Abstract

Parents attempting to follow the DIR/Floortime treatment plan for autistic spectrum disorders (ASD) have a huge amount of information to keep track of. DIR/Floortime is a new treatment plan for children with ASD that emphasizes an individualized, relationship based approach to treatment. A large number of daily tasks are prescribed for the child by the 3-7 clinicians working together to help the child.

The kidSTART software attempts to help the parents keep track of all of the information related to the treatment of their child, and coordinate the many people involved in their child’s treatment. It is also designed to evaluate the effectiveness of different aspects of the program by maintaining a detailed history of the treatment process.
Credits

Stephen DiCocco
- Windows testing for Java / SWT
- Java Programming, embedding browser
- User Needs Document: 1/3 user tasks
- References Document: ¼ citations
- First Design Document: Visual Studio models for the calendar view and navigation panel, task-centered walk-through section
- Task List / Questionnaire Revision before Usability Test
- Usability Testing
- Usability Test Report Document
- Final Report: development process section, future work possibilities section of conclusion

David Handy
- Java / SWT programming in Linux, CVS server setup
- Help documentation inside the program
- User Needs Document: introduction, system requirements sections, final formatting, proofreading and submission
- References Document: ¼ citations, final formatting, proofreading and submission
- First Design Document: Visual Studio models for the task view, new task, and daily summary interfaces, final formatting, proofreading and submission
- Final Report: final status section of conclusion, transition diagram, proofreading

Dyami Jenkins
- Flash Programming: Timeline / Calendar visualization
- User Needs Document: 1/3; user tasks
- References Document: ¼ citations
- First Design Document: web-based interface models for calendar, task list
- Task List / Questionnaires Document: first version and submission
- Final Report: web page design and formatting, introduction, presentation of design

Lauren Smith
- Flash Programming: Timeline / Calendar
- User Needs Document: 1/3; user tasks
- References Document: ¼ citations
- First Design Document: Strengths / Weaknesses section
- Final Report: introduction, presentation of design
# Table of Contents

1. Introduction................................................................................................................ .5  
2. Presentation of Design ................................................................................................ 7  
   2.1. Transition Diagram ............................................................................................. 7  
   2.2. Screen Shots ........................................................................................................ 8  
      2.2.1. New Task Dialog ........................................................................................ 8  
      2.2.2. Task View ................................................................................................... 9  
      2.2.3. Daily Summary ......................................................................................... 10  
      2.2.4. Timeline / Calendar View ......................................................................... 11  
      2.2.5. Help Screen ............................................................................................... 12  
   2.3. Help / Walkthrough ........................................................................................... 12  
      2.3.1. Adding a New Task .................................................................................. 12  
      2.3.2. Printing the Task List ................................................................................ 13  
      2.3.3. Completing the Task List .......................................................................... 13  
      2.3.4. Viewing the History .................................................................................. 13  
3. Development Process ................................................................................................ 13  
   3.1. Low-Fidelity Prototype ..................................................................................... 13  
      3.1.1. Prototype Main Screen .............................................................................. 14  
      3.1.2. Prototype Task Screen .............................................................................. 15  
      3.1.3. Prototype New Task Screen ...................................................................... 16  
      3.1.4. Prototype Information page ...................................................................... 17  
      3.1.5. Prototype Daily Summary ......................................................................... 18  
   3.2. Development Process ........................................................................................ 18  
      3.2.1. Phase 1: Preplanning ................................................................................. 18  
      3.2.2. Phase 2: Layout Design ............................................................................ 20  
      3.2.3. Phase 3: Implementation ........................................................................... 20  
   3.3. Usability Tests and Analysis of Results ............................................................ 20  
      3.3.1. Introduction ............................................................................................... 20  
      3.3.2. Subject Reports ......................................................................................... 21  
         3.3.2.1. Subject 1 ............................................................................................ 21  
         3.3.2.2. Subject 2 ............................................................................................ 21  
         3.3.2.3. Subject 3 ............................................................................................ 22  
         3.3.2.4. Subject 4 ............................................................................................ 22  
         3.3.2.5. Subject 5 ............................................................................................ 23  
      3.3.3. Summary of Usability Test Results .......................................................... 23  
      3.3.4. Evaluation of Problems and Suggestions .................................................. 24  
      3.3.5. Usability Test Conclusion ......................................................................... 24  
      3.3.6. KidSTART Pre-Test Questionnaire ........................................................ 25  
      3.3.7. KidSTART Post-Test Questionnaire ........................................................ 26  
4. Conclusion ................................................................................................................ 27  
   4.1. Final Status of Project ....................................................................................... 27  
   4.2. Future work possibilities ................................................................................... 27  
5. Acknowledgements.................................................................................................... 30  
6. References................................................................................................................. 31
1. Introduction

