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NORWEGIAN COMPUTING CENTER

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Carnival

An Application Framework for Enforcement of Privacy Policies

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Carnival

- A means for organizations to achieve customer privacy
- Provides mandatory enforcement of organizations' privacy policies through privacy access control
- Provides audit functionality
- Supports automated enforcement of customer preferences
- An application framework
- Implemented in Java

Customer privacy

- Customer privacy concerns organizations that collect and use personal data, and that:
  - Have a legitimate need for personal data
  - Wish to protect the privacy of their customers from threats from insiders and outsiders
- A privacy policy documents how personal data can be used in the organization. It is based on:
  - Legislation
  - The organization's needs and preferences
  - Customers' preferences

Customer privacy

- Carnival provides one part of the solution
- Organizations should:
  - Analyze the need for collecting personal data
  - Analyze the need for using personal data
  - Develop a privacy policy
  - Enforce the privacy policy
  - Design for privacy

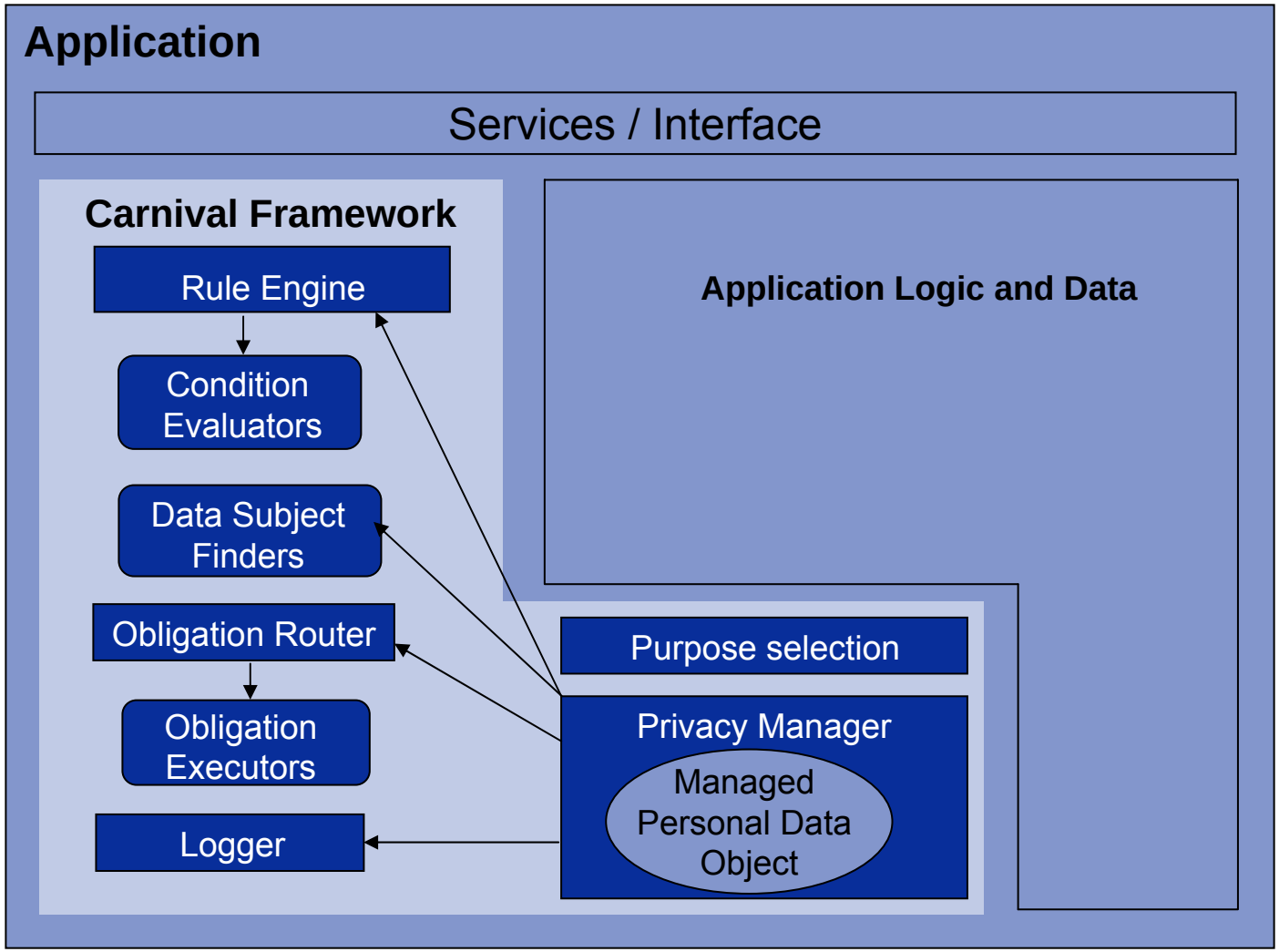
Privacy access control

- The purpose of the information access must coincide with the purpose stated when the requested information was collected (purpose binding)
- Access can lead to obligations that must be fulfilled
- Need for taking individual/customer preferences into account

