

## **Telecommunications and Technology Advisory Committee Retreat**

Thursday and Friday May 7-8, 2015

Kellogg West Conference Center

**TTAC Members Present:** Bill Scroggins, Craig Rutan, Dean Nevins, Jay Field, Kale Braden, Mandy Davies (online), Meghan Chen, Michelle Pilati, Paul Bishop (online), Robert Coutts, Tim Kyllinstad, and Wei Zhou.

**Chancellor's Office and Staff:** Blaine Morrow, Caryn Albrecht, Gary Bird, Jeff Holden, Joseph Quintana, Karen Rothstein, Kathy Booth, LeBaron Woodyard, Lou Delzompo, Micah Orloff, Theresa Tena, and Tim Calhoon.

### **Welcome/Agenda Review:**

Gary opened the meeting at 10:00am, welcomed everyone to the retreat and had introductions.

The goals for the retreat are to:

- Learn more about and identify emerging IT issues
- Improve data security for the community college system
- Identify ways to strengthen IT skills for community college staff
- Develop strategies for the next phase of TTIP work

Kathy provided an overview of the agenda and the structure for the retreat. She emphasized that although some of the work will involve looking at previous goals and possible new goals, the focus should also include big dreaming about where to strategically put new efforts, as well as the specific application of effort and technology.

### **Review Previous Strategic Goals and Outcomes:**

### **Information/Discussion**

The committee discussed the three main goals from last year's retreat and progress on them.

Goal A: Establish baseline standards and upgrade the technology infrastructure for California community colleges to create a state-of-the-art business and learning environment.

The Information Security Advisory Committee (ISAC) was formed and standards for security were established that they are trying to get implemented across the community colleges system. A standard for Federated Identity was also established and the Technology Center is working toward implementing that. Unfortunately this is a separate identifier from the one used in the K-12 system. The request for access to the K-12 identifier through a webserver has been made to the State Department of Education, and it is on the list of desired data, but we do not currently have access, and it is not practical to get the identifier directly from incoming students. There has been no progress on a system-wide survey on technology.

The System-wide Architecture Committee (SAC) put out a survey last year to determine where bulk purchasing was planned and that data was passed on to the Foundation. CENIC has a Cisco agreement that is being opened up to the community colleges for the first time. Some work had to be done to put out the reseller component to a competitive bid in order to meet procurement rules. That Cisco Reseller RFP is now on the street and will go to the Foundation board in June. There is also a negotiated agreement with VMWare and the Foundation hopes to have a valid contract with competitive pricing ready in the next 4-6 weeks. One of the elements important to CC users was an agreement that could also be used by existing VMWare users since there are a number of virtual machines in the system that datacenters are running on.

Goal B: Leverage technology to increase use of comprehensive and high quality professional development resources that promote student success.

There has been significant progress on the goal of putting together a portal to professional development information. There is a universal calendar of professional development events that affect the community college system which has been populated with most of the existing major events in the system. It is searchable and by clicking on an event, users can get details, including a Google map and the venue. The venues are stored in an event organizer to be retrieved from a pull-down menu when setting up another event. Feeding from the calendar is the speaker's directory which includes bios, titles of presentations, and contact information on speakers from events in the community college system. There is a resources link that currently has about fifty resources listed in categories that can be expanded on, which also includes definitions and website links for more than 1000 acronyms used in the CCC system. For example, "AB 2558" connects directly to the text of that professional development legislation. The resources include Powerpoint presentations, videos, and other kind of resources that can be added and searched. The plan is to add portfolios to the clearinghouse as well. Right now logins with a single sign-on are being developed so that users will eventually be able to store completed professional development centrally with some kind of badge system. The desire is to allow people to contribute materials, and to allow for social connections to establish groups. The portal also includes a link to a micro CMS Grovo, being called "Learn Academy" that is envisioned as making it possible for people to take courses from the professional development portal/clearinghouse. Currently it includes a dashboard to display courses you are taking, level of completion, and what is remaining to be finished. The Grovo library of applications includes: LinkedIn, Dropbox, Pinterest, Prezi, YouTube, Basecamp, and Trello. There are also "soft skill lessons" in: attention management, productivity, email, efficiency, working remotely, how to blog, digital etiquette, information security, and information privacy. The lessons are covered in very quick 1-2 minute presentations, and then there is a quiz. The audio of the presentation is time stamped to coordinate with the transcript, so that a user can jump to a particular location in the transcript if desired. These have all been produced by Grovo, and they will develop others if desired. Tim Kyllinstad noted that Prezi is not 408 compliant and shouldn't be used by anyone in the CCC. He also explained that a transcript is not a permissible substitute for captioning. Blaine is working on getting captioning done for the lessons. A user can go into his/her course and change the order of materials presented, or the titles and can add materials from Grovo lessons, documents, Powerpoint presentations, spreadsheets, and so on. Users can add their own quizzes as well. Standards or default settings can be applied to assignments, due dates can be set, and depending upon the user's credentials, other users can be notified that assignments have been given to them. The company is currently focused on the learning platform, but they know that as a system we would be interested in the ability to embed or import materials developed in Grovo into Canvas. The current badging infrastructure also isn't tied to Mozilla Open Framework, but we are asking them to look into it so that the API could be applied outside.

Goal C: Expand access to data and predictive analytics to inform student, college, and state decisions regarding statewide priorities.

Some work has been done on aggregating our data sources and utilizing data analytics. A data scientist has just been brought on at the Technology Center. His initial work will be targeted toward helping us design the architecture under the portal to support student interactions and data for a recommender system, similar to what is seen on Amazon. "Students like you..." Lou explained that a master data model will be important with OEI, EPI, and CAI all planned to throw off and consume data from existing systems, SIS and others. Without a master data record management kind of approach we'd be asking colleges to do 10-15 different integrations with those existing systems. Instead, the model with the portal will be to build out an Enterprise Service Bus (ESB) along with a master data record approach. To set that up we must look at a number of issues: What is the owner of the data? What system is the system of record for that data? Who has rights to view, update, edit, and those kinds of things? There needs to be a

system in place to manage those elements. Additionally, one of the bigger issues will be what feeds off of that data flow and who has rights to view it and work with it?

The main focus has been the recommender system in the portal, but digging into it there are a lot of other issues: how to integrate with SIS, where stored, and what kind of data sharing agreements need to be in place to facilitate access to it? The ecosystem must be developed and then we can talk about who is building the algorithms that will be used in analytics, will it be the RP Group, or a staff member, or someone else? There is a long road, but we are starting to make progress, and a few months from now there should be a better than rough prototype recommender system off of CCCApply.

Education Results Partnership working with CAI is supposed to look at the assessment data, however, an audit of where they store their data found it came up lacking; there is not enough security. A data warehouse model that is a little more secure will need to be built, and it will be important to be able to feed anonymized data.

The CCC Reporting Center including a reporting tool and dashboard tool that sits behind CCCApply was recently upgraded. It now allows scheduling of reports to run on the application data. It is now operating across 85-90 colleges; A&R departments are using it and like it, the ad hoc reporting is very easy. However, the challenge now is to replicate it out to scale in the cloud so that no matter what application we are trying to pull the data out of, we'll be able to serve that need.

#### **The Emerging Tech Landscape: Brainstorming**

The committee discussed current priorities and revisions or additions they felt should be made to the 2013/14 goals.