Children are very social individuals who require and desire contact with others to flourish and develop. They will take all the attention they can get. They love to be held, play, and smile. However, some children appear to live in their own world. They exhibit repetitive routines and outbursts, odd behaviors, and a complete lack of awareness or interest in others. For example, they may not respond when spoken to or they may look away from the person asking the question. These are characteristics of a developmental disorder called autism.

According to WebMD, autism is “a pervasive development disorder (PDD), a group of illnesses that involve delays in the development of many basic skills, most notably the ability to socialize or form relationships with others, to communicate and to use imagination” (Grayson, “Autism”). Nearly 75% of children with autism also have mental retardation. Diagnosis usually occurs before a child is 3 years old. Common symptoms that may be present to a degree in a child with autism include:

- Trouble with verbal communication
- Failure to take part in a conversation, even when the child can speak
- Difficulty with gestures and facial expressions
- Trouble relating to people and to his or her environment
- Unable to make friends and prefer to play alone
- Repetitive ways of playing with toys and other objects, such as only lining them up a certain way
- Recurring body movements, such as hand flapping, spinning and head banging

“Autism affects an estimated 10 to 20 of every 10,000 people. It is about four times more common in boys as in girls” (Grayson, “Autism”).

Autism varies from mild to severe. Despite having problems with adjusting to school, some children grow up and become very bright, do well in school, and live independently. On the other hand, some children with autism function at a lesser level. Although there is no cure for autism, proper treatment can have a positive impact on the child’s development and create a reduction in disruptive behaviors. According to WebMD, treatment for autism may include a combination of the following:

- Special education: education is structured to meet the child's educational needs
- Behavior modification: includes strategies for supporting positive behavior and decreasing problem behavior by the child
- Speech, physical or occupational therapy: therapies are designed to increase the child's functional abilities
- Medication: no medications are currently approved to treat or cure autism, but there are medications that may be used to treat specific symptoms

There are many different approaches for treatment for autism. The Floortime Foundation sponsors an approach called DIR/Floortime, pioneered by Dr. Stanley Greenspan. This approach concentrates on the emotional and social development of the
Being a parent who has a child with autism can be very devastating and overwhelming. Once a child is diagnosed there are endless appointments for several different therapists, at home treatment, along with special dietary needs. Specifically, a full program for parents who decide to pursue a DIR/Floortime treatment requires regular appointments with many therapists working together. Some parents may even seek the help of a nutritionist or developmental optometrist or other specialists. They also have to carry out the Home Program aspect of the treatment. This critical component of the treatment is called the “Floortime”. This is where the parent actually gets on the floor with the child and plays with them helping to promote development. The parent is instructed to do this as much as possible. Along with the appointments and Floortime, the child may have enrolled in a school for special children or a school for ordinary children with educational supports. No matter what school the child is enrolled in, the parent’s involvement will be greater than a typical parent. This comprehensive program is a lot for a parent to manage: appointments, medication, diet, home routines, etc.

Parents who are very organized can alleviate a lot of stress involved with raising a child with autism. A parent needs to have reminders of appointment, dietary requirements, and places to note their child’s progress. There are currently many different planning interfaces available, but we wanted to provide an interface specifically for parents who have children with autistic spectrum disorders (ASD). We envisioned a program that would keep track of appointments and daily tasks, diary progress, and also allow clinicians and educators to make notes on the child’s progress.
2. Presentation of Design

2.1. Transition Diagram

The following diagram shows the transitions between the main interfaces in the kidSTART prototype.

