



Report from Group B 21 June 2005



Early in 2005 the National LambdaRail (NLR) Board and the Internet2 Network Planning and Policy Advisory Council (NPPAC), with the endorsement of the Internet2 Board, constituted eleven of us as Group B. They charged us, as knowledgeable individuals rather than as representatives of specific organizations, to propose one or more aggregation schemes effectively combining the activities and plans of Internet2 and NLR. We were not required to maintain the organization of Internet2, NLR, or their affiliates. Rather, we were to satisfy the organizational requirements of the various services and activities while minimizing the complexity of the overall result.

Group B comprises Javad Boroumand (Cisco), Bill Decker (Iowa), Dave Farber (Carnegie-Mellon), Tracy Futhey (Duke), Ron Hutchins (Georgia Tech), Greg Jackson (Chicago, chair), Ron Johnson (Washington), Larry Landweber (Wisconsin), Jack McCredie (Berkeley), Doug Van Houweling (Internet2), and Tom West (NLR). Jim Bruce (MIT) has served as facilitator. We met in Chicago on March 25 and June 9, 2005, with electronic discussions before, between, during, and after those meetings.

We report here our final deliberations and recommendations. Following our charge, this report represents the collective thinking of a group of knowledgeable individuals. Apart from the fact that several Group B members are affiliated in various ways with NLR, Internet2, regional networks, or corporate entities, the report itself and the associated recommendations should not be taken as the views or endorsement of any of these organizations. Rather, the Board and other entities within Internet2 and NLR will now consider these recommendations. They may decide to follow none, some, or all of them.

Issues

We began by identifying issues each member hoped deliberations might help resolve. These fell into five general categories:

- our collective mission,
- the various ways we have (and might) organize to achieve that mission,
- the resources we bring to bear,
- the coherence and comprehensibility of our services, and,
- last but not least, our relationship with the research enterprise(s) we claim as our primary *raison d'être*.

In the course of these discussions, we identified some specific differences and resemblances between NLR and Internet2 that are important to next steps.

- *Membership*. Internet2 is a nonprofit corporation (the University Corporation for Advanced Internet Development,UCAID) whose members primarily are individual institutions of higher education, certain other research entities, and selected corporations. NLR is a nonprofit corporation (National LambdaRail Inc.), whose members and/or owners primarily are Regional Optical Networks (RONs) or aggregators. The universities involved in NLR's regional members are virtually all members of Internet2, so the two organizations' memberships overlap.
- *Governance*. NLR's Board comprises members designated by each NLR member (including Internet2) and by Cisco. Internet2's Board comprises the Presidents of several institutions (elected by the Presidents of the member universities), the

Chairs of its advisory councils, and two appointed members, one of whom is the chair of the NLR Board *ex officio*.

- *Network Services.* Currently Internet2 network services consist primarily of high-speed Layer 3 transport over the Abilene network, whose infrastructure is provided primarily under a contract with Qwest. NLR network services consist primarily of individual Layer 1 services dedicated to specific customers, using infrastructure owned or controlled by NLR. Each organization has plans to expand its services, with Internet2 proposing to provide Layer 2 services and NLR proposing to provide Layer 2 and Layer 3 services. How these services interact, and whether they use common fiber infrastructure, are the focus of Group A.
- *Finances.* NLR is funded by five-year, \$5-million contributions from each of its members (with some double memberships, and some contributions in kind rather than cash). Entities using NLR infrastructure pay to activate circuits. Internet2 is funded by member dues plus specified fees to use its current network, Abilene, and users bear the costs of connecting to the Internet2 nodes.
- *Partnerships.* Internet2 has a formal mechanism for corporate membership in the organization, recognizing various levels of contribution to the organization and its members. NLR has a special relationship with Cisco, and no other corporate sponsorships or partnerships. Each organization has some affiliates and/or members that are public entities or agencies. Internet2 has formal relationships with two score of international organizations.
- *Research.* NLR and Internet2 both seek to advance research through high-performance production networking and experimental networking. Within this broad goal, NLR tends to focus on network research – that is, research on networking itself, including technology, protocols, services, and management. Internet2 efforts include both network research and research in other domains that require or benefit from access to high-performance networking. Each organization has an advisory council comprising representative network researchers and a council designed to represent scientific research in general and other academic disciplines.
- *Other Activities.* Internet2 sponsors an array of activities and development beyond its network services. These include, for example, work with applications developers, primarily in middleware but also in other areas; formal interconnections with research networks abroad; services to secondary education and other non-research users; and conferences. NLR generally does not sponsor activities beyond its network services and research support.
- *Culture.* NLR is managed relatively thinly, sharing space and staff with other organizations and avoiding large, central administrative activities. Internet2, because of its wider array of activities and longer existence, employs about eighty staff, occupies a building in Ann Arbor with Merit and other tenants, and maintains an office in Washington DC. Those of us who work with both organizations are frequently struck by their very different cultural look and feel.

