Project Title
A Java API for unifying ad-hoc Wifi networking

Team Members
Klaus Cipi - kcipi2015@my.fit.edu
Peter Banis - pbanis2015@my.fit.edu
Michael Kolar - mkolar2015@my.fit.edu
Robert Olsen - olsenr2015@my.fit.edu

Faculty Sponsor
Dr. Marius Silaghi - msilaghi@fit.edu

Client
Dr. Marius Silaghi - Associate Professor at College of Engineering & Science, FIT

Meetings with Sponsor/Client
Wednesday, March 27

Progress of current Milestone (progress matrix)

Task	To Do (Completion %)	Peter	Klaus	Michael	Robert
Create User Manual	None 100%	25%	0%	25%	50%
Create Demo Video	None 100%	10%	80%	0%	10%
Finish DirectP2P	Redirect console messages to API 87%	47%	0%	0%	40%
Finish Android P2P support	Testing and bug fixes 50%	25%	0%	0%	25%
VPython animation of a constructed Ad-Hoc Network	None 100%	0%	50%	50%	0%

Discussion (at least a few sentences, ie a paragraph) of each accomplished task (and obstacles) for the current Milestone

- Create User Manual: The user manual covers several relevant topics including: a summary of the project, relevant system diagrams, the installation procedure, an

overview of the API's functions, key differences between operating systems, and descriptions of the intended users. The manual explains to users what the API is, its intended purpose and scope. Furthermore, it shows the user where to find the API online and then walks them through the installation process. This even includes how to import the API into a workspace environment. There are diagrams through nearly each section of the manual in order to make it easy for users to follow. The next section is dedicated to explaining the functionality of the API. This includes the names of functions, what they do, any possible exceptions, their parameters, and return values. Afterwards, the custom exception types are explained so that the user can interpret error messages. Then next section explains the networking nuances unique to each operating system, so the user can get an idea of what "goes-on-under-the hood" if they so wish. Finally, the last section is dedicated to outlining the relevant special interests and summaries of the groups which would comprise the direct or indirect user base. The manual amounts to 18 pages which meets the required length in a thorough, yet concise manner.

- Create Demo Video: The demo video was mostly handled by Klaus, who decided to split it into two separate parts. The first half of the video gives some statistics that demonstrate the size of the API, and it also showcases the functions that software developers will need to know when making applications using our API. That being said, these functions are better documented in the manual, as the video only shows their function signatures. The second half of the video shows a more polished version of the demo video from Milestone 5. In addition to demonstrating the purpose of the application, as well as its intended output, we also show what happens when a user is not successful in joining a network.
- Finish DirectP2P: We found a viable way to discover peer groups through the "p2pfind" command, but were unable to successfully to intercept the output of the command and send the information to the API. While this would seem like a simple case of redirecting the output stream, the necessary information is not actually being sent through that stream or the standard error stream. Instead, it is being sent directly to the terminal as a ttys process. Unfortunately, we could not figure out how to intercept this information in a timely manner.
- Finish Android P2P support: We were unable to create an application to test our code for Wi-Fi Direct on Android. Due to poor time management in prior milestones as well as this one, no significant information regarding the testing process was found. Our priorities were greater in finishing the Linux side of it, but that had unfortunately fell through as well. Our inexperience and neglect for Android development has cost us its inclusion in the project, but at the very least, it stands as a lesson to be learned.
- VPython animation of a constructed Ad-Hoc Network: Networks are abstract, so people

often have difficulty visualizing how they're constructed. This is a quick video which shows the construction of an ad-hoc network and makes it easier for viewers to see what decentralized networks actually look like.

Discussion (at least a few sentences, ie a paragraph) of contribution of each team member to the current Milestone

- Peter Banis: Peter's main focus for this milestone was to wrap up Direct P2P on Linux. Finishing P2P on Android was also a priority, but a lesser one due to how much closer and more feasible Linux was. On the side, he also contributed to the Wi-Fi Direct portion of the manual and the filming for Linux in the demo video.
- Klaus Cipi: Since Klaus had completed his work from prior milestones, he decided to focus more on the project from a presentation-wise perspective. He developed the necessary tools for the vpython program to determine the ip of the devices that have joined in the network. He edited both the Ad-Hoc network modeling video and the demo video. He also filmed the Mac portion of the demo video.
- Michael Kolar: Michael wrote the user section to the User manual. He developed the vpython program which modeled a test Ad-Hoc network and took the frames necessary to construct the video. He also wrote half the progress evaluation.
- Robert Olsen: Robert attempted to help Peter finish Direct P2P for both Linux and Android. He wrote a majority of the manual and half the progress evaluation. He also filmed the Windows portion of the demo video.

Lessons Learned

- Don't procrastinate when you don't understand. Research the biggest mysteries from the very beginning. (Android WiFi-Direct)
- Meet frequently with your advisor prior to the first milestone. It is already too late if you are working on your project with little understanding of the development process.
- If possible, sample every piece of the project from the start. Even though you will finish what is easier first, you will better understand time management for the more difficult tasks.
- Make heavy use of diagrams and visuals on your showcase poster. Especially for abstract conceptions like networks; the judges didn't seem to fully grasp the scope and importance of the project because they take for granted that computers can connect in their daily lives.
- The most important text portions of the showcase poster are the goal and challenges sections. Write them to be as clear as possible.

Sponsor feedback on each task for the current Milestone

- Create User Manual:

- Create Demo Video:

- Finish DirectP2P:

- Finish Android P2P support:

- VPython animation of a constructed Ad-Hoc Network:

Sponsor Signature: _____ Date: _____

Sponsor Evaluation

- Sponsor: detach and return this page to Dr. Chan (HC 322)
- Score (0-10) for each member: circle a score (or circle two adjacent scores for .25 or write down a real number between 0 and 10)

Peter Banis	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Klaus Cipi	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Michael Kolar	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Robert Olsen	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10

- Sponsor Signature: _____ Date: _____