



**MOTOROLA**

# **A Proposal for Integrating Technology into School Practice in the Merced County School District**

## **A. Introduction:**

Over the past year, Motorola has been interacting with several members from both the Merced County Office of Education, as well as with individuals representing the University of California (UC) system and the proposed new campus to be set up in Merced in the coming years. Motorola was initially attracted by UC's stated goal for the new Merced campus to be the most advanced eLearning institution in the world, with planned linkages to the surrounding communities and branch campuses throughout the Central Valley. Motorola met with representatives of the new campus, discussed goals and also shared lessons that Motorola had learned through its own efforts in education.

Motorola has a long history of distance education/eLearning activities, aimed mostly at internal education of Motorola personnel, but also in aiding local communities to improve basic education throughout the world. Recently, in response to interest from many educational sources, Motorola has decided to make these capabilities available to communities on a for-profit basis.

With this in mind, and with the implementation of the UC Merced campus still several years away, Motorola was invited to advise the local community of Merced on the application of Technology in Education (TiE). This would bring to bear novel high technology solutions - which thus far had not been applied to education – to solve real-world problems of teachers, students, administrators and parents.

From these early exchanges, two goals were set forth:

- (1) Creation of a Center of Excellence devoted to Technology in Education (CETiE)
- (2) Development of a strategic plan for the implementation of technology as applied to education throughout Merced county and surrounding areas.

Motorola has a long history of supporting and/or creating Centers of Excellence in new market areas in order to assist its efforts to target its products to customers. The purpose of such a center in this context would be the following:

- **Goal 1:** To make learning with technology in K-college/university an accepted part of the daily instructional and administrative processes for all stakeholders of the school community now and in the future.
- **Goal 2:** To develop exemplary teaching and administrative approaches that take advantage of new technologies to support the goals and visions of local communities in educational reform.
- **Goal 3:** To develop research and disseminate best practices which are relevant to the needs of other schools around the world, with emphasis on rural communities.

The purpose of a strategic plan is to ensure that all resources and activities are aligned to the intended learning goals of the community. Technology should never be installed for its own sake, but rather used in support of solutions to problems identified through the process outlined below. A plan can help reduce redundancies, project resource needs and highlight potential problem areas. Communication is also more effective and simplified when all parties involved can refer to a single, comprehensive plan that outlines areas of responsibility, deliverables, accountable due dates and other critical information. These issues are particularly important for projects in which stakeholder representatives may change over time.

In projects in which the criteria for success is not judged solely on the performance of the technology, it is important that the strategic plan engage not only the technologists, but also the various stakeholders associated with the project. In the case of TiE, these stakeholders include (but are not necessarily limited to) educators, administrators, students, parents, government and the business community. It is very important that these stakeholders together develop clear criteria for success, as well as a means of measuring the success.

Development of a strategic plan has four major steps:

- **Step 1: Assessment:** Understanding educational needs/requirements and business requirements and what is currently in place. A technology and educational assessment as well as a market assessment must be performed to form a baseline.
- **Step 2: Visioning:** Working with the stakeholders of the program to understand what the goals of the program will be, and in what timeframe.
- **Step 3: Gap Analysis:** Analysis of the differences between where the baseline assessment of technology and education and the stakeholders' vision. Furthermore, a gap analysis attempts to rank the various gaps by importance to allow the stakeholders to decide which gaps should be eliminated first, in what time frame etc..
- **Step 4: Strategic Implementation Plan (SIP):** The SIP proposes a methodology for achieving the goals outlined in the Gap Analysis, the timeframe, metrics, costs and process controls for continuous improvement .

Following delivery of the SIP, the Merced community will be in a position to take bids on the implementation of their strategic plan from a variety of potential vendors. It is, of course, Motorola's wish that it be allowed to bid on implementation as well.

### **Timeline and Deliverables:**

Motorola proposes that this proposal run from January 15 through July 15, 2002. The deliverables from the proposal will be:

- (1) A plan describing the goals, functions and benefits of a CETiE.
- (2) A SIP targeting the implementation of TiE for the Merced community (along with supporting documentation; i.e. the Assessment, Vision Statement and Gap Analysis)
- (3) Documentation of the process used by both Motorola and the stakeholders in Merced to allow local Merced representatives to repeat this process as needed for future, follow-on TiE design and implementation.

