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## **EXECUTIVE SUMMARY**

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This report is about cooperation, the way it is changing, and what this means for our national defense organizations (NDOs). We all know that cooperation helps solve challenges or achieve desired outcomes. In complex problems, it might even be a condition *sine qua non*. The downside is that cooperation also induces transaction costs. But the cost of organizations working together has been drastically reduced. For many organizations operating in an increasingly connected and therefore more complex world, both the pressure and the opportunities to cooperate have drastically increased. This different calculus has given rise to much more open, smaller scale – to

the extent that individuals next to organizations have become part of the equation – and vibrant forms of cooperation, in many instances rapidly displacing traditional forms of stove-piped and closed cooperation models. In the business world, driven by competition and the process of 'creative destruction', the innovative drive leads to successful new forms of

The calculus underpinning cooperation choices has changed, and now favors more open, smaller scale and vibrant forms of cooperation

cooperation. In this report, we will look at concepts and examples from the business world and explore whether successes and lessons learned in the private sector can also be applied to our national defense organisations (NDOs), even in operational processes for which the 'business logic' of commercial markets has limited applicability.

NDOs face a turbulent environment and an uncertain future. In these times of geopolitical shifts and exponential technological change nobody can go it alone -

Cooperation is not a binary choice; it is a portfolio choice from within a broader 'space' of cooperation options

certainly not the defense organization of a small to medium-sized country such as The Netherlands. The importance of 'with whom' choices for NDOs is only likely to increase. HCSS suggests putting a rich portfolio of cooperation partners and forms at the heart of the

strategic planning process. NDO partnership choices are typically thought to belong to the realm of politics, decided upon based on political preferences. This report argues they should rather be seen as value-for-money choices. Decisions should be made on the basis of a pragmatic, pre-political, pre-bureaucratic analysis that considers the various cooperation options that are available and then designs a portfolio of cooperation partners and forms that will enable an NDO to navigate very different futures.

The Dutch defense organization already manages a broad portfolio of cooperation partners. Its portfolio consists first and foremost of other NDOs with whom it work closely together. But its current portfolio goes far beyond these military partners. It includes other government departments or agencies; NGOs; local communities in their home countries and abroad; defense and non-defense industry partners or

We observe the greatest dynamism in the other parts of the cooperation space than where NDOs typically sit. suppliers; knowledge institutes, etc. But in other crucial dimensions the cooperation portfolio tends to be more lopsided. NDOs exhibit a (historic) preference for long-term, formalized, closed cooperation setups with

mostly like-sized, like-minded, and likewise organizations. These traditional kinds of cooperation clearly remain important. But this report set out to explore *other* forms of cooperation that NDOs have thus far not had much experience with - with unfamiliar partners and in more open and more loosely coupled ways, facilitated by new technological developments. More in the 'digital' than in the 'physical' sphere: in the information age, 'connect and being connected' is more and more a prerequisite for being able to achieve strategic effects in many different domains. It this new age, defense and security challenges once again have become very much part of society and societal processes at large. Defense and security ecosystems that try to cope with these challenges are emerging. In the words of the Commander of the Dutch Armed Forces General Tom Middendorp: "I think it's of vital importance that we come to realize that we are all actors in a defensive ecosystem... we also have to explore other parts of this ecosystem."

This report is based on the empirical observation that the most dynamic and promising new forms of cooperation in our everyday lives favor openness and loose coupling, while focusing on information rather than on physical assets. Examples include phenomena such as Wikipedia, open source soft- and hardware development, crowdfunding, etc. Many of these seem to defy common cooperation sense: they take very different organizational forms than our current companies; they tend to be highly distributed and peer-to-peer with unique coordination mechanisms; and they

are developing radically new business models to sustain their activities. But while dramatically different in nature, they seem remarkably effective and efficient. In some areas they are outcompeting the titans of the late-industrial age such as Microsoft or IBM, who themselves are also moving in that direction.

How can NDOs can learn from these new forms of cooperation? In order to answer this question, HCSS has explored three cases: InnoCentive, an open marketplace for R&D solutions; hacker communities; and Ushahidi, an open platform for crisis informatics. In this report, we describe how these new forms of cooperation are initiated, how they are managed, and what their strengths and weaknesses are. Do these cases

point to new golden opportunities for NDOs? Our findings are somewhat mixed. On the one hand, these forms of cooperation clearly benefit from surprisingly advantageous characteristics when compared to traditional forms of cooperation in terms of entry, cost, scaling,

Our case studies reveal some of the strengths and the weaknesses of new forms of cooperation. HCSS remains overall optimistic on their potential

space, speed, adaptiveness, and effectiveness. On the other hand, our case studies also reveal a number of prickly challenges in areas such as cultural resistance to change, quality assurance, command and control, information management and ethics. The case studies also explain, however, how these new forms of cooperation have developed quite effective ways to overcome some of these challenges. We want to emphasize that these case studies are not just about InnoCentive, Anonymous, or Ushahidi, but rather about the new forms of cooperation that they embody. In a short period of time, all of the example cases have learned and internalized many useful lessons, leading to impressive improvements. We submit that in all of these cases, the benefits can still be significantly enhanced and the drawbacks further mitigated.