Jay felt that Goal A was still a priority and thought that it would be useful to develop and adopt some standards so that "CSU like" system-wide purchasing would be more feasible. It would be difficult, but not impossible.

Kale noted that there are so many issues related to front end compliance for SISs and other systems, that there is not a lot of capacity for innovation on the instruction side. IT departments are too impacted with things that have to be done to be able to innovate. If there was a common SIS, IT departments would be freed up from tinkering with iterations of PeopleSoft or Datatel. It would be helpful to leverage conversations at the front end about the realistic impact things will have on institutions as the planning is happening for technological needs. The system needs may sound simple, but end up being complicated at the backend. There should be more holistic conversations about the true construction needs.

Lou wondered if there were ways to free up resources by having service providers that could do everything that colleges have to do: desktop support, datacenter management, and so on. Can those services be outsourced? Kale thought that could even be helpful within colleges that have the same SIS, or similar systems that are struck with the same or similar problems. Colleges come up with creative solutions independently without realizing that other colleges have already been down the same path. Having a resource bank of ways to solve common problems, or even solutions that have been tried that don't work would be helpful. Jay thought that some of that could be tied into professional development and improved communication; for example, there was great feedback to the CISOA conference that PeopleSoft presentations were needed, not just Banner and Datatel. In the CSU system they have the Community of Academic Technology Staff (CATS), there isn't really anything like that in the CCC, the closest is DE Coordinators focused on a very specific area. Maybe there is room in the professional development arena to stimulate conversation about it.

Micah thought there were ways to take advantage of common standards and still honor local sovereignty at the district level. He noted that the OEI model is "I'm not telling you that you need to come on, but if you do you are going to see a heavily subsidized licensing platform along with resources across the system working together." The choice is still up to the college about whether or not to participate. The Foundation can help with getting discounted leveraged cost, and professional development can be focused around the innovation. Lou noted that OEI has also focused on products or services and bringing people together to build solutions. In some areas there are specific configurations of SISs, so that you can't build something that is scalable to more than one institution. Being able to provide a product offering for the entire system is the key, in addition to leveraging our size to get what we want. That also provides for a consortium of support with ideas about how to configure things. The important element is to focus not on "who do we like" but instead on "what do we need this to do?"

Tim Kyllingstad noted that the training element should always be included in the contract with vendors, if it isn't included for the Cisco and VMware contracts it should be. Joseph explained that the CCC doesn't have the same amount of leverage as the CSU in contracting because the CSU can say "this is what we will buy" while the CCCs individually might choose to buy. Even with the recent contract the same pricing was not extended to the CCCs as was to the CSUs. The CSUs got 75% off of maintenance while the CCCs were offered 5% off, and so on. The vendors will not extend the same discounts because they recognize that the cost of sales will be significantly higher in the CCC system since it will not be an automatic system wide deployment.

Several members agreed that leveraging tools at the classroom level that can be used for ADA compliance would be very useful. In online courses, the platform is ADA compliant, but it is up to the instructor to make sure that everything within the class is ADA compliant. Tim Kyllingstad noted that funding of DSPS is not institutional or system level support, it is tied to the students. A technological solution to vetting classes would be a start, but there would still need to be help once problems were identified. Support technology is needed that helps to do some of the work. OEI is struggling with this right now because they have the goal of improving instruction in DE not just OEI. They are working on building tools that everyone can use, and developing processes that are sustainable and replicable. However, there are also many courses that are not part of OEI and a commitment needs to be made both to students and staff that everything meets the standard. Micah explained that OEI is looking at software with a web component that can be added which will spider crawl on sites to do the review for compliance, it cannot fix things that are out of compliance, but it can do an automated review. The adjustments still need to be made once they are found, and those might be best made by faculty. There is a need for more infrastructure assistance for instructor content. Right now there is the DE Captioning Transcription grant that can help support local resources on campuses, but as faculty become savvy with media resources, the need will become much larger and more challenging to support. Additionally, the money needed for captioning of Confer events continues to rise. Captioning content is also probably an area that each individual district is buying through their library program on some of the same media or content. Meghan mentioned that the library has done statewide buys and saved a lot of money on EBSCO; that helps to provide a benefit and more equitable access to the colleges that didn't have those resources.

Michelle emphasized that whether content is faculty developed, vendor developed, or spider audited, faculty are held accountable for vetting content and whether it is compliant with ADA. There is a lot of effort involved as well as a time element to be able to learn how to do this. There really need to be system-wide ways to acquire materials similar to the way that the Library group acquires materials. That system-wide leverage would also have more impact on vendors who are not compliant. It becomes easier to put pressure on Films on Demand and others who are not 100% captioned to become 100% compliant. Book publishers also need to be pressured to

provide ADA compliant materials. Tim Calhoon suggested that much as we have now set up a Security Center Advisory Committee, established standards, and are now looking at tools and putting out offerings, the same thing needs to be done for accessibility, there needs to be an Accessibility Center. It is important to look at the different entities that are coordinating similar functions which may be moving in silos and instead find ways to harness and aggregate those efforts.

Bill expressed concern about the needs of campuses for local support for implementation of the three major technology projects. CAI has local requirements for cut scores and multiple measures, EPI has a whole list of local implementation elements including catalog rights, articulation, alignment of curriculum between colleges in the swirl, and document processing, and finally, for OEI there will need to be assistance to faculty in transitioning curriculum to new platforms, integration of acceptance of courses between colleges, and implementation of local commitment to Credit by Exam. There will need to be a considerable amount of guidance and local resources for these efforts. Tim Calhoon noted that funding through mini-grants will provide some assistance, and the Systemwide Architecture Committee (SAC) is looking at standing up a consulting team on the technology side. Bill cautioned that technology is only about 10% of the issue, and that professional development isn't really the issue either; there is a need for on the ground implementation. Craig explained that CAI has been working on the challenge of trying to set up the professional development framework to help with the implementation of the technology. The people who are going to be required to integrate the system into the SIS are not easily identified in a statewide organization, but each individual campus will need to find a way to make the SIS link into the Common Assessment results so that the data shares. There will also need to be faculty professional development on establishing cut scores, placing students, and developing curriculum, but Craig has faith that faculty will be able to develop those pieces and get them out through the initiative. He felt that the biggest challenge for CAI was identifying the technical people that they need in order to create the professional development that is needed in order to help colleges.

Bill explained that the process of implementing DegreeWorks took two years of work to do all of the: alignment of catalog rights, straightening out rules, courses that faculty accept, e-transcript issues, what happens when curriculum changes, going into MIS to create the equates, and so on. All of that work has to take place or the implementation just won't happen. How do we take responsibility for the technology delivery to enable the colleges that don't have this capability of expertise, in order to make it happen? Jay sees the same issues at his school in delivering EPI. There are resources locally that are needed to do that well and they do not have those resources today. He is trying to figure out how to bring those positions in as new or redeployed people, it is a big challenge. The initiatives are trying to build models for processes and once City College of San Francisco does their Banner integration, they will be able to provide that expertise to anybody else that is Banner school that comes after them. There is an eye toward having the pilot schools develop some of those processes, but degree audit is an enormous amount of work and they had to hire two degree audit specialists to be able to do it.

