

**VOICE-ACTIVATED TOUCAN SAM®
KELLOGG™ FROOT LOOPS® CD INSERT PROGRAM**

Final Design Document



**Prepared by: Calvin Parks
Bill Perez**

Version: 1.0

Draft Date: August 23, 2004

Issued Date: Revised October 2, 2004

Approved Date:

PROGRAM Participants

PROGRAM Sponsor: Kellogg's Froot Loops
DNA Digital Media Account Manager: Christopher Tomes
DNA Digital Media Technical Director: Calvin Parks

TABLE OF CONTENTS

DOCUMENT HISTORY	p. 5
DOCUMENT APPROVAL	p. 6
RELATED DOCUMENTS	p. 7
1. INTRODUCTION	p. 8
1.1 Document Purpose	p. 8
1.2 PROGRAM Overview	p. 8
1.3 PROGRAM Objective	p. 8
Hardware, Software, and Human Interface Requirements	p. 8
1.4 Software Functions	p.9
1.5 Design Constraints and Limitations	p. 9
2. PROGRAM MODULES DESCRIPTIONS	p. 10
2.1..... Audio and Video Setup	p. 10
2.2..... Speaker Command Profile	p. 10
2.3..... Voice-Activated Command and Control	... p. 10
2.4..... Voice-Controlled Game	... p. 10
2.5..... Link to Toucan Sam Web Site	...p. 10
2.6..... Help Documentation	... p. 11

3. APPLICATION FLOW p. 11

3.1 Installation Setup and Uninstall.....	p. 11
3.2 Command and Control.....	p. 12
3.3 Application In “Idle” State	p. 12
3.4 Voice-Controlled Game	p. 12
3.5 Link to Toucan Sam Web Site	p. 13

4. PRODUCTION REQUIREMENTS AND SCHEDULE p. 13

4.1 Final Design Document	p. 13
4.2 Scripting and Storyboarding	p. 13
Voice Over Recording	p. 14
4.4. Animation	p. 14
4.5 Interface Integration	p. 14
4.6 Programming Module	p. 14
4.7 Testing	p. 14
4.8 Final Install Shield	p. 14

5. TEST PROVISIONS p. 15

5.1 Test Guidelines	p. 15
---------------------------	-------

6. TIMELINES	p. 16
6.1 Pre-Production	p. 16
6.2 Production	p. 16
6.3 Beta Delivery	p. 16
6.4 Testing	p. 16
6.5 Final Product Delivery	p. 16
7. ADDENDUM	p. 17

♦ ♦ ♦

DOCUMENT HISTORY

Version	Date	Updated By	Comments
1.0	8/23/04	Calvin Parks and Bill Perez	First Draft created
1.0 Redlined	9/7/04	Margaret Wagner and Frankel	Addition of Document History, Document Approval, Related Documents, Application Work Flow, Approved Toucan Sam Script and Storyboard sections; multiple text revisions throughout document
1.0 Frankel Changes Accepted	9/8/04	Margaret Wagner and Frankel	Resent 9/7/04 document with all changes accepted for easier read
1.0 DNA Changes	9/9/04	Calvin Parks & Bill Perez	Deleted Enroll and Verify sections (sections 2.2 and 3.1 paragraph 4) Added SRS profile creation (sections 2.2 and 3.1 paragraph 4)
1.0 Frankel Changes	10/04/04	Margaret Wagner and Frankel	

DOCUMENT APPROVAL

The following signatures indicate approval of this document and its content.

