

**THE UNIVERSITY OF ARIZONA®**  
**Procurement and Contracting Services**

**Request for Proposals (RFP) for a**  
**[Multi Player Gaming Simulation](#)**

**Please mark all Bid submission  
envelopes with the following information**

**ADDENDUM #1**

**TO**

**Sealed RFP # S021006**

**Due on Tuesday, November 17<sup>th</sup>, 2009 at 2:00 PM, MST**



## ADDENDUM #1

The following questions, with answers, were received for RFP #S021006

Q1. Portfolio: Our proposal includes references to previous work, to demonstrate capabilities and successful approaches that we propose to apply here. While we can print screen shots, live interactive games are much more relevant. Can we ask the review panel to access online material?

**A1. Yes, absolutely. There is no need to over annotate your proposal, as long as there are clear instructions on where and what to view on line.**

Q2. Performance Bond: Section 2.4.11 suggests that a performance bond may be required of the winning proposer if any prepayment is involved. Our typical payment schedule includes step payments based on performance milestones. For example, it might be four equal payments of \$20,000, beginning with an initial 'launch' payment. Would such a schedule trigger the performance bond requirement?

**A2. Yes, because the initial payment has no work associated with it. If the first payment was due after reaching the first performance milestone, then no performance bond would be required.**

Q3. Prototype: Is there proposer access to the existing Corbett simulation?

**A3. No. The “Corbett simulation” is not a prototype, but rather a research level simulation model. It is not in a form in which it can be distributed to or utilized by proposers.**

Q4. Play Context: Will all players and the moderator always be present in one location (i.e. no interest in remote players)?

**A4. Within the constraints of budget, we are and will always be interested in value-added expansions of our approach, especially ones that enhance our ability to reach and teach to more growers and other pest managers. However, we do not envision interactive, remote game play at this time or in the initial phase of deployment, and cannot make it a requirement for this RFP.**

Q5. Platform: Are all computers supplied by UA Ag program? If so - is there an established capabilities document?

**A5. Our in-house resources in this regard are an aging Apple Macintosh iBook laptop system. The processing requirements of any game training simulation should be developed in such a way that they do not require extraordinary hardware or commercial**

**software demands. There are no budgeted funds for new hardware and Universities don't typically have capital funds to upgrade our mobile laptop system. So, more modern capabilities will not be likely over the span of this grant. No capabilities document is available, but further detail can be supplied upon request. Also see Q32.**

Q6. Proprietary IP Considerations: One preferred implementation is built on our existing proprietary game engine. A full, free, perpetual license to this technology is included our deliverable. Does this present any problem?

**A6. This approach is acceptable as long as it does not preclude future use in our training contexts nor interfere with any future expansions of its capability or utility.**

Q7 Regarding "Ability to change the shape and scale of the agroecosystem (including crop components) to better mimic Arizona vs. W. Texas vs. central valley of California conditions", how complicated do you wish the possible layout modifications to be ?

I am interested in whether the following is sufficient. [ The entire grid would consist of an 8 by 8 grid of farms from which a subset of farms may be selected. The simulation builder could configure each farm in the grid to be user configurable (normally 16 of these), random crops, a specific pattern of crops, or a fixed level of infestation possibly none. All user farms have the same geometry, set by the moderator to be a grid of between 1 and 6 rows, between 1 and 6 columns, forming between 1 and 36 cells to be planted. Each cell could be planted with a different crop.]

**A7. The elements need not be terribly complex. However, sizes and shapes of fields are different among the three landscapes. In Arizona, field sizes tend to be 40 or 80 A with greater variability to include even very small fields (5 – 20 A in size). They also tend to be rectangular. In California, field sizes are much larger, more uniform, and generally square or rectangular (160 – 640 A in size). In west Texas, fields are also larger and more uniform, but include a high proportion of circular fields (irrigated on center pivots). Non-cropped habitat also differs greatly. In CA, there is little to no non-cropped habitat in the agriculturally intense Central Valley. In TX, there is moderate non-cropped habitat in the form of ample roadside vegetation (think of long skinny strips along roads as possible habitat for Lygus) as well as playas that support native vegetation when there is sufficient rainfall. In AZ, there is extensive non-cropped habitat in the form of roads and building (urban and ex-urban communities), washes or arroyos, small mountain ranges, and extensive native desert habitat.**

