Vectorization Advisor: getting started

Before you analyze

Run GUI or Command Line

Set-up environment

- Linux: source <install-dir>/advixe-vars.sh
- Windows: <install-dir>\advixe-vars.bat

Run GUI or Command Line:

- **advixe-gui**
- **advixe-cl** –collect survey –project-dir C:\myadvisor mult.exe

Intel Compiler 16 or 17 – enables more data in Survey

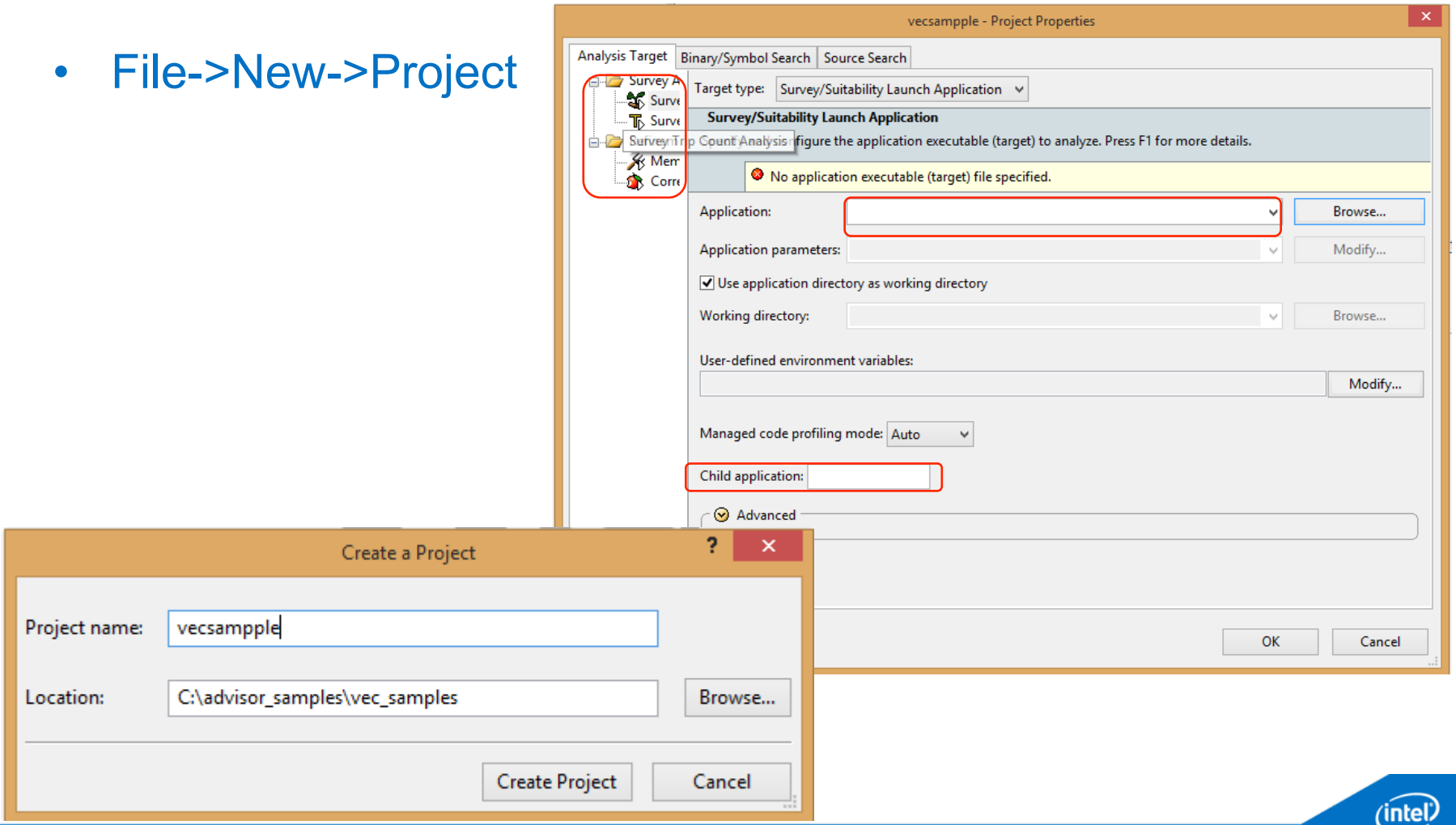
Min compilation switches (ICC example):

