Lab 1. Pipe and filter

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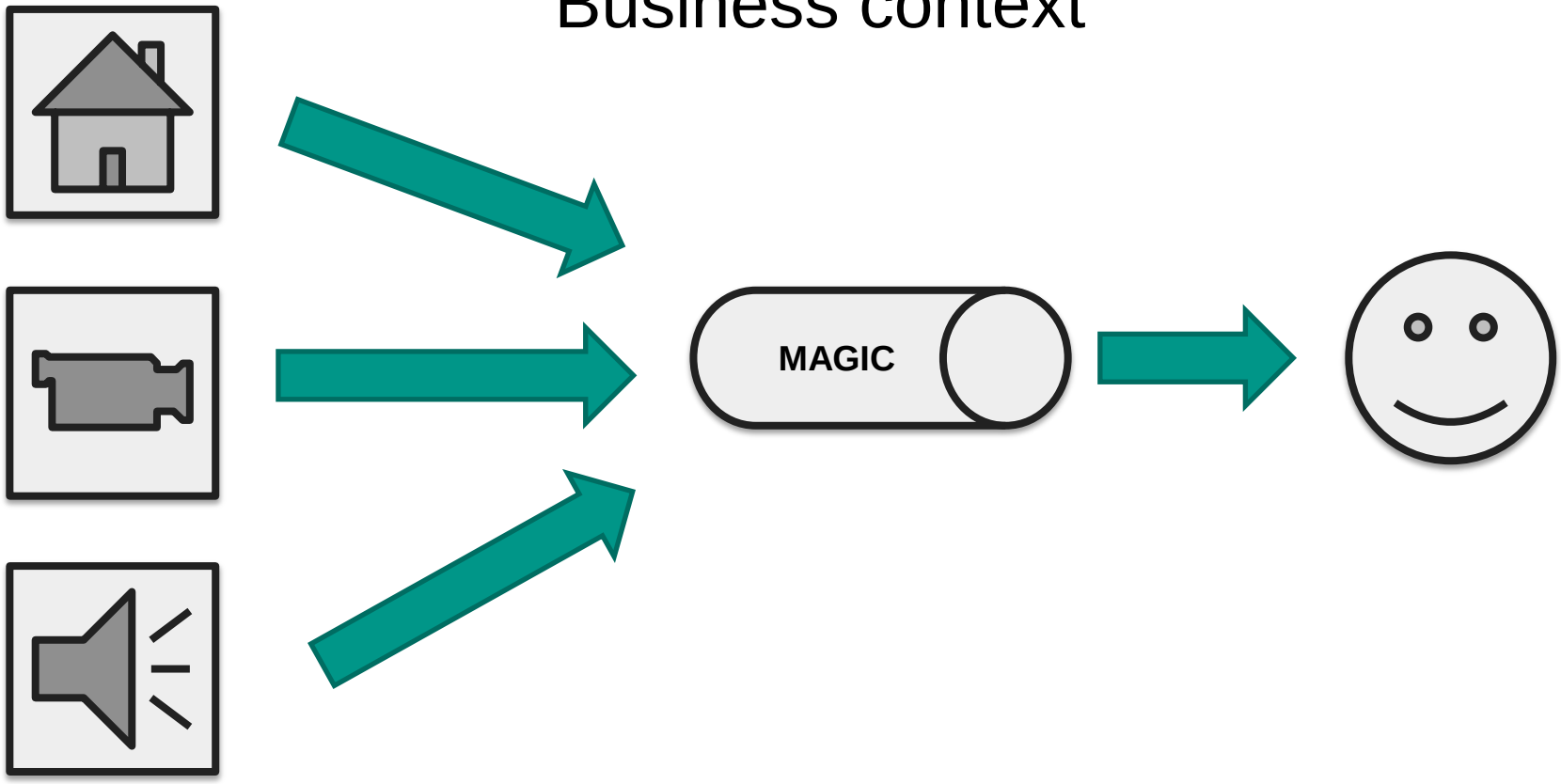
Agenda

- Business context and goals
- Architectural drivers
- Views
- Possible uncertainties

Business context



Architectural drivers

- Technical constraints
- Business constraints
- Quality attributes
- Functional requirements