As a path toward identifying recommendations, we framed nine questions to consider as NLR and Internet2 explore options for the future:

- Should we in the research and higher-education community collectively own, operate, and control our own network infrastructure?
- How do we design the network involving all relevant constituencies?
- How do we determine requirements for our services, and key tactical steps?
- What duplication is necessary, for example to satisfy conflicting requirements?
- How can we more effectively communicate with our many constituencies and enable “one-stop shopping” for our users?
- What misperceptions can we fix without major organizational change?
- Do we address resource shortages by seeking more resources, or by reducing the scope of our activities?
- Should we start over with a fresh redesign of our networks and organizations, or can we proceed without resolving Internet2/NLR overlaps?
- Through what processes involving whom should we address these questions, and then implement whatever changes are necessary?

These questions helped frame and guide our discussion. Since ours was a practical exercise, our discussion focused on identifying and exploring various options for the future, rather than on answering the questions in detail. We focus our report accordingly.

Goals

Before we delve into the options we explored and recommend, it is critical to remember the central goals of both NLR and Internet2. The evolution of NLR and Internet2, whatever its form, must align with those goals if it is to succeed.

On the surface, the primary goals of the two organizations are similar: to provide cost-effective high-performance networking for universities, colleges, and their research partners, thereby enabling and advancing research and other core higher-education goals. However, three important divergences lurk behind this consistency:

- the scope of “research”, specifically the balance among network research (that is, research on networking itself), scientific research (that is, research in the sciences) that requires high-performance networking, and research outside the sciences that requires high-performance networking;
- the importance of enhancing and transforming education as a secondary goal for high-performance networking; and
- the emphasis on rallying the troops, that is, on providing mechanisms whereby those who use and/or provide high-performance production networking and experimental networking can interact and thus work effectively together across campus and other organizational boundaries.

These divergences notwithstanding, clearly the primary goal for both NLR and Internet2 is to ensure that needs of researchers, however defined, are met. The conventional wisdom is that NLR is more focused on this goal than Internet2. The truth is, both organizations provide extensive services and support for researchers and involve them in key decisions, but full success in this regard has eluded both organizations. Indeed, as we will argue below, the continuing confusion arising from the competition and cultural divide between NLR and Internet2 has become a central impediment to full and comprehensive service to the research community.

Possibilities

As a heuristic to focus our attention and understand our preferences among mechanisms for advancing these goals, we explored three specific degrees of convergence that NLR and Internet2 might pursue. We called these scenarios “Allocation”, “Delegation”, and “Integration. We then constructed a *pro forma* proposal for each scenario, and used those proposals to move us toward recommendations.

It is important to note that Group B does not consider the *status quo* a viable option for the future, and so it is not one of our scenarios. We return to this point below.

