

코바를 통한 OpenGIS 데이터베이스 바인딩

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차 상 균
서 울 대 학 교

CORBA를 통한 OpenGIS 데이터베이스 바인딩

서울대학교

차상균

목 차

- GIS 기술 동향
- CORBA
 - Object Management Architecture
 - Interface Definition Language
 - Example
- OpenGIS
 - Geometry, Feature Model
 - Example
- ODBMS Binding
 - Architecture
- CORBA/COM

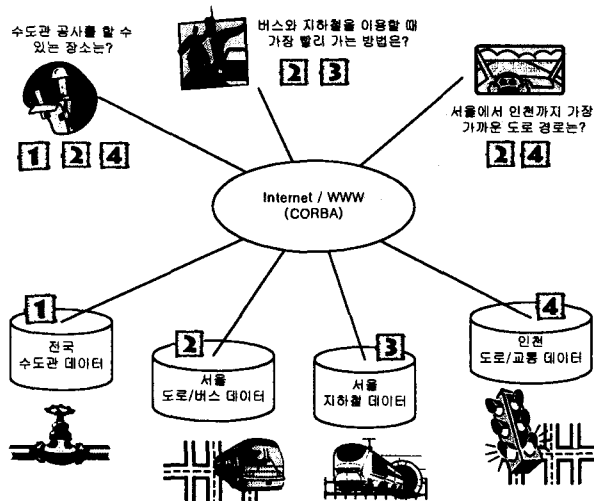
GIS Paradigm의 변화

- Ubiquitous GIS
 - 일반 사용자에게로 확산
 - Internet을 통한 접근
- Paradigm의 변화
 - Autonomous, distributed, decoupled system
 - Component-based system
 - Interoperable system

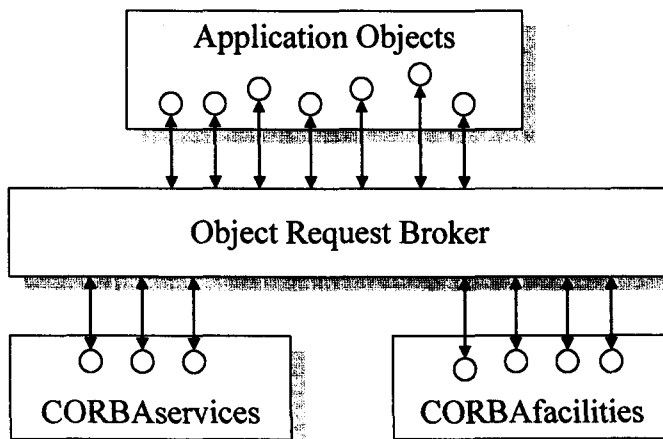
GIS 분야의 기술 동향

추세	기술 형태
Downsizing	<ul style="list-style-type: none">• Desktop 환경• Web GIS• Database-centered• Object Orientation• OpenGIS 표준• CORBA/COM 기반
Interoperability	

GIS Database의 활용 형태



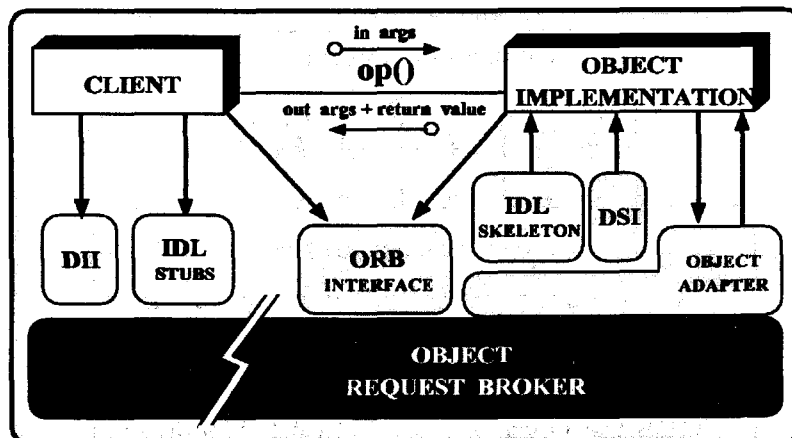
Object Management Architecture



OMA Component

- Object Request Broker
 - Basic communication channel
- CORBA Services
 - Most basic features
 - Naming, Event, Trade, Transaction, Security, ...
- CORBA Facilities
 - Horizontal Common Facilities: generic application functions such as printing, document management, email
 - Vertical Market Facilities: domain-specific tasks

