

## Noun Phrases

Specifications usually contain some long and ugly noun phrases.

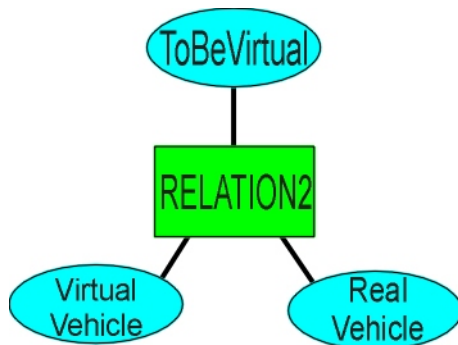
“a high fidelity computer generated three dimensional virtual vehicle”

a (high fidelity) (computer generated) (three dimensional) virtual vehicle

If we group phrases to form adjectives, and work backwards, we have

A “virtual vehicle” – this is one meaning of virtual, something is not real – another meaning is “almost”, as in a “virtual certainty”.

We could use a RELATION1, with the relation head also being the object, but this would prevent us mapping other relations across the ToBeVirtual relation – the relations, such as ToSee, that still function on the virtual object.



A virtual vehicle is an abstract object, not a physical object.

That is “three dimensional”

“Three dimensional” when describing a virtual object on a flat screen can either mean a scene rendered as a single image onto a conventional screen, and using lighting cues to give the illusion of depth, or multiple images viewed through special glasses or rendered onto a special screen, allowing the brain to fuse the images and give a much more realistic illusion of depth. Presumably the first meaning is intended. The phrase “3-D” is used later in the specification. This usage implies the second meaning – the use of multiple images to give a sense of depth.

And is “computer generated”

This would seem to be superfluous. A movable image is to be displayed on a computer screen. To achieve high performance, much of the image will be generated by a graphic processing unit using stream processing rather than general purpose processing.

And is “high fidelity”

“Fidelity” can only be understood by its synonyms – with people it means faithfulness. In music, it means the electronic reproduction of sound so that the aural experience is indistinguishable from the original sound produced by actual musical instruments, with their defects and limitations. The means of reproduction requires a very broad acoustic range, as it must be able to reproduce notes from a bass drum or a flute. In this case, we are comparing the appearance of an image on a small flat screen with the appearance of a large real object – the eye is not fooled at all. So what could “high fidelity” mean in this context. It probably means high resolution of detail and believable motion within the limits of the screen. The phrase combines several variables, some of which work against each other – a high resolution works against smooth motion –so high fidelity overall is not possible. A vague term such as this should either not appear in the specification, or be modelled across its variables so it has some quantifiable meaning. This would allow determining a suitable trade-off between resolution and speed for the purpose at hand – training maintenance crew. A different trade-off would apply for aircrew.

“the delivered training vehicle build state”

This is “the state of build of the vehicle that is a vehicle to be used for training and will be or has been delivered”.

The “build state” captures the revisions of all the components, processes and tools used in the assembly and testing of the vehicle and its subassemblies when they were built – a complex relation which can be a definition.

“the associated vehicle maintenance procedures”

“graphically represented access bay fasteners”

“any single supported vehicle component”