Organization	Name and Role	Signature	Date
The Kellogg Company	Sandy Uridge Director, Consumer Promotions		
Frankel	Mia Fatta SVP, Director Account Services		
DNA Digital Media	Christopher Tomes President		
DNA Digital Media	Calvin Parks Technical Director		

RELATED DOCUMENTS

Document Name	Version #	Location
Kellogg Statement of Work		Addendum, page
Toucan Sam Game Storyboard and Script (captions on Storyboard)		Addendum, page
Toucan Sam URL		Addendum, page
Frankel Email re: DNA Minimum System Requirements dated 10/4/04		Addendum, page
Frankel Memorandum re: Toucan Sam List of Animation Elements for Desktop Commands dated 10/4/04		Addendum, page

1. INTRODUCTION

1.1 Document Purpose

This product Design Document serves the following purposes:

- To outline PROGRAM specifications
- To outline PROGRAM requirements
- To outline PROGRAM deliverables
- To outline PROGRAM timeline

1.2 PROGRAM Overview

DNA Digital Media (herein referred to as DNA0, in association with The Kellogg Company (herein referred to as Kellogg), present a voice-activated *Froot Loops®* Cereal Toucan Sam™ CD Insert PROGRAM (herein referred to as “The PROGRAM”). Toucan Sam comes to life on the user’s computer desktop. Through a 2D animated Toucan Sam character, users can interact with Toucan Sam by using only their voice. The PROGRAM contains three main voice features modules: Command and Control, the “Toucan Sam Find the Box of *Froot Loops®* Cereal” game, and a link to the www.toucansam.com web site.

1.3 PROGRAM Objective

The PROGRAM’s objective is to create a unique user experience by enabling users to interact with their favorite character. In this case, the character is the 2D animated “Toucan Sam.”

1.4 Hardware, Software, and Human Interface Requirements

The PROGRAM will require the user to have a computer with the following minimum system requirements:

Minimum System Requirements

- Windows® 98 Rel. 2., Windows® NT 4.0 Workstation, Windows® 2000 Professional, Windows® ME, Windows® XP Home Edition, Windows® XP Professional Edition
- 500 MHz Pentium® III or higher
- 64 MB free RAM
- Multimedia compatible
- Speakers and microphone for PC users
- MS compatible mouse
- Keyboard
- Screen resolution must be at least 800x600 with 16 bit colors

- Video card must be 32 MB or more and contain one of the following chipsets: NVIDIA GeForce 4, GeForce 3, GeForce 2, ATI Radeon™ 9000, ATI Radeon™ 8000, ATI Radeon™ 7500 or greater

Although most of the PROGRAM is voice activated, a mouse or pointing device is required to launch certain applications. All input will be provided via a microphone, mouse and keyboard. Output will be heard on the computer's speakers and displayed on the computer monitor. The above specification can be printed on the side panels of the Kellogg's *Froot Loops*® cereal promotional packaging and on the CD label and backer card of the Toucan Sam promotional CD for Phase 2.

In addition, a mouse-click override will be inserted into the PROGRAM where needed, so the user has the option of activating the desktop commands or game with their voice, or with the click of an onscreen button.

1.5 Software Functions

The PROGRAM includes a number of software elements that will work together to produce the user's experience. DNA's Creative and Development team will work together to make the user interface and the core system functionality work flawless together. The software will also create a program group that contains additional files such as: Kellogg's www.toucansam.com Web link, PROGRAM administration (new user set up), Command and Control maintenance and Help Documentation). The user can access these files at anytime.

1.6 Design Constraints and Limitations

The PROGRAM's performance is key to making it enjoyable and successful. The interface needs to efficiently run on a variety of computers and platforms. The setup process should be straightforward and fast. The PROGRAM should not create any security holes for any malicious use. The PROGRAM connections should be reliable and not cause dropped data or other synchronization errors.

This Design Document serves as a guideline for the PROGRAM's development. There may be unforeseen design constraints and or limitations that would cause the PROGRAM to be modified at any time during its development. These limitations or constraints could include file size issues, programming conventions and compression schemes. In other words, DNA will do everything in its power to ensure the reliability and effectiveness of the PROGRAM.

In order to ensure the completed product is delivered on the agreed upon date, it is imperative that all parties associated with its development work in an efficient and timely manner. DNA Digital Media will in its best efforts work to meet all delivery dates and timelines. Any delay by any party for any reason can cause the delivery dates to be pushed back.

2. PROGRAM MODULES DESCRIPTIONS

2.1 Audio and Video Setup

After the initial installation of all the necessary files, the user will go through the one time audio and video set up portion of the experience. During this stage, the PROGRAM will determine whether there is a microphone installed and enabled. It will also determine if the speakers are installed and working. And finally, the software will determine the user's screen resolution, and the software will adjust accordingly.

