

iTunes

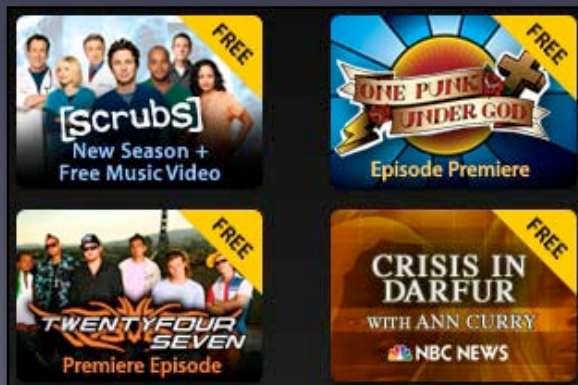
Amy Grude
Voratima Orawannukul
Ryan Rindler
Nick Senske
Mike Toulouse
Mike Wise

Introduction

- World's most popular jukebox
 - Over 100 million users
- But iTunes doesn't just **play** music
 - search
 - sort
 - rip
 - burn
 - share
 - shop

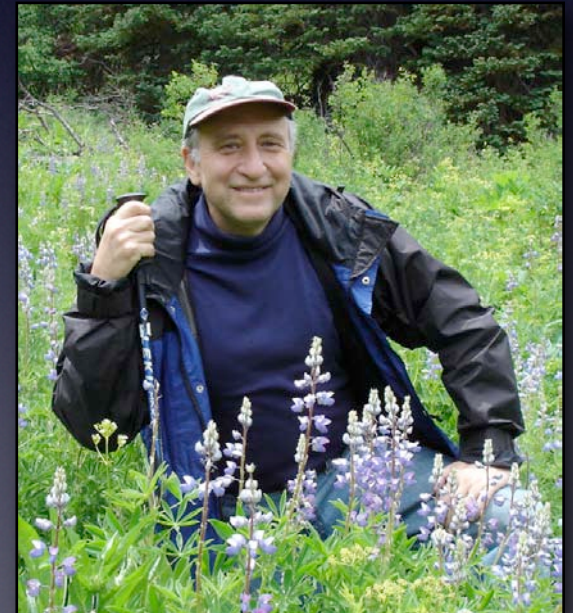
Introduction

- iTunes has recently expanded into additional forms of media



Apple's Human Interface Guidelines

- Reflect the user's mental model
- Direct manipulation
- User control
- Feedback and communication
- Consistency
- Forgiveness
- Perceived stability



Introduction to Problems

- Organizational Complexity of iTunes
 - Unintuitive controls
 - Complex functionality
 - Error handling
- Active Attention Requirements
 - Monitor and control playback
 - “Background” music

iTunes Evaluation

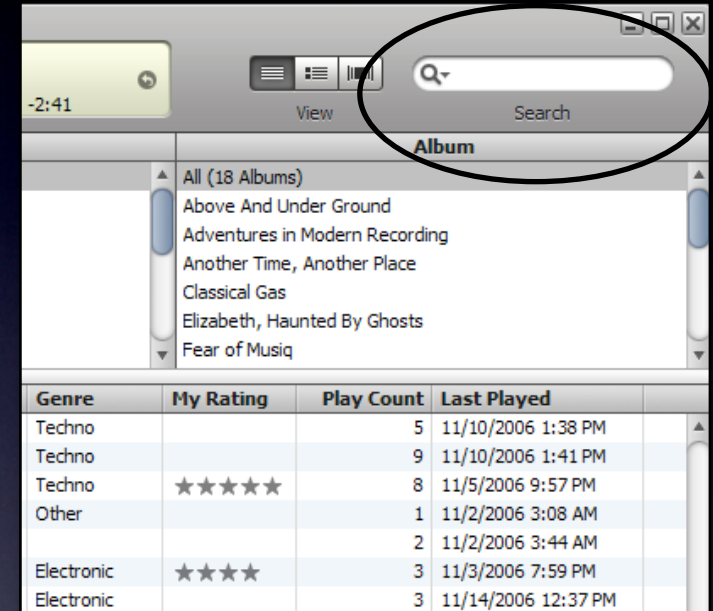
- Cognitive Storyboards/Walkthroughs
- Heuristic Evaluations
- Personas

