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ANSA Phase III

ANSAworks presentation - JET

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Abstract

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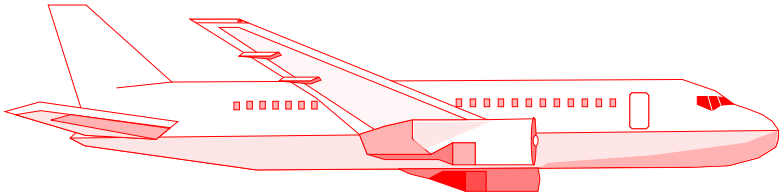
JET

CORBA API on the DIMMA Platform



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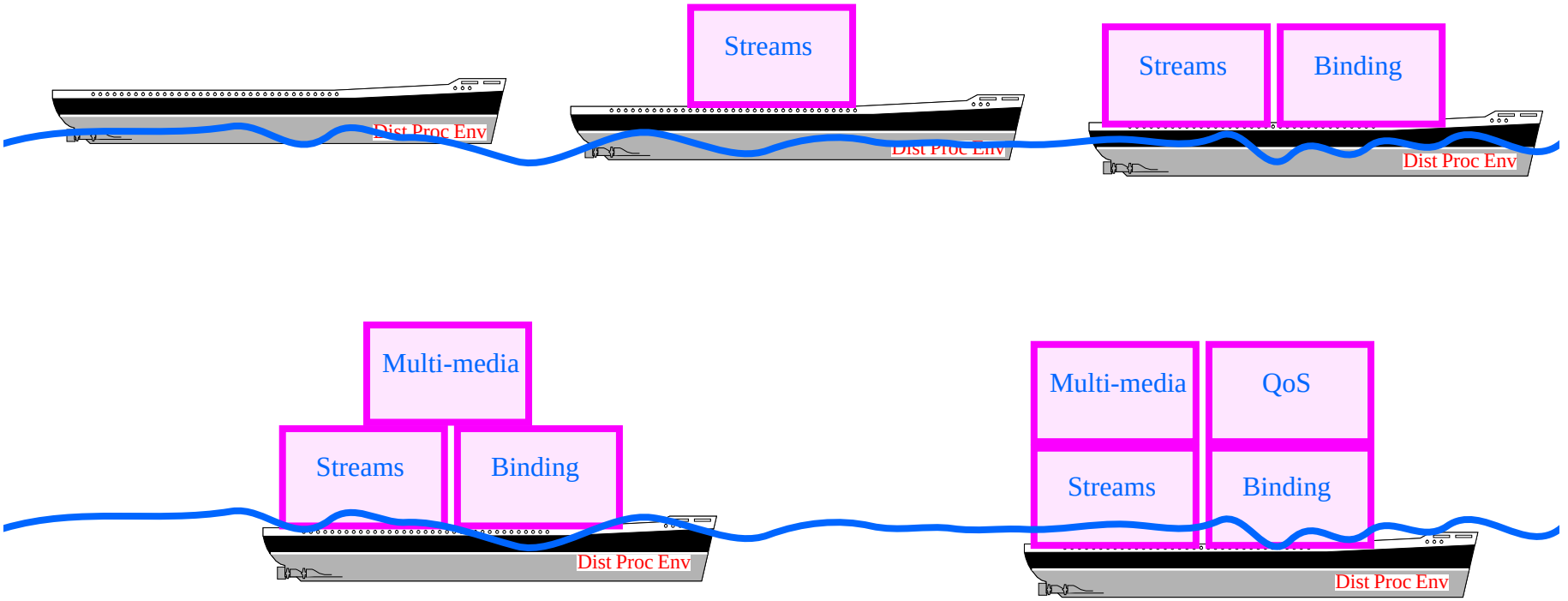
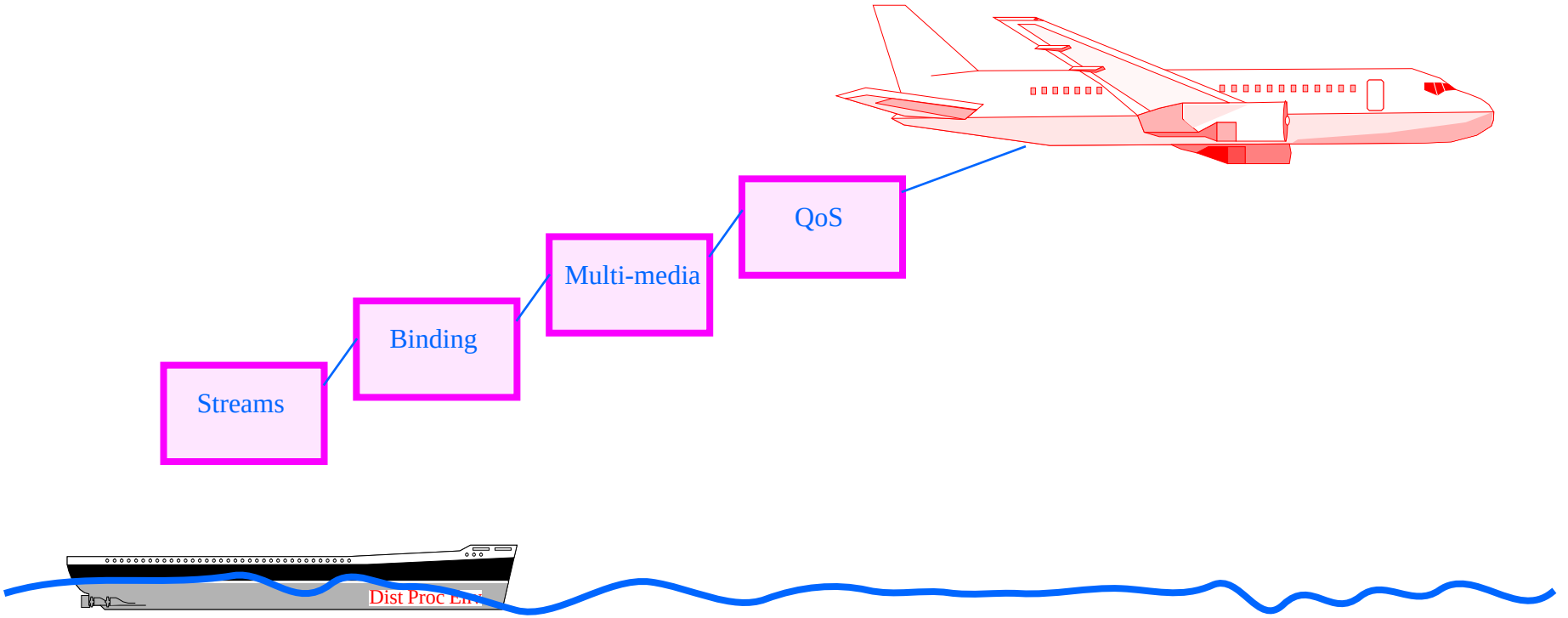
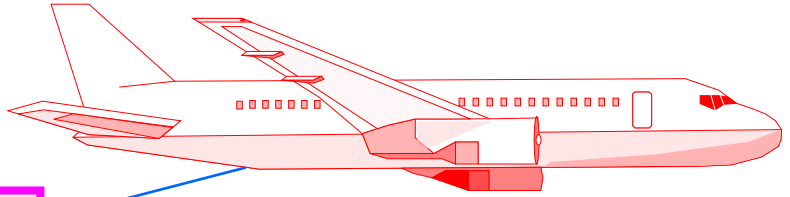
Existing dist. proc. environments are not sufficient

