

NC, Robotic

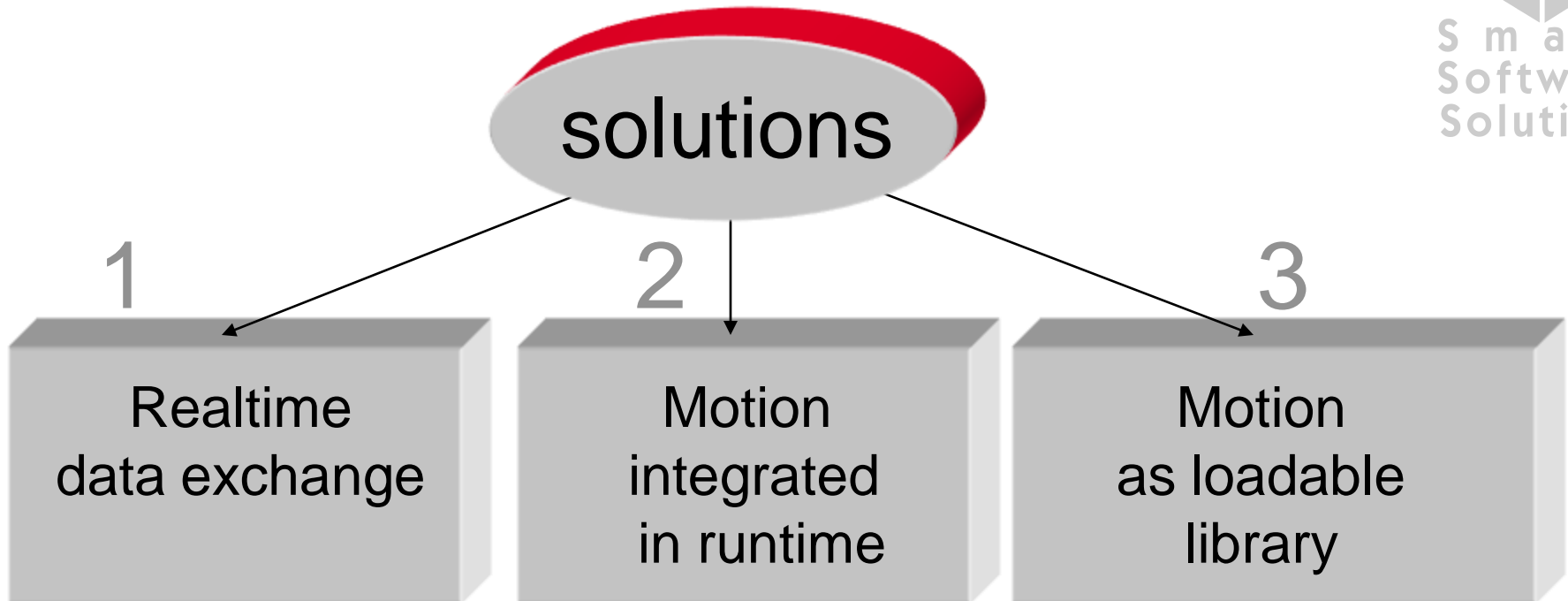


Visualization



CoDeSys + Motion

Motion Integration (Runtime)