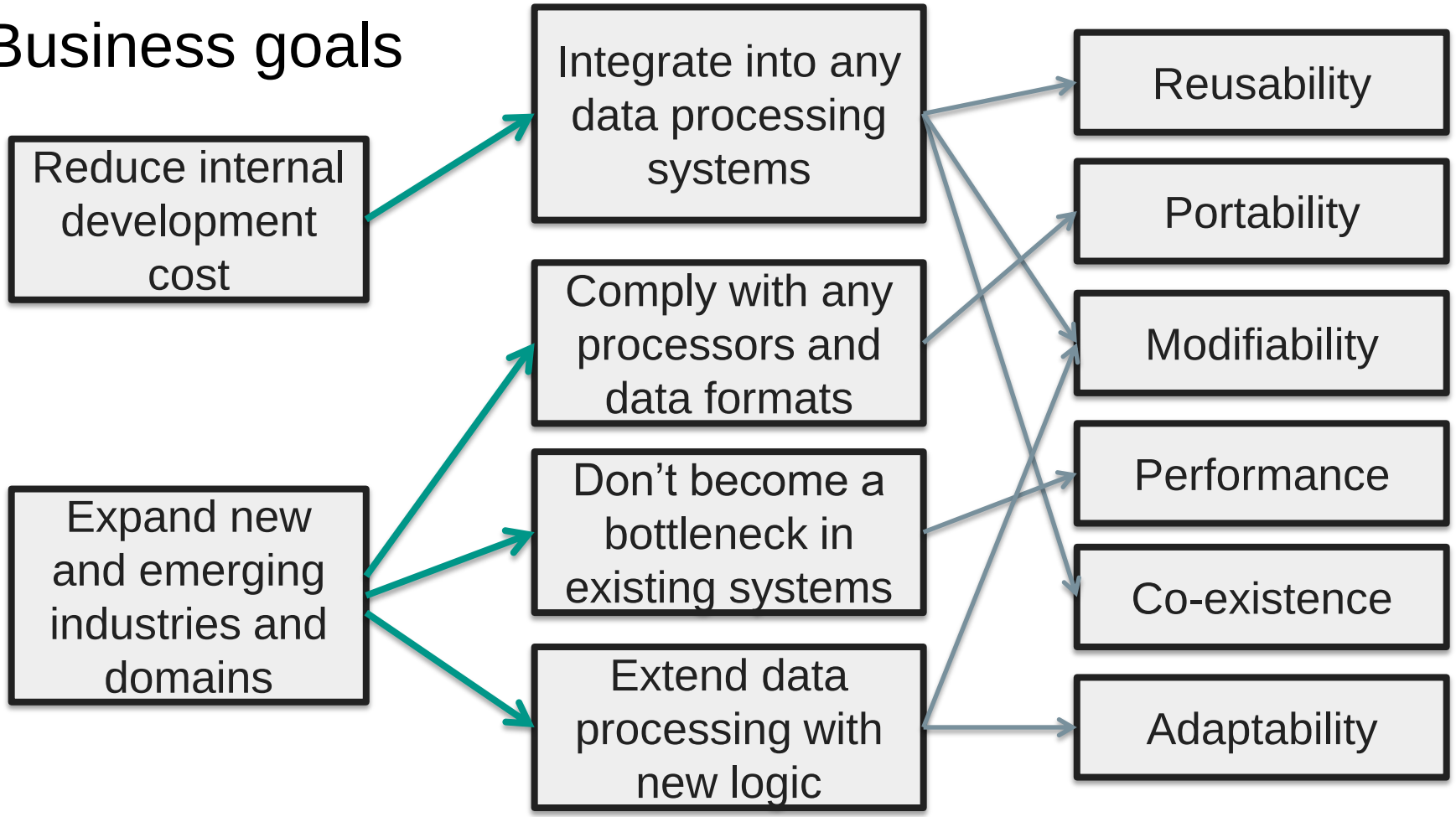
Technical constraints

- JAVA language
- Pipe and Filter pattern
- Data formats
- Framework

Business constraints

Comply with new domains regulations

Business goals

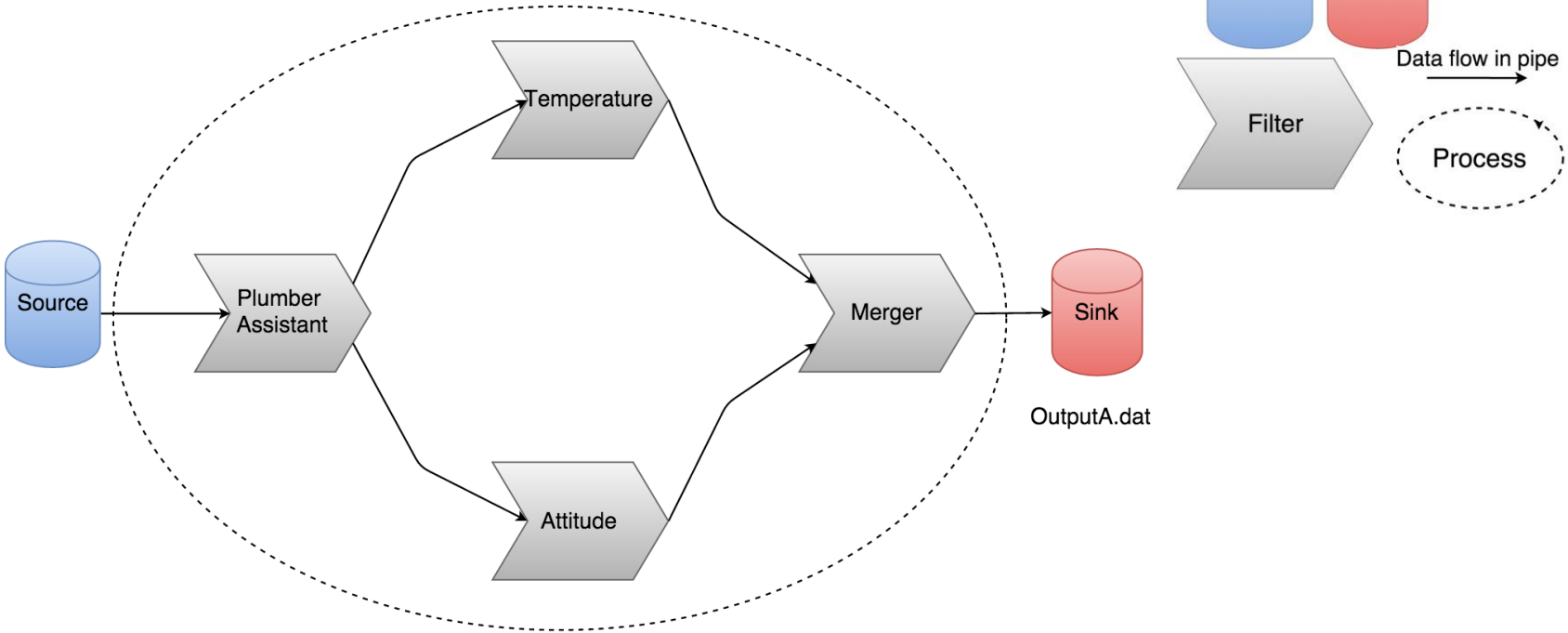


Attribute	Scenario
Modifiability	Faculty gives directive to the developer to add new behavior (A-B-C) during design time and developer makes modifications before assignment due date
Reusability	Faculty gives directive to the developer to add new behavior (A-B-C) during design time and reuse previous step solutions on the next step task with modifications that take no more than 1 hour per each module
Performance	External system sends the data to the source and our system processes the data during runtime in the way that the latency between any two bytes in a row at the sink is less than 10 latencies between first and second processed bytes

System A requirements

- Read data from file
- Convert temperature and attitude
- Filter all other parameters
- Write result to the output file

