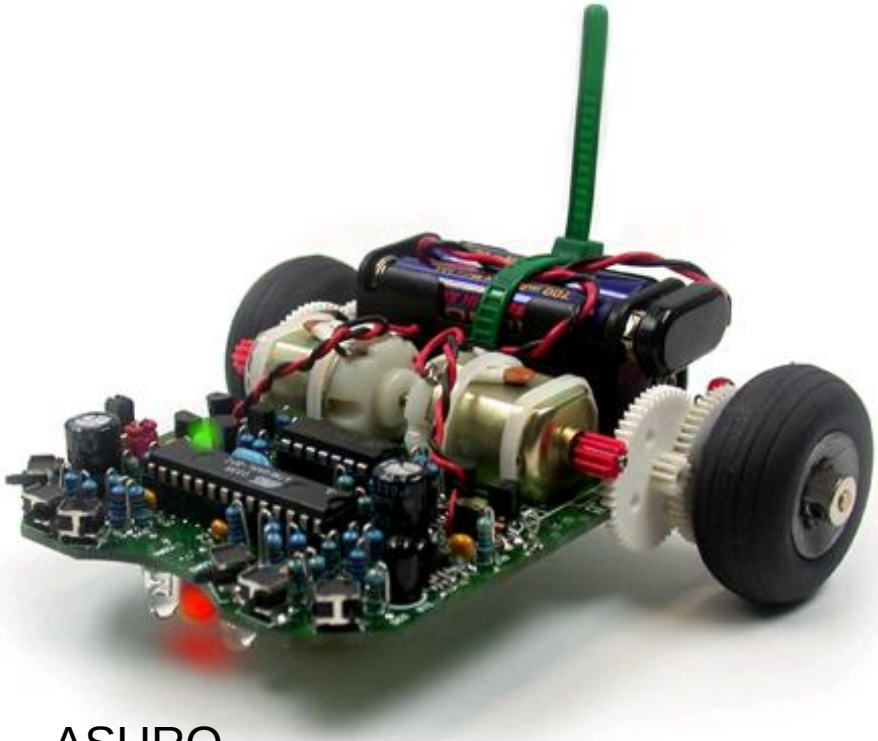



**FTKL-Fachtagungsthema 2009**

# Changen mit LP 2010

## Hardwareentwicklung – Prototypenentwicklung (Beispiel)





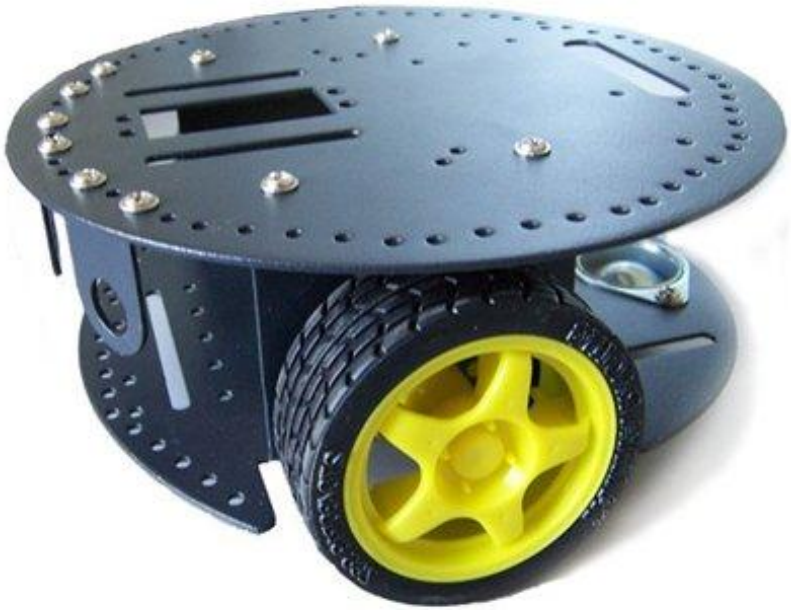
ASURO
Bausatz €50

3PI
Fertiggerät €100