-O2 –g –xHost

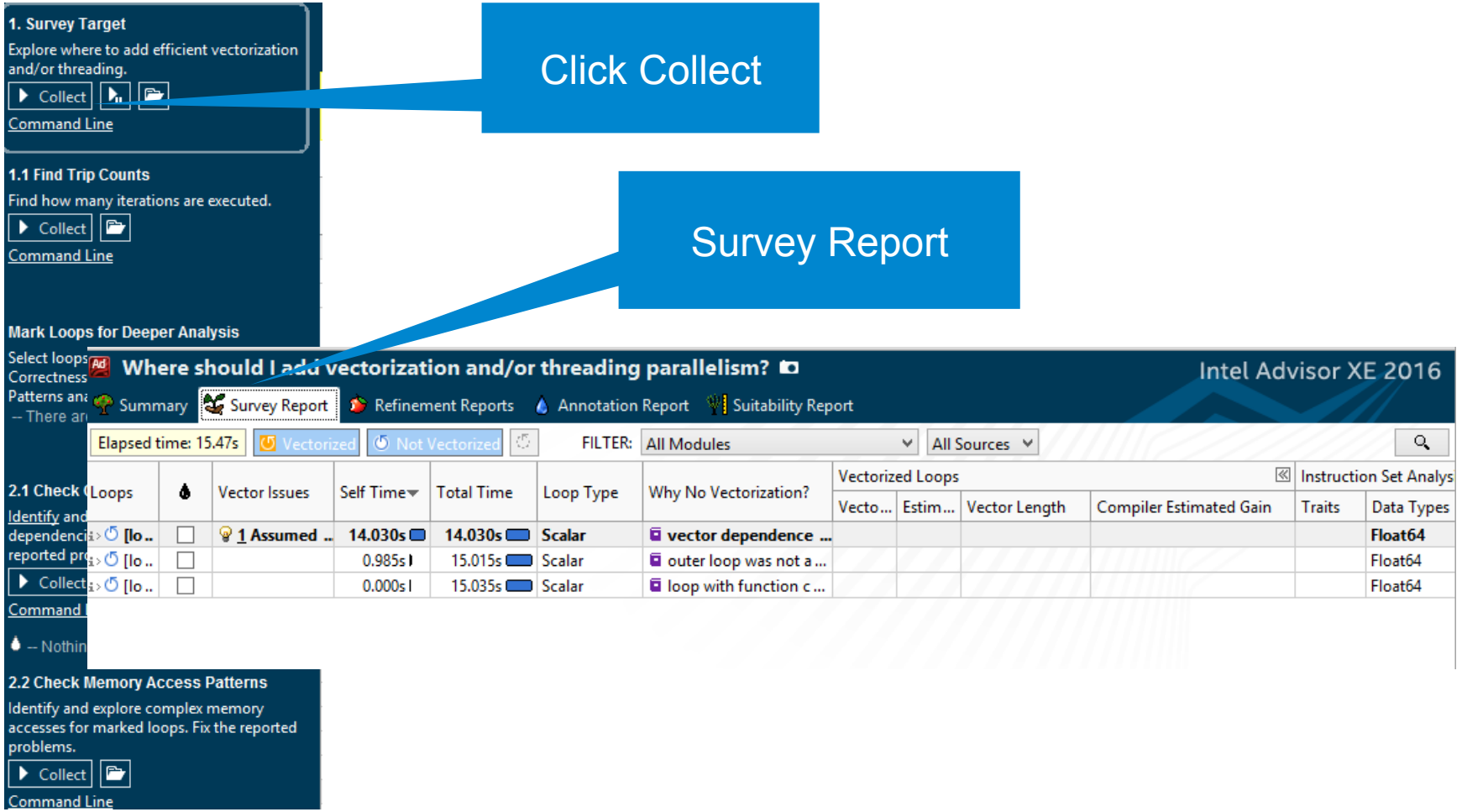
GUI: Before you analyze

Create Project

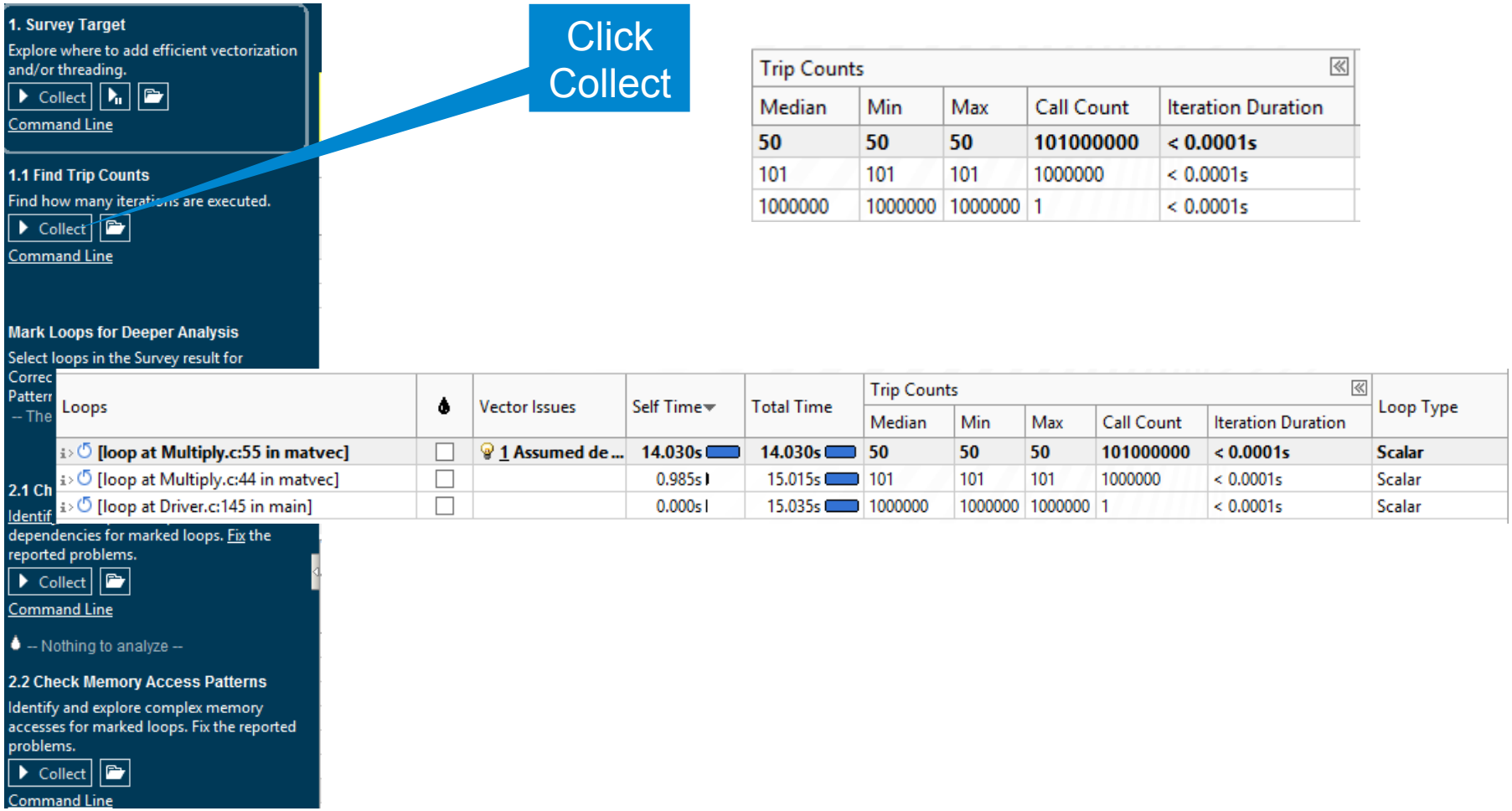
- File->New->Project



Analyze what loops you are spending your time in and how they have been vectorized