### **Big Data and Analytics:** **Information**

Alan Duncan from Gartner provided a presentation on some of the ways that data and analytics could and probably should be used in the future for making some of the business decisions in higher education. Often in higher education people don't like to think about how the financial health of the institution drives what the college is able to provide to the students, but data and analysis of that data can help to connect those two inter-connected elements in ways that can be beneficial to the institution. The world is changing and education is a competitive market just as any other industry would be and this is driving a dynamic in how to do things differently. Just as we see a shift in market conditions, there will need to be changes in the way we run our

educational institutions, we will need to adapt to keep pace with expectations in order to continue to operate.

Social media, mobile devices, ubiquitous information and the cloud, are all changing the way we operate and interact. There are increased expectations around continuous access to information and data analytics is starting to bring all of those elements together in a way that drives our ability to act, especially in the research space. Academia has been familiar with the idea of collecting data and analyzing it to identify learning opportunities and come to solutions that drive society forward academically. Previously there hadn't been much thought given to uses of the data to drive institutional performance, but they are coming to the fore now. Educational institutions perform functions in four key areas: research and development, teaching and learning, campus community, and community engagement. Those institutions also support activities in the areas of: administration, finance, human resource, facility management, information management, and technology and communications. If an education institution is not running in the black, it will not have the opportunity to offer the kinds of educational services and engagement that it wants to. Every institution has to be solvent and able to generate revenue to invest back in a feedback loop.

Alan asked about the model for the CCC and Bill explained that the finance model is based on enrollment. For fiscal health colleges are required to make decisions that produce cost effective enrollment, but at the same time expectations are focused on producing outcomes such as graduation and transfer, which are disconnected from the funding model. Alan explained that the reality of the world we are living in is that the institutions that are focused on revenue profitability are the ones that can invest in the furthering of their academic and research goals; it may feel a bit dirty, but that is where success generates from. Colleges will find it beneficial to provide evidence input into both strategic planning and operational management of all campus areas to expand out the functional aspects. The college can then move into modeling the business functions and elements that go into operating and managing the organization and looking at the data sets that can be brought together in order to understand the current situation and model future situations.

The whole central thesis of an information based approach is an expectation that things will have to change as a result of the information. If there is not an expectation of changing either tactically or strategically, then the idea of an information based approach is a fallacy. Bill explained that the reality is that the malleability of operational changes varies tremendously between the facilities and operations end, where there is a short timeline between data informing and producing outcomes and the other extreme where program and curriculum decisions are less time connected to new informational data. Alan acknowledged those extremes and highlighted the importance of looking at the functions that the college performs to see where there are opportunities to be more effective, whether by being more efficient, or providing better outcomes with the same investment, and looking for those opportunities to drive those changes. He started with an example regarding increasing enrollment or improving the entry qualifications of incoming students; the committee clarified for him how the CCC operates as a system that takes all students that want to attend, and often (but not always) has more students than seats available. Afterward, he provided an example related to the courses that a college offers and decisions related to a particular cluster of courses that are a foundation for another course and how to decide when it is appropriate to cut that cluster if there is not much enrollment, and when that need might need to be balanced with the academic need to offer them.

The important elements to look at are: identifying goals that can be looked at in terms of measurable data, what the college can do to help support the achievement of those goals, and finally the data needed. These three items need to be correlated with each other to have a functioning evidence based approach. There are five key principles needed in connecting the

data that you have with the business functions for decision making purposes and outcomes that monitor and manage success: facilitate, communicate, support, broker, and arbitrate. It is critical when working with data to have common shared data definitions; having different campus entities using different definitions will result in difficulties. Trust is important as well, so having visibility of data integrity for an auditable view is important, especially for statutory or compliance reporting to some sort of government agency; accuracy and completeness of data, in context, is critical.

It might be useful to consider potential business opportunities, or to look at ways to get a better value than originally conceived for a particular business function. Some areas to look at might be: customer experience, cost reductions, new business models, and targeted marketing. There are a lot of technologies that are available, many that might fall into the category of a solution looking for a problem. It is best to start with the business problem first and then look for tools and technologies that can solve that problem.

The University of New England in Australia found that uses of social media applications allowed them to look for areas related to student welfare. One involved a simple selection of a face for "how are you feeling today," but when linked together with status updates it was possible to identify students at risk either academically or socially. Another successful program at another college predicted that students with a particular background would benefit from an orientation course for a month before starting at the college; that analytic was built into the enrollment process and prompted the administrative assistants to proactively offer the preparatory course. They were about to raise pass rates by 20% with the use of the program.

Often there needs to be a mix and match of different tools: dashboard with regular outputs, analytics workbench involving more data discovery, and a data science laboratory which is much more entrepreneurial. It is important to explore the inter-relationships between these areas in order to look for new patterns and trends. Therefore it is necessary to think carefully about how teams are put together, because almost nobody can do it all. Ideally a director can bring together a blended team made up of: business skills, IT skills, and data scientist skills, to make an analytics team. Tim Calhoon explained that since the data scientist is fairly rare, perhaps that role could be centralized since more colleges have researchers and IT support. Alan encouraged those in the central role as facilitator and enabler not to be seen as authoritarian but more as a coach.

Tim C explained that the CCC is interested in what would be a good makeup of job functions for a governance/steering committee for analytics. Alan would be happy to provide a future presentation on governance, if desired.

#### **Data Analytics in California Community Colleges: Information**

Karen Rothstein presented information from the paper "Presenting the Possibilities for Improving Student Success Using Predictive Analytics" put out by researchers in the RP Group. She provided an overview of the current types of data analytics programs in use in the CCC. MMAP and STEPS 2 are focused on predicting student success in initial English and math placement and have found that the variables that are highly predictive of success are: high school GPA, grade in last course in subject, and difficulty of last course in subject. They found that test scores are not very predictive of success. Long Beach CC now uses these multiple measures to enhance student placement. There could also be a use for a website that allows students, parents, and counselors to put in this multiple measures type of information to predict their placement and chance of success. The multiple measures could theoretically be used alone, but that would not be recommended without extensive conversation with faculty and departments.

The Common Assessment Initiative (CAI) is looking at combinations of these different components to be included in the Common Placement System for colleges to use in developing placement algorithms and decision trees. Non-cognitive Variables (NCV) are being looked at in terms of affect and motivation of students, but there is not really a place for them right now other

than as an additional measure for placement and success. Some colleges are using an informed self-placement process which is structured with workshops and interactions with counselors and discipline faculty, however, research does seem to indicate possible issues with lower self-placement and the resultant issues of students having to take more courses to transfer or degree when they self-place.

Current uses of predictive analytics include for recruitment and enrollment management partially based on identification of likely students through geographic data, anticipated program of study, high school GPA, and so on. This can provide for targeted marketing to high schools which can increase student success, however, it doesn't work if students don't actually engage with the marketing that is sent to them. Enrollment management based on historical data about the predicted ups and downs of enrollment can be investigated, and yield management based on predictions of where students are most likely to enroll, and targeted use of financial aid to recruit students most likely to enroll and stay enrolled are also uses of data and predictive analytics.

