

DEPARTMENT OF PHYSICS STRATEGIC PLAN, SPRING 2012

Strategic Plan

The Department of Physics conducted its only previous formal self study in the spring of 2007. At that time it produced the table on the following page for its strategic aspirations, goals, projects and performance indicators. In this section we address what actions have been taken to make progress toward these goals and what modifications to this plan are appropriate at this time. While it might appear to be sensible to add another column to the table to do so, that would not provide sufficient space. Therefore these indications of progress and suggestions for future actions are given in the following text that is organized around the aspirations and goals given in that table.

1. Strategic Aspiration 1. *Provide premier academic programs for the various tracks and specializations within the Physics Department that provide experiences which guide students to become accomplished and engaged learners.*

The Department continues to believe that this should remain our top priority.

1.1. Enduring Goal 1-A). *Continuously evaluate and strengthen courses.*

The department underwent a careful analysis of its curriculum and courses and has made many changes over the past five years, with several more under consideration. The web pages of comparable institutions were examined in 2008 and again in 2011 to understand which tracks and courses were offered by those other colleges and universities. The outcome of the recent analysis is given in Section IV above. To summarize, we have compared the courses offered by our department with a substantial number of other colleges and universities with strong physics departments. Our course offerings and requirements are generally on a par with those departments within the core physics areas, but we offer more courses in astronomy and astrophysics than to most such programs and we also offer courses in geosciences that they do not offer. The one core course that a large majority of other institutions requires that we currently do not require is Quantum Mechanics, but we are planning to make that a required course for all majors aside from those in the PHYT track.

Most of the faculty members teaching General Physics classes have incorporated more peer instruction and on-line demonstrations to complement the actual demonstrations we show our students. Nearly all faculty members assign students in those classes homework through the WileyPlus system that gives prompt feedback and reduces cheating. Classes such as Mathematical Physics (PHY 306) and Classical Mechanics (PHY 401) now use more computer illustrations (e.g. Mathematica notebooks) and require more problems to be solved using programming languages. Our successful request for significant additional funding in AY10-11 has allowed us to purchase a substantial amount of new and replacement apparatus for the PHY 201 and 202 labs.

Strategic Aspirations

<p>1. Provide premier academic programs for the various tracks within the Physics Department that provide experiences which guide students to become accomplished and engaged learners.</p>	<p>1-A) Continuously evaluate and strengthen courses.</p>	<ul style="list-style-type: none"> ● Search the web pages of comparable institutions to learn what they offer in the way of tracks and courses. ● Develop or revise courses that provide the best learning experience for our majors. ● Create a Student Advisory Group composed of student representatives from each track.. ● Contact alumni for feedback regarding how their experiences at TCNJ have been applicable to their careers. 	<p>Tabulated results of web search</p> <ul style="list-style-type: none"> ● New or revised curricular materials ● Formation of Group; number of meetings; feedback. ● Compiled and analyzed results
		<ul style="list-style-type: none"> ● External Review (Spring 2007) 	<ul style="list-style-type: none"> ● Reviewers' Report
	<p>1-B) Continuously evaluate and strengthen tracks.</p>	<ul style="list-style-type: none"> ● Develop a new track in astronomy and astrophysics ● Develop a strategy for continuing the Teacher Education Track in the Department ● Seek approval to advertise for new faculty lines which will augment existing and future tracks within the department. 	<ul style="list-style-type: none"> ● Departmental approval of new track ● Outline of the strategy ● Approval of the Dean
	<p>1-C) provide high quality instructional facilities</p> <p>1-D) develop department colloquia and invited talks</p>	<ul style="list-style-type: none"> ● Develop strategies for upgrading instructional facilities ● Invite speakers to include alumni to present departmental colloquia 	<ul style="list-style-type: none"> ● Strategy Document ● Number of talks
<p>2. Provide an academic climate that supports scholarship within the department for both faculty and students.</p>	<p>2-A) Provide high quality experimental and computational labs for both faculty and student research.</p>	<ul style="list-style-type: none"> ● Develop a strategy for upgrading lab equipment. 	<ul style="list-style-type: none"> ● Equipment Purchased
	<p>2-B) Encourage and support faculty and student research and participation at professional meetings and conferences</p>	<ul style="list-style-type: none"> ● Encourage participation in undergraduate research program ● Encourage participation at professional meetings and conferences 	<ul style="list-style-type: none"> ● Number of independent research projects, and research experiences for undergraduates ● Number of meetings and conferences ● Number of publications
	<p>2-C) Encourage and support faculty and student publications</p>	<ul style="list-style-type: none"> ● On-going funding 	<ul style="list-style-type: none"> ● Number of faculty serving on committees
<p>3. Provide service to The College and the community</p>	<p>3A) Departmental representation and participation in college-wide and school-wide committees</p>	<ul style="list-style-type: none"> ● Increase awareness and encourage faculty participation in college-wide and school-wide committees 	<ul style="list-style-type: none"> ● Number of faculty serving on committees
	<p>3B) Provide departmental outreach to local schools and the community</p>	<ul style="list-style-type: none"> ● Give planetarium presentations for recruiting purposes during open houses for prospective students and their parents ● Seek approval to hire a planetarium director and technician ● Give tours of the facilities for recruiting purposes during open houses for prospective students and their parents. 	<ul style="list-style-type: none"> ● Number of shows ● Number of tours
	<p>3C) Establish a cooperative relationship with our alumni</p>	<ul style="list-style-type: none"> ● Invite alumni to colloquia and invited talks 	<ul style="list-style-type: none"> ● Number of alumni