2.2 Speaker Command Profile

The PROGRAM's Speech Recognition System (SRS) can understand and follow simple commands that it has been educated about in advance. DNA will provide grammar files that describe the commands that the system must recognize. Additionally, the SRS can learn more about a particular user. As a result of different people's enunciation, accent, pitch and so on, the SRS will require a speaker profile to be set up; this will significantly increase the accuracy of the SRS. This profile results from training sessions that educate the recognizer about the nuances of the speaker's voice. The profile will include meta-data that defines the users gender and age range. This additional data tells the SRS engine which dynamic range the user voice will most likely fall.

2.3 Voice-Activated Command and Control

A unique feature of the PROGRAM is the "Command and Control" module. This allows the user to pick a program and use a specific word or group of words to open that program. This is activated by the user saying, "Hey Toucan Sam," followed by "Wake up!," in which Toucan Sam appears on the screen and asks the user how he can help. The user then says the word or keywords to open a specific program and or file.

2.4 Voice-Controlled Game

The "Find the Box of *Froot-Loops*® Cereal" game module features a basic Flash game that uses a person's voice to activate specific actions. The object of the game is to help Toucan Sam find a box of *Froot Loops*® cereal. The adventure game consists of three (3) levels, each containing obstacles and energy opportunities. For example, the user says, "Fly, Toucan Sam," then Toucan Sam will fly over the current obstacle. The game ends when Toucan Sam reaches the top of a "Magical Multicolored Mountain" where he finds a full box of *Froot Loops*® cereal.

2.5 Link to Kellogg's www.toucansam.com Web Site

The user will also be able to link to Kellogg's www.toucansam.com Web site. The user may also link to Kellogg's www.funKtown.com, at Kellogg's option.

2.6 Help Documentation

Help Documentation will be available to the user in an Adobe PDF format. This Help Documentation will highlight potential troubleshooting measures to help the user with the installation and activation of the PROGRAM. It will also contain a Frequently Asked Questions (FAQs) section and a System Support Help Line [DNA: Why no Support Web Page?]. This Help Documentation will be developed upon completion of the initial Beta copy of the PROGRAM. DNA will supply technical support via phone to Kellogg and will make all necessary changes to correct unforeseen software bugs that may exist. Technical support will be provided for consumers for a fixed period of time by a third party (NTS has been hired to provide this).

3. APPLICATION FLOW

3.1 Installation Setup and Uninstall

The application will be packaged for a standard size CD-ROM. During installation, all the necessary checks will be performed to ensure that the pre-requisite software is already installed on the user's machine. If any of the required software components, e.g. Macromedia Flash Player, a suitable Java VM, etc., are not found, the user will be given a choice to install these components. Installation of the application will automatically continue after the appropriate software components are successfully installed.

Upon successful installation of the application, the user will be given a choice to run the setup module. The user may choose to exit the installation without running the setup module. In this case, the setup module will automatically run the first time that the user attempts to start the application. As such, the user will not be able to use the application without running the setup module at least once. A separate configuration module will be provided that will allow the user to modify most of the application properties set during the setup process.

The setup module will start by launching the Audio Configuration utility. This utility provides the user with the ability to verify the suitability of the installed audio hardware and software for use along with the software. The user can also modify the volume levels for the speakers and the microphone via this utility. The user can re-run the Audio Configuration utility via the configuration module at any time.

The speaker profile training sessions, which educate the speech recognizer about the nuances of the speaker's voice, will start. The training session will consist of a series of words that the new user will be asked to say. The word will be the actual commands that are going to be used in the PROGRAM. The training session will be fun and engaging. It will take on the form of a short game.

[Uninstall info?]

3.2 Command and Control

The user will have the ability to skip or set up and load the Command and Control training module. The user will be given a brief introduction to the Command and Control functionality supported by the application, and then the training process will start. During the training process, the user will be prompted to select an application (an executable, a batch file, etc.), and then speak two renditions of the command that they want associated with that application. For example, the user can choose MS Outlook as the application and then say “Open E-mail” two times to train the system to launch the MS Outlook application when the user issues the “Open E-mail” command.

