

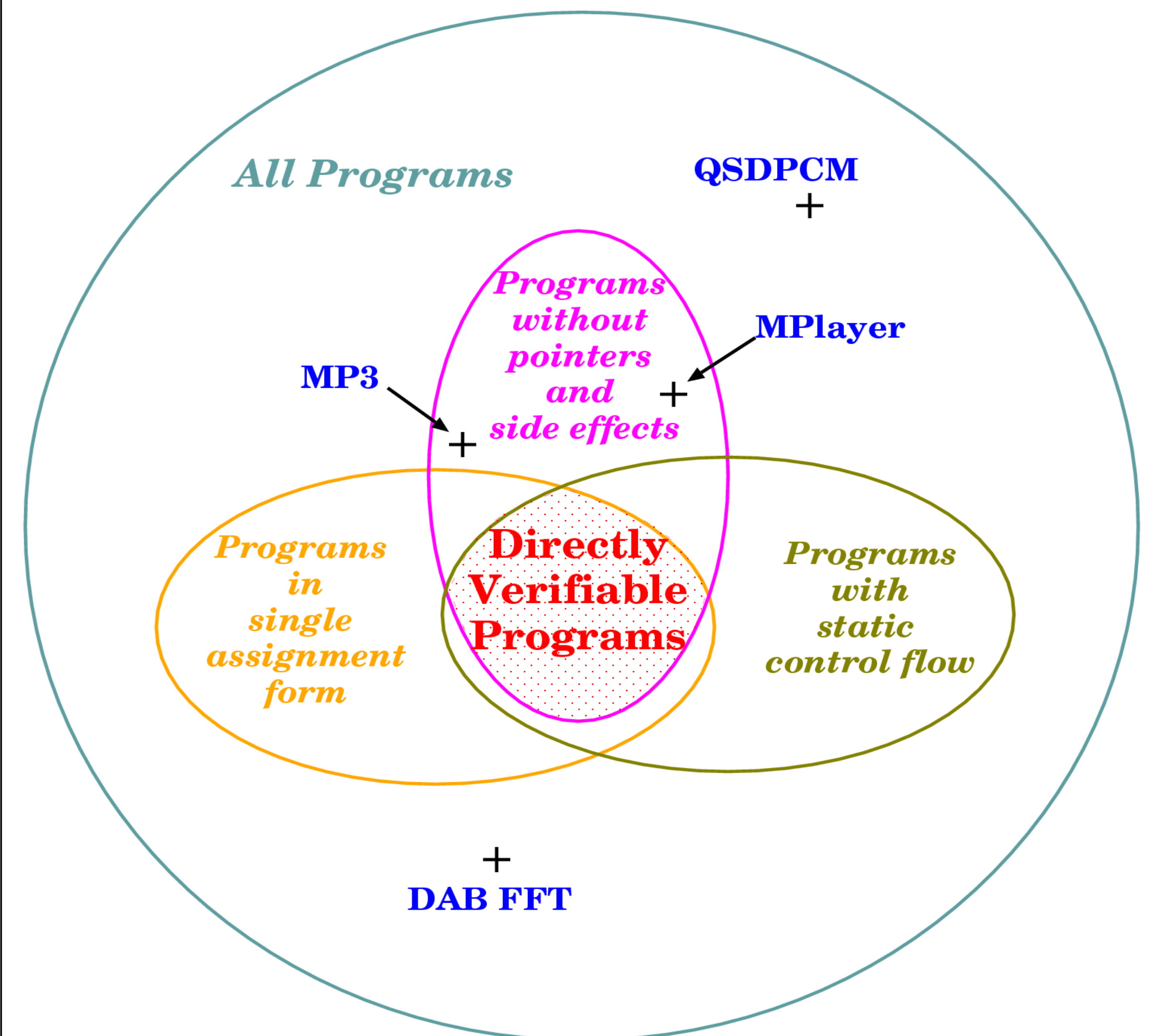
On the problem of verification of source code transformations:

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A case study

Analysis of the current state of the art translation verification method:

