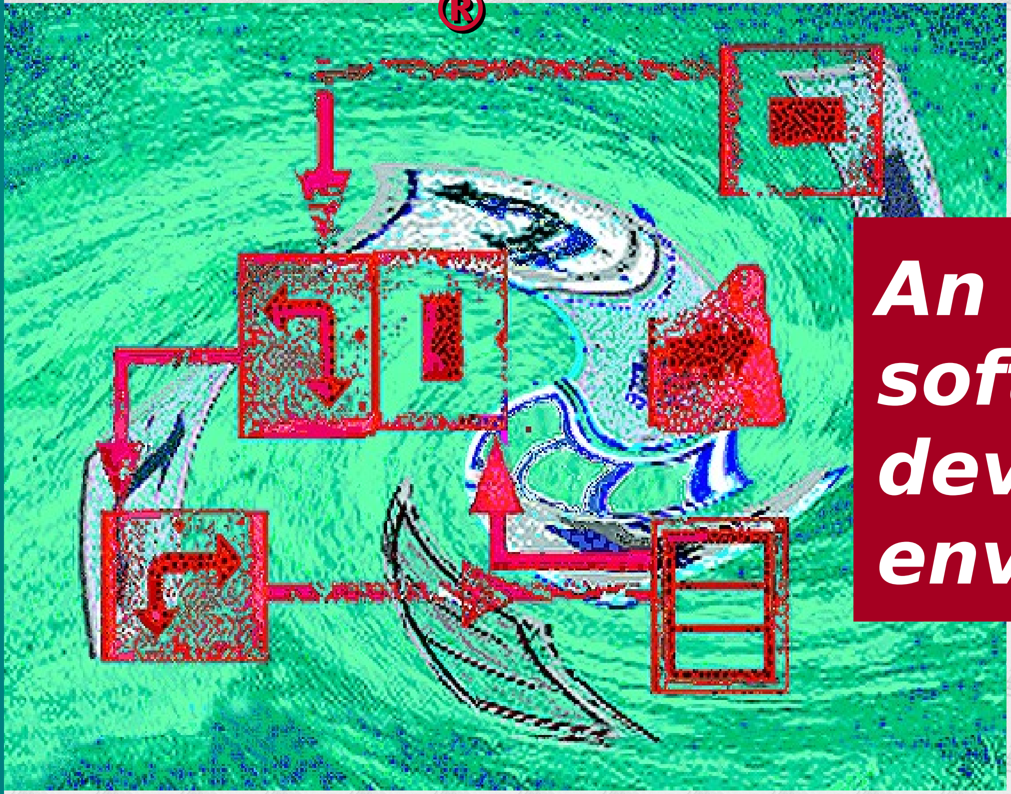
objectiF®



An object-oriented software development environment

objectiF

microTOOL

ware Techniques Trai

microTOOL - at a glance

- 12 years of experience in software engineering
- structured and object-oriented approaches
- successful and independent

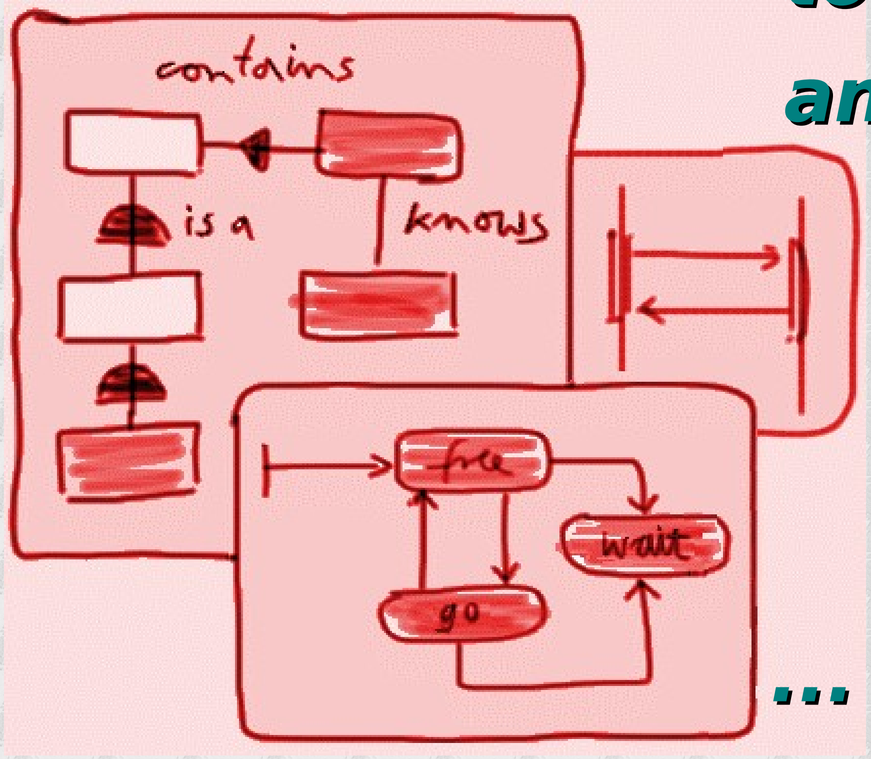
micro TOOL

Products and Services

- model-based process manager *in-Step*
- version and configuration manager with a relational product library *in-Line*
- object-oriented software development environment *objectiF*®
- structured software development environment case/4/0
- training, coaching, tool-integration

What is objectiF?

A model-based tool for OOA/OOD and OOP ...



... using C++

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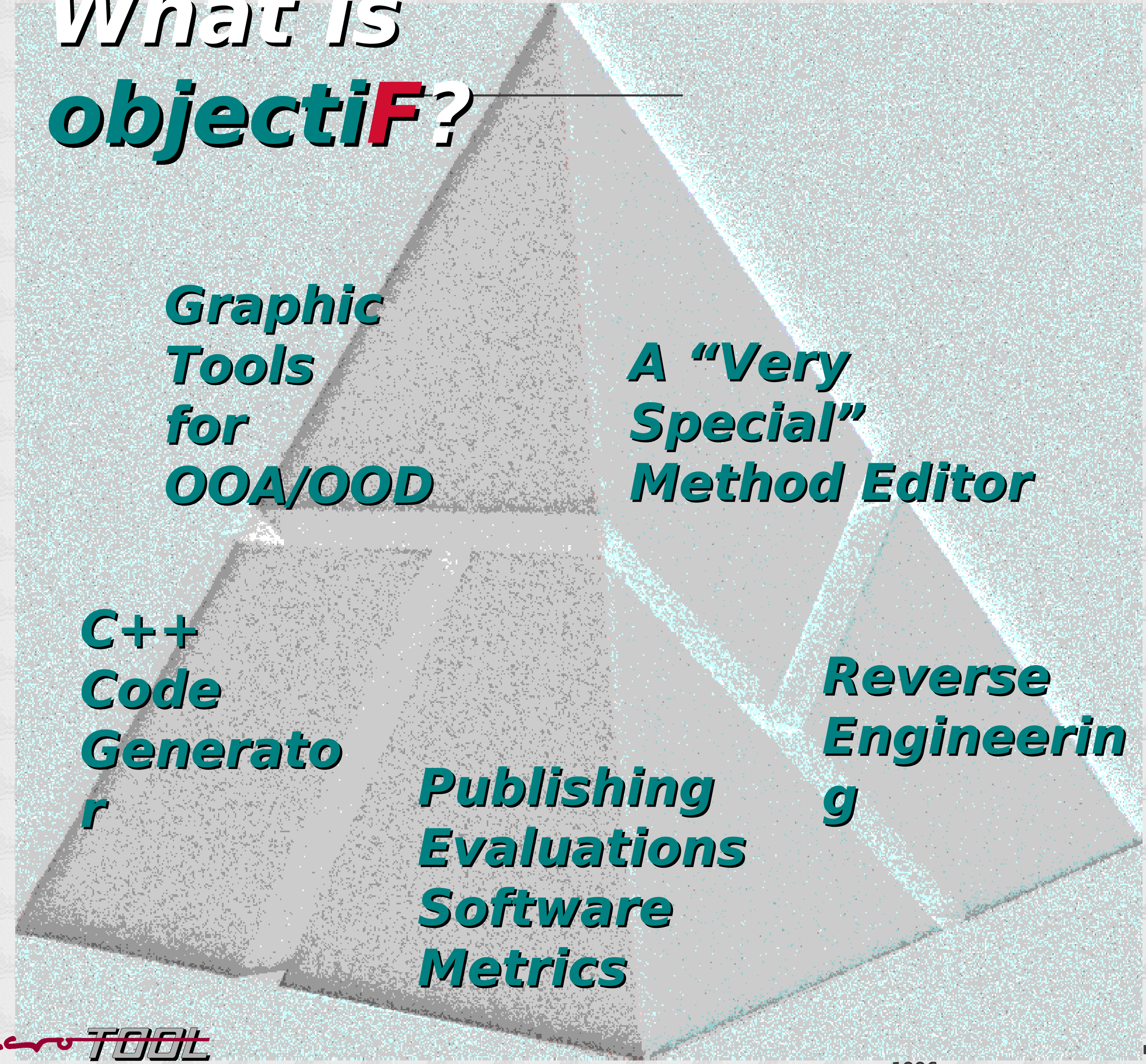
What is objectiF?



