

## Information about ongoing activities in the technical core group as of 04-30-2008



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### UP<sup>3</sup>I TECHNICAL MEMORANDUM

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#### *Firewire on the road to obsolescence*

We in the UP<sup>3</sup>I technical core group believe that IEEE 1394 (Firewire) will become a niche technology sooner rather than later for industrial applications. In addition, we have experienced quite a few problems with the IEEE 1394 physical layer in the past. Therefore, the UP<sup>3</sup>I technical core group is recommending a change to the underlying UP<sup>3</sup>I physical layer.

#### *New physical layer*

UP<sup>3</sup>I is implemented over IEEE 1394 for both time-critical control signals and for mass data such as file transfer. A logical successor of IEEE 1394 could be an industrial Ethernet derivative that has realtime capabilities. However, it is not yet clear which of the several competing standards is going to become the dominant one. Besides, an industrial realtime Ethernet is rather difficult to implement especially for smaller devices, thus, the UP<sup>3</sup>I technical core group has opted for a separation of the time critical control signals and mass data -- the time critical control signals on a CAN bus and the mass data over standard TCP/IP Ethernet. These communication standards are well established in the industry which seems unlikely that one or both will be abandoned in 5-10 years.

#### *Easy step by step approach*

A significant advantage of the proposed future physical layer (CAN and TCP/IP Ethernet combination) is the ability to only implement the time critical control signals over the CAN bus -- an entry level solution which supports only a subset of UP<sup>3</sup>I functionality. This entry level solution is especially meant for rather simple devices that do not require advanced UP<sup>3</sup>I features such as remote GUIs, SNMP, or sophisticated error recovery. The complexity and development effort required to support the CAN bus implementation is much simpler and easier than an IEEE 1394 implementation. We expect the costs per device for a CAN-only implementation to be equal to Type-1, but with more functionality. As there are also USB and PCI adapter cards available to support CAN it can be supported instantly by PC-based hardware as well as by small microcontroller based systems. All UP<sup>3</sup>I features can be implemented by a combination of CAN and TCP/IP Ethernet within one device.

#### *Next steps*

The UP<sup>3</sup>I technical core group members have begun an intensive test of the proposed physical layer based on a draft specification (UP<sup>3</sup>I version 2.0) which is available upon request. UP<sup>3</sup>I version 2.0 will be published as soon as this test is completed which should be no later than year's end 2008. Should you require more information about these changes and are interested in planning for support of UP<sup>3</sup>I version 2.0 in the near future, please contact us.