iTunes Storyboards

- Connecting and disconnecting an iPod
- Importing music and folders to iTunes & changing metadata
- Deletion of duplicate songs
- Adding lyrics to songs
- Search system
- Movie/Video Playback

iTunes Search System

- Primitive
 - Lacks history
 - Lacks Feedback
 - No “fuzziness”
- Poor status indication
 - Distant from related items
- Lack of contextual links

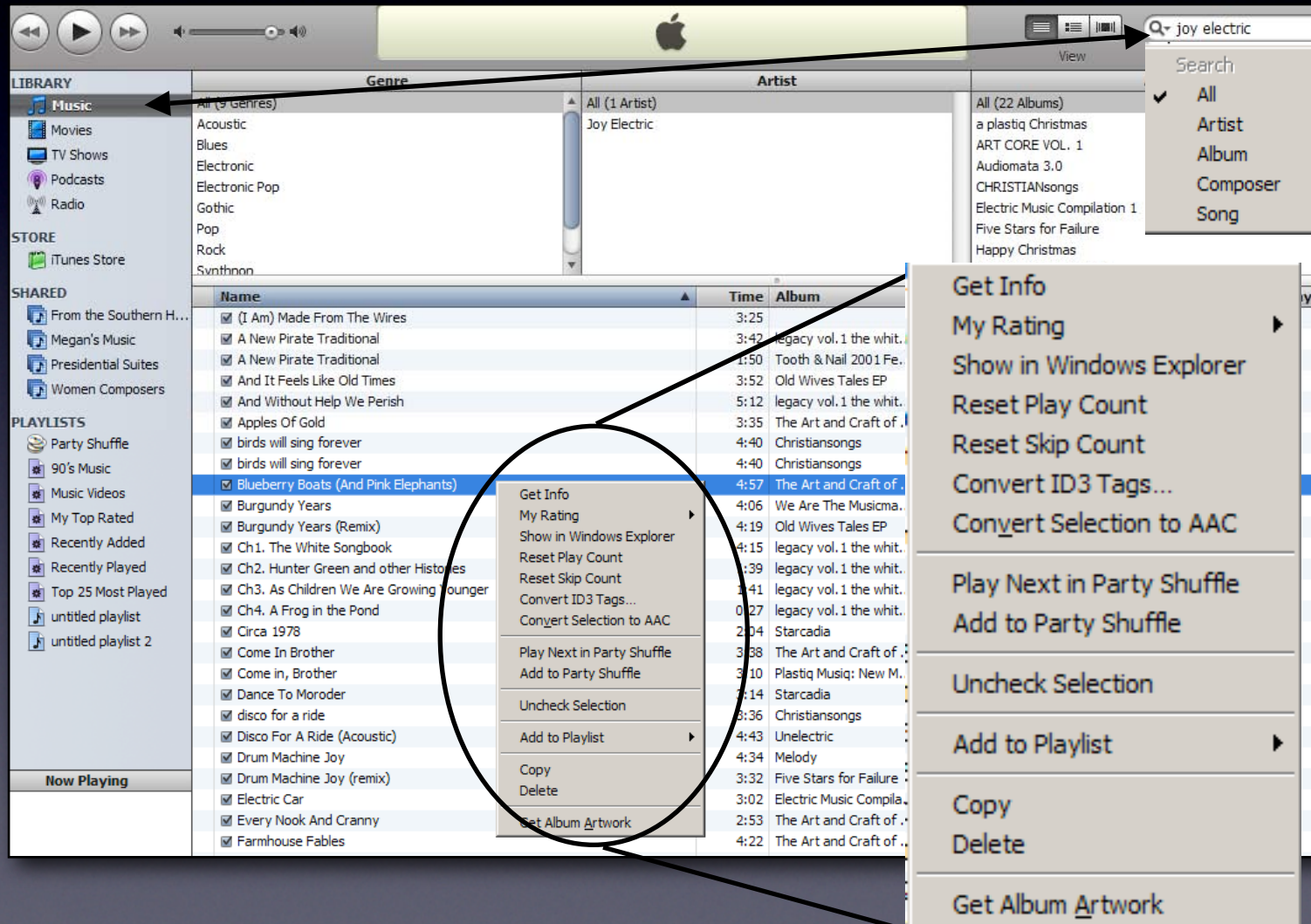


Search System: Heuristics Violated

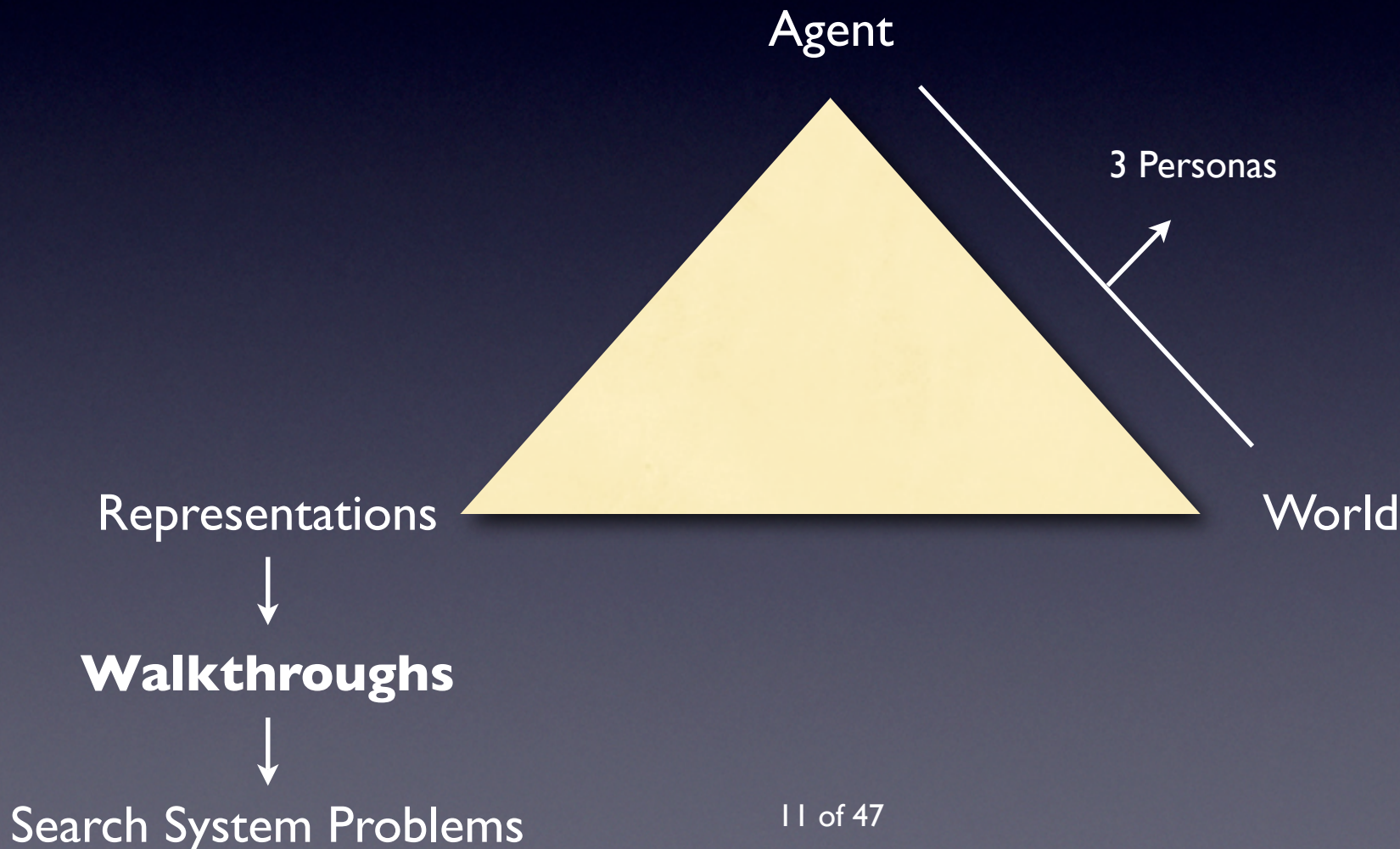
- Visibility of system status
- Reduce short term memory load
- Support error prevention and management
- Permit easy reversal of action
- User control and freedom
- Offer informative feedback



