ServiceGlobe: Distributing E-Services Across the Internet

Markus Keidl, *Stefan Seltzsam*, Konrad Stocker, and Alfons Kemper

Universität Passau
Fakultät für Mathematik und Informatik
94030 Passau
`<last name>@db.fmi.uni-passau.de`

What is ServiceGlobe?

- Platform for mobile e-services/Web services

- Implemented in Java Release 2

- Based on standards (XML, SOAP, UDDI,...)

- Features:
  - ☐ Services are mobile code
  - ☐ Dynamic deployment of services
  - ☐ Supports development of flexible and reliable services
  - ☐ Security system
  - ☐ Transaction system

Basic Components of ServiceGlobe

- **Service Host**: standard Internet server additionally running the ServiceGlobe runtime engine
- **Code Repository**: storage for executables of services which are loaded on demand
- **Adaptor**: service used to integrate existing services or applications into ServiceGlobe
- **Simple Service**: service not using any other service
- **Composite Service**: higher-value service assembled from other services (called basis services)
- **UDDI Server**: used to store metadata about services
- **External/Internal Service**: Service not provided/provided by ServiceGlobe itself

Demonstrated Features

- Dynamic Service Selection
  - Runtime selection of services using UDDI's notion of a tModel → 'calling tModels' instead of 'calling services'
  - Several modes: one/some/all
  - Modes are customizable using constraints
  - Flexible and reliable service execution
- Runtime Service Loading
  - Dynamic distribution of services to service hosts at runtime
  - Runtime security system to deal with security issues of mobile code
  - Enables load balancing and parallelization
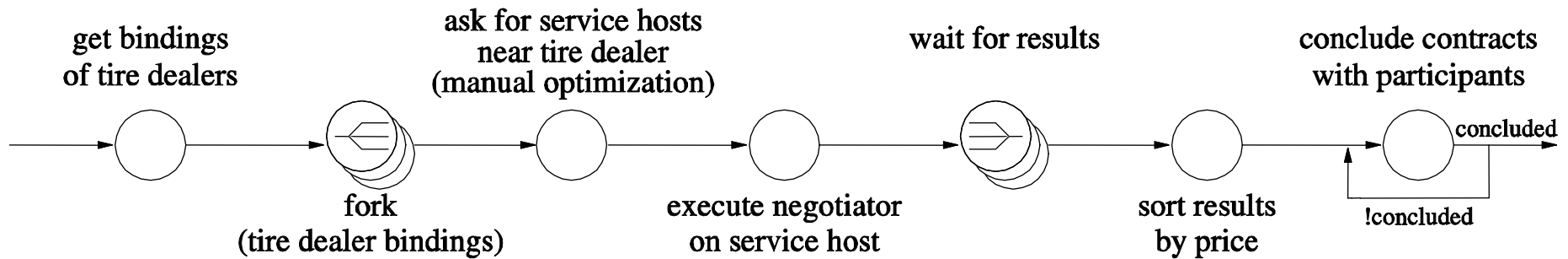 - Flexible and reliable service execution
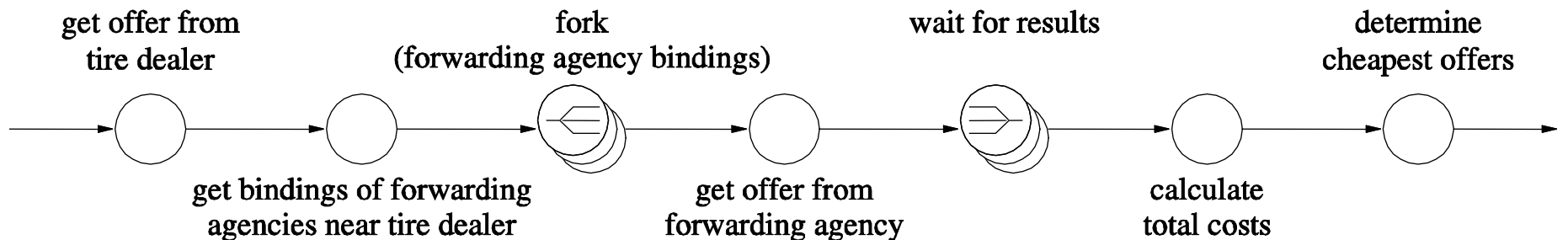
The E-Procurement Scenario

