State University of New York (SUNY)
Expanded Investment and Performance Fund
Request for Proposal (RFP) Application Form

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<td>David Demers</td>
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<td>Title:</td>
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<tr>
<td>Phone:</td>
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<tr>
<td>Email:</td>
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Buffalo State, in collaboration with Finger Lakes Community College, Monroe Community College and Niagara County Community College, proposes to improve student success, specifically as measured by student retention and completion, by leveraging the power of predictive analytics to inform and direct intervention activities designed to assist students identified as potential attrition risks. The proposal’s underlying framework, based on the successful OAAI (Open Academic Analytics Initiative) program established at Marist College, directly addresses the expanded investment and performance fund’s strategic criteria by having a student-centered focus, multi-institution involvement and by taking full advantage of existing technological infrastructure available on each of the partnering campuses. The proposal also specifically addresses the SUNY Completion Agenda by establishing a portable, scalable framework which coordinates data extraction, transformation and analysis strategies with subsequent predictive modeling, early alert and intervention approaches to promote student success across all partnering campuses. A key benefit to SUNY will be the sharing of anonymized transactional student data in a common repository. This shared datastore will facilitate the training and testing of predictive models tailored to each campus’ student population and will function as a library of successful intervention strategies employed at each institution. Access to this rich source of best-practices will aid participating campuses in the adoption of proven, effective student success practices. By utilizing open-source tools and models, the framework will be adaptable and available to all SUNY campuses at the conclusion of this project.

The Predictive Analytics Collaborative is expected to contribute significantly toward SUNY’s goal of awarding 150,000 degrees annually throughout the duration of the 5-year project and beyond. By employing early, intrusive intervention strategies targeted to those students predicted to be an attrition risk, conservative estimates of the number of additional degrees granted by all participating institutions grows annually from 105 (Year 1) to 389 (Year 5). An estimated cumulative total of additional degrees awarded throughout the 5-year project period is in excess of 1,200.

The Predictive Analytics Collaborative represents a strategic partnership between Buffalo State, Finger Lakes Community College, Monroe Community College and Niagara County Community College. This diverse collection of institutions provides expertise in student retention, learning analytics, data warehouse design and serving under-prepared students. Throughout the development of this proposal, stakeholders were consulted from each campus to develop and refine the framework for the Predictive Analytics Collaborative and to define the project’s anticipated outcomes.
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Project Description (Two (2) to five (5) pages recommended)

Identify the innovative components of the proposal and the relevant research and evidence that support the project (can be provided as an attachment).

The Predictive Analytics Collaborative will directly address the central theme of Chancellor Zimpher’s Completion Agenda: increasing the number of students attaining postsecondary degrees. The collaborative seeks to establish a programmatic partnership amongst SUNY community colleges and 4-year comprehensive institutions to adapt the successful OAAI (Open Academic Analytics Initiative) developed at Marist College to deploy evidence-based student success activities to improve student retention measures across all partnering campuses. The proposed ‘big data’ analytics approach will assimilate select institutional data, statistical analysis and predictive modeling to generate intelligence upon which students, advisors, instructors and administrators can act, in an informed manner, to improve academic success.

The Predictive Analytics Collaborative will take advantage of existing platforms currently deployed at each participating campus, including student information systems (SIS), learning management systems (LMS), constituent relationship management systems (CRM), retention management systems (RMS) and degree audit systems (e.g., DegreeWorks). The Predictive Analytics Collaborative will focus on the extraction, consolidation and analysis of these disparate data sources in a shared repository which will be used to create an analytics framework designed to identify pervasive, predictable student risk factors (Figure 1).

To facilitate implementation of the Predictive Analytics Collaborative, static demographic and cognitive data (e.g., SAT scores, high school GPA, class rank, etc.) will be extracted in batch format from each campus’ SIS and CRM/Recruitment platforms (e.g., Ellucian Banner) to be combined with more dynamic transaction-level data obtained from each campus’ LMS (e.g., Blackboard), such as login activity, assignment grades, adherence to assignment deadlines, etc. Combined data from

Figure 1 – Information Flow for the Predictive Analytics framework

Predictive Analytics Collaborative
each campus will be anonymized prior to secure upload into a hosted, cloud-based data repository. Since each campus will have the ability to securely and independently upload anonymized data sets for evaluation through the predictive modeling engine, this ensures that each campus retains complete control over their own data as the sole proprietor of the translation tables required to decode returned analysis files. The Predictive Analytics Collaborative will leverage the open-source Pentaho business intelligence suite to gather, manipulate, transform, statistically analyze and report on the collective data sets using the publicly available models published under an open license by the Marist OAAI. Access to these open, published models, which have proven portability across multiple institution types\textsuperscript{2,3}, will provide a significant jump start to the successful launch of the Predictive Analytics Collaborative initiative within a 12-month timeframe.