### **B. Background on Motorola:**

In support of this proposal, Motorola proposes to use resources mainly from two groups: the Global Software Group and Motorola University.

### **Motorola Inc.:**

Motorola is a \$40 Billion technology company with three main markets: telecommunications technology of all kinds; automotive electronics; and semiconductor design and fabrication. Motorola has over 125,000 employees worldwide, and operates in over 140 countries. To support these efforts, Motorola has six main business units:

- (1) Personal Communications Sector which designs, manufactures and sells handheld communication devices such as pagers and cell phones;
- (2) Networks Solutions Sector which designs, manufactures and sells communication network technology of all kinds (including fiber optic lines, wireless networks, cable networks etc.);
- (3) Integrated Electronics Solutions Sector, which focuses on the needs of the automotive industry for engine controllers and sensors etc.;
- (4) Semiconductor Products Sector which designs and manufactures microprocessors or all kinds (including the PowerPC chips used in Apple Computers);
- (5) Global Customer Support Organization which handles sales and custom services to large customers such as countries and multinational corporations; and
- (6) Corporate Offices, which include such diverse functions as Human Resources, Research and Development Labs, Motorola University and the Global Software Group. The purpose of this group is to support all other sectors.

### **Global Software Group (GSG):**

GSG was created 11 years ago to develop high quality software for the sectors in support of their product lines. Since that time, GSG has begun to branch into other areas, including manufacturing software, precision agriculture, the Internet, healthcare and eLearning. GSG currently has 3000 software engineers who are among the top 1% of software engineers around the world in terms of quality and productivity. Because of our role in supporting all aspects of Motorola, GSG engineers have experience and skill in all kinds of communication and network equipment.

The role of GSG in Merced will be to evaluate the existing technology, capture requirements for new technology and propose a systems solution. GSG personnel will manage the entire engagement as well as being responsible for the ultimate contents of the SIP.

### **Motorola University (MU):**

MU was created over 25 years ago to support several Motorola efforts. MU is responsible for training Motorola employees as well as Motorola customers. In its role as change agent, MU incorporates innovative technology into its curriculum. Employees now receive instruction via satellite and the web as well as through an internally developed method called Internet Immediate Instruction or I<sup>3</sup>. MU also supports communities of practice activities to facilitate knowledge transfer among employees sharing common learning needs.

In addition, MU has a long history of outreach to the local school systems. Many Motorola business groups owe a portion of their international success to MU's ability to collaboratively work with community stakeholders to develop effective educational programs. In the U.S., one of the most outstanding initiatives has been leadership institutes for principals, superintendents, school board members and district strategy team members. The institutes are modeled after professional development workshops offered to Motorola leaders. The ultimate goal of the institutes is to empower education leaders to implement new strategies for enhancing student achievement thus increasing the quality of future employees, suppliers and consumers.

In the past two years, MU has undergone a radical shift in focus, not only transitioning its internal education efforts to a web-based, always available system, but also in beginning to offer its technology and professional development expertise to outside clients and school systems on a for-profit basis.

The role of MU in Merced will be to evaluate the education system within the Merced community, especially as it relates to educational leadership of teachers and administrators; to coordinate the

interaction of Motorola staff and the diverse stakeholders in Merced; and to guide the choice of technology to fulfill the educational priorities of the community. Additionally, should the community of Merced be interested, MU could provide various courses and workshops on best practices in school leadership and educational reform.

GSG recently acquired three MU personnel with expertise in building collaborative partnerships to address community education issues. These individuals will form GSG's human resources core for this project.

## **C. Deliverables:**

### **1. Center of Excellence for Technology in Education (CETiE):**

In establishing a Center of Excellence, it is necessary to determine several attributes prior to beginning operation. In general, Motorola has found that defining the following criteria will minimize the risk of failure:

***Vision and Goals:*** The purpose of the institution. In this context, vision is synonymous with a long-term strategy for the Center, while goals focus on nearer term, concrete, measurable activities. Creating a vision that is agreed to by all participants is not necessary, but this agreement can simplify future operations since all of the participants become stakeholders in the future of the Center and are often much more willing to participate for the benefit they see for themselves. Several possible goals were mentioned earlier and are repeated below. Additional Goals can be added as desired.

