

I. ISSUE TO BE ADDRESSED

In today's world, we compare reviews on Yelp before we pick a new restaurant, we checkout the ratings on Rotten Tomatoes before we see a movie, and we consider the user feedback on Amazon before we buy...well anything. But where do members of the CF community go to find consumer reviews and suggestions pertaining to treatment devices/products?

Today, most user-generated content related to CF exists in online forums. One of these forums, forum.cysticfibrosis.com, has nearly one million posts (see below).

Threads	88,383
Posts	935,265
Members	15,015
Active Members	338

Statistics from forum.cysticfibrosis.com as of October 20, 2013

However, the purpose of a forum like cysticfibrosis.com is to promote conversation, not serve as an information resource. Discussions range from home spirometers to Halloween costume ideas to experiences at the hospital. It's easy to find yourself spending hours reading these posts; the content is a mixture of Facebook-like personal posts and Amazon-like reviews and recommendations (see the list of the most popular sub-forums on the site).

Sub-forum	Number of Posts
Adults	535,651
Families	191,630
Off-Topic (Non-CF related)	44,167
Pregnancy	41,354
Teenagers and Young People	25,377
Birthdays	22,295

Unfortunately, despite the amount of user-generated content available online, it is difficult gathering meaningful information about a specific product. For example, where can you find suggestions for cleaning a Nuk Quick N Ready Steam Sterilizer? Most people do not have time to sift through these forum posts to find what they are looking for and a generic Google search is only useful if the exact keywords are known in advance. Consequently, valuable

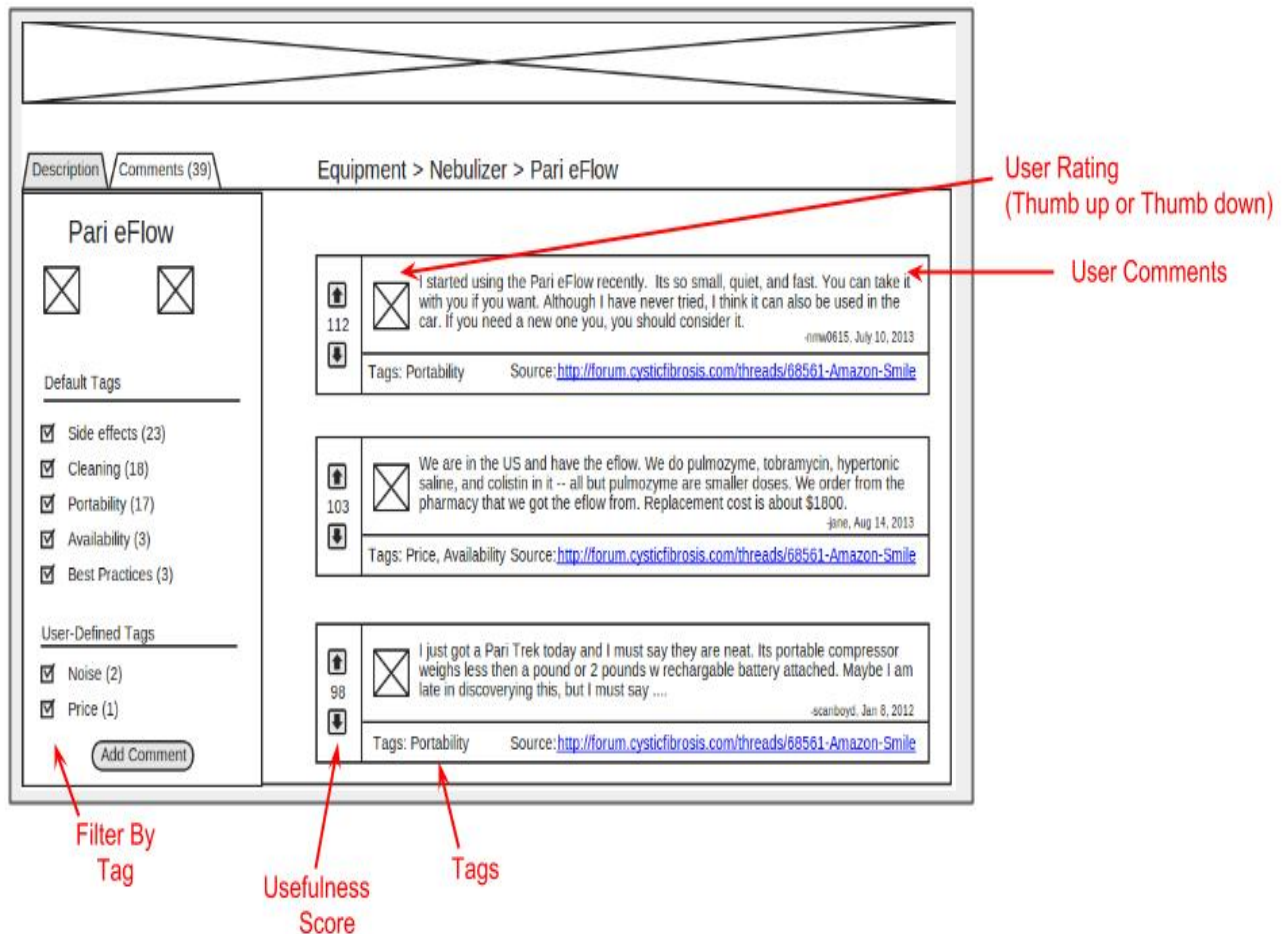
information is often overlooked because it is not readily accessible. As a solution, we propose a Yelp-like site for members of the CF community.