For initial testing of predictive models, combined historical data from participating institutions will be randomly distributed into two subgroups (evaluation; verification) of approximately equal sizes. Using the Pentaho business intelligence suite, the Predictive Analytics Collaborative will identify correlations between discrete data elements contained within the evaluation data set and measures of academic success (e.g., successful course completion, final course grade, persistence). An analysis of the strength of correlation between variables and academic success will be performed to identify potential ‘predictors’ of success/risk. A composite measure of student risk will be developed by combining the most significant predictors to simplify deployment of the model and to enhance scalability. This resulting composite model will then be validated by testing accuracy against the verification subgroup.

A core deliverable of the Predictive Analytics Collaborative will be the development and deployment of real-time, interactive student performance dashboards. Results generated from the composite predictive model run against current or new student data will be returned to each participating campus along with calculated risk scores. This data will be provided in a portable format which will allow for direct ingestion into existing retention management systems (e.g., Starfish, MAP-Works) for those campuses currently utilizing such a system, or other advising case management systems (Figure 1). The Predictive Analytics Collaborative will be responsible for developing a series of customized student performance dashboards that may be adopted by each participating campus. These dashboards will provide intuitive, streamlined access to student performance and risk evaluation scores for administrative review as well as simplified reports for students to track their own performance. Similar tools developed and deployed at Purdue and Cal State Fullerton have been demonstrated to be successful at enhancing student engagement by providing methods for students to track and take ownership over their own performance\textsuperscript{4,5}.

The proposed project will further extend the utility of the Marist OAAI framework by incorporating the evaluation of multiple intervention activities employed by each campus to address specific risk categories within defined student subgroups. This activity will create opportunity for participating campuses to collectively share student success strategies. By tying the evaluation of intervention activities to specific risk factors and modeled student profiles, a rich, shared repository of student success strategies results which will aid in the adoption of proven, effective practices. This ‘big data’ approach has the potential to revolutionize academic advising by providing additional context to inform the student-advisor relationship and guide initial conversations with new students to focus intentionally on resources predicted to enhance their success. Providing early, intrusive intervention for at risk students has been shown to be highly effective in helping those students successfully complete their inaugural academic sessions at a new institution and to ultimately achieve their degree completion goals\textsuperscript{6}.
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Provide a description of the institution(s)’ capacity to lead this effort and demonstrated experience and success in implementation.

In order to best meet intended outcomes, the Predictive Analytics Collaborative will assemble a diverse group of institutions and individuals with expertise in student retention, learning analytics, data warehouse design and serving under-prepared students. The participating campuses will leverage prior experience collaborating on SUNY-wide initiatives and shared services such as ITEC, SICAS, DegreeWorks and OpenSUNY.

Buffalo State
Over the past several years, Buffalo State, the lead institution in the Predictive Analytics Collaborative, has evidenced its ability to lead technological innovation within SUNY and throughout the region. The following summarizes key organizational capacity facts:

- Buffalo State’s newly established Project Management Office, a department responsible for ensuring successful deployment of new technological platforms and projects across the institution, was responsible for the first full implementation of the DegreeWorks platform across the entire SUNY system.
- Buffalo State has successfully utilized the MAP-Works retention system (Skyfactor) to provide initial identification of at-risk first-year students for 6 years. The MAP-Works system is used to survey first-year students to refine identification of at-risk students and to reinforce successful behaviors for students.

Finger Lakes Community College
Beginning in the Fall 2015 semester, Finger Lakes Community College began piloting a new student retention program using predictive analytics. The college determined that students placed on academic probation in their first semester was a powerful predictor of attrition. College strategic funds are supporting a new program that uses a predictive model to identify students at-risk for academic probation in their first semester. These students are flagged in the college’s retention system and monitored by an academic coach who is ready to intervene and contact the student upon first signs of academic difficulty. FLCC’s experience implementing this program will serve as a resource for successful implementation of the Predictive Analytics Collaborative.

Monroe Community College
In 2011, the SUNY Learning Network applied for and received a NGLC grant through the Gates Foundation and Educause. The purpose of the grant was to apply a number of interventions to an identified population, including the delivery of early alerts through the Starfish RMS. Through this tool, investigators were able to offer targeted interventions for students in a timelier manner. While a significant amount of data was created over the course of the NGLC grant, the use of the Starfish RMS and the implementation of the blended learning model were noted as particularly successful interventions.

Niagara County Community College
NCCC has multiple grant funded initiatives geared toward retention and student success (SUNY High Needs, Perkins –NFCI, DEVL, MOMS) that are evaluated on an annual basis and adjusted based on institutional research data and the evolving campus population. These initiatives rely heavily on the correlation of identified risks/alerts and advising/intervention activities. The campus currently relies upon manual input mechanisms from individual instructors through faculty feedback, census data, and mid-term warnings to trigger intervention activity.
If the proposal requests funding from multiple sources (as defined in Appendix I of the RFP), please provide a description of how each type of funding will be best utilized to fulfill project goals.