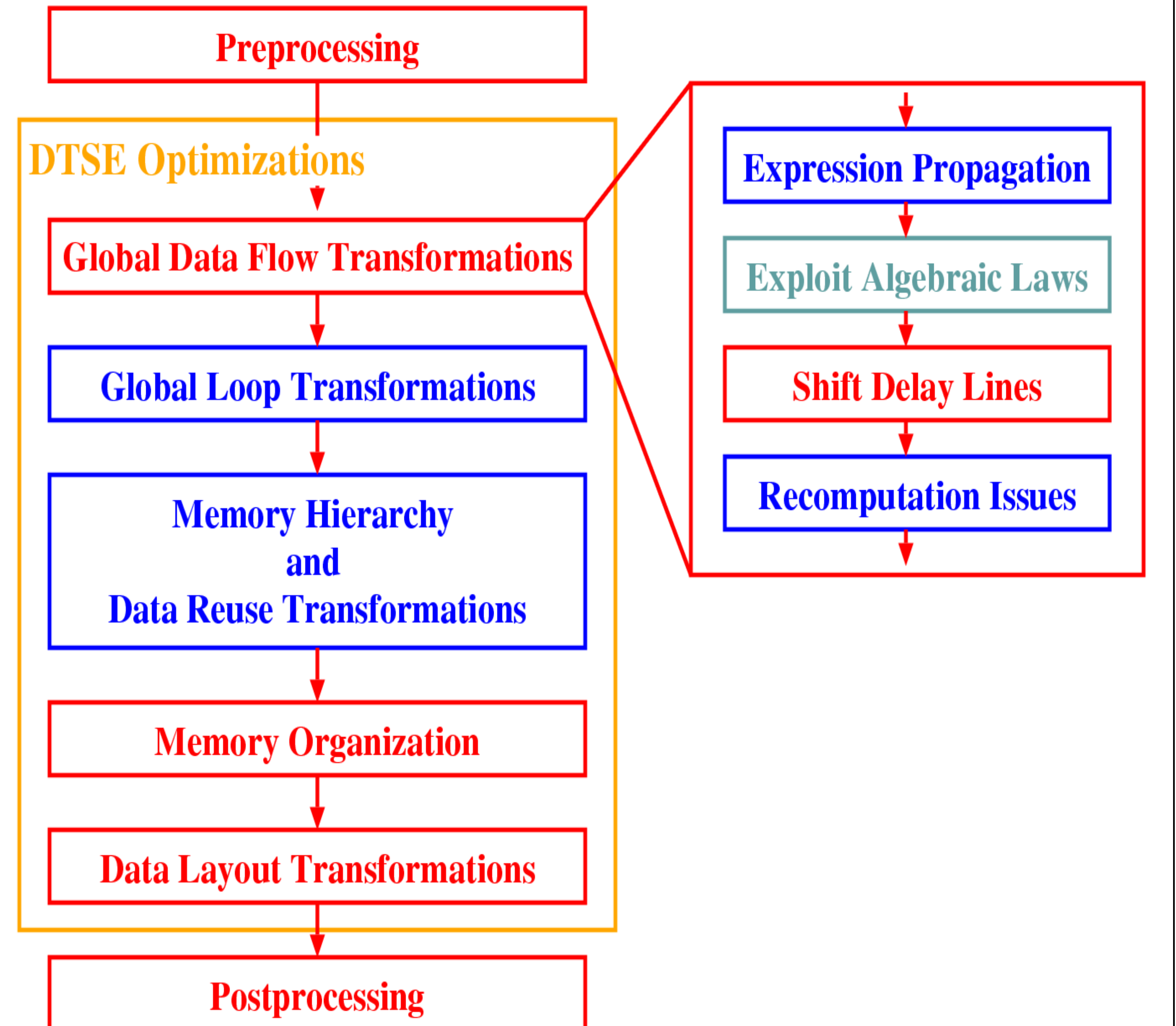
The characteristics of programs:



The characteristics of general multimedia applications:

- hardly ever in *DSA* form,
- *pointers* are widely used,
- *data-dependent control flow* and *while loops* are popular.

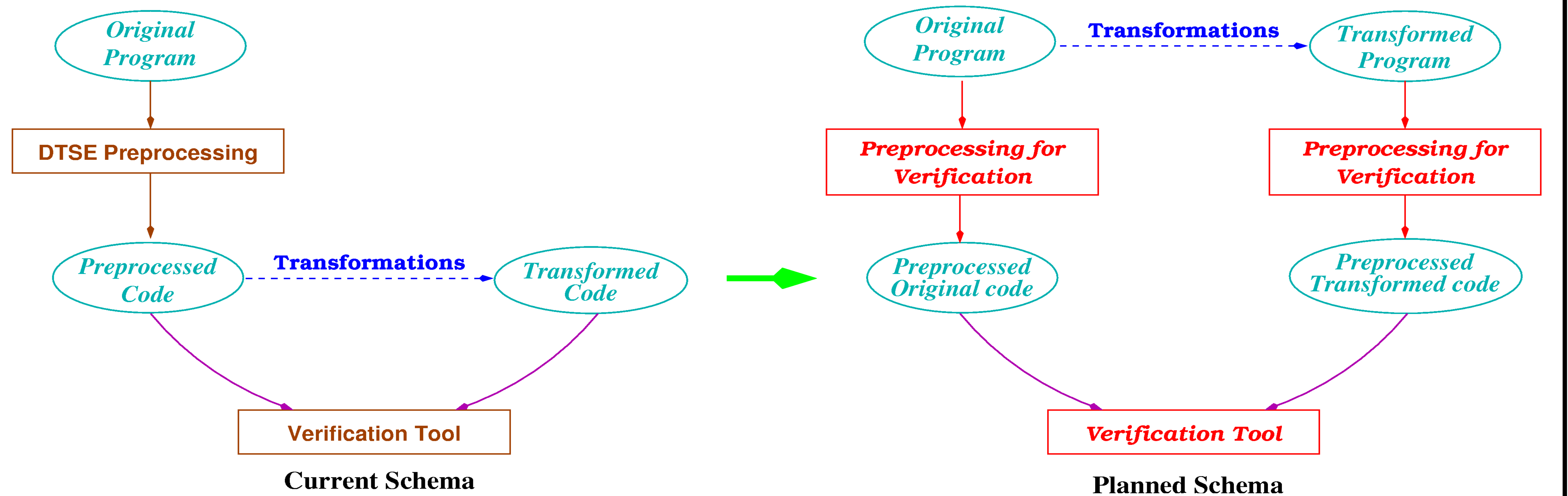
The transformations applied on real applications:



The above is the *DTSE optimization* methodology that our current verification method is designed for.

- the steps which can be verified now are in blue,
- the extension of the current method to handle *algebraic transformation* is in progress.

Future plan on the research of the transformation verification methods:



The planned extensions for the current source code transformation verification method:

- introduce a preprocessing step to clean up the source code for verification purpose (transform into *DSA* form, remove pointers),
- adjust the current verification tool to the verification preprocessing,
- extend the tool to deal with *data-dependent control flow*,
- extend the tool to deal with other transformations used in reality.