Figure 1: Transition Diagram
2.2. **Screen Shots**

2.2.1. **New Task Dialog**

The New Task form is used to enter a new task and to edit an existing task. This screen allows the user to enter specific information about the task including:

- name of the task
- time of day it is to be completed
- the duration
- description
- the particular goal for that task
- who it is assigned to
- who it was prescribed by

Although only 3 fields are required (name, time, and duration) the other field are useful for parents who are trying to remember task that need to be completed along with how to complete them. Extra information will eventually allow features such as viewing all tasks within a year prescribed by a specific clinician.

![New Task Form](image)

**Figure 2: New Task Form**
2.2.2. Task View

The Task View displays all the tasks for the day. This screen allows users to view all the tasks in a list format. If the user clicks the arrow button next to a task it is expanded and the name, description and duration of the task are displayed.

![Task View Screen](image)

Figure 3: Task View Screen
2.2.3. Daily Summary

The Daily Summary screen shows the user what tasks have been completed along with what tasks are incomplete. Once the user selects a task, the description of the task, duration, person that completed the task, and time, are displayed. This dialog is used to advance to the next day—all tasks are reset after clicking “Ok”. This is also when the information for the day would be entered into the storage system.

![Daily Summary Dialog]

Figure 4: Daily Summary Dialog
2.2.4. Timeline / Calendar View

The timeline screen offers the users several levels of zoom and the option to view years, months, or days. If the user clicks on a day on the timeline then a brief description of the task will be displayed. If the user clicks the date on the calendar then a more in-depth description appears. This screen allows the user to view past and future tasks and appointments at a click of the button. Sometimes the user may need to look back to past appointments and task, and this screen allows the user to complete this with ease.

Note that this visualization is implemented in Flash, and does not read task information from the rest of the program. The current version merely attempts to explore what a usable history visualization would look like.
2.2.5. Help Screen

The Help Screen gives the user help throughout the interface. The help screens are there to help users to navigate throughout the interface. Help content is organized in a hierarchical fashion. The content pages are stored in HTML while the table of contents is stored in XML.

Figure 6: Help Window

2.3. Help / Walkthrough

This walkthrough briefly discusses how to perform a few of the basic operations in kidSTART. This is part of the help documentation offered inside of the program.

2.3.1. Adding a New Task

To add a new task, click the "New Task" button in the tool bar. Fill out the dialog, and then click OK. The task will then be shown in the Task View. To view expanded task information, click the arrow button to the left of the task name in the Task View.
2.3.2. Printing the Task List

To print a list of tasks for the day, click the "Print" button in the tool bar. A dialog will appear with options for printing. The printed list will provide areas to fill in task feedback and other information.

2.3.3. Completing the Task List

At the end of the day or when all tasks have been completed, click the "Daily Summary" button in the tool bar. This operation will enter all of the information that has collected throughout the day into the history files and reset all of the tasks for the next date. Note that this operation will occur automatically at 1 AM and is not required.

2.3.4. Viewing the History

Click the "History" button in the left navigation panel to view the history visualization. This visualization will allow data stored in the history files to be viewed in a meaningful manner.

3. Development Process

3.1. Low-Fidelity Prototype

The original low-fidelity prototypes were laid out in Visual Studio although we knew that we were not using Visual Studio for development. Visual Studio has a wider selection of widgets available in the visual editor and also requires little to no coding to be done for the form to be seen in its near-final form, whereas SWT is not as suitable for rapid prototyping. The drawback of this is that when implementing the final version every screen had to be implemented from scratch in Java/SWT.

Included are sample screens from the prototypes developed by David and Stephen. The ideas from these two prototypes made up much of the design of the final prototype.
3.1.1. Prototype Main Screen

This was the Main screen of Stephen’s prototype. The overall layout was adapted from this form, utilizing the vertical navigation bar on the side to move between functions. Also the Calendar layout seen here is similar to the one used in the final project.

Figure 7: Prototype Main Screen
3.1.2. Prototype Task Screen

This screen was developed by David and ultimately ended up being the main screen for the final prototype. This design was attractive because if the tasks were minimized it allowed you to view a large number of tasks at once. If you expanded a task however it gave you detailed information on the task as well as the ability to enter feedback about it. This gave the form a lot of functionality in a simple layout.

This prototype also shows a few features that were not implemented in the final prototype, namely the ability to attach files to a completed task, the ability to mark the “priority” of task feedback, and the ability to partially complete a task.
3.1.3. Prototype New Task Screen

This form which was developed by David ended up being almost identical in the final prototype. It is a simple easy to follow form that is clean and gets all of the needed information. The measurements section was dropped, and a goal field was added. The “Until” field was also removed.

