The EUREF w.g. on Deformation models

I'd like to very briefly raise the question on terminology

What do we understand as:
• static
• dynamic
• kinematic
• semi-kinematic
Reference systems and frames?

Will present what I think is the usual understanding,
And an alternative approach,

Do we (EUREF TWG) have a clear preference?

Reference frame terminology, Static - usual understanding

In a "**static**" frame the coordinates are stable over time. I.e. no changes of coordinate values within the frame.

Therefore, in order to transform between ITRFxx current epoch, some "deformation model" may be needed to get a good agreement. But deformation models are not an integrated part of the definition of the system or realization of the frame

Reference frame terminology, Kinematic - usual understanding

In a "**kinematic**" frame the coordinates have positions and velocities.

I.e. ITRFxx and ETRF2000 are kinematic frames

(Also the term "dynamic datum" are used frequently. But possibly questionable.)

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Reference frame terminology, Semi-kinematic - usual understanding

In a "**semi-kinematic**" frame, the co-ordinates are fixed to the reference epoch of the frame. A deformation model forms an integrated part of the definition.

The semi-kinematic frames are usually discussed in relation to application of GNSS where also ITRF are used.

Reference frame terminology, - alternative view(1/2)

Frequently, the terms *dynamic*, *semi-dynamic* and *static* are used to describe reference frames (or geodetic datums).

Use of these terms causes confusion for reference frame managers and users alike. For example, when a reference frame is described as dynamic, this means that the coordinates for a ground-fixed feature are time-varying within that frame.

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Reference frame terminology, - alternative view(2/2)

Thus it is not the reference frame, but the coordinates which are "dynamic".

Even when referring to coordinates, the term "dynamic" is not rigorously correct, as technically this implies force in the coordinate movement, which is not necessarily the case. "Kinematic" is a more appropriate term, as it implies nothing about the cause of the motion.

Thus ITRF, which is sometimes described as a "dynamic datum", is in reality a static reference frame with kinematic coordinates for ground-fixed physical features.*.*

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