Background and Recommendations on Indefeasible Rights of Use

Executive Summary

An Indefeasible Right to Use (IRU) involves the contractual grant of usage rights in a telecommunications facility. This contractual tool may be used two ways; to sell assets, or to purchase assets. After carefully examining the advantages, disadvantages, challenges, and implications of offering IRUs to sell assets, it was concluded that UC2B should offer managed transport as its primary focus to generate recurring revenue, but maintain IRU contracts for warranted applications that are best served through lasting solutions (i.e. 20-years).

UC2B should sell access and services at sufficient markup above incremental cost to ensure that UC2B can always have revenues supporting continued growth. UC2B should then re-evaluate the product and pricing structures through an annual audit to validate the effectiveness of the then-current revenue model. Services in the meantime must operate under pricing principles based on reasonable, safe estimates. UC2B should be cautious when pricing contracts greater than 5 years and take into account the potential "risks" those contracts could impose on UC2B.

Inversely, the IRU could be a great tool for the integration of community assets offered by several UC2B investors. For example, if UC2B were to purchase the telecommunications assets of the two cities, the county, and Unit 116; an IRU agreement could be used to transfer the operational network facilities currently held by UC2B partners to UC2B, while allowing for the two cities, County, and Unit 116 continued, dedicated and long term use; relieving the partners of ownership's responsibilities, but allowing them the operational benefits they currently enjoy.

It is highly recommended that IRU contracts have associated but separate contracts for defining maintenance responsibilities, access rules, and itemized annual fees that would apply. Each situation is different, so these requirements must be defined, and mirror the objectives of the IRU.

UC2B should proceed with identifying legal counsel for drafting purchase agreements for infrastructure assets held by the City of Champaign, City of Urbana, Urbana School District, and Champaign County. These assets should be purchased by UC2B with the understanding that IRUs will be issued to allow these entities the ability to retain existing network infrastructure as is functionally intact. This same legal counsel should also create dark fiber and IRUs for the original nine investors, plus Champaign County. These IRUS should be structured where all assets are transferred based on 20-year terms, including transfer of ownership (Capital Assets). UC2B should become the managing owner for the infrastructure and will manage documentation, fiber splicing and maintenance repairs.

Beyond the questions and objectives of IRUs is the treatment of network expansion in the form of customer entrances. This will involve new construction and as such require Outside Plant (OSP) engineering and design processes to integrate new construction into the UC2B infrastructure management systems. These mini projects must be designed to UC2B standards as most will become UC2B assets. Questions remain on how lateral extensions and entrances will be financed, who will maintain them and who will manage service delivery. Suggestions for managing these complex issues will be discussed in depth in a later document.

Committee Members:

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IRU background

There are three types of telecommunications agreements:

a) A standard transport services agreement (contract) provides bandwidth with month to month or annual payment terms. With this agreement, the service provider includes electronics and enforces a specific usage cap. This is the most common type of agreement.

b) A capacity IRU is a simple lease for a fixed amount of bandwidth, usually over a fixed term equivalent to the life of the electronics providing this service (usually 5 to 10 years). Electronics are usually furnished by the Grantor. Payments are normally made monthly. The terms of this type of agreement generally do not meet the criteria of a capital lease.

c) A Capital IRU qualifies as a capital purchase of dark fiber or conduit for a specific period of time, usually the useful life of the asset. All the rights of ownership are implied, including exclusive use for any purpose with access at any given location the Grantee has fiber termination points.

The differences between the three types of agreements can be significant for both the Grantor and the Grantee. Capital IRUs imply rights of ownership which allow the grantee to class the fiber as an "asset", but generally require significant up-front investment. Capacity agreements provide a way for an organization to acquire significant capacity and point to point connectivity, with a relatively long term, but no impact on their balance sheet (payments are accounted for as expenses). Transport agreements provide a simple term contract for the Grantee to sign. Each type carries specific tax and operational benefits that both the Grantor and Grantee will position for.

Capital IRUs

Capital IRUs developed as a way for multiple telecommunications companies to share the up-front cost of satellites, undersea cables, and long-distance telecommunications lines. In IRU parlance, the network owner is the Grantor and the IRU recipient is the Grantee. Capital IRUs normally:

- Identify the assets; generally a small physical part of a network, like a fiber strand between two locations.
- Use language that conveys property rights including asset transfer.
- Include the option to purchase or extend the agreement at the end of the term.
- Require upfront payment.
- Are designed to survive bankruptcy, buy-outs and mergers of the Grantor and/or the Grantee.

