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How the SLICES research instrument leverages OAI to reach reproducible research

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Abstract—The EU SLICES Research Infrastructure (RI) is developing an open, reproducible, distributed research infrastructure built on top of blueprints aimed to be replicated by researchers, companies, and operators and to evolve in a collaborative manner. Each blueprint is associated to a free open-source reference implementation.

At the current time, the post-5G blueprint is at the center of all attentions in SLICES. The blueprint allows experimenters to test largely distributed 5G cores connected to split RANs interconnected by large diversity of links and potentially controlled by a RIC.

To implement this solution, SLICES has naturally chosen OpenAirInterface as it is at the same time complete, up-to-date, free, and open source.

But SLICES is not only about offering such an implementation, it also implements a full experiment lifecycle where all stages are automated, from resource allocations, to data and metadata collection and publication. That way, experiments done in SLICES are inherently reproducible and accessible to the public.

In this demo, we will show how we explore the impact of radio settings on the actual achievable performance, in an automated way. Both core and RAN are implemented with OAI, RRUs from SLICES' anechoic chambers are used to assess the gain in performances obtained by exploring the numerology setting space. If time permits, interactions with flexric will be exposed too. We will see that transparently SLICES collects all experimental data and metadata and publishes them in accordance with EOSC.

Index Terms—5G, blueprint, reproducibility, RAN, SLICES