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“User Perception and Usability of MyNet Concepts”

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Executive Summary

Advances in Peer-to-Peer (P2P) and web technologies have recently enabled P2P personal and social networking. The key to the success of such systems is middleware and tools that will allow non-expert consumers to manage their networks and share their resources easily and intuitively. This is the motivation behind MyNet, a P2P platform that enables non-expert users to easily organize their resources and share them in their immediate social neighborhood. MyNet was designed based on a user-centered approach: using real-world metaphors in the core system, leveraging NFC-based touch to mirror human behavior models, and involving actual users in the design process.

This report presents the results of the second MyNet usability study, which was conducted in November 2007. There were 50 participants, ages 15-55+, with a diverse educational background. They were all non-Nokia employees with no formal technical training. Each participant spent an hour performing key MyNet tasks such setup MyNet, create a personal network, access a personal device remotely from another personal device, add MyNet peers, share content and access to devices/services through passlets and use the NFC (iTouch) tools.

62% of the study participants indicated that they rarely connect device together and a wire connection is the most commonly used approach for doing so. As a result, personal networks, seamless connectivity, and access control as proposed in MyNet are radically new concepts for the average, non-expert consumer.

Setting up MyNet on a desktop was a very simple task for all participants and 66% deduced that it had resulted in the creation of a Personal Network or Personal Space of some type. The layout was generally easy to follow and was characterized as simplistic and straightforward by the majority of the participants. Approximately 70% of the users deduced the concept of the Passlet before using them based on visual hints in the GUI.

The completion rate for adding a second personal device (laptop) to the Personal Network was 100% and 76% of the users rated it as easy. Upon completing this task, 94% of the users concluded that they connected two personal devices together in a Personal Network; this was an increase from the initial 66%. The visual representation made it clear to most users that they were now able to access one personal device from the other.

Remote access to personal devices was one of the favourite features, and users were surprised by the ease of use and the ability to access and launch a service remotely. 92% said it was easy and 96% found it useful. The web camera application was a good example to demonstrate this feature but overall, more applications are needed so that the full benefits of this feature are apparent to the average consumer.

Sharing was one of the most challenging tasks. 49/50 users completed this task (on their own or with assistance). Although 71% rated it as easy, 29% had difficulty completing it. This is mainly due to the design of the passlet manager tool which has since been reformatted. It now offers a wizard-based interface for novice users and a streamlined interface for advanced users. After having completed this process once, 86% of the users felt that they understood the Passlet concept (an increase from the initial 70%) and 96% rated the concept as useful. While some users deduced that they were sharing permissions to a piece of content or service, generally, it was not clear that the content was not actually sent. Sharing through the mechanism of Passlets versus downloading from a website are radically different approaches and it is not reasonable to expect non-technical users to deduce MyNet protocol behaviour from this limited test.

TAPing (NFC-based peer introductions and sharing) is part of MyNet's agenda to promote an intuitive and fun user interaction. NFC technology was completely new for 49/50 users and gave rise to some strong responses, mostly favourable, such as: *this is cool, fun, easy!* It, also, prompted some users to expressed security and privacy concerns. Out of the 46 users that tried TAPing for adding a new contact and sharing, 96% rated it as easy to use. The participants were, also, asked to give access to a piece of content using 1-Touch-Share (1-T-S), a one-step process for sharing Passlets. 75% of users indicated that they prefer to use 1-T-S as opposed to the Passlet Manager tool in a situation where both options would be possible.

The participants were asked to switch roles from the one who grants the Passlet to the one who receives it and access the content or service for which the Passlet had been granted. 47/50 users completed this task out of which 79% rated it as easy and an improvement, especially for accessing services that belong to another user's device.

The participants also added a new contact using MyNet on the N800. Out of the 46 users that completed this task, 87% rated adding a contact (using multicast) as easy. Though some users felt that the look of MyNetBook on the laptop was too simplistic, the same simplistic look was more suitable for the N800 due to its small real estate. It should be noted that although some of the participants were first time or novice users of tablet/PDA devices and were able to complete this with ease, as it was reflected in their personal comments. Overall, the participants rated the system as usable (88%) and easy to learn (86%).

Finally, users were asked a set of marketing questions on MyNet virtual devices and MyNet-aware services. 18% of the users expressed strong security and privacy concerns with respect to signing up for a MyNet virtual device. Key drivers for adoption for MyNet services are ease-of-use and gaining the users' trust. Most value was seen in areas of personal device management and access, and a strong potential for enterprise services.

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1. USER CENTRED DESIGN APPROACH

Our main objective in designing MyNet [1], [2] was to design a system that can be used by everyday users, without requiring any special training or expertise. More specifically, we set the following design goals:

- Build a personal, virtual private network easily and securely. Use any device in your personal network to access any of your resources (devices, services, content) wherever they are connected. Mobility and disconnections are supported and handled gracefully.
- Link personal networks together to create social networks that can be exploited both for routing and for social interaction. Sharing resources and forming groups within your Social Network is as easy as using a device in your Personal Network.
- Use simple techniques to manage the security of your Personal Network and share access with other users in your Social Network. Enable fine-grained access control to all resources while hiding the complexity.
- Create a user experience based on social interaction models, so intuitive that anyone can understand the results of all network and security management.
- Build the system on top of a connectivity and security framework that is purely ad-hoc and peer-to-peer.

The design approach was user-centred, focusing on the end-user's perspective of the system:

- The front-end design takes advantage of metaphors that are based on familiar terms and representations from everyday life and social relationships: (a) users create Personal Networks that consist of their personal devices, (b) Personal Networks can be linked together to form Social Networks, (c) a user can share his/her personal devices or content with another user by granting a passlet which is the equivalent to an electronic permissions ticket and (d) passlets give access to users, not devices.
- Rather than requiring new models of behavior, we embrace intuitive human activities, such as pointing and touching, by adopting the “touch” UI paradigm in our system through NFC interfaces in mobile devices. Humans trust objects they can see and touch. An efficient UI design using “touch” can replace multiple manual steps and lengthy configuration processes with simple one-step touch gestures.
- We follow a phased design approach that includes user feedback at crucial decisions. User involvement is incorporated through an iterative cycle of design interchanged with small-scale usability tests.

1.1 Usability study objective

The objective was to assess:

- (a) the usability of the GUI and the interaction paradigms for future development & enhancements
- (b) how the users:

- perceive the key concepts of MyNet
- feel comfortable to use such a system
- trust the technology
- potential uses

1.2 Report organisation

Section 2 briefly introduces the prototype setup. Section 3 gives an overview of the usability test procedure and section 4 presents the tasks of the test. Section 5 describes the participants' background. Sections 6 and 7 present the results of the usability test and the post-test interview respectively. Section 8 gives an overview of the marketing survey for MyNet virtual devices and services. Finally, section 9 presents the some selected segmentation analysis statistics.