Graphic
Tools
for
OOA/OOD

A "Very
Special"
Method Editor

C++
Code
Generato
r

Publishing
Evaluations
Software
Metrics

Reverse
Engineerin
g

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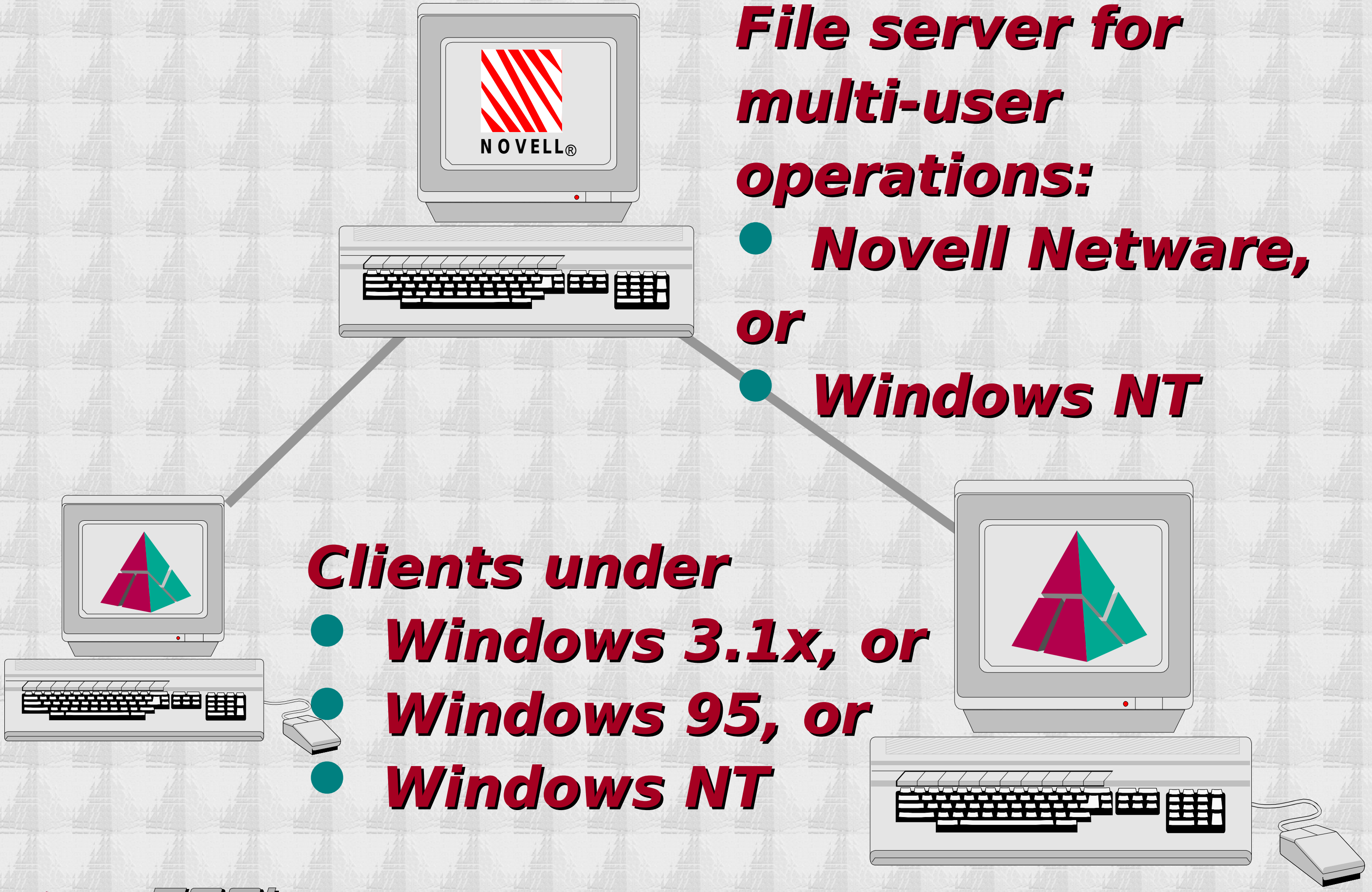
What you need for objectiF



File server for multi-user operations:
- **Novell Netware, or**
- **Windows NT**

Clients under
- **Windows 3.1x, or**
- **Windows 95, or**
- **Windows NT**

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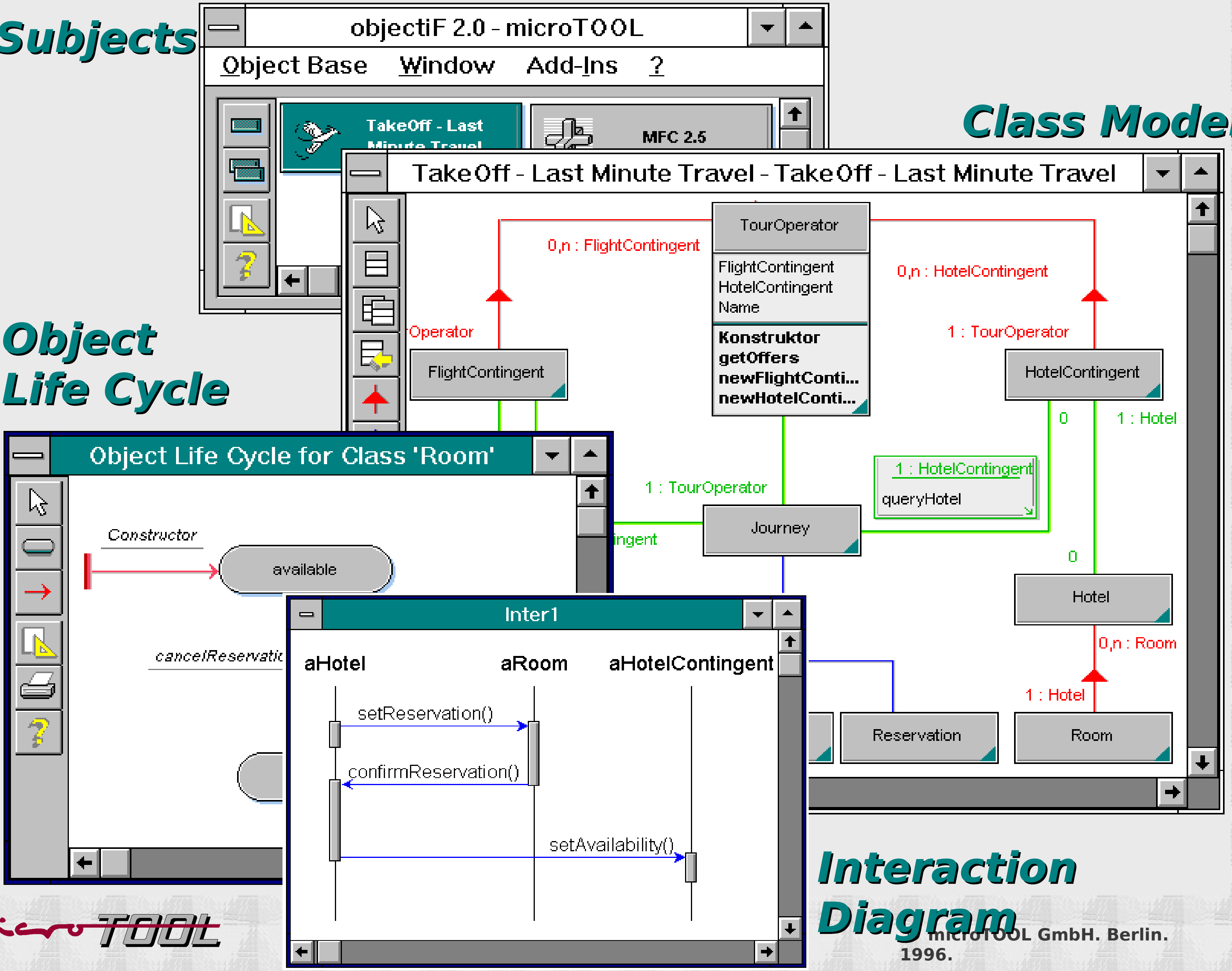
OOA/OOD - Methods in Practice



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microTOOL GmbH. Berlin. 1996.