Separate Motion- and PLC-tasks communicate via shared variables

3S or OEM integrates motion-functions with IEC-Interface into Codesys-Runtime*

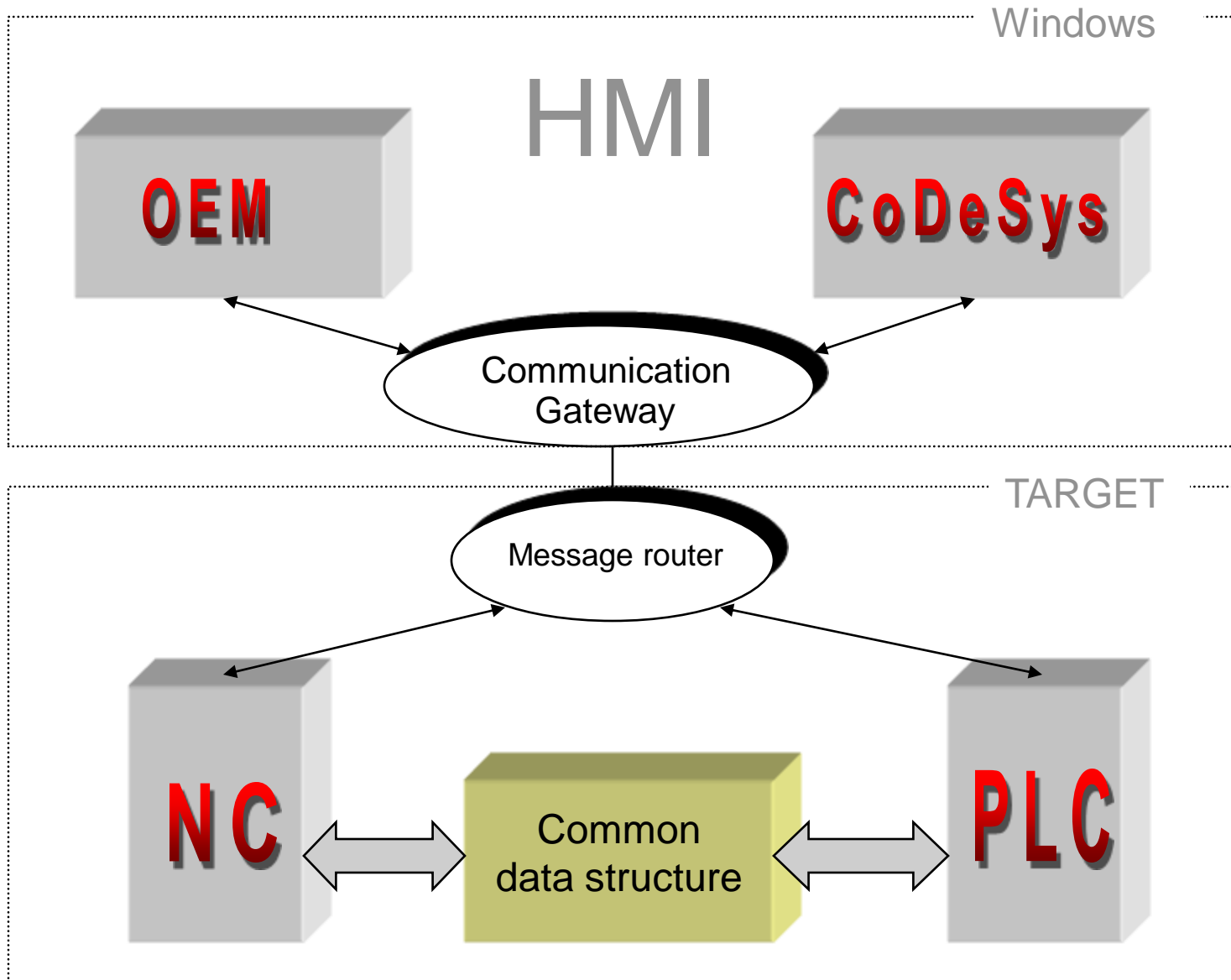
(„C“-source)

(*for NT-Realtime only through 3S at the moment !)

