



Mechatronics Real Time Linux: A RTOS Live CD Based on Linux

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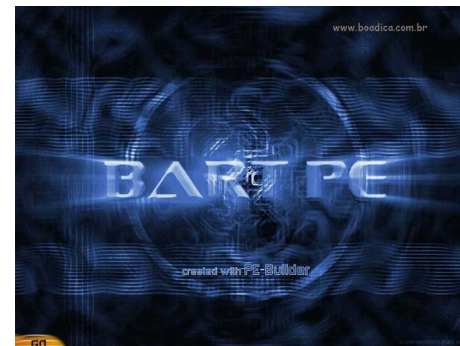


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Introduction

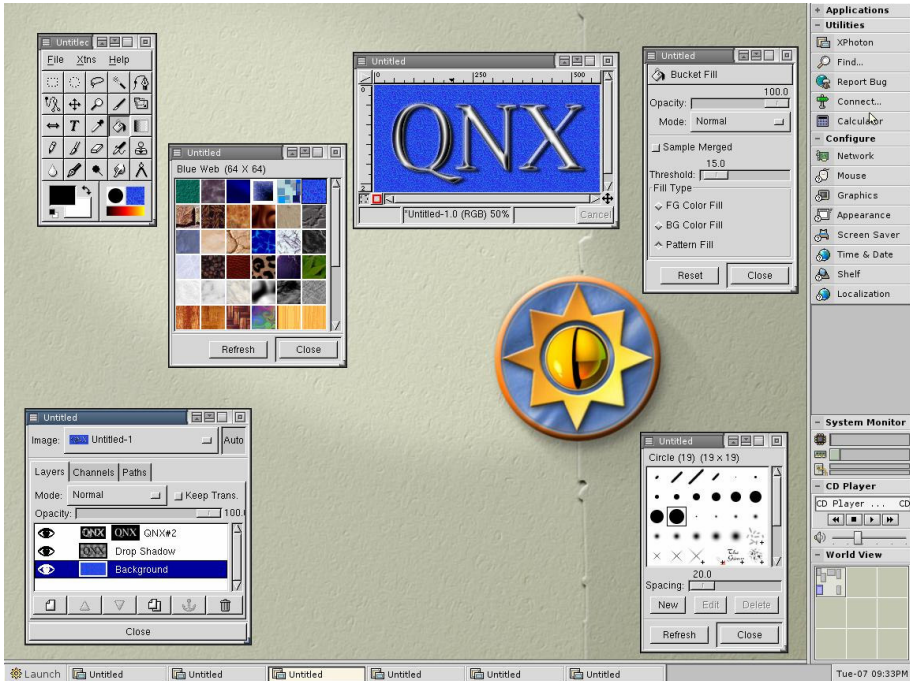
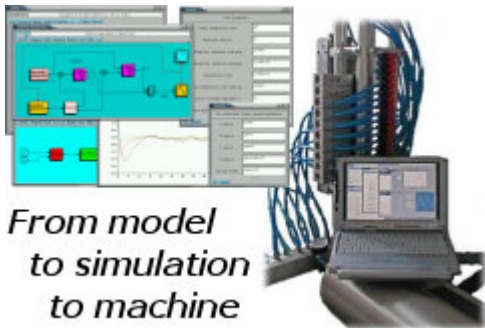
- Real Time Systems
 - Hard, Soft and Firm Real Time
 - Determinism & Reliability
 - Commercial Solutions
- RTOS
- Linux as a RTOS

