GAUT

A Free and Open-Source High-Level Synthesis tool

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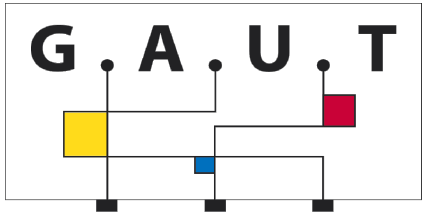
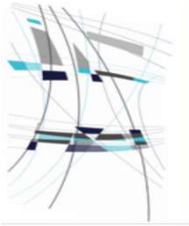
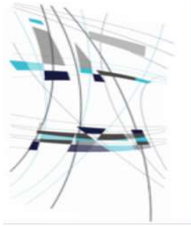




Outline

- Context
- High-Level Synthesis Overview
- **The tool GAUT**
- Conclusion and perspectives



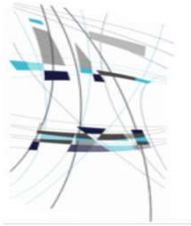
GAUT (1/2)

- An academic, free and open source HLS tool
  - CECILL B License (GPL-like) / Source code on Github
  - Eclispe-based + JAVA

- 3rd version (1st dev. started in 90s!)
- Dedicated to any type of applications
  - data- or control-dominated algorithm

- Input : C/C++ algorithm
- Outputs : RTL Architecture (VHDL) & TLM/CA models (SystemC)

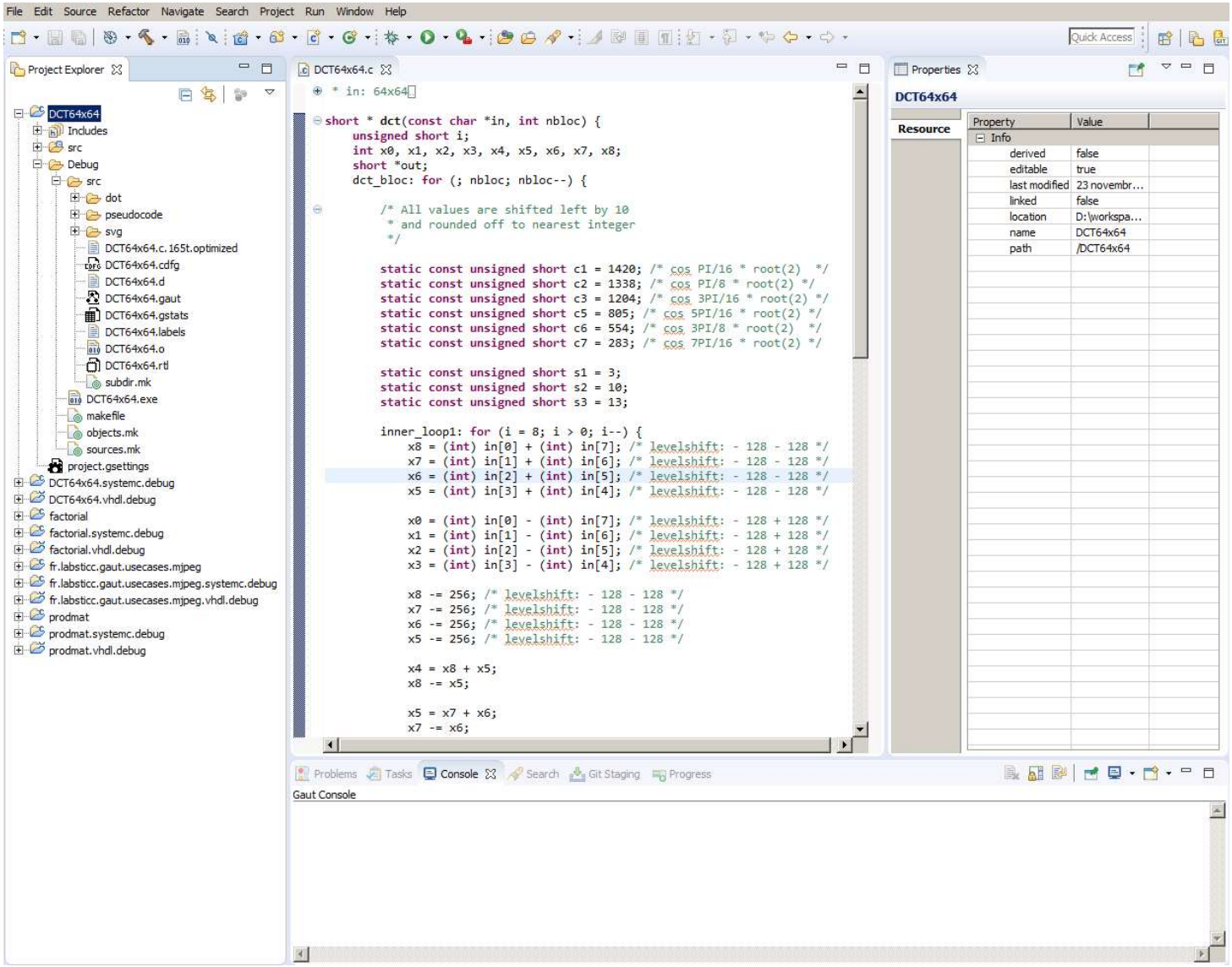
- Automated Test-bench generation
- Automated characterization of operator libraries