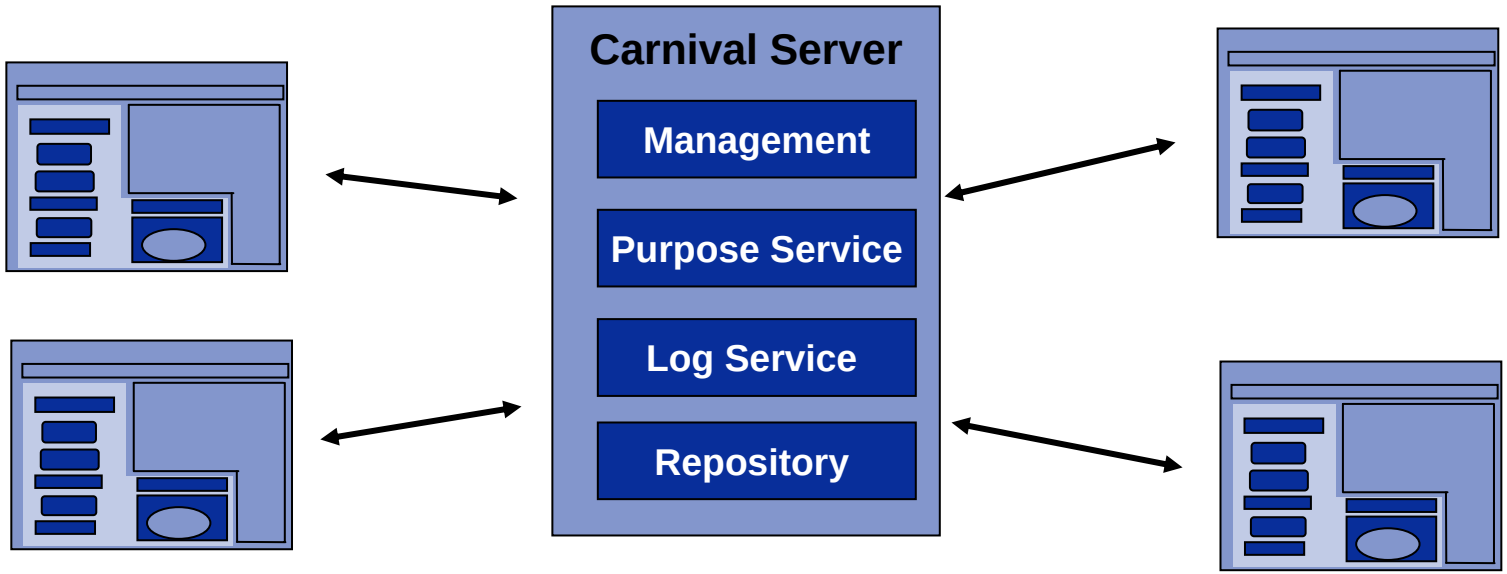
Design goals

- Capture the user's purpose of access
- Enforcement of application independent policies
- Support for domain specific obligations
- Support for replaceable access evaluation logic and condition evaluation logic
- Easy to integrate with applications

Carnival Framework



Carnival deployment



Information that Carnival extracts from the application

- The **roles** of the requesting user
- The **action** requested
- The **purpose** of the requested access
- The **type of data** requested
- The identity of the **data subject**
- Other information needed for evaluating domain specific conditions

Determining purpose, the problem

- Privacy policies, and the purpose statements they contain, are often rather abstract to be manageable and accessible to humans.
- Privacy policies state that personal data can only be accessed for specific purposes
- Computer applications are generally only aware of what the user wants to do (i.e. the requested operation), not why (i.e. for which purpose)
- The access control mechanism and the user must have the same understanding of what the user's purpose is
- The interruption to users' workflow should be minimized

Determining purpose, the Carnival way

- Refinement of possibly abstract purpose specifications
- A user's current purpose is determined as a function of the user's roles and the methods invoked by the user
- The application should provide methods that are called when the user moves from one purpose to another
- The application should provide Carnival with GUI callbacks, that Carnivals uses to display its understanding of the user's current purpose
- The user is provided with the possibility to override the purpose selected by Carnival

Conclusions

- Privacy access control should be mandatory
- Access control and audit must be combined in the privacy domain
- Carnival fulfills the listed design goals
  - Capture the user's purpose of access
  - Enforcement of application independent policies
  - Support for domain specific obligations
  - Support for replaceable access evaluation logic and condition evaluation logic
  - Easy to integrate with applications

Thank you

Questions?

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