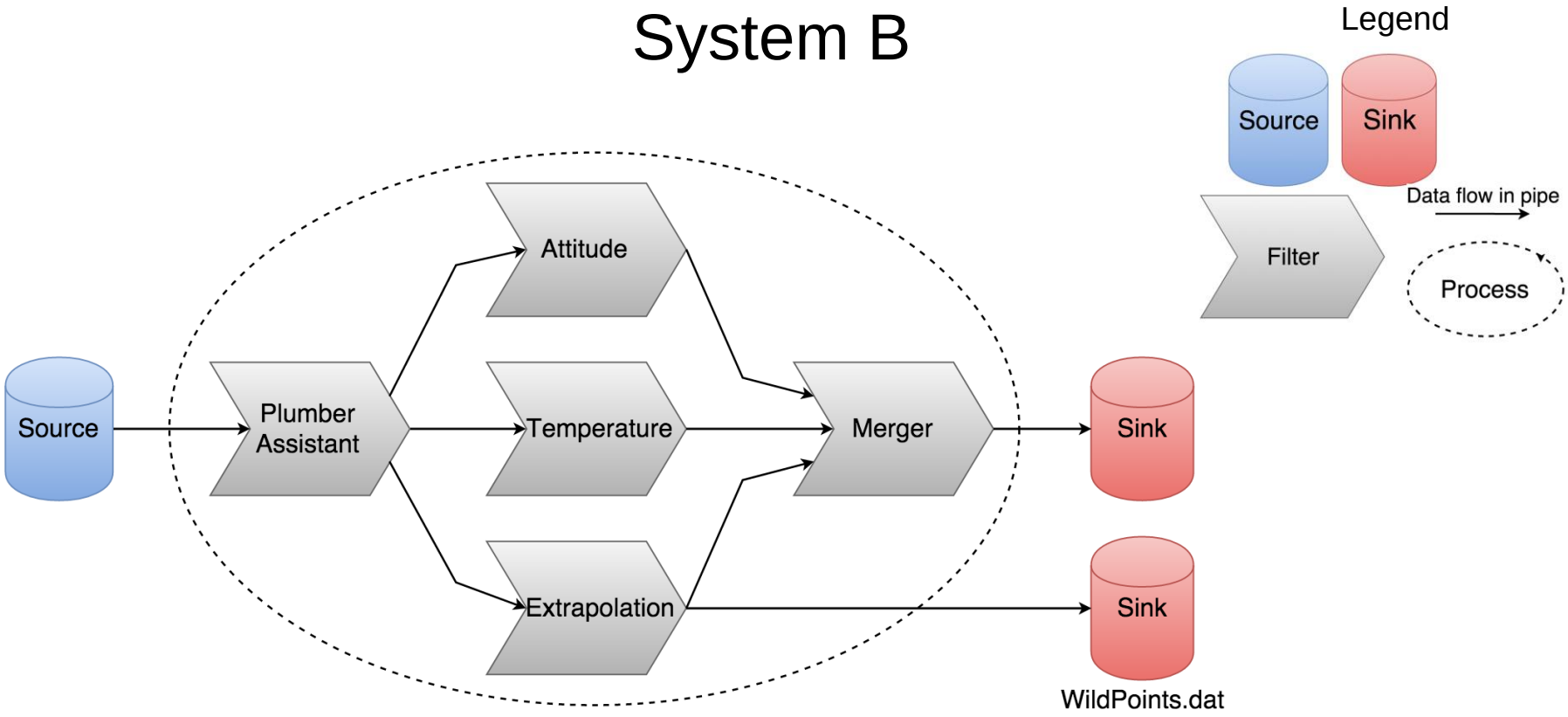
System A


Legend
Source
Sink
Data flow in pipe
Filter
Process
Source
Plumber Assistant
Temperature
Attitude
Merger
Sink
OutputA.dat

System B requirements

- Read data from file
- Convert temperature and attitude
- Extrapolate Pressure
- Write result to the two files: all data and wild points