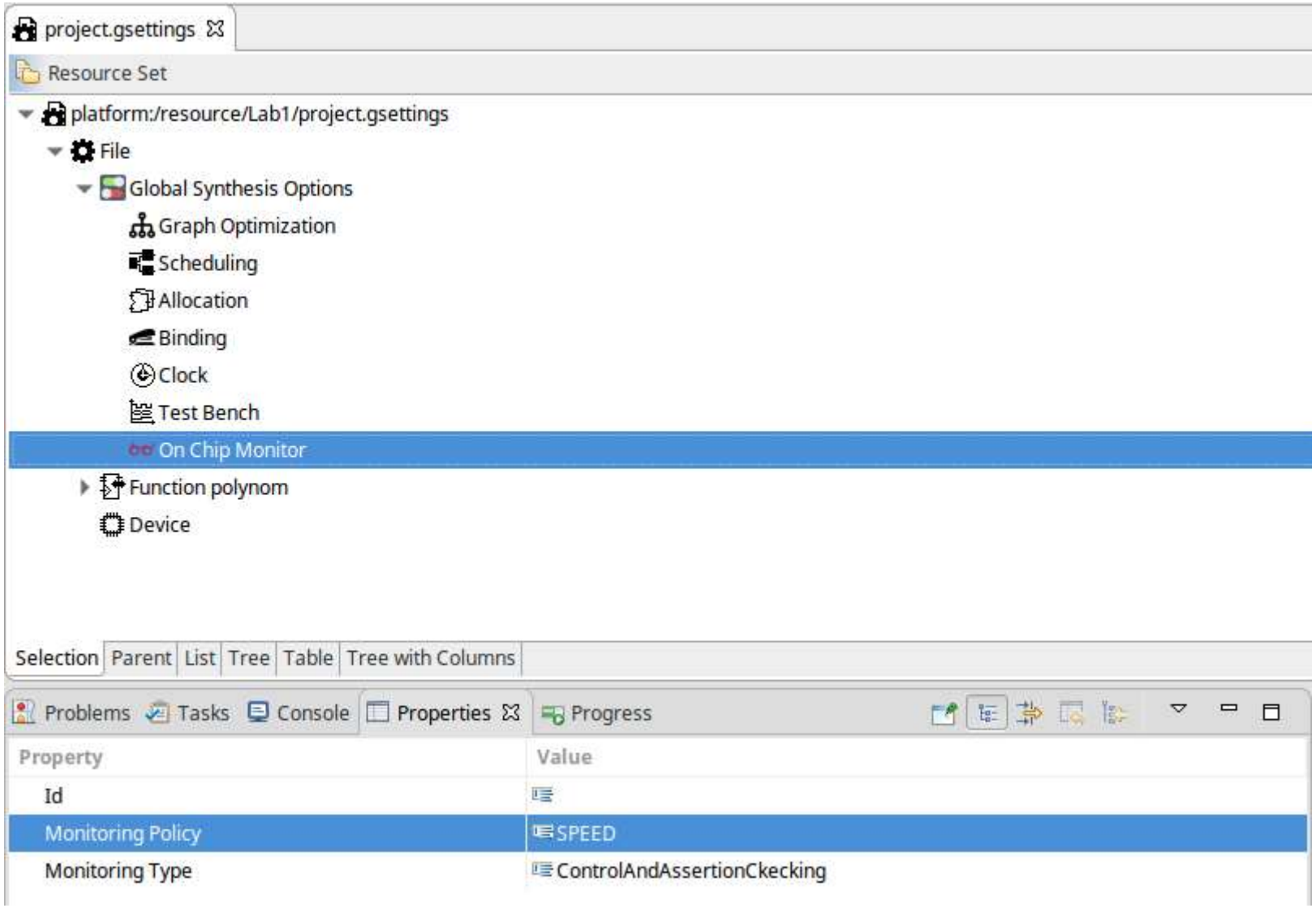
GAUT (2/2)