Live CDs

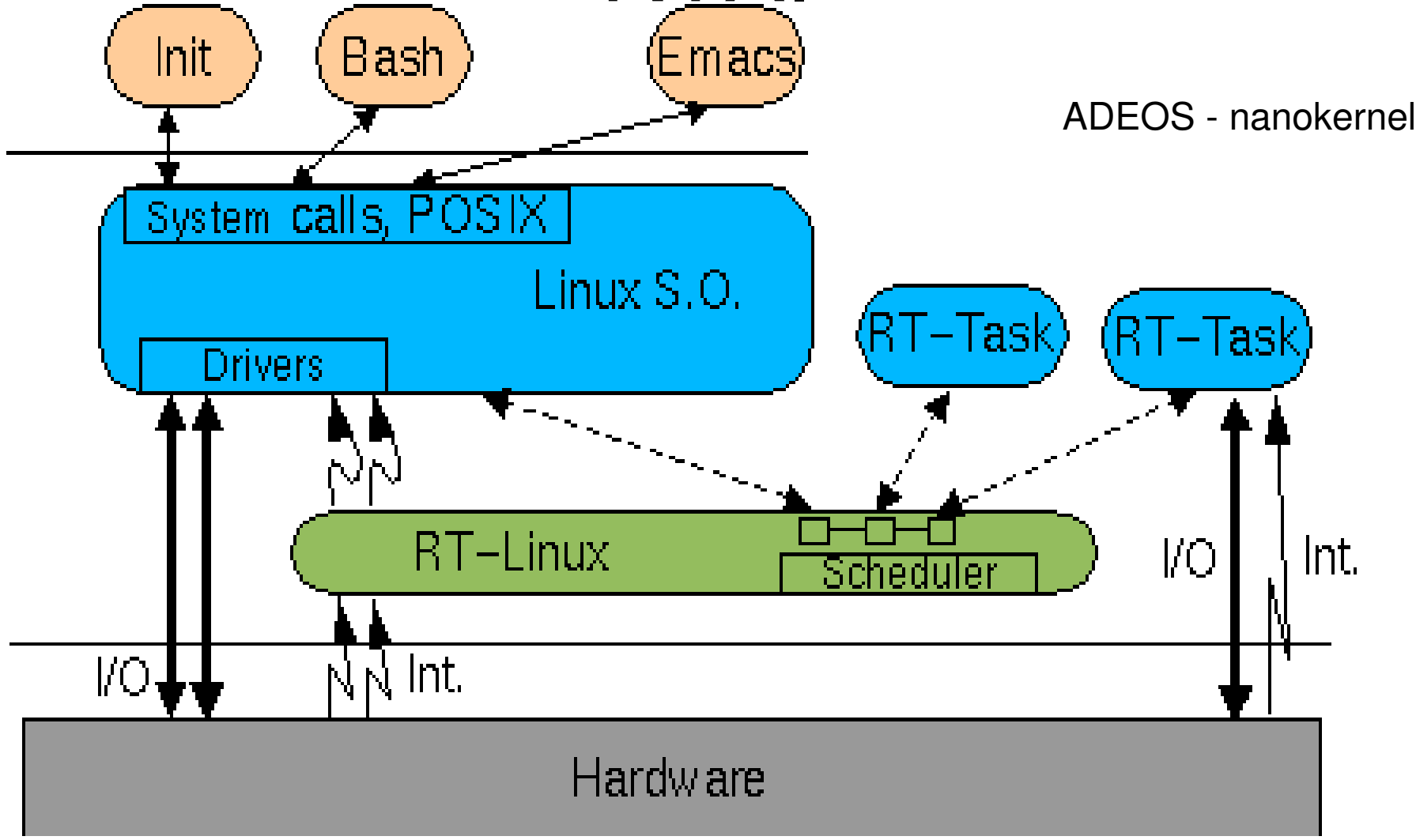


Real Time Live CDs

- QNX Neutrino
- RTAI Testsuite Live CD
- RTAI-Knoppix

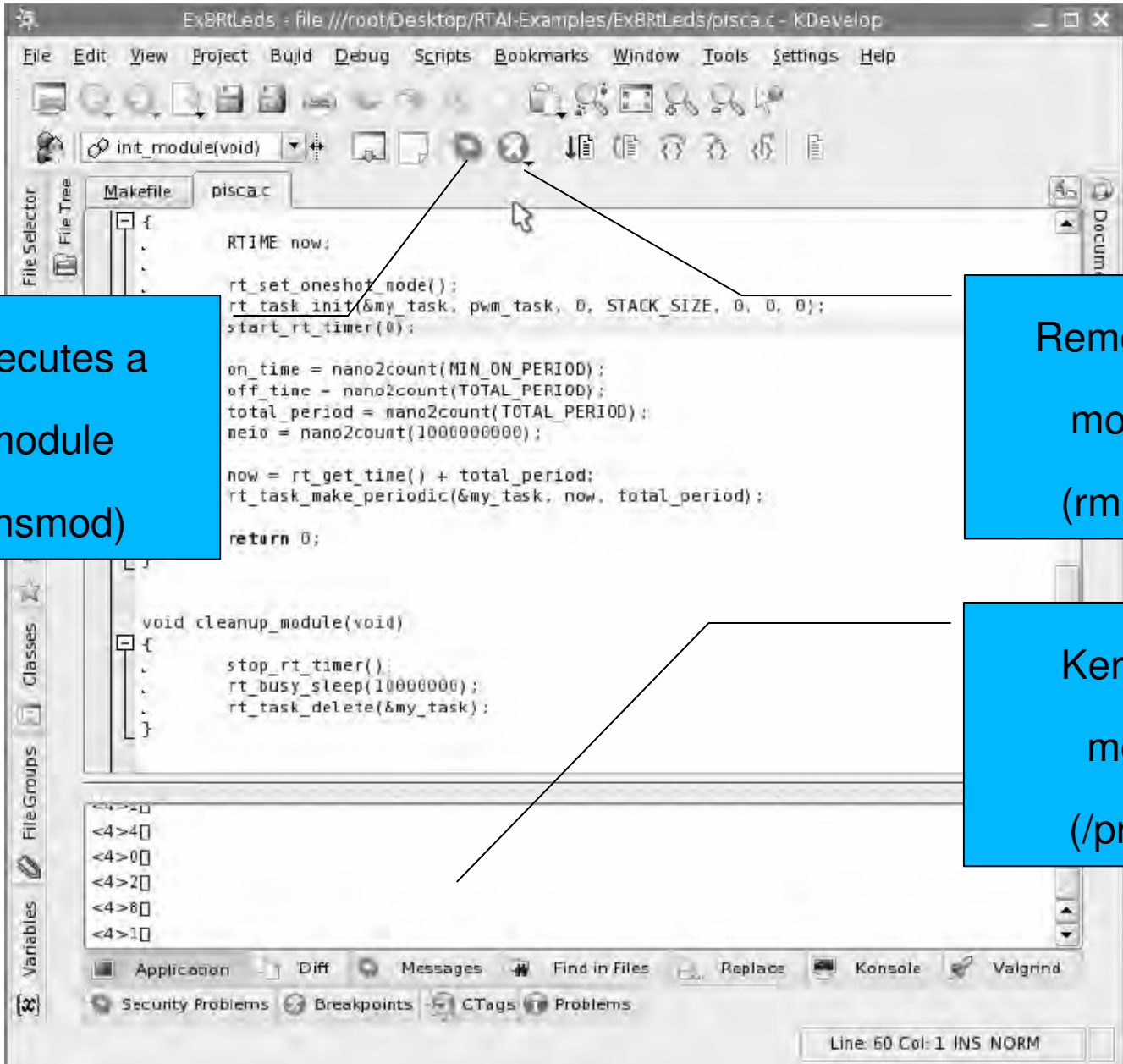


RTAI



Mechatronics Real Time Linux

- Based on Slax and RTAI
- websave/webrestore
- sshfs
- KDevelop with “Stop” & “Run”
- Samples from NIST Real Time Tutorial

