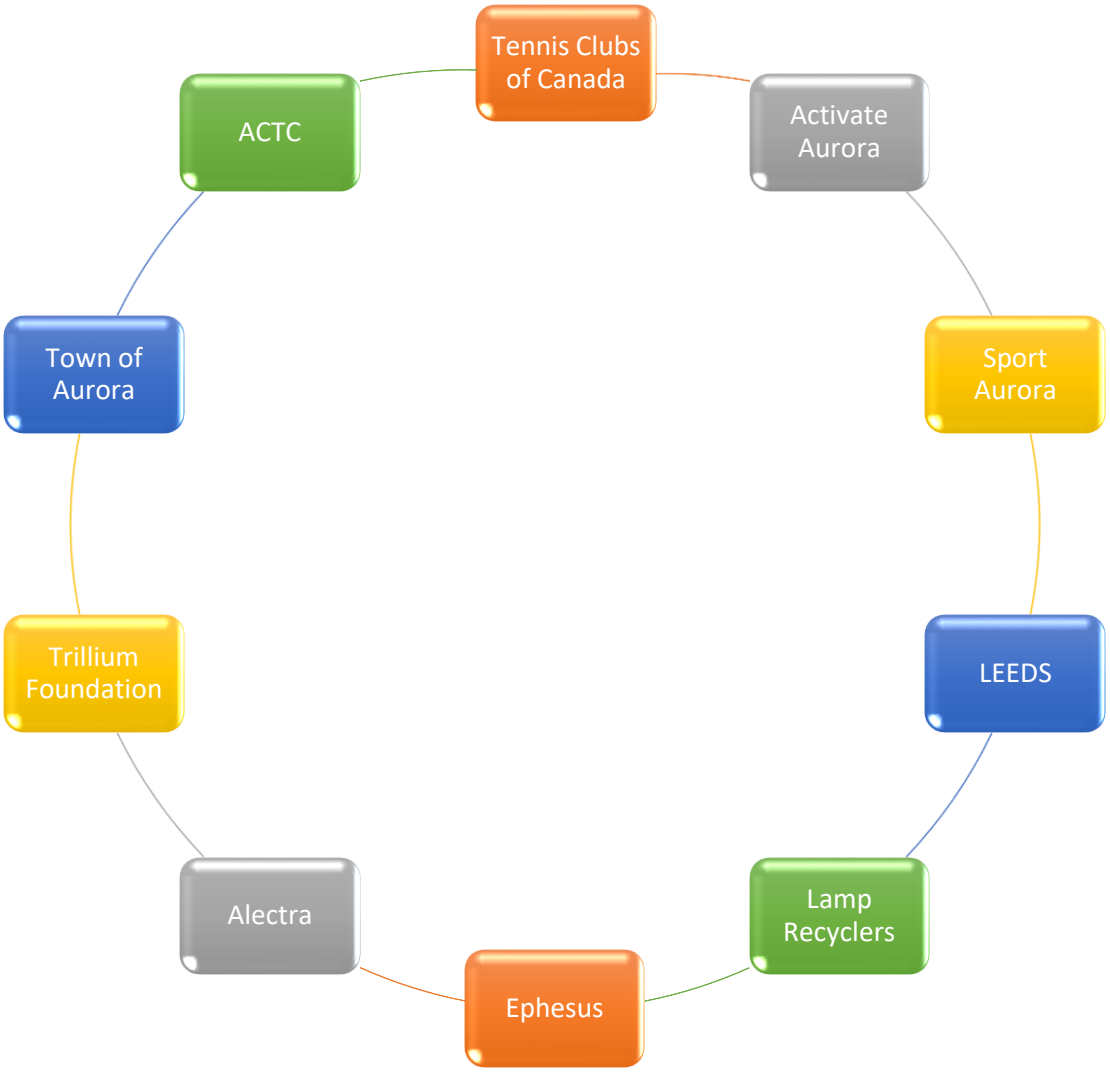
Feasibility Study

Aurora Community Tennis Club

Funded by SEED Innovation Grant

Ontario Trillium Foundation

Draft June 25,2018



Executive Summary

Feasibility Study:

To validate the premise that the acquisition cost of an expensive recreational asset can be funded more easily with multiple, cooperative partners.