Allocation

In this scenario, NLR and Internet2 would continue to exist separately. They would identify overlapping activities, and reach clear agreement that one or the other would take responsibility for each area of overlap. The essential feature of this organizational approach is that Internet2 and NLR would remain separate and independent organizations. The best attributes of each would be strengthened by collaborative strategic planning and coordinated operational management to minimize current and future overlapping, confusing, and often competitive projects and programs.

Instead of wasteful duplication, the organizations would rationalize service offerings and develop a few highly visible joint activities. When appropriate, representatives of other leading network organizations (for example, the Grid, RONS, and CANARIE) would participate actively to focus the community’s limited resources on addressing the highest priority needs and interests of the broad international research and education networking community.

Both organizations would develop a comprehensive communications plan to explain to a broad and often confused constituency how this new paradigm would work, why it would be better than the current working relationship, and what benefits the research and education community would harvest if Internet2 and NLR worked together thus.

We were advised, as we explored this scenario, that it almost certainly violated key legal constraints stemming from NLR’s and Internet2’s status as nonprofit organizations and from antitrust regulations.

Delegation

In this scenario, NLR and Internet2 would identify a set of overlapping activities, predominantly in the area of direct network services at layers 1 through 3. They would jointly create a new operating entity, the “Joint Venture”, to provide one-stop shopping and management for these services on behalf of NLR, Internet2, and relevant RONS.

The Joint Venture would include both formal members and informal members, whose governance roles and service rights would differ. The formal organizations might include Internet2, NLR, and some RONS. Other members might include entities and projects such as the QUILT, Federal agencies, the Global Lambda Integrated Facility, the International Education Equal Access Foundation, private enterprise research organizations, the TeraGrid Project, and the Grid. The whole would need to engage corporate partners in ways that fully honor existing covenants.

The Joint Venture would be a self-contained service organization under agreements among Internet2, NLR, and the member RONS. The Joint Venture would employ staff, who might also hold management positions in Internet2 or NLR. The Joint Venture would

manage and operate all the current assets, resources, capabilities and commitments of NLR, plus the Internet2 resources, capabilities and commitments currently associated with Abilene, HOPI, FiberCo, and ManLan.

Integration

This scenario started from the proposition that if we were starting over, knowing what we do now, we would build one national organization, not two. The scenario therefore replaces NLR and Internet2 with a new, single, national networking entity for higher education and research

The challenge would be to recreate an organization that meets collective needs in an optimal way. The new organization would need to provision basic services with high reliability, while allowing for advanced and high-performance networking needs. It would need to leverage economies of scale, harvesting the inefficiencies out of the two separate organizations.

The resulting organization would need to be very good at delivering production services. With partners, it would need to push the envelope as new technologies and capabilities emerge. This would help it to avoid seeing itself as the sole provider of next generation technologies. Rather, it would be a partner in that effort with close alignment to the campuses and RONS.

One obvious question would arise: how to handle certain valuable and successful activities currently part of NLR or (more typically) Internet2 whose natural home might not be a national high-performance networking organization. Similarly, there might be certain activities which belong under the high-performance-networking umbrella, but are currently housed outside NLR, Internet2, and the RONS. Two obvious examples of this are the Internet2 middleware work and the EDUCAUSE trust-fabric work. One might also cite the policy discussions within the Common Solutions Group. If NLR and Internet2 were to proceed with an Integration approach, it would be critical that the optimal home for these somewhat ancillary activities be identified and secured, either within the new organization or otherwise.

Challenges

Since they were heuristics for us to develop our recommendation, we do not belabor the scenarios here. But some general comments are worth recording.

- Each of the scenarios requires very careful organizational work, but the nature of that work varies across them. For example, scenarios like Allocation leave organizational cultures essentially unchanged, but entail delicate negotiation of boundaries and extensive attention to communication with patrons and customers otherwise easily confused by the continuing existence of two potentially competing organizations. On the other hand, scenarios like Integration require an extensive and difficult merger of organizations with very different cultures, but potentially address user confusion and unnecessary duplication head-on.
- No matter which scenario one chooses, financial issues are complex and daunting. In part this stems from the very different financial models underlying NLR and Internet2, in part it stems from the potential costs of overlap and duplication, and in part it stems from the unstable, weirdly competitive market for high-performance research and education networking and network

infrastructure. No matter which scenario we choose, we must make sure that resources follow activities to their organizational homes. There are finite resources available for high-performance production networking and experimental networking efforts in higher education, and they need to be coordinated to gain maximum benefit to campus, regional and national efforts. The final scenario should demonstrate financial advantage to members of both organizations.