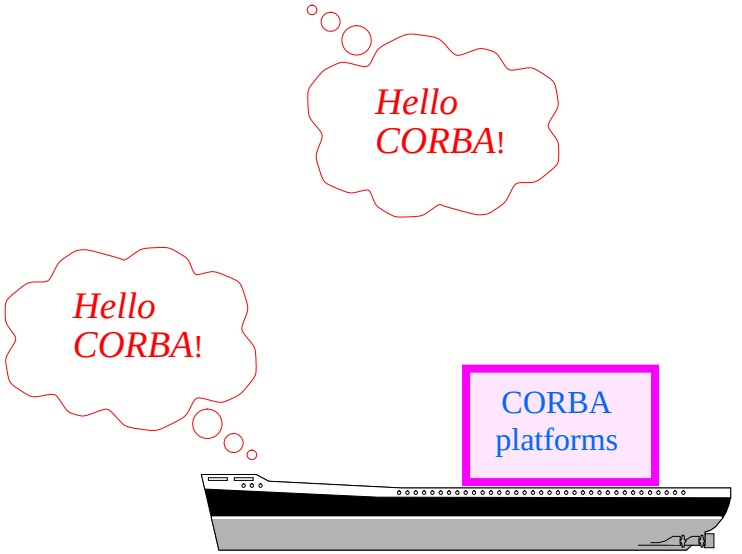



QoS
Multi-media
Binding
Streams



CORBA

Extensions


Hello
CORBA!
Hello
CORBA!
CORBA
platforms

Why JET?