Specific Context:

An outdoor summer tennis club purchases expensive, pole mounted LED sports fixtures to raise the illumination levels for senior eyes. After five months usage, (May through September), the LED fixtures are removed and remounted in an indoor, winter tennis bubble for use from October through to the end of April.

In May, the LED fixtures are returned to the outdoor summer club poles to the end of September. This procedure repeats, year after year. The electric power saving (from swapping in LED fixtures into the tennis bubble), is rebated back to the original purchaser, the summer tennis club. The power savings rebates, over the years, will pay for the cost of the LED fixtures.

Funding Sources:

1.) Annual Saving rebate from bubble operator: .....$ 2,000

2.) Club Reserve Fund.....$ 7,000

3.) Alectra Retrofit Rebate .....$ 2,300

4.) Seed Grant allocation.....$ 2,000

5.) CRA Rebate for HST .....$ 9,700

6.) Retaining Senior Members *.....$2,000

*Longtime club members, quit their membership because their "Senior Eyes" find the existing illumination inadequate. To play in the cool evening hours, with compromised vision becomes too frustrating. Seniors quit and the club loses longtime members and significant loss of membership revenue. For ACTC it is a $2,000 per year loss.

Background

In the 2015 season, the Aurora Community Tennis Club (ACTC) identified a serious issue affecting quality of programing and participation at the ACTC. The Board of Directors learned that many longtime time members stopped playing in the evening, and many more quitting the club due to inadequate lighting levels. Often cited as reasons was the lighting glare and how the shadows on the court affected their ability to track the ball.

In the 2016 season an ACTC Board survey (Board, 2016) revealed that 25 members had stopped playing at night due to difficulties in seeing the ball.

This survey alarmed the Board and propelled it to delve deeper into the problem. Our research revealed that existing illumination levels were insufficient for senior eyes. The existing metal halide lights provide only 15 lumens of illuminations. Newly developed LED fixtures provides 35 lumens of illumination. (Brielmaier, 2017).

Thus, just as accommodations are made for juniors, (smaller racquets, mini courts, fluffy balls), so to seniors require and are deserving accommodation of higher illumination levels.

Consulting Reports (more on Expert Misconceptions) in the Analysis section)

As early as 2006, the ACTC Board of Directors (led by President Brent MacKinnon and Facilities Director Bill Reid) petitioned the Town of Aurora to address the insufficient lighting levels. The Town hired a consulting firm to assess our request for improved lighting. In their 2007 Report, the Consultants recommended that a regular and scheduled maintenance plan complied with the IESO guideline *.

In 2016 we again petitioned the Town to address our lighting concerns.
Our goal was to have a lighting system using LED luminaires retrofitted on our existing poles. Our research into retrofitting technology with LED luminaries supported such a project. However, a second consultant's report stated that an improvement would cost in excess of $100,000. Their view was that new poles and wiring were required. So from a $30,000 LED retrofit project, the budget balloons to $100,000. The Town Recreation Department would not support such a cost. We felt the consultant's suggestion was preposterous, as we received

confirmation from the pole manufacturer that the poles were adequate and did not have to be replaced.

The consultants in their 2016 report (Robert J. Nadalin, 2016), acknowledges the problem of senior eyes…but goes on to some length about seniors not needing to hit fast balls, therefore they have more time to react in low light levels and therefore we should not have to upgrade the lighting. But…….seniors when playing younger players (juniors) have to contend with fast shots that younger players hit. So seniors are disadvantaged in low light evening play venues. In this case the consultant makes an erroneous supposition that seniors just play slow ball with other seniors.

You don't have to scratch too far to conclude this erroneous supposition is based on an Ageism mindset. In other sections of our Feasibility Study we will highlight the importance of identifying commonplace "expert" misconceptions and advocate for responsible and thoughtful consideration for "senior eyes".

Consultants are making recommendations based upon parameters set 30 years ago for metal halide lamps. Technologies have surpassed the old illumination metrics. For instance, an Internet search quickly informed us of: consideration for glare (Jeff Sheuster, 2014) and for colour,(kelvin, and CRI ...colour rendering index) and how it affects visual acuity. LED technology allows municipalities to now specify these qualities. Lumen output and energy reduction are just two metrics for Municipalities seeking lighting quotations.