- **Goal 1:** To make learning with technology in K–12 and beyond an accepted part of daily school life for all stakeholders of the school community now and in the future.
- **Goal 2:** Develop exemplary teaching and administrative approaches that take advantage of new technologies to support the goals and visions of local communities in educational reform.
- **Goal 3:** To develop research and disseminate best practices which are relevant to the needs of other schools around the world, with emphasis on rural communities.

***Location and Participants:*** Where the institution will reside, and what parties will participate with the Center. These elements will have profound impact on the operation of the Center. Typical Centers are located at universities, run by and for the university. By opening the Center up to other potential stakeholders, such as other local schools, the business community etc., the Center has potential for greater impact (insular Centers often focus on pleasing the funding agency and the professors who participate in the Center). However it should be noted that university officials often view such outside interactions as a loss of control, and the operation of a Center like this can be one of the greatest risks for success. On the positive side, however, outside participation can focus students and professors on 'real world' problems of which they might not otherwise be aware. Also, outside participation can simplify funding support, both by allowing the Center to draw on the resources of those outside participants for whom it is solving problems as well as by showing the greater utility of the Center to grant-based funders (such as government agencies, who often desire to see how the Center impacts the communities beyond the confines of the university.)

***Operating Principles:*** How the institution will operate. This includes issues such as who determines the goals of this institution, how are the goals agreed upon, who measures the success of the center against these goals, and what measures are taken if the goals are not achieved. Other attributes are: how funding is allocated to individual projects; the importance of teaching/students within the Center; how and when

information is disseminated from the Center to the other stakeholders as well as the general community. Finally, issues of Intellectual Property ownership must be decided upon at the inception of the Center prior to outside participation and funding.

***Funding and Timeline:*** How the institution will be supported, and in what timeframe the institute will operate. As mentioned above, a Center can receive funding from variety of sources, each of which can influence the direction of research. The rights of funders in influencing the direction of the center must also be established. Identifying start-up funding, as well as sources for continued funding is also important. Motorola and the local project director will commit to seeking and acquiring grant funding to fund staff time in accomplishing described work goals and to fund the CETiE. A timeline for the growth and maturity of the Center is also desirable as a means of measuring the success of the institution. Finally, while not often considered, many Centers outlive their usefulness, and become institutions whose sole purpose is to continue to locate funding simply to prolong its existence. Identifying the conditions under which a Center has outlived its usefulness and should be shut down is one of the most important attributes that can be determined before the Center is established.

***Deliverables:*** The deliverables for establishing a CETiE are as follows:

- (1) Facilitation of discussion of a CETiE by Motorola and Merced personnel
- (2) Delivery of a Strategic Plan for a CETiE covering the 4 areas outlined above, which will be suitable for presentation to potential funders of the CETiE
- (3) Establishment of a CETiE in the six month timeframe, funding and time permitting

## **2. Strategic Implementation Plan**

In developing this plan, Motorola believes that it has the necessary skills and experience to not only to facilitate the development of the plan, but also to engage in the implementation of the plan going forward. One of the most important aspects to this plan, however, is the partnership that exists between Motorola and the communities of Merced. Motorola strongly believes in local ownership of the planning process, facilitated by Motorola. One of the major deliverables from this plan, however, should be in documenting a process that works for the local communities of Merced, and training individuals in the execution of this process. The result of this should be the goal of Merced county possessing the necessary knowledge to conduct future Strategic Plans – either pieces of the plan or the entire plan - on its own. Local community contexts and the ability to customize locally while at the same time planning globally will be addressed. Continuous improvement loops built into the plan will be a criterion for plan development. It is unlikely that Merced will develop the local capacity to implement the plan on its own in the near future, but ownership of a process for tackling the initial stages of large-scale systems integration projects like this one which touches the entire community can reduce the risk of future failures of technological implementation.