**Implementierung in der 1. Klasse**

FTKL – Pläne, Werkstattzeichnung
Werkstätte - Zusammenbau

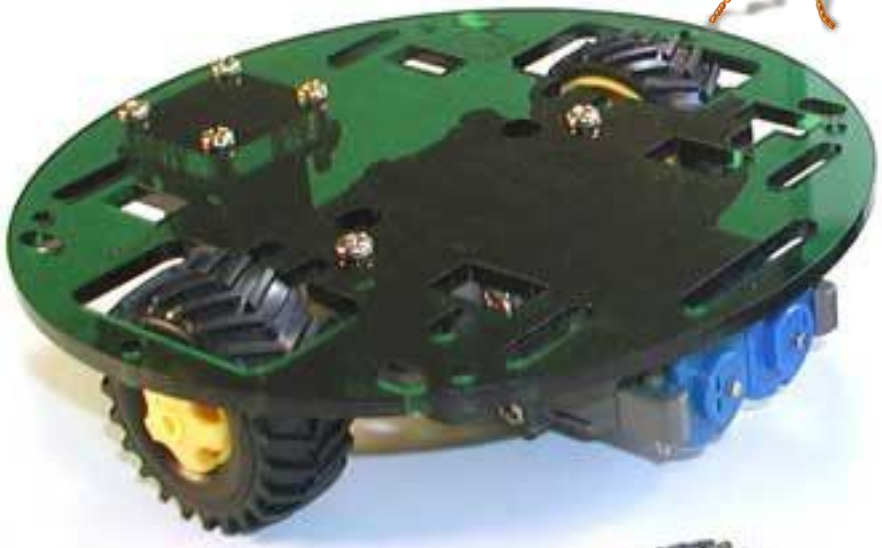
www.robotshop.ca



Preis €40,-

www.robotshop.ca

Preis €50,-

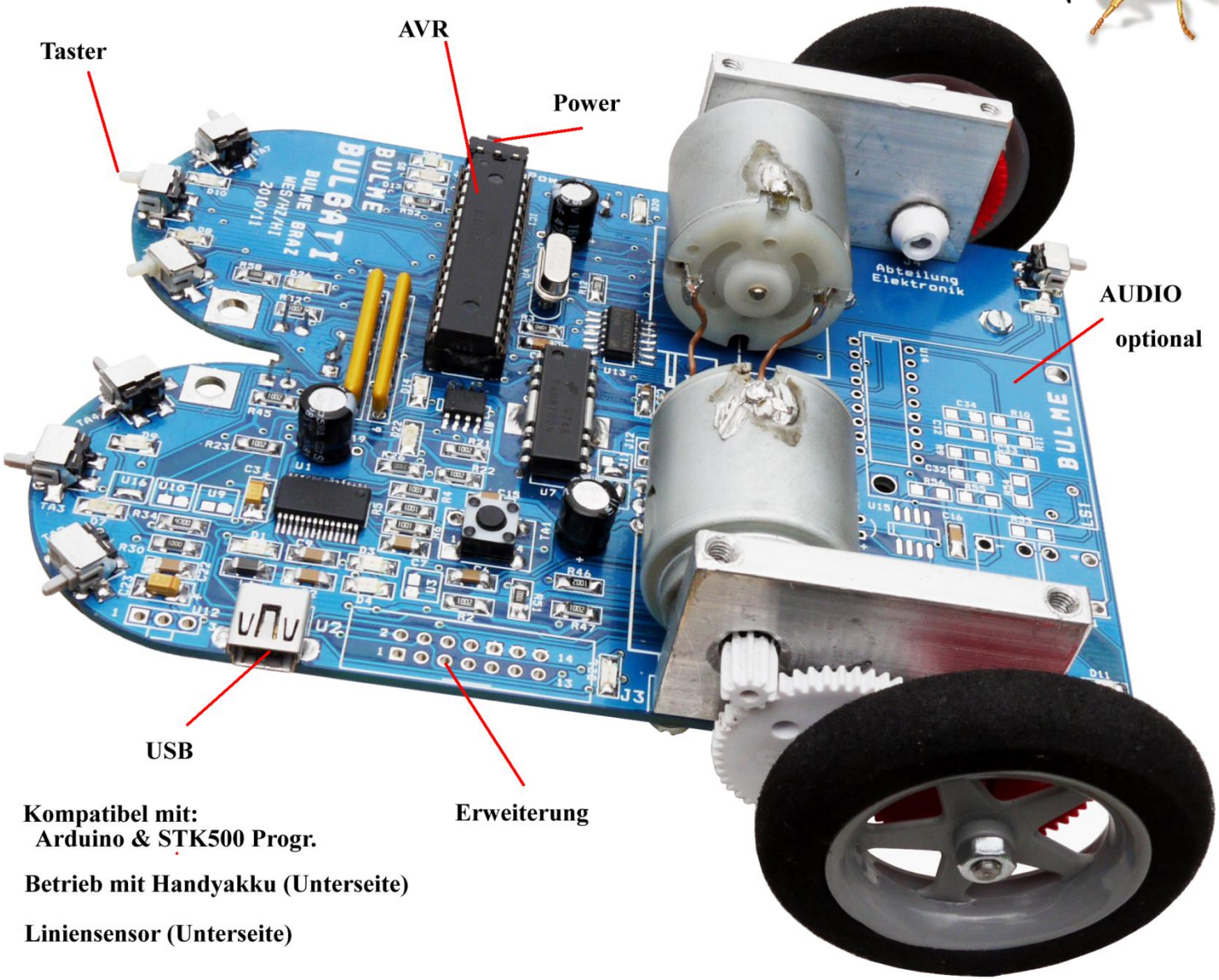


www.shop.robotikhardware.de

Preis €30,-

Einzelkomponenten
ca. 12 € /100 ohne Platte.

# FTKL- Tagung 2011 – Werkstättenprojekt 1. Jahrgang




Kompatibel mit:
Arduino & STK500 Progr.

Betrieb mit Handyakku (Unterseite)

Liniensensor (Unterseite)