Some courses have been completely revamped and modernized, including Advanced Geology (PHY 220), where there are now emphases on seismology, group work and peer instruction, Introductory Meteorology (PHY 171) and Advanced General Astronomy (PHY 261). Some of the projects developed for PHY 220 are part of a NSF funded curricular improvement grant on which Dr. Benoit is the PI; we expect they will be adopted by other departments around the country. To strengthen our Geoscience specialization we have added a course in advanced atmospheric science, Clouds and Climate (PHY 370), that will be taught for the first time in Spring 2012. To strengthen the new astronomy and astrophysics specialization we are proposing a course in Galactic and Extragalactic Astronomy that will be taught for the first time in Fall 2012 and the Astrophysics course (PHY 466) will be substantially revised when it is next taught in Spring 2013. The Advanced Experimental Physics course (PHY 451) is currently undergoing a major updating, and equipment for three additional experiments is being purchased this year. In addition, we have changed or will change textbooks in three core courses to provide a more rigorous experience for our students. We are considering how to further improve our Electricity and Magnetism courses (PHY 421 and 422) by covering more material than we have done in the past.

A Student Advisory Group with representatives of students was proposed but never actually implemented, as there always has been a good amount of informal interaction between students and the faculty. As one important example, students always go to lunch with candidates applying for jobs in the department and their opinions of the candidates are solicited and considered seriously. However, as of Spring 2012 we have now invited representatives from the Physics Club and Astronomy Club to attend parts of some Department faculty meetings to allow for some more formal discussions of student concerns and suggestions.

Our alumni were surveyed in both 2007 and again in 2011/12. On the whole they are well satisfied with the education they received at TCNJ and are even more satisfied with the education provided by the Physics department. They enjoyed their time here and most of them have used their Physics knowledge and skills in their jobs to a significant degree. Most of those who have gone to graduate school have felt themselves to be adequately prepared, but some regret not having had more mathematics or additional quantum mechanics classes. This input is one of the reasons we are now proposing to teach QM (PHY 431) every year instead of every other year and plan to add MAT 326 as a correlate course. Many alumni particularly seemed to benefit from the lab courses they took and we are reconsidering the change in our curriculum that allows our majors to take fewer upper level lab courses than they did in the past.

The external review mostly supported and occasionally instigated many of the changes that have been described above and others that will be described below. Some suggestions in the external review, such as increasing the amount of laboratory research opportunities for our students have certainly been implemented. The hiring of four replacement and additional faculty members since 2007 have led to the establishment of labs in atmospheric physics, seismology, photonics and fluid dynamics. Other external review suggestions, such as all faculty members commit to writing external grant proposals to support their research, while certainly desirable in principle, are quite impractical given the current funding climate. However, every one of the newly hired faculty members has managed to acquire external support for some of their research programs. Our current (2011-2012) annual external funding is ~\$233k from 5 grants to 4 faculty members from the NSF and NASA.

