5 Professionalism

This discussion is with respect to the paper titled "Contextualizing Professionalism in Capstone Projects Using the IDEALS Professional Responsibility Assessment", *International Journal of Engineering Education* Vol. 28, No. 2, pp. 416–424, 2012

5.1 Areas of Responsibility

Pick one of IEEE, ACM, or SE code of ethics. Add a column to Table 1 from the paper corresponding to the society-specific code of ethics selected above. State how it addresses each of the areas of seven professional responsibilities in the table. Briefly describe each entry added to the table in your own words. How does the IEEE, ACM, or SE code of ethics differ from the NSPE version for each area?

Area of responsibility	*Definition*	*NSPE Canon*	*ACM code of Ethics*
Work Competence	Perform work of high quality, integrity, timeliness, and professional competence	Perform services only in areas of their competence; Avoid deceptive acts	The ACM code 2.2 says that we are obligated Acquire and maintain professional competence
Financial Responsibility	Deliver products and services of realizable value and at reasonable cost	Act for each employer or client as faithful agents or trustees.	ACM code 3.3 and 3.4 says that engineers should provide articulates during system evaluation or improvement to customers who might be affected by the engineer's work for preventing their profitable acts.
Communication Honesty	Report work truthfully, without deception, and understandable to stakeholders	Issue public statements only in an objective and truthful manner; Avoid deceptive acts.	ACM code 2.5 says to give comprehensive and thorough evaluations of systems and their impacts. This falls on communicating with fully to the point where they are able to understand what you are telling them
Health, Safety, Well Being	Minimize risks to safety, health, and well-being of stakeholders.	Hold paramount the safety, health, and welfare of the public.	ACM code 1.1 is to contribute to society and human well-being. You must always be sure your work is being used to keep people safe and healthy
Property Ownership	Respect property, ideas, and information of clients and others.	Act for each employer or client as faithful agents or trustees.	ACM code 2.8 respecting access to computing systems and only using them when authorized. These systems are the property of our organization which we are working for

Sustainability	Protect environment and natural resources locally and globally	Hold paramount the safety, health, and welfare of the public.	ACM code 1.2 is to avoid harm to others. Because not protecting the environment is causing harm to people it is important to reduce your impact on the climate and natural resources.
Social Responsibility	Produce products and services that benefit society and communities	Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.	The ACM code 1.7 says to respect the privacy of others. Because privacy is something that everyone holds dear we have a social responsibility to protect the people we are working for

5.2 Project Specific Professional Responsibility Areas

For each of the professional responsibility area in Table 1, discuss whether it applies in your project's professional context. Why yes or why not? How well is your team performing (High, Medium, Low, N/A) in each of the seven areas of professional responsibility, again in the context of your project. Justify.

Area of responsibility	*Does it apply in our project's professional context?*	*How well is your team performing in each of the seven areas of professional responsibility?*
Work Competence	Because the type of work we are doing is very high level networking and computing it is important that we are all aware of the types of things we are doing so that we do not end up making a mistake	High - We have all spent weeks researching and reading papers as well as meeting with people studying this topic to ensure we are competent.
Financial Responsibility	Our project does not have any real financial burden as most of it is computer code and free libraries	N/A - Most quantum networking technologies are open to the public, same as ours. Thus even though our network crashed, there is no financial responsibility we have to charge in. However, the reliability of a product depends on the success of an open source project, we should take care of.
Communication Honesty	Our project requires us to communicate with people on high level topics. It is important that we are honest with them on any issues we are facing so that they are able to aid us. If we were not honest in how we communicated we would not understand the project and it would not be completed	High - we have strict guidelines in place as to how we communicate and what is expected of us. On top of this we give weekly updates to our advisor on what we have done the previous week
Health, Safety, Well Being	Our project does not involve any healthy or safety issues as it is all simulated code on our own computers. Because of this the risk of anyone's safety or wellbeing being damaged is very low(this is based on assumption that nobody will use our network for security application)	NA, or High - Based on the assumption that no one will use our simulated network for security applications such as alert network or emergency communication network, no one will get harm or in danger due to our product.

Property Ownership	Intellectual property rights are the primary concern here. There may be some hardware down the line but that will probably belong to Iowa State.	Medium - As of now we are only simulating our project on our own devices but when we move to other computers to simulate this we will need to understand the rules of the devices we are using and respect them.
Sustainability	Computing takes up the vast majority of resources produced on our planet. There is a major concern about the amount of power it would take to power a commercial level quantum computer. Currently this area is of little concern to us and we have not reached the realm of using actual quantum computers and are relying on classical computers simulating quantum properties.	Low - It's hard to find ways to use computers sustainably in the modern age. We could try to use sustainable power supplies or find ways to mitigate our power consumption but this is of little concern to us at this point in time.
Social Responsibility	There is some concern about the potential to do damage with the power behind a quantum computer. This is of little concern to us at the moment as we can only contribute very little to this potential problem. It will be something we will discuss as a group in the future.	Medium - the type of work we are doing is groundbreaking and could change a lot of current systems in place. It is important that we do our best to ensure we understand the work as well as document everything so that people can build off what we are doing.

5.3 Most Applicable Professional Responsibility Area

Identify one area of professional responsibility that is both important to your project, and for which your team has demonstrated a moderate or high level of proficiency in the context of your project. Briefly describe what this responsibility means to your project, the ways in which your team has demonstrated the responsibility in the project, and specific impacts to the project that you have observed

Work competence is important especially for projects such as quantum networking which requires a high level of understanding of physical, mathematical background and technical skills. In order to successfully build quantum networking, all team members have to have a high level of understanding of both physics and math, especially quantum physics and linear algebra, but also they have to know about computer networking, communication, and security. These combined skills are all required to build a quantum network.

Our team has been working on building a solid background for understanding current quantum networking and modifying it to make it better. For this, we have researched and studied individually for each specific area and shared our work at weekly meetings to learn at the same time. This work will be done for our future project schedule to enhance our work competence. We believe that by doing this, we could gain collective knowledge from quantum physics to computer networks which are all required for this project, and make reliable quantum networking.