2. PROTOTYPE SETUP

A proof-of-concept implementation for MyNet was initially developed for PCs and laptops running Debian Linux, using C, C++, shell scripts and Python (Figure 1). It uses the Open Network Connectivity Remote Procedure Call protocol (a.k.a. SunRPC), for P2P communication. This allows MyNet to interoperate across different platforms. MyNet has, also, been ported to the Nokia N800 (Linux OS), and MacOS X. Both the laptop and the N800 are fitted with an NFC smart sleeve attached through the USB port.



Figure 1: MyNet prototype setup.

3. PROCEDURE

The test was an in-lab, one hour session. First the participants filled in a background questionnaire. Then, they were given a short verbal introduction to MyNet and were asked to perform a series of tasks. There were no training tasks or user manuals. One of the assumptions of the MyNet user interaction model is that users do not read manuals and tools should require little or no training. At the end of the experiment, the users were debriefed.

4. TASKS

Each participant performed the following tasks:

- Created a personal network (PDC) on a desktop
- Added a second device (laptop) to the personal PDC
- Used the web camera on one desktop from the laptop
- Using the laptop shared a photo from the desktop with a new friend
- Browsed this photo from the friend's laptop
- Shared a second photo using 1-Touch-Share
- Added a new contact using the N800 internet tablets

5. PARTICIPANTS BACKGROUND

There were 50 participants, ages 15-55+, approximately equally divided between males and females. None of the participants had any formal technical training (i.e. engineering or computer science) or was employed by Nokia. They had a very mixed educational background, ranging from high school (HS) students to graduate degree professionals. All were familiar with basic e-mail, internet browsing, and use of mobile phone for phone calls. Most had basic computer skills (e.g. MS office, Excel), some experience with messaging and sharing applications and wireless proximity technologies.

The most important background questions the participants answered are listed below.

5.1 Gender

Female: 46%

Male: 54%

5.2 Age groups

<21: 26% (15-17: 22%, 18-20: 4%)

21-40: 28%

41-55: 38%

55+: 8%

5.3 Most frequent PC activities

Browsing the web, e-mail and IM were the most popular activities. For electronic sharing participants use primarily e-mail (86%) and web sites (68%), though some users share through BTH (22%) and USB memory sticks (42%). Blogging is another share-related activity popular with more than half the participants (58%).

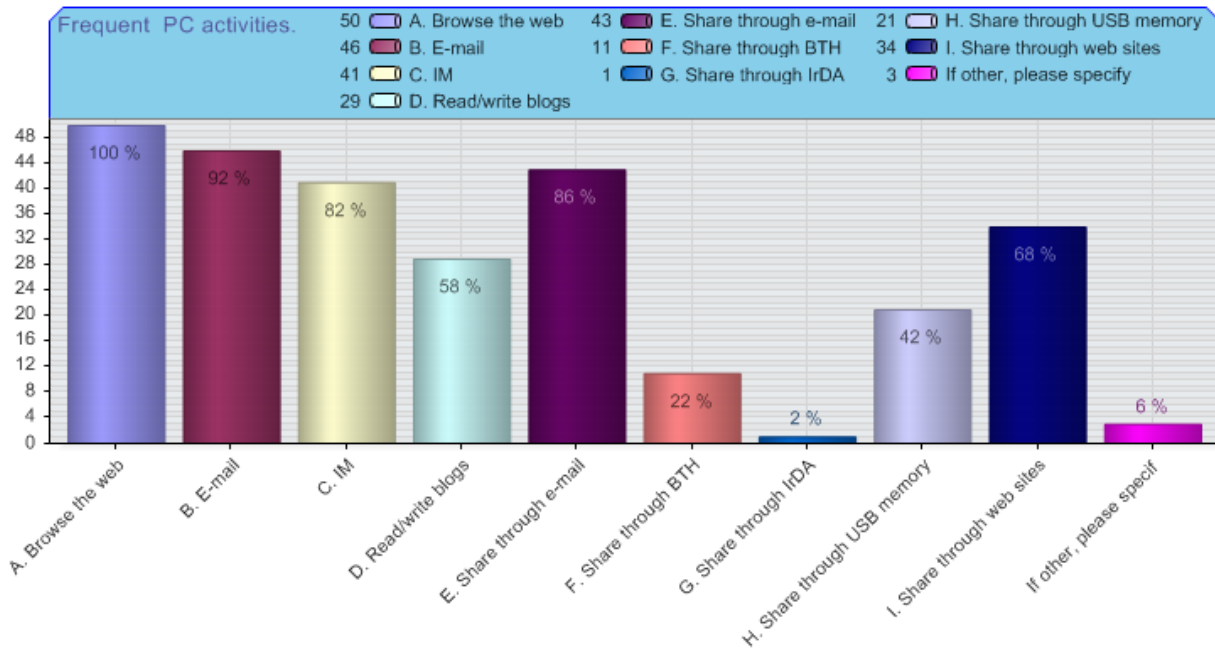


Figure 2: Frequent PC activities.

5.4 Frequent mobile phone activities

The most popular mobile phone activities are making phone calls (98%), text msg (92%), taking photos/videos (88%) and use of the calendar application (78%). Web browsing (54%), e-mail (44%), music (48%), taking notes (42%) are also popular with about half the participants. Sharing over the phone was limited to MMS (26%), BTH (2%) and some use of e-mail (some portion of 44%). Overall, sharing over the mobile phone is significantly more limited than over the PC.

