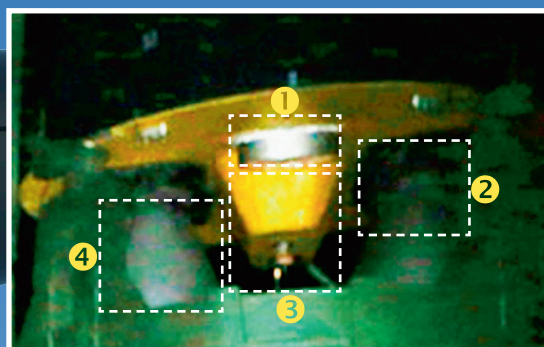
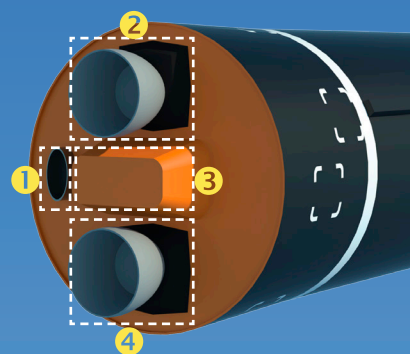


Retro rocket

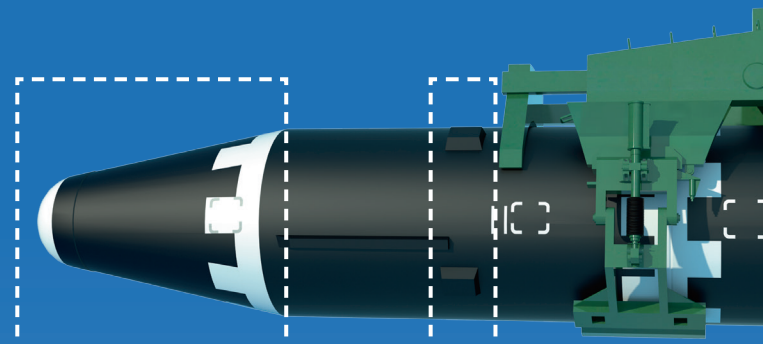
Three-dimensional modelling based on open-source imagery can be used to support analysis of North Korea's most advanced ICBM, revealing a number of similarities with Soviet-era ballistic missiles.



An image of the engine of the Hwaseong-15 first stage from North Korean reporting (right) and (left) a render showing the engine configuration. There are no Vernier engines. Instead, the engine nozzles (2 and 4) appear to be gimbaled for steering. The shape of the nozzles and the configuration relative to the turbopump cover (3) and its oval gas exhaust (1) is visually similar to that of the Soviet RD-250 engine. This similarity adds weight to the assessment that the Hwaseong-15 is likely to be based to some degree on Soviet-era knowledge or technology.

The Hwaseong-15 transporter is a nine-axle, 29-m-long self-propelled vehicle that shares some visible similarities with the eight-axle WS51200 trucks acquired by North Korea from China. In addition to transporting the missile, the vehicle also carries power generators, as well as checkout equipment that is used to feed data into the missile prior to launch and to monitor on-board systems.

The cab of the transporter differs visibly from that of the original WS51200 truck. One of those trucks may have been modified to create this transporter, or it may be an indigenous design.

