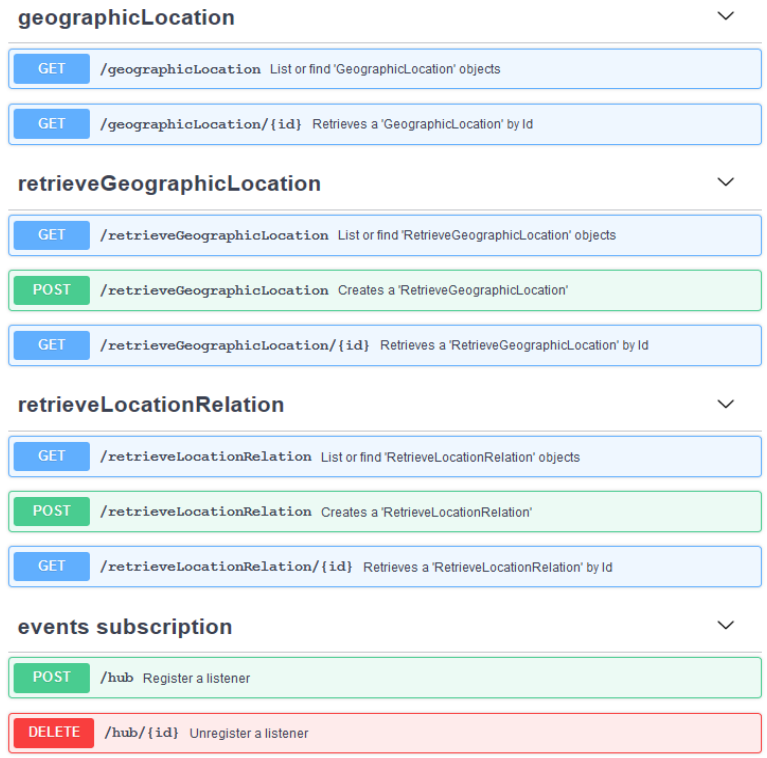
# The Pain

- we need budget
- to include a geolocation service
- no idea how complex or
- what effort it means
- only the specification of the API is important to us.



# The Question

How can we estimate and validate the costs?

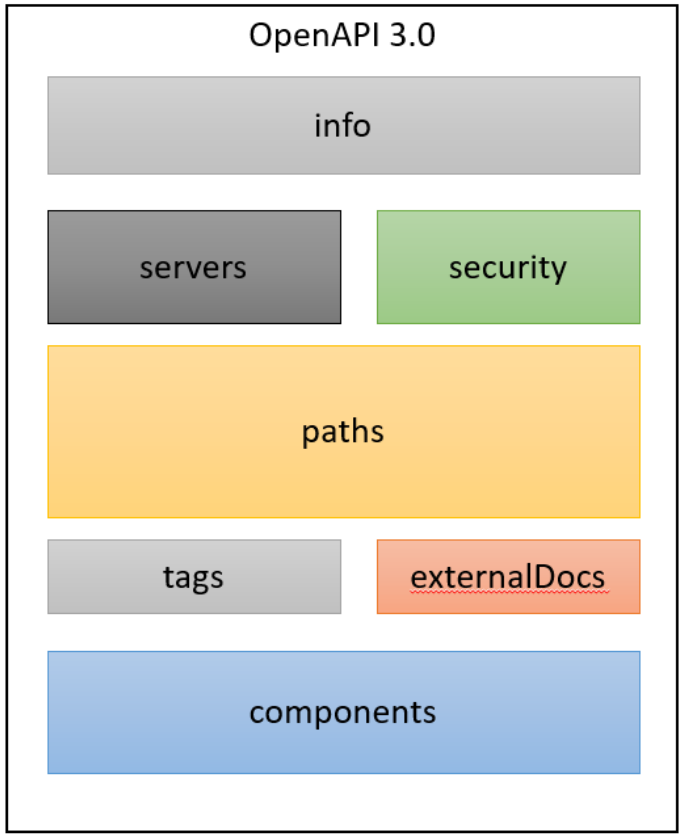
IWSM MENSURA
HAARLEM 7-9 OCTOBER 2019

# Cosmic FP on Swagger

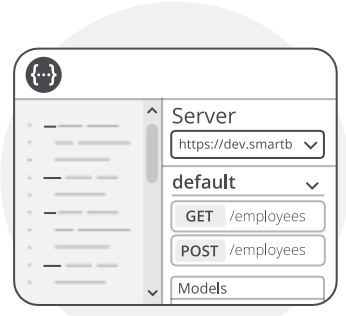
AN APPROACH FOR A FAST COST VALIDATION OF WEB-BASED APIS SUPPORTED BY FUNCTIONAL SIZE MEASUREMENT WITH COSMIC FP

