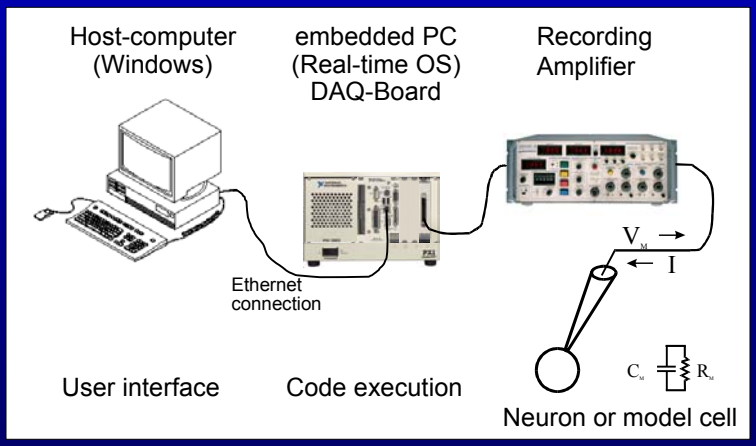
Dynamic Clamp based on LabVIEW-RT

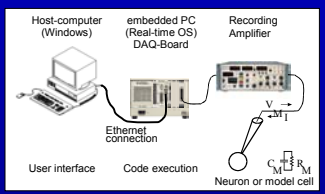
- an embedded computer running under a real-time OS
- real-time extension of the LabVIEW programming environment



Dynamic Clamp based on LabVIEW-RT

- an embedded computer running under a real-time OS
- real-time extension of the LabVIEW programming environment

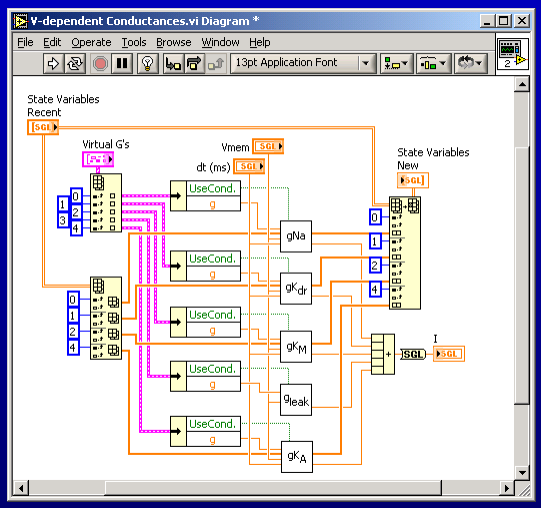
- *embedded computer*: no direct user-interaction
  → no knowledge about real-time OS required
- *real-time OS*: deterministic program execution
  → user-defined fixed time-steps



- *LabVIEW*: graphical programming environment
  → uses icons representing functions and procedures
  → program flow follows lines ('wires') connecting output of one function with input of next function

- *real-time extension*: add-on module that allows development of applications that can be downloaded to and executed on the embedded computer

Dynamic Clamp based on LabVIEW-RT



Dynamic Clamp based on LabVIEW-RT

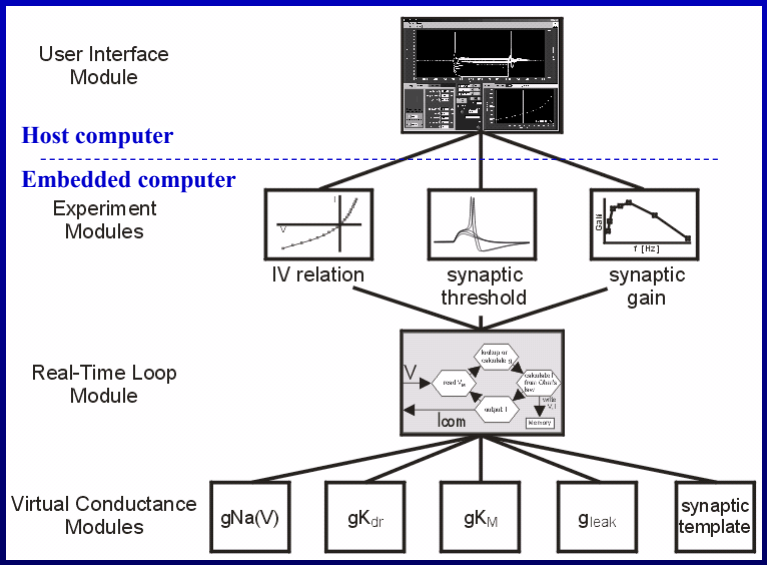
Con

- $10.000 – $15.000
  ~2/3 hardware (embedded computer, I/O board)
  ~1/3 LabVIEW

Pro

- everything from 1 manufacturer (National Instruments, Austin, TX)
  → hard- and software will work together without problems, including future upgrades

G-Clamp



G-Clamp

Kullmann, Wheeler, Beacom & Horn: Implementation of a fast 16-bit dynamic clamp using LabVIEW-RT. J.Neurophysiol. 91:542-554, 2004

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G-clamp software
+ documentation: http://hornlab.neurobio.pitt.edu