The Predictive Analytics Collaborative requests $1,501,000 exclusively from the SUNY Investment and Performance Fund. All other costs, resources and infrastructure needs are derived from existing campus sources.

Describe the student-centered aspects of your proposal, which may include flexibility in meeting emerging student needs such as academic skills development, study and thinking skills, early alert systems, and advisement/counseling as well as emerging educational pedagogies.

Recent enrollment data across all participating campuses demonstrate that large numbers of first-year students are enrolling at our institutions. Recent trends show that many of these students are first-generation and/or college students who arrive to campus from underperforming schools and from disadvantaged economic and social backgrounds. As a result, these students are often ill-equipped and under-prepared to assimilate into a rigorous collegiate experience. Therefore, it is vital that student-centered projects, such as the Predictive Analytics Collaborative, be prioritized to facilitate targeted, intrusive intervention strategies to directly address the needs of this growing population and to positively impact the SUNY Completion Agenda. The potential integration of predictive modeling results with existing early-alert or retention management systems deployed at partnering institutions will serve to accelerate the use of generated predictive data across all campuses.

One of the unique aspects of the Predictive Analytics Collaborative is the establishment of a shared repository of student success and intervention best practices culled from a diverse collection of institutions. Given the expertise present amongst the community colleges participating in the collaborative in working with and addressing the needs of under-prepared students, the proposed project will serve to correlate proven, effective strategies with identified risk-factors tied to student preparation. This shared knowledge base will serve to inform potential ‘new’ practices to be adopted at each campus as well as reaffirm proven approaches for those campuses that have found success in meeting the needs of under-prepared students.

If requesting NY-SUNY 2020 Challenge grant funding, describe the project’s direct economic impact on and investment in the local economy and communities. Economic impact may include jobs created by the construction, renovation, and maintenance of a new facility, as well as faculty hires, etc.

Not-applicable

If requesting Enabling Support funding, describe the factors leading the institution, or institutions, to being eligible for this support including but not limited to recent revenue trends, cost increases, or enrollment declines.

Not-applicable

If requesting Open SUNY Loan funding, describe the ability of the institution, or institutions, to repay the initial investment within the timeframe indicated within the RFP document.

Not-applicable
Funding Request & Leverage (One (1) page recommended)

Provide a multi-year (five years) budget and justification describing expected costs and matching funds leveraged for the project. Indicate clearly whether the leveraged funds are internal to the institution(s) or from external partners.

The Predictive Analytics Collaborative seeks $1,501,000 from the SUNY Investment and Performance Fund to support a collaborative partnership amongst community colleges and 4-year comprehensive institutions to adapt the successful, open-source Marist OAAI program. Funds will be used to develop a predictive analytics framework to inform evidence-based student success activities to positively impact the SUNY Completion Agenda by improving student persistence and retention measures across all participating campuses throughout the 5-year project (Please see Attachment 2 – Detailed Budget). Funded activities will occur over a period of three years with campus assumption of project costs beginning in Year 3 and full assimilation of ongoing costs into campus operating budgets by Year 4. Ongoing maintenance costs for the Predictive Analytics Collaborative (hosting, licensing, subscriptions) will be shared equitably among participating campuses with the intent to invite additional campus partners to offset expenses through a subscription model beginning in Year 4.

In addition to the investments each campus will provide to directly support the Predictive Analytics Collaborative over the 5-year period of the project ($1,225M; Attachment 2- Detailed Budget), participating institutions have identified up to $2.321M in annual operating expenditures for shared services, software licensing and in-kind personnel as matching funds to support the implementation of the project (Please see Attachment 3 – Matching Funds).

Please provide examples of the institution(s)’ ability to scale the project if the amount of funding provided is more or less than requested.

While the Predictive Analytics Collaborative is a highly scalable project capable of accommodating additional data sets from new partnering campuses, it should be noted that the resources requested to fund the implementation of the project are considered a minimum threshold for a successful initial launch. A reduction in funding would necessitate the reduction in the number of partnering campuses included in the project. Such a reduction would consequently compromise the accuracy of the composite predictive model and require significant time and effort to address false-positive results. A lower accuracy level of risk detection would subsequently reduce advisor efficacy and may ultimately undermine the entire project.

Based on the ‘big data’ nature of the Predictive Analytics Collaborative, incorporating additional campus partners with supplemental funding would serve to increase the overall accuracy of the composite predictive model, resulting in a more efficient deployment across all campuses. It is also evident that incorporating additional student success strategies and interventions employed amongst new potential partner campuses will serve to expand the breadth and depth of this shared repository of ‘best practices’. Strengthening this repository benefits all partnering campuses, and ultimately, the entire SUNY System.

Describe, if applicable, how the proposal leverages existing facilities, programs, and faculty.