- Synthesis Options
  - Allocation
    - Manual, automated (uniform, mean..)
  - Scheduling
    - List-based, ASAP, ALAP
  - Binding
    - Left-edge, MWBM (Hungarian method)
  - High-level transformations
    - Loop unrolling, function in-lining…
  - Interface synthesis
    - Memory, handshake…
- Testbench generation
  - Stimuli: Incremental, from files…

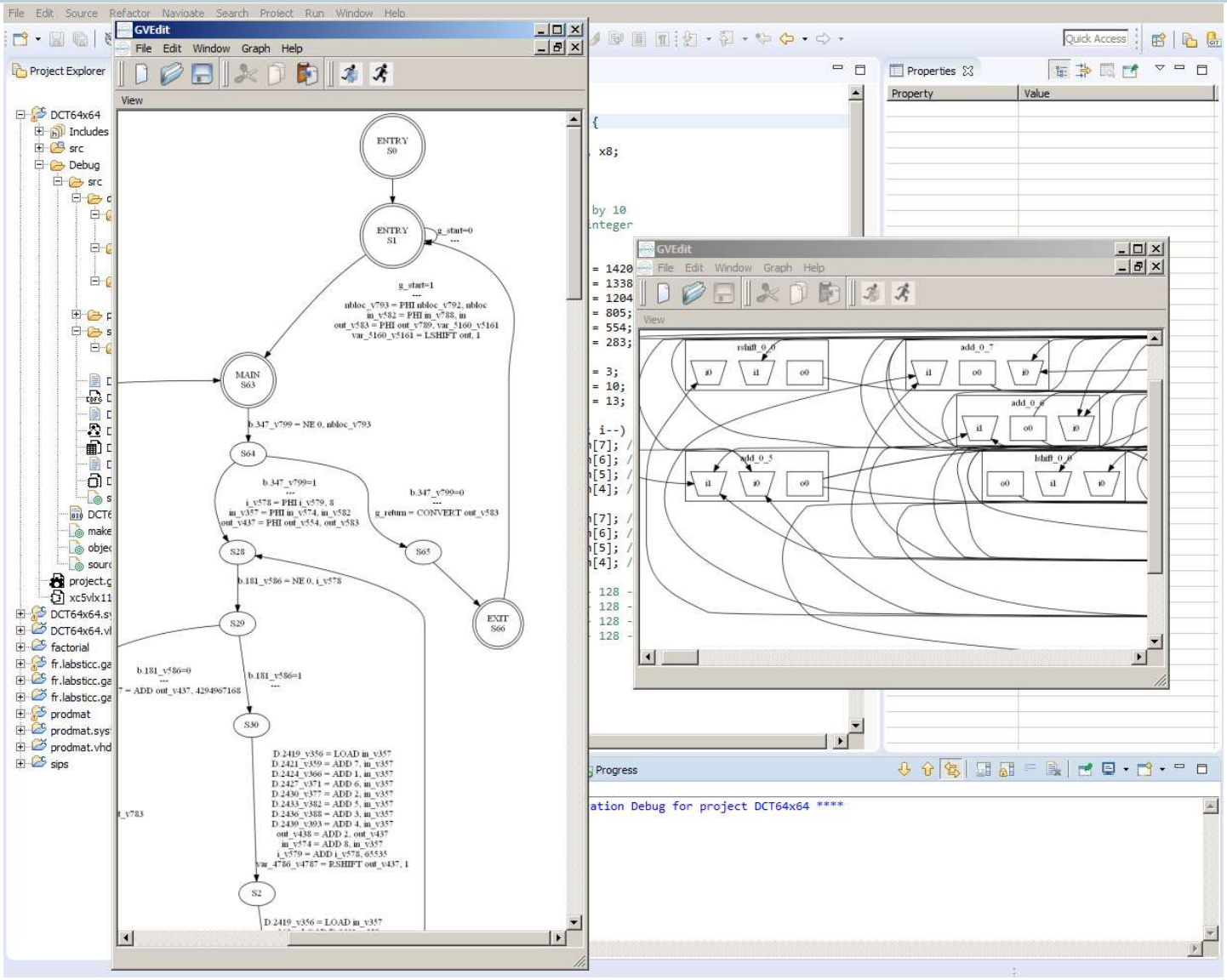