II. CF-DIGEST PROPOSAL SUMMARY

We are building a website –www.cf-digest.com– for members of the CF community to find and share product related information. Our goal is to make it easy to find what others are saying about specific treatment devices like the eFlow nebulizer, PiKo home spirometer, and Nuk Quick N Ready Steam Sterilizer.

In the following diagrams, we illustrate the key features of two possibilities for the CF-Digest interface. The first is a unique layout geared towards providing CF-specific information such as side-effects, cleaning techniques, and best practices for use. The second is an eCommerce type model that people are familiar and comfortable with because it mimics the style of other review websites such as Amazon.com. We have also discussed a hybrid of the two, though we have not worked a wireframe for such a model.

Vision 1:



Equipment > Nebulizer > Pari eFlow

Description | Comments (39)

View | [Edit](#) | [History](#) | [Talk](#)

Pari eFlow

The Pari eFlow nebulizer system is an innovative appliance for the treatment of respiratory diseases. It is beneficial to CF patients because it is 50% faster than typical nebulizers and noiseless. The Pari eFlow can be used with any medications that have been approved for inhalation.

Primary Features

- Short treatment times mean better quality of life and encourages patient adherence
- Quiet operation for discrete use [\[5\]](#)
- Light, compact and portable
- Flexible power options including off the shelf batteries, rechargeable batteries, or AC wall power [\[1\]](#)
- Two complete nebulizer handsets to alternate or use while traveling