Maintenance should be defined through a separate agreement from the actual IRU agreement and may include routine, preventive, and reactive support, or other items as defined in the agreement. More in-depth repairs (fixing cable cuts) may or may not be included in the maintenance fees. Major path changes caused by ROW construction (i.e. moving the conduit and/or cable as may be required) may require Grantees to share costs, based on a prorated cost as a percentage of the Grantor's total asset.

Who wants IRUs

With the exception of the original UC2B investors (as shown below), IRUs have limited audience. Most are established service providers that are migrating from leased facilities provided by local carriers, for

example ISPs, CLECs, large agencies or regional corporations migrating to a facilities-based network in order to have more control over their service applications. In many cases, this control allows for improved management of the services and creates a firmer hold on managing the expectations of their customers regarding the service level and deliverable bandwidth they consume. Based on these assumptions, here are several examples:

- Access service providers such as AT&T and Comcast have their own infrastructures, but there may be situations in the future where they request facilities they can fully control. Both companies are National Carriers located in Champaign/Urbana, but have not joined with the UC2B discussions.
- Regional carriers are typically long distant service organizations that sell large amounts of bandwidth to select customer sites. Prime examples are Paetec, Sprint, Level3, KDL (Kentucky Data Link, recently purchased by Windstream), and Consolidated Communications. These carriers have access to dedicated cross country fiber that terminates or passes through Champaign/Urbana or UIUC. These organizations may have an interest in an IRU to reach a specific customer site, or POP (Point of Presence) where their services would be distributed locally via another provider such as AT&T or Paetec.
- Large, multi-facility organizations like Carle, Christie, and Busey may see benefit in IRUs to connect their facilities, to give them more control over service level and provide more bandwidth for next-generation applications.

IRU Letters of Intent and other committments

The following organizations signed letters of intent to purchase Capital IRUs with the following terms:

Entity	Strand miles	IRU Price	Laterals & Entrances	Price for Entrances	Maintenance Fee ($/yr)
Unit 4 Schools	314.86	$232,556.51	20	$ 390,000	$ 31,055.65
CU Mass Transit District	298.75	$226,602.53	12	$ 112,500	$ 24,910.25
Champaign Telephone Co.	496.97	$377,697.53	7	$ 210,000	$ 41,969.75
Lincoln Trail Library			1	$ 30,000	$ 600.00
U-C Sanitary District			9	$ 120,000	$ 2,400.00

The following organizations did not sign letters of intent to purchase IRUs specifically, but they committed funds to UC2B based on the value of services they would receive, with the assumption that such contribution would be sufficient to provide for their needs as noted below each:

- The City of Champaign $ 498,070
  Should provide redundant connectivity to all major Champaign facilities (some with full physical path redundancy) including METCAD, and connectivity to the UC2B infrastructure for Internet access (from UC2B or another service provider) and to peer with the ICN. Current estimates are that this connectivity would require access to rack space at reasonable rates in each UIUC Node, 359.53 strand miles of fiber IRUs (all Champaign rings plus one ring passing METCAD), and building entrances and laterals to any currently-unconnected Anchor sites.
- The City of Urbana and Champaign County $ 345,675
  Should provide for continued use of existing fiber infrastructure, new connectivity to facilities not on the current fiber network, "back loops" to add ring protection to the existing network, and

redundant connectivity to the ICN, METCAD, and the County GIS Consortium. Current estimates are that this connectivity would require 182.72 strand miles of fiber IRUs on backbone rings and 261.84 strand miles of fiber IRUs on interior cables, in addition to building entrances and laterals to any currently-unconnected Anchor sites.

- The University of Illinois $ 510,971
  Should connect existing remote sites to the UIUC network, and provide redundant connectivity to METCAD and the County GIS Consortium. Current estimates are that this connectivity would require 496.97 strand miles of fiber IRU.
- District 116 Schools (In-Kind) $ 298,075
  Should provide for continued use of existing fiber infrastructure, new connectivity to 1-2 facilities not currently on the network, "back loops" to add ring protection to the existing network, and redundant connectivity to the ICN. Current estimates are that this connectivity would require 118.92 strand miles of fiber IRUs on interior cables, 1-2 building entrances, and 1-2 new laterals.

The County of Champaign did sign a letter of support for UC2B, but did not sign a letter of intent. Champaign County is a part owner of the City of Urbana/Unit 116 School District network, so IRUs to support their continued use of their infrastructure have been included with the City of Urbana's IRUs above.

