Keynote Speech
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Thanks to CZE for hosting, in particular Colonel Vaclav Prenosil, CZE NMSG principal, and Petr Jecman, National Coordinator and Czech MOD.

I confess that it is a little intimidating to be offering a keynote speech to such an august and exceptionally sophisticated audience. In such a case, the speaker's maxim should be to say something useful and if you cannot say something useful, at least say it quickly. I hope I will do both.

Let me start by saying that I am pleased to be back with the NMSG community. Many of you will ask, what does he mean by that?—we've never seen him before! Well, in fact, I was lucky enough to be involved with the birth of the NMSG. At the time, I was on the NATO HQ IMS as the R&T Staff Officer and I was responsible for working with Jim Hollenbach and the other NMSG founding fathers as NATO tried to come to grips with the exploding area of M&S. Having spent much of the previous two years working on the reorganization that created the RTO, we had important lessons to share about starting a new group in NATO. It was quite clear that NATO needed a group like the NMSG to begin to instil some NATO-wide order into the vast work being done is very many places on M&S for all manner of applications. Unfortunately, I left NATO before the final resolution was agreed regarding the NMSG, but the fundamental plan and structure had been laid and I was hopeful that a positive outcome would result. Now 10 years later, I am gratified that the vision that Jim and the others had has largely come true, thanks to your past and continuing efforts.

OK, so we've established that I was there when Moses came down the mountain with the stone tablets and so also were some of you. But, besides being one of the few people Paul Newman has to look up to, at least literally if not figuratively, why am I here? As the Director of the NATO Research and Technology Agency, I have the wonderful opportunity to work across not only the full spectrum of military technologies, but as well, across the full spectrum of NATO groups and organizations. While this offers me a very wide perspective on the needs and opportunities in NATO and our nations, it also hampers my personal ability to delve at great depth into any one subject. Thus, I freely confess that, unlike you, I am not an expert at modelling and simulation. So I will not endeavour to tell you how to do your craft. Rather I would hope that you will permit me to give you a view of why you should do what you are doing, how it can address the needs of NATO and the nations, and to draw some connections to other groups that the M&S community should collaborate with for their mutual benefit.

I will begin with a view from near the very top. General Lance Smith, Supreme Allied Commander Transformation and also Commander of US Joint Forces Command, recently promulgated his top 3 priorities for ACT. The first is support for implementation of the Comprehensive Approach to conflicts as called for in the Riga Summit. This means employing all the tools of influence from military force to infrastructure re-building and improvement to political persuasion to economic development to help resolve the immediate and underlying causes of conflict and particularly, terrorism. His second priority is improving the capability development process to provide tools for the commanders, both national and Alliance, more quickly and cost-effectively. And the third is improving training with a particular emphasis on the use of modelling and simulation to reduce cost and improve effectiveness.

If we cast an eye across this symposium's agenda, we will see that you are working on aspects of each one of these top priorities. So let's look at some key examples of the vitally relevant work you are doing on behalf of your nations and the Alliance.

The first invited presentation will discuss the connections with SISO. NMSG has a unique function within the RTO as it is the only group charged with writing and maintaining standards—a fundamental reason for its existence. Preparation of standards is usually an arduous, time-consuming task. However, in the rapidly changing arenas of M&S and IT, standards are particularly difficult because the targets are moving so fast. As well, unlike many military technologies, the demand for and creation of M&S tools and architectures is driven more by the commercial and consumer needs than the military. The result is that standards are being developed in the non-military realm by folks like SISO that will by necessity impact on the military developer and user. Thus, it makes eminently good sense for these two communities to leverage each others' efforts and coordinate their work and share their results. I was extremely pleased to welcome the next speaker, Rick Severinghaus, the Chairman of the SISO Executive Board, to the RTA recently where we signed a landmark agreement between NATO and SISO to do just that. I am hopeful that this agreement will be an example of employing efficiencies in Gen Smith's capability development process.

Following on in this vein of standardization, Session 1 addresses military language and data standards to improve interoperability. May I be so bold as to suggest that there is likely an overlap in the ways that forces, weapons, signatures, organizations, and even individuals are represented and communicated about in the M&S domain and in the real operational domain. Is there not logic to using a common "language" is both these domains? While there may be also be additional prefixes and suffixes that each domain may need for its unique purposes, use of common basic "words" would help training simulations better reflect their operational counterparts. Further, these training simulations would also enable higher fidelity experiments to exercise these systems for development of advanced tactics and procedures. In so doing, you are supporting both the training and the capability development pillars of Gen Smith's priorities. In Session 2, there will be a discussion of the MAJIIC program, which in my mind, would be a superb testing ground for the common language approach.