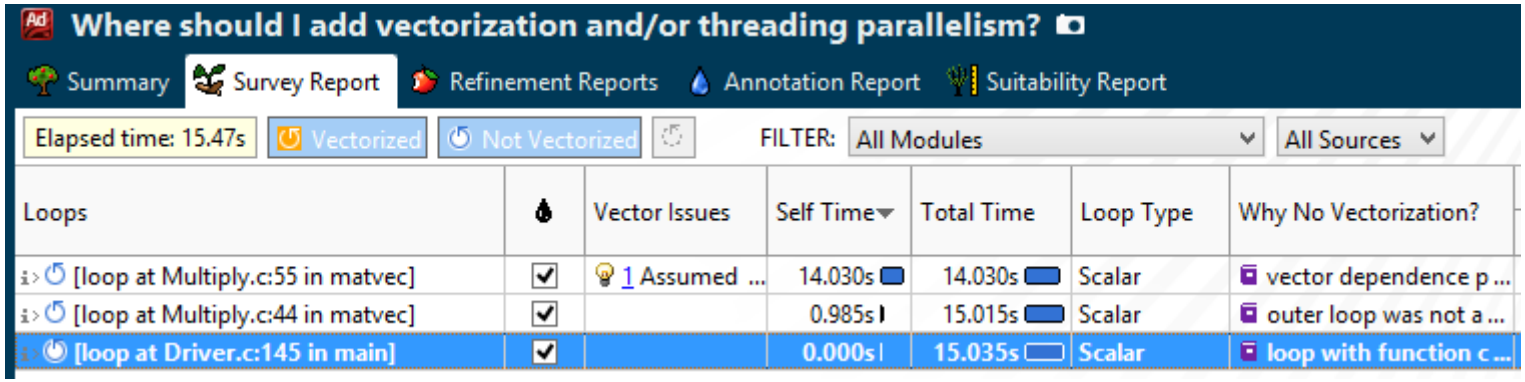


Same approach for trip counts



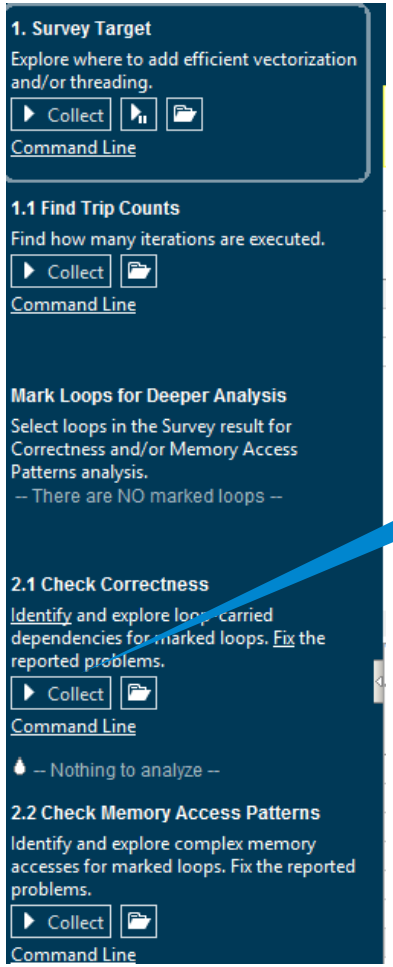
Trip Counts				
Median	Min	Max	Call Count	Iteration Duration
50	**50**	**50**	**101000000**	**< 0.0001s**
101	101	101	1000000	< 0.0001s
1000000	1000000	1000000	1	< 0.0001s

Specify loops for deeper analysis



Deeper analysis

Check dependencies



Click Collect

We marked 3 loops for a dependency analysis. Two of the loops had no dependencies. One of the loops has Read-After-Write dependency and can't be vectorized.