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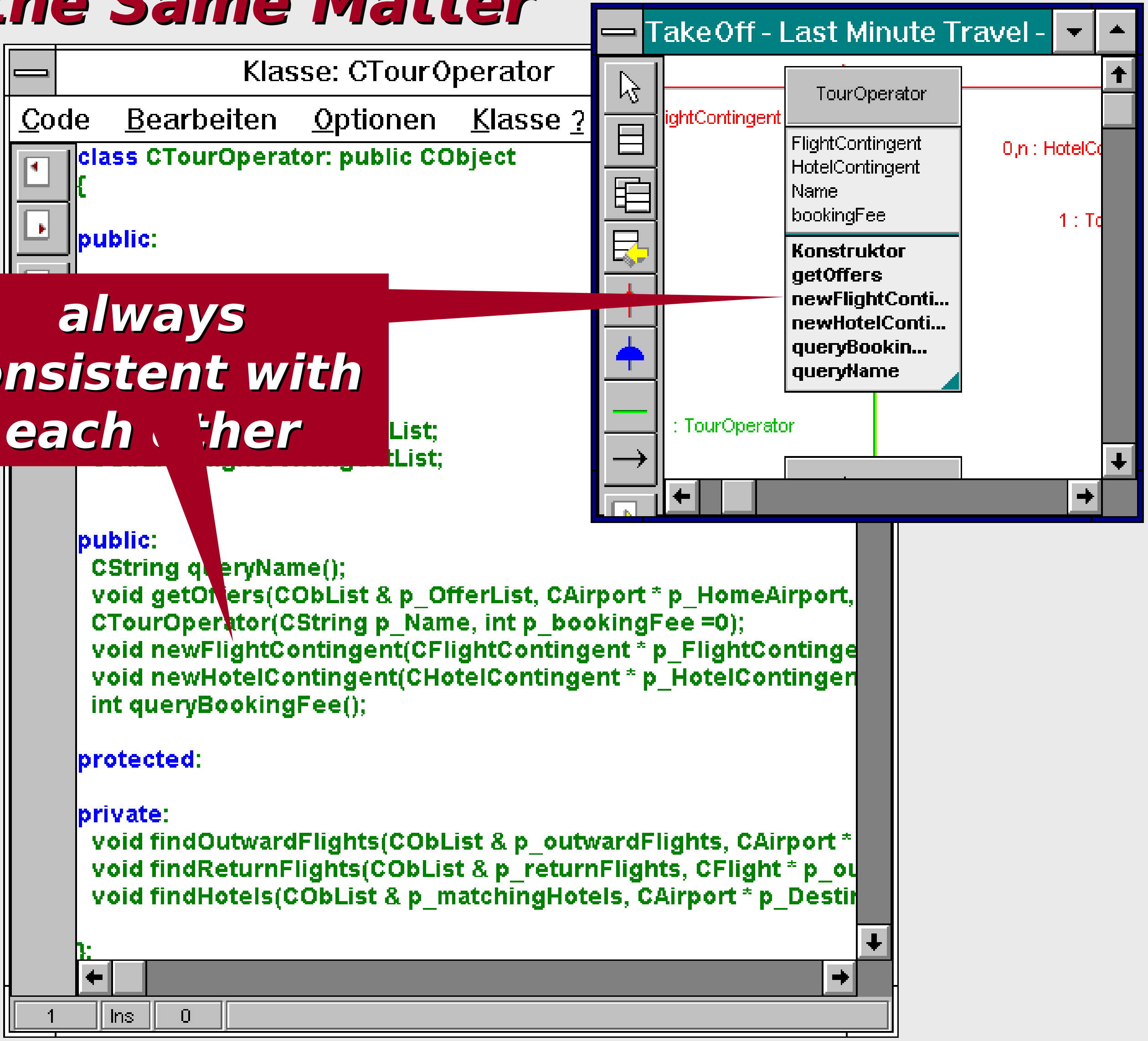
Graphic Specification and Code - Two Aspects of the Same Matter



```
class CTourOperator: public CObject
{

public:

                                   List;
                                   tList;


public:
  CString q eryName();
  void getOf ers(CObList & p_OfferList, CAirport * p_HomeAirport,
  CTourOper tor(CString p_Name, int p_bookingFee =0);
  void newFlightContingent(CFlightContingent * p_FlightContinge
  void newHotelContingent(CHotelContingent * p_HotelContingen
  int queryBookingFee();

protected:

private:
  void findOutwardFlights(CObList & p_outwardFlights, CAirport *
  void findReturnFlights(CObList & p_returnFlights, CFlight * p_ou
  void findHotels(CObList & p_matchingHotels, CAirport * p_Destir

};
```

TourOperator

FlightContingent
HotelContingent
Name
bookingFee

Konstruktor
getOffers
newFlightConti...
newHotelConti...
queryBookin...
queryName

ightContingent

0,n : HotelCo

1 : To

: TourOperator

always consistent with each ther

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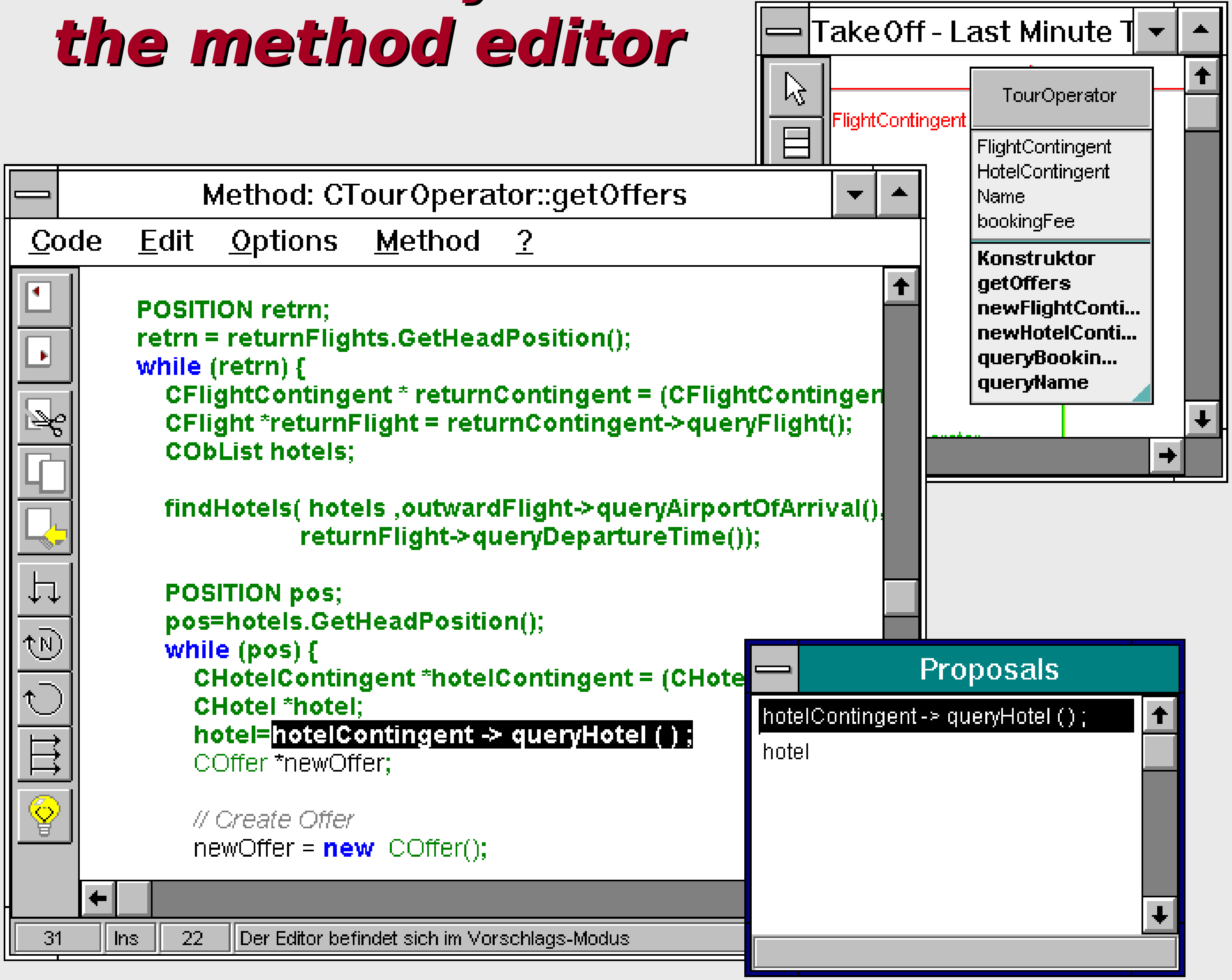
Kind of fuzzy - the method editor


Take Off - Last Minute T

```
FlightContingent
HotelContingent
Name
bookingFee
Konstruktor
getOffers
newFlightConti...
newHotelConti...
queryBookin...
queryName
```

Method: CTourOperator::getOffers

```
POSITION retrn;
retrn = returnFlights.GetHeadPosition();
while (retrn) {
    CFlightContingent * returnContingent = (CFlightContingen
    CFlight *returnFlight = returnContingent->queryFlight();
    CObList hotels;

    findHotels( hotels ,outwardFlight->queryAirportOfArrival(),
                returnFlight->queryDepartureTime());

    POSITION pos;
    pos=hotels.GetHeadPosition();
    while (pos) {
        CHotelContingent *hotelContingent = (CHote
        CHotel *hotel;
        hotel=hotelContingent -> queryHotel ( ) ;
        COffer *newOffer;

        // Create Offer
        newOffer = new  COffer();
```