There are interesting early alert programs. Purdue has a program which provides student with a green, yellow, or red prediction of their success in a course along with steps that would make them more successful, based upon their demographics, academic history, engagement with online resources, and current course performance. These "signal courses" now have an 89% retention rate versus 69% previously. Lynchburg has a Student Retention Predictor which identifies both at-risk students and students most receptive to the efforts to retain them, based upon local enrollment data and a college student inventory. This program has seen an increase in mid-term GPA and retention rates. Successful programs also provide resources more than once, and significantly, at the time that the student needs it, rather than just telling students about the tutoring center at the beginning of the semester. Karen envisions a time when a struggling student would be reminded about the tutoring center, and be provided both the name and picture of a tutor for the course, along with a time to come in for tutoring that is open on the student's schedule.

Historical data on academic, financial, and social factors can be preloaded for students, and when that data is combined with college data, can provide meaningful information on risk factors for the student, as well as what could be done to help the student succeed. Desire2Learn has a student success system based on this concept. Starfish which is being provided by Hobsons also has a retention package. It can be difficult to gather some of the college data, and sometimes the only way to really gather it is on campus, but it can be hard to convince faculty to give up class time for surveys. Kale thought that it would be useful either to incentivize the collection of the data, or to capture it with other data that is being collected for other purposes in standalone systems. Faculty need to be able to see how that data will be useful to their students rather than just being another checkbox for accreditation or something else that is not particularly useful to the student.

Karen cautioned that data can identify the "why" for things like persistence and at risk, but some behaviors are unobservable and will not be captured. A student might wait 6 months to enroll and it might be due to helping his mother after the death of his father, or perhaps he wanted to travel, or maybe he missed the registration deadline. Those very different behavior patterns would not be captured by the single factor that he waited 6 months to enroll. She also cautioned that small learning communities based on demographics are rather arbitrary and may not actually meet a student's actual needs. Although she is Korean, she is adopted and therefore would not have her needs meet as well in a group intended for Korean students as one for Jewish students.

Recommender system services are moving beyond simply identifying at risk students to identifying which services best fit which students, and have shifted away from focus on students most likely to fail, to students most likely to benefit from interventions.

SHERPA (Service-oriented Higher Educational Recommendation Personalization Assistant) used at South Orange CCD builds student profiles based on preferences, schedules, and courses, and suggests alternatives if a course is full. If the student likes the alternative they can click and register right away. This doesn't replace counselors, but it can provide a benefit to some students who just want another course that meets a requirement. Major Matcher at Georgia State predicts the student's probability of success in a major using information from: courses attempted, grades earned, remaining courses needed, predicted level of success in a particular course, and areas that might need tutoring, and the counselor could then help the student make an informed choice of major or suggest possible alternatives.

Student outcome data on: historical rates of student progress and success, demographics of student body, available transfer slots, growth or decline of industries, and strength of economy, can help to set realistic data-driven targets for improved graduation and transfer rates. Realistic information can also be used for the education of legislators and public stakeholders about factors that affect progress.

In the ethics of predictive analytics it is important that students have awareness of the fact that data is being collected, and how that data is being used. Student privacy is critically important. There is no IRB structure for the CCC system so there probably is not a system-wide policy regarding aging of data or retention of data, but that might be an important point to consider. There should be a clear process in place that is transparent and it should be used for good. Policies will probably vary by institution. Jeff noted that every school has a privacy policy and Education Code has regulations about how long certain records must be retained, but there is not a limit on how long you may keep information.

Philosophically, don't try to reduce students down to a number and it is important to balance the power of predictive analytics versus the invasion of privacy. There is the potential for bias and error and it is important to be cognizant of the fact that outliers and errors are often what people are drawn to. It is important to think about the validity of the model and continue to make revisions and refinements to try to make it more accurate. We can identify at risk students, we may be able to identify interventions, but we also need to do follow-up and have conversations about the models to make them more accurate and really meet the needs of the student with the right kind of intervention. These are starting points in the conversation

The old model had data analytics housed within the IT or IE department, whereas the new center for excellence model would include: project management, data management, data analysis, application development, network administration, web design, graphic design, sales and marketing, communications management, and operational support in an all-inclusive center that uses data responsibly. Tim Calhoon emphasized the need for a collaborative center of excellence. People tend to think of putting data analytics under the Technology Center because the machine learning part ties in with software development. However, the RP Group has the expertise on getting data into the right format, and CalPASS Plus is also working on having a good understanding of the CCC data set. This should be a collaborative effort with a governance mechanism and a steering committee to oversee what is going on. For example, how would students and faculty feel about using social media to predict retention?

There is the potential for predictive analytics and new systems to be able to make the data work in real time, with just-in-time interventions. Right now research can tell the big picture story, but isn't as good at telling what this student in this class needs right now. Those interventions with a really simple interface that might have a red dot next to the student's name with a follow-up message to send the student an email, because something in the data indicated that the student was at risk as a result of not having done x, y, or z, could be very helpful. It could provide quick, easy, actionable information but with very real potential for change.

Lou expressed concern about who would be writing the rules, and how that would happen. His team is going to build a platform for consuming analytic models and doing something with analytic models, but who will be writing the rules for what to do when some piece of information shows up? He wondered about the composition of the team that would build the template so that the default matches what really works. Tim Calhoun thought that it would need to be a work group that included counselors and student service personnel to say things like, "No, not a red dot on the screen, instead send me an email directly rather than having an intermediate step." Mt. SAC had a respected "power user" in the group to help create the usability profile for the analytics and the others in the group to engage with. When that engagement happens, additional variables came out that wouldn't have been shared if the power user wasn't involved. The technical support people also need to be involved in the process and to hear the affect and understand that it matters to the user that the color is green or red, because they will be able to use it more effectively. They have also found it really helpful to have software that enables the technical support person to make the changes instantaneously and check with the user about whether or not it works for them. The size of the group should depend on the voices that need to be heard: counselor, faculty, and so on, but it is most helpful to have multi-layered representation from people who can see things from two or more perspectives. Those who have a hybrid perspective can convey visions across bridges between IT and faculty, or administrators and counselors, and so on.

### **Information and Security: Information/Discussion**

Jeff Holden provided an overview of the reasons for starting the Information Security Center in February 2013 at the Technology Center. As more data is being gathered in the CCC system it becomes more important to keep that data and information secure. A survey of CCCs found that 75% had no dedicated IT security staff, 60% had no security awareness program, and 60% rated their program as "just starting out." The Information Security Advisory Committee (ISAC) was formed with a secure email list open only to members and that group refined an information security standard, based loosely on the ISO 27001 standard, which could be adopted by institutions. They are providing colleges with vulnerability assessment tools for web facing servers and offering server monitoring which includes sending an alert to an outside email if your server goes down. The group has twice yearly information security workshops; the first one was this winter at San Jose and another will be at Mt. SAC in July. The Security Center provides information security consulting as they can, and has purchased InCommon memberships for every college in the system, which includes low cost SSL certificates and federation for Shibboleth.

The Information Security Standard was developed and approved by SAC, reviewed by Gartner, ISAC, CISOA, and the CCLeague. The League has added a footnote to the Acceptable Use Agreement with a link to the URL for that document. The standard includes: best practices for information security, information security controls, and a data classification standard including definitions for public, institutional, and private/protected data. Mandatory information security awareness training for anyone who deals with private/protected data is required in the standard. Information security is critical because data breaches are becoming a larger risk. In April 2013, Maricopa CCD lost more than 2 million student records, and spent \$26M so far, to clean it up, not including class action lawsuits. Both tuition and property taxes have been raised to cover those costs. Unfortunately adoption of the standard has been slow; no colleges have officially adopted the standard yet. The League does not want to put the standard in as a board policy, they only want to include it as a best practices footnote. They only want to implement things that are legislated; they feel they might be increasing risk otherwise. However, the risk is in not adopting and following the standard.