- Usage of a restricted tire dealer scenario to ease the understanding of the demonstration
- Task: purchase tires and employ a forwarding agency for delivery
- Details:
  - Invite offers from available tire dealers
  - Invite offers for the delivery of tires
  - Calculate cheapest combined offer
  - Place purchase orders
- Task is split into two services:
  - tire purchasing service
  - negotiator service
  - pushing negotiator services to service hosts close to tire dealers
  - all negotiator services are executed in parallel
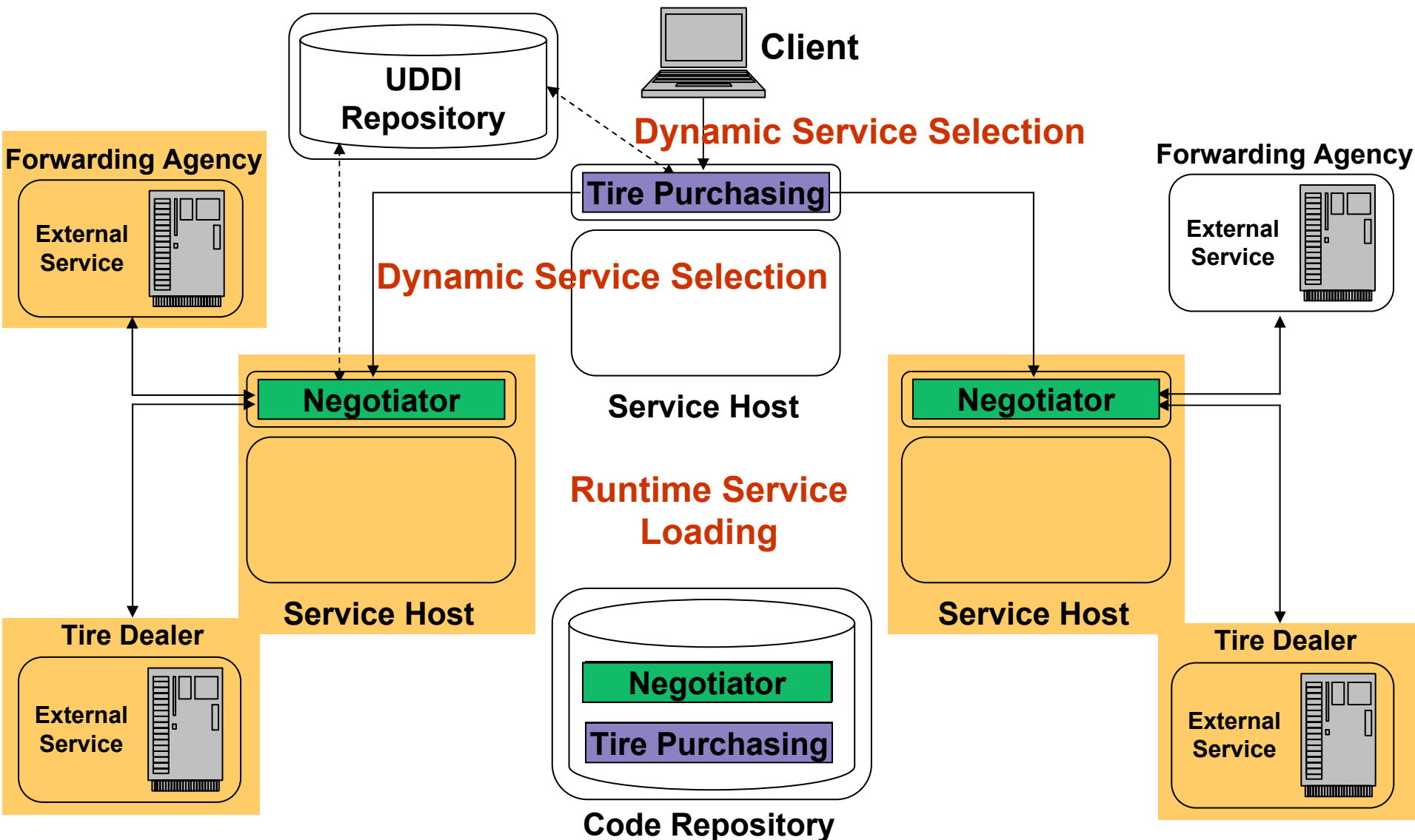
Graphical Representation of the Services

Tire Purchasing Service:

get bindings
of tire dealers

ask for service hosts
near tire dealer
(manual optimization)

wait for results

conclude contracts
with participants

concluded

fork
(tire dealer bindings)

execute negotiator
on service host

sort results
by price

!concluded

Negotiator Service:

get offer from
tire dealer

fork
(forwarding agency bindings)

wait for results

determine
cheapest offers

get bindings of forwarding
agencies near tire dealer

get offer from
forwarding agency

calculate
total costs

Execution of the Services

Trace of Service Execution

Legend
- Tire Dealer
- Forwarding Agency
- Service Host
- Negotiator
- Incoming Request
- Confirmed Request
- Result
- Canceled
- Error