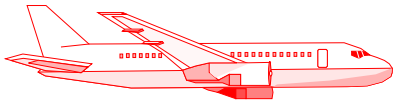
- CORBA is the standard - this is what people want

- CORBA on its own is not sufficient - no support for streams, binding, etc.

- The Distributed Multi-media architecture DIMMA which can provide this support is not CORBA-compliant

No answer

- so JET aims to provide a subset of CORBA API supported on the DIMMA environment

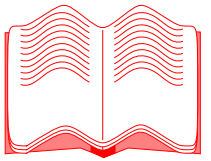


JET will provide:

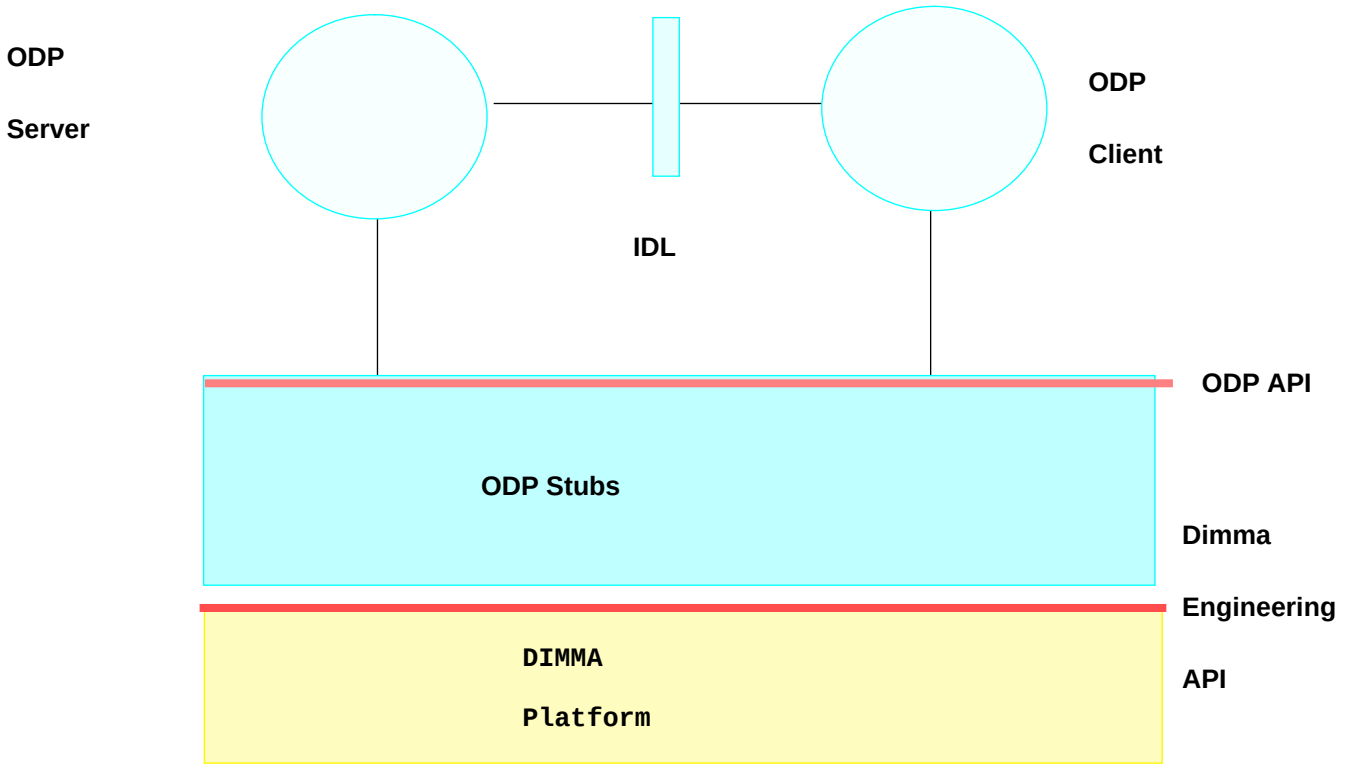
- a subset of a CORBA compliant platform for experimentation with extensions to CORBA for binding, streams, and so on

