As part of its Force XXI development program, the U.S. Army is “digitizing” the force: interweaving its various levels of command with sophisticated information technologies to provide a clear and accurate shared picture of the battlespace, or area of operations, at all levels, from the commander down to the individual soldier. The intention is to increase dramatically the scope and quality of shared situational awareness, to permit units to synchronize and resynchronize operations smoothly and quickly, and to be able to focus fires, logistics, and other resources wherever they are needed, without being rigidly limited by traditional organizational boundaries.

In turn, improved situational awareness should enable standoff, nonlinear, dispersed operations, as opposed to the more conventional approach of massing forces to conduct close combat on a clearly delineated battlefield. The Force XXI process is also expected to facilitate enhanced force protection, leaner logistics, and split-based operations.

The Army’s fast pace of modernization appears to be unmatched by the militaries that are likely to deploy alongside the United States in future coalition operations. Such disparity in technological sophistication, it is feared, will lead to coalition incompatibilities, which in turn can undermine the effectiveness of multinational forces. The capability gap caused by differing levels of technological sophistication, coupled with the continuing political need to operate in a multinational environment, may significantly hinder future coalition operations.
The tension between the efficiency of mounting unilateral operations and the political imperative of fielding forces in a coalition setting is well understood conceptually. But as yet there has been little work examining how seriously U.S. Army technological advancements will affect multinational force compatibility (MFC). In light of this, the objective of this study was to determine how—and how significantly—U.S. Army technological developments for Army XXI will influence multinational force compatibility, and to begin exploring what the Army can do to mitigate the effects of such incompatibilities.

The project was undertaken in three parts. First, case studies of recent operations (Gulf War, Haiti, Bosnia) were used to derive MFC lessons learned and to explore how the context of each operation affected the degree of—and need for—coalition compatibility. In the case study analysis, particular attention was paid to how coalitions sought to mitigate technological disparity. The key issues raised by the case studies include the following:

- The technological gap between U.S. and partner forces has been a constant factor in past coalition operations. The impact of technological disparity was not just limited to technical issues; it also shaped operational and political concerns.
- The operational context has played an important role in determining the degree to which such a gap affected coalition performance. Factors such as the intensity of conflict and type of mission, the amount of time to prepare, the extent to which the United States plays a lead role, and the degree of force integration have a great impact on both the amount of MFC achieved and on the need for MFC itself.
- In past operations, mitigation measures (some of which were not necessarily of a high-tech nature) were devised either to eliminate or circumvent the incompatibilities.

Second, comparisons of the U.S. Army’s Force XXI modernization process with similar efforts of NATO allies offered a best-case scenario of what technical disparities are likely to appear in the future. This approach assumed that the technological gaps affecting NATO would be even greater in ad hoc operations with non-NATO mem-
Comparing Force XXI with allied modernization plans leads to the following findings:

- The gap is expected to grow with all partner armies, including the most modern NATO militaries. The disparity lies primarily in the modernization of "software" and command, control, communications, computers, and intelligence (C4I) systems, as opposed to weapon platforms.

- Technological disparity can potentially cause numerous incompatibilities. In a high-intensity conflict that places a premium on speed of maneuver and fast-paced operations against a large and well-entrenched force, nondigitized partner contingents can hinder Army XXI units and undermine the coalition effort. As in the past, however, the magnitude and relevance of the incompatibility will depend on situational factors.

- Indeed, given the evolutionary (rather than revolutionary, as in the case of the Army After Next) nature of the Force XXI process, its development will most likely exacerbate existing incompatibilities with allies and coalition partners rather than create new ones.

Finally, the project team built a framework that characterizes the problems arising from technological disparities and identifies appropriate responses. This allows a systematic analysis of potential MFC problems and solutions. The framework includes the implications of technology gaps (whether technical, operational, or political), the nature of multinational command and control (integrated or separated), the nature of the operation itself (high or low intensity, type of mission, short or long warning), and the range of available mitigation measures. It also discusses how some of the mitigation measures used in the past can be adjusted so that they are applicable in the future. The framework indicates that:

- If the engagement undertaken is a longer-term one, then it is preferable to focus on "fixes" that reduce incompatibility at its roots through such initiatives as combined training and doctrine, multilateral command post exercises, combined research and development, and intelligence-sharing protocols. This is the fastest and most effective route to achieve compatibility among forces with different capabilities.
• When fixes are insufficient or impossible, “workarounds”—efforts to reduce the effects of incompatibilities—remain a viable alternative, allowing forces with different technical capabilities and operating procedures to coordinate their efforts. Although fixes are ideal, workarounds may become increasingly necessary when the technological gap cannot be fixed due to limited resources or because a coalition needs to deploy with little notice.

• The same mitigation measures used in the past should apply in future operations, with some modification to take into account the “digital” nature of future Army XXI units. Army XXI planners need to anticipate and adjust for those requirements that are likely to undermine their efforts at efficiency (e.g., more bloated headquarters, logistical support) and could even affect their operations (e.g., coalition partners’ force protection requirements, concerns about fratricide with less-networked contingents, partitioning of the area of operations).

The framework also suggests that engagement efforts will be key. Even as its modernization efforts set the standard for other advanced armies, the U.S. Army’s engagement activities can help ensure cooperative and constructive relations with foreign militaries—securing not just technological but also operational and political compatibility over time. The kinds of long-term engagement activities that have underpinned NATO; inspired the American, British, Canadian, and Australian Armies’ (ABCA) Standardization Program; and spread U.S. doctrine, equipment, and training worldwide (through International Military Education and Training, Foreign Military Sales, and other security assistance efforts) will be increasingly important. Readiness to deploy liaisons and coalition support teams to bridge gaps and enhance coalition cohesion is crucial.

This challenge also calls for a broader U.S. Army vision. Rather than treating modernization and coalition-building as separate efforts, the Army can combine them as part of a larger strategy.1 It should establish bureaucratic mechanisms to monitor and evaluate how future

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1This subject will be covered in detail in forthcoming RAND Arroyo Center research by Thomas S. Szayna et al., “Improving Army Planning for Future Multinational Coalition Operations.”
modernization programs will affect MFC. The Army should also de-
vise MFC enhancement packages for a number of friendly countries. Such packages would vary their emphasis on fixes and workarounds, according to the capabilities of each partner army and the types of missions to which such forces would contribute.

Efforts to bridge the dual pressures for technological development and engagement can be pursued within the context of long-term Army institutional and operational interests. Such an approach can also help the Army balance its responsibilities and resources in an environment characterized by a broader array of missions and increasingly constrained resources.