1.2. Enduring Goal 1-B) *Continuously evaluate and strengthen tracks.*

The department has certainly done this, and the major curricular revision arising from the previous strategic plan has led us to make major changes. First of all, several previous tracks that prescribed strict course lists were replaced by specializations that allow for more flexibility and make it much easier for our students to pursue double majors or study abroad. Our basic physics track that prepares students for graduate school is now slightly less rigorous in terms of requirements, but with appropriate advisement it should remain just as strong. On the other hand, the biomedical physics, computational physics and geosciences specializations, as well as the secondary education physics teaching track, are now more rigorous in that regard.

As proposed in 2007, we have implemented a specialization in astronomy and astrophysics as of Fall 2010. At least 8 of our majors are currently in this specialization. In addition, we have added a 7-year Physics BS/MD track with the University of Medicine and Dentistry of New Jersey that will allow exceptional freshmen committed to a career in medicine to spend 3 years at TCNJ with a guaranteed admission to UMDNJ medical school (beginning Fall 2012); during their first year there they would complete the credits needed for the BS degree. We expect that no more than 1 or 2 students per year would be admitted to this degree program.

The teacher education track in the department has remained strong, with Dr. Magee taking over from Dr. Kolp as the coordinator and primary observer of student teachers. The number of teacher candidates has rising in tandem with the overall enrollment in the major and we expect to graduate 5 students with teaching certificates in physics this year. One concern is whether or not the School of Education will continue to provide a qualified faculty member to teach PHY 390 (science pedagogy) to all juniors in the sciences pursuing teaching careers.

The Department has managed to replace lost faculty members and actually add a couple of positions, thanks to support from the Dean and Provost. Drs. Benoit and Magee joined the department in 2008 to revive the geosciences specialization, Dr. Wiita joined in 2010 to strengthen the astronomy and astrophysics specialization and to serve as chair, and Dr. McGee joined in 2011 to strengthen the core physics program. Our current search for an experimental biophysicist to strengthen the biomedical physics program attracted an excellent pool of candidates; the three finalists will be interviewed within one week of the time this is written. Assuming that we are able to recruit one of them, despite the modest start-up funds we can offer, the Department faculty will be up to 10 tenure-line positions, which would be an historical high and should allow us to appropriately advise and supervise our current large number of majors.

We understand that given the funding constraints that the College currently faces and is likely to face for the foreseeable future, it would not be realistic for the Department of Physics to obtain authorization to recruit additional full-time faculty beyond the 10 we expect to have next year over the next few years. However, two of our current faculty members have been here over 40 years and may well choose to retire before our next program review. Assuming that we do have one or two positions to fill, we now describe our current priorities for them.

One of these senior faculty members works in astronomy and it would be very sensible if he could be replaced by another astronomer or planetary scientist. If the College does follow through on its promise to build a stand alone observatory, then such a putative replacement would seem to be imperative in order to justify the large investment in that construction. A planetary scientist who can use small telescopes in his or her research would be an excellent

interdisciplinary addition to the department as such a person could teach geoscience as well as astronomy courses and thereby strengthen both those tracks. Such a position was considered a high priority in the Department's previous self-study and should remain so.

The other faculty member most likely to retire in a five-year time frame has worked in particle physics and computational physics but has not supervised student research for some time. We would expect more flexibility if this person were to retire and be replaced; while our nominal preference would be for another experimental physicist, we will be constrained by a lack of additional laboratory space once we set up a biophysics lab. This would be particularly the case if we can convert a nominal research lab (P-303) into an instructional lab room for PHY 451. If the envisioned new computational sciences building is completed, we understand that the Mathematics and Statistics department would leave the 2nd floor of the Physics wing of the Science Complex. In that case, Physics would anticipate getting at least one additional research lab on that floor, though we understand that both Biology and Chemistry also need more space. If that additional research lab can be obtained, then we would probably try to recruit an additional condensed matter or atomic/molecular/optical physicist. If the Math & Stat move does not occur in the appropriate temporal frame, or if we cannot obtain additional research lab space even if it does, then we certainly could use a theoretical physicist who is both a superb teacher and someone who could involve undergraduates in her or his research program. Another area in which we would certainly consider recruiting is Physics pedagogy research; such a person could cover PHY 390 and would also be a driver of additional improvements in our delivery of instruction to PHY 201, 202 as well as SCI 103 (physical sciences for elementary school teacher candidates).