iTunes Search System



Consideration of Cognitive Triad

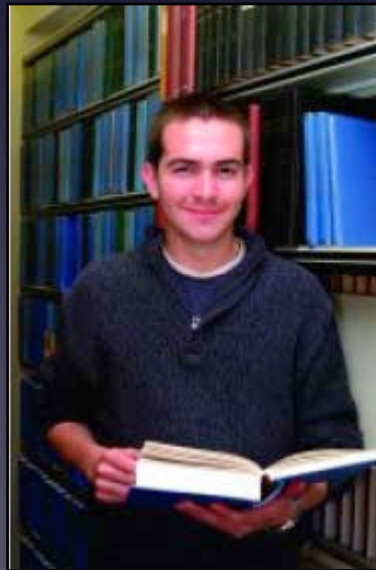


Personas

- Developed independently by 3 group members to understand the agents themselves and the world they work and play in



Tammy



Daveryn



Jonathan

Persona: “Tammy”

- Computer Novice
 - Owns an iBook
 - Recently received iPod as a gift
- Aspiring Writer
 - Uses web, email, IM and Word extensively
- Loves jazz
 - Has begun to convert her CD collection



Personas: Common Thread

- iTunes is *rarely* the focal computing task
- User goals involve *listening* to their music
 - “Also, like most students, Daveryn listens to his music almost everywhere. He brought his entire CD collection to college and has uploaded a handful of them to his computer. Although he downloaded iTunes, he prefers Winamp for everyday music *listening*.”

A Fundamental Flaw

- iTunes does not support user preferences
 - Relies strictly on deterministic playlists
 - Only pure randomization or “smart shuffle” offered to relieve users of burden of song selection
 - Task switching on a GUI is time intensive
 - iTunes is limited by users’ overt choices