- Productively addressing the interactions between NLR and Internet2 necessarily involves addressing the interactions between them (or their combination or progeny) and the other networking providers upon which higher education depends. These include RONS, campus IT organizations, and other research organizations.
- The research community speaks with many voices into many ears. This is unlikely to change even if NLR, Internet2, and their partners manage to become utterly uncomplicated and transparent service providers. We recognize that our efforts to support the research community will require continuing focused effort no matter how we are organized.
- Time presses. Our users and funders are frustrated. Our administrative and oversight structures are stretched to the limit. Our grace period is expiring. We need to identify the best way to move forward, knowing only what we know now, and then move forward. Since time pressures do not allow for full analysis of all possible paths, whichever scenario is selected should include particular attention to governance so as to create transparency for the community in how remaining organizational details will be resolved.

Recommendation

Our discussions helped us agree on the issues driving NLR's and Internet2's future. They also helped put some important canards to rest – for example, that NLR exists only to compete with and destroy Internet2, or that Internet2's membership in NLR is a spoiling action. Our discussions made clear that Internet2 and NLR are full and inseparable partners together providing high-performance production networking and experimental networking for the diverse needs of higher education and research, and supporting various ancillary activities.

That the two organizations are partners does not help distinguish among the scenarios for the future. The choice instead depends on which scenario maximizes the likelihood we will achieve what we need without spending more than we have. Both of these obviously involve subjective judgment

We believe and recommend that NLR and Internet2 should combine their efforts. ***The goal, we believe, must be a single national entity responsible for the collective high-performance production networking and experimental networking needs of higher education and the larger research community.*** This entity must then work with RONS and recursively with their members and customers to ensure smooth interactions and the simplest possible interactions with network users and researchers. It also must work with networking sponsors such as corporate partners and federal agencies to strike the right balance between distinct financial and organizational requirements and optimally integrated hardware, transport, and service mechanisms.

In the next few pages, we expand upon this recommendation in three ways. First, we summarize the reasons we believe the *status quo* is unsustainable, making change necessary. Second, we outline some principles that should guide convergence between NLR and Internet2. Some of these represent goals not yet attained, and others represent current achievements that must not be sacrificed. Third, we present a potential framework for a merged organization which we believe can move the two organizations into one that is consistent with the principles.

Why Merge?

We recommend merger since this scenario, in our view, produces the greatest progress toward our collective goals with the greatest speed and efficiency. But it is important to start by rehearsing the insufficiencies of the *status quo*.

- As Group A documented, the current combination of divergence and competition between Internet2 and NLR seems likely to impede technological opportunities for collaboration by having the two organizations unnecessarily duplicate services.
- Neither Internet2 nor NLR has enough resources of its own to achieve its current, near-term, or long-term goals. Moreover, the universities and RONS that directly or indirectly provide funding for NLR and Internet2 are beginning to ask why two separate funding mechanisms make sense, and to seek escape from one or the other. Other funding agencies are equally confused, and thus reluctant to contribute additional funds to the enterprise.
- Our primary constituencies, the research and education communities within our campuses and affiliates, have become immensely confused by the increasingly parallel and redundant network offerings from NLR and Internet2.
- The widespread perception that NLR and Internet2 squabble rather than collaborate is damaging each organization's credibility, and increasing the likelihood that other actors will try to enter the national research and education high-performance networking space.

