**2018-00307 - R&D Engineer: Contributing to the development of SocialBus - A Universal Social Network Bus**

**Context**

**The SocialBus Research & Innovation Project**

Computer-mediated communication can be defined as any form of human communication achieved through computer technology. From its beginnings, it has been shaping the way humans interact with each other, and it has influenced many areas of society. There exist a plethora of social interaction services enabling computer-mediated social communication (e.g., Skype, Facebook Messenger, Telegram, WhatsApp, Twitter, Slack, etc.). Based on personal preferences, users may prefer a social interaction service rather than another. As a result, users sharing the same interests may not be able to interact since they are using incompatible technologies.

To tackle the above interoperability barrier, we propose SocialBus, a middleware solution targeted to enable the interaction via heterogeneous social interaction services.

A first version of the SocialBus software is available under the AGPL open source license at [https://gitlab.inria.fr/usnb/universal-social-network-bus](https://gitlab.inria.fr/usnb/universal-social-network-bus).

**References:**

- Amel Bennaceur, Valerie Issarny. Automated Synthesis of Mediators to Support Component Interoperability. IEEE Transactions on Software Engineering, 2015. [https://hal.inria.fr/hal-01076176](https://hal.inria.fr/hal-01076176).
- Emil Andriescu, Thierry Martinez, Valerie Issarny. Composing Message Translators and Inferring their Data Types using Tree Automata. FASE 2015 : 18th International Conference on Fundamental Approaches to Software Engineering, 2015, LNCS. [https://hal.inria.fr/hal-01097389](https://hal.inria.fr/hal-01097389).
- James Holston, Cristhian Parra, Valérie Issarny. Engineering Software Assemblies for Participatory Democracy: The Participatory Budgeting Use Case. International Conference on Software Engineering (ICSE), Software Engineering in Society (SEIS) Track, 2016. [https://hal.inria.fr/hal-01261013](https://hal.inria.fr/hal-01261013).
- Rafael Angarita, Nikolaos Georgantas, Cristhian Parra, James Holston, Valérie Issarny. Leveraging the Service Bus Paradigm for Computer-mediated Social Communication Interoperability. International Conference on Software Engineering (ICSE), Software Engineering in Society (SEIS) Track, 2017. [https://hal.inria.fr/hal-01485213](https://hal.inria.fr/hal-01485213).
- Rafael Angarita, Nikolaos Georgantas, Valérie Issarny. USNB: Enabling Universal Online Social Interactions. IEEE International Conference on Collaboration and Internet Computing, 2017. Best paper award. [https://hal.inria.fr/hal-01591757](https://hal.inria.fr/hal-01591757).
- Interoperability. International Conference on Software Engineering (ICSE), So/ware Engineering in Society (SEIS) Track, 2017. [https://hal.inria.fr/hal-01591757](https://hal.inria.fr/hal-01591757).

**Assignment**

**Contribution**

As part of the further development of the USNB solution, the research engineer will specifically contribute to:

- Design and implementation of an automated solution to the synthesis of software mediators associated with the plugging of given social interaction services, while the current SocialBus implementation relies on the ad hoc, cumbersome and error-prone implementation of the required mediators by the developers.
- Customizing SocialBus to foster the participation of citizens in urban consultation processes. The work will subdivide into:
  - The study of workflows associated with participatory processes,
  - The elicitation of supporting middleware-relevant mechanisms,

**General Information**

- **Theme/Domain:** Distributed Systems and middleware
- **Town/city:** Paris
- **Inria Center:** CRI de Paris

**Contacts**

- **Inria Team:** MIMOVE
- **Recruiter:** Valerie.issarny@inria.fr

**The keys to success**

The candidate should have interest and/or be willing to develop expertise in the development, from design to prototype implementation, of advanced software systems.

The candidate should have interest and/or be willing to develop expertise in online social networking and participatory systems.

The candidate should be both autonomous and a team-worker.

**Conditions for application**

**Defence Security:**

This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

**Recruitment Policy:**

As part of its diversity policy, all Inria positions are accessible to people with disabilities.
The design and implementation of such mechanisms for the integration within SocialBus. The work will go along with the adoption of adequate software engineering practices, and the production of documentation.

Main activities
The activities to be undertaken derive from the above expected contributions and include:

- Analyzing and getting to know the existing socialBus prototype implementation.
- Designing and implementing a solution to the automated synthesis of mediators for the connection of online social network services to the bus.
- Customizing SocialBus for large-scale participatory processes.
- Experimenting with, and assessing, SocialBus in the context of participatory processes.
- Ensuring the quality of the developed software.
- Producing the documentation associated with the developed software.

Skills
Expertise, including experience or at least knowledge in the following topics:
- Service oriented architectures,
- Middleware architectures and systems,
- Implementation on Java EE and/or Node.js,
- Implementation of Web APIs,
- Code generation,
- Use of data base management systems,
- Use of social networks.

Benefits package
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