31 | Ins | 22 | Der Editor befindet sich im Vorschlags-Modus

Proposals

```
hotelContingent -> queryHotel ( ) ;
hotel
```

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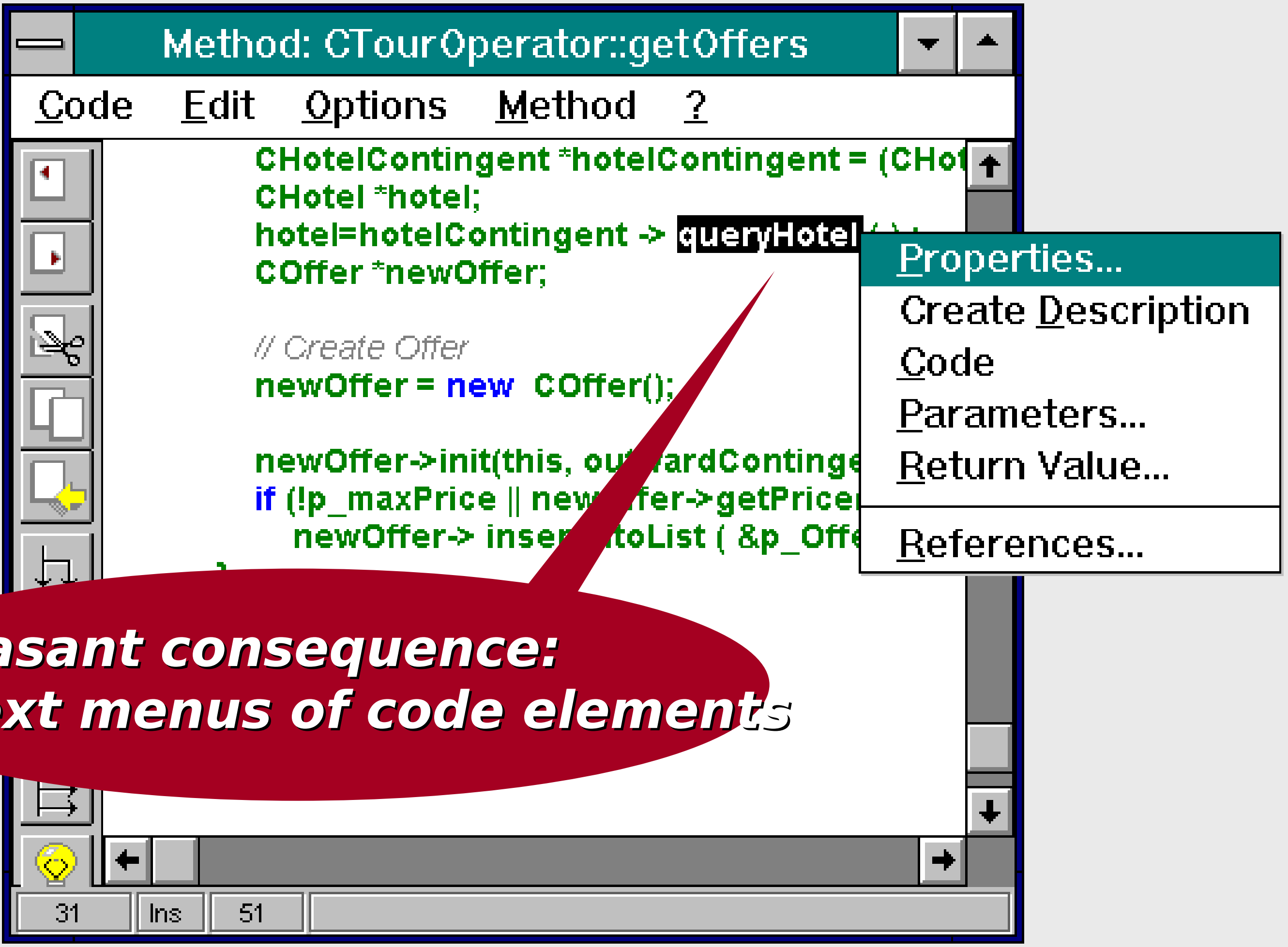
Code is more than just a text string for objectiF



```
CHotelContingent *hotelContingent = (CHot
CHotel *hotel;
hotel=hotelContingent -> queryHotel ( ) ;
COffer *newOffer;

// Create Offer
newOffer = new  COffer();

newOffer->init(this, ou   ardContinge
if (!p_maxPrice || new   fer->getPrice
   newOffer-> inser   toList ( &p_Offe
}
```

A pleasant consequence:
Context menus of code elements

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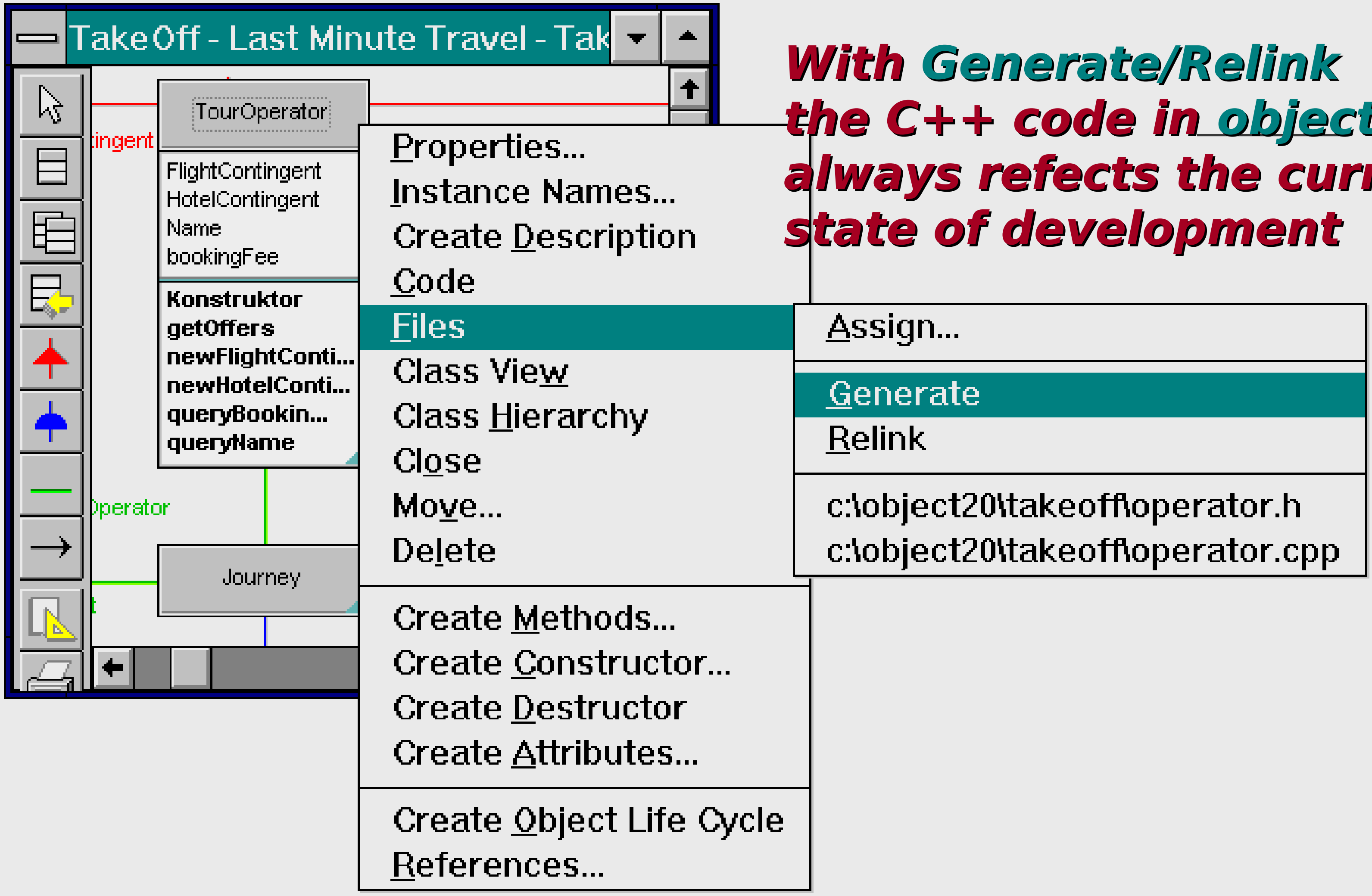
How the code gets to the compiler


Take Off - Last Minute Travel - Tak

TourOperator
FlightContingent
HotelContingent
Name
bookingFee

Konstruktor
getOffers
newFlightConti...
newHotelConti...
queryBookin...
queryName

Journey

Properties...
Instance Names...
Create Description
Code
Files
Class View
Class Hierarchy
Close
Move...
Delete
Create Methods...
Create Constructor...
Create Destructor
Create Attributes...
Create Object Life Cycle
References...