**The habitat need not be literally interpreted, but to the extent that the budget supports it, we wish to provide as stimulating and relevant a user experience as possible. If the different landscapes cannot be accommodated in this RFP within the budget constraints, then the AZ agroecosystem should be the focus of implementation and the solution should be built so that it may be modified some time in the future to address these other systems.**

**The example you have provided seems to address the basic needs of this project.**

Q8. Regarding "a simulation engine that mimics or replicates our expected pattern of Lygus movement through an ecosystem", how complicated could the model become ? While I do not need specific details on the model for the purposes of this bid, a general idea of the complexity would be helpful. A simple model might be a function where infestation levels for a cell at any time are based on integrals of infestation level over time for all neighbor cells with factors for crop type and distance from the cell. If it would be more complicated than this, please provide a brief description of the model.

**A8. You have captured the basic functional elements of the simulation engine. This would be all that is required as long as we confirm that it “mimics or replicates” the patterns of Lygus distribution we expect. This would require some dialogue back and forth until the functions were tweaked to perform properly. Once again, however, extensibility or the built-in ability to develop other variables and functions for the model would be desirable. But, it is true that our main factors for determining Lygus distributions are in fact crop type and distance from the cell. Scalar impacts of wind would provide the user some sense of realism, as would the area-wide lowering of population density with increasing intensity or coordination of insecticide use, just to name some other possible factors.**

Q9. You do not specify a required architecture for this project, but do reference a "simulation model in .net/C++". Is there a preference for a native windows, .net, or a web based application?

**A9. The assumed architecture is a simulation model/application running on a server which communicates with a “rich internet application” running in a web browser. One reasonable approach would be a .net application running on a Windows Server communicating with a Flash movie running in the web browser – but other approaches would be acceptable if they achieve the desired results.**

Q10. Will the workstations be running Microsoft Windows, Linux, Macintosh or another operating system

**A10. Our current laptop system is Macintosh-based, OS X. Also see Q5 & A32.**

Q11. There is discussion of communication with neighbors. Will this be verbally, outside the simulation, or via the program perhaps as an instant messaging type of interface?

**A11. Instant messaging would be “cool” and very appropriate for student groups. However, it was and is not a requirement of this RFP. One reason for this is that growers may not be as computer savvy or text-savvy as younger populations. Plus, the discussion is meant to be interactive as a way to change the pattern of learning during the workshop exercise, i.e., using computer-, seminar-, and discussion-based approaches. As such, our expectation would be that with or without chatting abilities, some verbal discussion would occur. There is native chatting abilities built into the Macintosh operating system that could be used as an adjunct to the exercise.**

Q12. The description seems to indicate a setup phase and a results phase. Is there a desire to have a movie style simulation mode where participants could watch the spread of the infestation?

**A12. Again, anything that enhances the user experience and stimulates learning is very welcome, within the confines of our limited budget.**

Q13. In 5.3 there is mention of a .Net application, in 5.2.4 there is mention of a shared server, in 18.1 there is a fixed development budget... can UofA confirm hosting services for the "site"/simulation engine will be provided by UofA and not part of the scope of work. Also can UofA provide any summary specifications of the server environment such as the .NET version and if SQL is available?

**A13. The shared server will be supplied by UofA and will be located in our training lab. It will be connected to laptops via a local TCP/IP network. We will configure the machine as needed to support the simulation engine – but hope to avoid major expenditures on special software for the shared server. The server referred to is simply a master laptop available in the room where the training is conducted. It is a more capable Macintosh laptop. It has whatever native networking and hosting capabilities that OS X Leopard has available. Your solution will need to include a mechanism for managing the game training experience with this set-up, including communication among laptops with the instructor's laptop. If the solution requires a Windows-based server, then it may be possible to re-purpose a recent vintage Windows computer laptop for this.**

Q14. Would you like to see the feature that Non Player Characters (NPCs) should be incorporated into the game for cases where there aren't a sufficient number of farmers to play the game? If so, then either other elements of the project would need to be postponed to a future version or additional resources would need to be found to produce NPCs for the game.