IRU sale concerns and responses

There are two distinct views regarding IRUs:

- The first is that IRUs provide a fast track to create dedicated broadband connectivity by eliminating major roadblocks with construction and permitting.
  An example is providing Comcast an IRU for an "overbuild" of a route for service expansion to improve delivery speeds and expand a service area.
- The second view is that IRUs create direct competition for UC2B.
  The above example could create competition if UC2B were to provide a triple-play bundle.

As an illustrative example, in the late 1980's and throughout the 1990's independent service providers used IRUs to target high-value customers of the Regional Bell Operating Companies (RBOC). This gave those independent providers quick access to market share and bolstered competition, primarily in the Long-Distance Voice market. The telecom term for this process was "by-pass," because it bypassed the normal Franchise process. By-pass grew, with the FCC's approval and the passage of the "Telecom Act of 1996", and the result is today's market where Long Distance service is no longer a strong profit center and many business and residential plans provide free LD. The clear winner here is the consumer; the clear losers are those companies that invested millions in infrastructure, betting on a pot of "LD" gold.

The moral of this story is that situations change, products change and customer requirements change. What looks like a great idea today may prove to be tomorrow's unintentional challenge. To the extent that those changes benefit consumers without hurting UC2B's long-term interests, they are a win. But if they threaten UC2B's long-term viability, any consumer benefits need to be weighed against that cost.

Some questions arose regarding IRUs and their impact on UC2B, which we have answered below:

- **Will the sale of IRUs create a shortfall of fiber strands for growing UC2B services?**

  This Committee believes it will not, based on the following. First, the UC2B Design Review released by Shive-Hattery on February 7, 2011 indicated a 288 count fiber is sufficient for the

next ten years. Second, at the request of the UC2B Policy Committee, the original design was modified to increase the size of manholes on the fiber rings to provide physical space to support oversized splice cases and cable storage. If capacity were to become a problem, this will allow fiber expansion on the rings without additional boring.

- **How would an IRU sale impact UC2B revenue?**

  Capital IRUs are front loaded, thus providing inflated cash flow the year of the sale. This can be helpful when trying to finance expansion of infrastructure, or challenging in that it would require fiscal discipline to support ongoing operations.

  Maintenance agreements go hand in hand with IRUs and provide UC2B with annual revenue which—when priced appropriately—should support day to day maintenance on the IRU Grantee's portion of a fiber route.

  Conversely, in most cases IRUs bolster competition for UC2B's transport services. In an extreme case where such competition dominated the market, UC2B might no longer have sufficient demand for transport services to support traditional transport services.

  Despite the risks and in light of benefits Capital IRUs can provide for expansion, we believe that the market for Capital IRUs is small enough that such risks and benefits are manageable. UC2B should attempt to maximize its revenue, short and long term, by offering traditional transport when it makes sense, but IRUs should be an option when it does not.

- **Are legal fees to create IRUs a concern?**

  The legal fees to prepare the IRUs associated with matching funds are covered within the grant. Any new IRU legal fees would not be covered by the grant and would need to come out of operating income or from another source (e.g. Grantee pays all legal preparation fees).

  IRU legal fees will always be expensive as there are limited attorneys having this experience, and while there are many similarities from agreement to agreement each IRU must be tailored to the needs and wants of the Grantor and Grantee, which extends billable hours. A new IRU agreement must be prepared for each asset sale.

  Conversely, for the most common customer term contract, UC2B will pay to have one contract prepared that will fit the requirement for many FTTP sales, possibly in the thousands.

- **Is UC2B allowed to sell IRUs on fiber strands?**

  For UC2B to sell an IRU, NTIA ownership must be recognized for the projected life of the asset. NTIA is expecting grant awardees to "self certify" that they are following the rules and terms of the grant. NTIA has an internal document that addresses potential issues with IRUs, but at this time this document is for internal use only, not for use by grant recipients. NTIA has implied that grant recipients should not lease more than 50% of their fiber strands. UC2B's design plan currently is far below this threshold.

The IRU is a necessary tool, but one that should be used with caution: IRUs were critical to allowing UC2B to generate the 20% matching funds required to win its initial grant, and they may allow UC2B to generate short-term revenue for growth, but the long-term affect can create unintentional challenges. **UC2B's first priority should be to create a financially secure and enduring transport revenue model that provides predictable revenue to support and expand network operations.** Our recommendation is for UC2B to reserve the sale of IRUs to situations where (a) traditional transport services are not appropriate, and (b) the sale can be implemented with limited future revenue impact.

