⑫ Interprocedural Data Dependence Locator

Makoto SATOH [1, 2], Kiyomi WADA [1, 2] [1] APC Technology Group [2] Hitachi, Ltd.

Project Goal

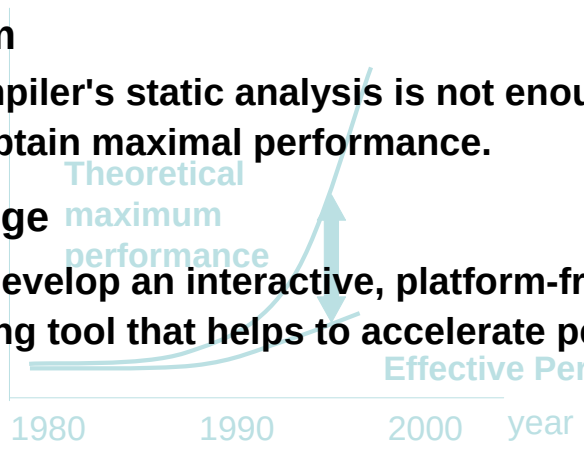
To boost an effective performance of applications.

Problem

Compiler's static analysis is not enough to obtain maximal performance.

Challenge

To develop an interactive, platform-free parallelizing tuning tool that helps to accelerate performance.



Motive of This Research

Convenional parallelizing-tuning tools can locate two statements with data dependence in a loop.

However, it is difficult to apply them to a loop with a call to a subroutine.

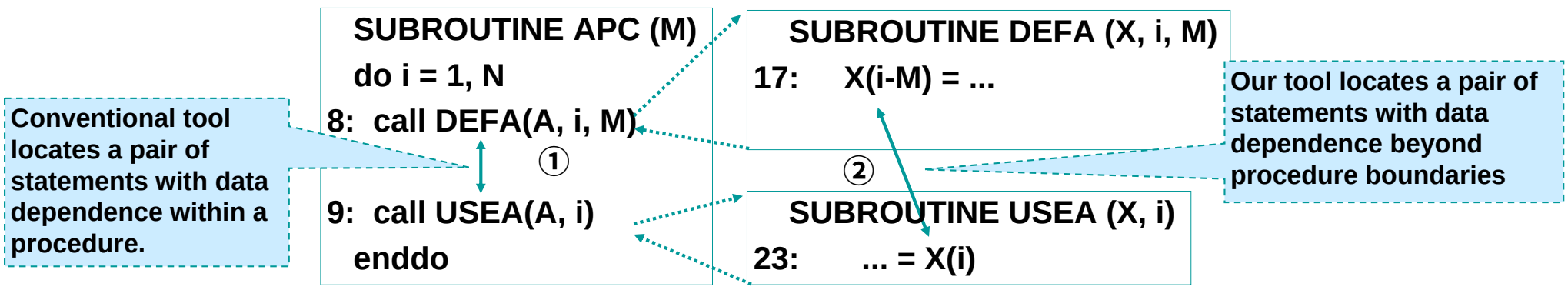
Purpose of This Research

To develop a tool which can locate statements with data dependence in the callee subroutine.