1.3. Enduring Goal 1-C) *Provide high quality instructional facilities*

Our building in the Science Complex is only a decade old and our facilities are in general adequate but not optimal. We are fortunate to have a high quality small planetarium for instruction in astronomy. The annual department budget allows for repair or replacement of most broken equipment and some modest amount of new equipment for our instructional labs and for research work done with students that is not funded by external grants. Making the best use of these funds has been a top priority for the department and there have been ongoing discussions as to which items should be purchased first since the need far outstrips the budget.

Fortunately, last year the College recognized that many departments suffered from outmoded equipment (while the building is relatively new, much of our lab equipment is many decades old) and a substantial commitment to ameliorate this problem over 5 to 7 years was made. Our department submitted a list of priorities for funding over that period and we have already received \$30,264 for additional equipment for our PHY 201, 202 and 161 labs. A separate request for a Geo-Wall, a 3D projection system including dual projectors, silver screens and associated computer and optics was also funded in the amount of \$10,000. We have assembled and installed this system on a cart, with one screen in the geology lab and another to be installed in a lecture room used by astronomy and geology lectures.

The highest priority in our current request for additional funding is for \$21,327 for equipment to be used to expand our modern physics, optics, electronics and advanced labs. A large portion of the AY2011-12 budget has already been committed to such purchases. Additional teaching space for our advanced lab (and capstone) course is also needed at this point since we are converting it from a course in which students did projects in several research labs to

one where a single faculty member supervises a set of key canonical experiments that all physicists should have performed before they get a degree. Given the growing number of research students working in most labs, the former model does not work well any longer. All these facilities would be better maintained and even more effective if we are authorized to hire a full-time technician.

1.4. Enduring Goal 1-D) *Develop department colloquia and invited talks*

Additional improvements to departmental colloquia have been discussed in some detail in Section II. The number of department colloquia has remained relatively constant over the past several years, with between 4 and 8 annual colloquia and invited talks. We would like to increase this number to around 10 to 12 per year, but do not believe we can realistically go beyond that. In some years half of the colloquia have been associated with candidates for faculty positions. Given that the College only provides gas money and lunch to speakers (aside from a few special cases for prominent speakers where better support can be obtained), the vast majority of such speakers must be local, though occasionally a visitor to a faculty member will give a talk (e.g., Prof. D.J. Saikia of the Tata Institute for Fundamental Research in India last spring). The addition of four faculty members over the past four years has increased the number of speakers we should be able to attract.

Over the past 5 years we have had 9 alumni come back to campus to talk, either individually or as part of a panel, to our students. We plan to have at least one such speaker or panel every year.

2 Strategic Aspiration 2. *Provide an academic climate that supports scholarship within the department for both faculty and students.*

The department continues to believe that this must remain our overall second priority.

2.1. Enduring Goal 2-A) *Provide high quality experimental and computational labs for both faculty and student research.*

At the time of the Physics department's last program review, the main experimental work in the department was being conducted in our optics lab by Dr. Ochoa and his students. Observational work was being done at our observatory and associated workstations dedicated to space-based astronomical data reduction and theoretical astrophysics by Drs. Pfeiffer and Wickramasinghe. Dr. Dalafave's work in computational biophysics was just getting underway and continues to expand. These programs could not accommodate the growing number of majors to do the research projects we expect our stronger students to take part in.

The addition of four new faculty members over the past four years has dramatically increased the number and type of research experiences available to our students and substantially increased the research output of our faculty over all. This transformation occurred through the start-up funds provided by the College to each new faculty member and the external funds attracted and/or transferred to the College by each of them. Several powerful computers have been purchased for our seismology lab and they, along with seismological field work has been funded by grants to Dr. Benoit by the Research Corporation and the NSF. A lab for cloud physics has been established by Dr. Magee with equipment funded by the Research Corporation, the College and the Department. The new photonics and soft condensed matter lab was set up by Dr. McGee last summer with over \$750k worth of NSF funded equipment transferred from Drew University and additional equipment purchased from start-up funds and continuing NSF grant funding. A fluid dynamics lab is being set up by Dr. Wiita with start-

up funds, and his NASA funding for research on active galaxies using the Kepler satellite has supported students doing data reduction, analysis and modeling.