OEM integrates motion-functions into internal (IEC) or external („C“) library

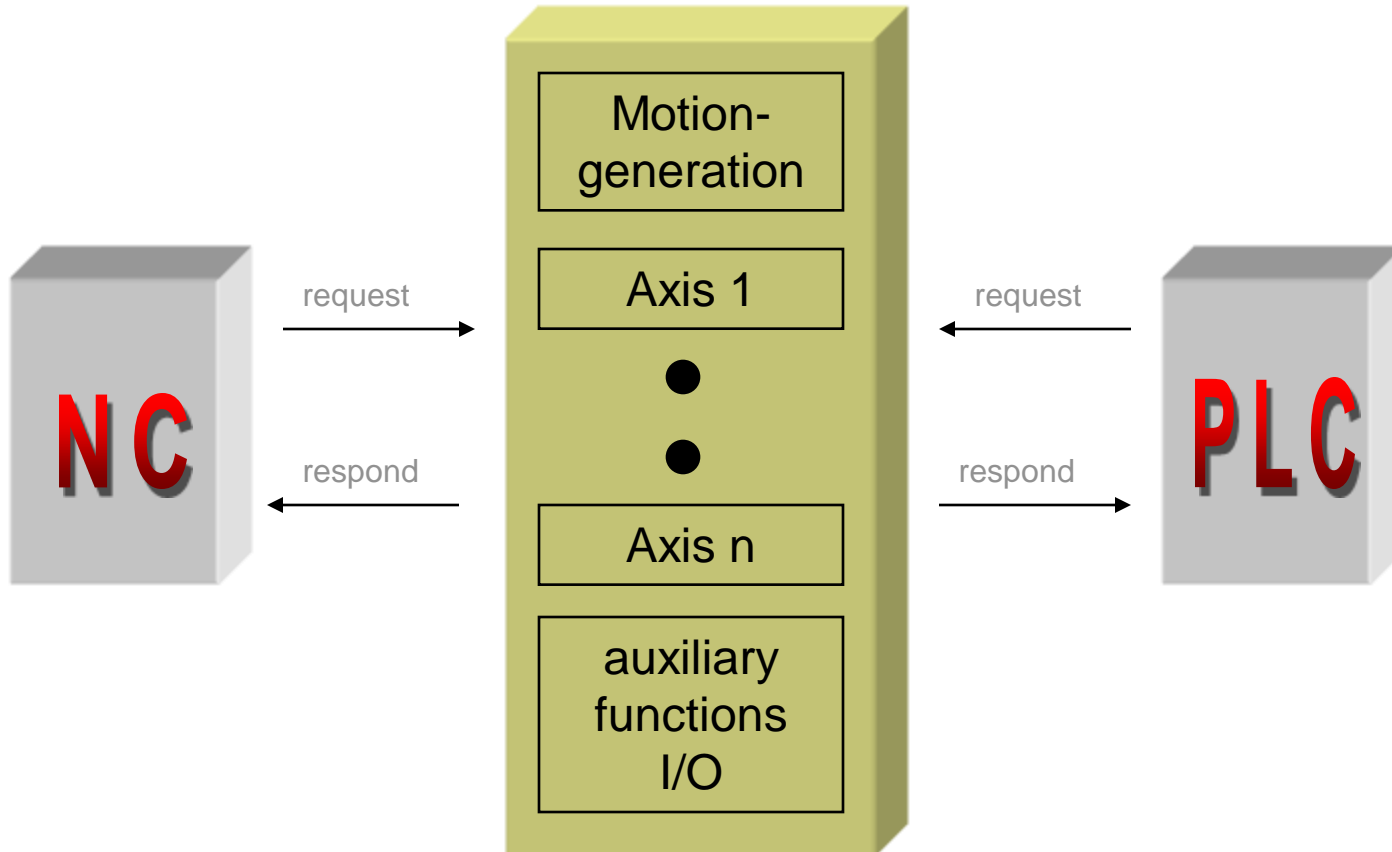


Motion Integration 1



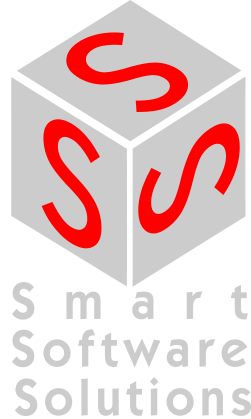
Motion Integration 1

Common data structure



(definition depends on motion kernel)