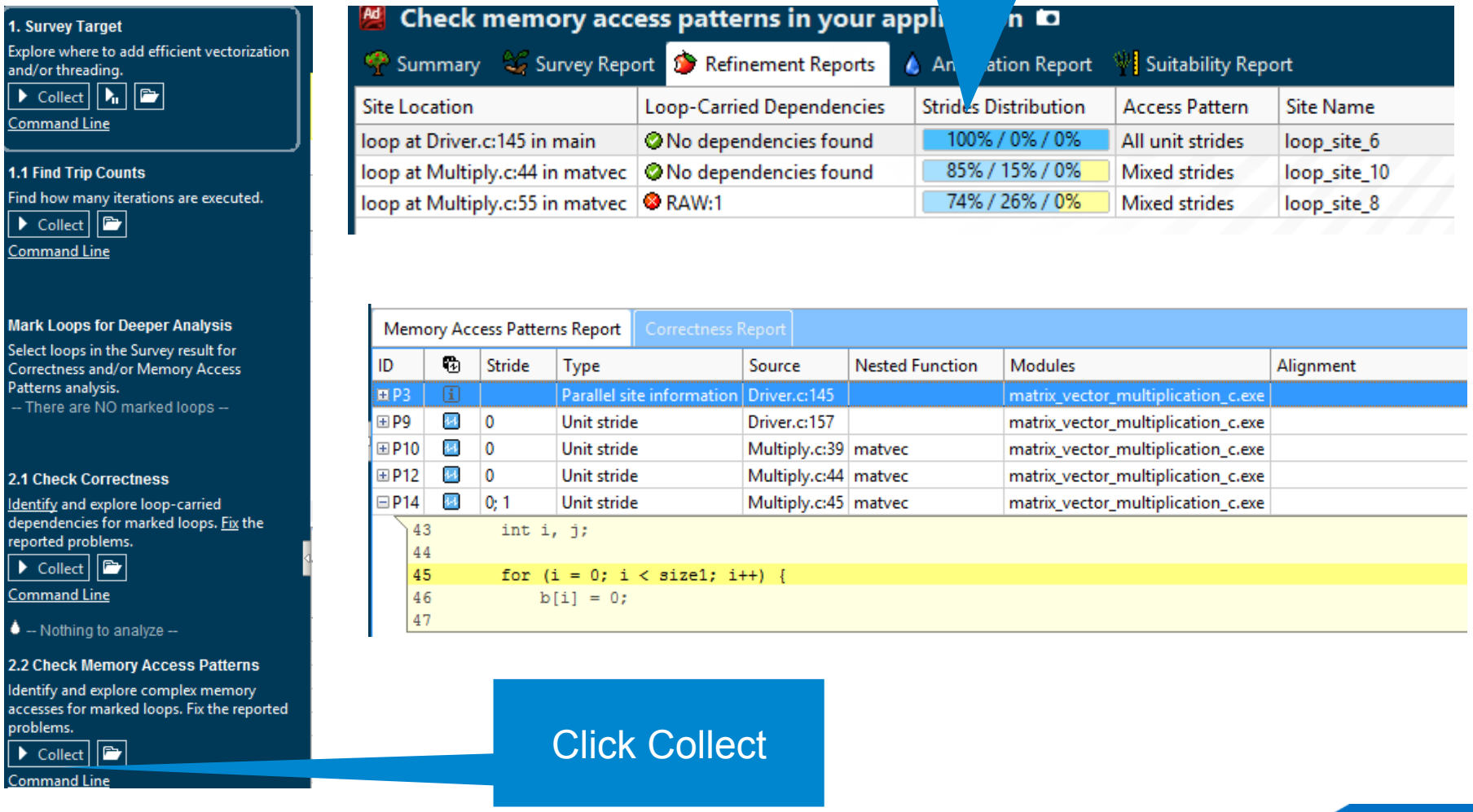
Check memory access patte in your application

Summary | Survey Report | Refinement Reports | Annotation Report | Suitability Report

