



Civilian Armoured Vehicles (CAVs) - The Essence of Protection, Discretion and Mobility - Part 1: Understanding "real" user requirements

In the first of a 4 part series. Rob Getreu, Senior Consultant with the leading international civilian armoured vehicle consultancy, **Armoured Consulting**, explains what it takes to build a best practice CAV.

Part 1 – Understanding “real” user requirements.



A former colleague of mine at the Defence Materiel Organisation in Australia best summarised every project leader's role.... *you need to manage the user's expectations.* Now, we all know that's not always so simple a task when you have a user operating in multiple environments and who wants a flying tank that is as luxurious as a 7 seater Rolls Royce and can ford a river of 3 meters!

While this may be what they tell you they *want*, your reality is all about helping them recognise what they *need*; What they need is to avoid ending up like the vehicle pictured here, which met with an unfortunate “event” in Afghanistan. Good looks, well trimmed interiors and low prices don't protect lives! Nothing beats well thought out engineering design, quality production and skilled labour.

Without doubt, the 3 key attributes for any functional civilian armoured vehicle are **protection, discretion and mobility**. And when working with the user, it is a careful and analytical review of the inevitable necessary compromises that should take top billing. This review is an absolute must in order to ensure that the vehicle's ultimate capability is really what the users want.... and need.

But why, you ask, should I compromise on such important aspects of the CAV? Surely, I can get the best of all worlds, and all at the price not much more than the cost of the base vehicle? Wouldn't that be wonderful? Unfortunately, *it ain't necessarily so*. And if someone tells you that it is, then you are definitely not getting the best advice.



While a CAV should provide optimal protection, discretion and mobility, the simple reality is that each attribute has a significant impact on the other two. Sure you can build a vehicle that can provide significant ballistic and side blast protection, but of course it doesn't take too much forethought to understand that a vehicle with such protection will weigh significantly more, and thus is not going to have the mobility of a Mini Minor or the speed of a Ferrari. Further, if the user needs significant electronics counter measure protection, it cannot be made to look as unobtrusively discreet as a Toyota Corolla.

It is vital, therefore, that before any civilian armored vehicle is built, and the project leader conducts a well structured requirements analysis. This process should be done with a range of the various users. What do I mean by a range of users? Well, the person who pays the bills is not necessarily the person sitting in the back of the vehicle. Further, the rear passengers do not have the same requirements as the driver or the mission commander. Chances are that the rear passenger is wearing a suit while the driver and commander are wearing 20-30kg of body armour. Very simple arithmetic and experience tells you that the space budget and human dynamics are therefore going to be very different. For this reason, it is critical to include the full spectrum of user types, whose different inputs will then come together to form the full matrix of vehicle requirements.

By way of a lesson learned, here's one of mine: Early in my career, I was managing a project that involved building a fleet of armored Chevrolet Suburbans. During the first vehicle build review, I sat in the rear seat and thought, yep, this all feels good. Plenty of space to sit and move about. Now as it happens, I'm only 170cms tall. It turned out that most of the people who would be the rear passengers were averaging over 190cms! It got to stage that these tall folk could not ride in the rear of the vehicle unless they sat slouched or with their heads on an angle. Not much fun when going on a long drive from Baghdad to Basra. In the end, we needed to replace all the rear bench seats with a lower profile seat. Now, that's a stack of project funds and time that need not have been spent if we had got the requirements right in the first instance.

The essence of the requirements elicitation process is to ensure that each user sub group has had a chance to input their specifics and evaluate the importance or preference of such. It's a complex matrix that is both qualitative and quantitative in its analysis. However, once you've done it (and to be sure it can be a very arduous and exhausting exercise), getting stakeholder sign off is a logical and simpler consequence of the analysis rather than an ambiguous discussion of "but I thought you meant...". Better still, it locks the user into the design requirements and so makes the design review process and production all that much more efficient and effective.

The bottom line is that the more time, and better expertise, invested in the user requirements definition phase, the more likely it is that the vehicle's capability, and subsequent compromises, will enable each of the users to get to their destination safely.

And the translation of user requirements into safety and protection of real people is what it's all about.

In Part 2 of this series, I will detail the important elements of protection within a best practice built civilian armoured vehicle.

If I can assist you with any aspects of civilian armoured vehicles, please do not hesitate to contact me at armouredconsulting.com

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