Status

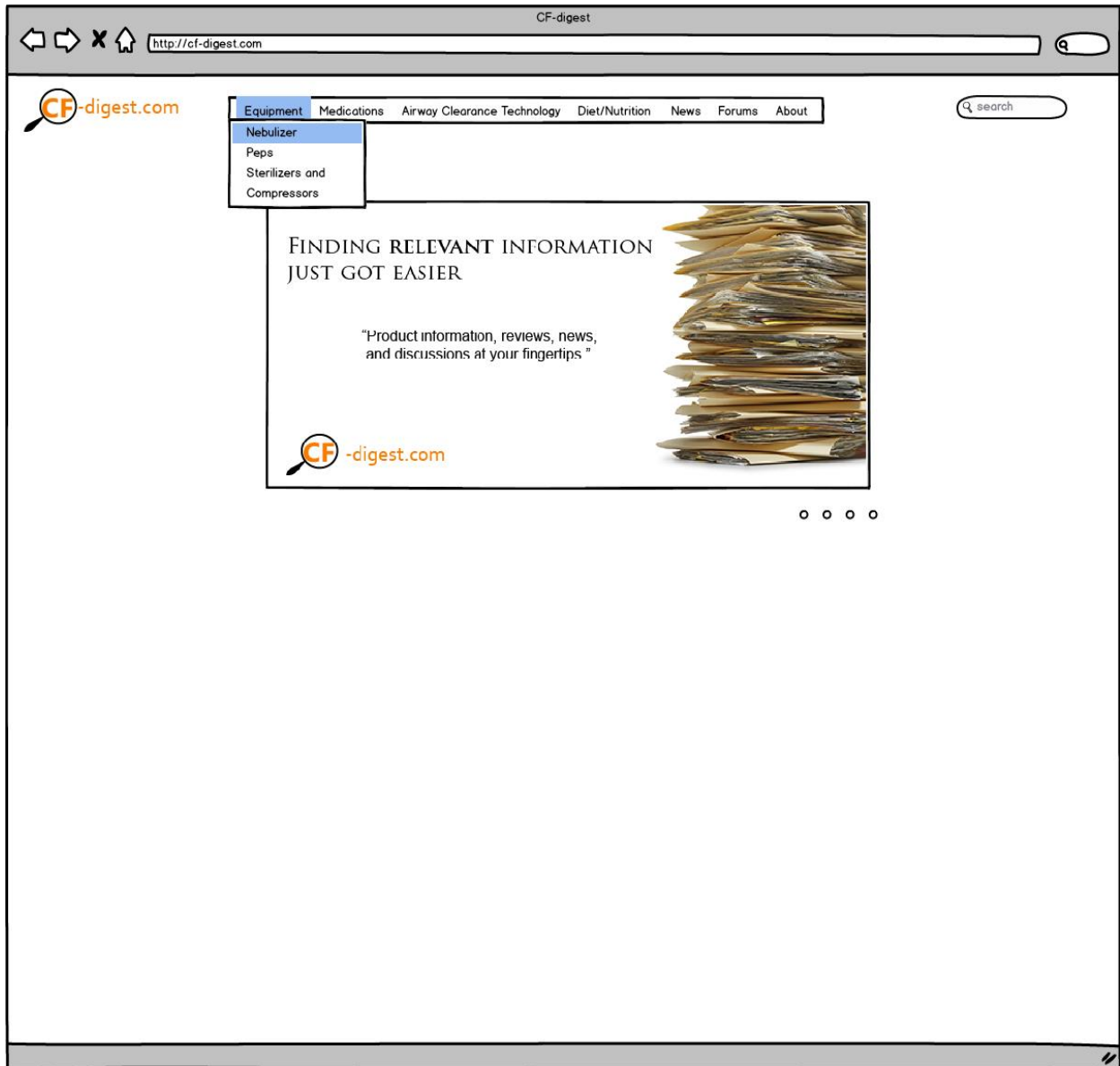
- Clinical trials in U.S. [\[2\]](#)
- Limited availability in Germany

Wikipedia editing features

User-generated descriptions

Link to comments

Vision 2:




CF-digest.com Equipment Medications Airway Clearance Technology Diet/Nutrition News

Home > Equipment > Pari > eFlow

Pari eFlow@rapid nebuliser system

Modern inhalation treatment - twice as fast!



Description

The eFlow@rapid nebuliser system is an innovative appliance for the treatment of respiratory diseases. Throughout its development, particular care was taken to consider patients' needs for efficient, safe, and above all fast inhalation treatment.

With a time saving of more than 50% and its noiseless - thus unobtrusive - operation, the eFlow@rapid can be beneficial to cystic fibrosis patients. With the eFlow@rapid, medications that have been approved for inhalation can be transported deep into the lungs quickly and efficiently. The eFlow@rapid is suitable for all medications that have been approved for use and are available throughout Europe. It also offers worldwide portability and unparalleled hygiene reliability.

★★★★★ (126)
 ★★★★★ (100)
 ★★★★★ (12)
 ★★★★★ (6)
 ★★★★★ (2)

Features Reviews Discussions Media

Components: 2 complete nebulisers 2.0 (incl. aerosol head 2.0), easycare cleaning aid, control unit with batteries, connection cord, international power adapter with four interchangeable adapters, a carrying case and nebuliser bag
 Item No. 178G1005
 eFlow, rapid, inhalation treatment

Short treatment times mean better quality of life
 Quiet running for discrete use
 Light, compact and portable. Can be run on either batteries or mains power for greater mobility
 Easy to clean, handset can be disinfected and autoclaved for the highest standards of hygiene
 New display delivers feedback during inhalation


Banner AD (Partner Perk)

Ads can run down the page based on how much content we have.

Banner AD (Partner Perk)

Banner AD (Partner Perk)

Accessories / Related Products

Image	Model/Options	Common Name
	eflow rapid mouthpiece	rapid mouthpiece

Substitute Products

Image	Model/Options	Common Name
<blank>		

Page 1 of ...