Assign...
Generate
Relink
c:\object20\takeoff\operator.h
c:\object20\takeoff\operator.cpp

With Generate/Relink the C++ code in objectiF always refects the current state of development

objectiF

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What is a component?

A component represents reusable, executable software providing object-based functionality.

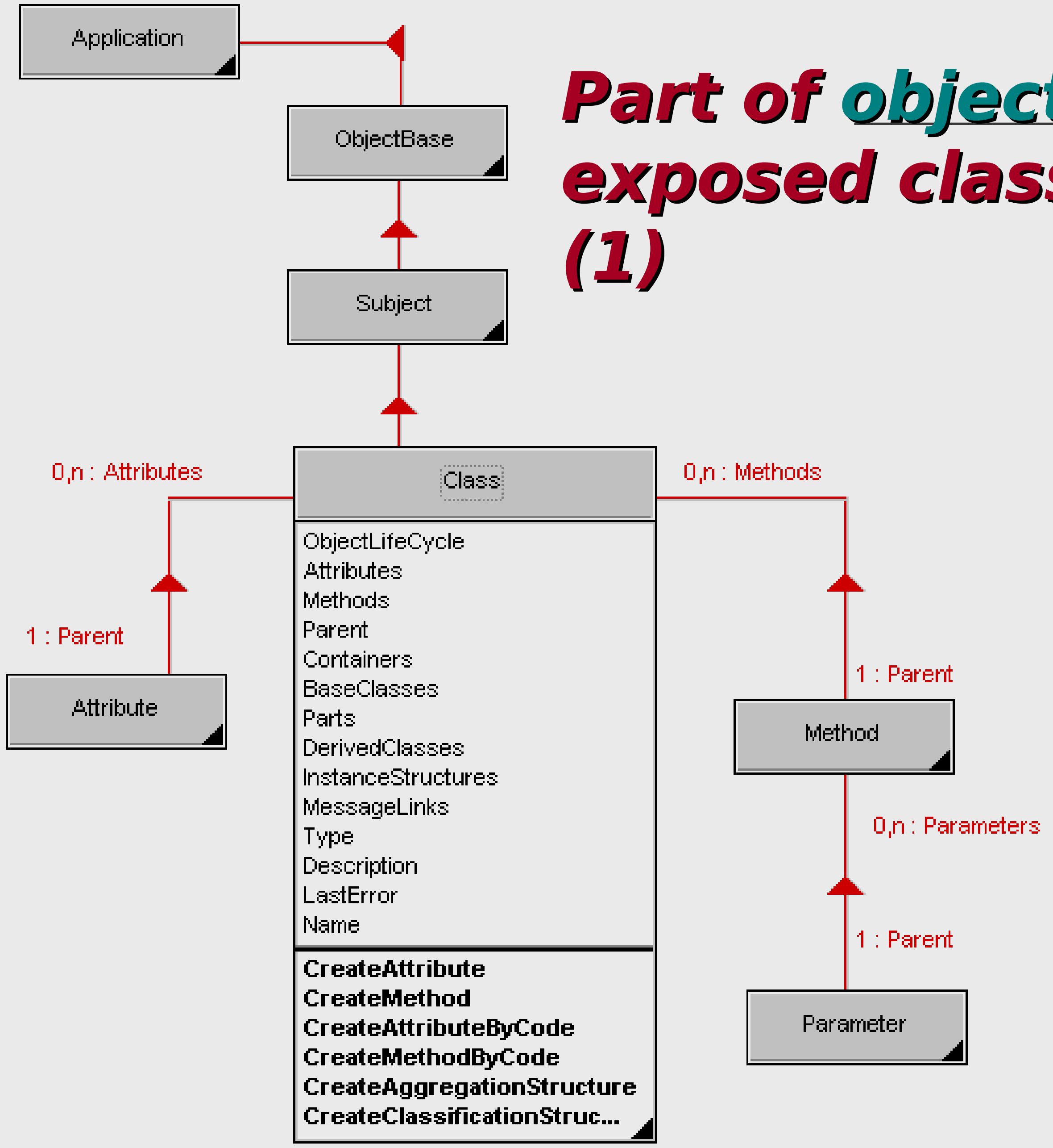
Component functionality is offered through interfaces of objects.

objectiF is a component.

... the appeal of components

- *Integration of components from different companies*
- *Component market in Internet*
- *Structured and object-oriented implementations in different programming languages*
- *“Wrapping” existing applications*
- *Polymorphic behavior over pre-defined interfaces*

Part of objectiF´s exposed class model (1)



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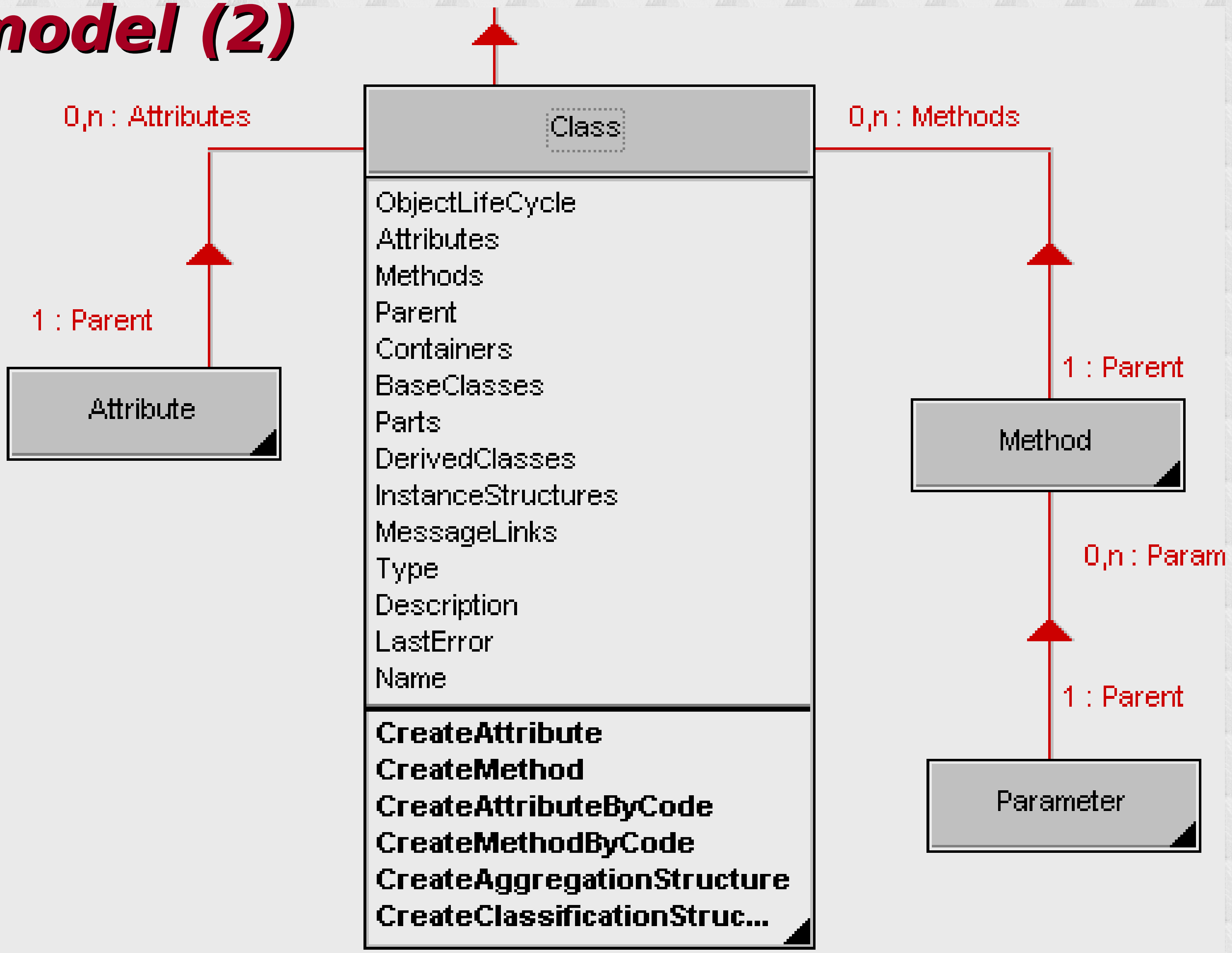
Part of objectiF´s exposed class model (2)



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A programmable tool component: objectiF