Not-applicable
Metrics (Two (2) pages recommended)

Describe in detail the proven effectiveness of the program’s approach and detail the projected impact and related timeline as a result of implementation at your Institution or Institutions.

A common theme in higher education analytics research is the intent to move from simple analysis of student activity toward predicting future behaviors to automate the trigger of early alert systems to optimize the educational experience for students. The proposal’s underlying framework, based on the successful Marist OAAI (Open Academic Analytics Initiative), seeks to combine available, static student demographic information with more dynamic, transactional data captured in the institution’s learning management system to correlate with overall student success. Composite predictors of student success will be validated against historical institutional data and eventually applied against new, incoming student data to provide predictive, actionable early-alert information to advisors.

Such strategies have been successfully validated in higher education at the undergraduate or community college level. The Purdue Course Signals\(^4\) and Marist OAAI\(^1\) projects have incorporated the automated distribution of messages to students identified as ‘at risk’ through analytics detection. These simple interventions involved alerting students about concerns over their course performance and provided tangible recommendations for improvement such as meeting with the instructor, seeking a tutor, location/hours of help desk support and other student services. Results from the Course Signals and OAAI projects demonstrate that interventions using predictive analytics can successfully assist students to improve performance and course completion rates when compared to similar students who did not receive an intervention\(^2\)\(^-\)\(^4\).

The full proposed project timeline is provided as Attachment 4.

Delineate clear qualitative and quantifiable goals, as well as methods of evaluation inclusive of timelines and general descriptions of evaluation deliverables. Proposals that can begin implementation (defined as the expenditure of funds awarded) within 12-15 months of the award of funds will be reviewed favorably.

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Figure 2 – Retention Targets for Predictive Analytics Collaborative

Each institution participating in the Predictive Analytics Collaborative has articulated improved Fall-Fall retention targets through their submitted Performance Improvement Plan. These targeted retention rates are summarized in Figure 2, above. Across all participating campuses, the year-to-year improvement targets for Fall-to-Fall retention range from 1-2% annually, with aggregate increases over a 5-year period ranging from 4-7% in total. With the aggressive implementation timeline proposed (see Attachment 4), each campus is expecting to realize immediate results from the implementation of the Predictive Analytics Collaborative. The first cohort to fully benefit from the predictive analytics framework and the associated early alert and intervention strategies will be the entering Fall 2016 class.
Future expansion of this program will include connecting results to student learning outcomes assessment. Many college’s assessment platforms, such as that deployed at Finger Lakes Community College, connect student learning artifacts through the LMS. By connecting the results generated through the Predictive Analytics Collaborative with such qualitative data, this initiative has the potential to be the first of its kind to combine at-risk student models, retention systems, interventions and genuine student learning artifacts to evaluate correlations between student learning outcomes assessment and successful interventions.

Establish a baseline, using discrete and measurable metrics, for ongoing review of the extent to which the program attains its annual measures of success.

Acute baseline measures for retention already exist at each participating campus and are routinely reported twice annually, following each campus-defined census date in the Fall and Spring semesters. Reported retention measures for the last two years are shown for each campus in Figure 3. While the offices responsible for compiling the data necessary for reporting retention metrics vary from campus to campus (e.g., Institutional Research, Office of Information Technology, Office of Institutional Effectiveness), in all cases, each participating campus has an established mechanism for disseminating this information to the internal community and for publishing the data on the institutional website. The Predictive Analytics Collaborative once per semester, following the latest census date amongst the participating institutions, will perform ongoing review of the improvement in retention metrics across all campuses. Each institution will have access to a shared dashboard where reported retention metrics will be displayed for each campus alongside original targets for ongoing evaluation.

Provide information on projected direct impact on increased enrollment and/or persistence and retention toward the System-wide goal of awarding 150,000 degrees annually by 2020.

Table: Increased Graduate Projections

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Figure 3 – Retention Baseline Metrics

Figure 4 shows the projected number of additional students attaining a degree as a result of implementing the Predictive Analytics Collaborative to improve Year 1 to Year 2 retention. The conservative projection of 1228 additional graduates is based on several assumptions:

- Targeted retention metrics are met by each school for each of the 5 years of the project
- Current graduation rates for each campus remain unchanged (4-year graduation rate for Community Colleges; 6-year graduation rate for Comprehensive Colleges)
- First year enrollment at each campus remains unchanged

Given the strong potential for the implementation of the Predictive Analytics Collaborative to have tremendous impact beyond Year 1>Year 2 retention, the above assumptions are likely overly conservative and the actual contribution toward the System-wide goal of 150,000 degrees annually will be much greater than shown above.
Capacity, Feasibility & Sustainability (One (1) page recommended)

If building on an existing program, please describe the current supportive infrastructure (financial, administrative, faculty, etc.) in place to support the program at its current capacity and what additional resources would be needed to expand.