Moreover in this session, there will also be discussions of activities that support the so-called Comprehensive Approach. Today's conflicts are not the classic clash of military forces. As we have seen, the settings in Iraq, Afghanistan, and the Balkans were often in urban areas and in many cases involved the adversary intermingling with non-combatants for cover and to instigate civilian casualties to serve their strategic political purposes. As well, many of these settings are in faltering states where numerous non-military agencies as well as non-governmental organizations such as charities are working to help the populations. These agencies and NGOs provide needed services to the population but they often have a different focus and widely varying levels of training relative to their military counterparts. Of course, our militaries have worked with agencies and NGOs in humanitarian missions, but we now find ourselves having to conduct combat operations in the same time and places as the agencies and NGOs are doing their work. This superposition of fighting and supporting introduces new difficult dimensions of training for our soldiers and these other groups. Thus, your work in M&S for civil-military operations is vital for

both emergency response and combating terrorism training. There is a growing swell of interest to conduct combined distributed training of military forces with non-military organizations to promote better coordination and understanding. The M&S tools and environments you are creating could form the foundation for this important capability for training but also planning.

Tomorrow there will be numerous papers addressing other aspects of M&S for training. Last week in ACT's Industry Day in Warsaw, one of the panel discussions addressed Gen Smith's priority for M&S in training. Indeed, the NATO Secretary General made specific reference to this needed capability in his opening remarks to the participants. I was very pleased to hear two active NMSG members, Dieter Steinkamp of Germany and Hans Jense from NC3A, espousing from the stage the excellent work of many of the NMSG sub-groups in this area. The message was clear that NMSG is a key partner in helping NATO and nations develop the tools to train and educate the forces that are entering into a very dynamic and challenging battle zone. This partnership is key as ACT moves forward with a huge initiative called Snow Leopard to advance the ability of NATO and nations to conduct distributed training. The lessons and building blocks from First Wave and Pathfinder need to be considered as forming the foundation of this initiative. Continued involvement of the NMSG in the evolution of Snow Leopard would allow this crucial program to benefit from the expertise developed by those earlier and on-going activities.

And there are other partners in the RTO that can derive and provide benefit from close collaboration with NMSG. I noted in the NMSG review of activities in the panel meeting that you are working with the Information Systems Technology Panel and with the NATO Industrial Advisory Group. But may I offer an additional linkage that may be useful. The Human Factors and Medicine Panel has a new subgroup on Improving Human Effectiveness through Embedded Virtual Simulation. The melding of the expertise from HFM on how humans learn best with the expertise in NMSG in developing the simulation tools would seem to be a natural collaboration that would enable each group to more efficiently reach its goals.

Finally, you will have discussions of new concepts and support for acquisition which echo Gen Smith's plea that it takes too long for new ideas to become systems on the field and capabilities in the quivers of our commanders. Here again M&S, when properly applied, can speed the understanding of new systems, the evaluation of the parameters of their employment, the assessment of their operational effectiveness, and, of course, the identification and resolution of vital issues of interoperability with associated systems.

In summary, the continuing improvements in our ability to represent the real world in the virtual domain is feeding a rapid expansion in the applications of modelling and simulation as a more cost and time-efficient means to train, to experiment, to plan, to design, and to test. In our resource-constrained environment, using M&S can significantly help maintain and, indeed, improve the readiness of our forces and speed the delivery of new capabilities to our commanders and political leaders. However, the cacophony of models and simulations and architectures that naturally arises from well-meaning but locally focused developers leads to a virtual analogue of the weapons, procedures, and communications interoperability disconnects that we see in the real world. The community gathered here was formed nearly a decade ago with the primary objective to serve like an orchestra director and harmonize the many disconnected efforts in nations and the Alliance so as to bring order to the then growing dissonance in the M&S arena in NATO. Your efforts have made much progress, but the composition is yet unfinished. There are clear challenges to overcome, and I urge you to remain steadfast in carrying on with your work. Your nations and the Alliance are intrigued and encouraged by the sonatas and concertos they have heard from you so far and they are anxiously waiting for the full symphony.