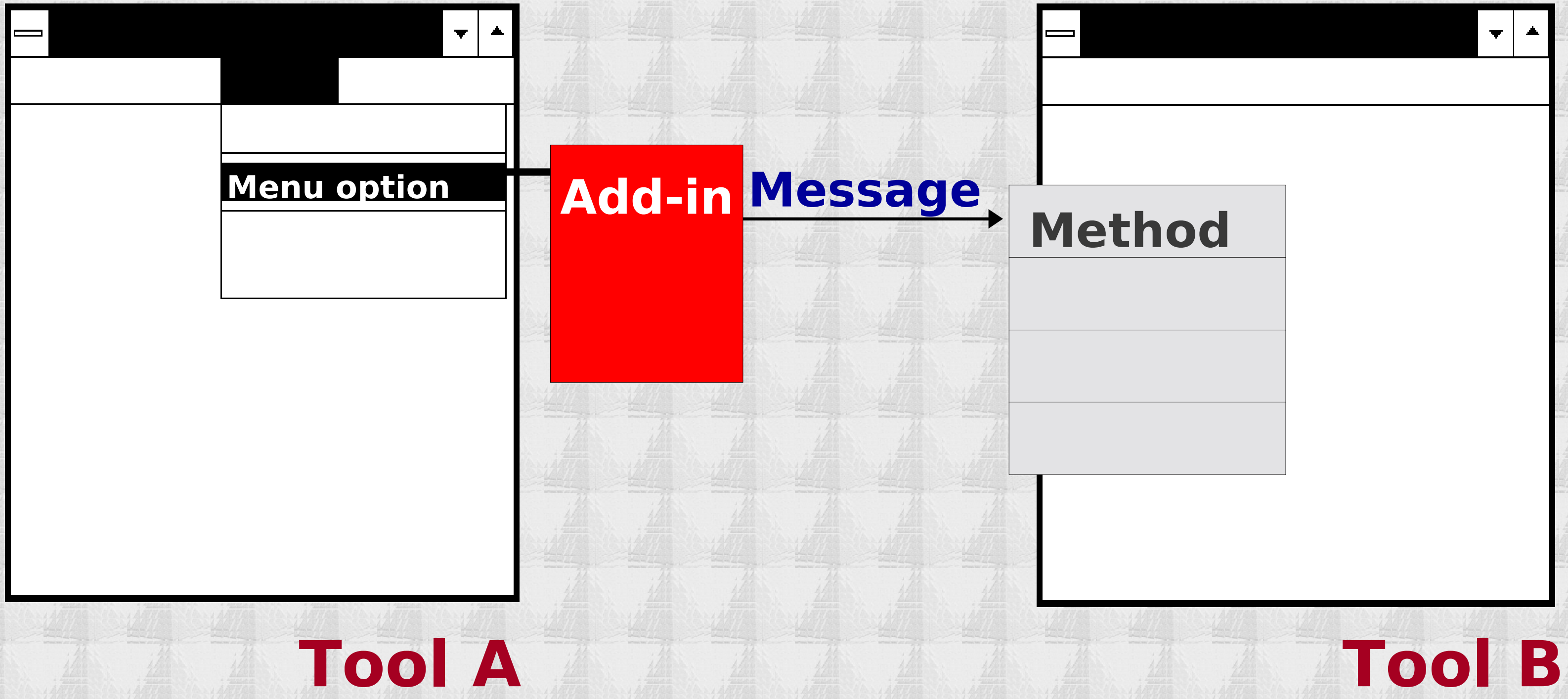
How to insert a class into objectiF

```
Dim anApplication As Object
Dim anObjectBase As Object
Dim aSubject As Object

Set anApplication = GetObject
    (,“objectiF.Application“)
Set anObjectBase = anApplication.ObjectBase
Set aSubject = anObjectBase.QuerySubject(“TakeOff“)

Public = True
aSubject.CreateClass “Room“, Public
```

Cooperation of tool components



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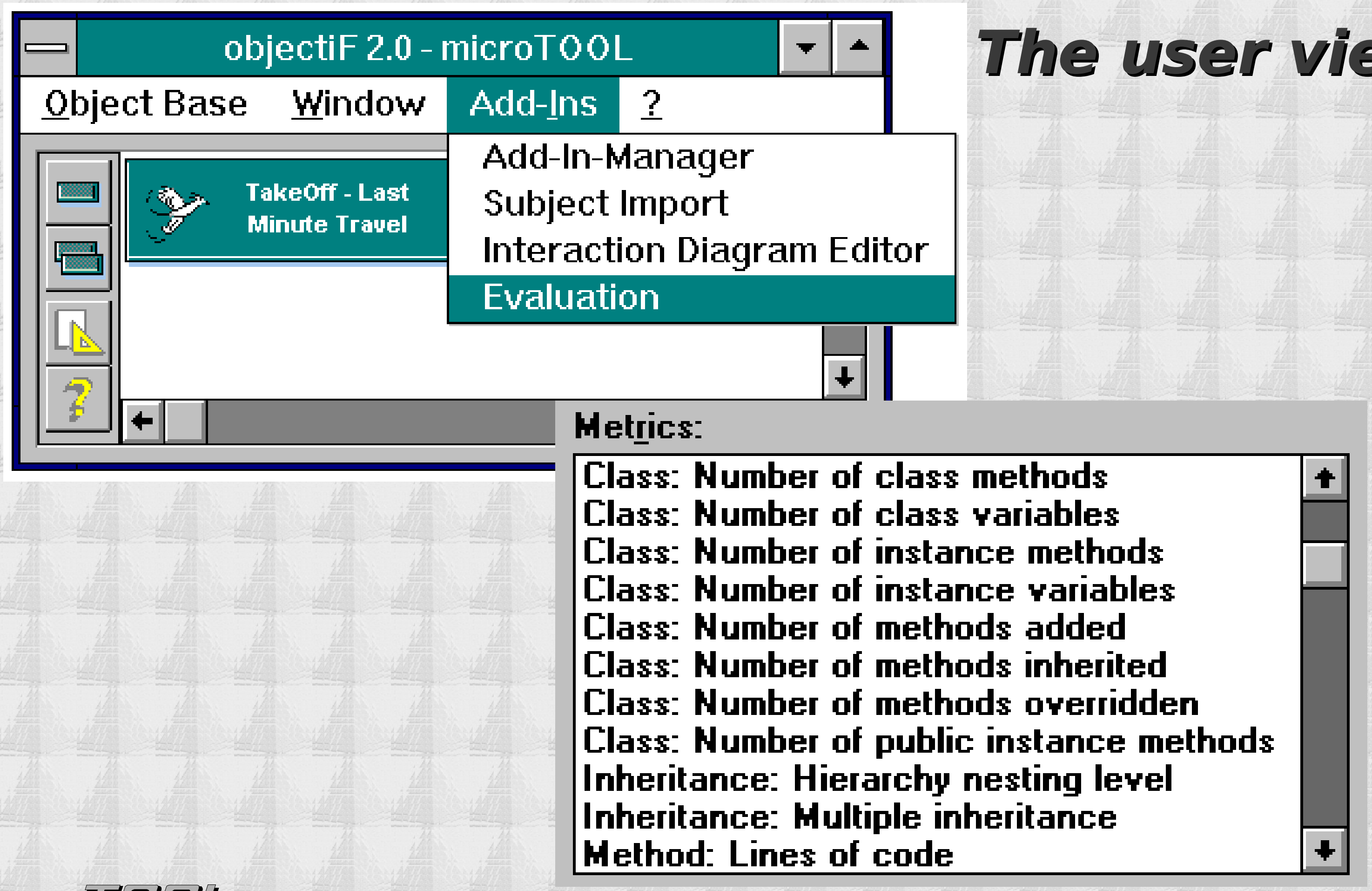
Software metrics: Four interacting components



Metrics:

Class: Number of class methods
Class: Number of class variables
Class: Number of instance methods
Class: Number of instance variables
Class: Number of methods added
Class: Number of methods inherited
Class: Number of methods overridden
Class: Number of public instance methods
Inheritance: Hierarchy nesting level
Inheritance: Multiple inheritance
Method: Lines of code