Related Discussions

Discussion Thread	Author
new pari product	Stev
service/operation manual?	Techie2
Looking for real world info	Jeff

Can be based on Product, Category, or Keyword

Related Articles

2011 American Medical Journal, January 2011
CF Trends, June 2011
Stanford Study -- blah blah blah, January 2009

Can be based on Product, Category, or Keyword

III. ORGANIZATION DESCRIPTION

The CF-Digest team was formed at the HackforCF Hackathon on October 5-6, 2013 at Georgia Tech, Atlanta, GA.

Below find the qualifications and CF-Digest specific responsibilities of each member

Team member	CF-Digest Responsibilities	Background
<p><u>Bill Beers</u> B.S. in Computer and Information Science, Troy State University of Montgomery</p>	<p>Design and architecture of the system</p> <p>Application development as needed</p>	<p>Bill began his software development career in 1991 while serving as a computer programmer at the Air Force Wargaming Institute in the United States Air Force. Throughout his IT career, Bill has been involved with all aspects of software development, from design to deployment. His skill set includes multiple programming languages, database systems, and operating systems. His current focus is on emerging web technologies and non-relational database systems. Bill currently works as a Senior Developer at Celerant Technologies.</p>
<p><u>Kent Czechowski</u> PhD candidate in Computer Science, Georgia Institute of Technology</p>	<p>Business related tasks to ensure CF-digest stays focused on achieving the core vision</p> <p>Assist with product development</p>	<p>Kent has a technical background in high performance computing, machine learning, and finance. His work experience includes stints at Intel Corp, the Federal Reserve, and the U.S. Navy research as well as involvement in several early-stage startups.</p>
<p><u>Olgert Denas</u> PhD candidate in Computer Science, Emory University M.S. degree in Computer Science,</p>	<p>Design and implementation of methods for content extraction from unstructured text data</p>	<p>Olgert was a visiting researcher at the Georgia Institute of Technology and at the CAS-MPG Partner Institute for Computational Biology. He worked on efficient algorithms</p>

<p>University of Padua B.S in Information Engineering</p>		<p>and data structures for feature extraction from text data. He is currently a PhD candidate in Computer Science at the Emory University. His current research is on feature extraction from functional genome data using deep learning architectures.</p>
<p><u>Cesar Flores</u> B.S. in Computer Science, Georgia Institute of Technology, specializing in Artificial Intelligence and Media Technologies.</p>	<p>Extraction and integration of internal and external data sources</p>	<p>Cesar currently works on developing and maintaining phone fraud and reputation solutions for Pindrop Security as a software engineer.</p>
<p><u>Kleon Kita</u> Studied Computer Engineering, Rome, Italy. B.S. in Computer Science (in progress), Georgia State University, specializing in Enterprise Applications, and Database Optimization</p>	<p>Build and maintain the application in every aspect</p> <p>Optimize application to load fast and scale efficiently</p> <p>Link context extraction data algorithms to web engine.</p>	<p>Kleon currently works for Oracle Social Cloud supporting all Products across the platform. His responsibilities include main background design, architecting web applications, and writing world class code.</p>
<p><u>Maret Maliniak</u> MPH candidate in Epidemiology, Emory Rollins School of Public Health B.S. in Health Sciences, Furman University</p>	<p>Subject matter expert and project manager</p> <p>Promote CF-Digest in the CF community</p> <p>Form collaborations and relationships with non-profit CF organizations</p>	<p>Maret's previous work experiences include the Centers for Disease Control and Prevention (CDC) and the New York City Department of Health and Mental Hygiene (NYCDOHMH). Maret's sister has cystic fibrosis (CF), fueling her passion for CF research. Her Master's thesis is being conducted at three CF centers in Atlanta, GA examining the effect of Pseudomonas aeruginosa and</p>

		MRSA on FEV1 decline among 600 pediatric and adult CF patients.
<p><u>Yanjun Zhao</u> PhD candidate in Computer Science, Georgia State University. M.S in Computer Science, Georgia State University</p>	<p>Design and implement approaches for name entity recognition from text documents</p> <p>Analyze relationships among recognized entities and hidden information culled from large text corpora</p>	<p>Yanjun’s research interests mainly include artificial intelligence, pattern recognition, data mining and image processing.</p>

IV. PROJECT DESCRIPTION

I. Problem being addressed

There is an overwhelming amount of information on CF-related issues ---such as user reviews on nebulizers and best practices for sterilizers--- online; unfortunately, valuable information is often overlooked because is too difficult to find. To solve this problem, we envision a Yelp-like recommendation site for members of the CF community to find/share product related tips and comments.