The most promising case appears to be open innovation, which is gaining significant traction in many areas of public and private activity. NDOs have no alternative but to leverage the outcomes of the fast and high-quality innovation cycles in the commercial (civilian) market. At the same time, NDOs strive to keep the exact specifications and even performance range of their core capabilities hidden ("mil specs"), with the aim to ensure that would-be opponents do not acquire the same possibilities and to make it harder for potential adversaries to develop appropriate counter-measures. The challenge for NDOs is to have system integration processes in place that harness (fast) open innovation at the component level in continuous performance improvement while retaining the structural integrity at the system / platform and system-of-systems level.

The report concludes with some general recommendations that are, by and large, supported by the case studies. We note that the Dutch defense organization already has taken steps along the route proposed below. To that extent, the recommendations serve as an encouragement to further implement the vision of CDS Middendorp of a defense organization fully and consciously embedded in true defense and security ecosystems, able to both strengthen and draw strength from those ecosystems.

The first recommendation is that NDOs should move further along the road towards full-spectrum cooperability. This capability to engage in a broad portfolio of cooperation partners and forms should be treated just like the many other capability choices NDOs invest in. Developing cutting-edge defense hardware (e.g., jet fighters, frigates or land

Track the cooperation space and experiment with promising areas.

vehicles) requires meticulous long term investment, planning and refinement; so too does competitive full-spectrum cooperability. In many ways this particular capability may even be more

difficult to achieve. It cannot just be procured or dealt with in a centralized "cooperation department", but has to be mainstreamed throughout the entire organization. But while representing a number of daunting challenges, its potential benefits are also outsized: we can think of no single force multiplier that comes even close. We suspect that as NDOs evolve towards broader strategic balance-of-investment methods, the net contribution of this capability will become even more apparent.

The second recommendation is that our NDOs should monitor the entire cooperation space more closely than they currently do. Most NDOs engage in various forms of technology watch. There is still a clear bias in these efforts towards physical technologies at the expense of social technologies of the kind that we describe in this report. Given the growing importance of the entire

Cooperation choices are political, but they should increasingly be informed by a constant and rigorous 'portfolio analysis'

defense and security ecosystem, we submit that our NDOs should devote more attention to monitoring real-life trends and developments in the cooperation space (as we illustratively do in this report) in order to remain situationally aware of new promising developments in this space. At the same time we also suggest they should go beyond that and experiment with various new forms of cooperation technologies. Some of the concrete incarnations of these new forms that we describe in this report (players such as InnoCentive or Ushahidi) may even represent good candidates for such experimentation efforts.

Finally, we recommend that cooperation choices be seen as portfolio choices that require pragmatic, evidence-based analysis and that can be and constantly are recalibrated based on that analysis. These choices should be made politically. But those political choices should increasingly be informed by a more pragmatic, dispassionate, rigorous, a-/pre-political analytical stage. It is a sound risk and uncertainty mitigation strategy to diversify the portfolio of partners. The key analytical question then becomes how to determine which baskets to choose. In a time where we are faced with exponential and epochal change, this choice admittedly requires more thinking than has ever been the case before. Without prejudging the outcome of this debate, we would encourage NDOs would ask themselves which partners represent the highest future potential defense and security return on cooperation investment: country A or B or companies such as Google, IBM, or Microsoft.

In an ever more connected and complex world, designing a more diversified portfolio of cooperation partners and cooperation forms becomes a strategic imperative for national defense organizations.

The Westphalian and industrial age mindset has accustomed our NDOs to think of themselves as "prime defenders" of our national security. In this frame of mind, NDOs see it as their responsibility to be able to do as much as possible on their own. Cooperation represents a residual activity, that is called upon when the own resources prove to be insufficient (as often

is the case for small to medium-sized NDOs). In the transition to the new information age, however, NDOs may want to position themselves more as custodians of a broader ecosystem of a variety of actors that all contribute in their own way to promoting security and/or countering insecurity. Only a diverse and resilient ecosystem can mobilize enough variety, agility, and mass to deal with the challenges at hand. Pursuing and fostering cooperation then is no longer merely a residual activity; it becomes a core competence at the heart of the defense and security effort. In an ever more connected and complex world, designing a more diversified portfolio of cooperation partners and cooperation forms becomes a strategic imperative for NDOs.

Throughout the ages, actors that succeeded more quickly than others in seizing the opportunities embedded in emerging new physical and social technologies derived enormous – economic, but also defense and security – advantages over relative laggards. In the last major transition from the pre-industrial to the industrial age, Europe found itself in the lead of this process.

Consider full-spectrum cooperability as a key NDO capability to be treated on par with fighters, frigates and tanks Today, Europe is no longer the undisputed leader on the leading edge of the new technological revolutions. But HCSS still feels that when it comes to the defense domain, Europe – and especially the smaller European NDOs – may still stand a better chance than many others to discover the optimal social technologies that befit these revolutions. We see current trends, especially (but not exclusively) in The Netherlands, of starting to think of "defense" as a "defense and security ecosystem", of which new style NDOs may be the best suited custodians. This might be seen as the present-day equivalent of how armies and militias gradually morphed into NDOs during the industrial age.

NDOs can no longer go it alone. Not today and certainly not in the future. They will be better positioned to achieve the defense and security objectives that their societies expect from them when they pursue those together with others. Better **together**. But in order to do so, they will also have to explore new and better ways of cooperating with others. **Better** together. We can already discern glimpses of how to cooperate better in some of the case studies we presented in this report; as well as in some concrete initiatives within the Dutch defense organization. The challenge that remains for all of us is to improve our ways to apply those to defense.