The original Estonians were conquered by the Danes who founded Revel in 1219. Revel is the former name of Tallinn, the current capital of Estonia. Remains of the ancient Revel fort settlement survive to this day, a testament to the construction skills of the craftsmen under the rule of King Valdemar II. Developed as a trading port and member of the Hanseatic League in the 13th century, it was sold to the Teutonic Knights in 1346 and on dissolution of the order it passed to Sweden in 1546. Later taken by Russia in 1710 and except for the period of independence from 1918 to WWII, it remained a Russian annexation until its present independence in 1991 (Merriam Webster’s Geographical Dictionary, 3rd edition).

Estonia is slightly smaller than New Hampshire and Vermont, bordered on the north by the Gulf of Finland (PE&RS, October 2006), on the east by Russia, on the south by Latvia (PE&RS, September 2002), and on the west by the Gulf of Riga and the Baltic Sea, the total coastline is 3,794 km. The republic is comprised mostly of marsh and lowlands; the lowest point is the Baltic Sea (0 m), and the highest point is Suur Munamagi (318 m).

The first period of geodetic surveying and mapping in Estonia was from 1845 to 1920. The principal mapping agency for this period was the Korpus Voyennykh Topografov – KVT (Corps of Military Topographers) under the Russian Imperial General Staff. Survey activities in Estonia began with Struve’s triangulation in 1811/1816-1819 and by Tenner’s first order network of 1820-1832 published by Czarist Russia in 1843 and 1847. Tenner later supplemented his primary net with lower order stations. The Tenner chains were originally computed on the Walbeck 1819 ellipsoid where the semi-major axis \( a = 6377397.155 \) m, and \( 1/f = 298.3 \); they were later recomputed on the Bessel 1841 ellipsoid where \( a = 6376895 \) m, and \( 1/f = 298.26 

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m₀ = 0.999975, the False Easting (Yo) = 200,000 m, and the False Northing (Xo) = 200,000 m. (Ed. – note the transposition of “X” and “Y” component identifications – the Estonians are consistent with this convention for all grid systems used in their nation, including UTM.)

For the Estonian South Zone (Lõuna-Eesti), the Central Meridian, λ₀ = 25° East, the Latitude of Origin, ϕ₀ = 58° 06’ North, the Scale Factor at Origin, m₀ = 0.999975, the False Easting (Yo) = 200,000 m, and the False Northing (Xo) = 88,634.86 m. The ellipsoid of reference was the Bessel 1841. Apparently, this was used in connection with all of the Estonian Datums that were referenced to the Bessel 1841 ellipsoid.

The “O-series maps” were introduced by the Soviet military (O-34 & O-35), after the 7th of April 1946. Referenced to the System 42 Datum, the grid system was the “Russia Belts” on the Gauss-Krüger Transverse Mercator for Zone 34 (λ₀ = 21° East, FE = 4,500,000m) and Zone 35 (λ₀ = 27° East, FE = 5,500,000m), all zones having a False Northing of zero at the equator, and a scale factor at origin (m₀) = 1.0.

The “C-series maps” were introduced by the Soviets for civil use in Estonia in 1963, and were deliberately mantled in the typical Soviet penchant for obfuscation for the sake of obfuscation. Also referenced to the System 42 Datum, the grid system was a modification of the “Russia Belts” on the Gauss-Krüger Transverse Mercator where the interval spacing (zone widths) of the central meridians were at 3° intervals such that (λ₀ = 21° 57’ E, 24° 57’ E, 27° 57’ E), FE = 250.000m, all zones having a False Northing of zero NOT at the equator, but at ϕ = 00° 06’ North, and a scale factor at origin (m₀) = 1.0.

In keeping with the Soviet penchant for obfuscation, Soviet legislation about construction activities for every town in Estonia had a local coordinate system based on a local geodetic network. Most of these goofy systems appear to continue to be a mystery to the local inhabitants as to how the local geodetic network was connected to the state geodetic system, or System 42 Datum. An example offered by the Estonian government for one of these “Local Urban Systems” (Linnade Kohalikud Süsteemid), “designed” for the capital of Tallinn is as follows: Gauss-Krüger Transverse Mercator (Faussi Mercatori Põiksilindriline), λ₀ = 24° East, FE (Yo) = 24,000m), False Northing (Xo) = 6,536.000 m) at the equator, and a scale factor at origin (m₀) = 1.0.

“TM Baltic ’93” is designed to give a common reference and mapping frame for Estonia, Latvia and Lithuania as follows: Gauss-Krüger Transverse Mercator, λ₀ = 24° East, FE (Yo) = 500,000m, False Northing (Xo) = 0 m) at the equator, and a scale factor at origin (m₀) = 0.9996, euphemistically referred to as a “modified UTM.”

Finally, the main official coordinate system (grid system) currently in Estonia is based on the GRS80 ellipsoid, on EUREF-89, and the Lambert Conformal Conic projection. The origin of coordinate parameters “was chosen to match coordinates” with “TM Baltic ’93” where: λ₀ = 24° East, the Latitude of Origin, ϕ₀ = 57° 31’ 03.19415” N, the southern Standard Parallel, ϕ₀ = 58° 00’ N, the Northern Standard Parallel, ϕ₀ = 59° 20’ N, the False Easting (Yo) = 500,000 m, and the False Northing (Xo) = 6,375,000 m.

The contents of this column reflect the views of the author, who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the American Society for Photogrammetry and Remote Sensing and/or the Louisiana State University Center for Geoinformatics (C4G).