Excerpt from International Tennis Federation (ITF) Lighting Guidebook – 2013

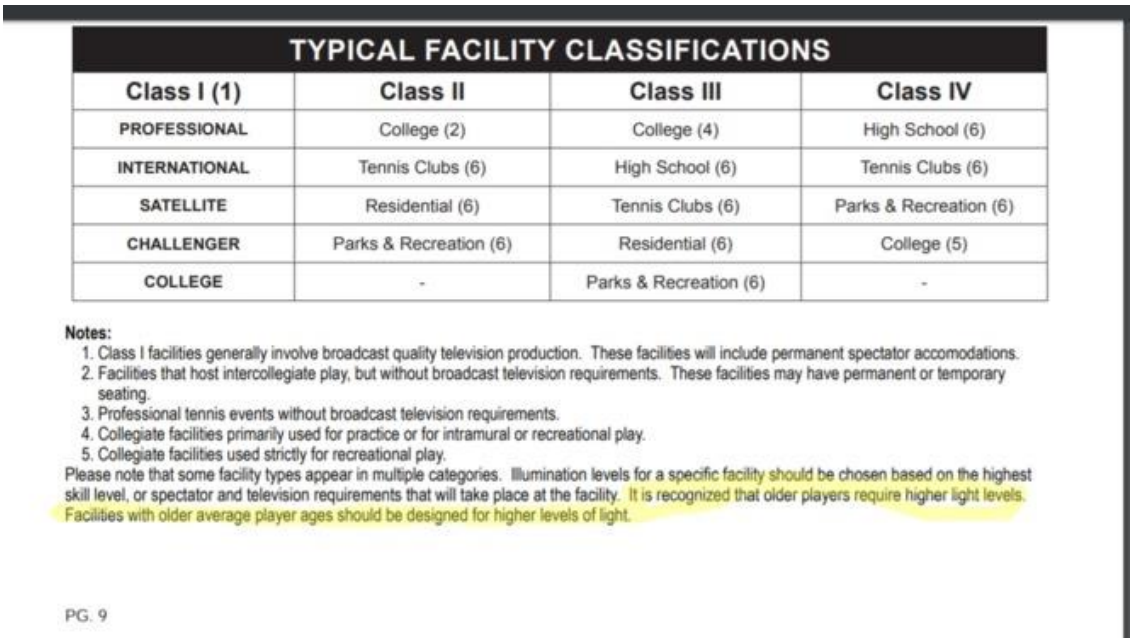
As you can see in the chart below, the ITF did not even mention LED technology for lighting. See references for a link to the full document.

6. Light sources

Many types and lamps available today can be used for the lighting tennis courts. The most appropriate lamps in common usage are described below, including the range of lamp types and wattages and efficacies. Efficacy describes the ratio between the light output (lumens) and power input (watts).

Lamp type	Range of suitable wattages	Efficacy lm/W	Advantages	Disadvantages
Metal halide	400 to 2000	60 - 100	White light with good colour rendering High efficiency Low running costs Relatively long lifetime	High replacement cost Length of time to reach full strength (10-15 minutes)
High-pressure sodium	250 to1000	90-130	Very high efficiency low running cost Long lifetime	Poor colour rendering Length of time to reach full strength (10-15 minutes)
Fluorescent	55-60	60 - 100	Good colour rendering and low Glare High efficiency Suitable for use with time clocks	Inefficient at low temperatures Require deflectors to enable light to diffuse in correct direction Noisy, therefore distracting to players Low lumen package
Tungsten halogen	500-2000	20-25	Good colour rendering Low initial cost Suitable for use with time clocks Relatively small fixtures	Short lifetime Low efficiency High maintenance and operating costs

Excerpt from a Sport Lighting Manufacturer that recognizes that senior eyes require greater illumination levels. See References for link to the document.



TYPICAL FACILITY CLASSIFICATIONS			
Class I (1)	**Class II**	**Class III**	**Class IV**
PROFESSIONAL	College (2)	College (4)	High School (6)
INTERNATIONAL	Tennis Clubs (6)	High School (6)	Tennis Clubs (6)
SATELLITE	Residential (6)	Tennis Clubs (6)	Parks & Recreation (6)
CHALLENGER	Parks & Recreation (6)	Residential (6)	College (5)
COLLEGE	-	Parks & Recreation (6)	-

Notes:

1. Class I facilities generally involve broadcast quality television production. These facilities will include permanent spectator accomodations.
2. Facilities that host intercollegiate play, but without broadcast television requirements. These facilities may have permanent or temporary seating.
3. Professional tennis events without broadcast television requirements.
4. Collegiate facilities primarily used for practice or for intramural or recreational play.
5. Collegiate facilities used strictly for recreational play.