The user view

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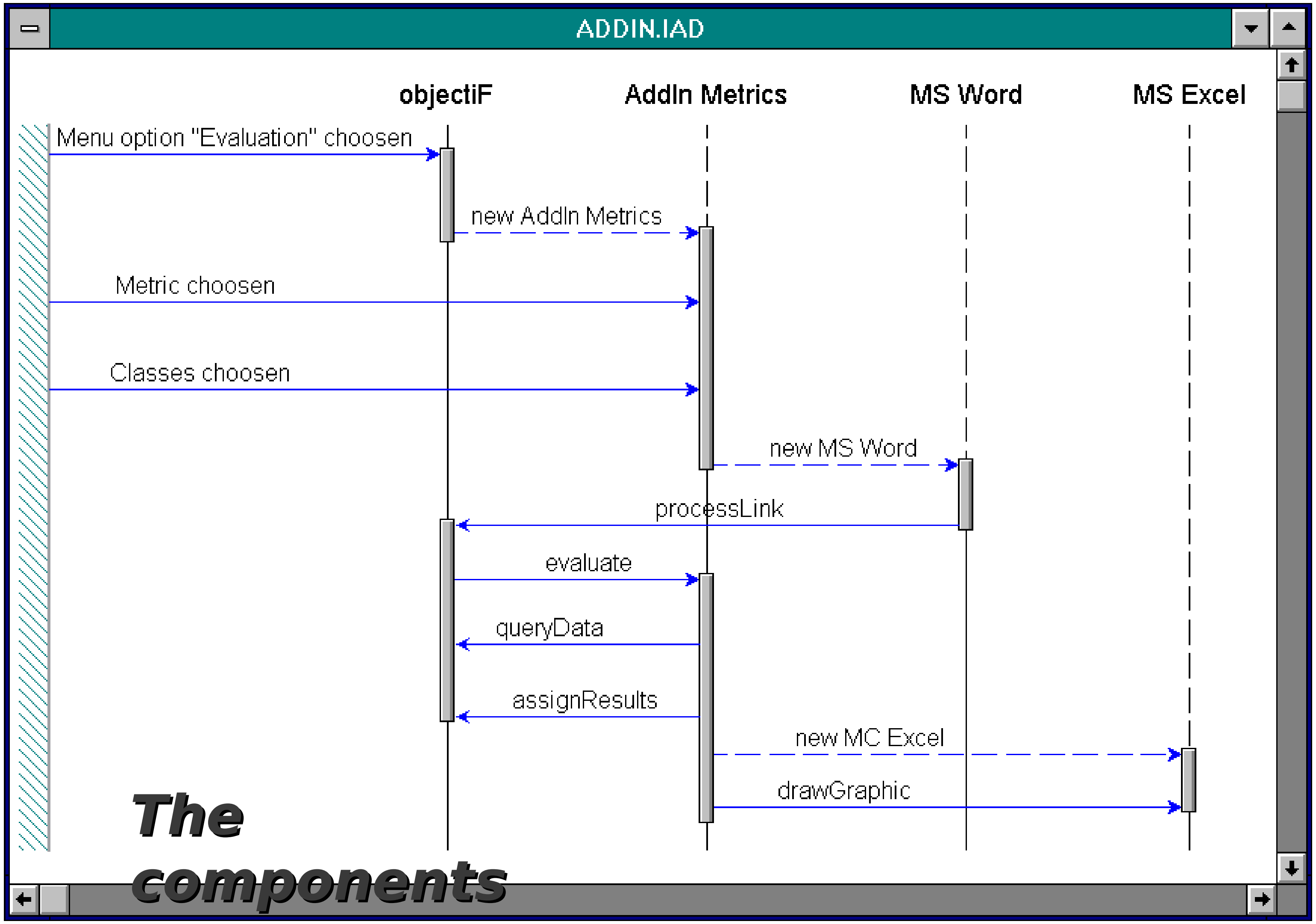
Software metrics: Four interacting components



The components

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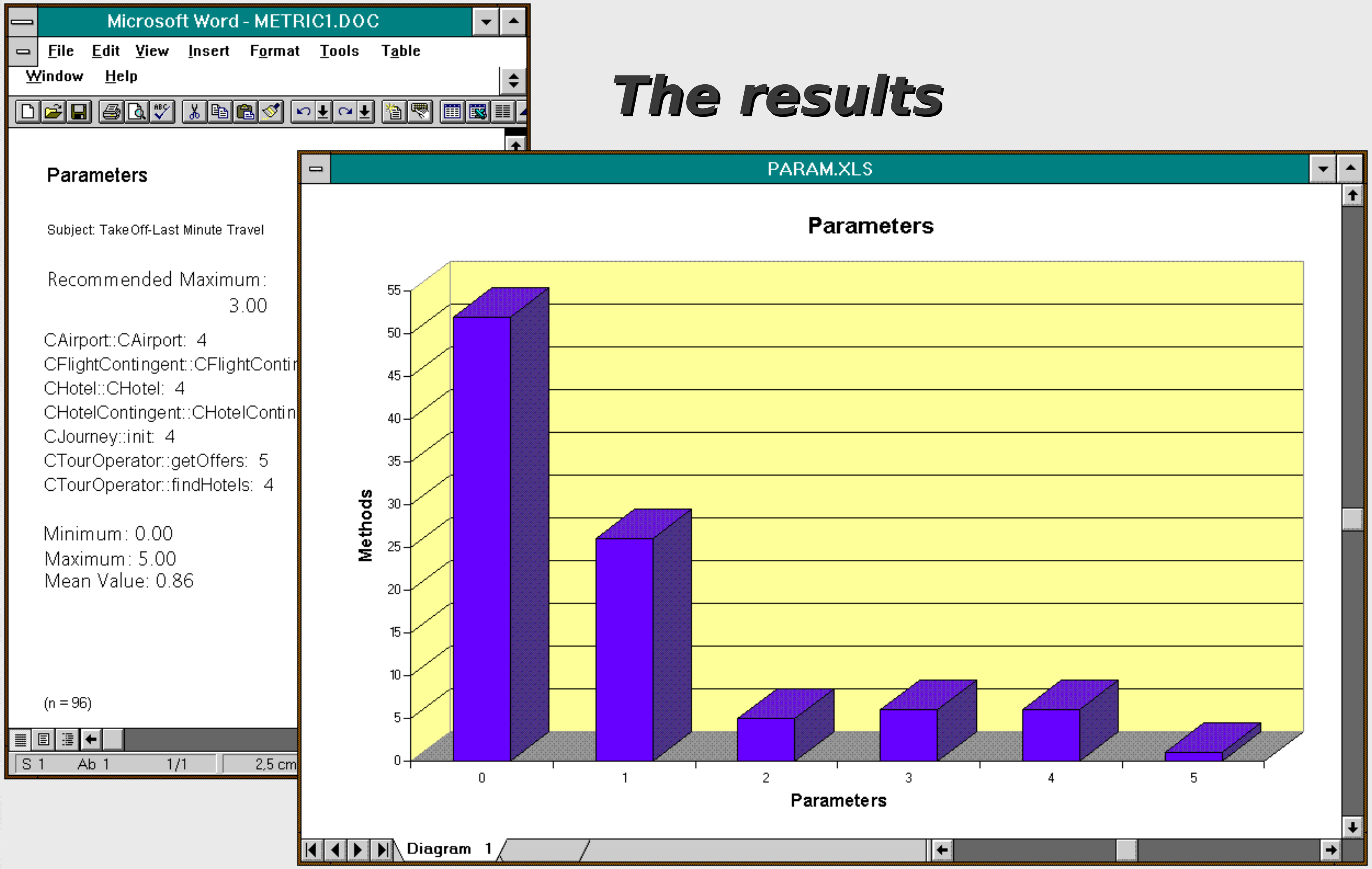
Software metrics: Four interacting components

The results



Microsoft Word - METRIC1.DOC

Parameters

Subject: Take Off-Last Minute Travel

Recommended Maximum:
3.00

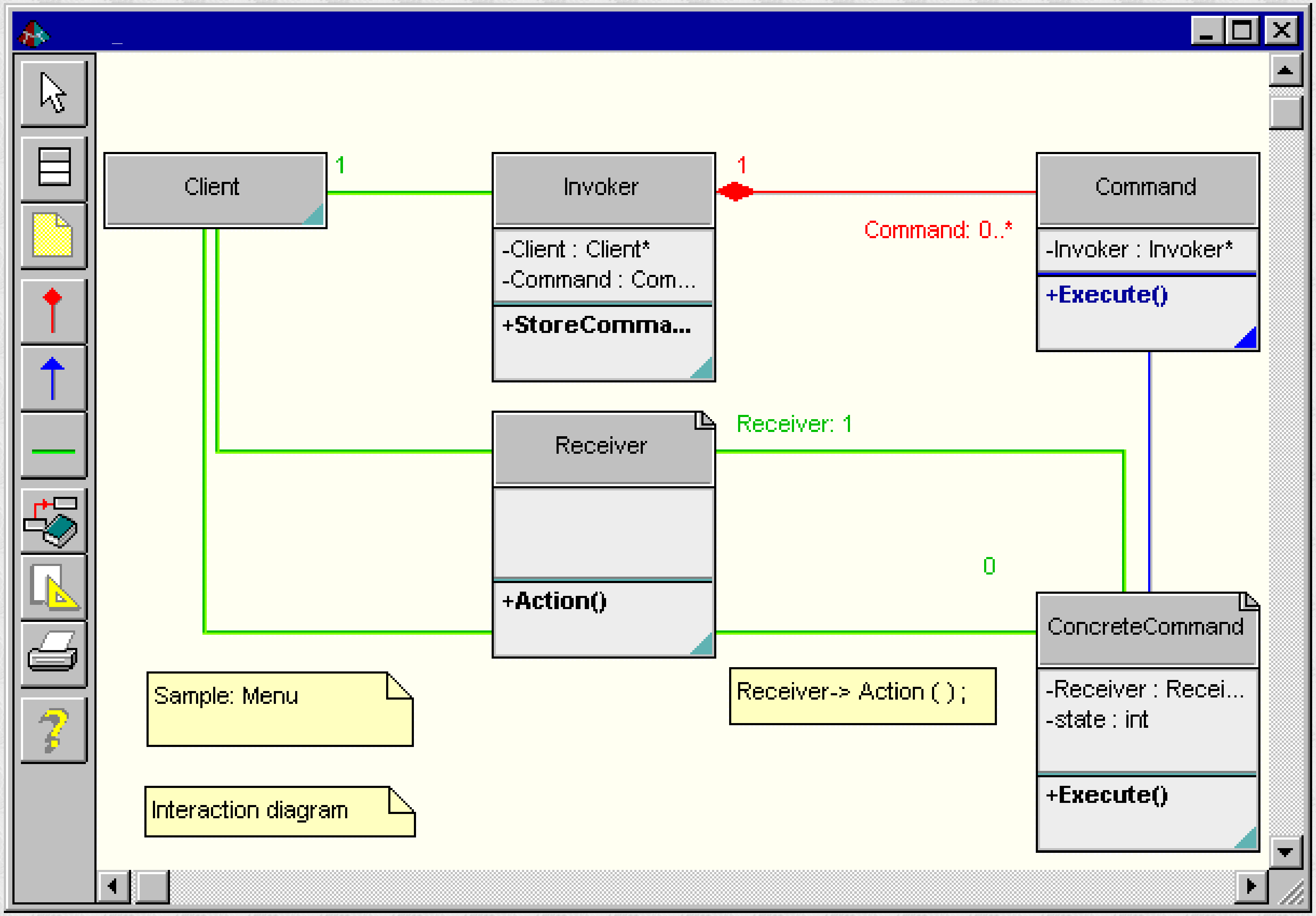
CAirport::CAirport: 4
CFlightContingent::CFlightConti
CHotel::CHotel: 4
CHotelContingent::CHotelContin
CJourney::init: 4
CTourOperator::getOffers: 5
CTourOperator::findHotels: 4