**A14. This was something not anticipated for the RFP, but brings up a good point. Either the universe should shrink to accommodate the number of players, or else NPCs may be necessary. This is hard to assess, as our main goal over this granting period is to do proof of concept and pilot testing. We do not believe there will be sufficient time left in our grant to do a full deployment of teaching.**

Q15. 5.2: 6) Growers are then taught about the movement biology, ecology and management of *Lygus* in sensitive crops of their region through oral presentations and discussion (This is not formally part of the "game" but an integral part of the teaching of concepts to growers between simulation runs). Would the selected vendor be expected to create any assets related to the oral presentations or discussions as a part of the scope of work?

**A15. No. Their input, however, would be most welcome. Even things as simple as screenshots from the game demonstrating some of the concepts we will cover would be helpful, but not required.**

Q16. 5.3 Current Status: Would we have full access to the source code for the existing model/simulation?

**A16. The source code can be made available. However, it should not be assumed that this code will or should form the basis for the simulation engine for this learning game. The existing model is a research level mechanistic model -- our current thinking is that a statistical/phenomenological model will be most successful.**

Q17. 5.3 Current Status: The current status refers to an existing model, written for the .net platform. Is it a requirement that the backend ("server") code which constructs the model be written to support a .NET/ASP server, or are other back-end technologies also acceptable?

**A17. Anything that performs within the constraints of our hardware and software is acceptable. See A9.**

Q18. 5.3 Current Status: Is it a requirement that the model simulation code be performed solely at the server end, or is it acceptable that model calculations be performed on the client-side (perhaps with some degree of data preprocessing at the server side), so long as we can continue to provide accurate and timely results without adversely affecting the user experience?

**A18. Yes, I think this is very acceptable within the hardware and software limits already identified. You have identified the governing principle: a high quality user experience. How you arrive at this solution is up to you.**

Q19. Should we assume that the existing "high-level but relatively simple simulation model" will form the conceptual basis of the new simulation?

**A19. See A16.**

Q20. If yes, then is that model stable and of reasonable validity in terms of the natural system is trying to simulate? Does the simulation outcome reflect empirical findings? Do the major elements of pest control produce reasonable outcomes within the simulation model?

**A20. Our empirical findings are ongoing and unfortunately concurrent with the development of the game training simulation. So we do not have a priori empirical results to further shape the model. We do, however, know what we think we know ;) We certainly could identify if a simulation produces clearly erroneous or out of bounds results. We have a conceptual model only at this time. The simulation model will have to be developed by the vendor.**

Q21. If no, will the client provide a prioritized list of the key features and concepts that will be required for the new version of the simulation? The information contained in the PDFs is extremely helpful but we would want to crystalize this information into a clear set of objectives.

**A21. See Q8, which I think identifies the most basic, elemental features for the simulation. We will of course advise the vendor throughout the development phase as much as they feel is necessary to guide their development.**

Q22. Is there an anticipated amount of seat time or number of rounds of play that you are targeting?

**A22. Minimally. One round without instruction (beyond what is necessary to operate the game) or discussion and perhaps without Lygus or their control costs and damage in the system, followed by another initial round with Lygus “in the system” but still not instruction or discussion, followed by another round after instruction is provided, and still another after discussion is permitted. So 3 or 4 rounds would be the minimum. Depending on how engaging the exercise and user experience is, an upper level might be 6-8 rounds. I wouldn’t envision time to do more than this. A typical “attention span” for any of our trainings generally cannot exceed 4 hours.**

Q23. Is it possible to see the simple simulation that was alluded to in the RFP as already being worked on? Our goal in seeing it is about the aligning expectations of the game play rather than about a code review.

**A23. See A3 and A16.**

Q24. Would you always deploy with 2 people per computer or when you don’t have 30 people, do they allocate individuals to laptops?