- inter-operability with and portability to other CORBA platforms

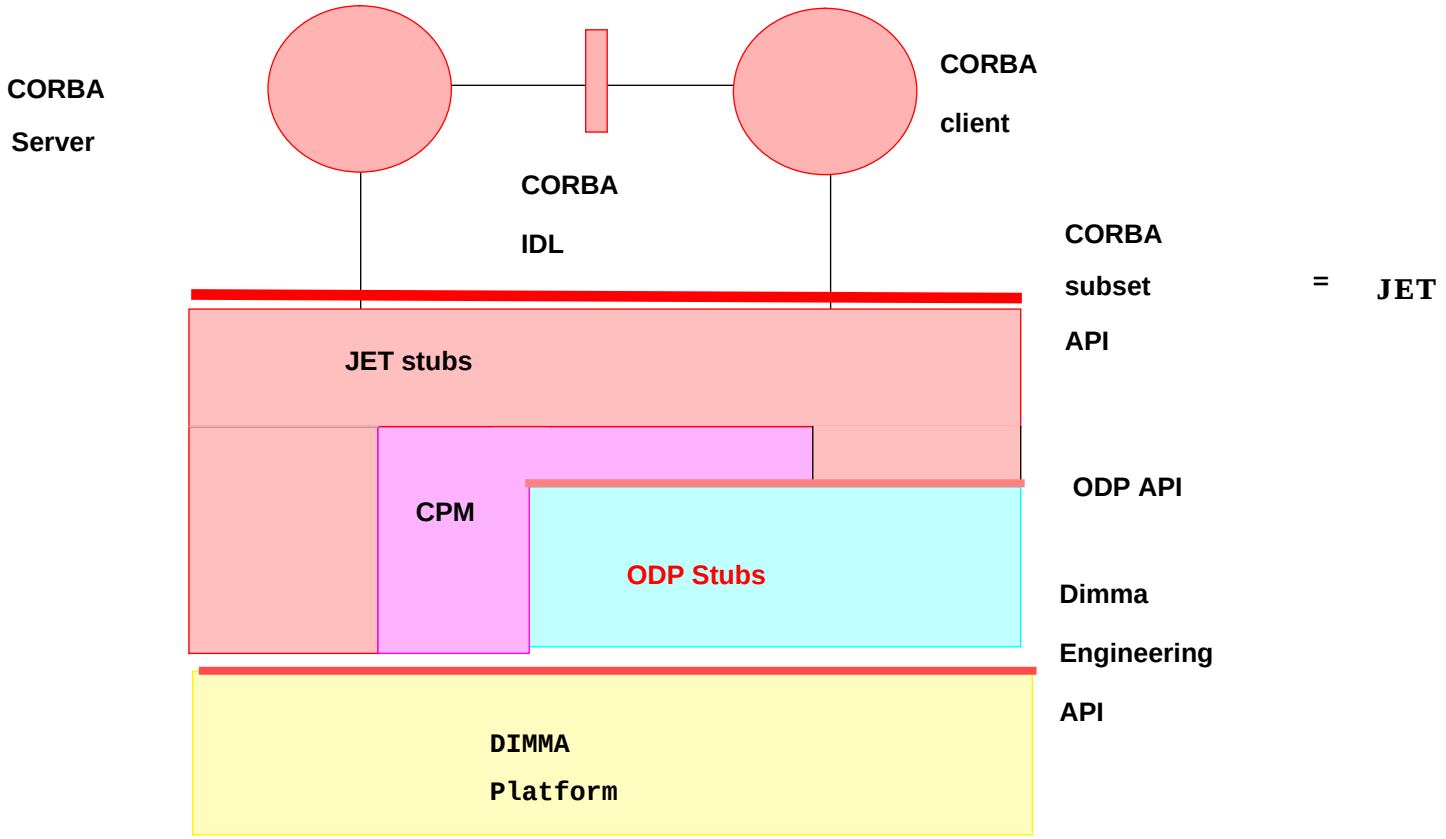
- conclusions from this work can be input to OMG