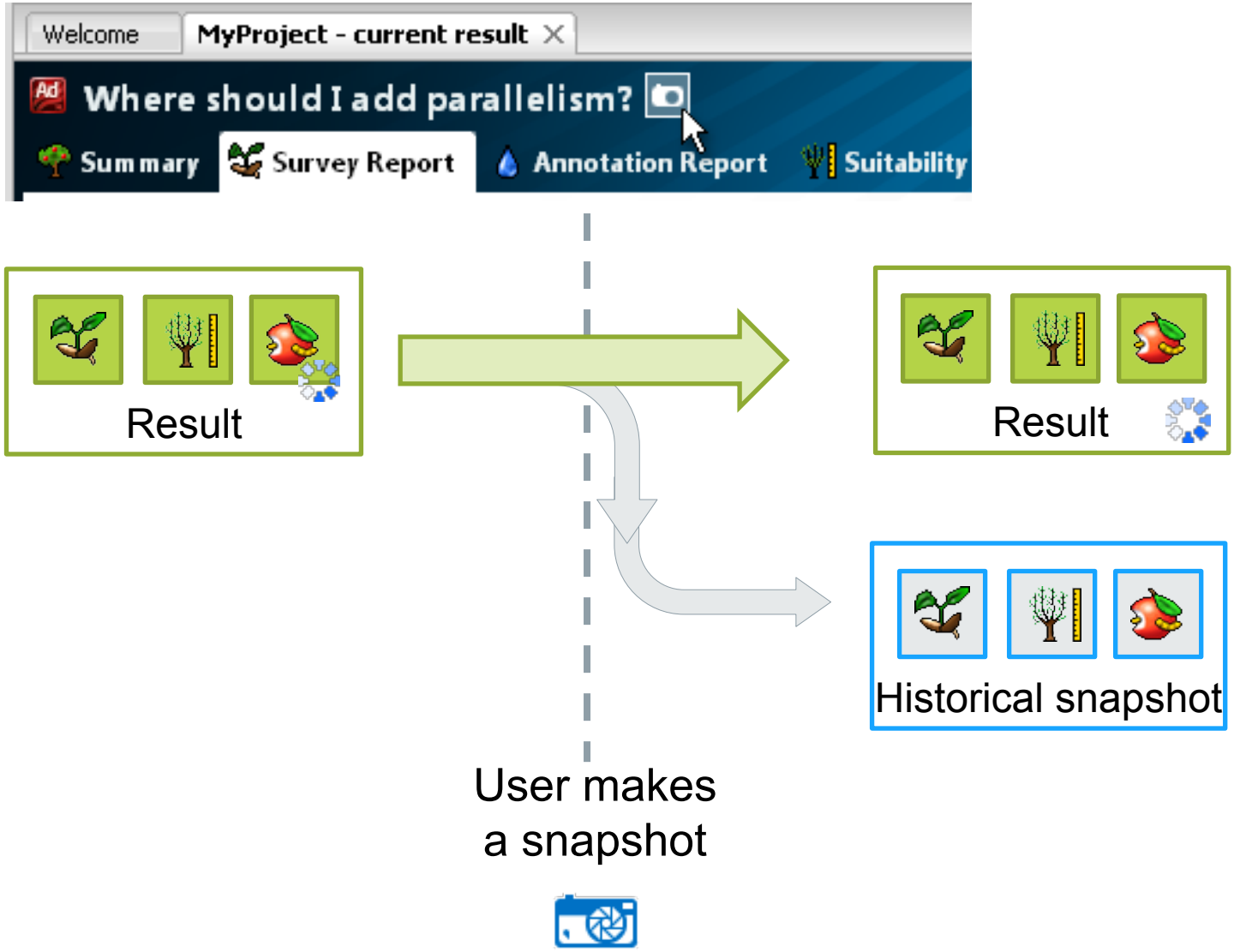
Site Location	Loop-Carried Dependencies	Strides Distribution	Access Pattern	Site Name
loop at Driver.c:145 in main	No dependencies found	No information available	No information available	loop_site_6
loop at Multiply.c:44 in matvec	No dependencies found	No information available	No information available	loop_site_10
loop at Multiply.c:55 in matvec	RAW:1	No information available	No information available	loop_site_8