Figure 9: Prototype New Task Form
3.1.4. Prototype Information page

This page was part of Steve’s low-fidelity prototype. The idea and the layout of this form were good, but we decided that it was a lower priority item on the final prototype since it was a more of a convenience feature and not something that couldn’t be managed by another program. It was unclear exactly what type of information to include on the pages and how we should break that information down. Therefore although there is a space for it in the final version it wasn’t implemented in the final prototype. It could still be a useful feature of the program, but was not particularly interesting or innovative from a design perspective.

Figure 10: Prototype Information Page
3.1.5. Prototype Daily Summary

This screen was originally part of David’s prototype and was included in the final design because it was clean and accomplished the purpose with very little extra information.

![Prototype Daily Summary Window](image)

Figure 11: Prototype Daily Summary Window

3.2. Development Process

3.2.1. Phase 1: Preplanning

Our initial idea was to develop a software package to aid in the caretaking of autistic children. Our first task was to decide who would be the primary users of the software. We decided that we wanted to focus on the parents of autistic children. However, we also wanted to make sure the software would be useful to the other people that would be participating in the treatment of the child. This category of people was mainly made up of home-therapists and clinicians.

The first step in developing our project was to determine the major needs
of the caretakers of autistic children. In order to determine what these needs were we interviewed several people who have experience interacting with autistic children in several different capacities, including parents, teachers, clinicians, and therapists. This gave us several different viewpoints on the subject which allowed us to make an informed decision about what features to focus on in our software.

The most beneficial person we talked to was the parent of a child whose son was recently diagnosed with autism. One of the greatest challenges she told us about was the challenge of keeping meaningful records about her son’s performance of tasks. She had developed a form she was using in excel however it was still difficult to keep this things organized and to enter data. Also it was impossible to visualize the data over spans of time because the data is all stored separately. We decided that this would be one of the major focuses of our project: data collection and visualization.

The major needs we discovered were:

- Daily Task organization
- Information recording and reporting and visualization
- Communication between parents, physicians, therapists and clinicians
- Recording milestones

Once we knew the major needs we had to determine which of them could be best met by our software program. Our major concerns in regard to what features to focus on were importance and feasibility. We wanted to try to use our time efficiently and find a medium between implementing the most useful tasks and as many tasks as we could. In order to do that we had to decide which were most important and we also had to try to estimate how difficult it would be to implement each of the tasks.

The set of tasks we finally decided to attempt to implement were:

- Daily Tasks
  - Adding and removing tasks
  - Marking tasks as completed
  - Recording observations about tasks
- Calendar
  - Adding and removing appointments
  - Viewing appointments
  - Being able to set recurrences for appointments
- Information
  - Keeping emergency information for the child
  - Storing contact information for everyone who works with the child
  - Store Behavioral protocols
  - Store Dietary Restrictions
- Visualizations
  - Develop a meaningful way to search a large amount of data over a period of time
  - Allow for searching and filtering data
3.2.2. Phase 2: Layout Design

After we decided on the list of tasks and features we wanted to include we had to decide upon a layout. In order to brainstorm as many different ideas as possible about how to design the interface for our project we made several different low-fidelity prototypes. David and Steve worked on their own while Lauren and Dyami worked together to develop a third prototype.

The three prototypes that were developed ended up being rather similar to Microsoft Outlook, and we decided to use a combination of the prototypes that David and Steve developed. One of the features of David’s design that we liked the most was the Daily Task Screen. We decided that this should be the focal point of the project as well as the main screen because one of the main focuses of our software was organization and management of the daily tasks.

3.2.3. Phase 3: Implementation

After deciding on our layout we went to work implementing the design. We chose to use Java with SWT, the Standard Widget Toolkit. We also chose to do our development using Eclipse, a free java IDE that has many useful tools for using SWT. One of the main reasons we chose this was that David was familiar with SWT and knew how to implement several of the features in SWT that we did not know how to implement in Visual Studio. This included the ability to make complex, dynamic layouts like the layout needed for the main task list. We also planned to implement the calendar using flash and embedding it in the program.