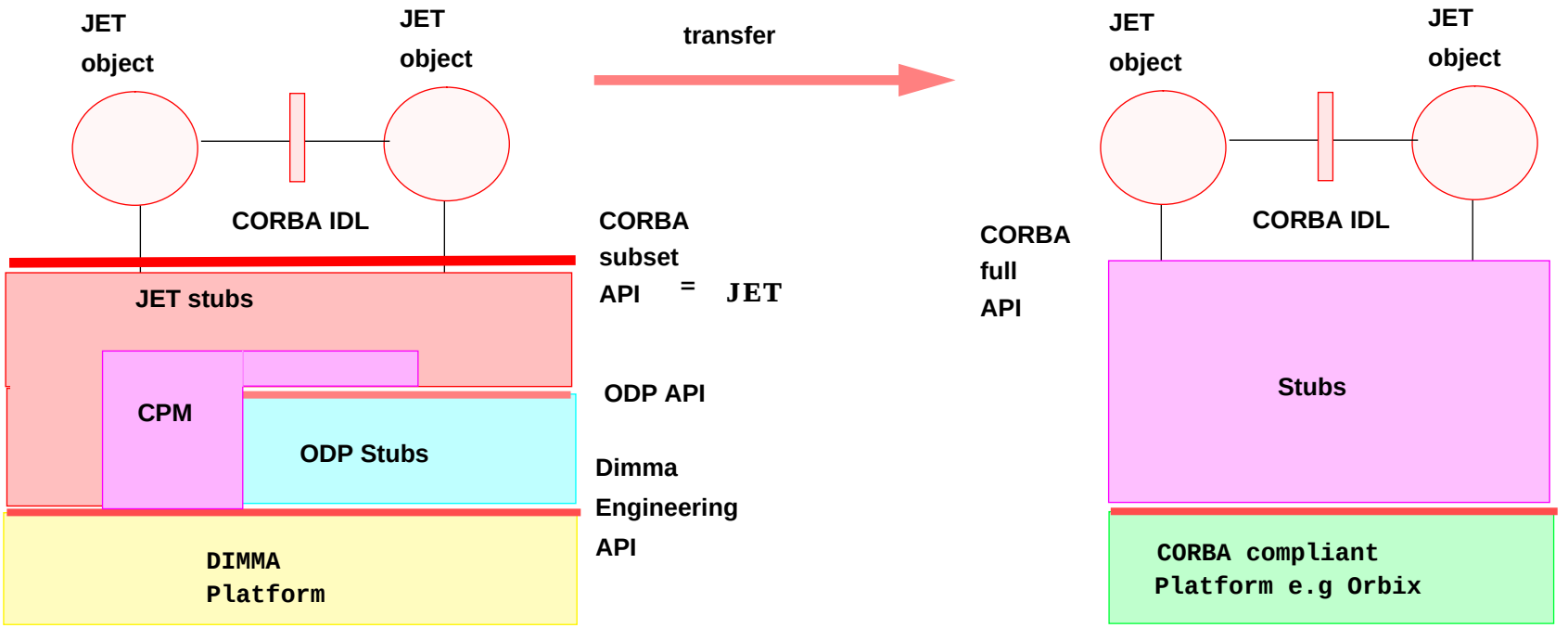
DIMMA and the ODP API



How JET works - CORBA and the ODP API



How JET works - JET and CORBA



Portability

- Other applications using same CORBA subset can port to JET
- JET applications without extensions can port to other platforms
- Minimal changes required for aspects not yet covered by CORBA
  - in the code (e.g. _bind, trading)
  - in the environment (eg. makefiles)

Interoperability

- JET applications will interoperate with
  - applications on the DIMMA/ODP platform
  - other CORBA platforms (using IIOP)

Why a Subset of CORBA

- full CORBA support is not necessary to provide the functionality needed
- the subset will be sufficient so as not to restrict the application programmer in writing distributed applications
- it will be extendable as further requirements become known
- it will avoid some less desirable features of CORBA

not included in the Subset

- context parameter
- attributes
- oneway invocations - will be provided by streams
- BOA object adapter
  - ill-defined
  - unnecessary - can be done implicitly and via explicit binding support
- concrete any
  - no type checking at compile time
  - difficult to implement
  - unnecessary - use union
- dumb pointers T* - impinges on memory management