For every rendition spoken by the user, the application will perform the necessary quality checks and provide appropriate feedback to the user via audio and video prompts. Once a command is successfully trained, the application will prompt the user to train another command or continue with the setup process. The user can exit the training process at this time and continue with the setup process. The application allows for the Command and Control training module to be accessed via the configuration module. {DNA: Say the user gets half way through setting up commands and wants to stop. Is the configuration module the way they can get back to setting up commands at a later date?]

The setup process then prompts the user to determine if the application should be installed as a NT Service (for Windows 2000/XP and above only) or as a startup application (for Windows 98/ME only). The user can choose not to have the application automatically start at system startup, in which case he/she can start the application via the Desktop icon or the Start menu link.

3.3 Application In “Idle” State

When the application is running and minimized to the system tray (a Toucan Sam icon will be displayed in the system tray) it is deemed to be in an idle state, i.e. the configuration module or any other modules are not currently active. The user can activate the Command and Control module by speaking a pre-determined vocal, e.g. “Hey Toucan Sam”. This will cause a Balloon Tip to appear over the system tray that will visually prompt the user to say a confirmation phrase, e.g. “Wake Up”. If the application does not hear a confirmation phrase it will go back into listening for the activation phase. Once activated, the Command and Control module will prompt the user to speak a command that the application has been trained to recognize. The application will then attempt to recognize the command spoken by the user, if any, and will launch the associated application.

If the user does not speak a command within a pre-determined amount of time, the Command and Control module will play a suitable prompt and close it, returning the application to an idle state. For every rendition spoken by the user, the application will perform the necessary quality checks and provide appropriate feedback to the user via audio and video prompts.

The PROGRAM will also include a utility for the user to be able to review the selected programs and voiceprint files.

3.4 Voice-Controlled Game

The user will also be able to play the “Toucan Sam Adventure” voice interactive game. Using voice commands, the user will help Toucan Sam journey through a jungle, field and mountain to find a new box of *Froot Loops*® cereal. Toucan Sam will have to navigate obstacles as he travels. The user will have to tell Toucan Sam what to do. There will be an option of using a mouse click command, in case the user does not properly use the voice commands. If the user’s command is correct, Toucan Sam moves on and wins points and keeps his energy level high. Points are a multiple of the energy level. After each obstacle has finally been passed, Toucan Sam will encounter a scent trail. If he walks past it, nothing happens. But if the user says, “Smell, Toucan Sam,” he’ll smell in the scent trail and his energy level will be replenished. Even if Toucan Sam’s energy goes down to zero, he will be given the opportunity to smell the drifting scent trails. The goal is to get to the top of the “Magical Multicolored Mountain” and find the *Froot Loops*® cereal box, while scoring as many points as possible.

3.5 Link to Kellogg’s www.toucansam.com Web Site

The user will also be able to link to Kellogg’s www.toucansam.com Web site. The user may also link to www.funKtown.com, at Kellogg’s option.

4. PRODUCTION REQUIREMENTS AND SCHEDULE

4.1 Final Design Document

Once the preliminary creative document (concept), script and storyboards are approved, the Final Design Document will be completed and signed off by all necessary parties: DNA, Frankel, Leo Burnett and Kellogg. The Final Design Document is a detailed document that will be the guide in which the final product will be developed. Changes made to the Final Design Document after it is approved can cause delays in the product’s delivery and increase expenses associated to its development.

4.2 Scripting and Storyboarding

The final script and storyboard will be completed and approved in conjunction with the Final Design Document. The approved final script and storyboard will be the basis from which the voice over will be recorded and animation sequences created. Changes made to the script and storyboard after it is approved can cause delays in the product’s delivery and increase expenses associated to its development.