# FTKL-Tagungsthema: AVR/Arduino

**open source -**
**Entwicklungssystem für**
- Windows
- Mac OS X
- LINUX

25€/BBG

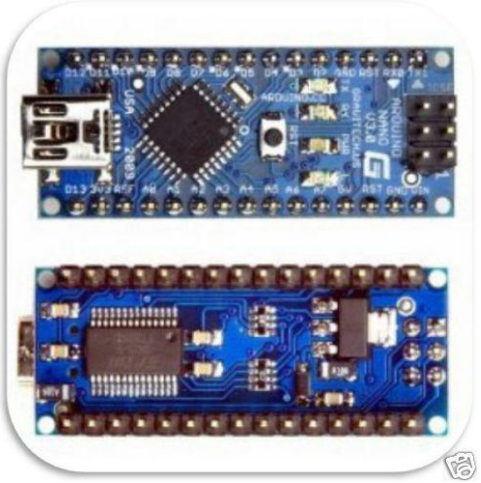
Bild: ARDUINO Konzept
www.arduino.cc

SEEED STUDIO

# XXXduino Basisplatinen

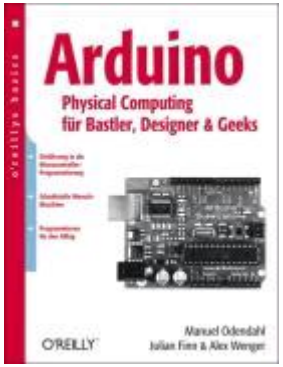
35€

ATMega 128

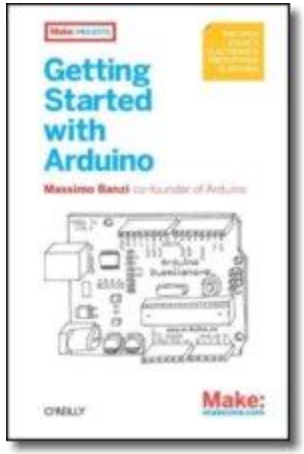


20€

25 €



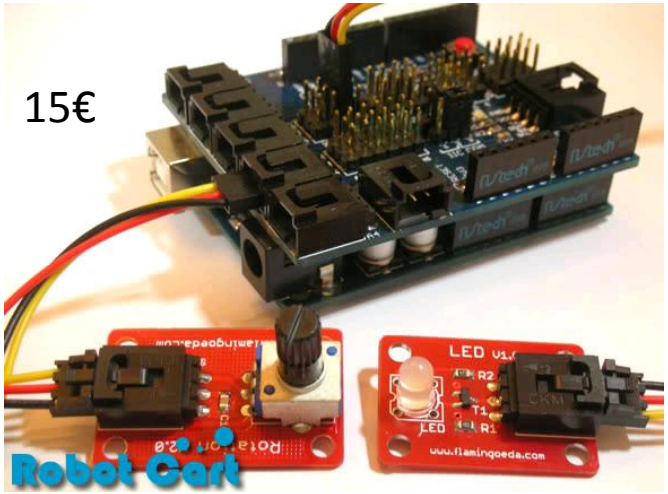

7€



Atmega 328 .. 20€

20€

# XXXduino Zusatzplatinen




15€

LCD Modul

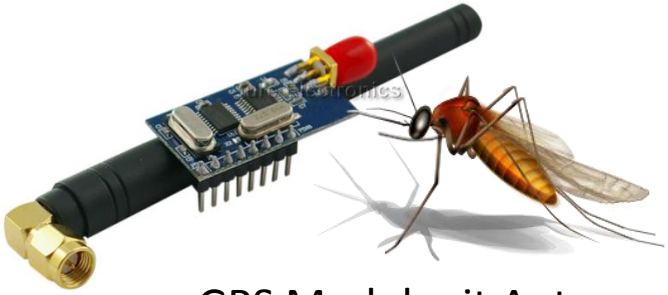
15€

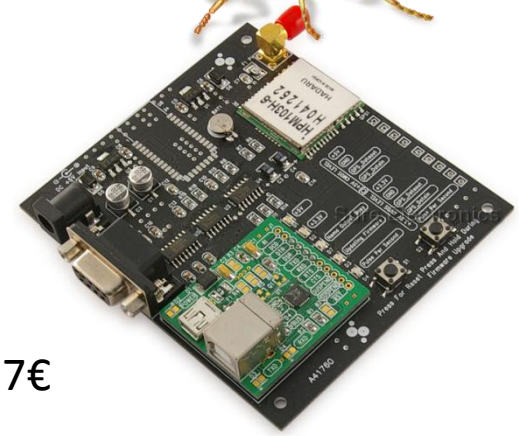
25€

# FTKL- Tagung 2011 – ARDUINO

Transceiver 433MHz 9€

Gyrator 14€