David and Steve worked on the Java/SWT programming and interface design while Lauren and Dyami worked on the data visualization in flash. We decided to focus on implementing working and testable versions of several of the functions instead of completely finishing the functions. We decided to ignore the need for long term data storage and use prefabricated datasets read from text files in order to show the feasibility of our features and ideas.

3.3. Usability Tests and Analysis of Results

3.3.1. Introduction

We conducted a total of five usability tests with a variety of subjects in order to see how it would be received by the different types of people that could be using this software. We tested two parents of an autistic child, which is our primary user group, two therapists who conduct home therapy with autistic
children, and one speech pathologist that conducts office based therapy with autistic children.

We were hoping to find out different information from the 3 different sets of users. From the parents we were hoping to determine the overall ease of use, the interest level in the specific features we have implemented as well as what other features would be useful on a day-to-day basis. We were also hoping to determine from the home therapists if our software would enable them to communicate better with the other therapists. From the speech pathologists we were hoping to find if they felt the data collection aspects would allow them to make decisions more effectively and also if they would recommend this kind of software to their clients as a way to organize and track treatment.

3.3.2. Subject Reports

3.3.2.1. Subject 1

Subject 1 is a 40 year old mother of three young children ages one to three. Her two eldest children, ages two and three, have been diagnosed with minor development delays while her one year old son Ben has been diagnosed with autism. The subject has on average two therapists coming everyday to work with Ben which she balances with a career in Real Estate.

The subject was an experienced computer user and quickly became familiarized with the interface. She easily completed the tasks with little problem, though she did have several suggestions for improvement:

- Fix the lack of a help function
- Add the ability to print monthly calendar
- Have the ability to print or email the data as a single option

Overall the subject was very pleased with the idea and the ability to keep everything organized in one place because she has been trying to develop her own system to keep track of progress and a record of her son’s improvement.

3.3.2.2. Subject 2

Subject 2 is the husband of Subject 1. The subject has on average two therapists coming everyday to work with one of his children which with he balances with a full-time career.

The subject was an experienced computer user and quickly became familiarized with the interface. While overly satisfied with the product he did
have several suggestions for improvement.
- Fix the lack of a help function
- Add the ability to automate the sending of data on a daily/weekly basis

3.3.2.3. Subject 3

Subject 3 was a 23 year old graduate student in speech pathology. She current works conducting home therapy for a young autistic child twice a week.

The function of the software that most excited the subject was the communications aspect with email and print outs as well as the ability to set who assigned a specific task. The biggest problem that she faces in home therapy is that she doesn’t always know what the other therapists are working on with the child or if anything has proven to be particularly effective. They felt that the communications would enable them to be much more effective with their therapy.

The subject had the following suggestions for improvement:
- Add help documentation
- Add ability to search data/tasks by therapist/goal/and time
- Include a Goal section in the description of the task

3.3.2.4. Subject 4

Subject 4 was a 23 year old graduate student in speech pathology. She currently conducts home therapy for two young autistic children several times a week.

As with the other therapist the idea of facilitating communication between therapists was an exciting prospect. Communication between several people who work with the child when none of them are there at the same time is very difficult and a centralized system would make things much simpler.

Suggestions for improvement:
- Add a help feature
- Encode daily reports as good/bad days and then visualize that on the timeline by color coding
- Add the ability to view the calendar and get all appointments and tasks for a day by viewing info for that day

During the design phase, we had considered allowing the user to characterize days with numbers or colors as this user suggested, but decided that it would probably not capture any real data or relationships due to the
3.3.2.5. Subject 5

Subject 5 is a 25 year old Speech Pathologist that works at Kennedy Krieger Institute in their school for autistic children conducting one on one speech therapy in a school/office setting. She sees her patients once a week.

The therapist was interested in the Daily reports and the abilities to email them because they often find it difficult to obtain that kind of daily information in an organized fashion from the parents. They also feel it would be something that they would recommend as a way of organize and tracking all of the therapies and other things that their children is involved with.

Suggestions for improvement:

- Lack of help
- Ability to have a set task list for each day of the week (especially useful for older children who are in school)
- Ability to print daily task list.
- Ability to search history by task/keyword/time/therapist
- Create a wizard to walk the user through setting up all the needed elements the first time they use it.