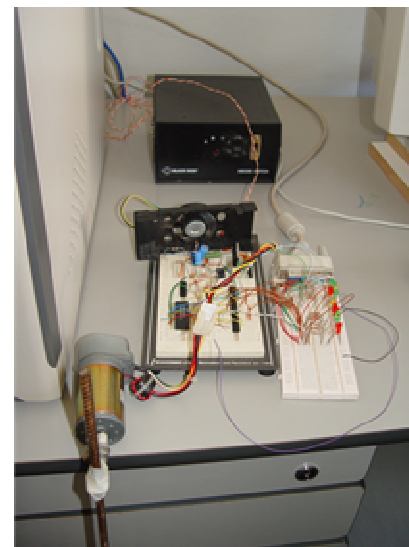
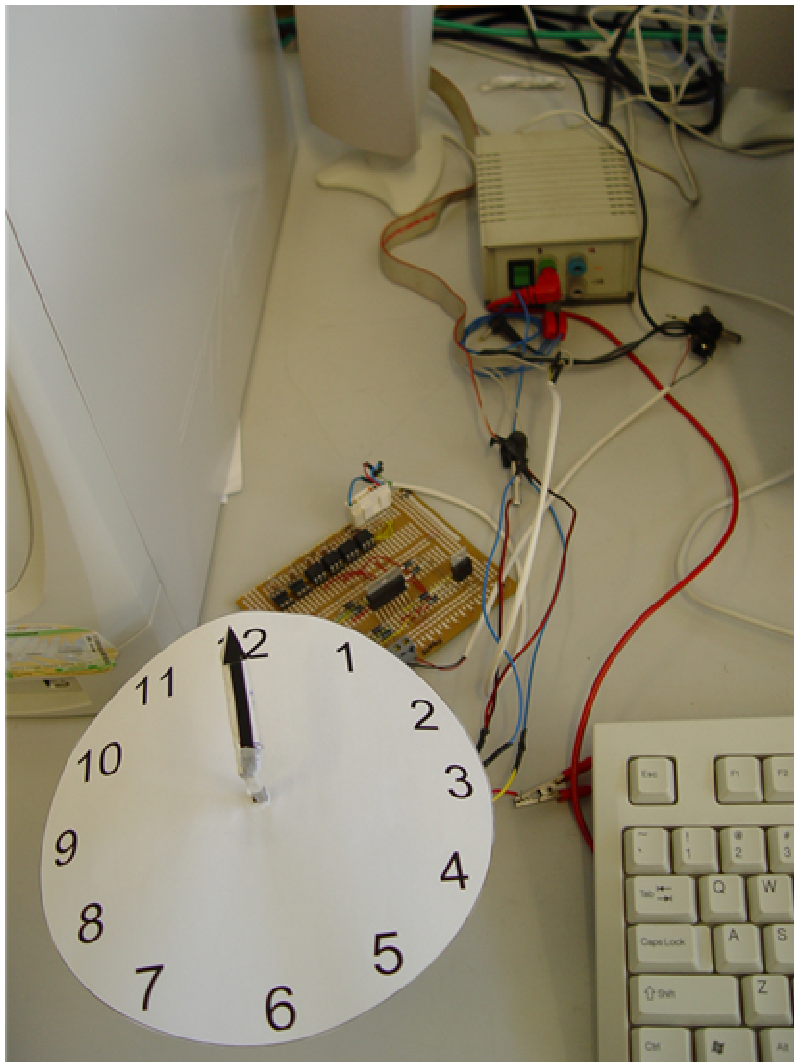


Executes a module (insmod)

Removes a module (rmmod)