Zoom
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Show these eservices
- ☑ Tire Dealers
- ☑ Forwarding Agencies
- ☑ Service Hosts
- ☑ Negotiators

Show names of these eservices
- ☑ Tire Dealers
- ☑ Forwarding Agencies
- ☑ Service Hosts
- ☑ Negotiators

Tire Purchasing Service

Negotiators
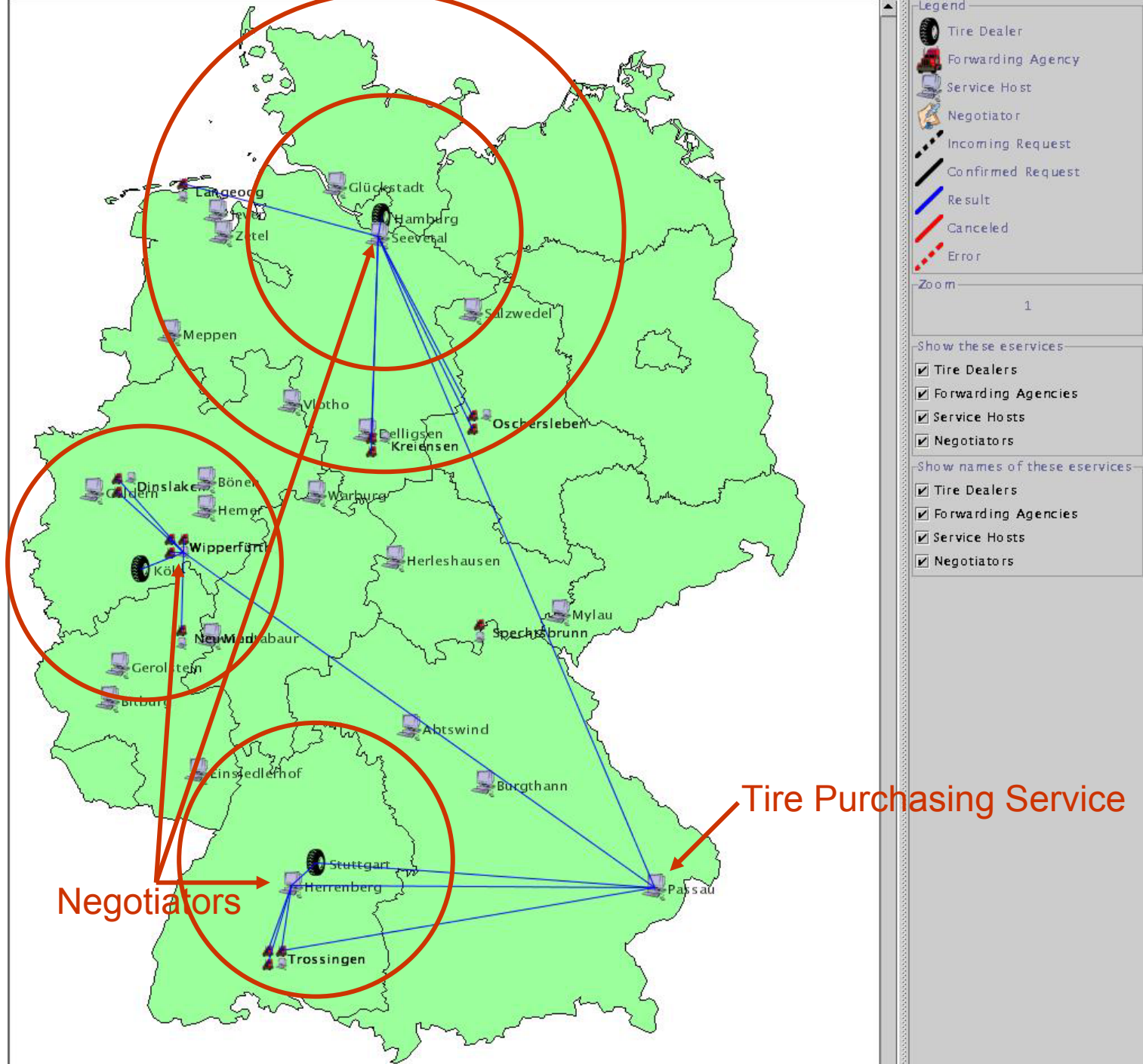
Thank you for your Attention!