II. Objectives

We are building a website--CF-Digest.com--that catalogs posts from forums such as cysticfibrosis.com as well as others by product type (e.g. home spirometer) and specific product (e.g. Piko-1 Spirometer) so users can find all posts (from multiple forums) related to the specific product quickly and efficiently.

The creation of CF-Digest.com and the categorization of forum posts will serve as the first step in creating a Yelp-like website in which CF-users can write their own reviews and recommendations. The purpose of categorizing the forum posts on CF-Digest.com is to 1) locate and organize the already existing user-generated information for easier navigation through product-related content and 2) pre-populate CF-Digest with user comments to prove that a user-reviewing website is valuable and useful to the CF community.

After achievement of these two goals of CF-Digest, we plan to advance to a review website where CF-users will write reviews and recommendations directly to CF-Digest.com.

III. Methods outline

1. Scrape data from forum.cysticfibrosis.com and other forums
 1. Status: 80-90% completed
 2. Team Member: Cesar Flores
2. Store data from all forums onto server
 1. Team Member: Bill Beers
3. Extract content from scraped data
 1. Team Member: Olgert Denas
 2. Name entity recognition Yanjun Zhao
4. Conduct several forms of data analyses including:
 1. Keyword analysis
 1. Team Member: Olgert Denas

2. Sentiment analysis (determined if post content is positive, negative or neutral)
 1. Team Member: Bill Beers
3. Recognize relationships among entities and hidden information among large text corpora
 1. Team Member: Yanjun Zhao
5. Link context extraction data algorithms to web engine
 1. Team Member: Kleon Kita
6. Design and architecture of application
 1. Team Members: Bill Beers and Kleon Kita
7. Continued Maintenance of Website
 1. Team Members: All

V. PROJECT TIMELINE

The goal of Milestone 1 is to produce a Minimum Viable Product. It consists of two major drives: (1) developing a website with the core functionality and (2) cataloging forum.cysticfibrosis.com posts to provide the initial content for the site.

Milestone 1

Initial creation of CF-Digest website with core functionality:

- Basic “comment” and “rating” functionality
- Upvoting comments
- Tagging comments
- User accounts

Cataloging forum.cysticfibrosis.com content

- Define CF vernacular (common abbreviations and slang)
- Find meaningful posts related to products
- Annotate relevant posts (e.g., tag as “side effects”, “cleaning techniques”, etc)
- Develop a weighting function for ordering comments based on value

The second milestone will focus on developing an active user base and tuning the site’s functionality.

- [January 2014] Complete Milestone 1, Soft launch
- [Summer 2014] Target: 1,000 unique users and 500 posts
- [Fall 2014] Target: 4,000 unique users and 2,000 posts
- [Fall 2015] Target: 10,000 unique users and 5,000 posts

VI. BUDGET

We are seeking initial seed money of \$5,000-\$7,500 to cover the first milestone. Since the CF-Digest team is willing to donate their time and talents to complete this phase, our primary costs will consist of:

Legal services to incorporate as a nonprofit	\$2000-\$3000
Server hosting	\$500-\$1000
Professional design work	\$500-\$1000
Marketing (Promotion at CF events, conferences, etc.)	\$500-\$1000
Miscellaneous expenses (meeting space, maintenance)	\$500-\$1500
Total	\$5000-\$7500

After the completion of milestone one, CF-Digest will be functional enough to demonstrate the true value of the site. With the grant money provided, we will be able to accomplish the following:

- (i) Initial creation of CF-Digest website with core functionality:
 - Basic “comment” and “rating” functionality
 - Upvoting comments
 - Tagging comments
 - User accounts
- (ii) Cataloging forum.cysticfibrosis.com content and potentially other online CF forums
 - Define CF vernacular (common abbreviations and slang)
 - Define hierarchy of product categories and products for easy, coherent navigation e.g. Equipment > Nebulizer > Pari e-Flow
 - Find meaningful posts related to products and list by relevancy with defined thresholds of relevancy
 - Annotate relevant posts (e.g., tag as “side effects”, “cleaning techniques”, etc)
 - Develop a weighting function for ordering comments based on value

If necessary, we will pursue additional funding to continue development. Ultimately, the long-term goal is to make CF-Digest financially sustainable by covering operational costs with advertising revenue or sponsorships from device manufacturers.