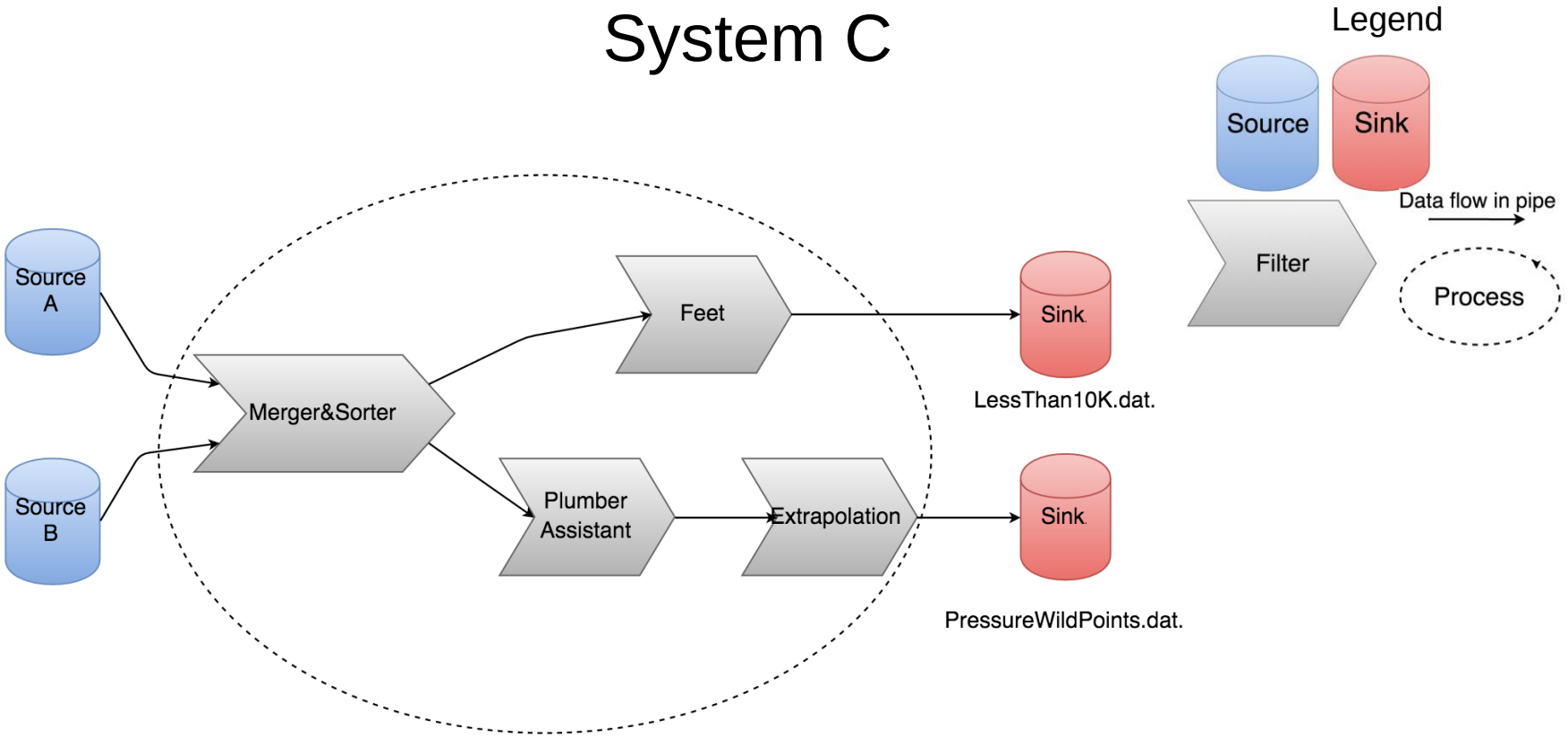
System B


Legend
Source
Sink
Data flow in pipe
Filter
Process
Source
Plumber Assistant
Attitude
Temperature
Extrapolation
Merger
Sink
Sink
WildPoints.dat

System C requirements

- Read data from two files
- Filter records by feet
- Extrapolate Pressure
- Write result to the two files: filtered data and wild points

System C


Legend
Source
Sink
Data flow in pipe
Filter
Process
Source A
Source B
Merger&Sorter
Feet
Plumber Assistant
Extrapolation
Sink
LessThan10K.dat.
Sink
PressureWildPoints.dat.

Concerns

- Quality attributes and metrics (workshop?)
- Data extrapolation
- TA Comments

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Attribute	Scenario
Co-existence	Other system send input data to the system during runtime and it processes the data with no downtime and side effects causing any faults in other system modules
Reusability	Customer gives directive to the contractor to introduce existing filter module into his system and contractor implements the solution during design time in less than 80 working hours
Adaptability	If customer changes runtime environment, system should continue to operate after restart without side effects

Attribute	Scenario
Portability	Customer wants the system to process data under new processor model during deployment and system runs under new hardware without adding or modifiing SLOC
Modifiability	A system administrator configures the system during deployment to handle new units conversion for the source data and the system is able to process new formats with no side effects