Please note that some facility types appear in multiple categories. Illumination levels for a specific facility should be chosen based on the highest skill level, or spectator and television requirements that will take place at the facility. It is recognized that older players require higher light levels. Facilities with older average player ages should be designed for higher levels of light.

PG. 9

Other metrics that can now be added to the list of options in RFP's to lighting consultants include: instant on and off; wireless remote control, maintenance cost reductions - specifically replacing burnt out metal halide bulbs vs. replacing LED luminaires.

For example: For the town to maintain optimum light illumination levels, each year the Town would have to rent a Skyjack and assign two staffers to service 12 fixtures. At $50 /bulb = $600. Skyjack rental: $800, two staff = 2 x $ 300 = $ 600. In the first year it will cost $2000. In subsequent years, if one bulb needed replacing the cost would be a minimum of $1,450. With an LED lighting system this cost for maintenance will be nothing. So an LED installation will save a Municipality a minimum $1,450 per year.

Developing a Business Case for Purchasing LED Luminaries

The ACTC Board decided that resolving our problem of insufficient lighting levels required the purchase and installation of LED luminaires. In the summer of 2017, the ACTC Board summarized their business case to partners (both ongoing and potential) including: funding organizations, Board Directors, club members, the

local neighbourhood, the Municipality – The Town of Aurora. Their core message stated that:

- The expanding senior cohort requires higher illumination levels for their play spaces (see attachment Old/Existing Lighting Code/Guideline);
- Seniors deserve to be accommodated with higher quality light levels for reasons of safety, inclusion, fairness & accessibility; (as stated in the Ontario Trillium Foundation guides);
- Rising hydro costs are rising and predicted to increase;
- New LED lighting technology provides better quality illumination and less glare at less cost than metal halide lighting;
- Non-profits can apply for government grants to offset cost of LED lighting.

The Board concluded that the benefits of LED lighting system are:

1. Better infrastructure leads to greater participation thus reducing social isolation.
2. Reduction of pernicious environmental impact through reduced energy usage and cost.
3. Programs that are grounded in: safety, inclusion, fairness & accessibility;

Developing a Financial Plan (based on partnering)

*A **partnership** is an arrangement where parties, known as partners, agree to cooperate to advance their mutual interests. The partners in a partnership may be individuals, businesses, interest-based organizations, schools, governments or combinations. Organizations may partner to increase the likelihood of each achieving their mission and to amplify their reach. A partnership may result in issuing and holding equity or may be only governed by a contract. (From Wikipedia)*

How could a small non-profit community club afford to purchase new LED luminaires? Our challenge was to develop a financial plan by looking for partner supporters that shared similar goals to ACTC. A critical insight made by our Facilities Director Bill Reid was that having expensive LED lights sitting fallow during the winter months (ACTC is a summer club only) was a waste of valuable

community resources. Why would we invest over $30,000 dollars and not use them for seven months of the year.

Bill asked “what if a private tennis bubble operator partnered with us so that he can take advantage of our LED luminaires during his winter tennis bubble season.

Bill knew that there were many private tennis bubble operators who still were using high cost, inefficient metal halide lamps in their facilities. From that insight we concluded that a private bubble operator might welcome the opportunity to use our LED luminaires during the winter tennis season and then return our lamps in the spring. Furthermore we believed that the bubble operator would gladly rebate back to ACTC the hydro savings accrued from using our cost saving LED luminaires.

Next on the list of potential partners was local Power Companies that offered rebate programs to companies upgrading their lighting to energy efficient LED luminaires. We clearly recognized how those rebates would further offset our cost for purchasing LED luminaires.

To recap, we now had a multi-sector partnership plan that could spread out (bring down) out the cost of purchasing our LED luminaires.

1. ACTC would find a private sector partner that would agree to give back the energy savings from using our high efficiency LED luminaires;
2. ACTC would apply for retrofit rebate from our local Energy Company (system);
3. ACTC would apply to funding bodies that are supportive of infrastructure improvements to further the community and environment.
4. Finally, ACTC would invest its own membership funds to replace our old metal halide fixtures with energy efficient LED luminaires.