Online information security training has been offered to the system, but despite repeated monthly email campaigns to CTOs and CBOs only 500-600 people have signed up to participate. There is no separate listserv for IT, so it is a challenge to get information directly to IT staff.

**Action Item:**

Bill is willing to take the best arguments for the security standard to the CCLeague board, and to put the information on security training out to the CEO Listserv.

The Security Center needs funding for staffing and buying more security products; currently Jeff is the only central security staff member for 112 colleges. Jeff provided an overview of where the CCC system stands in comparison to the 2014 Educause CDS Benchmarking Report on Information Security and found that as a system we are far behind where we need to be. Every CSU has an information security officer, and most have an information security team. We cannot afford to keep our heads in the sand and adopt a "business as usual" strategy.

Jeff would like to develop best practices documents for all of the different applications that are currently used in the CCC system: Banner, PeopleSoft, DataTel and so on. He'd also like to have them for counselor systems and other common system applications. Developing that kind of best practices document could provide the foundation for an audit process, allowing colleges to check their systems and compare them to best practices. It would be helpful to colleges to be able to visit and do full vulnerability assessments including optional penetration testing, to see if they are vulnerable. Campuses should have and review information security procedures, policies, and plans including: disaster recovery plan, acceptable use plan, information security standard, BYOD policy, and cloud policies. That would help colleges to do a risk analysis that complements their security assessment, allowing them to discover, prioritize, reduce, and remediate or transfer their risks in various areas. SimpleRisk is software that can help set reminders to review risk and transfer items into a group that can be tracked throughout the year.

Looking at different kinds of security threats faced over time, guessing credentials is still pretty high, while spyware and key logger have decreased, but phishing has become a huge threat with very sophisticated and clever campaigns, often specifically targeting leadership to gain access to credentials. Phishing attacks cannot be guarded against with technical controls and can only be stopped by educating users. Therefore suggested practice is now to operate phishing campaigns against your own users to educate them about what to look for and what actions to avoid. Jay sends out de-linked examples about every 6 weeks to try to educate users on his campus.

Phishing Frenzy is an open source product that could be used to help educate users about what information can be gathered and used; for example, on a campus with single sign-on, using your credentials, it could be possible to change where your automatic deposit paycheck is deposited.

Tim Kyllingstad suggested that it might be useful to gather data on the number of attacks that are happening on the system, perhaps the system office or board of trustees could require reporting so that could be tracked; the information could be useful in asking the legislature for support for information security. The fact that tax payer dollars have had to go toward remedies when breaches have occurred is also information that would be of interest to legislators.

There are probably at least a dozen things that could be done to reduce risk on every campus in the system. One important area is patch management; 99.9% of exploited vulnerabilities were compromised more than a year after the bulletin on that vulnerability was released. The time between announcement of software vulnerability and when it starts being exploited is decreasing but if patches are kept up to date the risk is decreased. At this point a large number of malware samples are unique to a particular organization, and focused to get by the virus scanners, so patch management is becoming more important than virus management.

Jeff is interested in providing vulnerability management security as a service for the system. He did a trial of Tenable, which will scan inside the network after the local IT helps set it up. Once it is set up, a staff member could monitor it and send tickets to the individual college IT department if an issue is noticed. The system allows for: configuration management, sending out alerts regarding changes, asset management (which scans for new computers on the system to make sure they are known), log correlation (looks for anomalous information), passive vulnerability

discovery (looks for outdated and therefore vulnerable versions of software on the system and on BYOD and also credit card numbers sent as clear text), and continuous monitoring. When issues were found, remediation assistance could be offered to the colleges if there was enough staffing at the Security Center. Jeff would also like to develop and offer a Security Plus course through Canvas. It would be free to all college staff and would cover all of the basic domains of information security: network security, cryptography, and so on. There would also be the opportunity to simulate security incidents and test the disaster recovery plan and the incident response plan. He is investigating breach insurance right now and will be creating a white paper on the topic. Many colleges may already be covered through ASCIP, and Beazley is another possibility which also provides forensic information. Two-factor authentication would be another good area for the CCC system to focus on; where to use it, and what product. Many colleges are moving to using it for all users and most are using Duo Security. It has gotten a lot easier to use and it a lot cheaper.

For a “big dream vision” there could be system-wide implementation of SIEM, Security Information and Event Management. That would have someone available 24x7 feeding all logs into a central system. However, it would be millions of dollars for a system the size of the CCC. More realistically, it would be useful to be able to staff 2 FTE at the Security Center and get funding for licensing of Information Security software, like Continuous View monitoring. This would be most effective with the addition of local resources of about 1/4 FTE at each campus to coordinate and work with the central Information Security Center.

Tim Calhoon explained that projections for next year’s budget look promising with respect to freeing up a little bit of money which might be able to get Jeff a security team. The K-12 system received about \$112M to upgrade their networks, and Louis Fox, from CENIC is encouraging Erik Skinner to go to the legislature to ask for more money for the CCCs. We are currently in the process of doing a build-out with money received for connecting up the centers and paying for circuits within the districts. It is late in the process, but we might be able to ask the legislature for money for information security. Tim and system CTOs would like to see information security on the list of strategies that come out of TTAC this year. It is a big concern and as a system we need to focus on it because we are very underprepared. Jay confirmed that his campus does not have a dedicated IS officer, their manager for network service fulfills that role. Staffing resources are hard to come by. It would also be useful to be able to train and retain staff within the CCC for IS and IT. Members felt that information security was important and that it would be a good idea to look at ways to provide training and/or certification within the CCC system as well as providing some resources at the system level. It is also important to have a stronger message about the importance of information security, avoiding breaches, and most especially the costs involved if there is a breach. Jeff has been working to get the message out through talks at CISOA, the CCLLeague and any other opportunities that he has. Tim felt that there should be about \$1.5M in ongoing funding for information security for the system.

Kale emphasized the importance of getting the conversation about information security in front of the Academic Senate. Faculty hear that \$x M dollars are going to some program and wonder why it isn’t going to instruction. Awareness needs to be built that if there is a breach it will take money away from the school; Academic Senate representatives can bring the issue to the Executive Team, since the knowledge is not there yet. Theresa highlighted the importance of getting this information into the budget dialogue for 2016/17.

Many seats for SANS Securing the Human training were obtained that have not yet been taken advantage of. This is a well-respected company, which provides entertaining materials in 3 minute vignettes and lessons that can be completed over the course of a week or so. The link will be sent to the TTAC list.

Bill suggested getting the attention of the system through telling the Maricopa story and explaining the risks for all colleges in the CCC system. Maricopa is well-known for their technology, they are not weak, but they did everything wrong and tried to cover it up. That will help get over the “this couldn’t happen to us” mentality. What is our level of risk? If this were to happen to City College of San Francisco, what would happen, what would it cost them? Then put together some concrete steps that constitute what we should do, along with what needs to be done, and a reasonable budget, that will resonate and we should be able to get it funded.