Not-applicable

If starting a new program, please identify the anticipated impact to current programs, operations, and staff and what additional resources will be necessary to accommodate this expansion of services.

The outcomes of the Predictive Analytics Collaborative have the potential to radically enhance the efficacy of front-line advising staff by arming them with timely, actionable information. The methods employed to leverage this information will vary from campus to campus as outlined below:

At Buffalo State, University College (UC) is the academic home for first-year and undeclared students. UC provides advising, academic support and student-learning opportunities to facilitate student success by connecting students to resources that foster engagement and develop skills. Dedicated advisors spend their time with students in meaningful conversations to help them identify goals, access resources, plan their academic path, and develop confidence in themselves and their education. UC Advisors will benefit from the Predictive Analytics Collaborative by having persistent access to predictive indicators such as historical student information (e.g., transcripts, GPA, class rank, etc.), real-time student performance information (e.g., LMS activity indicators), automated notification of alerts issued to advisees, resource utilization (e.g., tutoring, library databases, writing center, etc.) and ongoing evaluation of the efficacy of interventions provided.

Finger Lakes Community College currently has a faculty based advising system for full-time students. All full-time students have a faculty advisor assigned to them. Part-time students have a member of the Educational Planning and Career Services staff as their advisor. New students enroll through an on campus based registration program. The college is currently assessing this current model during the 15-16 year. The established Center for Academic Success and Access currently consolidates and provides general tutoring, the math center, the writing center, the science incubator, disability services, testing and placement, and EOP. The information obtained through the Predictive Analytics Collaborative will help guide the work and coordination among these offices.

Niagara County Community College currently has a decentralized advising model combining faculty advisors (29 students/advisor) with two professional advisors (150 students/advisor) serving students required to take 3 or more remedial courses. In addition, the Student Development department provides coordination of advisor assignment, scheduling of advisors for new student advisement, campus advisor manual, general advisor training and processing of student requests for advisor changes. The information obtained through the Predictive Analytics Collaborative will help guide the work and coordination among these offices.

As the funding sources being provided through the Expanded Investment and Performance Fund are primarily “one-time” in nature, please provide a explanation of the pathway to long-term financial sustainability of the proposed project or initiative.

The Predictive Analytics Collaborative has presented a budget plan that includes the assumption of ongoing costs into campus operating budgets beginning in Year 3 of the project with full absorption of costs occurring in Year 4. This includes salaries for project staff, which will be absorbed into the lead campus budget and offset by projected increases in enrollment resulting from the successful retention activities. Furthermore, the participating campuses have agreed to share ongoing maintenance costs for the Predictive Analytics Collaborative (hosting, licensing, subscriptions) equally with the intent to spread these costs across a greater number of SUNY campuses through a subscription model that will be made available in Year 4 of the project.
Collaboration (One (1) page recommended)

Describe the qualifications, specific roles, and contributions of each collaborator in the proposed project.

As the lead institution for the Predictive Analytics Collaborative, Buffalo State has a long-standing reputation as a leader within SUNY for innovation and successful project implementations. Buffalo State has successfully launched two Open SUNY + Masters degree programs and has steadily increased the size, scope, and quality of online learning opportunities at all levels. In 2014, Buffalo State offered a Massive Open Online Course through Coursera that enrolled 45,000 students. Additionally, Buffalo State recently established a Project Management Office (PMO) which greatly enhances its proven ability to implement new infrastructure as evidenced by the first full implementation of DegreeWorks across the entire SUNY System. By employing proven project management methodologies, the PMO will be integral to the implementation and success of the Predictive Analytics Collaborative.

Finger Lakes Community College will contribute expertise in the area of student learning outcomes assessment to provide qualitative assessment strategies for the Predictive Analytics Collaborative.

Monroe Community College will contribute expertise in the use of the Starfish Early Alert program derived through their Gates Foundation Next Generation Learning Challenge grant received in 2011. Through this tool, investigators were able to offer targeted interventions for students in a timelier manner. While a significant amount of data was created over the course of the NGLC grant, the use of the Starfish RMS and the implementation of the blended learning model were noted as particularly successful interventions.

Niagara County Community College will contribute knowledge in the realm of integrated student support services and how various offices, working in concert, can leverage actionable data to best serve the needs of students.

If applicable, discuss prior and existing relationships with collaborators that will enable the proposal to succeed.

Buffalo State serves as the host campus for SUNY ITEC and has a very strong, collaborative working relationship with the system-wide organization. ITEC hosts Buffalo State’s Banner and Blackboard environments and provides DBA support services for both platforms. Buffalo State is also an active member of SUNY SICAS and takes advantage of their Banner and Blackboard support services.

Finger Lakes Community College has an active working partnership with SUNY ITEC, and although not currently a member is actively considering and evaluating their available cloud hosting services as options for long-term storage and server needs. FLCC currently does participate with ITEC in their U-wide software offerings of Blackboard Collaborate, SPSS, and Minitab - and also with ITEC’s contracted hosting and managed services for Elluminate/ Collaborate and Ensemble.