Memory Management - T_var v. T*

- A CORBA API can be implemented using either T_var or T*
- you can do everything with one or the other
- you don’t need both

- T_var uses smart pointers with a reference count
- easy to implement garbage collection

- T* needs release/duplicate
- garbage collection harder

- support is provided for T_var only

Implementation

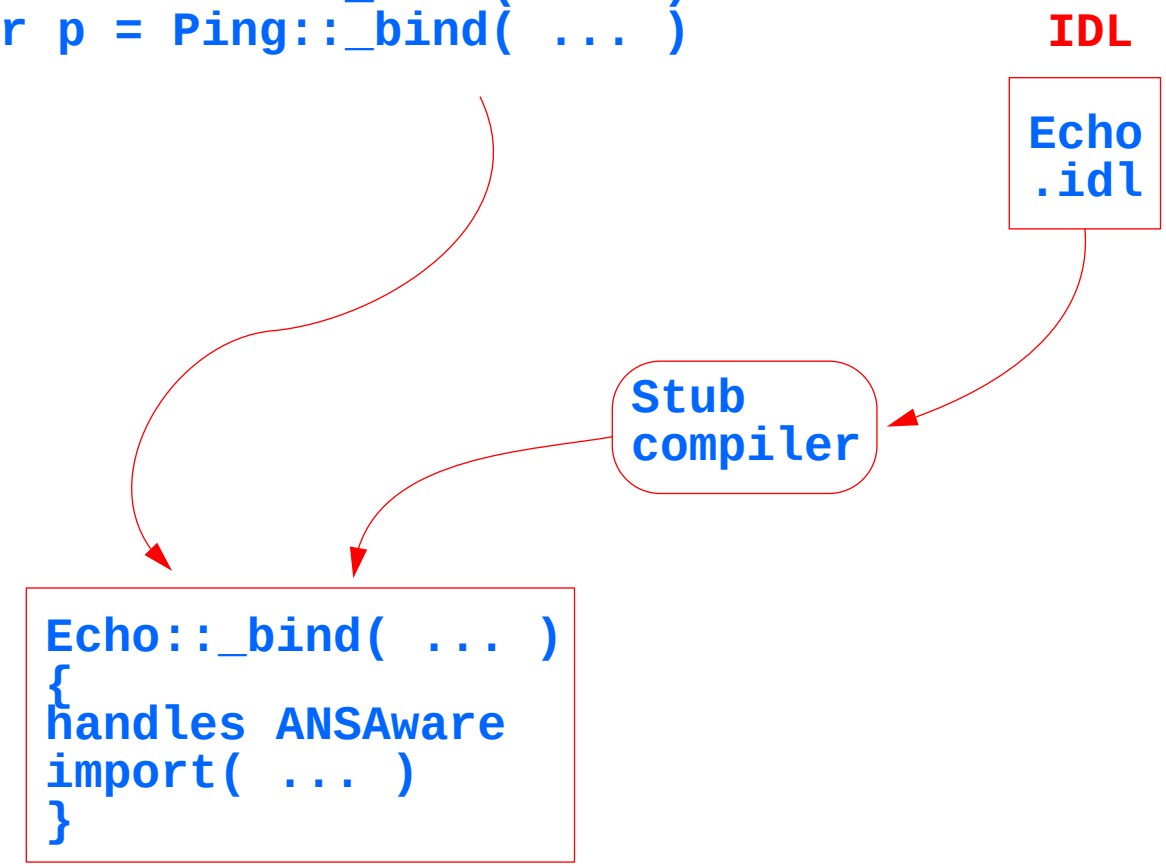
- stubs, generated from CORBA IDL by the stub compiler
- ODP API
- CORBA Personality Module (CPM)