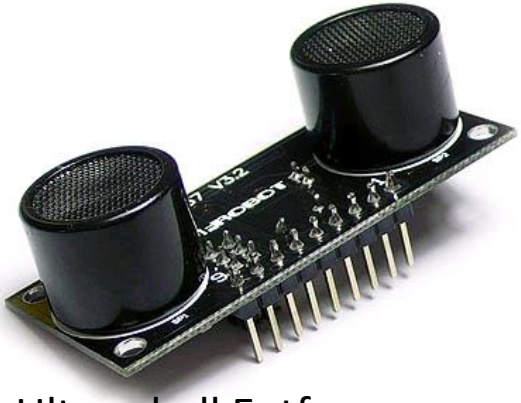




GPS Modul mit Antenne 27€

Joystick 5€

3-Achsen Beschlg. 11€



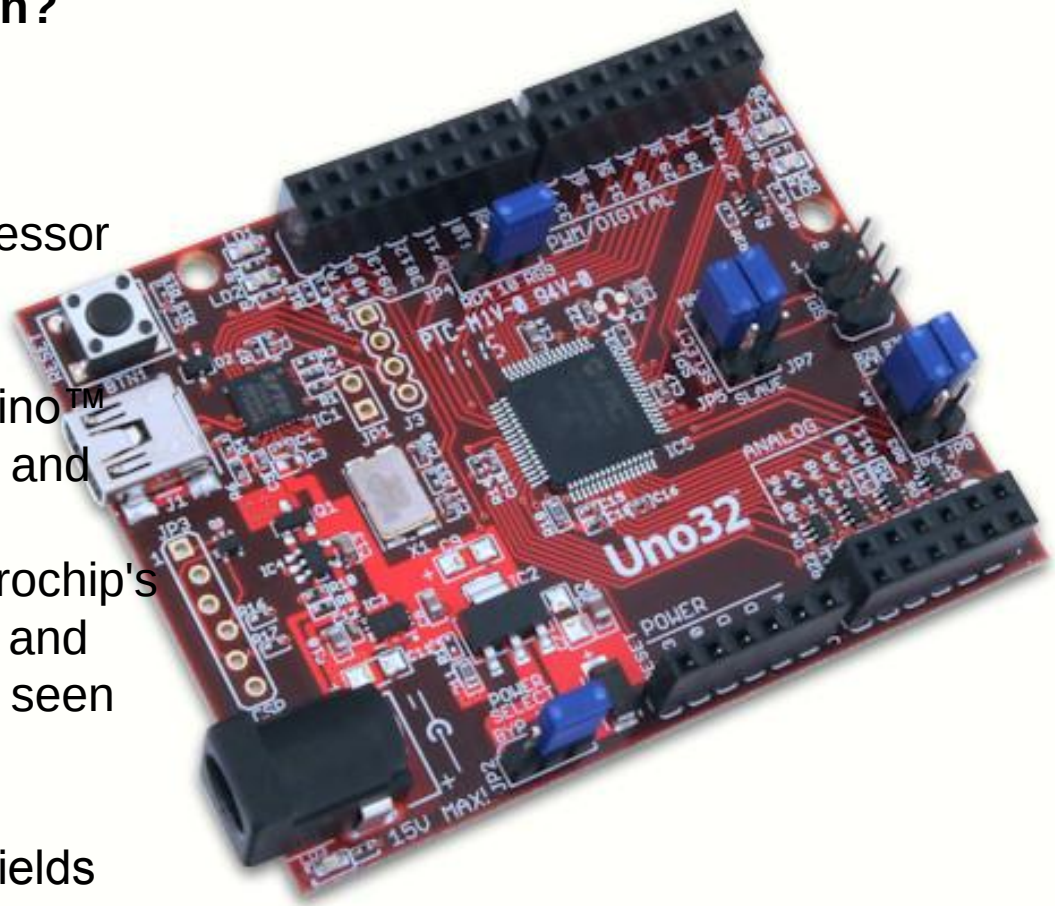
Ultraschall Entfernungsmesser 9€…20€

2-Achsiger Kompass 35€

www.sureelectronics.net, www.seeedstudio.com

## ARDUINO – Nächste Generation?

http://www.digilentinc.com




Microchip® PIC32MX320F128 processor
- 80 Mhz 32-bit MIPS
- 128K Flash, 16K SRAM

Compatible with many existing Arduino™ code examples, reference materials and other resources

Can also be programmed using Microchip's MPLAB® IDE (along with a PICkit 3 and our PICkit3 Programming Cable Kit, seen below)