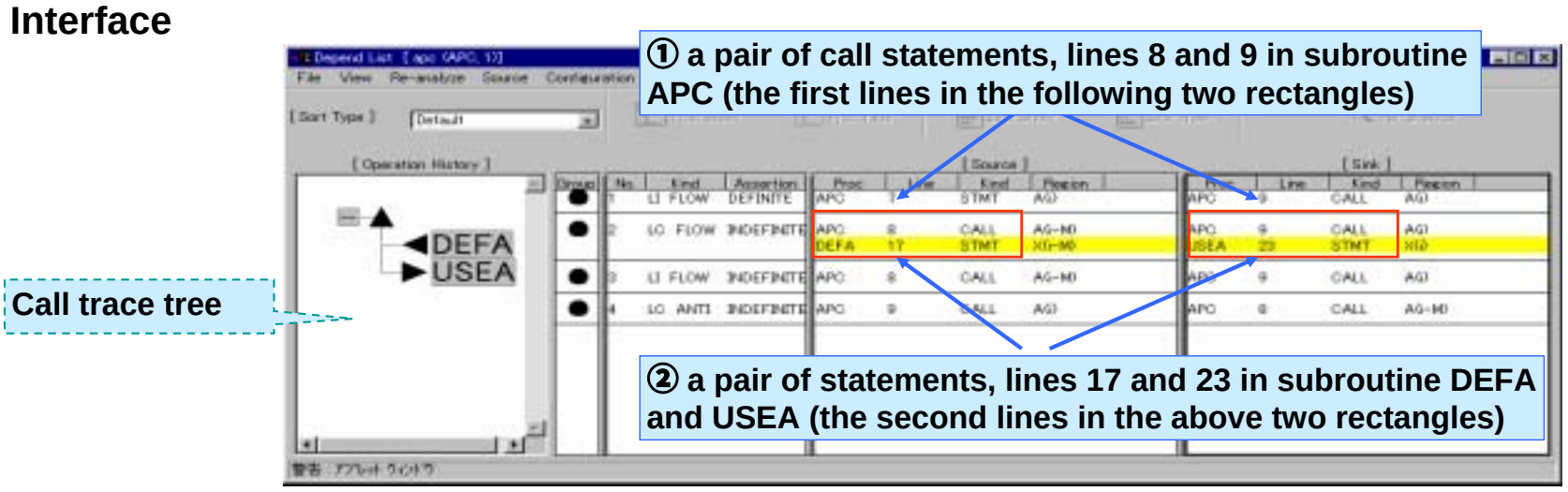
Concept and User Interface of Our Tool

Concept

Our tool automatically locates a pair of statements with loop-carried dependence beyond procedure boundaries.



User Interface



Features and Whole Structure

Features

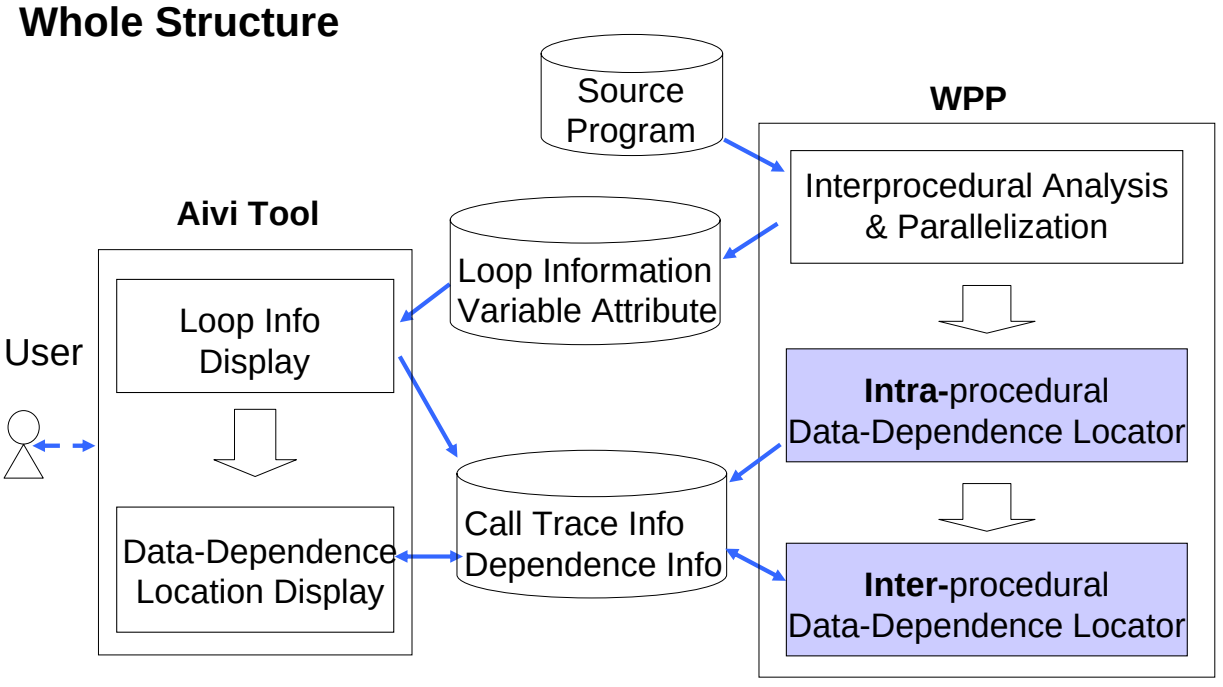
(1)Reduction of the number of dependence variables.

- Dependence info of only serial loop is analyzed.
- Variable attribute is taken into account: private and reduction variables are excluded from the candidates of dependence variables.

(2) Some loops are found to be parallelizable.

- The tool analyzes an exact dependence info of each statement in the callee subroutine. So, it does not merge dependence info of multiple statements as the WPP does.

Whole Structure



WPP: Whole Program Parallelizer (Automatic parallelizing module), Aivi: Analysis Information VIsualizer