IRU and other services recommendation

The financial commitments of the founding investors are the reason that UC2B has come this far. IRUs are a necessary component of creating capital for this start up. The values assigned to these initial IRUs should be considered foundation pricing and if future IRUs are contemplated, the pricing for future IRUs should be at rates that are competitive while supporting the long term viability of UC2B.

Recommendation #1:

UC2B's primary objective should be to offer managed transport services (Active Ethernet) with 5-year and shorter terms providing tiered services that create monthly-recurring revenue. Service delivery should focus on capacity based product selections. This would include: per-megabit transport or per-wavelength transport.

Recommendation #2:

UC2B should sell access and services at sufficient markup above incremental cost to ensure that UC2B can always have revenues supporting continued growth. UC2B should then re-evaluate the product and pricing structures through an annual audit to validate the effectiveness of the then-current revenue model. Services in the meantime must operate under pricing principles based on reasonable, safe estimates. UC2B should be cautious when pricing contracts greater than 5 years and take into account the potential "risks" those contracts could impose on UC2B.

Recommendation #3:

UC2B should proceed with identifying legal counsel for drafting purchase agreements for infrastructure assets held by the City of Champaign, City of Urbana, Urbana School District, and Champaign County. These assets should be purchased by UC2B with the understanding that IRUs will be issued to allow these entities the ability to retain existing network infrastructure as is functionally intact. This same legal counsel should also create dark fiber and IRUs for the original nine investors, plus Champaign County. These IRUS should be structured where all assets are transferred based on 20-year terms, including transfer of ownership (Capital Assets). UC2B should become the managing owner for the infrastructure and will manage documentation, fiber splicing and maintenance repairs.

Recommendation #4:

This committee recommends that UC2B investors be provided fair share compensation for new attachments to any lateral constructed through private funding. If and when UC2B becomes financially strong, it would be advantageous for UC2B to be the investor in lateral construction, but even in that case, given that rights of way are public, there may be private initiatives that should be encouraged to the extent they can benefit UC2B. The details of these policies will require additional work, to be completed by this subcommittee as time is available.

Further reading

Mike Vrem's IRU Power Point

Pages 250-261 from the initial UC2B application section 5-1

Glossary of Terms

Competitive Local Exchange Carrier (CLEC): competitive local exchange carrier (CLEC), in the United States, is a telecommunications provider company (sometimes called a "carrier") that competes with other, already established carriers (generally the incumbent local exchange carrier (ILEC)).

Construction Standards: The construction standards are the construction guidelines created by members of UC2B (both cities and University) that compiles a common body of construction standards that contractors and designers must follow for the construction and restoration of communications facilities within the project Rights of Way (ROW).

Entrance Facility: In telecommunications, *Entrance facility* refers to the entrance to a building for both public and private network service cables (including antenna transmission lines, where applicable), including the entrance point at the building wall or floor, and continuing to the entrance room or entrance space.

Grantee: One to whom a grant is made, in this case, this applies to use with an IRU agreement granting ownership rights to conduit or fiber optic strands.

Grantor: A legal term conveying, for the party, a grant of title or encumbrance, as it applies to an IRU granting title to conduit or fiber optic strands to or from UC2B.

Indefeasible Rights to Use (IRU): Indefeasible right of use (IRU) is a contractual agreement between the owners (Grantor) of a communications facility, such as conduit or a fiber optic network, and a client (Grantee).

Internet Service Provider (ISP): An ISP is a company that offers its customer's access to the Internet. The ISP connects to its customers using a data transmission technology appropriate for delivering Internet Protocol packets or frames, such as dial-up, DSL, cable modem, wireless or dedicated high-speed interconnects.

Lateral: A telecommunications term defining a conduit path extension, extending from a backbone (ring), and linking to multiple entrance facilities along a street or ROW, providing customers access (i.e. FTTH) connectivity to the UC2B network.

Managed Transport Service: Managed transport service identifies a bundled digital delivery facility (fiber optic) with electronic equipment managed by UC2B, to the site and/or customer. UC2B is accountable for the functionality and performance of the service, as well as delivery of other applications over this facility, which may be provided through multiple Retail Service Providers (RSPs), to this customer or site.

Right of Way (ROW): Right of way is in most cases a strip of land bordering streets or roads that is controlled by: in this case, the Cities, University or State of Illinois Department of Transportation. It is within this strip of property where UC2B will locate underground conduit and access points for the distribution and maintenance of fiber optic facilities that will encompass the UC2B network.