Prof. Dr.-Ing. habil. Andreas Schmietendorf , Steven Schmidt, Konrad Nadobny, Sandro Hartenstein

# OpenAPI Specification and Swagger

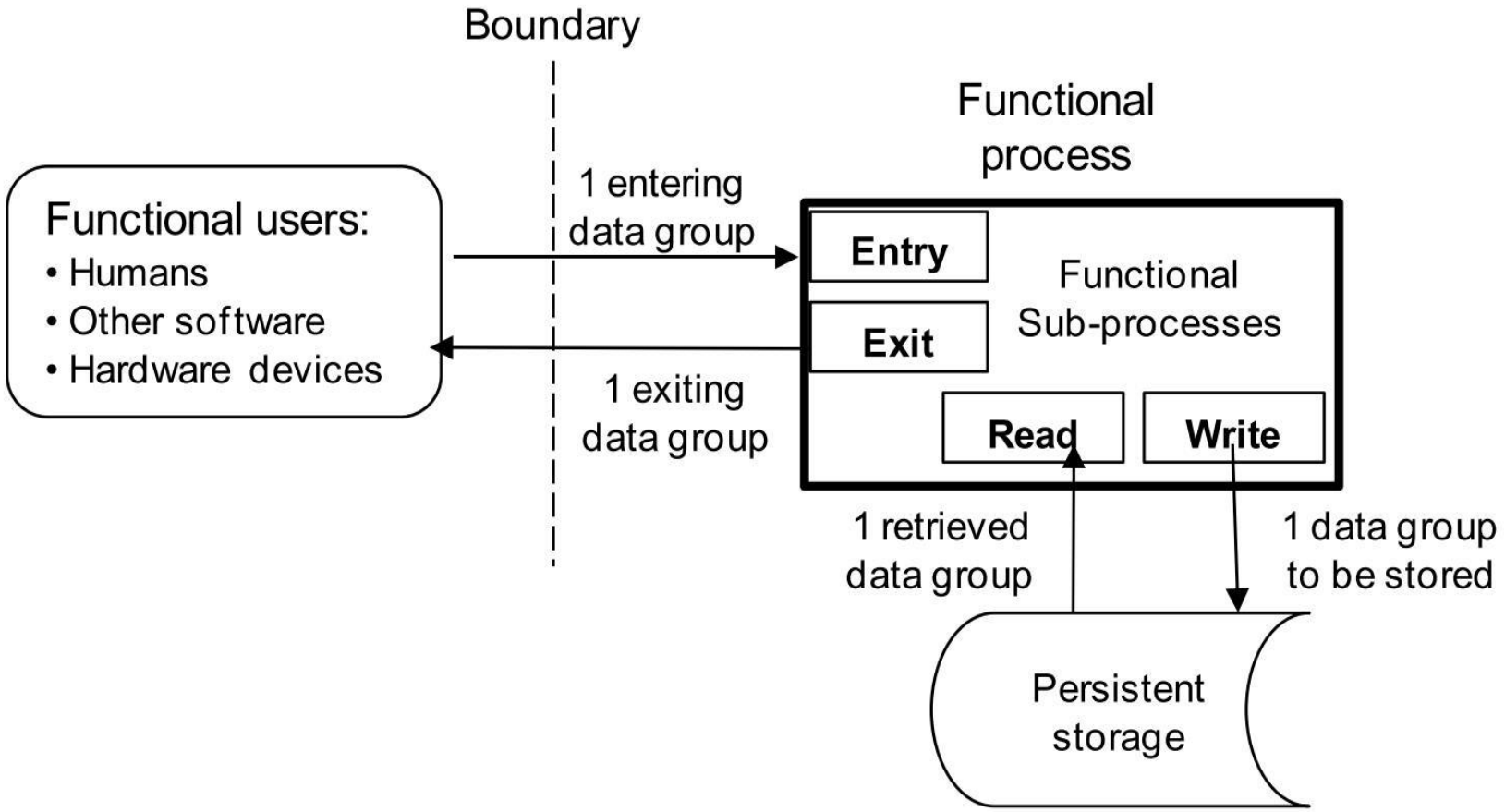



Swagger™
Supported by SMARTBEAR



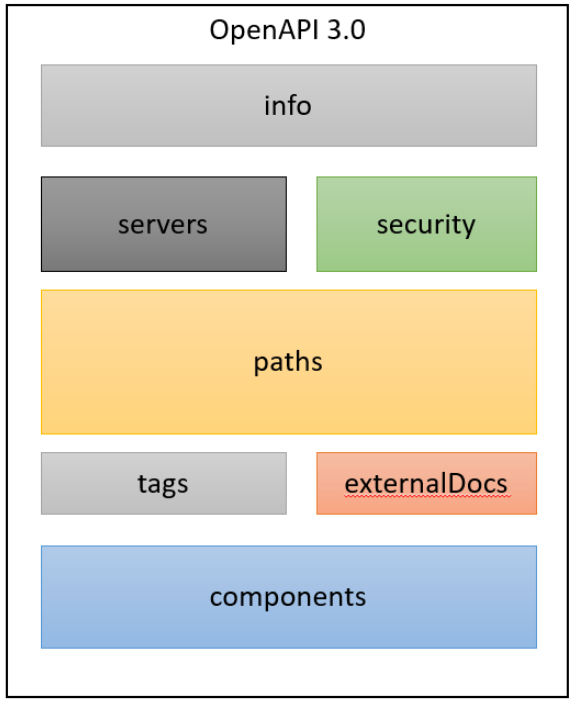