CORBA



DII: Dynamic Invocation Interface, DSI: Dynamic Skeleton Interface

CORBA 장점

- Interoperability
 - Platform: UNIX, Windows, OS/2, ...
 - Protocol: TCP/IP, IPX, ...
 - Language: C++, Java, C, Smalltalk, ...
- Legacy integration
 - Wrapper
- Object-oriented approach
 - Inheritance, Encapsulation, Polymorphism

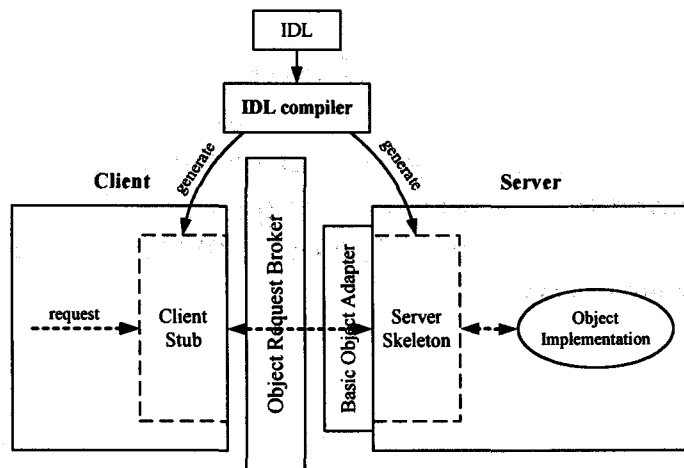
Interface Definition Language

- Defines the interfaces of server objects
- Similar to classes in C++ and interfaces in Java
- Declarative language, not programming language
- Mapped to programming languages
 - C, C++, Java, Smalltalk, Ada95, COBOL, Bourne shell
 - Standardized mapping

RoadSegment IDL

```
interface LineString { ... };  
interface Intersection { ... };  
typedef sequence<Intersection,2> IntersectionSeq;  
  
interface RoadSegment {  
    attribute double length;  
    attribute LineString shape;  
    attribute IntersectionSeq nodes;  
    ...  
};
```

CORBA 객체 호출

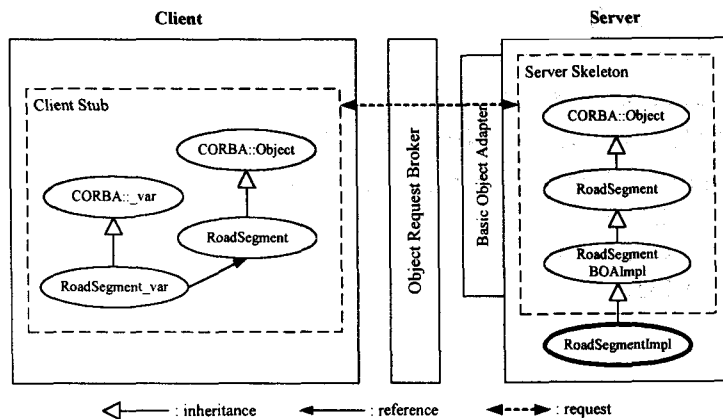


RoadSegment Impl.

```

class RoadSegmentI : public virtual RoadSegmentBOAImpl {
private:
    CORBA::Double length;
    LineString shape;
    Intersection* nodes[2];
    ...
public:
    CORBA::Double length() { ... };
    void length(CORBA::Double) { ... };
    LineString_ptr shape() { ... };
    void shape(LineString_ptr) { ... };
    IntersectionSeq* nodes() { ... };
    void nodes(IntersectionSeq&) { ... };
    ...
};
    
```