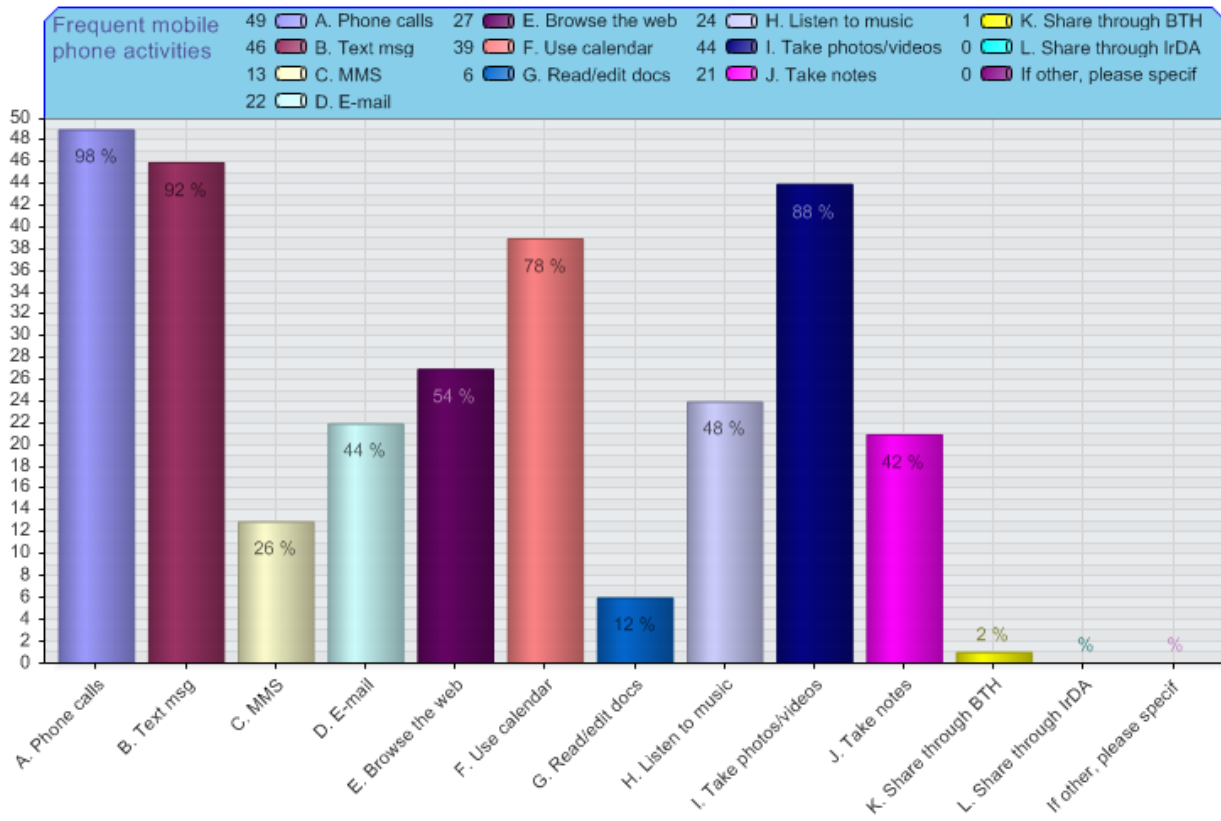


Figure 3: Frequent mobile phone activities.

5.5 How often do you connect devices together today and what technology do you use?

The answers to these questions indicated that on average the participants rarely setup smart, networked environments and a wire connection is the most popular approach for connecting devices together. As a result, personal networks (PNs), seamless connectivity, and access control as proposed in MyNet are radically new concepts.

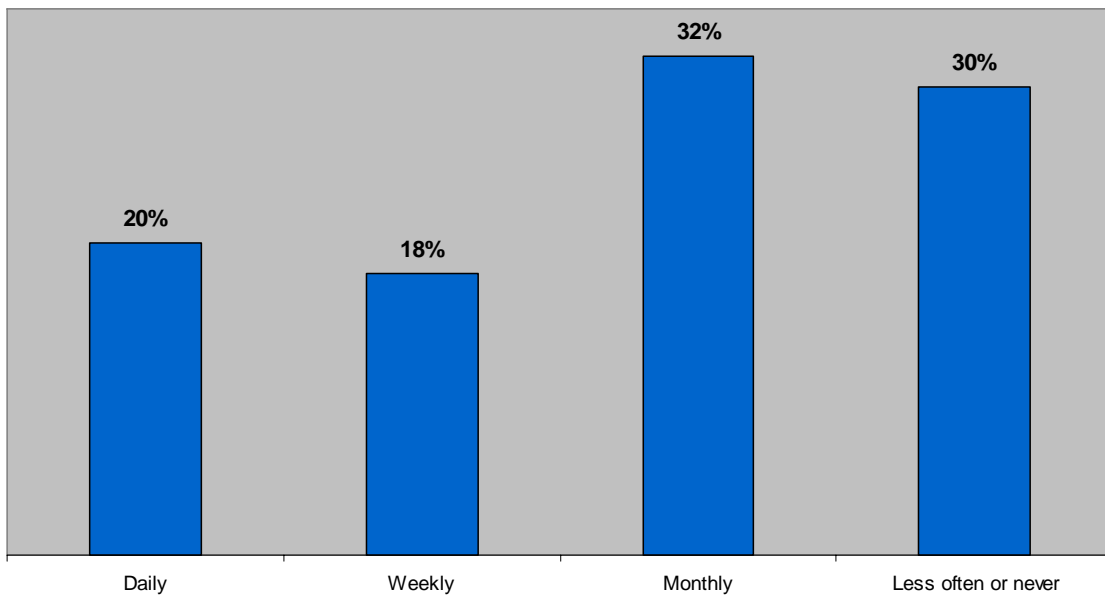


Figure 4: How often do you connect devices today?

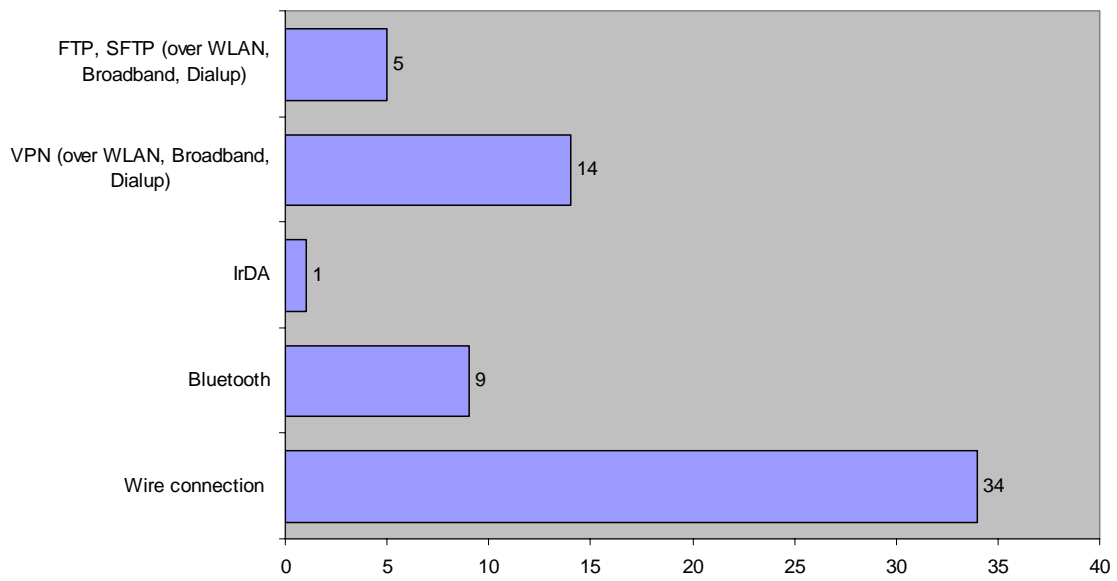


Figure 5: What technology do you use to connect devices today?

While 42% of the participants rated the current technology they use for device synchronisation and networking as easy, 58% were neutral or discouraged. A significant portion of users (68%) indicated that they prefer to use web-based interfaces for sharing due to their ease of use. This leads us to believe that there is room for innovation in terms of an intuitive, easy to use technology that allows non-expert users to create networked environments and share.