Going into the future we expect all new faculty members to also propose for external support to supplement the modest start-up funds we have available. In the first instance, we expect that a new experimental biophysics lab will be established during the next academic year. We trust that the new observatory will be constructed soon and as soon as that is guaranteed by the administration we will aggressively search for funds for a larger (preferably 24-in) telescope to replace the current 16-in as our major research instrument.

2.2 Enduring Goal 2-B) *Encourage and support faculty and student research and participation in professional meetings and conferences.*

The increase in both experimental and computational research opportunities described in the previous sub-section has allowed a larger number of students to work with faculty members on meaningful research projects during the academic year and during the summer. All of our stronger students are encouraged to do research through the PHY 393 and PHY 493 classes starting with PHY 393 in their sophomore years. PHY 493 can serve as a student's capstone experience. As seen from the faculty CVs, quite a few papers have emerged from that work; 10 different students have been coauthors on 5 out of the 30 refereed papers published by our faculty members since 2008 and dozens of students have presented at national conferences.

Our students are also urged to do research over the summer. On campus that work is supported either by grant funded stipends from NASA and NSF or by the College MUSE (Mentored Undergraduate Summer Experience) program. Many of our students apply for REUs on larger campuses. Some details are given in Appendix 5.D. Last summer, there were 9 TCNJ physics majors plus 3 TCNJ education majors and 1 Drew University alumnus receiving stipends for paid research in our Department. We also had a substantial number of students working off campus on REUs at institutions including Caltech and CERN.

The department has no travel budget and these funds are distributed by the Dean. Fortunately, he strongly supports travel by faculty and students to present results at meetings, and the great majority of requests by our department faculty for such a trip each year for themselves and for their students have been funded. Unfortunately, there are not sufficient College funds to fully support a second trip each year by very active faculty members. Some trips are covered by external grants and all faculty members are encouraged to ask for travel support in any grant proposals they submit.

2.3. Enduring goal 2-C) *Encourage and support faculty and student publications.*

The culture of the department has always encouraged publications, but the emphasis on this has certainly grown over the years and particularly since the College "Transformation" in 2004-05. The total number of refereed faculty publications was 1 in 2004 but 4 in 2008, 1 in 2009, 12 in 2010 and 13 in 2011. Several additional papers are in press or submitted. As noted in 2.2, from 2008 through 2011 students were coauthors on several of these papers.

One way in which the College could expand our rate of publication would be to provide more access to additional journals needed for our research. Right now several of our faculty members must rely on colleagues to download and e-mail papers they need for their research or must visit libraries at Princeton or Rutgers. These requests and trips really slow down research work, since when one needs to refer to a paper, one usually needs it right away. We understand that the library journal funds are limited, but we strongly believe that with the

many additional research active faculty members in our department some redeployment of funds to provide more journal access is imperative, particularly in the geosciences.

Another area where we need more support is for page charges. Many journals in physics, particularly in fields such as astrophysics and biophysics, require authors to pay substantial page charges. Often these are the best journal in the field (e.g. The Astrophysical Journal) or otherwise the most appropriate journal for a particular paper. Although no funds for page charges are in the department budget, and so far the Dean has not provided us with any additional fund for this purpose, the department has provided 3 different faculty some support for 4 publications over the past two years. The chair would like to continue to do so, but given our needs for additional equipment and limited budget, most page charges will need to come from external grants.

3. Strategic Aspiration 3. *Provide service to The College, the community and the profession.*

The department has expanded this important aspect of our work to include a reference to service to the profession in 3.4.

3.1. Enduring Goal 3-A) *Have adequate departmental representation and participation in college-wide and school-wide committees*

Over the past five years every single faculty member has served on college-wide and/or school-wide committees, with the great majority having served on both. Despite our rather small size, during this period we have always had two members on the Faculty Senate and we have usually had representatives on critical committees such as Committee on Faculty Affairs and the College Promotion Committee. Right now we have more members (including the only staff representative) than any other department on the School of Science strategic planning committee. While Physics department representation on College and School committees has historically been good, we believe that we are currently punching above our weight class in our service to the School and College. Committee memberships at College and School levels are listed in the following tables.