Any change in the relationship between Internet2 and NLR obviously should mitigate these insufficiencies. In considering how a merger might be achieved, therefore, it seemed to us important that the plan

- reduce inter-organizational squabbling,
- promote efficient and effective acquisition and use of resources by simplifying relationships with direct and indirect participants in the enterprise,
- discourage unnecessary duplication of services and competition, and
- clarify and simplify how we communicate with users, arrange services for them, and deal with problems.

In addition to mitigating insufficiencies, though, a merger should move the collective enterprise forward. It should not make things worse (although clearly it is reasonable to incur some costs – be they organizational or financial – if the resulting benefits justify them). And it should in important ways make things better. We turn next to a discussion of principles and goals for a merged organization, and then to a specific proposal we believe fulfills those.

Principles

Any organizational change, but especially a merger, must have goals against which its success can be measured and toward which its progress can be managed. In discussing our recommendation that NLR and Internet2 merge, we developed a long list of goals for the merged organization beyond the expected goals of quality service, organizational efficiency, and fiscal responsibility. We can summarize these as seven general principles:

- The merger must combine NLR and Internet2 equitably into one entity whose precursors rapidly become invisible and irrelevant.
- The merger must carry forward all of Internet2's and NLR's current activities and their plans for future evolution, shrinking or combining them only when their overlap produces no important benefit. At the same time work should proceed on realizing economies of scale and organization so that funds can be focused on the highest priorities of the organization.
- The merger must maintain the complex web of current NLR and Internet2 commitments to future cutting-edge capabilities and services, while simplifying it wherever possible.
- The merger must produce widely appreciated benefits beyond those expected of the *status quo*.
- The merger must improve upon the financial *status quo* for both NLR and Internet2, both by streamlining management and by eliminating unnecessary duplication and redundancy.
- The merger must engage and accommodate other important actors in high-performance production networking and experimental networking within the research and education community.
- The merged organization's governance must be at once simple, transparent, efficient, inclusive, flexible, and nimble, and be driven primarily by its Board and participants rather than by its management.

Quite possibly there are several specific approaches that satisfy these principles. We thought it important to explore at least one of these in order to satisfy ourselves that what we recommend is indeed feasible.

Partly to ensure feasibility, we charged the two Group B members who best understood the NLR and Internet2 organizations to collaborate (entirely in their roles as Group B members) on a specific merger plan. Group B then discussed this plan in detail, amending it in myriad ways. We present the *pro forma* result as one way, and perhaps the best way, to implement our recommendation that Internet2 and NLR merge.

Of course this proposal has no effect until it is adopted, perhaps after discussion and amendment, by the Internet2 and NLR boards. We hope that these boards will work expeditiously within the bounds of the proposal. We recognize that the result may differ significantly from what we propose. If it does, we hope that the result respects the principles and goals we outlined above.

A *Pro Forma* Proposal

Our discussions suggested that organizational governance – which individuals and/or organizations have what kind of franchise, how those franchises translate into authority,

and how authority is delegated to management – is central to defining how an organization works, and critical to garnering confidence in the result from those whose roles will evolve. In framing a proposal for how a merger between NLR and Internet2 might work, therefore, we concentrated on the governance of the new entity, both at the boundary – that is, at the creation of merged entity, which for convenience only we call the “New National Networking Organization” or “N3O” for short – and as it evolves toward the steady state.

Our belief and intent is that a new organization properly constituted so as to represent NLR’s and Internet2’s current stakeholders, users, and goals is the best mechanism for actually defining myriad services, staffing, pricing, financial, and other details. This is why we focus on governance, membership, and high-level finance.

We propose that NLR and Internet2 create N3O by October 2005, and as quickly as possible transfer all of their resources, responsibilities, and activities to it. N3O will then

- work with RONS and other NRENS to appropriately engage and include them,
- develop a combined business plan,
- develop a new governance structure,
- enable the current NLR and Internet2 to exist until completion or transfer of existing contractual and other obligations,
- create a consolidated organization realizing the best attributes of NLR and Internet2, and
- obtain financial and operational efficiency through combined planning and operation.