Statistics:

Synchronising/Sharing with the techniques you use is easy:

Strongly Agree = 6%

Agree = 36%

Neutral = 46%

Disagree = 10%

Strongly Disagree = 2%

I prefer to use web-service for commonly used and shared data because it is easy:

Strongly Agree = 12%

Agree = 56%

Neutral = 22%

Disagree = 6%

Strongly Disagree = 4%

5.6 Familiarity with WLAN & NFC

Are you familiar with LAN scanning:

Yes = 53%

No = 47%

Are you familiar with NFC:

Yes = 0%

No = 100%

5.7 Educational background

The participants had a wide range of educational backgrounds, from HS students to graduate degree holders.

Currently enrolled in HS = 22%

HS Diploma or equivalent = 24%

Undergraduate Degree = 34%

Graduate Degree = 20%

6. TEST

This section presents the results and statistics from the main part of the usability test, where users attempted to walk through the scenario described in Section 4.

6.1 MyNet Setup Process

The setup process required the user to fill in a username, PIN and device name in a series of simple popup dialog windows, as shown in Figure 6.



Figure 6: The MyNetBook setup process.

This was one of the easiest tasks to complete where 100% of users rated the task as easy. The completion rate was 100%.

Setting up MyNet was easy:
 Strongly Agree = 84%
 Agree = 16%

About 2/3 of the users deduced that they had created a PN at the end of the setup process:
 Have you created a PN at the end of the setup process:
 Yes = 65.96%
 No = 34.04%

What is the end result of your action (open ended question): Among the users who answered “Yes” responses revolved mainly around:

- I have created a personal network/space
- I have setup an account with the system (MyNet) and my laptop is connected to it

Among the users that answered “No”, responses revolved mainly around:

- I have setup my name, password
- I have setup my device

No major setup flaws were reported.

6.2 First impression of the GUI

Overall, the layout received a positive response as the statistics below reveal.

I like the layout of the GUI:

Strongly Agree = 40%

Agree = 52%

Neutral = 6%

Disagree = 2%

I like the PN tree layout, it is clear and usable:

Strongly Agree = 68%%

Agree = 20%

Neutral = 6%

Disagree = 6%

Do you understand the role of the tool buttons:

Yes = 97.92%

No = 4.08%

I like the content browsing window:

Strongly Agree = 74%%

Agree = 18%

Neutral = 2%

Disagree = 4%

Strongly Disagree = 2%

6.3 First impression of passlets

Approximately 70% of users deduced the concept of the passlet before using them based on visual hints.

Do users understand the concept of a Passlet at a high level before using it (out of 49 users):

Yes = 69.39

No = 30.61%

6.4 Add personal devices

The completion rate for adding a second personal device (laptop) to the PN was 100% and 76% of the users rated it as easy. This is consistent with the fact that 74% of the users started this task by clicking on the “add personal device” toolbutton. The most common cause for confusion for the rest of the users was the icon associated with this button, which has since been updated.

Upon completing this task, 94% of the users concluded that they connected two personal devices together in a PN; this was an increase from the initial 66% (see section 6.1). Typical comment was:

- I have connected my two devices and I can access one from the other

The merging process requires the users to enter the PIN as a means of user authentication. Users are used to entering PINs for security purposes and this step was not deemed as necessary and easy enough.

Do users start by clicking on the “add personal device” toolbutton:

Yes = 74%

No 24%

Adding the laptop to the PN was easy:

Strongly Agree = 56%

Agree = 20%

Neutral = 14%

Disagree = 10%

6.5 Remote access to personal devices/services

In this task users were asked to use the desktop web camera from their laptop. It was very straightforward for most users to navigate to the desktop icon, click on it to expand the list of available services, select the web camera and double-click on it. Remote access to personal devices was one of the favourite features, and they were generally surprised by the ease of use and the ability to access and launch a service remotely. 92% said it was easy and 96% found it useful. The web camera application was a good example to demonstrate this feature but overall, more applications are needed so that the benefits of this feature are apparent to the average consumer.

Using the desktop web camera from the laptop was easy:

Strongly Agree = 78%

Agree = 14%

Neutral = 6%

Disagree = 2%

Remote access to personal devices is useful:

Strongly Agree = 72%

Agree = 24%

Neutral = 4%

6.6 Sharing

For this task, the users were asked to use the laptop in order to share a photo from the desktop with a new MyNet contact. This task can be completed in a variety of ways and it is the most involved of all the tasks that users had to perform. All users attempted to start this task but 49 completed it (on their own or with assistance). To start, 40% of users clicked on the “share” toolbutton, while 52% selected “add contact”. The option of 1-T-S was only chosen by one user as it is the least visible one and generally, users were not very familiar with the context menu. Many users wanted the interface to allow them to open up or preview the photo they want to share and offer a “share” option (button, right click menu). This is consistent with some interfaces today.

Although, ~71% rated this task as easy, 29% had difficulty completing it. This is mainly due to the design of the passlet manager tool. The users had to make all four selections for the new passlet in one window which was overwhelming. This led to the redesign of the passlet manager tool. The default passlet manager now resembles a wizard interface whereby the user is presented with a series of individual dialogue windows in order to select the recipient, device/service, permissions and expiration date. In addition, there is an introductory window summarizing the passlet creation process which the user can choose to disable. The wizard-based tool allows novice users to create passlets step-by-step without being overwhelmed. It is possible to select the advanced passlet manager option from the menu, where all steps are packed in one window.

After having completed this process once, 86% of the user felt that they understood the passlet (an increase from the initial 70%) and 96% rated the concept as useful. While some users deduced that they were sharing permissions to the photo, it was not clear to most users that the content was not actually sent. Sharing through the mechanism of passlets (as opposed to downloading it from a website) are radically new concepts and it is not reasonable to expect non-technical users to deduce MyNet protocol behaviour from this limited test. Some visual hints and short tooltip explanations may be useful in educating the users. For the case of content sharing, it may worth considering the option of sending the content with the permissions or at least, offering this option to the sender.

Which sharing option do users select from the GUI:

Share=40%

Add contact=52%

1-Touch-Share= 2%

Other = 6%

Sharing with a new contact was easy to complete:

Strongly Agree = 24.49%

Agree = 46.94%

Neutral = 24.49%

Disagree = 2.04%

Strongly Disagree = 2.04%

It is desirable that no default permissions are exchanged upon adding a new buddy:

Strongly Agree = 91.67%

Agree = 4.17%

Neutral = 4.17%

The concept of a Passlet was easy to understand once you have used it:

Strongly Agree = 40.82%

Agree = 44.9%

Neutral = 6.12%

Disagree = 4.08%

Strongly Disagree = 4.08%

I like the Passlet Manager layout:

Strongly Agree = 40.82%

Agree = 34.69%

Neutral = 14.29%

Disagree = 8.16%

Strongly Disagree = 2.04%

6.7 Share through TAP

Due to a few instances of HW failure not all users had the opportunity to complete this task. TAPing is part of MyNet's agenda to promote an intuitive and fun user interaction. NFC technology was completely new for 49/50 users and it gave rise to some strong responses, mostly favourable, such as: *this is cool, fun, easy!* TAPing was rated as easy to use by 96% of the participants. Some users expressed privacy and security concerns such as:

- what am I giving away by TAPing ?
- can my device be hacked if it is TAPed?
- will other devices have TAPing?
- what happens with accidental TAPing?