Guided User Interface



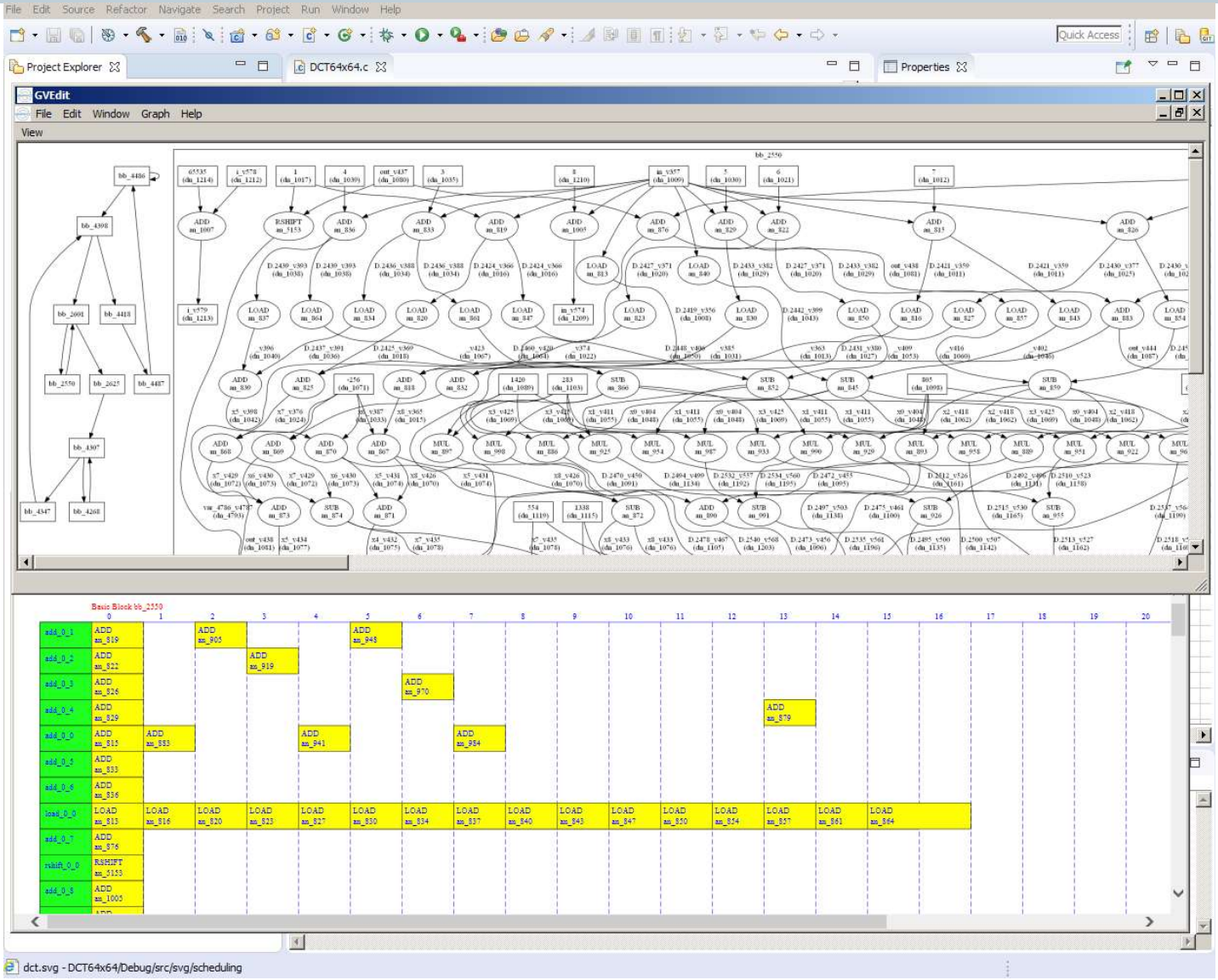
HLS steps and options



CDFG


GVEdit
File Edit Window Graph Help
View
ENTRY S0
ENTRY S1
g_start=0
g_start=1
MAIN S63
b.347_v799 = NE 0, nbloc_v793
S64
b.347_v799=1
b.347_v799=0
g_return = CONVERT out_v583
S65
S28
b.181_v586 = NE 0, i_v578
EXIT S66
S29
b.181_v586=0
b.181_v586=1
S30
S2
Project Explorer
Properties
Property
Value
Progress