4.3 Voice Over Recording

“Voice over” talent will be determined by Frankel, Leo Burnett and Kellogg. All voice recordings will be produced by Frankel and Leo Burnett. The voice over will be one of the first elements needed to start embedding animation and programming. Any supplemental voice overs will be recorded at the time the script is recorded, so there will only be one studio recording. The Kellogg approved talent, Maurice La Marche, will be used to record the voice of Toucan Sam. DNA and Kellogg will split 50%/50% the cost of all talent fees. All parties associated with the PROGRAM’s development will need to approve the final voice over recording (Kellogg, Leo Burnett, Frankel and DNA).

4.4 Animation

Once the voice over is completed, it will become the template for the animation team to synch to. The animation will be created by DNA Digital Media based on 2D, black and white sketched illustrations created by DNA and Frankel that serve as the storyboard and that is approved by Kellogg and Leo Burnett. The animation will then be imported into the user interface where the programming will be applied and compiled. All Toucan Sam environments, backgrounds, art, etc. not supplied by Leo Burnett will be created by DNA as original art. Kellogg owns all original art created by DNA for the Toucan Sam PROGRAM. All original art drawings must be approved by Leo Burnett and Kellogg prior to animation.

4.5 Interface Integration

Once the animation is complete, it will be imported into the user interface. At this point, it is important to make design elements flow together to create an entertaining and effortless user experience.

4.6 Programming Module

DNA’s development team and creative team will work in parallel for the entire duration of the PROGRAM. Once the interface is complete, the DNA development team will integrate the voice-activated coding into a container application. The container application merges the multimedia interface with the backend source code and core system functionality.

4.7 Testing

Once the beta PROGRAM is completed, the testing phase is engaged. This is where DNA will internally test the PROGRAM’s compliance on different operating systems.

Once internal testing is complete, DNA is responsible for having the PROGRAM tested by an external source to ensure its user friendliness and functionality. DNA will pay 100% of the fees for this external testing phase of the PROGRAM. In addition, DNA will split 50%/50% with Kellogg all fees for the external software support phase of the PROGRAM.

4.8 Final Install Shield

The final install shield will be put into the PROGRAM and tested to check compliance on different operating systems. Once DNA is satisfied with the PROGRAM's compliance, the files will be transferred to all other involved parties for further testing and approval.

5. TEST PROVISIONS

5.1 Test Guidelines

Reviewing the application for potential errors, omissions and program glitches (bugs) will be performed during the beta testing phase. A list of these bugs will be provided to DNA in a timely manner. This thorough test will be completed before new or changed modules are added into the PROGRAM. Execution is based on testing communication. Final testing will check that the PROGRAM and procedures are followed and the PROGRAM performs accurately before final production is approved.

[Special considerations?]

6. TIMELINES

6.1 Pre-Production

Script/storyboard approved: August 30, 2004

Preliminary Design Document: August 23, 2004

Final Design Document approvals needed: September 3, 2004

6.2 Production

Begin production: August 13, 2004

Final recording of Toucan Sam talent: September 7, 2004

Start Animation: August 17, 2004

Final Animation: September 17, 2004

Integration into interface: September 19, 2004

Programming integration into interface: September 26, 2004

6.3 Beta Delivery

The PROGRAM's beta delivery will be for review to all applicable parties on October 1, 2004.

6.4 Testing

Initial review and testing from all parties to Beta version: October 10, 2004

Delivery of Beta version to outside testing provider: October 15, 2004

Change requests due from all necessary parties: October 17, 2004

Changes and fixes made to Beta version: October 20, 2004

Final review and testing phase: October 22, 2004

Final changes completion: October 26, 2004

6.5 Final Product Delivery

The final master product will be delivered to Kellogg on October 28, 2004.

NOTE: Gold Master deadline to be delivered to Kellogg is Monday, November 1, 2004

♦ ♦ ♦

7. ADDENDUM

The **Addendum** section contains the following documents:

- Kellogg Statement of Work
- Toucan Sam Game Storyboard and Script (captions of Storyboard)
- Toucan Sam URL
- Frankel Email re: DNA Minimum System Requirements dated 10/4/04
- Frankel Memorandum re: Toucan Sam List of Animation Elements for Desktop Commands dated 10/4/04