### ***Assessment***

There are two main elements that should be addressed in conducting an Assessment:

- (1) **Scope:** Scope refers not only to a geographic scope of the effort, but also to the breadth of the goals and participants; the scope is most often limited by time and funding rather than by design. Understanding the scope of the project is a necessary prerequisite to undertaking the actual assessment. Education touches so many other areas that it is difficult to measure its impact to any great degree of completeness, and decisions will need to be made on limits in both time and geography. For instance, Merced County has more than a dozen different school districts within the county and it may be impractical to assess the educational level of each school in the time frame outlined; a representative sample is probably more desirable.

Similarly, the scope of the project with regard to the participants must be determined. As mentioned previously, each of the various stakeholders will have different criteria by which to judge the success

of this program, as well as different stages of technological development. At the very least however, the needs of students, educators, administrators, the local workforce, parents and (at least) the local government needs should be assessed. Again, because of the size of this undertaking, understanding the needs of representatives from each of these stakeholders is probably more practical than doing a comprehensive survey.

- (2) **Assessment:** Once the scope of the work is determined, the assessment needs to focus on a number of attributes. At a minimum, given the initial discussions, three areas for Merced should be examined. First, the level to which the current educational system in Merced County meets local needs. Second, the current, installed technology base of the educational system within the Merced area. Third, current plans for installing future technology, and the goals that have been set for those installations.

### ***Visioning:***

Visioning focuses on eliciting from the participants an ideal, improved future state. Again, there are two main elements:

- (1) **Participants and Scope:** As above, the size of the engagement must be limited for practical purposes of carrying this effort out, with regard to both the scope of the engagement, as well as those individuals who will represent each of the stakeholders.
- (2) **Vision and goals:** The purpose of this section is to determine the desired goals from the perspective of each of the stakeholders. These goals are generally divided into short (6-12 months), medium (1-3 years) and long-term (3+ years) goals, with successive goals building upon the earlier ones. This is an iterative process, whereby the participants should be exposed to other, similar efforts occurring elsewhere, as well as being exposed to different kinds of technology and their uses.

### ***Gap Analysis***

The Gap Analysis focuses on the difference between the current state of the community and the stated goals contained within the vision. This step is often iterative, as the prioritization of efforts and the metrics can change after the initial presentation of the results. The Gap Analysis has three main pieces:

- (1) **Metrics:** Very simply, establishing metrics at this stage refers to understanding the criteria by which success of the overall project will be measured. These metrics will become modified going forward, but understanding the metrics at this stage broadly links future work back to the stakeholders. As an example, if one group of stakeholders is the local workforce, then they will clearly measure success by how well the locally educated students are prepared for jobs within their community after graduation. This in itself leads to a number of sub-metrics - such as familiarity with high technology etc. - but success in such a case should not be measured by the number of computers installed within each high school.
- (2) **Gap Analysis:** The purpose of this section is simply a statement of the difference between the present state of the community (the assessment) and the desired future goals. As stated above, the future goals should be ordered based upon a timeline for the future.
- (3) **Prioritization of Effort:** This section allows the community to begin the process of establishing the most important goals. Again, as in the scope of work discussed above, Prioritization of Effort is most often limited not by the lack of work but rather by time and dollar constraints. Also, given the diversity of the stakeholders in this effort, there may be incompatible or redundant goals that need to

be combined into a single vision. At this stage, it should become clear which efforts are fundamental to the success of the rest, as well as the dependency of later efforts on other efforts. Some idea of a desired timeline for carrying out these efforts is also a necessary component, as this will affect the cost and level of effort in the subsequent SIP.

