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# EGN Services Architecture

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# Content

- EGN Architectural model in detail
- - Purpose & Overall architecture of EGN
- - State-of-the-art solutions
- - Technical requirements for NMCA sites
- - Implications for self-programming NMCAs
- - Server requirements (capacity, procurement, installation)



# EGN Functionality

Provide pan-european gazetteer service

## Input

### feature selection

- A search term (a string of unicode characters) or a unique identifier
- Optional: a specification of the language the client uses
- Optional: a specification of how the term should be used (literal, fuzzy or 'sounds like').
- Optional a spatial operator (requires use of unique identifier)
- Optional: a specification of a set of feature classes

### output modification

- Optional: The desired language of the response (if not specified english will be used)
- Optional: The set of desired feature attributes (if not specified, all available attributes will be returned)
- Optional: A specification of geometry generalisation level (if not specified, the highest generalisation level will be returned)

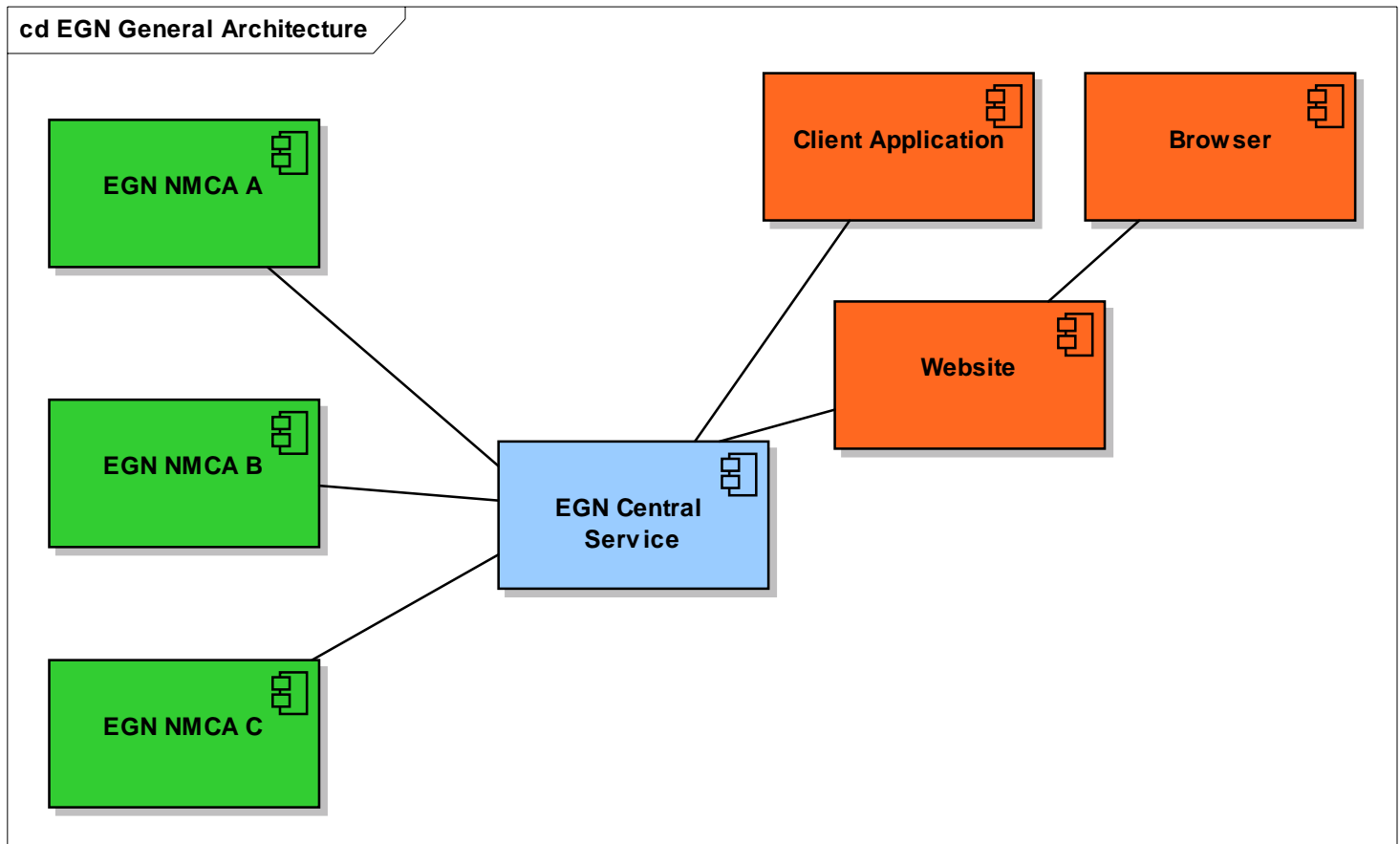
## Output

For each feature:

- The EGN feature ID
- The ID of the EGN web service instance
- The attribute values of the selected attributes