**IT Hiring and Training: Information/Discussion**

The committee discussed some of the challenges of finding, hiring, and retaining IT staff. The CCC system offers good benefits, but salaries are at least 10-20% less than in the commercial sector, so it can be difficult to hire people. The best way to solve the problem may be to train people from within the system. CISOA has had a program for about three years to train new CTOs, and they have trained about 45-50; this means that when jobs come up there are IT leaders who know the intricacies of our system. However in specialty areas of SISs, security, networking equipment, Cisco, and VMWare, it is hard to bring people up within the ranks. Additionally, the system probably needs mid-level management expertise to lead the networking engineers or to lead the people doing the development with the SIS. What are directions that can be taken to bring in and up more people for the system?

Paul explained that his campus spends money to send staff out to user groups or vendor training; CISOA is a good one and more campuses should take advantage of it. Jay explained that in the past they would bring in a vendor for a week of MS Server 2012 training for system administrators, but it was expensive to bring someone in to teach onsite. They also take advantage of free vendor training but that only works for products that are purchased. The other issue is the classification system, you can’t promote people. You have to open a job, people have to apply for it, and often it ends up going to someone one job below and then you have to repeat the process over again to fill that position. The structures make it really hard to move people up in the system. Additionally, there are higher skilled technical people who have been certified in different technologies. The training should be for your staff to have movement, but often it really doesn’t work that way, and you cannot provide extra stipends for extra training because it must be negotiated in your contract and other campus groups want the same carrot.

Bill thought that it would be helpful to be able to hire someone out of a pool who didn’t have everything that he needed and be able to train them up to that level. They end up training inside, but it would be better if they could send them out for 2 weeks to train. Members noted that @ONE did great training in the past, and was able to offer it at very reasonable prices to participants versus how expensive it would have been if purchased corporate retail. Blaine reminded the group that those resources are available within the system, ICT instructors at various colleges have programs that are designed to teach people to become network engineers, network administrators, system administrators, and Cisco administrators; that is what they do. He and Micah have been part of the Mid-Pacific ICT MPIC Conference where they talk about network security and have great relations with the vendors. That should be a source of training and candidates. Micah acknowledged that @ONE used to do a lot of information technology training for Tier 1 and Tier 2, but when there were budget issues, it got cut. They would hire a Microsoft Certified Trainer with the official MS curriculum. The nominal cost to the staff member was \$50 and they would get three meals. The IT people loved it, they had a network and were able to communicate and be away from campus, in fact that was a key element for them; they did not want to do the training remotely, because if they were on campus they would be interrupted with tasks. Micah thought there might be possibilities for renewing the program if funding were available. It would be useful to provide the virtual infrastructure that would provide the different VMs that could be used. Then they could set up a lab facility to remotely go into those VMs. It is a model to look at; although it would be costly on the front end. Micah also noted that when we

train up students from within the system they feel like a part of the community and tend to have more loyalty so they are less likely to leave. Jeff mentioned that there is a lab environment funded by the federal government that is out there for institutions to use; RAVE lab which is a Virtual Environment for cyber security.

Jay suggested including HR in the discussion. At City College, work done as a student does not count if you apply for a job there. Other members noted that policies differed campus to campus but thought that including HR in conversations about how to meet the need for IT staff could be important.

It should be possible to negotiate a lower rate for training with the vendors/providers, in the past the MS IT Academy was offered at a lower rate. The curriculum is compressed to 5 days compared to 17 weeks within IT curriculum on campuses. Basic knowledge is already assumed and the training tends to be targeted and specific. Lou also suggested considering formalizing some of the informal relationships with vendors so that instructors might for example be able to provide tech support to the vendor with access to information 10 hours each week, with perhaps a 30-10 split, the college would pay for 30 hours and the vendor 10 hours.

Joseph mentioned that training has been discussed for some of the Foundation contracting, but that it might be worthwhile for an institution in the system to be direct with vendors about the need for training. The system spends over \$5M a year on Microsoft, so it would be logical instead of having MS come in with their pitch; we tell them what we need. That is something that could be done during a SAC meeting.

The system is finally going to see the benefits of all of the work CENIC has been doing in the central valley build-out, with the contracts with AT&T that were renegotiated, and with some of the TTIP costs being split amongst the three large technology grants. Perhaps with TTAC's blessing those savings could go over to @ONE for reinvigorating tech training. Micah suggested that there be a needs assessment also because he believes that San Jose or Evergreen does a Cisco Academy every summer. Some IT training may be able to be funded out of Student Success/Student Equity money.

The group extensively discussed centralized IT versus de-centralized IT spread out in implementation units. Although many units prefer de-centralized IT because they think they are getting better service, the reality is that is not the case. IT should be centralized for better supervision of best practices, testing, making sure that skills are up to date, making sure that they are doing a good job, and all other aspects that are not as well understood by the department units. Supervision under IT is critical to make sure that standards are met and documented properly. However, it is important to have a system that allows those departments to get their needs met without having to come to IT begging with their hat in their hand. Kathy noted that with the three large initiatives there will need to be some kind of hybrid knowledge brought into implementation with technical staff, academic faculty, and counselors all involved. Bill explained that what worked best within their centralized model was to have a lead person they are calling a business analyst on the IT staff. That person reports to IT but their job is to go over to the unit that is receiving these programs to act as a liaison to translate the needs to the IT personnel. The requests for IT services are also put on Smartsheet and treated the same as facilities requests are; they are prioritized and will soon be online so people will know the status of those projects, it helps with transparency. Kale explained that they've been struggling with the issue of centralized IT and they have started to pilot keeping a centralized IT process, but with the prioritization process split off to different committees with the right people in the room to be able to make informed decisions.

Mt. SAC is doing three additional things to address the shortage of IT staff. First they are reviewing job descriptions and compensation with the realization that the comparison is not with

other CCs, it is with the broader IT field and they need to be competitive both in job description and salary. Second, each time they bring in a vendor contract they look at how much of the service can be pushed into that vendor contract. Finally, they are working on developing a pool of professional experts that can be brought in on a project basis.

Members agreed that having @ONE or someone else to be a vital source of low cost training would probably provide the biggest impact for the system. There should also be a component for training CEOs on the use of IT. There is CEO training at the CCLLeague every year but it would be a good idea to find out what kind of training that audience would like to see. Micah also brought up the new Media Consortium and the challenges of the new Digital Literacy Campaign; there are populations within the system that would benefit greatly from digital literacy, CEOs, Instructional Deans, some faculty, and so on.

Members agreed that there should be some kind of system-wide security model starting with 2 staff members as well as an administrative support person.

**Develop Strategies for 2015-2019 Goals:**

**Small Group Work**

Committee members met in small groups to look over the previous TTAC goals and strategies to discuss what needs revision for the next several years. Then they came back together to report out and pull together common elements from their discussions.

**Original Text Goal A: Establish baseline standards and upgrade the technology infrastructure for California community colleges to create a state-of-the-art business and learning environment**

**Draft Revised Goal A: Upgrade business information systems and learning environments to foster the transformative use of technology to advance and support student success efforts**

Kathy thought that there might be a desire to expand the focus of this goal so that it is not just narrowly on technology infrastructure, but instead includes all the ways that IT permeates through the different functions and portions of the institution. She also asked groups to look at priorities about which standards to develop and push out in the coming year, perhaps expanding to services that are or can be outsourced.