COLLEGE-WIDE COMMITTEES:

Faculty Senate	-	M. Benoit
Committee on Faculty Affairs	-	M. Benoit
College Promotions Committee	-	D. Dalafave
Finance and Budget Council	-	D. Dalafave
Committee on Students and Campus Community	-	N. Magee
President's Climate Committee	-	N. Magee
TPEC (Teacher Preparation Education Committee)	-	N. Magee
Honors and Scholars Program Council	-	D. McGee
Faculty Senate	-	P. Wiita
Sabbatical Committee	-	P. Wiita
Global Studies Committee	-	T. Wickramasinghe
Liberal Learning Council	-	R. Ochoa

SCHOOL OF SCIENCE COMMITTEES:

Chairs Council	P. Wiita
One Question/One Answer Assessment	R. Ochoa
Secondary Education	N. Magee
Information Technology	N. Magee
Library Liaison	R. Pfeiffer
Academic Integrity	R. Gleeson
Colloquium Committee	M. Benoit
Curriculum Committee	D. Dalafave
Strategic Planning Committee	M. Benoit, C. Calu, R. Pfeiffer

3.2. Enduring Goal 3-B) *Provide departmental outreach to local schools and the community.*

The majority of our outreach occurs during recruitment events on campus and through our frequent observatory open-houses, although some faculty members will give presentations at elementary, middle and high schools when requested.

Such presentations in schools occur probably once or twice a year, but given our other responsibilities we have not made this a strong priority, nor do we expect to be able to do so.

The observatory is open 2 hours every clear Monday, Tuesday, Wednesday and Thursday evening. Student observatory technicians open the 11-in dome and give all students and members of the public who show up a tour of the planets, star clusters and nebulae that are visible that night at that time.

The fall recruitment events include three open houses, each of which provides two one hour long opportunities for students (and their parents and occasionally siblings) to see departmental presentations, go on tours of the department facilities and labs and see a brief planetarium show. In addition, there are three other “scholars” events, where students the College wants to recruit are given single such presentations. This makes for 9 formal tours per year. In addition, the department chair and occasionally other faculty members give personal tours to prospective students and their parents who cannot attend one of the open houses.

We could dramatically increase our outreach if we could hire a planetarium director who could both produce more sophisticated shows and give them far more frequently. However, such a position has not been authorized, and we do not expect it to be authorized in the near future. The recent reopening of the planetarium in the NJ State Museum in Trenton has somewhat reduced the rationale for shows open to the public at our small Hiack planetarium. We expect that the departmental technician we anticipate hiring this year will devote a small fraction of his or her time to the maintenance of the planetarium; we hope that this person can be trained to offer occasional shows to the public.

3.3. Enduring Goal 3-C) *Establish a cooperative relationship with our alumni.*

Many of our faculty members stay in touch with some of their advisees or research mentees and Dr. Ochoa keeps tabs on a large fraction through his TCNJ physics blog. This allows for

informal feedback from alumni aside from the more formal responses we get from our occasional surveys. Every year several alumni drop by the department when they come back to the area to visit family or friends.

We have invited alumni living nearby to attend talks and department events. As noted above, we have had several alumni come to speak to the current students to describe what it's like in graduate school or industry and we certainly plan to continue this way of keeping alumni involved with the department.

3.4. [New] Enduring Goal 3-D) *Provide valuable service to the profession.*

The most common way in which our faculty members serve the profession is through refereeing manuscripts submitted to journals and reviewing grant proposals. Some faculty members perform these duties every year. Others review texts or chapters of texts written for courses in areas that they teach or participate on panels that evaluate Advanced Placement exams.

In addition, several of us have taken on positions of responsibility in scientific societies, field committees and editorial boards.

Dr. M. Benoit has served on important external committees in her field: the IRIS (Incorporated Research Institutions for Seismology) Consortium Education and Public Outreach Committee; the National Science Foundation GeoPRISMS (Geodynamic Processes at Rifting and Subducting Margins) decadal program, including serving on the Education Advisory Committee and Steering and Oversight Committee. Dr. D. Dalafave serves on the Committee for Professional Opportunities for Women of the Biophysical Society. Dr. M. McGee is Chair of the Physics and Astronomy Division of the Council on Undergraduate Research. Dr. P. Wiita is a member of the editorial board of the *Journal of Astrophysics and Astronomy*, and selects referees and supervises their responses for several manuscripts per year submitted to that journal.

We trust that as the profile of The College and the Physics Department rises further in the years ahead our faculty members will be offered more opportunities to provide this type of service and that we will do so.