Deeper analysis

Memory Access Pattern analysis



Snapshot concept



Command Line: Intel® Advisor XE

Collect

advixe-cl –-collect STEP –-project-dir PROJ EXE

Report

advixe-cl –-report STEP –-project-dir PROJ

Where ***PROJ*** is your Intel Advisor XE project

STEP is the specific type of report or collection you are trying to run. Could be: survey, tripcounts, map, dependencies

Need helps? -

advixe-cl --help

advixe-cl --help report

Command Line: Intel® Advisor XE

Collecting survey and tripcounts

advixe-cl –collect survey –project-dir ./advi – mult.exe

advixe-cl –collect tripcounts –project-dir ./advi mult.exe

Creating snapshot in command line, e.g:

advixe-cl --snapshot --project-dir ./advi --pack --cache-sources **--**cache-binaries -- /tmp/new_snapshot

Viewing the results

advixe-gui ./advi

advixe-cl –-report survey –-project-dir ./advi

Important notes

Reporting (exporting) spreadsheet data to csv/xml/txt : example

advixe-cl --report survey -show-all-columns -format=csv --project-dir ./advi

- - Csv file will be created automatically and location will be reported

Enabling experimental features (e.g. FLOPs)

$ export ADVIXE_EXPERIMENTAL=FLOPS

Running Intel Advisor XE on a cluster

mpirun -n 10 **advixe-cl** -collect survey --project-dir ./my_proj ./your_app

mpirun -n **R** advixe-cl -collect survey --project-dir ./my_proj ./your_app : -np 9 ./your_app

Intel MPI-specific:

mpirun –n N **–gtool** “advixe-cl –collect STEP C:\myadvisor:R,R,R” mult.exe

Where STEP is the type of collection, N is the number of processes and R are ranks you want to run.

Running dependency analysis using the command-line

1) First run a survey to get the ID of the loop you want to analyze

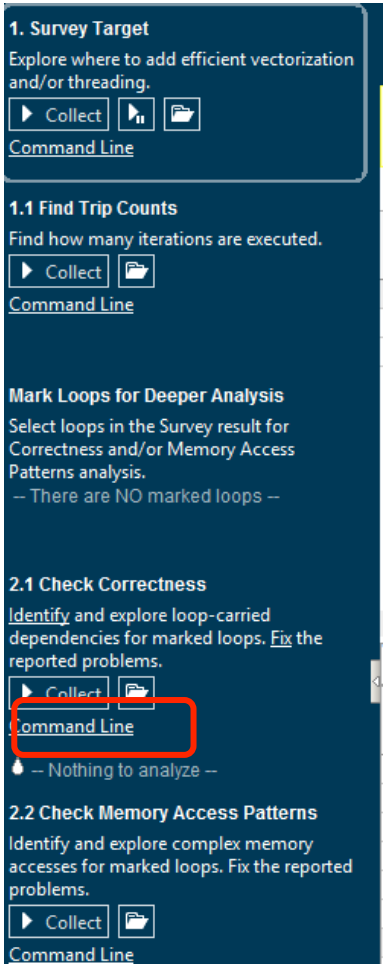
2) Then run

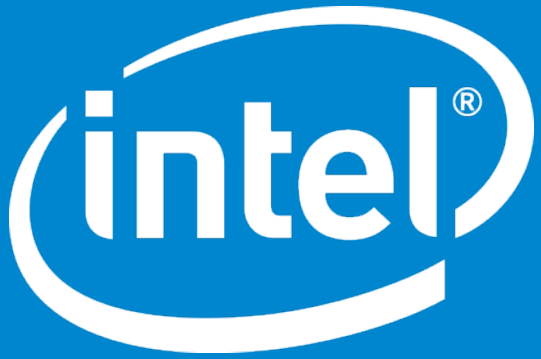
advixe-cl –collect dependencies

–mark-up-list ID –project-dir C:\myadvisor mult.exe

3) To display the results you can use the GUI or the command-line

advixe-gui C:\myadvisor

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