Introduction

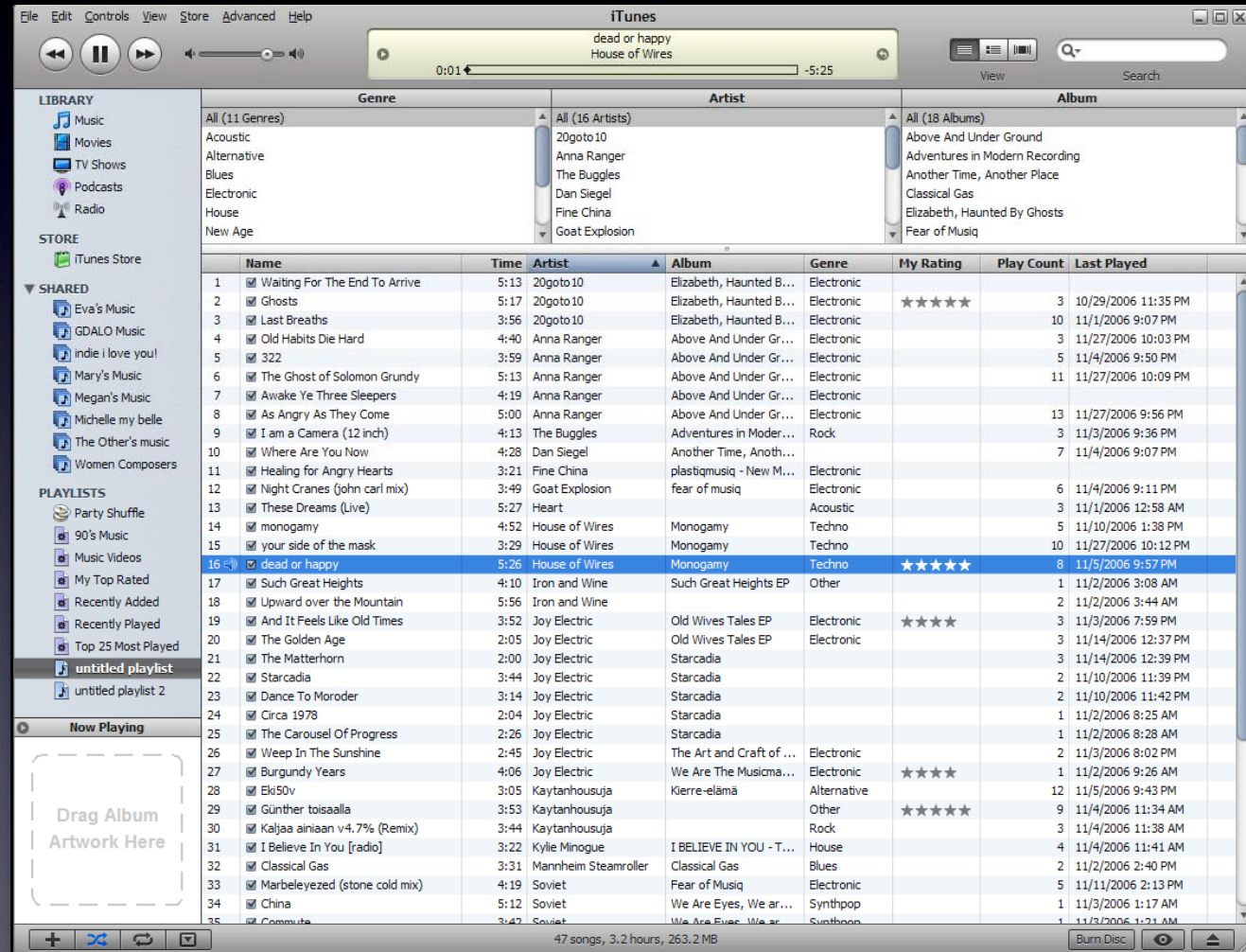
Methods
& Findings

Design Solutions

Day
Scenario

Night
Scenario

“User Control and Freedom?”



Evaluation Results

- Targets for Improvement Identified
 - Search/Browse system overhaul needed
 - Consideration of user preferences must be greatly improved (*affective* computing)
 - Must take more into account than a person's playlist
 - Implicitly and explicitly expressed preferences
 - Understanding the users' language

Focus of Redesign

- iBrowse
 - Contextual browsing using a recommender system
- SmartPlay
 - Intelligent song selection based on surroundings