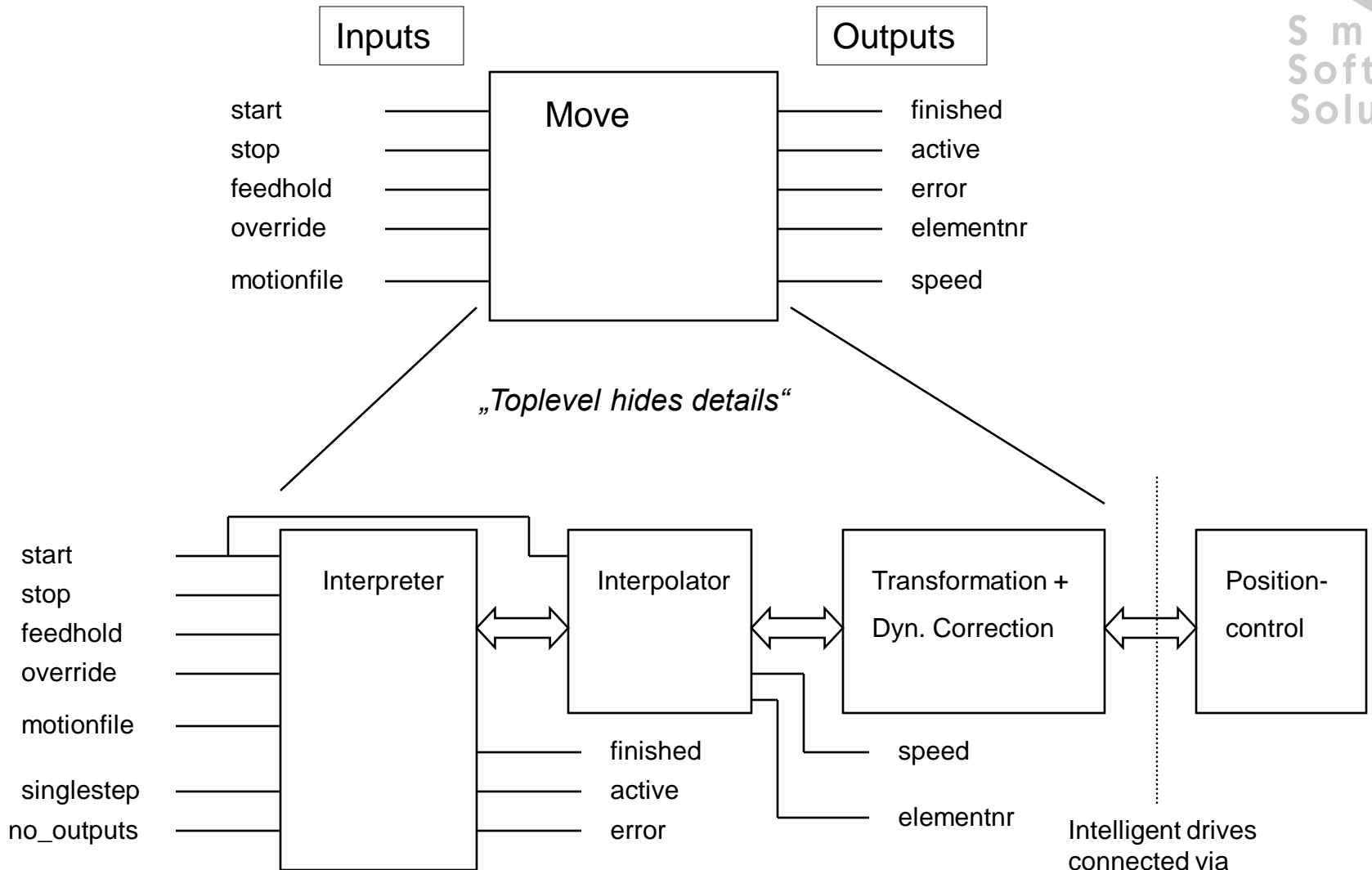
Motion Integration 2



- Motion list-editor in workbench
- down-/up-load of motion lists
- motion functions are build with C-compiler, the IEC-interface allows usage as function blocks in IEC program
- functions are linked to runtime