- will TAPing break the devices?

TAPing was easy to use (out of 46 users):

Strongly Agree = 82.61%

Agree = 13.04%

Neutral = 2.17%

Disagree = 0%

Strongly Disagree = 2.17%

Skipped = 8%

6.8 Use a Passlet to access content and services

The participants were asked to switch roles from the one who grants the passlet to the one who receives it and try to access the content or service for which the passlet had been granted. 47/50 users completed this task and ~79% rated it as easy. Some users were unclear about the namespace under which the newly received service/content would appear. For some users having to navigate through the entire directory path to the file was too many clicks and suggested the notion of an Inbox. Overall, users found that navigating to the intended file/service and clicking on it was easy and, indeed, an improvement to current means of accessing services that belong to another user's device.

Using a Passlet from a friend for the web camera/photo was easy:

Strongly Agree = 68.09%

Agree = 18.51%

Neutral = 10.64%

Disagree = 10.64%

Strongly Disagree = 2.13%

Skipped = 6%

6.9 1-Touch-Share

The participants were asked to give access to a piece of content using 1-T-S. 28% of users did not complete this task, mostly due to HW/SW failure. Out of those who did complete it, 96% rated it as easy. 75% of users indicated that they prefer to use 1-T-S as opposed to the Passlet Manager tool in a situation where both options would be possible. Some participants perceived the Passlet Manager as the tool for novice users or the tool that allows for more control over the sharing process. 1-T-S was seen as the quick and easy way to share, especially by more advanced users. In reality, 1-T-S is a good option only in cases where at least one of the devices is portable.

Giving access to a buddy for a photo using 1-Touch Share was easy to complete (out of 36):

Strongly Agree = 86.11%

Agree = 11.11%

Neutral = 2.78%

Do you prefer to share using the Passlet Manager or 1-Touch Share (out of 36)?

Prefer 1-T-S: 75%

Prefer Passlet Manager tool: 11.11%

No preference: 13.89%

6.10 N800 Tablet interaction

The participants were asked to use MyNetBook on the N800 in order to add a contact. 46/50 participants completed this task. Approximately, 83% said they liked the overall layout on the N800. 87% rated adding a contact using multicast from the N800 as easy. Though some users felt that the look of MyNetBook on the laptop was too simplistic, the same simplistic look was more suitable for the N800 due to its small real estate. It should be noted that although some of the participants were first time or novice users of tablet/PDA devices and were able to complete this with ease, as it was reflected in their personal comments.

I like the overall layout of the N800 MyNet GUI (out of 46):

Strongly Agree = 43.48%

Agree = 39.13%

Neutral = 13.04%

Disagree = 4.35%

I find the R-click implementation on N800 usable (out of 46):

Strongly Agree = 32.61%

Agree = 43.48%

Neutral = 19.57%

Disagree = 2.17%

Strongly Disagree = 2.17%

Adding a new contact to the N800 was easy to complete (out of 46):

Strongly Agree = 71.74%

Agree = 15.22%

Neutral = 6.52%

Disagree = 4.35%

Strongly Disagree = 2.17%

6.11 Passlet revocation

Revoking a Passlet was easy to complete (out of 44):

Strongly Agree = 77.27%

Agree = 9.09%

Neutral = 13.64%

7. POST-TEST INTERVIEW

Overall, the system was rated as usable (88%) and easy to learn (86%). Some of the users who are more familiar with current web-based social networking applications indicated that the look and feel of MyNetBook on the laptop was too simplistic, while less experienced users found it well balanced; overall, (90%) of the users said they liked it. Many users commented that the simple UI of MyNetBook was very suitable for the small N800 screen size; of the 46 users who rated the MyNetBook on the N800, 82% said they liked it. The concepts of personal networks (94%), passlets (96%) and remote access to personal devices (96%) were rated as very highly useful as the corresponding percentages indicate.

PIN authentication for critical tasks was deemed as a necessary and important feature that added to the security of the system. Some users indicated that logging into MyNetBook with a PIN should be sufficient while others deemed PIN authentication necessary for merging with personal devices, linking and sharing. A customizable option in this case is recommended.

Users were asked to indicate their preference of TAPing vs. Scanning. 25% of users voted for Scanning, 40% for TAPing and 35% had no strong preference. A closer look at the preference distribution by age category (Section 9) showed that TAPing is preferred mostly by younger users while Scanning is more popular with more senior users. This result is not conclusive and should only be used as an indication; it leads us to believe that there is a significant audience for both techniques.

The system is usable:

Strongly Agree = 64%

Agree = 24%

Neutral = 8%

Disagree = 2%

Strongly Disagree = 2%

The system is easy to learn:

Strongly Agree = 60%

Agree = 26%

Neutral = 12%

Disagree = 2%
Strongly Disagree = 0%

I like the look and feel on the laptop:

Strongly Agree = 50%
Agree = 40%
Neutral = 8%
Disagree = 2%
Strongly Disagree = 0%

I like the look and feel on the N800 (out of 46):

Strongly Agree = 39.13%
Agree = 43.48%
Neutral = 15.22%
Disagree = 2.17%
Strongly Disagree = 2%

I find the concept of a Personal Network useful:

Strongly Agree = 66%
Agree = 28%
Neutral = 4%
Disagree = 0%
Strongly Disagree = 2%

I find the concept of a Passlet useful:

Strongly Agree = 58%
Agree = 38%
Neutral = 2%
Disagree = 0%
Strongly Disagree = 2%

The idea of remote access to the devices you own or have passlets for is useful:

Strongly Agree = 80%
Agree = 16%
Neutral = 2%
Disagree = 0%
Strongly Disagree = 2%

I like authentication for critical tasks (out of 49):

Strongly Agree = 83.67%
Agree = 14.29%
Neutral = 0%

Disagree = 2.04%
Strongly Disagree = 0%

Would you use PIN authentication for (out of 46):

Log-in = 35.22%
Merge = 41.30%
Link = 26.09%
Share = 17.39%
Other = 23%

What do you prefer (out of 48):

Scanning = 25%
TAPing = 39.58%
No preference = 35.42%

I find Remote Introductions useful:

Strongly Agree = 79.59%
Agree = 18.37%
Neutral = 0%
Disagree = 0%
Strongly Disagree = 2.04%

Do you trust the system to keep your PN secure and to share easily and securely ? Would you try it if it was made available to you ? (out of 48):

Strongly Agree = 52.08%
Agree = 31.25%
Neutral = 14.58%
Disagree = 0%
Strongly Disagree = 2.08%

8. MARKETING SURVEY OF MYNET SERVICES

Users were asked a set of marketing questions on MyNet virtual devices and MyNet-aware services. These features were not available as part of the test. The goal of these questions was to merely collect some preliminary data.

