

German research institute is looking for EIC Transition partners: Game-changing synchronization for high-frequency applications (10-100 GHz)

Summary

Profile type	Company's country	POD reference
Research & Development Request	Germany	RDRDE20231211007
Profile status	Type of partnership	Targeted countries
PUBLISHED	Research and development cooperation agreement	• World
Contact Person	Term of validity	Last update
Sabrina WODRICH	12 Dec 2023 11 Dec 2024	14 Dec 2023

General Information

Short summary

Based on a previous European-funded project that used a novel adaptive synchronization approach (ADSYNX, <https://adsynx.de/>), the R&D institution has developed a non-linear – thus, very fast – method, relying on only a few operations, which are compatible with the implementation in RF (radio frequency) systems, allowing for highly efficient multi-channel signal synchronization. This method has, thus, the potential to replace the – often cumbersome – conventional PLL technology.

Full description

New applications within the scope of mobile communication, smart home / smart city / smart factory, autonomous driving but also human-robot-interaction trigger novel requirements on sensing accuracy as well as high bandwidth communication within limited frequency resources. The core functionality of many such systems is the use of (a) several frequency bands and (b) the employment of multiple, spatially distributed units. Here coherent processing, hence processing with stable and fixed phase relations between the signals, provides significant advantages w.r.t. signal-to-noise-ratio and resolution. This, however, requires synchronization between the different units without which stable phase relations cannot be maintained. Synchronization today is realized by exchanging data (e.g., pilot signals) and locking individual PLLs at the respective units. For many applications, this approach is too complex and too slow).

Thus, new synchronization paradigms are crucial in order to assure the required high performance. Furthermore, for the cost-effective realization (especially at higher frequencies), on-chip solutions in advanced semiconductor processes are required.

Advantages and innovations

Technical specification or expertise sought

The research institution is looking for partnering opportunities to achieve the following two main goals:

- 1) Further development of a newly introduced adaptive synchronization method towards on-chip synchronization-applications for several use cases.
- 2) Maturation of this technology to at least TRL7 and demonstration of market readiness.

The research institute is seeking at least one more partner

- To provide a use-case with an application domain in (1) automotive, (2) sensing (e.g. joint-communication and sensing, JCAS), (3) massive IoT.
- To integrate the ADSYNX chip into their application
- To contribute to market assessment.

Stage of development

Under development

IPR Status

Sustainable Development goals

- **Goal 9: Industry, Innovation and Infrastructure**

Partner Sought

Expected role of the partner

Providing a use-case with an application domain in, automotive, sensing (e.g. joint-communication and sensing, JCAS), and/or massive IoT.
Integration of the ADSYNX chip into their application.
Contribution to market assessment.

Type of partnership

Type and size of the partner

Research and development cooperation agreement

- R&D Institution
- SME 50 - 249
- University
- Other
- SME <=10
- Big company
- SME 11-49

Call Details

Framework program

Horizon Europe

Call title and identifier

EIC Transition

Submission and evaluation scheme

Anticipated project budget

Coordinator required

No

Deadline for EoI

31 Aug 2024

Deadline of the call

18 Sep 2024

Project duration in weeks

Web link to the call

https://eic.ec.europa.eu/eic-funding-opportunities/eic-transition_en

Project title and acronym

Dissemination

Technology keywords

- **01006003 - Mobile Communications**
- **02009009 - Sensors for cars and transport**
- **01006009 - Signal Processing**
- **001001006 - High Frequency Technology, Microwaves**
- **01003025 - Internet of Things**

Targeted countries

- **World**

Market keywords

- **01004002 - Data communication components**
- **03001001 - Semiconductors**
- **03001002 - Customised semiconductors**

Sector groups involved