Niagara County Community College is actively engaged in sharing resources, technologies, and the outsourcing of technical personnel to SUNY ITEC, Open SUNY, and SUNY SICAS. Each partner, through their support, guidance, and technical support, is integral to the success of NCCC. NCCC was the first Banner hosted campus at ITEC and ITEC continues to host and manage the campus’ student information system and room scheduling software. NCCC is a member of Open SUNY and participates in conferences, webinars, and training, both receiving and providing. SICAS manages and maintains NCCC’s student information system on a day to day basis and provides strategic planning support. NCCC is active partner in SUNY’s Smart Track program with the intent of lowering the College’s student loan default rate.

Predictive Analytics Collaborative
Scalability & Replicability (One (1) page recommended)

Demonstrate the extent to which the metrics, budget, and implementation of your proposal will ensure replicability and scalability.

The Predictive Analytics Collaborative was originally crafted to accommodate a total of 5 participating campuses to build the initial framework for the platform. Due to resource constraints, one campus withdrew prior to submission of the Full Proposal. Therefore, the initiative has excess capacity to accommodate an additional partnering campus at the onset. Several campuses have expressed interest in participating in the initiative if funded through the SUNY Expanded Investment and Performance Fund.

As stated previously, due to the ‘big data’ nature of the Predictive Analytics Collaborative, incorporating additional campus partners with supplemental funding would serve to increase the overall accuracy of the composite predictive model, thereby resulting in a more efficient deployment across all campuses. Furthermore, the potential for incorporating additional student success strategies and interventions employed amongst new partner campuses will serve to expand the breadth and depth of the shared repository of ‘best practices’, increasing its utility and value to the entire SUNY System.

Since the underlying framework for the Predictive Analytics Collaborative will be built using common tools across the SUNY System (e.g., Blackboard, Banner, DegreeWorks, etc.), the ability to quickly assimilate new partner campuses for scale is greatly enhanced. Given the project’s goal to establish a working template for data ETL (Extract-Transform-Load) strategies and the inherent portability of the composite predictive model across student populations, new partner campuses will receive a significant jump-start to take full advantage of what the Predictive Analytics Collaborative has to offer. Additionally, since the data warehouse and business intelligence suite will be hosted by ITEC, most campuses will have immediate, direct access for establishing peer connectivity to the shared repository.

The availability of proven, validated predictive models for new partner campuses will provide these institutions with an effective baseline to immediately test against their own historical student data for verification purposes as well as the possibility of applying the model to current student data for urgent retention risk analysis. Additionally, the proposed project’s goal of developing mechanisms to deploy targeted, actionable information to participating campuses in a portable format will allow new partners to leverage existing platforms, resources and investments to digest and respond to the recommendations provided through the predictive model(s). This flexibility will facilitate rapid adoption for new and/or potential partner campuses across the SUNY System.
State University of New York (SUNY) - Expanded Investment and Performance Fund
Request for Proposal (RFP) Application Form

<table>
<thead>
<tr>
<th>Letters of Support</th>
<th>Proposals MUST include letters of support from all external partners referenced in the application. Please include a detailed list of appendices and include them together as a PDF attachment submitted with a completed application template.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official Proposal Submission</td>
<td>Completed Application Templates should be no more than 15 pages in length using a minimum of 11 point font. Proposals should be submitted no later than 5pm on October 7, 2015 as a pdf email attachment to: <a href="mailto:investmentfund@suny.edu">investmentfund@suny.edu</a></td>
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<table>
<thead>
<tr>
<th>Institution Leader(s)’ Signatures</th>
<th>(Presidents from all collaborating institutions must sign applications in order for them to be considered)</th>
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</thead>
<tbody>
<tr>
<td>Dr. Katherine Conway-Turner</td>
<td>SUNY Buffalo State</td>
</tr>
<tr>
<td>President’s Name</td>
<td>Institution</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>Barbara Ritter</td>
<td>Finger Lakes Community College</td>
</tr>
<tr>
<td>President’s Name</td>
<td>Institution</td>
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<td></td>
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<tr>
<td>Anne M. Kress</td>
<td>Monroe Community College</td>
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<td>President’s Name</td>
<td>Institution</td>
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<tr>
<td>Dr. James P. Klyczek, President</td>
<td>Niagara County Community College</td>
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<tr>
<td>President’s Name</td>
<td>Institution</td>
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</table>

Predictive Analytics Collaborative
List of Appendices/Attachments

- Attachment 1 – References 15
- Attachment 2 – Detailed Budget 16
- Attachment 3 – Matching Funds 17
- Attachment 4 – Proposed Project Timeline 18
Attachment 1 - References