In the summer of 2017, the ACTC Board secured agreements from the private sector bubble operator to rebate back to ACTC the savings accrued from using our LED luminaires. Concomitantly ACTC made application for a retrofit rebate with Save On Energy, our local energy company (Retrofit Program Incentives, 2018). The Board also submitted (still under review) an HST Rebate application to the Canada Revenue Agency. The ACTC, as an incorporated non-profit organization

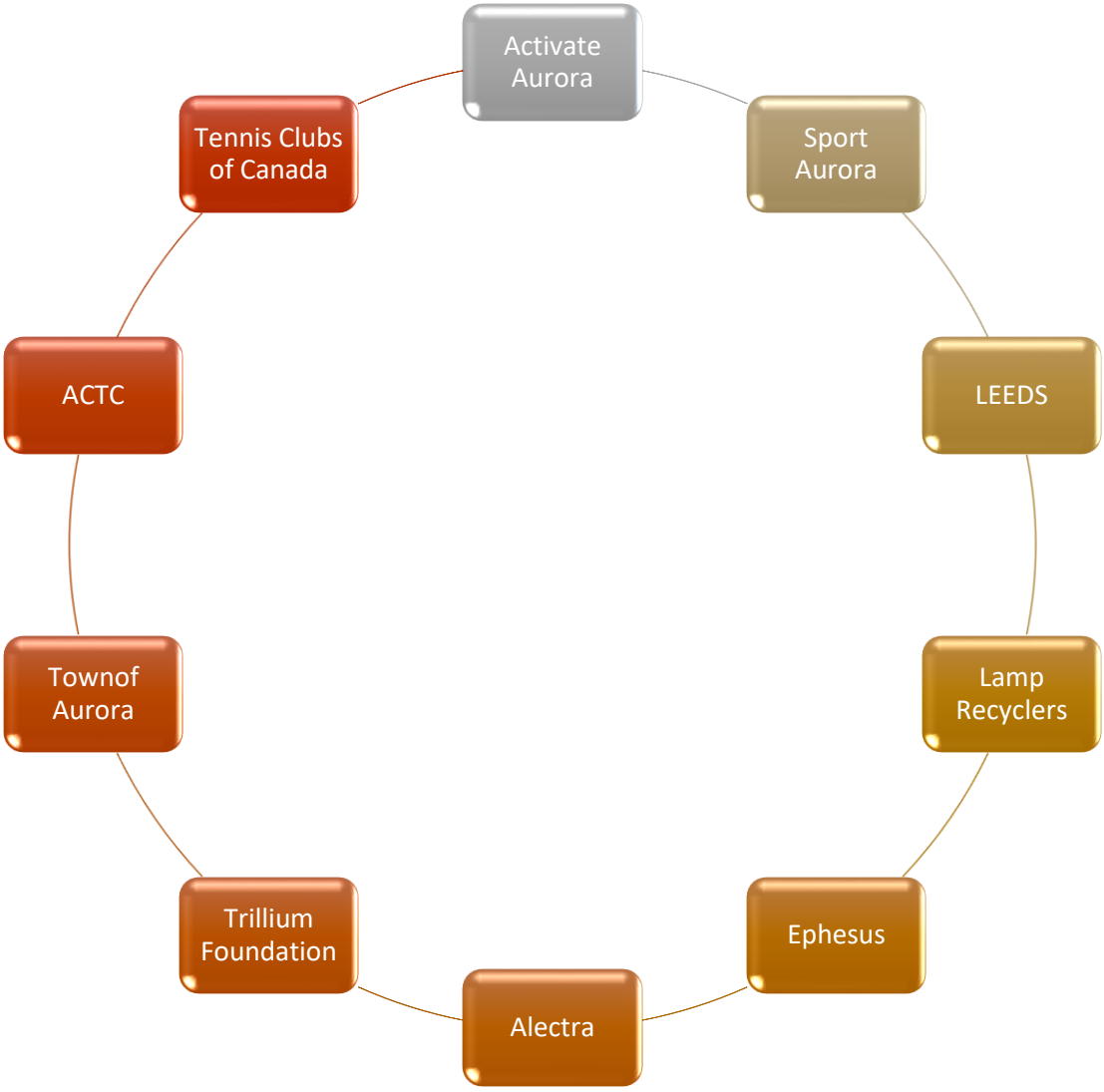
can claim an HST rebate when it receives approved funding from Government sources that total 40% of its yearly budget.