# Cosmic FP

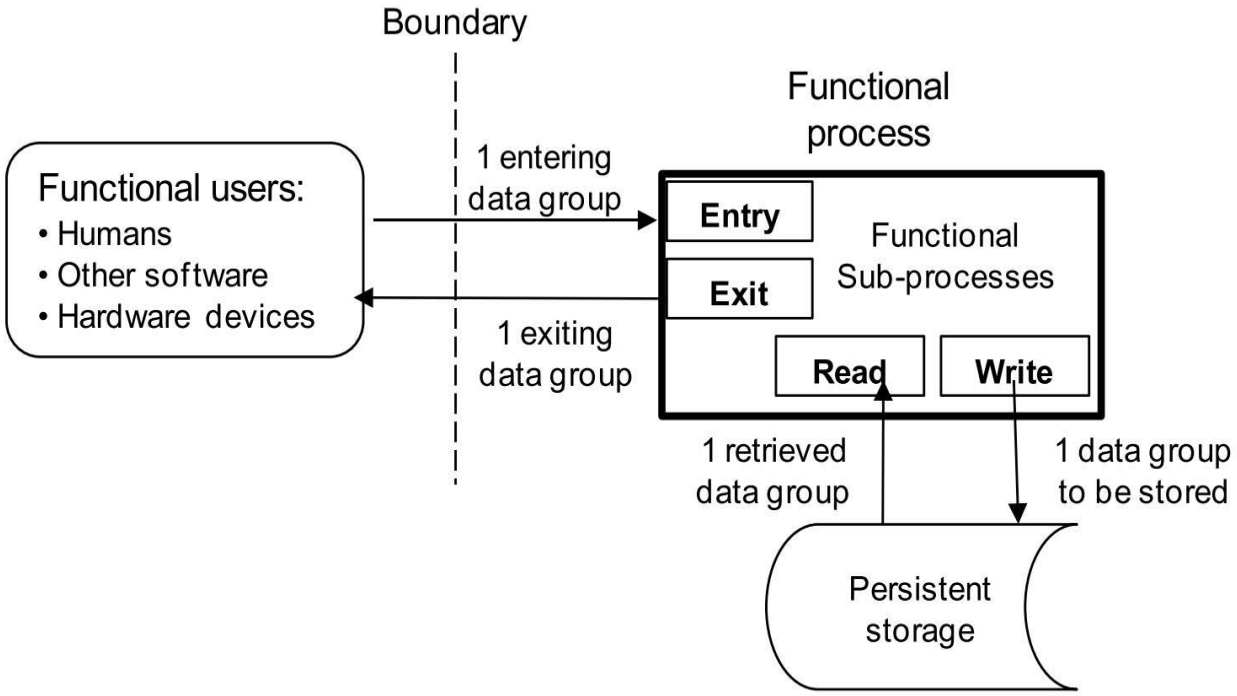

Boundary
Functional process
Functional users:
• Humans
• Other software
• Hardware devices
1 entering data group
1 exiting data group
Entry
Exit
Functional Sub-processes
Read
Write
1 retrieved data group
1 data group to be stored
Persistent storage