References


## SUNY

### Infrastructure
- ITEC Hosting Costs (3 Environments; Production, Development, Test)
  - Year 1: $50,000.00
  - Year 2: $50,000.00
  - Year 3: $25,000.00
  - Year 4: -
  - Year 5: -
- Virtual Desktop Licenses (30; Secure remote connections)
  - Year 1: $10,000.00
  - Year 2: $10,000.00
  - Year 3: $5,000.00
  - Year 4: -
  - Year 5: -

### Software
- Starfish RMS (License for 3 Campuses)
  - Year 1: $150,000.00
  - Year 2: $150,000.00
  - Year 3: $75,000.00
  - Year 4: -
  - Year 5: -
- MAP-Works RMS (License for 1 Campus)
  - Year 1: $10,000.00
  - Year 2: $10,000.00
  - Year 3: $5,000.00
  - Year 4: -
  - Year 5: -
- Data Cookbook (Subscription; Shared Data Dictionary for Participants)
  - Year 1: $20,000.00
  - Year 2: $20,000.00
  - Year 3: $10,000.00
  - Year 4: -
  - Year 5: -

### Consulting Services
- Data Warehouse Design (8 Weeks @ 40 hrs/wk)
  - Year 1: $140,000.00
  - Year 2: -
  - Year 3: -
  - Year 4: -
  - Year 5: -
- Pentaho BI Suite Configuration/Training (12 Weeks @ 20 hrs/wk)
  - Year 1: $40,000.00
  - Year 2: -
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- Ellucian - Automation & Discovery (4 campuses; 5 Weeks @ 20 hrs/wk/each)
  - Year 1: $80,000.00
  - Year 2: -
  - Year 3: -
  - Year 4: -
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- Training Consultation - Retention Staff (4 campuses; 6 Weeks @ 10 hrs/wk/ea)
  - Year 1: $36,000.00
  - Year 2: -
  - Year 3: -
  - Year 4: -
  - Year 5: -
- Retention Dashboard - Design/Develop. (10 Weeks @ 40 hrs/wk)
  - Year 1: $80,000.00
  - Year 2: -
  - Year 3: -
  - Year 4: -
  - Year 5: -

### Staffing
- 1 FTE Data Scientist/Data Officer
  - Year 1: $120,000.00
  - Year 2: $120,000.00
  - Year 3: $60,000.00
  - Year 4: -
  - Year 5: -
- 1 FTE Database Administrator
  - Year 1: $90,000.00
  - Year 2: $90,000.00
  - Year 3: $45,000.00
  - Year 4: -
  - Year 5: -

### SUNY Total
- Year 1: $826,000.00
- Year 2: $450,000.00
- Year 3: $225,000.00
- Year 4: -
- Year 5: -
- Total: $1,501,000.00

## Institutional

### Infrastructure
- ITEC Hosting Costs (3 Environments; Production, Development, Test)
  - Year 1: -
  - Year 2: -
  - Year 3: $25,000.00
  - Year 4: $50,000.00
  - Year 5: $50,000.00
- Virtual Desktop Licenses (30; Secure remote connections)
  - Year 1: -
  - Year 2: -
  - Year 3: $5,000.00
  - Year 4: $10,000.00
  - Year 5: $10,000.00

### Software
- Starfish RMS (License for 3 Campuses)
  - Year 1: -
  - Year 2: -
  - Year 3: $75,000.00
  - Year 4: $150,000.00
  - Year 5: $150,000.00
- MAP-Works RMS (License for 1 Campus)
  - Year 1: $20,000.00
  - Year 2: $20,000.00
  - Year 3: $25,000.00
  - Year 4: $30,000.00
  - Year 5: $30,000.00
- Data Cookbook (Subscription; Shared Data Dictionary for Participants)
  - Year 1: -
  - Year 2: -
  - Year 3: $10,000.00
  - Year 4: $20,000.00
  - Year 5: $20,000.00

### Staffing
- 1 FTE Data Scientist/Data Officer
  - Year 1: -
  - Year 2: -
  - Year 3: $60,000.00
  - Year 4: $120,000.00
  - Year 5: $120,000.00
- 1 FTE Database Administrator
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  - Year 2: -
  - Year 3: $45,000.00
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  - Year 5: $90,000.00

### Institutional Total
- Year 1: $20,000.00
- Year 2: $20,000.00
- Year 3: $245,000.00
- Year 4: $470,000.00
- Year 5: $470,000.00
- Total: $1,225,000.00
### State University of New York (SUNY) - Expanded Investment and Performance Fund

Request for Proposal (RFP) Application Form

#### Attachment 3 – Matching Funds

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</table>

**Predictive Analytics Collaborative**
Attachment 4 – Proposed Project Timeline

December 2015:
• Data Definitions – Identify core data elements (CRM, SIS, LMS); Local IRB Approval

January 2016:
• Procure Virtual Infrastructure/Secure Connections

February-March 2016:
• Deploy Pentaho BI Toolkit; Design shared data repository schema