Arduino™ "Uno" form factor

Compatible with many Arduino™ shields

42 available I/O

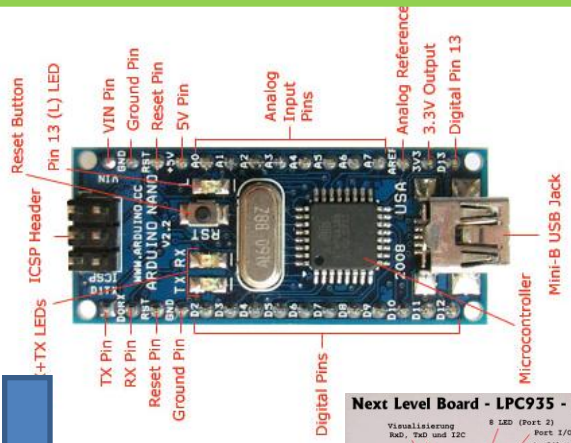
User LED

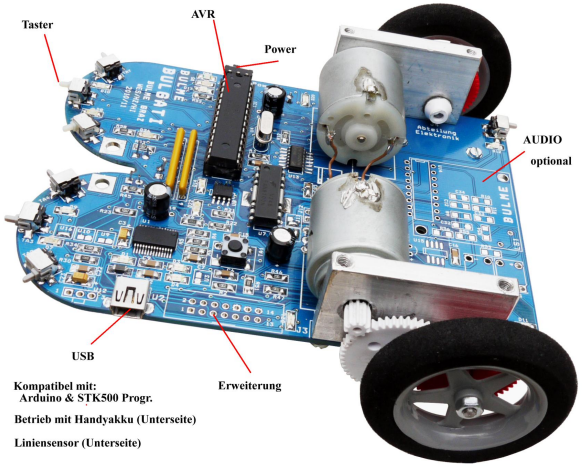
30 €

# FTKL- Tagung 2011 – Zukunft?

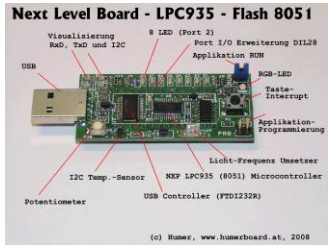
I .. V Jahrgang

**Arduino** / AVR o. PIC



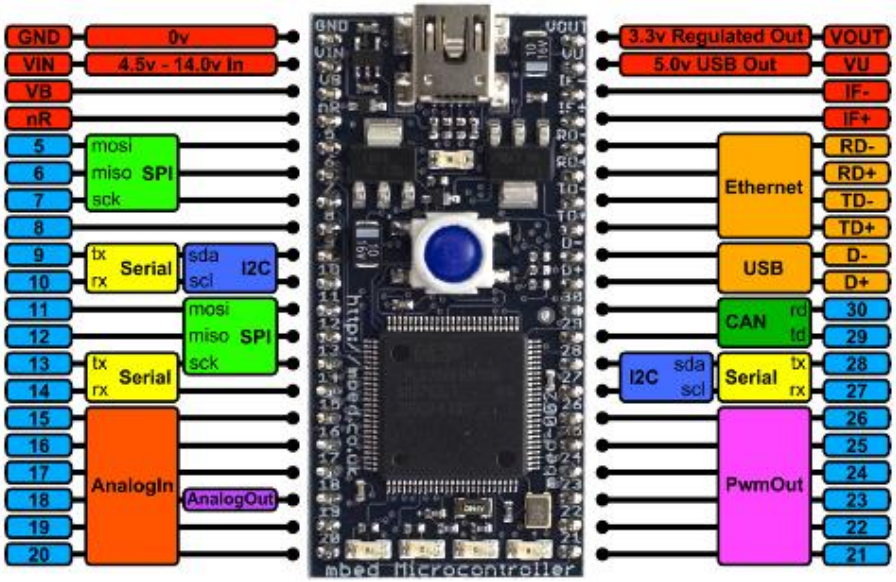




Ev. 8051-Flash

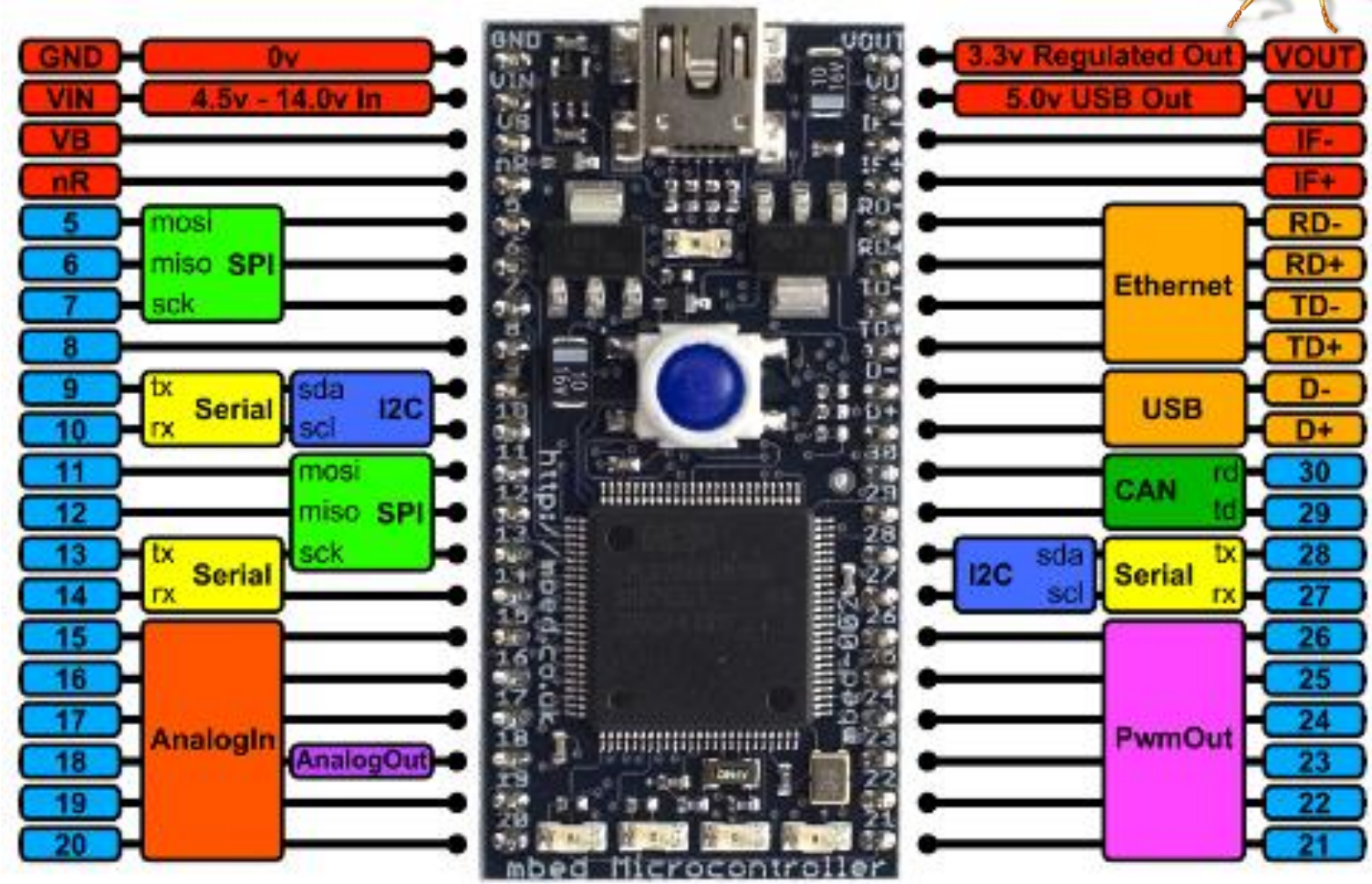