Motion Functionblock



„Toplevel hides details“

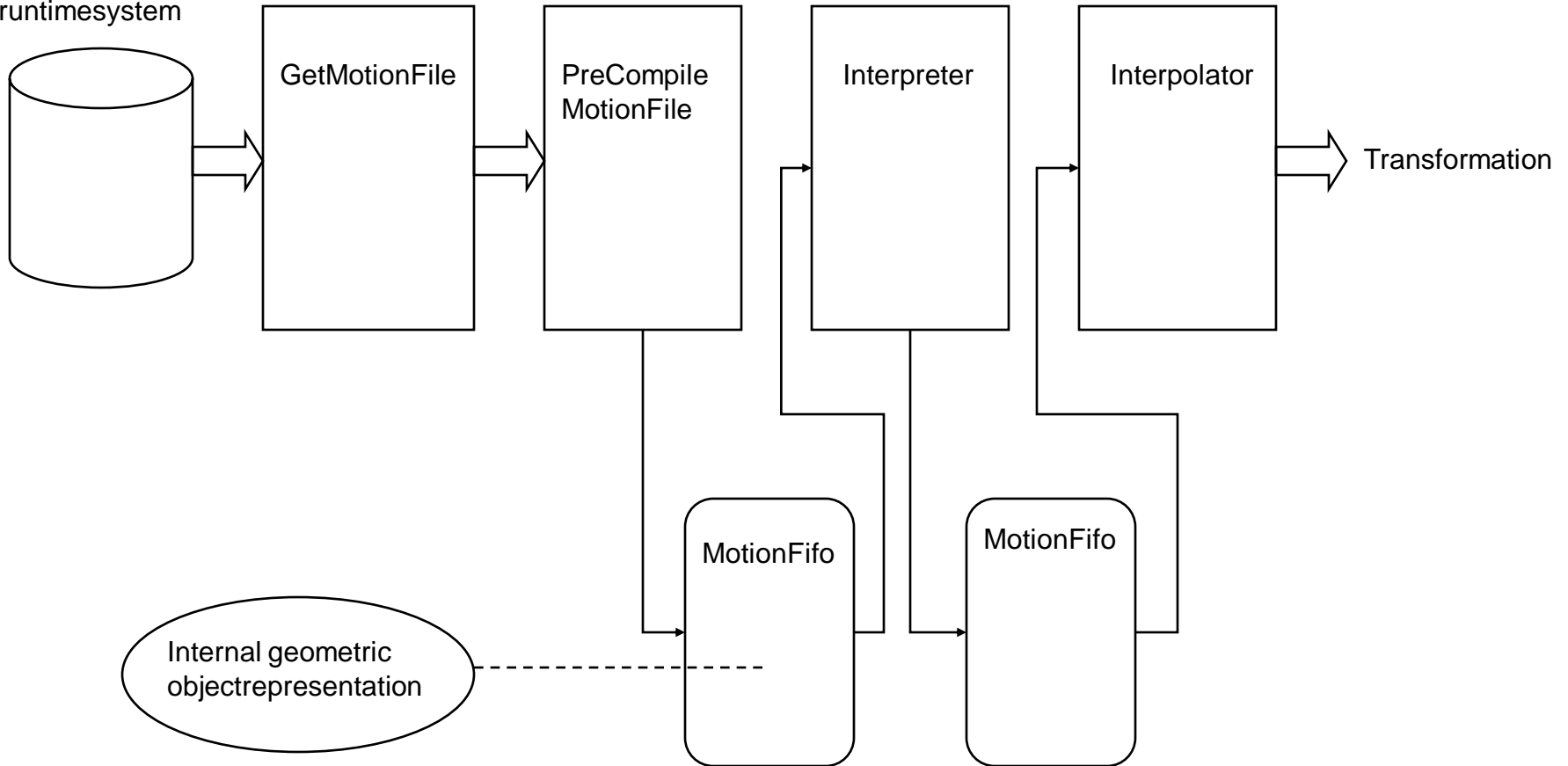
Intelligent drives
connected via
fieldbus