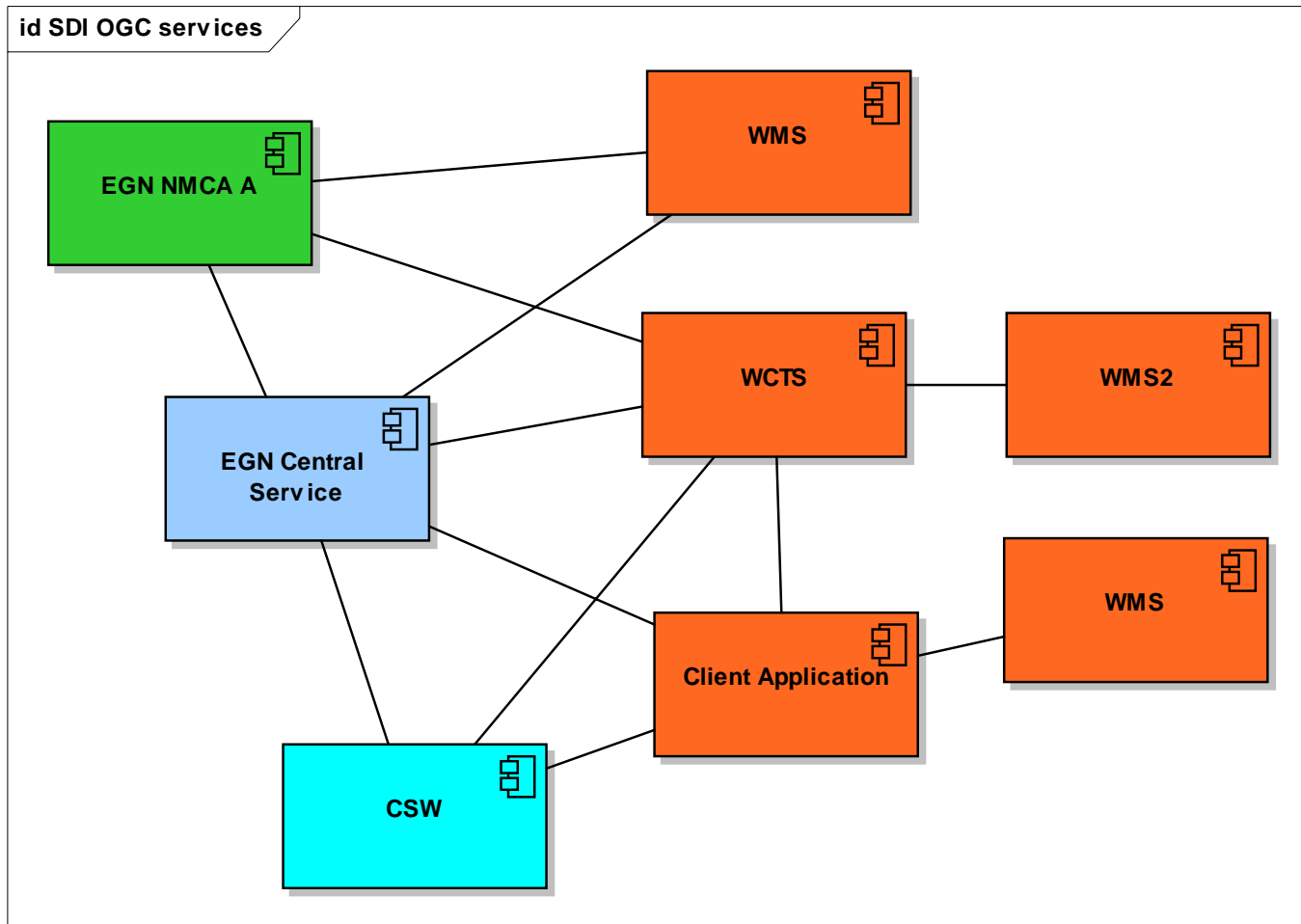


# EGN General Architecture





# EGN and SDI using OGC compliant services





# Web Service Types

- OGC
  - WFS Interface is described in GetCapabilities, DescribeFeature and profiles, general purpose
  - OpenLS Interface is described in public online xsd documents, special purpose
  - Request is posted XML
  - WFS response is GML, an xml that is conformant to the geographic markup language
  - OpenLS response is xml that is conforming to xsd document
- SOAP
  - W3C
  - Interface is described in online wsd documents (specially formed xml files)
  - Request is posted XML
  - Response is XML
- Simple URL's (REST)
  - Basic Web
  - Interface is described in html
  - Request consists of query parameters to url (?param1=value1&param2=value2)