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& Findings

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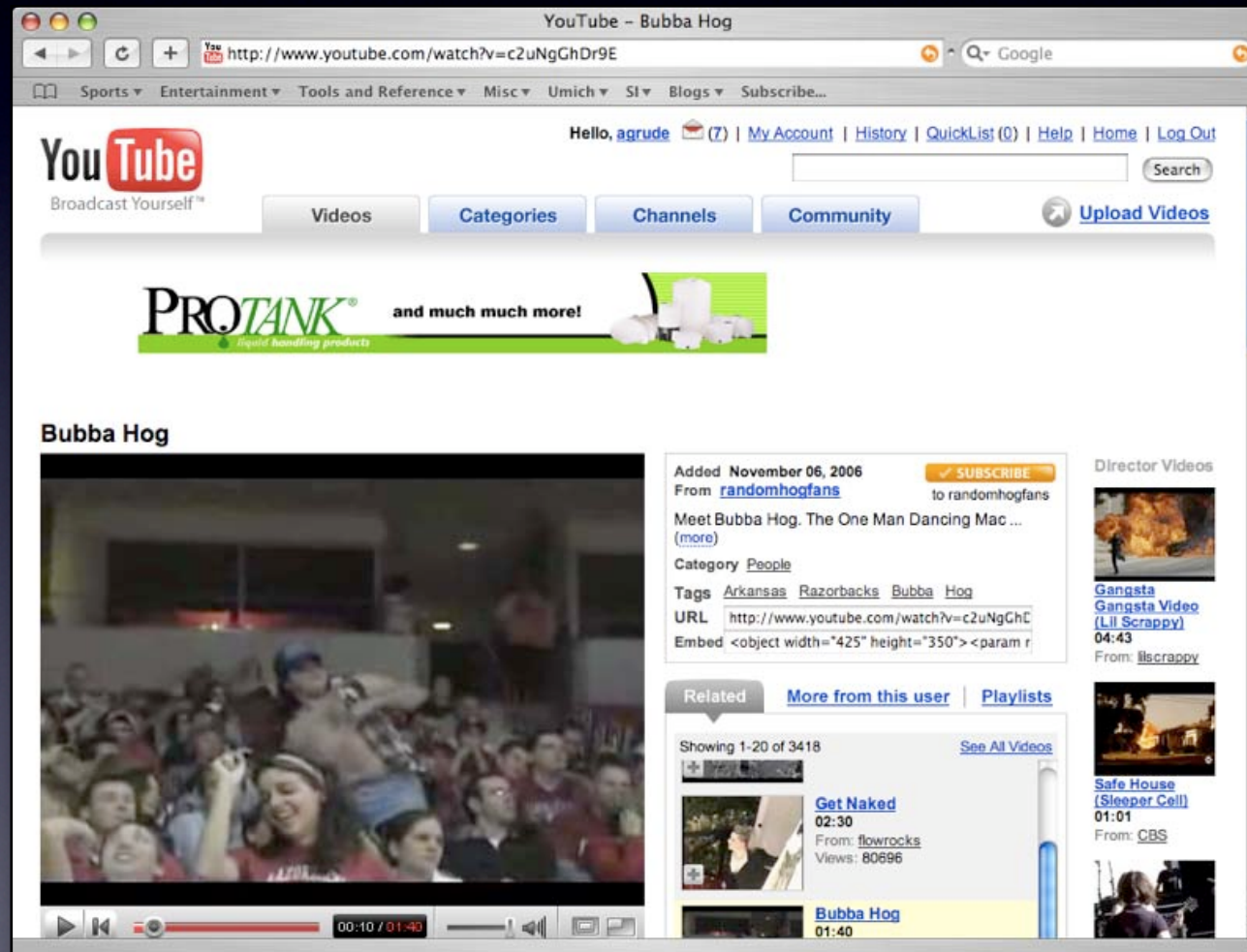
Day
Scenario