3.3.3. Summary of Usability Test Results

None of the subjects had any problems carrying out the assigned tasks. Most claimed that the simple interface made it very easy to use and to find things because there were not a large number of menus to look through to find functions. The most important way the testing helped us was with what directions we can take the project in. None of us have first hand experience in caring for autistic children so we were not sure what caretakers would be interested in.

The tests gave us a lot of ideas of useful features that we could add to the project. One of the major pieces of information we gathered was a list of things we could include in the info section that could be useful. We liked the idea of having it but any first-hand experience we were not sure what information we should include. However from talking to all our subjects we have determined that we should include emergency contact, and dietary information, behavioral protocols, development levels, and contact information for all doctors and therapists.
3.3.4. Evaluation of Problems and Suggestions

<table>
<thead>
<tr>
<th>Problem/suggestion</th>
<th>Importance</th>
<th>Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fix the lack of a help function</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>print monthly calendar</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>ability to print or email the data as a single option</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Ability to have a set task list for each day of the week</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Ability to print daily task list</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Ability to search history by task/keyword/time/therapist</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>wizard to walk the user through setting</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Encoding daily reports as good/bad days</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>view calendar and get both all appointments and tasks</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Add ability to search data/tasks by therapist/goal/and time</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Include a Goal section in the description of the task</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

3.3.5. Usability Test Conclusion

Overall the usability tests were very informative. We gained a lot of information and many suggestions for ways in which we can expand upon the functionality of kidSTART to make it more functional. Unfortunately, we were only able to conduct testing with two members of our main target audience (parents). We may have received different information if we could have done a higher percentage of our testing with parents. We still received a lot of valuable information from testing our product with both doctors and clinicians. If we were to repeat the usability test with a new version of the project, we should take more time to set up a larger testing group with more potential users.
3.3.6. KidSTART Pre-Test Questionnaire

General Questions:
1) Age Range: □ under 18 □ 18-25 □ 26-40 □ 41-60 □ 61 and over

2) Do you have a Personal Computer (PC) in your household?
   Yes / No

3) If yes, how often do you use the computer?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Daily</td>
</tr>
</tbody>
</table>

Autism Related Questions:
4) Are you responsible for taking care of an autistic child?
   Yes / No

5) Are you familiar with the DIR/Floortime treatment model for children with autistic spectrum disorders?
   Yes / No

6) Have you ever used a scheduling tool to keep track of daily appointments and tasks?
   Yes / No

7) Would you consider using a scheduling tool on a computer to keep track of daily appointments and tasks?
   Yes / No

8) Do you think having a scheduling tool on the computer would be helpful in tracking daily appointments and tasks for an autistic child?
   Yes / No
3.3.7. KidSTART Post-Test Questionnaire

1) I liked using this application
   1 2 3 4 5 6 7 8
   Strongly Disagree Neutral Strongly Agree

2) Would this software be useful in monitoring the caretaking of your Autistic child?
   1 2 3 4 5 6 7 8
   Extremely Difficult Neutral Extremely Easy

3) Ease of entering in a new task
   1 2 3 4 5 6 7 8
   Extremely Difficult Neutral Extremely Easy

4) Ease of entering in a new observation
   1 2 3 4 5 6 7 8
   Extremely Difficult Neutral Extremely Easy

5) Ease of viewing daily tasks
   1 2 3 4 5 6 7 8
   Extremely Difficult Neutral Extremely Easy

6) Ease of viewing weekly/monthly appointments
   1 2 3 4 5 6 7 8
   Extremely Difficult Neutral Extremely Easy

7) Ease of compiling/printing monthly observations summary
   1 2 3 4 5 6 7 8
   Extremely Difficult Neutral Extremely Easy

8) What would make the application easier to use?

9) What problems occurred during usage?

10) What features did you like or dislike about this application?

11) Please list any additional comments.
4. Conclusion

4.1. Final Status of Project

In its current state, the prototype is almost capable of performing the basic, data collection tasks. This includes maintaining and storing a list of tasks for the day along with important associated information. The task list prints nicely but only the first page. The program currently assumes that all tasks occur on a daily basis.

There is a Flash-based time-line based calendar display embedded in the application that conveys how all of the data that has been entered into the system could be presented in a meaningful way. This visualization currently acts on “dummy” data for purposes of the demonstration. This was necessary both because implementing actual data storage system would have taken some time, and then we still would have had to create artificial data for purposes of the prototype in that format.