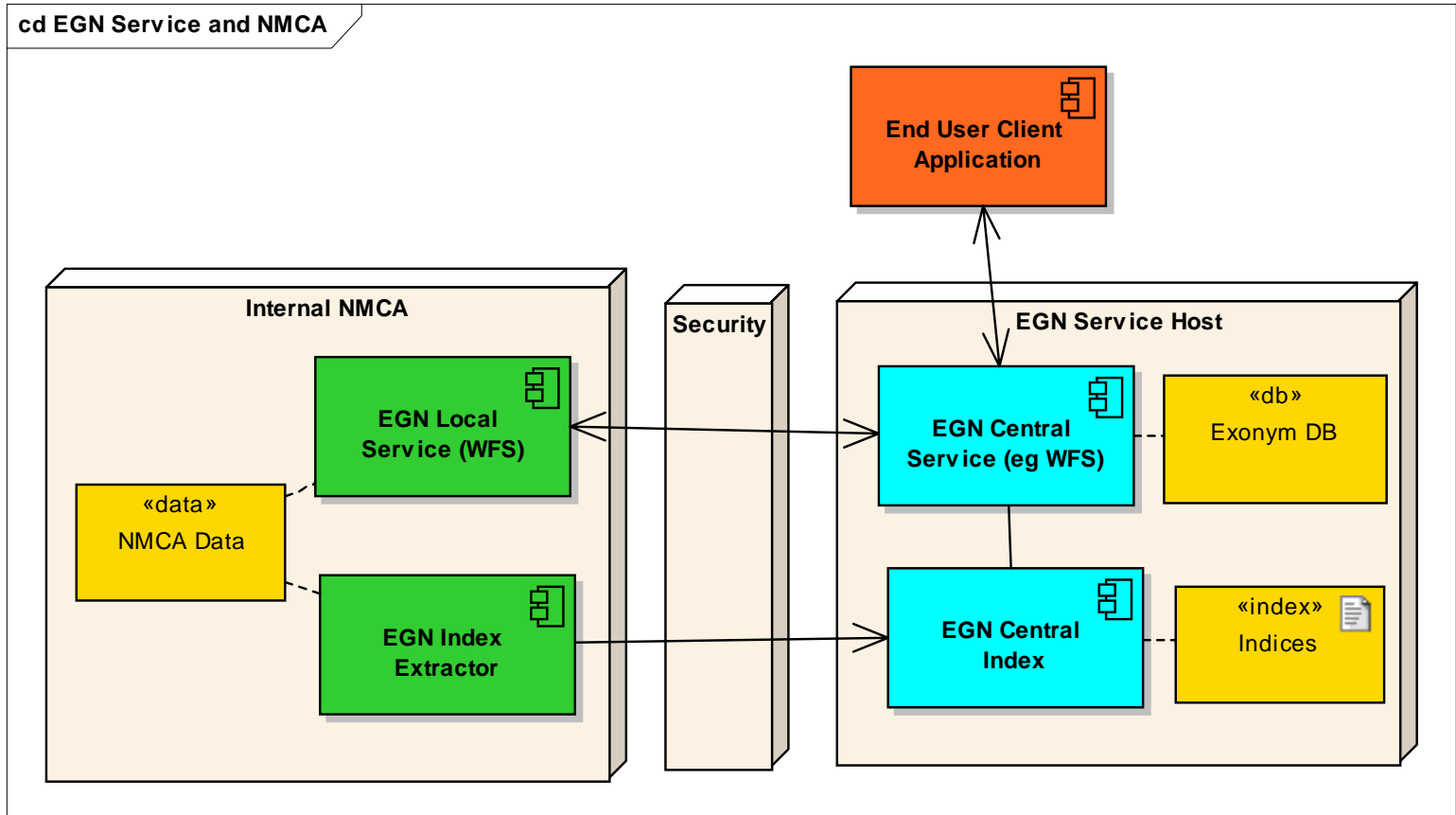


# WFS

- Web Feature Servers (WFS)
  - OGC standard
  - Serves features as GML (Geographic Markup Language)
  - Main functions:
    - GetCapabilities
    - DescribeFeature
    - GetFeature
  - Implementations
    - Geoserver
      - Limited to WFS version 1.0.0, which supports only “Simple Features”. EGN should probably support “complex features”, features that contain multiple attributes (multiple names, multiple geometries). Java, J2EE, tomcat etc
    - Degree WFS. Supports WFS version 1.1, which includes complex features.
    - Ionic WFS, commercial product
    - Etc.
  - Gazetteer profile
    - WFS can support many features and queries. In order to standardize the way we could serve named features from a gazetteer, a so called WFS Gazetteer profile is proposed but not yet finalized.