Night
Scenario

Web Browsing



Browsing on YouTube

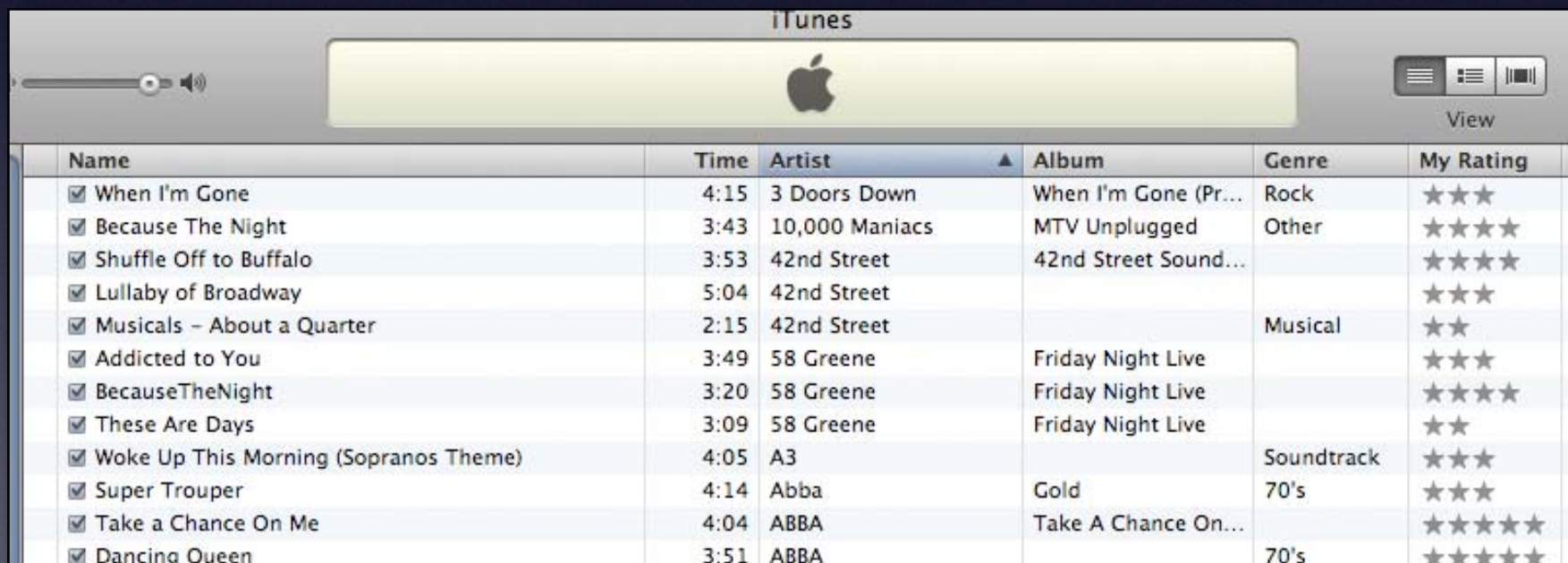


Browsing in Stores



iBrowse

- Based on recommender system technology



The screenshot shows the iTunes application window. At the top, there's a volume slider on the left, a search bar in the center with the Apple logo, and view controls on the right. Below this is a table of music tracks. The table has columns for Name, Time, Artist, Album, Genre, and My Rating. The 'Name' column includes a checkbox for each track. The tracks listed are: 'When I'm Gone' (3 Doors Down), 'Because The Night' (10,000 Maniacs), 'Shuffle Off to Buffalo' (42nd Street), 'Lullaby of Broadway' (42nd Street), 'Musicals - About a Quarter' (42nd Street), 'Addicted to You' (58 Greene), 'BecauseTheNight' (58 Greene), 'These Are Days' (58 Greene), 'Woke Up This Morning (Sopranos Theme)' (A3), 'Super Trouper' (Abba), 'Take a Chance On Me' (ABBA), and 'Dancing Queen' (ABBA). The 'My Rating' column shows star ratings for each track.

Name	Time	Artist	Album	Genre	My Rating
☒ When I'm Gone	4:15	3 Doors Down	When I'm Gone (Pr...	Rock	★★★
☒ Because The Night	3:43	10,000 Maniacs	MTV Unplugged	Other	★★★★★
☒ Shuffle Off to Buffalo	3:53	42nd Street	42nd Street Sound...		★★★★★
☒ Lullaby of Broadway	5:04	42nd Street			★★★★
☒ Musicals - About a Quarter	2:15	42nd Street		Musical	★★
☒ Addicted to You	3:49	58 Greene	Friday Night Live		★★★
☒ BecauseTheNight	3:20	58 Greene	Friday Night Live		★★★★★
☒ These Are Days	3:09	58 Greene	Friday Night Live		★★
☒ Woke Up This Morning (Sopranos Theme)	4:05	A3		Soundtrack	★★★
☒ Super Trouper	4:14	Abba	Gold	70's	★★★
☒ Take a Chance On Me	4:04	ABBA	Take A Chance On...		★★★★★
☒ Dancing Queen	3:51	ABBA		70's	★★★★★