The follow set of statistics shows a list of paid online services, of which music downloads is the most popular choice. Which of the following currently available "Premium Services" have you paid for this year?

Photo printing = 29.55%
Music downloads/streaming = 77.27%

Video downloads/rentals = 22.73%
 Game downloads, online gaming = 36.36%
 Backup storage = 22.73%
 Technical support = 20.45%
 Buying/selling in a moderated marketplace = 31.82%

The following four figures present the results for the most important marketing questions.

Users would likely sign-up for an MVD, but need to address privacy concerns

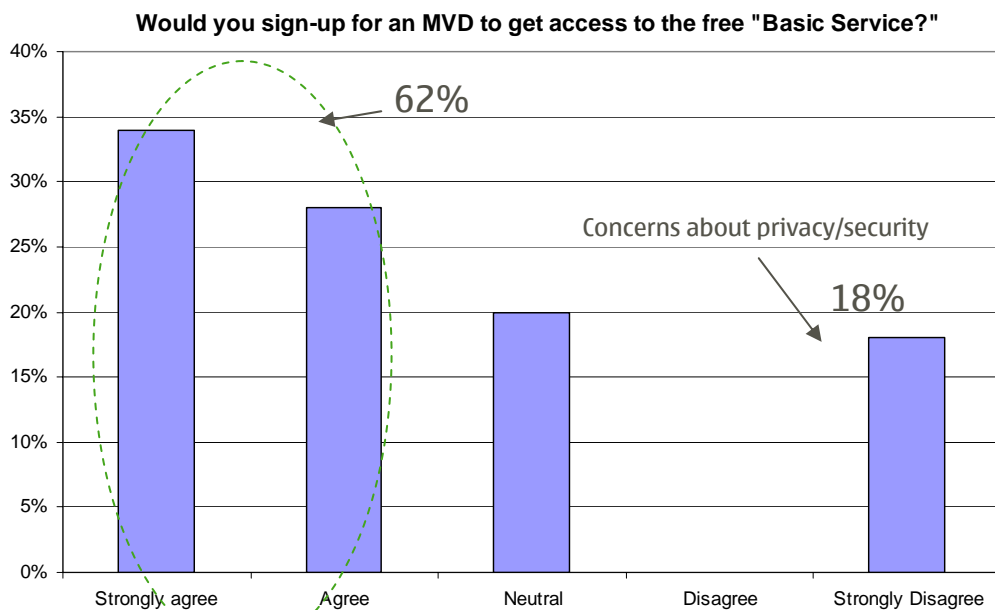


Figure 7: Would users sign up for a free MVD?

Key drivers for adoption are ease-of-use, gaining users' trust

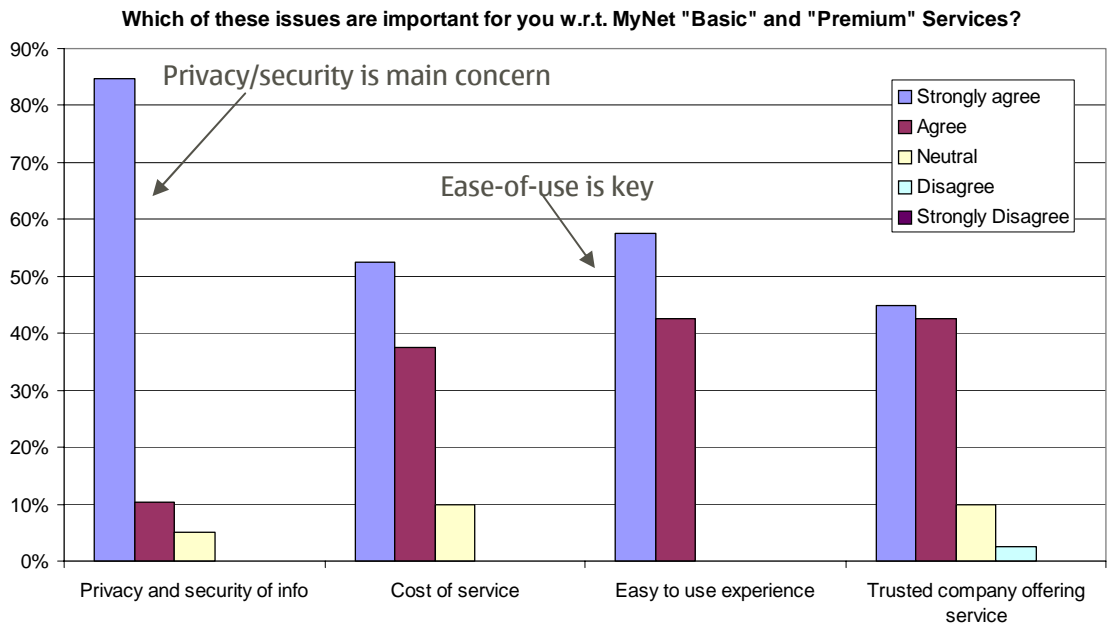


Figure 8: What are the key issues for MyNet services?

Most value seen in personal access, potential for enterprise services

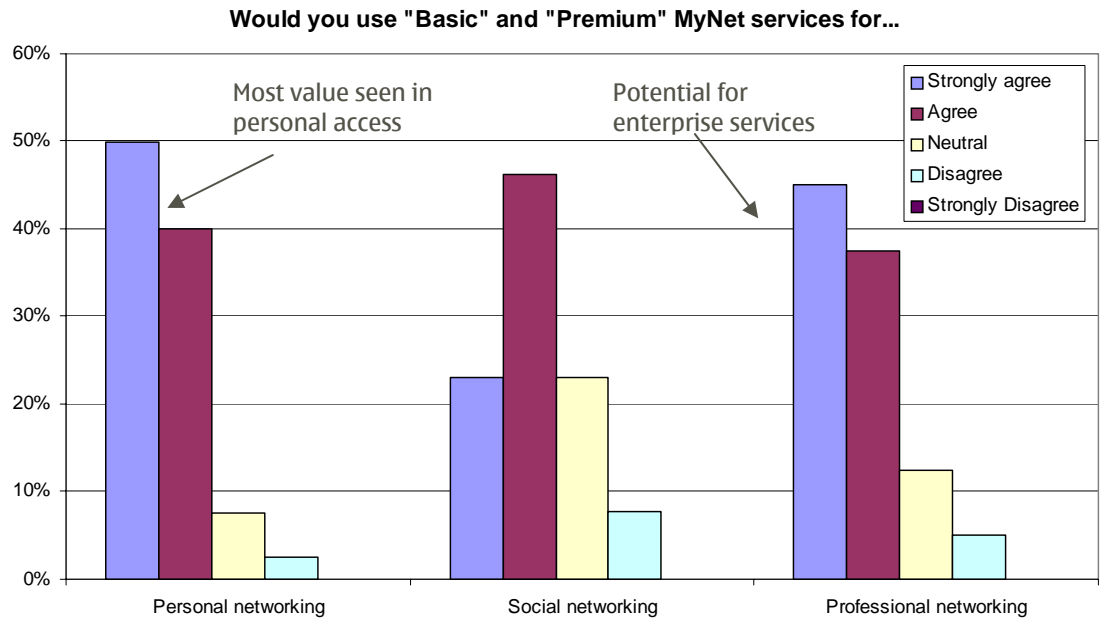


Figure 9: Where do users see the value for MyNet services?