### ***Strategic Implementation Plan:***

A SIP focuses on four main elements:

- (1) **Purpose of the implementation:** The installation of technology for its own sake should never be a goal unto itself; rather technology is used to support the achievement of goals set forth by the stakeholders. Understanding the goals and purposes of the implementation allow for the proposal of several options in technology choice – one or more of which will be mutually agreed upon by all parties for implementation. Furthermore, performance metrics surrounding the actual installation of the technology are also derived from an understanding of the purpose.
- (2) **Technology Architecture:** While it is certainly possible and often common to implement technology projects individually, there are certain inefficiencies that arise as the projects become more and more complex. Redundant or incompatible technologies are the most common problem, which leads to higher costs to the stakeholders. In a complex *program* consisting of several interacting *projects* it is common to create an overarching *architecture*. This plan takes into account how the various subsystems interact.
- (3) **Timeline:** Simply sets forth when the various subsystems will be created, tested, implemented and – oftentimes – how long the systems will last until they are to be superseded by new technology. Depending on the complexity of the program, the timeline can be anywhere from months to years in duration; timelines also offer options for increasing or decreasing the overall costs of the implementation.
- (4) **Budget:** Simply sets forth the cost of implementation of the various projects in the overall program, as well as maintenance for the systems.

Following delivery of the SIP, the Merced community should have all confidence in their ability to begin taking bids from companies for the Implementation of the SIP. It should be noted that creation of the SIP does not obligate Motorola in any way to implement the recommendations of the SIP, and that Motorola at its sole discretion may enter a bid for the implementation of the SIP.

***Deliverables:*** The Deliverables for the Technology Strategic Plan are as follows:

- (1) Technology and Educational Assessment Document
- (2) Community Vision Statement
- (3) Gap Analysis
- (4) SIP for the application of TiE
- (5) Process for facilitating development of strategic plans

### **D. Process for Engagement:**

Like Merced County Business Education Alliance (MCBEA), Motorola believes that it is imperative for students to have access to learning strategies that effectively integrate technology into the curriculum so that they may be prepared to excel in a technology-driven society. Both parties also see the potential for

administrative efficiencies using technology in educational settings. Furthermore, both parties acknowledge opportunities for revenue generation if viable solutions are developed.

Recognizing MCBEA's understanding of its community education needs and Motorola's experience in developing technological solutions and education partnerships, it is the intent of Motorola to combine resources and efforts with MCBEA to jointly develop the deliverables outlined in Section A and expanded upon in Section C. To that end, Motorola proposes the following process for engagement.

1. MCBEA will have primary responsibility for identifying key community stakeholders and maintaining those relationships including issuing meeting notices, identifying pilot and research sites and responding to stakeholder issues.
2. Motorola will support MCBEA in its stakeholder care role by providing any information specifically related to Motorola and making recommendations on stakeholder and pilot issues.
3. Motorola will have primary responsibility for facilitating stakeholder sessions including content and post-session analyses. MCBEA will provide logistical/administrative support (securing meeting locations, arranging for meals or refreshments, issuing maps, meeting minutes, etc.) and make recommendations for improving the sessions.
4. Motorola will have primary responsibility for assessing technology needs and developing technology solutions.
5. MCBEA will identify technology representatives to assist the Motorola team in obtaining information and building access as required to meet the goals of the project.
6. In order to foster a free exchange of information, each party agrees that it will protect the other's confidential proprietary information from unauthorized dissemination. Neither party will use the other's confidential or proprietary information for purposes other than those necessary to further the purposes of this agreement. Neither party will disclose to any third party the other's confidential or proprietary information without the prior written consent of the other party. The parties' obligations with respect to confidential or proprietary information shall extend beyond the termination of the partnership.
7. Given the aggressive six-month timeframe for the project, both parties agree to comply with operating and reporting procedures that will be mutually established at the formal onset of the project.
8. Both partners accept and share responsibility for seeking and acquiring funding to support project goals.

In keeping with our key beliefs, Motorola will exhibit constant respect for people and uncompromising integrity throughout this project.

## **E. Activities Timeline:**

### **Activity 1: Define the Scope of Work (6 weeks)**

The purpose of this activity is to begin recruiting local champions from the various stakeholder groups, and define in very broad terms the goals of the project.

#### **Participants:**

*Motorola:* Project Manager (half time)  
Education Specialist (half time)

*Merced:* Merced Project Manager (half time)  
Available stakeholders

**Activities:** On-site meeting with different stakeholder groups to explain goals and recruit  
Second meeting with recruited representatives to discuss broad goals

**Activity 2: Local Assessment (6 weeks; in parallel with Activity 1)**

The purpose of this activity is to perform a comprehensive assessment of the Merced community.