# The Approach

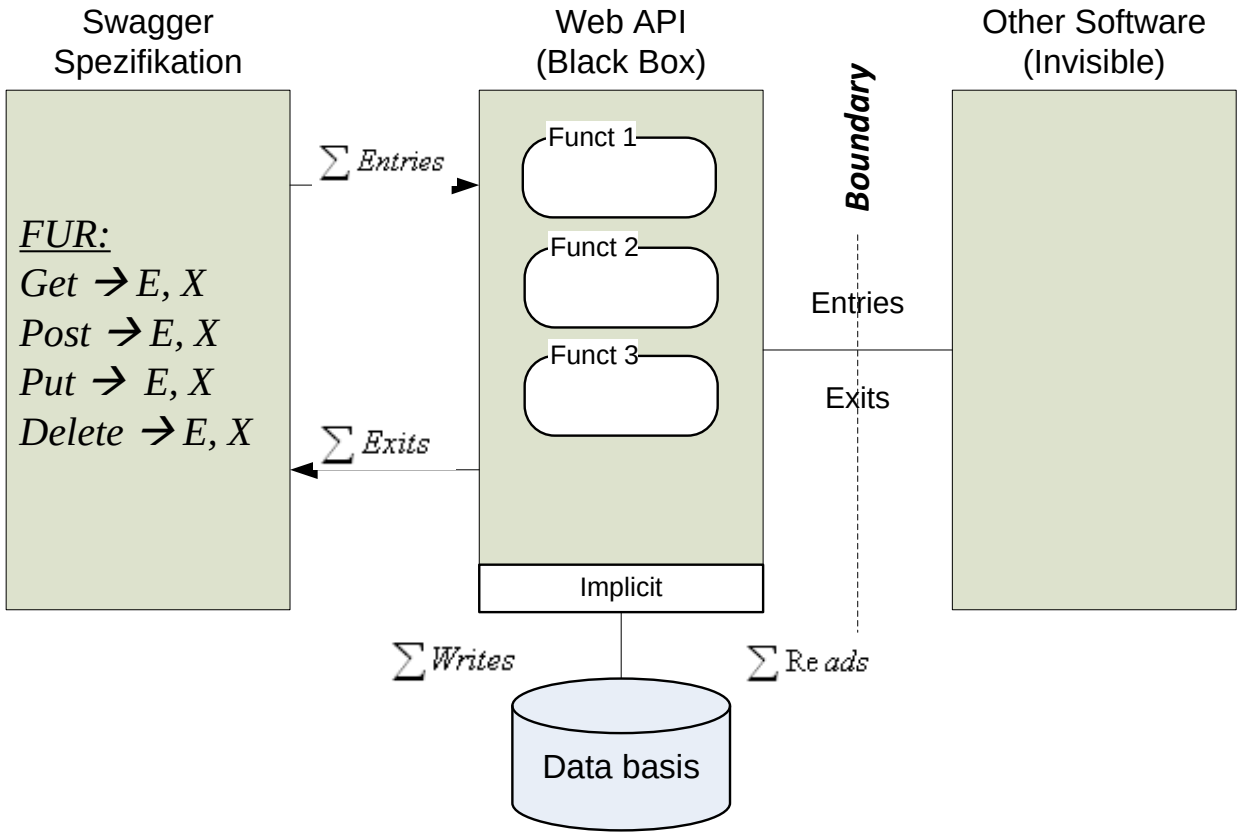
OPEN API SPECIFICATION




COSMIC FP



# The Approach



# The Answer

$$\mathbf{Size(functional_{process}) = \Sigma\ Entries + \Sigma\ Exits + \Sigma\ Reads_{implicit} + \Sigma\ Writes_{implicit}}$$

| | | |
|---|---|---|
| **GeographicLocation.** 2 GET | (5En+2Ex+2R+0W) | 39 CFP |
| **RetrieveGeographicLocation.** 1 POST and 2 GET | (6En+3Ex+2R+1W) | |
| **RetrieveLocationRelation.** 1 POST and 2 GET | (6En+3Ex+2R+1W) | |
| **Hub.** 1 POST and 1 DELETE | (2En+2Ex+0R+2W) | |

Dumke et al. uses the conversion key 1 CFP ≈ 0,07 PM. → 39CFP *0,07PM = **2,45 PM**

Abran in Dumke et al. 1 CFP = 40.8 LoC → SizeLOC = 39*40.8 = **1591 LoC**.

# The Outlook

- fast automated cost estimation
- validation of the correctness
  - automatic counting (implement a parser)
  - empirical exploration
  - comparisons can be made with little effort


# Thank you

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