**A24. Individuals to laptops would probably be more the norm, but any time we exceed 16 in a group, there would be doubling up occurring. Some growers would likely prefer to learn vicariously through the active hands-on efforts of a partner operating the computer.**

Q25. What data do you want returned to the players and does that need to be communicated through the interface or through the facilitation (would need a facilitator’s interface)? For example: How much damage to your crop? How much more pesticide do you have to use? Is this different for individual impact versus entire economy/group impact?

**A25. Data and feedback needs to be provided through the interface (also see Q31). Yes on all counts, but see the mock up that was provided in the online PDF. Many results will be expressed economically in terms of net income to the individual and to the community for the current run and perhaps in comparison to prior runs so that they can see if they are**

**making progress. No. of sprays and their costs may be another set of information provided. Also see Q31.**

Q26. What are the final variables that you are currently anticipating? Is there a priority on variable use in terms of balancing the game?

**A26. We do not understand this question.**

Q27. What are the metrics that determine a win state – just the economic consequences or is it controlling the bug as well?

**A27. Growers would say economics always, but we will also discuss the environmental consequences of pesticide use (quantity and quality). Results in the no. of sprays and their overall costs to control Lygus will also be important. But yes, economics will be a priority. If our hypothesis is correct, spatially arranging crops can and will minimize Lygus damage, their costs of control, and overall income for the individual and the community. Hopefully it will be win-win-win wrt environment, individual gains, and community gains, though it is possible that an optimization will show occasional individual gains that are not as high when they are optimized for the community.**

Q28. Are the starting parameters always the same, or should they be variables that the facilitators set?

**A28. There should be control over starting parameters, but this will depend greatly on the simulation developed. Some things that should be “settable” should be whether Lygus are in the system and then if they are at historically low, medium or high initial levels. Costs of control can be derived from existing records that we can provide, but there should be the ability to change (and probably increase) these costs as economic conditions change; these costs are also crop and location (AZ, CA, TX) specific. The range of values (prices) for crops will also be variable and should change over some range each time. Again, these can be derived by historical records but should be changeable to reflect prevailing economic conditions.**

Q29. Are there additional crops from those listed in the RFP?

**A29. I don't believe a list was provided in the RFP, per se. There were many crops mentioned in the online resources provided. The simulation should have the capability for changing the types and numbers of crops made available to the game players for a given session. This is to reflect the rather large differences in crop diversity among regions (AZ, CA, TX). Ultimately, we may only develop information for each region about 5 or 6 crops and their influences on Lygus distributions. However, the game could accommodate the planting of more crop types than this in order to better reflect their actual choices within their communities. For AZ, these crops include cotton, alfalfa, wheat, corn, sorghum, seed-**

alfalfa, safflower, vegetables, melons, fallow, and of course other non-cropped habitats. For TX (a simpler system), this would include mainly cotton, sorghum, roadside habitat, and other non-cropped habitat. For CA (the most complex system), there are many other crops in addition to ones already mentioned like tomatoes, sugar beets, and almonds. However, these details can all be worked out with the vendor as the development begins.

Q30. Once the crops are planted, what are the critical points at which decisions will be made? How do those affect whether a round should be a season or a year?

**A30. As far as this effort goes, the major decisions made are the planting ones. After that, no critical decisions are made until the next round. The simulated period would be one growing season. For AZ this could mean decisions about planting crops early in the year (January/February) and growing out through summer/fall harvest (October). If you are asking for general interest what critical points are decisions made. There are many but most wrt Lygus occur mid-summer in terms of sampling, control decisions, and application of insecticides if needed.**

Q31. From a simulation overview perspective, is there a need for a results summary display of all players or groups? And if so, do we need to show the results to the facilitator only or to each player's laptop?

**A31. Yes, results summary display is an expectation. Though of low quality, a mock results panel was presented in the online PDF. If the solution were too complex or costly to implement, then minimally, the facilitator would need this feedback and could project it to the screen from his/her laptop for the others to see. But optimally, the feedback would be available on all units and to all users but with options for the facilitator to control whether that display went to all or only to the facilitator. Also see Q25.**

Q32. What are the laptop specifications? Are there any peripheral devices?