Some persistent data is stored in XML based data files. This includes the current list of tasks in the task display, as well as a list of users and clinicians that have been entered into the program. The program does not yet allow the list of users and clinicians to be managed.

There is also a help window that uses an embedded web browser, so it is easy to include detailed help information with pictures. The table of contents is read from XML. A brief walk-through as well as descriptions of each of the current interface windows is included.

The software is currently implemented in Java using SWT, which allows automatic portability between Windows, Linux, and Macintosh.

4.2. Future work possibilities

The first two items that need to be taken care of before the system can be developed further are implementing an information storage system, and redesigning the timeline and calendar features in Java. Long-term storage of the child’s history is the main goal of the system, but was not important for a prototype. It was never intended that the final versions of the calendar and timeline features be implemented in Flash, but due to time constraints it would have been impossible to implement the timeline in SWT.

There are several features that could either be added or expanded upon in our final prototype if this program was to be completed. One area to look into are suggestions we received from usability testing such as a wizard to aid in the initial setup of the program, additional options for printing and sending information, and a way to have different task list for different days of the week.
We feel that a wizard to set up all the initial information such as medical information and contacts quickly would be very useful. There could be a lot of this type of information so we feel having a step by step walkthrough of every piece of input would be very helpful and also prevent the user from leaving out any information that they might need later. A wizard would also act as a good chance to walk the user through the features and forms of the program in a useful manner.

Suggestions about allowing greater flexibility when printing and sending information were received during the usability testing. These suggestions ranged from several different ways to format the information and choose what information to include, to the ability to design your own forms to export. Also many people had interest in a way to automate the program to email a specific set of information to a list of people on a regular interval, such as day, week or month. This would be a function used mostly by expert users but the higher level of configuration would grant another layer of functionality to the program.

Another suggestion that we liked was the ability to have a day-specific task list. For older school age children this could be very beneficial. If the child is receiving services at school during the week the other tasks that need to be completed at home might vary day to day depending on what other services he had received that day. Also on weekends when he is not at school there would be many more things that need to be done. This need was not anticipated by our initial design, where we were mostly targeting very young children with daily schedules.

Our current design could also be refined, especially the timeline and calendar. These two features are currently the weakest in our design in terms of meeting their true potential. We want the calendar to be useful for storing appointments and other events that do not recur as tasks. Even though some users might prefer to use Microsoft Outlook for this purpose, it could be important to have all the information in one place.

The timeline is also lacking some key features. Currently it only allows a brief description of items to be viewed. Ideally it would allow for you to view the detailed daily reports on a specific task or to view information for entire time periods at once, such as a daily, weekly, or monthly summary. Also, the ability to filter the information based on time carried out, who prescribed it, keywords, or other features would allow you to easily view all the information that related to a specific item of interest.

The ability to search the timeline for keywords or events could prove to be very useful over a long time with a large set of data. For example, if you had tried a therapy treatment a year ago and it was recommended again by a different doctor, you could search the history and find out that it had already been tried and how successful it was.

The information screen can also be developed much further. The information screen was something that we envisioned from the beginning of the project but did not have time to implement. We felt that it would be very beneficial to have all of the information that would be useful to a caretaker organized in one place. This such as health concerns, diet, cognitive level, and behavioral protocols as well as emergency
contacts would all be very useful for temporary caretakers, such as babysitters or grandparents. Also the ability to store contact information for all of the child’s physicians would be useful in making and coordinating appointments. If the information was stored in the program it would be easy to use that information when emailing or faxing reports to doctors and clinicians.

All of these suggestions would add new and useful functionality to the overall product. Although this includes many directions in which improvements could be made it is by no means exhaustive of the possibilities that could be explore for a product of this kind.
5. Acknowledgements

We would like to thank everyone that helped us with this project we would like to extend a special thanks to the following people.

David Raphael, for the initial product vision

Dr. Ben Shneiderman

Rebecca DiCocco

Our usability test subjects

Our classmates

Michael Wires

Daniel Hewlett

Vincent Nibali

Jane Hwang

Vik Mittal
6. References

Autism Research Institute. 4 September 2004. ARI. 4 October 2004


   http://my.webmd.com/content/article/60/67141.htm