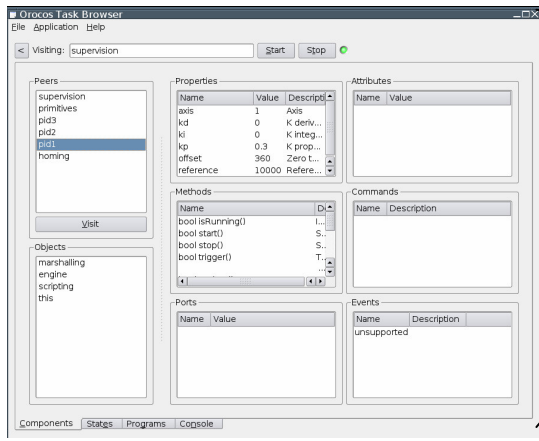
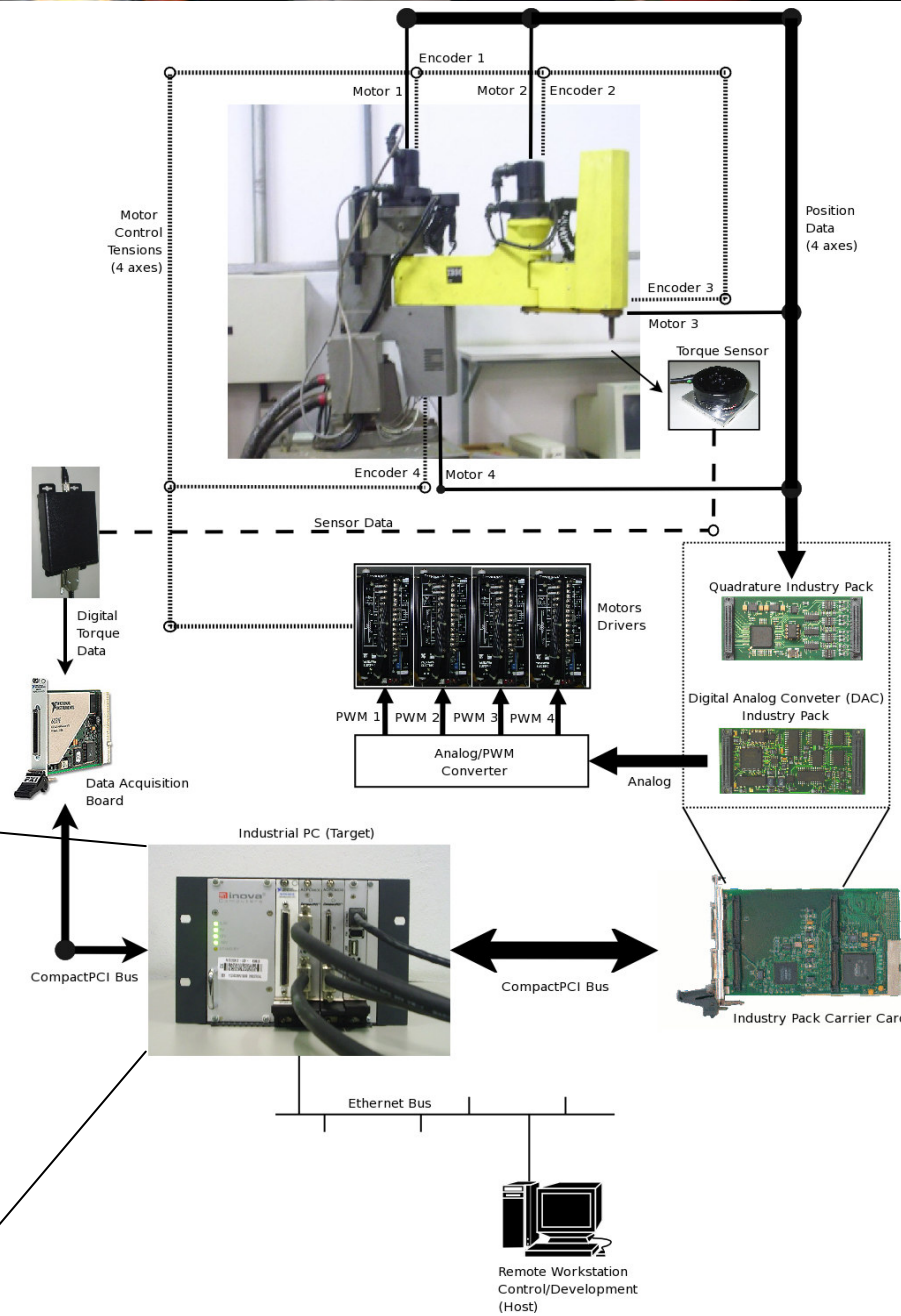
Kernel output monitoring (/proc/kmsg)

Teaching with MecRTL



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Case Study: Scara Robot



Orocos Task Browser

File Application Help

Visiting: supervision Start Stop ●

Peers

- supervision
- primitives
- pid3
- pid2
- pid1**
- homing

Visit

Properties

Name	Value	Description
axis	1	Axis
kd	0	K deriv...
ki	0	K integ...
kp	0.3	K prop...
offset	360	Zero t...
reference	10000	Refere...

Attributes

Name	Value

Methods

Name	Description
bool isRunning()	I...
bool start()	S..
bool stop()	S..
bool trigger()	T..

Commands

Name	Description

Objects

- marshalling
- engine
- scripting
- this

Ports

Name	Value

Events

Name	Description
unsupported	

Components States Programs Console

Conclusions

- MecRTL is a Live RTOS for people with basic computing skills

- Simple and quick to use and learn

- Free and Open Source

– <http://www.mecatronica.eesc.usp.br/~aroca/slax-rt/>

Main References

- Palli, G. (Last Access on Mar 2007). Rtai knoppix (md5sum) - knoppix based rtai livecd.
- Aarno, D. (Last Access on Mar 2007). Evaluation of real-time linux derivatives for use in robotic control. On-Line:
<http://www.nada.kth.se/bishop/resources/rtos.pdf>.
- Irwin, P., Richard, L., and Johnson, J. (2002). Real-time control using open source rtos.
- In Lewis, H., editor, *Advanced Telescope and Instrumentation Control Software II*, volume 4848, pages 560–567. SPIE.



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