FSMD + GANTT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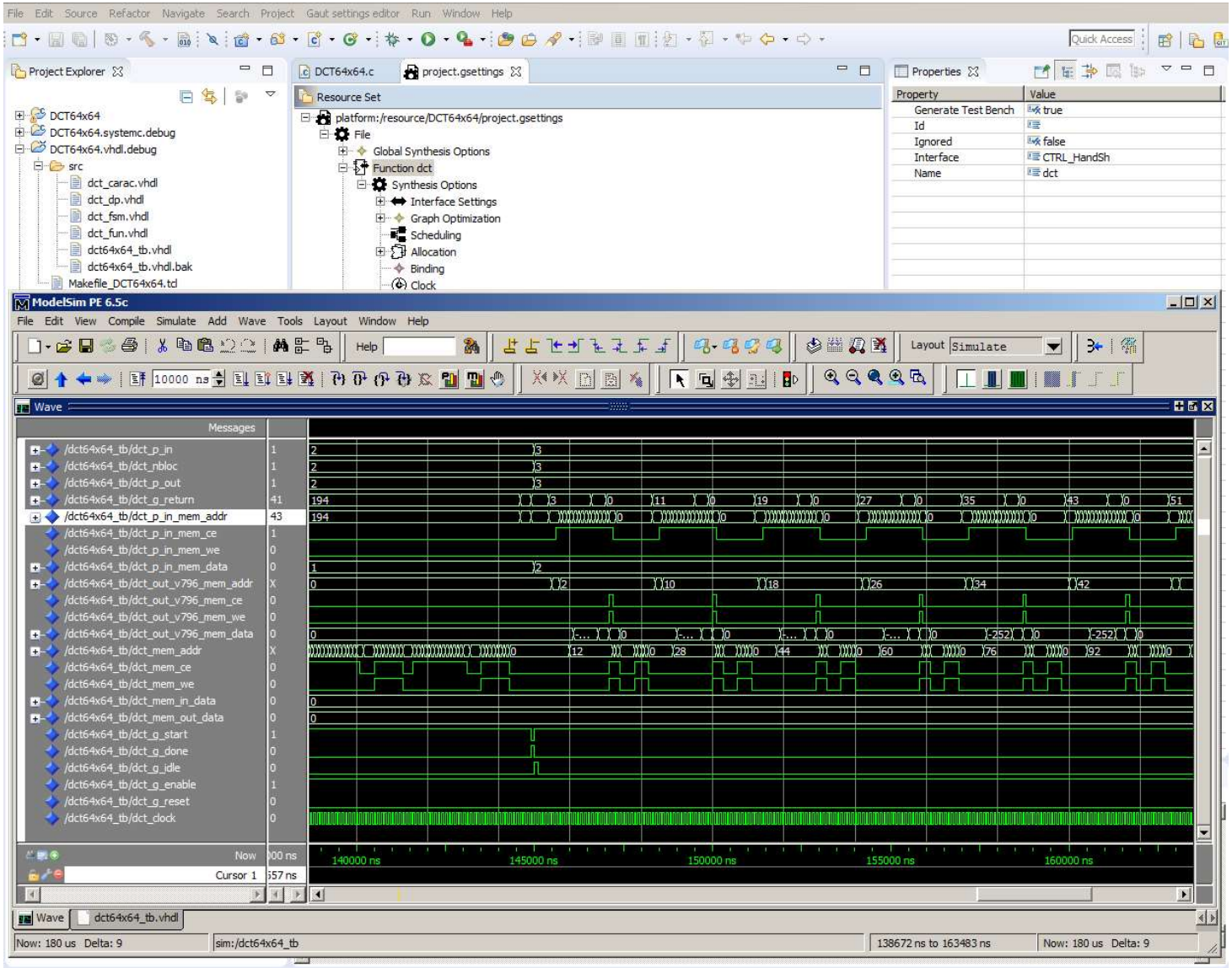
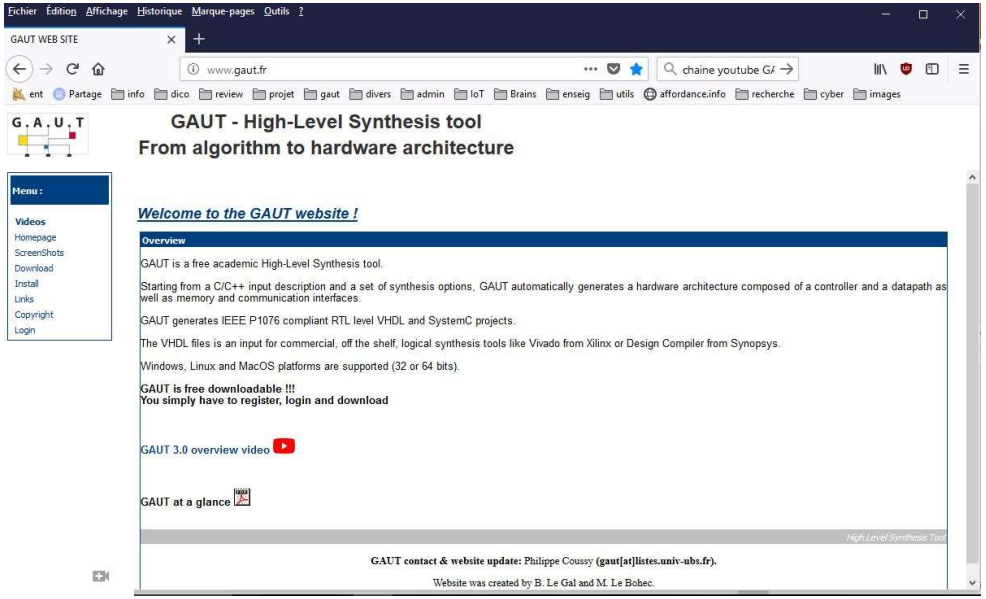
Project Explorer
DCT64x64.c
Properties
GVEdit
File Edit Window Graph Help
View
Basic Block bb_2550
dct.svg - DCT64x64/Debug/src/svg/scheduling