Would pay for MyNet "Premium Services": music, technical support, photos, video

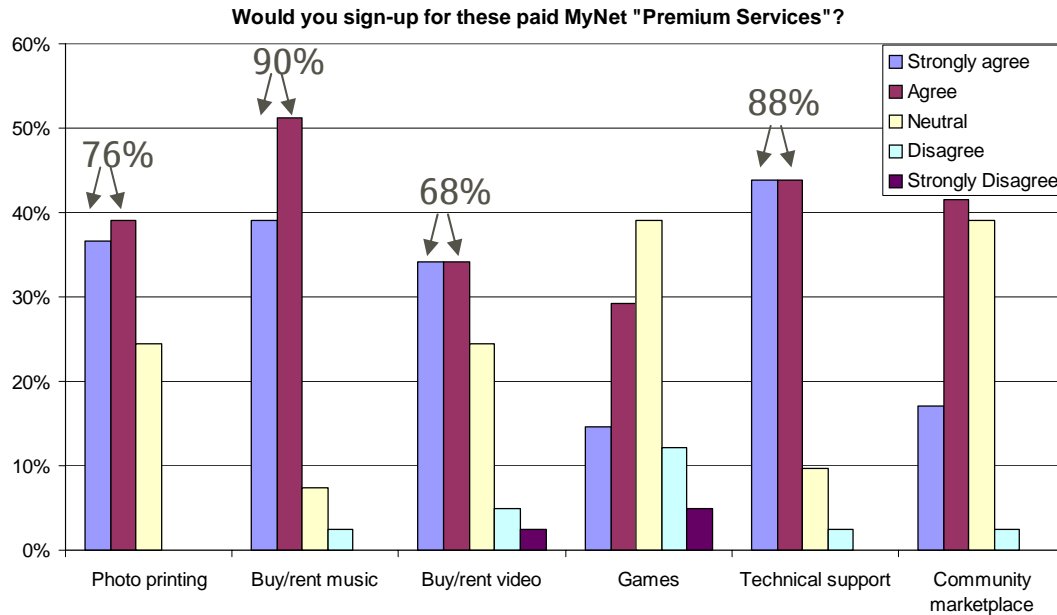


Figure 10: What kind of paid MyNet services would users sign up for?

The final set of statistics shows the users' preference for the potential MyNet service providers. Would trust/refer the following service providers to offer the B & P services? (Total= 40)

a) device manufacturer (e.g. Nokia, Sony, Apple):

23(57.5%) 12(30%) 5(12.5%) 0(0%) 0(0%)

b) mobile service provider (e.g. T-mobile, ATT):

11(27.5%) 16(40%) 9(22.5%) 4(10%) 0(0%)

c) telecom/cable service provider (e.g. Comcast, Verizon):

8(20%) 14(35%) 12(30%) 6(15%) 0(0%)

d) Internet service provider (e.g. Yahoo, Microsoft, Google):

10(25%) 12(30%) 14(35%) 2(5%) 2(5%)

e) new startup company:

0(0%) 11(27.5%) 20(50%) 7(17.5%) 2(5%)

9. SEGMENTATION ANALYSIS

This section presents further results on key MyNet features based on age groups, gender and educational background.

Have you created a PN at the end of the set up process (Yes/No)?

The age groups with the highest “Yes” score were the 21-40 (71%) and the 55+ (100%). From the other two groups ~58% replied “Yes”. In terms of gender, male users scored higher than females ones, 72% vs. 59%.

Does the user understand the concept of a Passlet (at a high level) before using it?

Users between 21-40 and 41-55 had a better grasp of the passlet concept with 77% and 84% respectively. The scores for under 21 were 46% and 50% for 55+. Male users scored higher than female one, 74% vs. 64%. HS students scored the lowest in this question with 36% while all other educational background groups scored between 70%-90%. The group of users that are least familiar with connecting devices together (less than once a month) scored the lowest (40%) as compared to users in higher frequency groups (>80%).

Adding a second personal device to the PN was easy to complete:

The majority of users in all age groups rated this task as easy, with the 41-55 having the highest score.

<21: 69%
21-40: 64%
41-55: 89%
55+: 75%

Male users rated the ease of use of this task higher than female ones, 85% vs. 65%.

The concept of a Passlet is easy to understand once you have used it:

<21: 69%
21-40: 93%
41-55: 94%
55+: 75%

Female users rated sharing with a new contact as easy by 82% vs. 63% for the male users.

Sharing with a new contact was easy to complete:

Based on educational background:

HS students: 64%
Completed HS: 55%

BS degree: 88%

G degree: 70%

Based on how often users connect devices today:

Daily: 30%

Weekly: 78%

Monthly: 76%

Less often: 93%

Using a passlet from a friend for the web camera/photo was easy:

Based on age groups:

<21: 62%

21-40: 77%

41-55: 82%

55+: 100%

Based on educational background:

HS students: 55%

Completed HS: 91%

BS degree: 88%

G degree: 100%

The concept of a Passlet is easy to understand once you have used it:

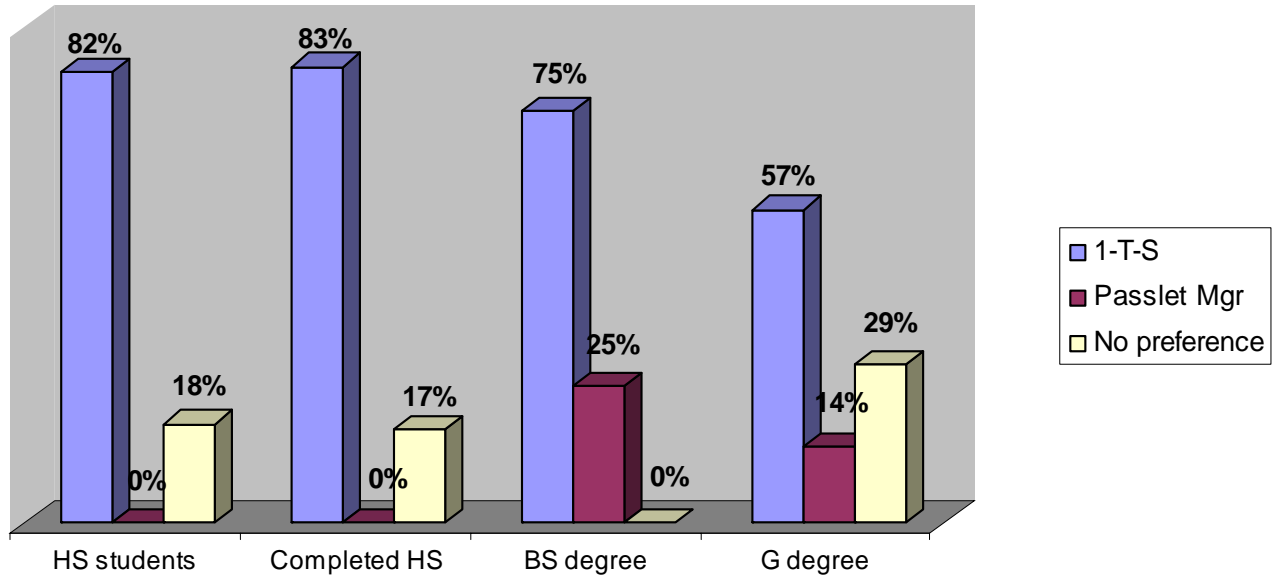
HS students: 64%

Completed HS: 80%

BS degree: 81%

G degree: 90%

Do you prefer to share using the Passlet Manager or 1-Touch Share ?



I like the overall layout of the N800 GUI:

Overall, the N800 GUI scored the highest with the smallest age group. There were some issues with the size of the fonts for more senior users.

Based on age groups:

<21: 100%

21-40: 69%

41-55: 82%

55+: 67%

Based on educational background:

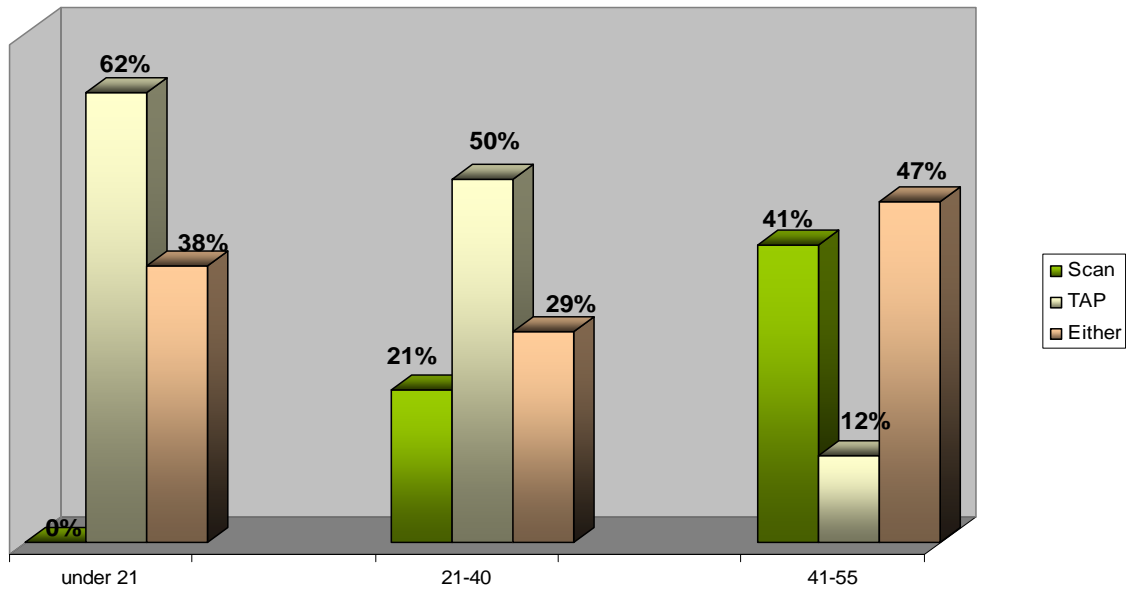
HS students: 100%

Completed HS: 83%

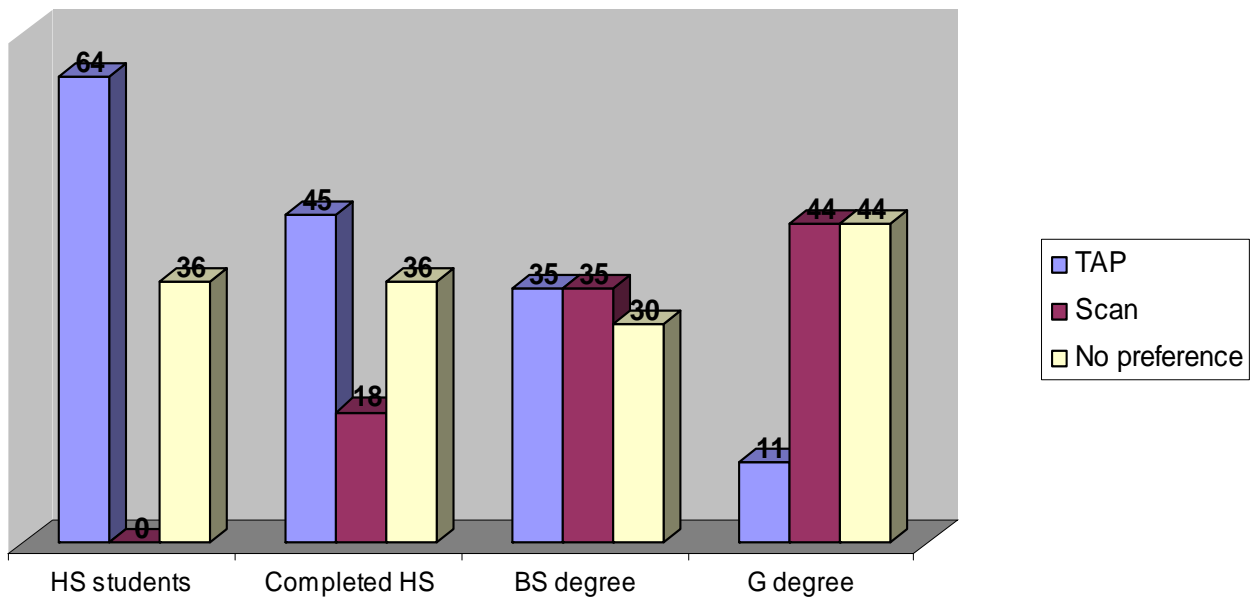
BS degree: 80%

G degree: 63%

What do you think of Scanning vs. TAPing:



The above results are consistent with statistics based on educational background:



REFERENCES

- [1] Antoniou Z., Ankcorn J., Kalofonos D.N., Reynolds F., and Wisner P., "Take your network with you - Ubiquitous P2P social networking with MyNet". Published in Advance Magazine, Nokia, no. 2, May 2007.
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