The red group discussed the idea of having SAC set the system-wide technology standards. Fusion is driven by funding, so there needs to be some financial incentive to commit to a Fusion-like model for future technology implementation projects like data analytics and so on. Focus this goal on the three initiatives but use the experience and data gleaned from their implementations. CAI, OEI, and EPI should develop specific technical, professional development, and programmatic standards for adoption. For example, what type of staff should there be for implementation of degree audit? Adopt programs offered through the three initiatives, show measurable outcomes, and a plan to achieve them. This would form the basis for a document that can be passed to the Department of Finance to ask for funding with a gap analysis. TTIP and the technology grants should fund the gap analysis to demonstrate to the legislature the need for ongoing resources for the programmatic adoption of OEI, CAI, and EPI. The group also felt that this goal needs a specific strategy focused around security because it is getting lost in everything else.

The blue group looked at the strategies and saw a sequenced process, so they took the strategies and reworked them into steps in that sequence. The first would be to establish a committee and possibly work groups with a participatory governance structure. There will need to be the right representation, including input from the Academic Senate. Second would be a needs assessment to identify the standards to be established in all of the areas that came out of last

years strategies: federated identity, accessibility, security, Wi-Fi, and so on. There would be standards for hardware and software, best practices to be implemented, and total cost of ownership associated with those implementations. Third would be identifying funding, not just one time funding, but a structure that allows usage for total cost of ownership. The structure should allow and support the usage of products and technology efficiently with best practices in mind. The funding for services and professional development should be secured and tied together to help overcome the challenge of getting institutions to participate if they don't have local resources. The idea is similar to the OEI Consortium model of building something enticing for the institution to opt into. This goes along with subsidizing or leveraging low cost trainings. Step four would be some kind of agreement between the local institution and the statewide service so that there is accountability. If you don't have the resource locally to implement Wi-Fi, the state will seed that if you are willing to commit the person locally to become up to date to maintain it. The state will provide the tactical team, but the local college will provide staff to be trained to provide ongoing support for it. This will help to build a knowledge network and create a process for developing a community of practice. Success would be measured through: regular evaluation, reports associated with mini-grants to document the implementation progress, and quarterly/year end reports. The people that would need to be involved would include the advisory committee, local institutions, tactical teams, and the RP group for evaluation. It would be important to have correct representation on SAC so that instructional technology is included. A survey could identify the needs assessment regarding what should still remain local and what would be outsourced as a service. This would be more of a looping process than a linear one, it would continue to evolve and loop around through the process again.

The yellow group discussed looking toward the approach taken by the CSUs with a consortium focused on one issue at a time. In order to decide what to start with, CTOs would be asked the equity needs are that should be addressed. It is important not to just generate reports; instead they wanted to develop functional items. The committee would bring together the relevant technical people to do the work, so work on network infrastructure would bring together network nerds. Dean explained that the Fusion model actually evolved organically, it started as a small group of interested colleges which put up money, and it grew from that. So the Fusion model was generated bottom up. Baselines are different from standards, and it is important to have minimum functionality baselines. It is also important to move toward interoperability. As we see that many schools are on a particular platform, it makes sense to move toward a group buy and establish consortia and networking around that.

Together the groups felt that an important point was that "technical infrastructure" should mean much more than just dumping hardware on a college and leaving. It should also include continuous professional development but even more than that, the transformative elements of changing business practices to work differently. The goal is to have full, deep, rich, transformative implementations, not "flashing 12:00 VCR" implementations. That needs to be captured in the narrative included with this goal. This is about far more than providing the technology it is about helping to foster the transformation of practices. Committee members struggled to find a way to make the wording include the fundamental shift of transformative integration in business systems and the change involved. Kathy will provide a draft of the goals and strategies after the retreat so that members can do more wordsmithing to convey what is desired and then have a follow-up phone meeting.

The work of Google and Apple is pushing the CCC into new areas and TTAC should have some sort of strategic objective to look at those things and experiment with them, otherwise we will not be prepared for the next big thing. TTAC must keep an eye on the horizon so that we don't lose the vision for what is coming and time should be set aside for that in the retreats.

**Original Text Goal B: Leverage technology to increase use of comprehensive and high quality professional development resources that promote student success.**

**Draft Revised Text Goal B: Increase participation in comprehensive and high quality professional development that promotes digital literacy and student success**

The blue group discussed the fact that the three strategies attached to this goal have been addressed relatively well with the professional development clearinghouse solution including: the master calendar, the speaker's bureau, repository for resources, documents maintenance, and some measure of portfolio resources along with digital badging and credentialing, all tied to one location. Blaine noted that the seed money for the clearinghouse did not come out of TTIP, but from OEI, and there will need to be ideas about where the maintenance resources will come from to keep that going.

Assessment resources should be established and IEPI for Institutional Effectiveness and the Success Center might be good groups to be involved in that. It is critical that there is quality content in the clearinghouse. There should be a promotion and marketing effort associated with this tool; it is a large tool and could be very effective if stakeholders use it. The Ambassadors Program used to be able to communicate at the campus level about statewide resources and did a great job of generating energy and interest. The current email blasts and webinars don't seem to yield a change in behavior; it may be that those channels are informational rather than transformational. The Ambassadors were able to do that work of fostering community and creating networks among those doing professional development. Maybe 4CSD can take the lead in pushing those resources and fostering connections.

Usage metrics could be collected from the clearinghouse and measures of success could be tied to those metrics. Currently event registration is not built into the clearinghouse, but that is a feature that could be incorporated.

The clearinghouse could be used for documenting effective practices for implementing recent policy changes; resources on best practices, professional development, spreadsheets, and so on could be stored there.

Looking into reinstating technical boot camps would also be valuable for the system; perhaps through partnerships between MPICT and @ONE IT training options could be increased.

The red group suggested: establishing a system-wide license for Linda.com because that provides IT training online, establishing a program for lunch and learn for IT, and centralized purchasing of online training for mandated things like: sexual harassment, safety, etc. that are currently being paid for individually by all of the campuses. There could also be classified CE credit courses for salary advancement. There could be renewal of the CCLLeague two day conference on promoting awareness and best practices; CEOs would bring CTOs and webcasting could also make it a live event. Potential topics could include: 508 compliance, security, and return on investment technology enhancements.

The yellow group talked about considering professional development across the board that would be tied to the initiatives and would be integrated across the board for networking pros, but also faculty, administration, and staff to gain information literacy as users. Perhaps including badges or even a certificate to quantifying professional development activities related to information and technical literacy. Use those to connect to job descriptions and hiring criteria. This could incentivize having crossover credit or job descriptions that could be upgraded, those are negotiable items, but there are models to do it (Mt. SAC has one). They could even be linked into a credit program like the Academic Senate has in a partnership with CSU where CSU credit can be used for faculty advancement on the class steps. Jay suggested bringing HR and the state classified groups into the discussion and into looking at job descriptions; it would be useful to encourage the creation of a technical track that rewards people for staying technical. Competitive job descriptions are needed.