**Participants:**

*Motorola:* Project Manager (half time)  
Education Specialist (half time)  
Communications specialist (half time)  
Networks specialist (half time)

*Merced:* Merced Project Manager (half time)  
5 local K-12 network staff  
2 local K-12 administrative staff

**Activities:** Site survey of several schools representative of Merced  
In depth meetings with stakeholder representatives to elicit their assessment of the current state of Merced education  
Presentation of the Assessment to the larger stakeholder community

**Activity 3: Visioning (1 month)**

The purpose of this activity is to determine the overall goals and driving vision for the project.

**Participants:**

*Motorola:* Project Manager  
Education Specialist

*Merced:* Merced Project Manager  
2 local K-12 administrative staff

**Activities:** At least two meetings with representatives of the stakeholders to envision goals  
Presentation of the goals and visions to the larger stakeholder community

**Activity 4: Gap Analysis and Selection (1 month)**

The purpose of this activity is to analyze the shortfall present between the Assessment and the Visioning. Grant attainment will be a critical component of this phase, before this phase if feasible.

**Participants:**

*Motorola:* Project Manager  
Education Specialist  
Communications Specialist (Half time)  
Networks Specialist (Half time)  
Architect (Half time)

*Merced:* Project Manager  
5 local network Specialists

**Activities:** At least two interactive meetings with the representatives of the stakeholders to determine priorities and gap analysis

### Activity 5: SIP Workshops (6 weeks)

The purpose of this phase will be the iterative development of individual projects of the SIP. Each proposed project will need to go through a series of iterative steps within these on-site workshops to arrive at both a community as well as technological consensus. These steps will begin with a proposed technological solution to a problem identified in Activity 2, with its associated costs and time to implement. Representatives of the community will review the proposed solutions, and make suggested modifications to the solution, followed by another presentation and round of criticism.

#### Participants:

*Motorola:* Project Manager  
Technical staff as needed

*Merced:* Project Manager  
5 local technical staff  
2 local K-12 administrative staff

### Activity 6: SIP Architecture (6 weeks; staggered with Activity 5)

Following agreement on proposed solutions from Activity 3, Motorola will prepare an overall system architecture to incorporate all of the proposed projects in the most efficient manner monetarily and time-wise. The overall architecture will be presented to representatives of the community for criticism and feedback.

#### Participants:

*Motorola:* Project Manager  
Architect

*Merced:* Project Manager  
5 local technical staff

### Total Activity Time: 6 months from start date

Note: Some preliminary work (recruiting of stakeholders, recruiting of local project manager etc.) must be in place prior to the start of this program. This activity will be facilitated by Motorola at no cost and is not included in this timeline.

## F. Budget:

**Motorola:** Cost per week is fully loaded, including travel

Project Manager: 25 weeks @ \$4000/week	\$100,000
Education Specialist: 16 weeks @ \$4000/week	\$68,000
Network Specialist: 6 weeks @ \$4000/week	\$24,000
Communication Specialist: 6 weeks @ \$4000/week	\$24,000
Architect: 8 weeks @ \$4000/week	<u>\$32,000</u>
Subtotal	\$248,000
Motorola Contribution	<u>-\$124,000</u>
Grant funds and other sources:	<b>\$124,000</b>

**Merced:**

Project manager (WIB)	\$58,500
Office space 20 wks x 5 days/wk @ \$13 per day	\$1,300
Clerical support 20 wks x 5days/wk x 3 hrs/day @ \$8/hr	\$2,400
Meeting locations @ \$1,250/day x 5 days	\$6,250
Meeting refreshments	\$1,000
Copying	\$3,000
Local technology coordinator time 20 wks x 2 days/wk x \$320/day x 5	\$64,000
Assistant Supt time 20 wks x 1 day/wk x \$445.53/day	\$8,910
Program Administrator time 20 wks x ½ day/wk x \$414/day	<u>\$4,140</u>
	\$149,500