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## Staying fair while being FAIR - challenges with FAIR and Open data and services for distributed community services in Seismology

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The European Plate Observing System EPOS is the single coordinated framework for solid Earth science data, products and services on a European level. As one of the science domain structures within EPOS, EPOS Seismology brings together the three large European infrastructures in seismology, ORFEUS for seismic waveform data & related products, EMSC for parametric earthquake information, and EFEHR for seismic hazard and risk information. Across these three pillars, EPOS Seismology provides services to store, discover and access seismological data and products from raw waveforms to elaborated hazard and risk assessment. The initial data and product contributions come from academic institutions, government offices, or (groups of) individuals, and are generated as part of academic research as well as within officially mandated monitoring or assessment activities. Further products are then elaborated based on those initial inputs by small groups or specific institutions, usually mandated for these tasks by 'the community'. This landscape of coordinated data and products services has evolved in a largely bottom-up fashion over the last decades, and led to a framework of generally free and open data, products and services, for which formats, standards and specifications continue to be emerging and evolving from within the community under a rather loose global coordination.

The advent of FAIR and Open concepts and the push towards their (formalized) implementation from various directions has stirred up this traditional setting. While the obvious benefits of FAIR and Open have been readily accepted in the community, issues and challenges are surfacing in their practical application. How can we ensure (or enforce) appropriate attribution of all involved actors through the whole data life-cycle, and what actually is appropriate? How do we ensure end-to-end reproducibility and where do we draw the practical limits to it? What approach towards licensing should we take for which products and services, and what are the legal / downstream implications? How do we best use identifiers and which ones actually serve the intended purpose? And finally, how do we ensure that effort is rewarded, that best practices are followed, and that misbehavior is identified and potentially sanctioned?

In this contribution we present how the community organization behind EPOS Seismology is discussing these issues, what approaches towards addressing them are being considered, and where we today see the major hurdles on the way towards a truly fair FAIR and Open environment.