**Original Text Goal C: Expand access to data and predictive analytics to inform student, college, and state decisions regarding statewide priorities  
(No revised text yet)**

Lou expressed concern about strategy one calling for consolidating into “a single data repository.” He noted that data warehouses and data extracts normally exist for a particular purpose. Tim Calhoon suggested that what is actually being proposed is a single path to get to all the data or to pull data together for particular purposes or queries. Kathy explained that is happening in CalPASS Plus with data from: K-12, MIS, EDD, EMSI labor market data, and CTE employment outcome surveys. There is an aggregation function that is happening.

Kale thought that it was great to have amnesty to correct faulty data and to incentivize campuses to fix it, but also felt that corrupt data from the past would need to be fixed since predictive analytic models are only as good as the data that goes into them. If some of the old data is faulty, the predictions will be as well. Tim Calhoon thought that issue would be project based, when there was an application to fix the data, it would be cleaned up. The Chancellor’s Office may be able to provide the leverage to get the K-12 data for the CCC system. The process will probably involve transactional databases all over the place, for CCCApply and others; the goal would be to go in and pull the data, flatten it out and look at it where it resides. For CalPASS it would be in their data area. It would be important not to store non-anonymized records at CalPASS for security reasons. However, through web services it should be possible to have a view of the data no matter where it actually resides. There will probably be some consolidator service provider that will have the data sharing agreements with all the different areas, and a centralized interface to do table joins and flatten out from a bunch of different tables.

There should be some kind of governance group to act as data custodians to decide who will be able to access the data and how. Currently, Lou gets all of the requests, for example, “we want to have access to all your LGBT data.” However, there are no rules set up to protect some of the data that is now in the system. The legislature started requiring the collection of data on every student’s sexual orientation, gender expression, and gender identity a few years ago, which is very private information, but that information is not currently protected under any statute. It is especially important given the security issues that we know exist in the system, to protect that data so that no harm will come to our students. The governance group would set up rules for access so that users could interact with the data in a way that kept the security and privacy of the data for the protection of our students. That is why Tim was interested in advice from Gartner regarding governance. (Who should be on that board? Who should be advising the projects and the Chancellor’s Office on handing out data? Should there be agreements about how long data sits on someone’s machine?) Michelle did not feel that Gartner demonstrated enough knowledge about the CCC system to know who should be on the governance group, and Craig thought that looking at Scorecard would provide a better model of who should be on the group for our system. The group for Scorecard includes: the RP Group, researchers from the Chancellor’s Office, Academic Senate, CSSOs, CIOs, trustees, and CEOs. Perhaps some kind of sandbox environment could be provided for the researchers to use rather than handing them the data, maybe using a VDI terminal to work on the data but which would not allow it to be exported.

Lou noted that beyond research use of the data, there are operational uses of the data that need to be covered as well: What kind of data can be used to make what kinds of decisions? What are the top 3-4 system benefits we want to serve? Is it just for research, or do we want it to be used for MIS reporting and FTES? There needs to be governance of the master data record: how the data is to be used, what the system of record is for particular data, which people have rights to view it, and who has rights to edit it. In some cases the owner of the data is the student; if the student opts out their data can’t be part of the data set that is handed over to the researcher. Tim has had a request into Chancellor’s Office legal since June 2014 to find out whether we could

collect data on minors (dual enrollment students, for example) because the LGBT community wants data on the whole cohort. If there was a governance committee, they could provide input on that issue.

The second strategy was to create tools that compile and visualize data to support decisions and provide professional development that supports the use of these tools. Bill noted that when there is a data extract that is produced for a research project with a report, the data extract model and the research model are posted on a website. So when a user wants to do a project there is an archive of data usage projects that might be useful.

Lou noted that it is practical to have data marts that are continually updated for a particular project, Scorecard, for example. But it is not practical to have a single warehouse. Tim Calhoon thought that it might be a model with multiple data marts which could be used in scenarios and reports. Kathy took note that the technologists seem to have concerns that there are issues with what is described in the strategies.

The intent of the strategies was about providing better access to data related to CTE programs, labor market information, and wage information. The desire was to get data into the hands of practitioners in a way that was more visual, translated into plain language, and perhaps more actionable. Is that still something that we want to focus on, and if so what would we want the TTIP funded programs to be doing?

Karen expressed the opinion that it is great for people to have access to data, unless they don't know how to use it correctly. You need to know how to generate an appropriate comparison cohort, for example. Someone can end up looking at a really pretty visual but they don't understand what it tells them and what it doesn't tell them. Her concern is about the practitioners who are accessing the data, and what level of understanding they have of that data. She felt it could be really dangerous to have people making decisions on the basis of pretty visuals that they may not understand. Lou agreed and noted that the cross-functional professional development piece between the people running the business and the IT people writing the rules would be very important.

Bill emphasized that information and data are important, it is what we needed to get funding from the legislature. The Scorecard is not perfect, but it has evolved over time and is getting better and better. We need to be equal to the challenge to do this with CTE, to gather the data and make the decisions, because the alternative is that someone else will. The committee felt that TTIP needed to put together a steering committee to: get the data, establish the relationship between various databases, have a set of rules that protect the privacy of the data and the reporting of the data, and have experts do the extracts and analysis. There should also be caveats on what the data should and should not be used for. There should be appropriate representation from all the different constituencies and expert groups on that steering committee. Bill suggested that there should be a consortium model to provide help and expertise to colleges especially those that do not otherwise have research capacity.

#### **Meeting Evaluation:**

Blaine lamented the absence of a Vice Chancellor, and Patrick Perry in particular, as a champion for the system with the legislature, and as a watchdog to make sure that technology projects stayed on track. Theresa explained that the Chancellor's Office recognizes the importance of the issue and is moving quickly to address it; they hope to have an announcement of an interim arrangement very soon.

There needs to be a portion of the agenda set aside to review new technologies to be able to have the background needed to be visionary, perhaps that could be part of the agenda at other meetings during the year leading up to the retreat. Kale thought that was a good idea, but did not

feel that Gartner was the group to provide that information; their lack of awareness about the CCC didn't help move him into considering ideas that they presented. Lou noted that the California in general and the CCC specifically have not historically been on the radar for most vendors or consultants, with these large statewide level projects that is changing and there should be improvements in the amount of knowledge about how things are done here.

Dean felt that the most useful parts of the retreat were when the committee was discussing things and bouncing ideas off of each other. Kale agreed that the value was in the conversations. He suggested that some of the material from the presentations could have been provided as homework reading prior to the meeting, or included in structured small group conversations at the meeting; that might be more beneficial than so many presentations on the first day of the retreat.

Members appreciated Kathy's work as facilitator and thanked her for helping to keep the dialogues and discussions going.

Members were not particularly excited about having the next retreat at Kellogg West, they suggested that consideration be given to having the next retreat closer to an airport, perhaps at the new Embassy Suites in Ontario.

**Next Steps:**

Tim Kyllingstad noted that Tech 2 and 3 published baselines regarding staffing and training needs for IT; those should be considered in revisions to goal A. He also suggested that a summary report from this meeting be generated so that people can see what our priorities are, and to publicize the planning and work that TTAC does. It does not need to be a glossy 150 page report, but it should provide a summary that CEOs could receive in their email. Members agreed that a brief tactical report should be published and sent out to appropriate constituent groups.

**Adjournment:**

The meeting was adjourned at 1:45pm.