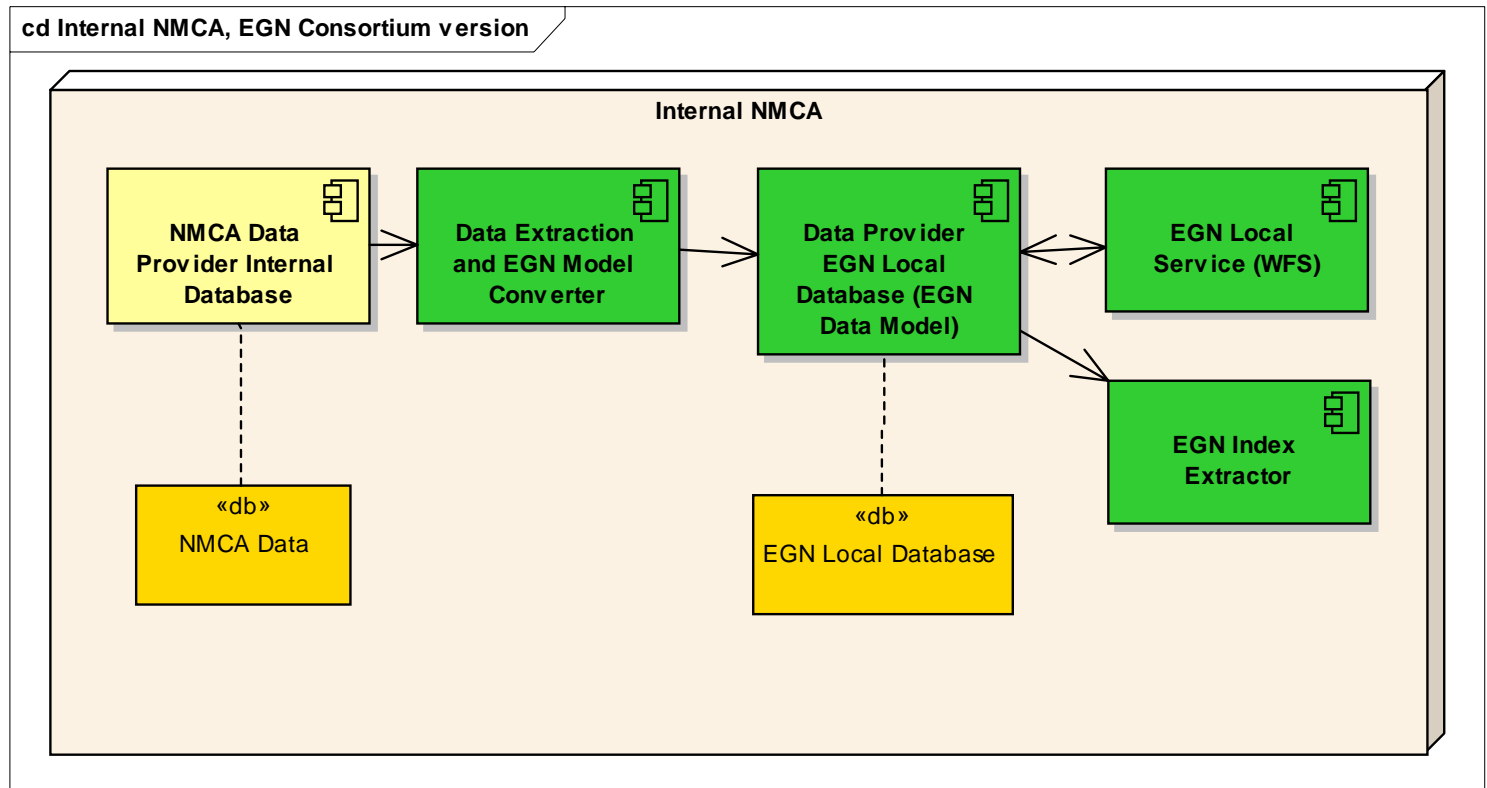


# EGN Service and NMCA Internal Architecture





# NMCA Service, EGN Consortium version





## EGN software vs NMCA software

- EGN software
  - NMCA should allow installation of EGN software on their systems and somehow provide the software with the NMCA data
  - NMCA should probably supply some support to EGN for the development of the Data Extraction and EGN model converter
  - EGN can only provide good support through remote access
  - NMCA should wait for the availability of resources from EGN to develop NMCA-specific software
- NMCA software
  - Software development requires NMCA resources
  - NMCA Software should be fully compliant to the external interface specifications as specified by EGN. These specifications may change during the initial implementation and testing phases.



## NMCA Hardware / Software

The following hard- and software will probably be installed at EGN NMCA sites (indicative)

- Intel/AMD based server
  - 2 – 3 Ghz single or multi core
  - Standard disks (100Gbyte +)
  - Enough memory (1Gbyte+)
  - RAID
- OS: Windows Server or Linux
- Open source database (Postgres)
- Webserver (Apache httpd)
- Geoserver and Degree require a java application server, such as tomcat
- Hardware Firewall
- Fail over system? Redundant standby system? Backups? Images?



# Security

- Resource theft (network, processor, disk)
  - Distribution of malware (trojans, virusses)
- Data theft
- Data corruption
- Denial of service
- Possibility of unauthorized access to internal NMCA systems through EGN service
- How to keep systems safe against attacks?
  - Deny access to unnecessary functions
  - Keep system up to date
  - Check for intrusion
  - Prepare backup system
  - Keep system isolated from other systems



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## Questions and Discussion



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## Discussion & Questions

- End