N3O will become responsible for all activities now carried out by NLR and Internet2. It will acquire the capabilities identified in Group A’s report, working closely with and including the RONS and GigaPoPs.

Governance

We propose that N3O be governed by a single Board created by the NLR and Internet2 Boards. Although we explored many schemes that resulted in small Boards, we found all of them lacking, at least at the initial boundary. The resulting large Board will do much of its work through an Executive Committee and five standing committees. In addition, the Board will appoint four Councils based on current NLR and Internet2 Councils.

Board

We recommend that the N3O Board initially comprise 40 individuals, as follows:

- 14 members designated by the current NLR Board. We expect that until the end of the current NLR funding commitments, in 2009, these individuals will be selected by the same criteria as current voting members of the NLR Board, except the two current members designated by Cisco (which are included in the researcher category below).
- 9 members designated by the current Internet2 Board. We expect these individuals to be the current university presidents on the Internet2 Board, plus the appointed members. As these members’ terms expire, at least 7 of the positions must be filled by the presidents of universities associated with N3O.
- 5 members designated by the Internet2 Board from among the members of the current Internet2 Network Planning and Policy Advisory Council.

- 6 researchers who actually or potentially use N3O services, with two of these to be named initially by Cisco Systems (presumably its two current network-researcher designees on the NLR Board) and the remainder to be named by the other members of the N3O Board once the Board is constituted.
- 4 Chairs of the Councils described below (Applications Strategy, Industry Strategy, Science Research, and Network Research).
- The 2 senior executives of N3O.

Our intent is that most of the initial Board should be constituted so as to give equal influence to two sets of members, one representing the transitional interests of Internet2 and the other representing the transitional interests of NLR. The calculus is messy, given the current overlap between NLR and Internet2, the multiple roles key actors play, and the various ways current practice departs from each organization's formal structure. If our suggested structure does not satisfy our intent, then it should be modified to do so.

We emphasize that balance is the initial boundary condition to ensure that the merger places NLR's and Internet2's legacies on an even basis. Over the first few years of N3O's existence, as NLR and Internet2 cease to exist separately, the N3O Governance Committee will recommend for Board approval redefinitions of categories and qualifications for Board seats so as to ensure balance appropriate to the new organization's mission, stakeholders, and finances. We hope that it will also find ways to reduce the size of the Board, perhaps to fewer than 20 members.

The Governance Committee might, for example, recommend that subsets of the Board select their own (perhaps less numerous) replacements. Alternatively, it might recommend allocation of Board seats on the basis of overall financial contributions to the collective enterprise, on the basis of substantive engagement, or on some other basis. For different reasons, it might recommend limiting the number of Board members from a single institution to one or two. It will recommend terms for Board members, which might vary by category of membership. The point is that the initial Board composition may not be right for the long run, and that the Governance Committee will recommend a process for its evolution.

We note that of the initial 40 members,

- 18 carry forward from NLR (the 14 designated by the NLR Board, plus 2 of the researchers, 1 of the Council chairs, and 1 senior executive),
- 18 carry forward from Internet2 (the 9 designed by the Internet2 Board, plus the 5 NPPAC members, the other 3 Council chairs, and 1 senior executive), and
- the remaining 4 researchers are to be designated by the new Board.

At the Board's discretion, there may be a few formally designated observers who attend meetings and participate in discussions, for example representing Class C members of NLR.

The Board will have two co-Chairs. At the outset, one will be the current chair of the Internet2 Board, and the other will be the current chair of the NLR Board. As the co-Chairs' terms end, the Board will elect their replacements from among its members, with the proviso that one co-Chair must be a university president and, until the end of the current NLR funding cycle in 2009, one must be the representative of an entity that was an NLR Class A member. The Board will meet quarterly, and at least one meeting per year must be face-to face.

New members of the Board, its Committees, and Councils will be elected by the Board based on nominations from the Governance and Nominations Committee.