With these successful partnering initiatives, the ACTC Board approved a plan to purchase 8 LED luminaires.

ACTC Partners with the Ontario Trillium Foundation

From the beginning we recognized that our insufficient lighting and accessibility issues were a common problem for community tennis clubs across Ontario. We believed other non-profit community tennis clubs could benefit from what we learned as we developed and still are creating a business case for purchasing our LED luminaires. We believed our experience might help other small non-profit groups purchase their LED luminaires. When we read the OTF SEED grant program we felt that our experience and learning was an innovative approach and worthy of a SEED Grant (SEED Grants, 2018). That view was supported by the OTF SEED grant program.

Lessons Learned from working with our consortium of partners



- **Aurora Community Tennis Club – Board of Directors**
    - Your working group will be most effective with 2 or 3 individuals. Keep your work group small to maximize time and efficiency. This type of project will require a commitment of 1 to 2 years.
- **Tennis Clubs of Canada (our business partner);**
    - Draft and get signed a memorandum of understanding;

- **Activate Aurora;**
    - Affiliate with other community organizations so you can cross publicize and support your activity;
- **Sport Aurora**
    - Affiliate with local umbrella organizations so you can cross brand and publicize and support your project;
- **LEEDS**
    - This is an important reference site that can support your green initiative LED project;
- **Lamp Recyclers;**
    - This service certifies that you have recycled your old luminaires. This is a requirement to qualify for a rebate from your local power company;
- **Ephesus (vendor);**
    - Excellent reference site for LED sport lighting;
- **Alectra;**
    - Provides a variety of retrofit and energy saving grant rebates to qualifying organizations;
- **Ontario Trillium Foundation;**
    - Provides funding to manage all aspects of coordinating the project.
- **Town of Aurora**
    - The Town will receive, install and takes title of the asset transferred from the non-profit tennis club.

Attachments:

Sources of Funding

1. Ontario Trillium Foundation: SEED Program, Capital Grants Program;
2. New Horizons for Seniors Grant Program; (Federal Government);
3. Seniors Secretariat - Ministry of Seniors Affairs (Ontario Government);
4. Membership Fees, Line of Credit;
5. Power Company (Alectra) – Retrofit Rebate Program;
6. Municipal Capital Grant Programs – Green Municipal Fund Program;
7. Public Service Clubs – Lion's Club, Rotary Club etc.;
8. Corporate Donations & Advertising Rights;
9. Canada Revenue Agency – Non Profit GST Rebate Program;
10. Aurora Community Tennis Club Proposal – SEED Innovation Grant.

Reference Tools:

1. On Line Power Calculator - Alectra (check your local power company);
2. Court Lighting – Light Reaction (Tennis Industry Magazine 2017); (attached)
3. Tennis Industry Magazine: The Life and Slow Death of Metal Halides;
4. Tennis Industry Magazine: Hit the Lights (attached)
5. Eaton Company – Energy Tools (Ephesus LED's);
6. Eaton Company - Ephesus Retrofit Manual/Guide;
7. Residential Neighbourhood Survey (attached);
8. Survey of LED/Bubble Players (attached);
9. Old/Existing Lighting Code/Guideline; (see pg. 8 – illumination levels);
10. Aurora Community Tennis Club – Media Release (attached);
11. GST/HST for Non Profit Organizations Guide
12. International Tennis Federation Lighting Guidebook 2013
13. Light Manufacturer (VUE Tennis) corroborates senior eyes require greater illumination

Summary:

Our overriding message is that other small non-profit organizations can go through a similar process that we followed and succeed in purchasing their LED lighting system. We hope our business plan template can serve as a guide for other groups.

Be prepared for many obstacles such as dealing with doubters, indifference, apathy and incompetence. In our case, the glue that helped us through these negative factors is the perseverance and commitment of the working group committee. All our partners to varying degrees are invested in LED technologies for energy cost saving, reducing the earth's carbon footprint and improving the quality of illumination for all. Keeping focused on our shared common goal will help you deal with the complexities of multi-organization partnering.