Blocks can be realized as combination of subblocks

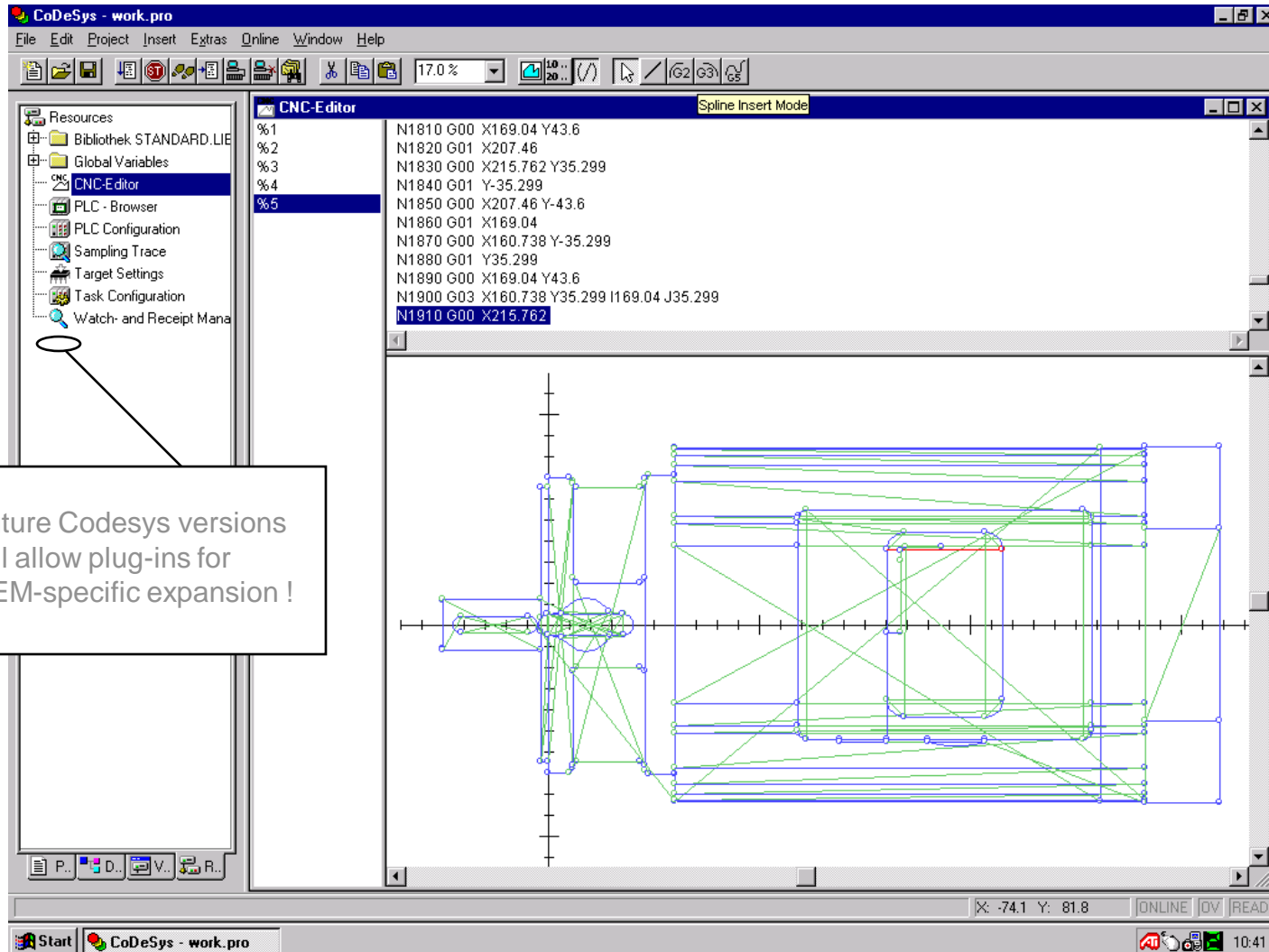


Motion Functions

Motionfiles in
runtimesystem



Integrated Motion Editor



The screenshot displays the CoDeSys - work.pro application window. The title bar reads "CoDeSys - work.pro". The menu bar includes "File", "Edit", "Project", "Insert", "Extras", "Online", "Window", and "Help". The toolbar shows various icons for file operations, editing, and execution, along with a zoom level of 17.0%. The left sidebar contains a "Resources" tree with folders like "Bibliothek STANDARD.LIE", "Global Variables", and "CNC-Editor" (which is selected). Below the tree are icons for "PLC - Browser", "PLC Configuration", "Sampling Trace", "Target Settings", "Task Configuration", and "Watch- and Receipt Mana". The main window is titled "CNC-Editor" and is in "Spline Insert Mode". It displays a list of G-code blocks:

```
%1 N1810 G00 X169.04 Y43.6
%2 N1820 G01 X207.46
%3 N1830 G00 X215.762 Y35.299
%4 N1840 G01 Y-35.299
%5 N1850 G00 X207.46 Y-43.6
N1860 G01 X169.04
N1870 G00 X160.738 Y-35.299
N1880 G01 Y35.299
N1890 G00 X169.04 Y43.6
N1900 G03 X160.738 Y35.299 I169.04 J35.299
N1910 G00 X215.762
```

Below the code is a 2D coordinate system with a complex motion path plotted in blue and green lines. The path starts at the origin, moves to (169.04, 43.6), then to (207.46, 43.6), then to (215.762, 35.299), then to (207.46, -43.6), then to (169.04, -43.6), then to (160.738, -35.299), then to (169.04, 35.299), then to (160.738, 35.299) with a circular arc, and finally to (215.762, 35.299). The status bar at the bottom shows "X: -74.1 Y: 81.8" and "ONLINE" status.

Future Codesys versions will allow plug-ins for OEM-specific expansion !



Features

- CoDeSys runtime functions for NC-decoding, motion planning, interpolation
(restricted to 2.5 dimensional applications)
- New visualization components to display motion program