Committees and Councils

Since this is a large Board, it cannot reasonably be expected to oversee N3O operations, finances, and activities. For this purpose there will be several Board committees (which may, if appropriate, include non-Board members) and Board-appointed Councils.

Executive Committee

The Executive Committee will meet monthly, and will take principal responsibility for routine Board matters and oversight of N3O management. In the steady state, we recommend that the membership of the Executive Committee be 15:

- The Board's co-Chairs,
- The Chairs of the 5 standing Board committees (Strategy, Operations, Finance, Audit, and Governance),
- 2 at-large members elected by the Board,
- 2 two senior executives of N3O, and
- The Chairs of the 4 Councils, *ex officio*s without voting rights.

Pending appointment of the Board committees, or for a longer period if this seems appropriate, three Board members named by the "NLR Board" subset of the Board, three named by the "Internet2 Board" or "NPPAC" subsets, and one other selected jointly by those six will serve on the Executive Committee in lieu of the 5 Chair and 2 at-large seats on the Executive Committee.

Strategy, Capabilities, & Policy Committee

This committee will guide and advise the board and executive management on N3O's strategy, the capabilities required by the N3O community, and the policies required to accomplish the strategy, deliver the capabilities and advance the interests of the N3O community. It will comprise 11 board members, plus the two senior executives of N3O.

Operations Committee

This committee will guide and advise the board and N3O executive management on the operational processes required to effectively and efficiently deliver N3O's capabilities and services to members and customers. It will comprise 7 board members plus the two senior executives of N3O.

Finance Committee

This committee will guide and advise policies and practices affecting the overall finances of N3O, including cost recovery (pricing) of all capabilities and services. Until 2008, it will comprise 3 Board members from the "NLR board" group, 3 from the "NPPAC" group, one of the Board's co-Chairs, and one of N3O's senior executives. After 2008, it will comprise those last two plus 6 Board members.

Audit Committee

This committee will have the usual and statutory responsibilities of an audit committee. It will comprise 5 Board members, including a chair who meets the legal qualifications for audit committee chairmanship, plus any additional members that audit regulations might require.

Governance & Nominations Committee

Through recruitment and nomination of qualified individuals to serve on the board drawn mainly from the presidents and institutional representatives of the N30 membership, this committee will maintain a strong Board focused on achieving N30's objectives. Within the board, it will distribute the board's workload equitably and assign individuals to responsibilities matching their expertise and interest. In the beginning, it will work to insure that individuals chosen for board committees understand the background of NLR and Internet2 commitments and the need to honor them. As the consolidation of NLR and Internet2 progresses, this committee will propose appropriate modifications to N30's governance structure to meet the evolving needs of the organization and its objectives and resources. In particular, the committee will seek opportunities to reduce the overall size and complexity of the board structure. It will comprise 11 board members chosen for diversity of connections with the N30 community, and will be chaired by a Board member who is a university president.

Councils

We propose that the Board appoint four Councils: an Applications Strategy Council (ASC), an Industry Strategy Council (ISC), a Science Research Council (SRC), and a Network Research Council (NRC). The first two resemble their Internet2 precursors, the third resembles its NLR precursor, and the fourth consolidates the NLR and Internet2 Network Research Councils to oversee requirements for infrastructure and support for network research. Our Board recommendations above presume that certain Chairs will carry through into the new organization, and thus affect initial balance. We assume that the Board will attend to similar issues as it appoints members to the evolved Councils.

Finances

N30 will meet the commitments that NLR and Internet2 have made to their respective members. The commitments Internet2 and NLR members have made to each organization will be transferred to N30.

Financial issues are of keen interest to NLR and Internet2 stakeholders, and to the community at large. Moreover, one of the core principles articulated earlier is that the merger should demonstrate financial advantages to the members of both organizations. While a subcommittee of Group B engaged in preliminary discussion about possible financial models for N30 in the Integration scenario, antitrust regulations preclude further direct discussion of finances between the separate non-profit organizations until we have formal action from the respective Boards.