Testbench and simulation

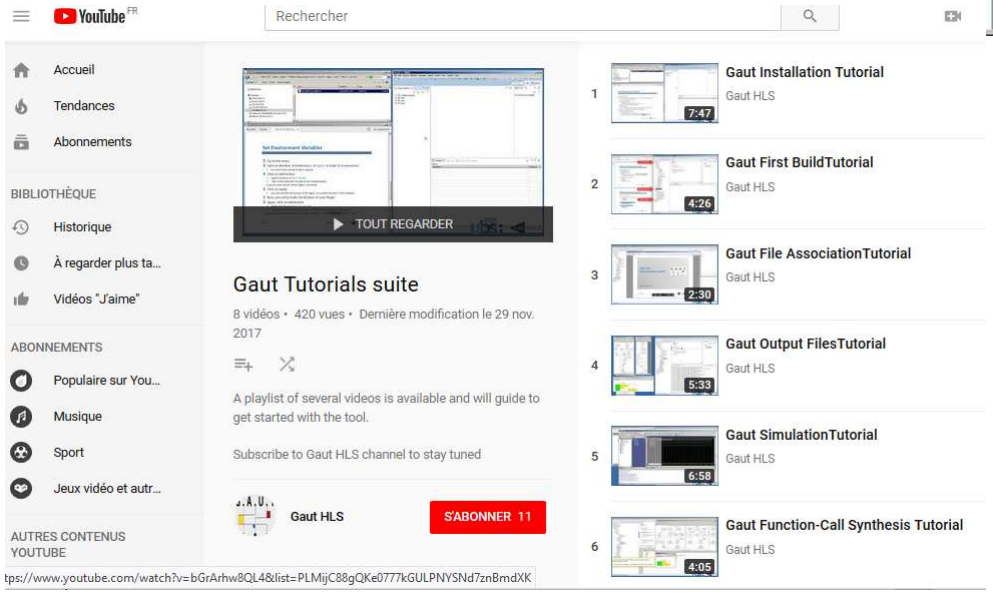


How to…

- Web site : www.gaut.fr

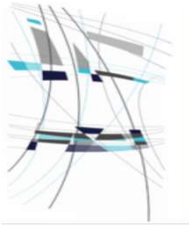


- Youtube chain
  - Video tutorials



GAUT Downloads

195 downloads from 43 countries during the last 18 months



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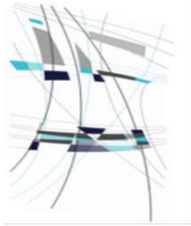

Conclusion

- GAUT is an open source and free HLS tool
- Did not focus on synthesis performances
  - Rather on providing a “good-enough” open environment
- Objective
  - Introduce/promote HLS to newcomers
  - Provide an open environment to test new algorithms/ideas (Ph.D and MsC thesis…)
- Collaborations are welcome!

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