**A32. Apple Macintosh iBook 14" A1007. No peripherals. These are PowerPC G3 – based computers. They currently run under OS X (Panther), but could be upgraded to Tiger if that facilitates delivery. Hard drives are small, 30-40 gb, but do not contain any extraneous data or information. There is 512mb RAM but could be potentially upgraded to 640mb on all machines. They run at 700 MHz.**

Q33. What are their software specs? Do they have Flash 10?

**A33. OS X. They are or can be made Flash capable. I believe Flash 10 is supported on this platform, if upgraded to Tiger.**

Q34. Can the software be installed or changed?

**A34. Yes.**

Q35. What is the network setup? What is the server environment? What kind of access would we have to that system?

**A35. See A13. Currently, a PPC-G4, OS X – Leopard capable laptop serves as the facilitator’s laptop. Processor speed at 1Ghz or better, 1 gb RAM, with ample HD space. The solution would be ideal if operable within these minimal system constraints, but see A13.**

Q36. How would we deploy updates and changes?

**A36. You’ll have to tell us. We have one person who cares for the laptop system. He could implement electronic or media-delivered updates. The facilitator could also handle this prior to sessions.**

Q37. Where are these usually held?

**A37. Sessions can be held anywhere there is power. This ranges from structured classrooms to working restaurants, bars, and other commercial establishments. Initial pilot testing may likely occur on University property at the Maricopa Agricultural Center, Maricopa, AZ, and Cooperative Extension offices around the state.**

Q38. Is translation an issue in the future into Spanish?

**A38. This is not required at present, but could be of some value to us in the future, especially when extending these concepts south of the border to growers in Mexico.**

Q39. Are there any 508 compliance issues that need to be considered?

**A39. I’m unsure about this, but certain there is UA policy that can be found on this subject on the University’s website. Because grower can participate in the workshops simply by observing the game play by others, I don’t think there should be any extraordinary 508 concerns.**

Q40. Do you have any expectations in terms of multimedia look and feel?

**A40. Not really. We are interested in your ideas and expertise in this area. Our goal is fixed. We want a very positive user experience. A grower must engage this game and feel like he or she wants to “play” this game and attain an outcome. Whatever look and feel accomplishes this goal is sufficient, within the constraints of budget, hardware, and software. Vendors should be very mindful of the target group(s), growers and professional pest managers. Lygus control decisions on large farms represent economic exposure that**

ranges from the 10's of thousands of dollars upwards to millions of dollars. While this is a game, the consequences of these decisions are quite serious. Therefore, the grower must have confidence that the concepts we are teaching are relevant to their situation. The user interface will be important in conveying this relevance.

Q41. We were anticipating visualizing the crops from the perspective of a very high altitude. Does that fit with your vision?

A41. Yes. It can be literal or symbolic, as long as the user experience is high quality and learning is stimulated.

Q42. Would the vendor be provided with all of the data and a definition key on the relevance of that data?

**A42. We don't understand this question.**

Q43. Who will be conducting the pilot and how do you envision that running? Is there a possibility of including vendor personnel at that pilot?

**A43. The pilot will be run by the PI (Dr. Peter Ellsworth), with support from Drs. Al Fournier (IPM Program Manager) and Russ Tronstad (Ag Economist). There is no requirement in the RFP for vendor personnel to be involved; however, they would be more than welcome. So yes, they could easily be included. Pilot testing will likely occur in central Arizona with easy access from Phoenix, AZ. The details are subject to change and discussion, but will probably involve some colleagues (fellow entomologists), pest managers (Pest Control Advisors) and growers. The group will be small, and pilot-testing may occur over multiple sessions.**

Q44. Will the research be complete before the project on the simulation begins?

**A44. No. Sadly, it won't be and even if it were, it would likely still not be definitive. New research questions always emerge. We are establishing relationships among crops and identifying distances over which they are active. But the results from the TX, CA and AZ environment are different and not necessarily consistent over years. However, as soon as any new information is uncovered, we will use it to help guide the simulation development efforts.**

## **ALL ELSE REMAINS THE SAME**