The N30 Governance and Finance committees will recommend for Board approval by June 2006 a long-term financial plan that

- takes advantage of the best features of the Internet2 and NLR financial strategies,
- recognizes the need for strong regional organizations, and
- recognizes and accounts for current commitments.

Pending development and approval of this plan, and if possible pending approval of a merger plan, we recommend that to work around the antitrust issue NLR and Internet2 commission a neutral, disinterested third party to analyze the structure and levels of each organization's current and projected financial resources and obligations, and prepare a *pro forma* analysis that compares the two organizations' current resources and obligations currently and as they might add up following a merger.

Membership

Closely tied to finances is the membership scheme for N30. As we noted under *Issues* above, NLR and Internet2 have very different membership models (\$27,000 annually plus contracted network fees for Internet2, \$5-million over five years plus dedicated wave or service costs for NLR). A critical aspect of establishing N30 will be reconciling the membership models while ensuring continuity across the range of services committed by the existing organizations.

We recommend that for the first year of N30's existence current Internet2 and NLR members pay the new organization on the same basis that they were paying Internet2 and/or NLR, either in the form of dues or in the form of payments under membership agreements. Note that this involves only dues and membership agreements, not payments for services received. Membership fees after the first year will be set by the N30 Board based on recommendations from its Finance Committee. We expect that changes from current member dues and payments under agreements will be gradual and modest until the end of the initial NLR funding period, in 2009.

Management

We recommend that Doug Van Houweling and Tom West be the senior executives of N30 at its creation, serving at the pleasure of the Board with a formal review and possible reappointment no later than December 31, 2007. We expect that these two men's responsibilities and duties will overlap substantially.

- Van Houweling will serve generally as the chief executive of N30, with a title such as Chief Executive Officer.
- West will provide leadership for the progress of activities related to networking and research, with a title such as Chief Operating Officer.

We mean to convey the responsibilities of these two senior executives, not to specify precise titles at this point. We recognize that titles have substantive, organizational, and symbolic importance that we cannot do justice here. This is a delicate and difficult issue that may well become a matter for extensive negotiation among the senior executives and the Board.

If Van Houweling and West are unwilling to serve the merged organization, then the Board should promptly constitute a search committee to identify and recommend other candidates for N30 leadership.

Next Steps

We believe the above proposal is consistent with the principles and goals of a merger, and is the best proposal we have been able to develop. But we emphasize that it is a *pro forma* proposal. It must be discussed, amended, and accepted by the NLR and Internet2 Boards before it (or a replacement) takes effect.

Yet time presses, as we remarked above. Unnecessary delay is tantamount to endorsing the *status quo*, which we believe cannot successfully fulfill our community's need for high-performance production networking and experimental networking in support of research and other goals. Progress toward future structures therefore must be steady and as rapid as possible. To this end, we propose the following milestones:

- During the early summer of 2005 we hope that the Internet2 and NLR Boards will discuss our recommendations separately and jointly, amend them as they see fit, and agree on an implementation plan.
- No later than October 2005, we hope that N3O will exist, and merger activities will be well underway.
- By December 31, 2006, we hope that there will be only one national collective networking organization carrying out the activities now part of NLR and Internet2. We recognize that for legal and contractual reasons Internet2 and/or NLR may continue to exist technically, but neither should continue as an operating entity beyond the end of 2006, and ideally beyond six months after N3O comes into existence.

Current operations and commitments must not be neglected pending a merger. For example, where there currently are critical vacancies within the Internet2 or NLR staff, it is important that these be filled even as the merger progresses. Similarly, the merger must be framed and executed to honor commitments to members and vice versa.

We believe that this report and recommendations complete Group B's work. We are eager to see it implemented, and stand ready to assist this process however we can.

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Version history

A: original, 6/21/2005

B: gj corrected typos, 6/23/2005

C: gj corrected typo, 6/27/2005