Major Features

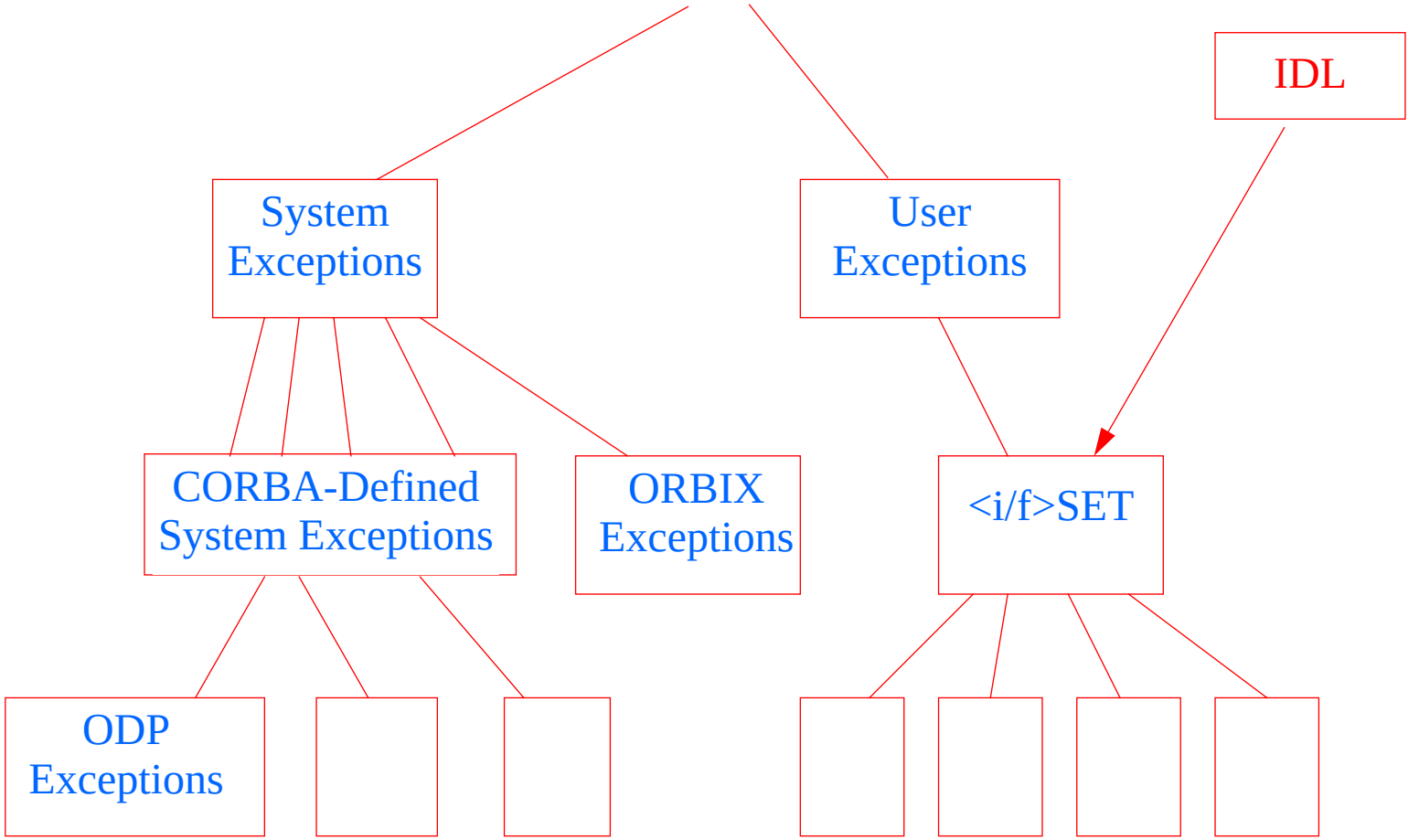
- support for all types other than any (structures, unions, arrays etc.)
- invocations (with in/inout/out)
- top level marshalling (underlying marshalling done in ODP API)
- _bind (trader import for client)
- exceptions

_bind

```
client:
Echo_var e = Echo::_bind( ... )
Ping_var p = Ping::_bind( ... )
```



Exceptions


IDL
System Exceptions
User Exceptions
CORBA-Defined System Exceptions
ORBIX Exceptions
<i/f>SET
ODP Exceptions

Summary

- JET is important in that it provides a basis for further work in all the areas mentioned
- Further details in APM.1657, “JET: CORBA API on the DIMMA platform”
- Contains: CORBA IDL stub compiler, CORBA API, CORBA personality module
- Demonstration will show how a CORBA program can be directly transferred from JET to another ORB