RoadSegment 객체 호출



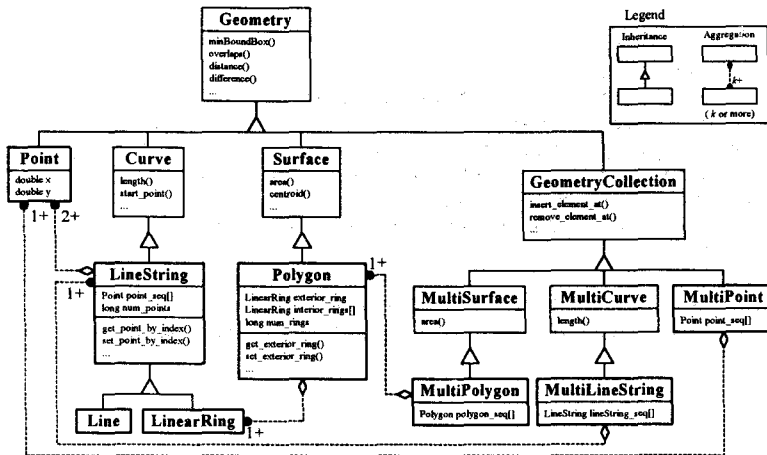
Open GIS

- **OGC Specification Model**
 - Open Geodata Model
 - Geodata type, operator
 - OGIS Services Model
 - Catalog service, semantic translation
 - Information Communities Model
 - Sharing data

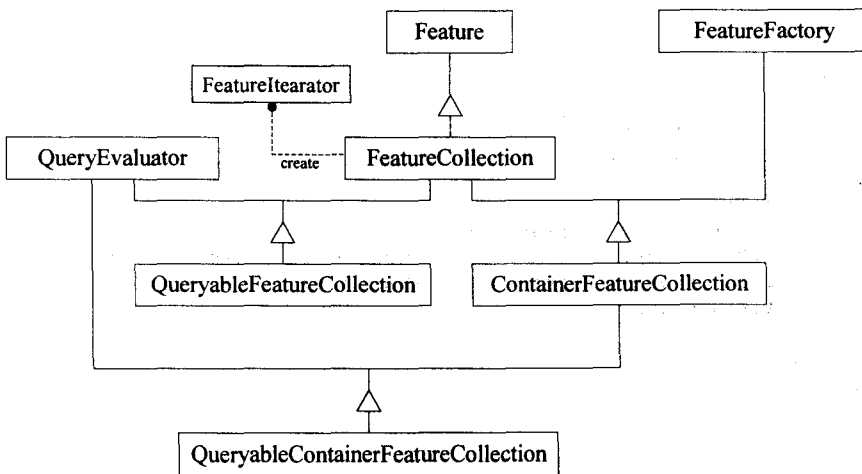
OpenGIS GeoData Model

- **Abstract Specification**
 - Feature Model
 - Geometry Model
- **Implementation Specification**
 - Simple Feature Specification for
 - CORBA
 - OLE/COM
 - SQL

Geometry Model



Feature Model



Feature IDL

```
module OGIS {
  interface Geometry;
  interface Feature {
    readonly attribute FeatureType feature_type;
    Geometry get_geometry(...);
    any get_property(in string name);
    void set_property(in string name, in any value);
    // Iterator를 통한 property 접근
    FeaturePropertySetIterator get_property_iterator ();
    ...
  };
  interface FeaturePropertySetIterator {
    boolean next(out NVPair the_pair); // Name-Value Pair
    ...
  };
  ...
};
```

OpenGIS Application

```
main() {
  ...
  OGIS::ContainerFeatureCollection_var container;
  OGIS::FeatureIterator_var itr = container->create_iterator();
  OGIS::Feature_var feature;
  CORBA::Double total_length = 0.0;

  while (itr->more()) {
    feature = itr->current();
    OGIS::Geometry_var line_string = feature->get_geometry();
    total_length += line_string->length();
    itr->advance();
  }
  ...
}
```