Cortex – M0 o. M3

**mbed**

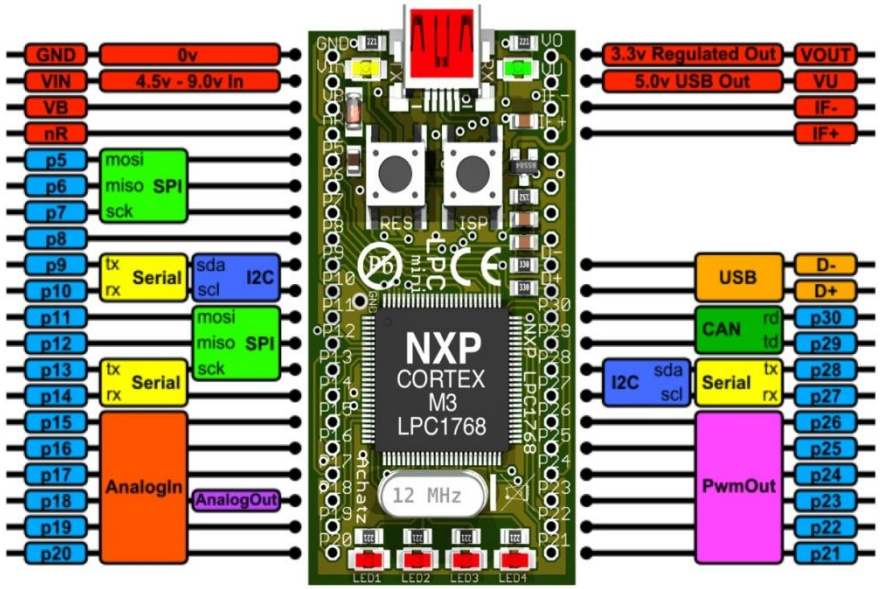



7.11.2011

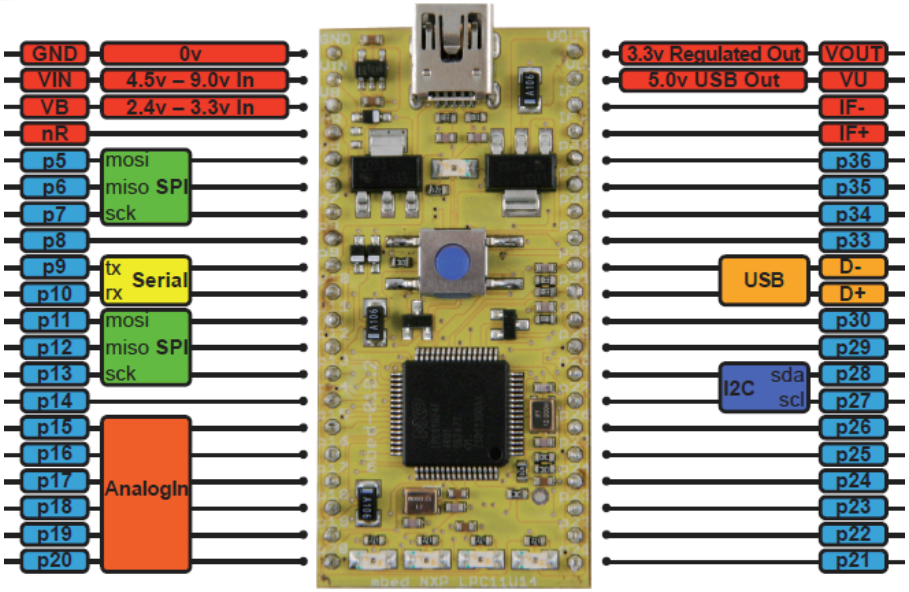

GND
VIN
VB
nR
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
0v
4.5v - 14.0v In
mosi
miso
sck
SPI
tx
rx
Serial
sda
scl
I2C
mosi
miso
sck
SPI
tx
rx
Serial
AnalogIn
AnalogOut
3.3v Regulated Out
5.0v USB Out
VOUT
VU
IF-
IF+
RD-
RD+
TD-
TD+
D-
D+
30
29
28
27
26
25
24
23
22
21
Ethernet
USB
CAN
rd
td
I2C
sda
scl
Serial
tx
rx
PwmOut
http://mbed.co.uk
mbed Microcontroller

# www.mbed.org

# FTKL- Tagung 2011 – Zukunft?




Cortex M3 (mbed) LPCmini
Materialpreis ca. 20€
Werkstätte – löten und testen




Cortex M0 (mbed)
Materialpreis ca. 10€
Werkstätte – löten und testen

# T E R M I N Tagung 2012
# Thema: mbed

- Mo., 5. November 2012
- BULME Graz (?)
- 2 Halbtage
- ARM 7 - Implementierung