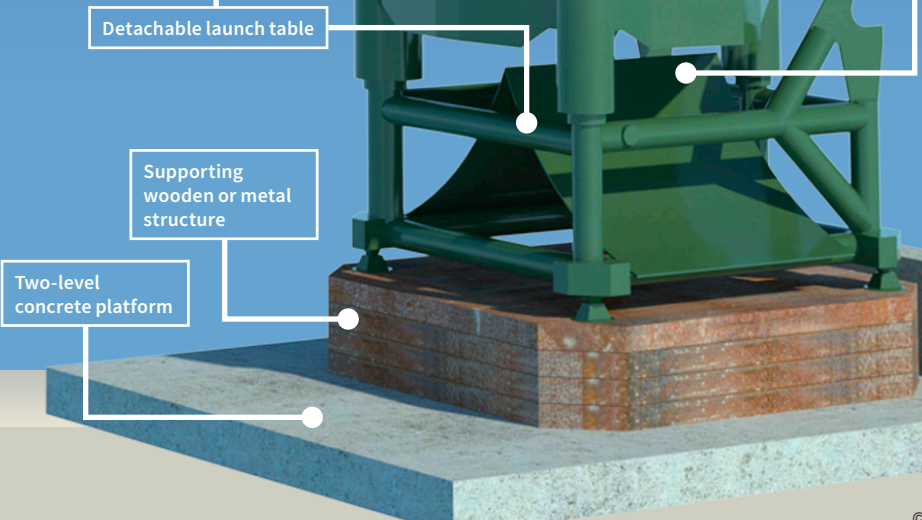
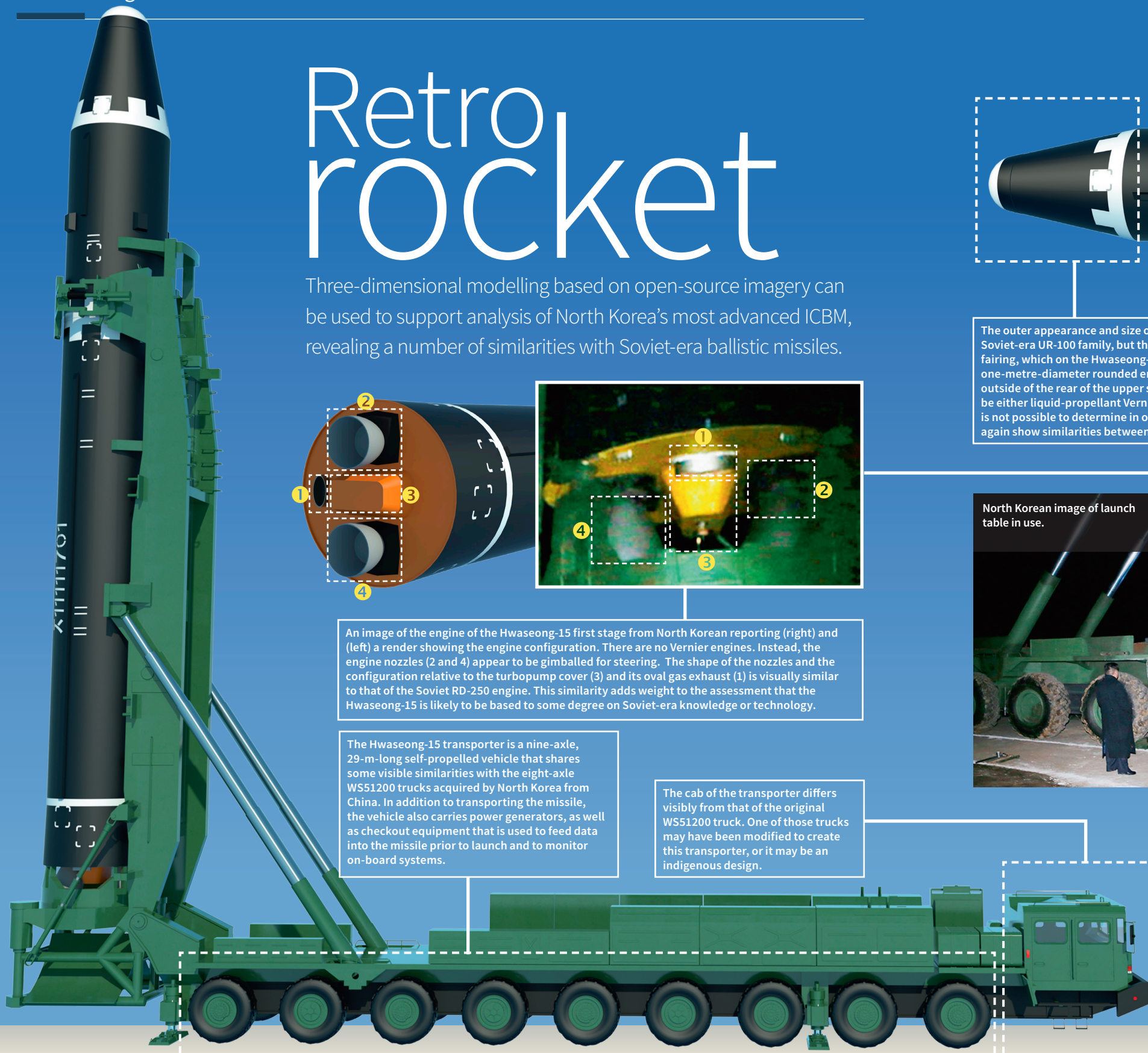


The outer appearance and size of the Hwaseong-15 missile show parallels to the Soviet-era UR-100 family, but there are notable differences. One is the payload fairing, which on the Hwaseong-15 is 2.5–3.0 m long, tapering to an approximately one-metre-diameter rounded end. The four small equally spaced housings on the outside of the rear of the upper stage (two are visible in the graphic above right) may be either liquid-propellant Vernier engines or solid-propellant rockets, although it is not possible to determine in open sources. If they are Vernier engines, this would again show similarities between the Hwaseong-15 and the UR-100.



North Korean image of launch table in use.

The use of a launch table has precedents in Soviet missile design. Examples of Soviet systems incorporating this design include the R-5/8A62 (SS-3 'Shyster') missile system, or the missile family of R-12/8K63 (SS-4 'Sandal'), R-14/8K65 (SS-5 'Skean'), and R-16/8K64 (SS-7 'Saddler'). However, this launch mode was phased out in the 1960s.



These renders were provided by Nathan Hunt of Thegjus, and are based on a three-dimensional model that was developed using the limited images of the Hwaseong-15 available in open sources. This model will evolve over time as more imagery becomes available.

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