Minimum: 0.00
Maximum: 5.00
Mean Value: 0.86

(n = 96)

objectiF 3.0 - Preview:

Unified Modeling Language



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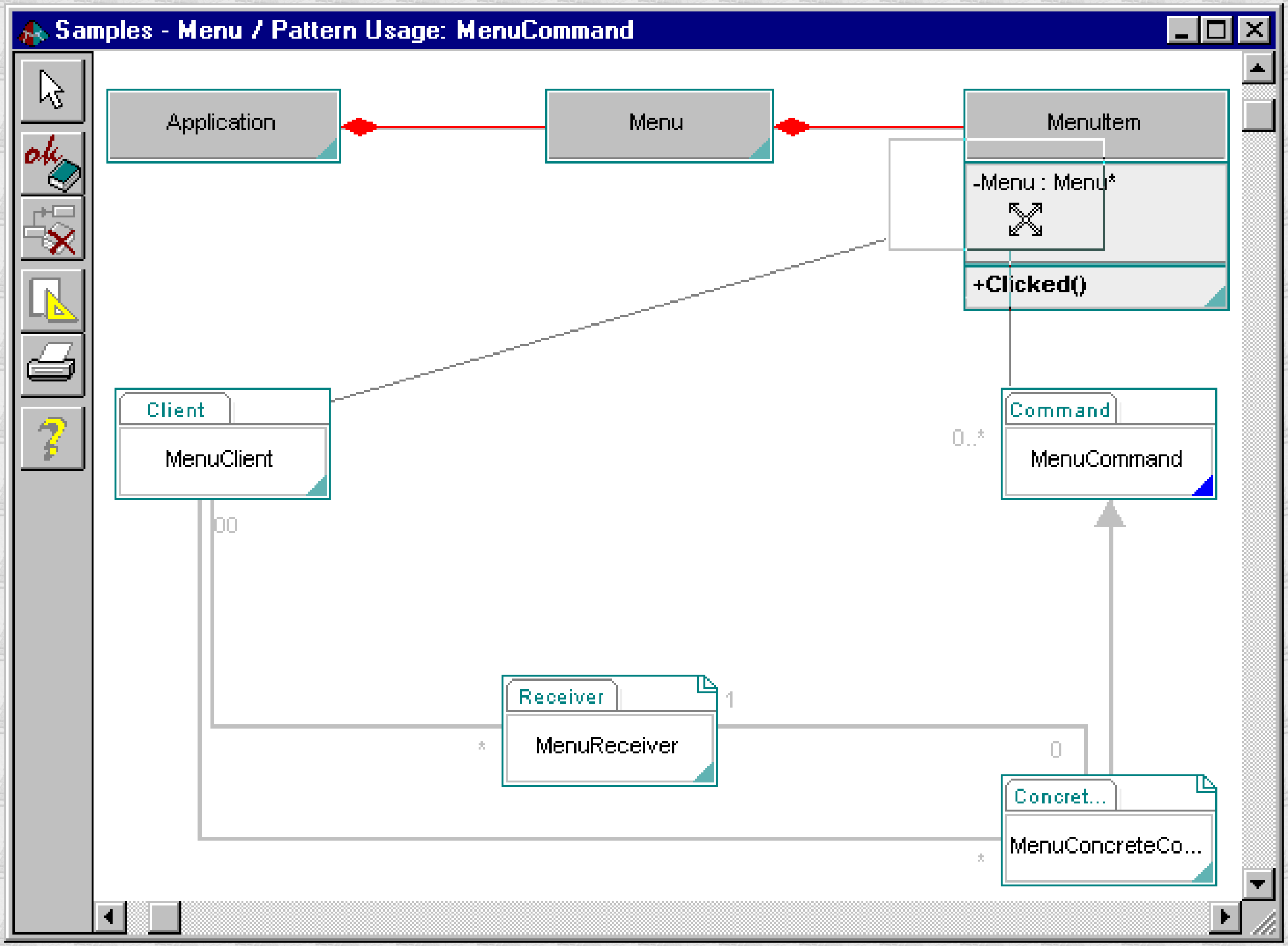
objectiF 3.0 - Preview: Design Patterns



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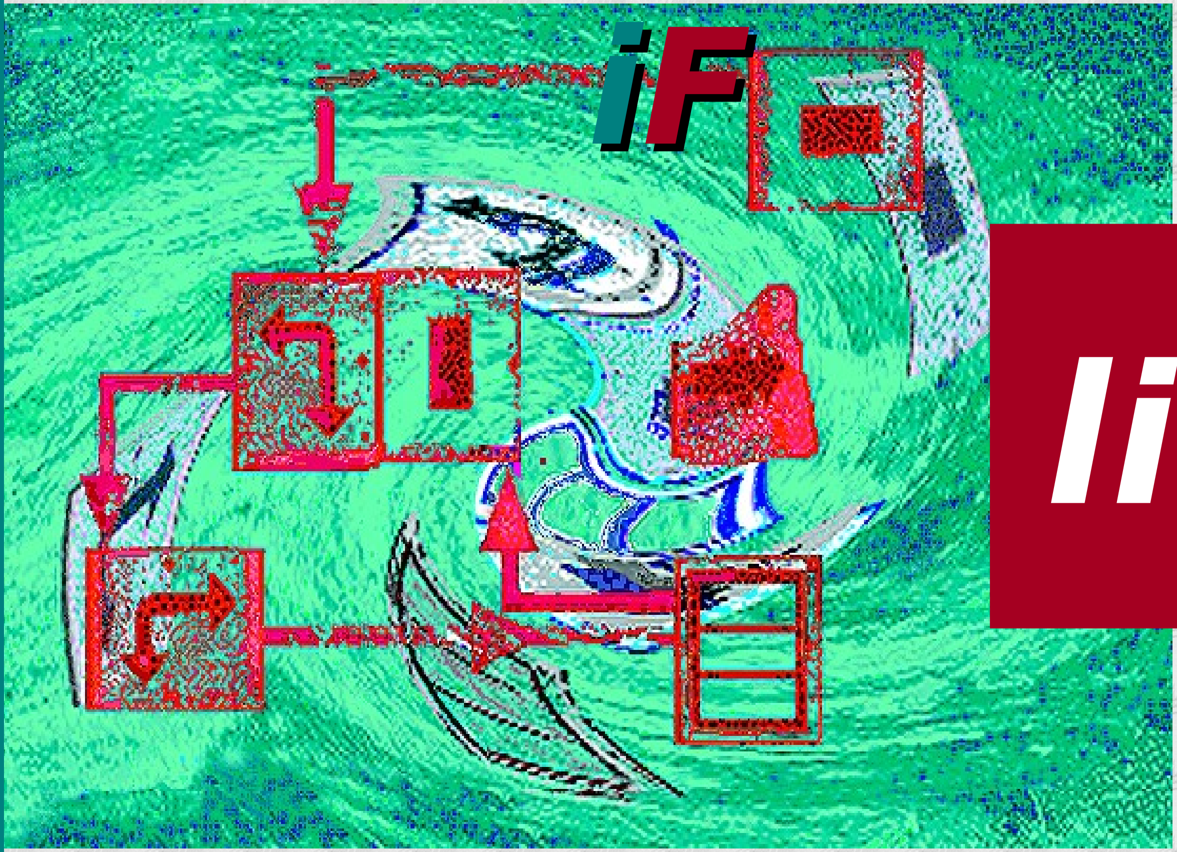
object iF



live...

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