April-May 2016:
• Upload anonymized historical student data for modeling, training;
• Identify significant success/risk predictors;
• Test published (OAAI) public models against historical data

June 2016:
• Develop/Deploy/Integrate Early alert/notification strategy

July 2016:
• Develop mechanism for incorporating logged intervention activity;
• Revise and retrain model to identify successful intervention strategies for identified ‘at risk’ students

August 2016:
• Develop/Deploy student reporting dashboards for use at each campus;
• Publish intervention models, provide access to each campus

September-December 2016:
• Ongoing evaluation and assessment of goals:
  o Retention
  o Logged Interventions
  o Logged Alerts/Triggers
  o Model Accuracy
  o Number records analyzed

October/February – Annually:
• Compilation and dissemination of annual report documenting improvements in retention metrics for all participating campuses
• Results to be published on Predictive Analytics Collaborative website
October 5, 2015

Re: SUNY 2020 Proposal for Predictive Analytics Collaborative

To Whom It May Concern:

I write this letter to express my enthusiastic support for Finger Lakes Community College’s participation in the Predictive Analytics Collaborative, a SUNY 2020 grant proposal led by Buffalo State. This project is an excellent collaborative opportunity that will allow us to leverage our data systems in support of student success outcomes, using proven intervention strategies.

FLCC is committed to increasing student retention and completion rates by connecting predictive analytics to inform the direct intervention activities designed to assist students who have been identified as potential attrition risks. This fall, our college began piloting a program to connect an at-risk student predictive model to proactive student intervention systems. We look forward to collaborating with other SUNY institutions to create predictive analytics that will be much more sophisticated than we could achieve on an individual campus level. I believe that the use of predictive analytics to inform proactive intervention has the potential to be scaled system-wide and can have tremendous impact on the success of SUNY students.

I urge you to support this very worthwhile SUNY 2020 grant proposal.

Sincerely,

Barbara G. Risser, Ed.D.
President
Bonita R. Durand, Ph.D.
Chief of Staff/Secretary to the Buffalo State Council
Buffalo State, State University of New York
1300 Elmwood Avenue – GC517
Buffalo, NY 14222

Dear Dr. Durand,

It is my pleasure to submit endorsement for Monroe Community College for a SUNY Predictive Analytics funding proposal developed by Buffalo State College in collaboration with Finger Lakes Community College, and Niagara County Community College. This RFP initiative is a collaboration of SUNY schools proposing to improve student success, specifically as measured by student retention and completion, by leveraging the power of predictive analytics to inform and direct intervention activities designed to assist students identified as potential attrition risks.

At the heart of this application is the opportunity to specifically address Chancellor Zimpher’s central theme, the SUNY Completion Agenda, by establishing a framework which coordinates data extraction, transformation, and analysis strategies with subsequent predictive modeling, early alert, and intervention approaches enabling the promotion of student success across all partnering campuses. This “big data” analytics approach directly addresses the expanded investment and the performance fund’s strategic criteria by having student-centered focus, multi-institution involvement, and by utilizing existing technological infrastructure available on each of the partnering campuses.

Through open-source tools and models, this proposed framework will be adaptable and available to all SUNY campuses. MCC and SUNY will jointly benefit through sharing of anonymized transactional student data in a common repository. This “datastore” will facilitate training and testing of predictive models tailored to each campus’ student population and ultimately become a shared library of interventional strategies employed at each institution providing adoption of proven, effective student success practices.

For these reasons, it is important that MCC and collaborative SUNY colleagues are supported for the Predictive Analytics Collaborative RFP that will greatly benefit the entire university system of New York State.

Sincerely,

Anne M. Kress
October 5, 2015

Ms. Johanna Duncan-Poitier
Senior Vice Chancellor
Office of Community Colleges and
Office of the Education Pipeline
State University of New York
SUNY Plaza
Albany, NY 12246

Dear Ms. Duncan-Poitier:

Please find this letter expressing strong support for the Buffalo State Predictive Analytics Collaborative proposal that is being submitted for funding through the SUNY Investment and Performance Fund. This important project will assist Niagara County Community College in improving student success, specifically as measured by student retention and completion, by leveraging the power of predicative analytics to inform and direct intervention activities designed to assist students identified as potential attrition risks. The Buffalo State Predictive Analytics Collaborative proposal is in line with the SUNY Completion Agenda and will contribute to improving SUNY Excels measures in the areas of: Access; Completion; and Success.

I very much thank you for your time and consideration concerning this very important proposal. If you or your review team have any questions or require any additional information about our support for this project, please feel free to contact our Director of Grants, Steven Lamkin, at (716) 614-5928.

Sincerely,

Dr. James P. Klyczek
President

Board of Trustees

James W. Ward, Chairperson

Henry F. Wojtaszek, Vice Chairperson - Bradley W. Rowles, Secretary - Gina I. Virtuoso, Financial Secretary