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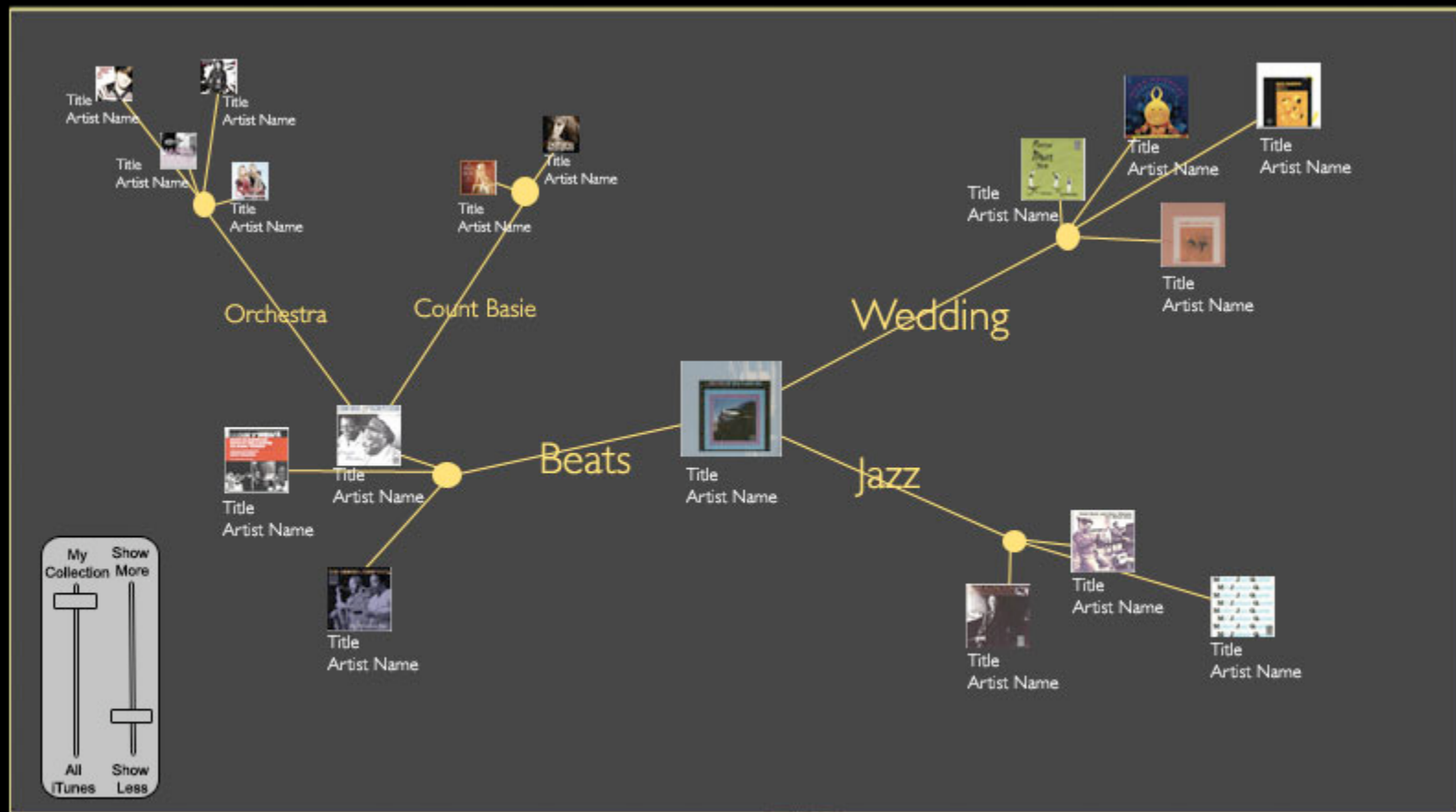
Day
Scenario

Night
Scenario

iBrowse

Launch iBrowse

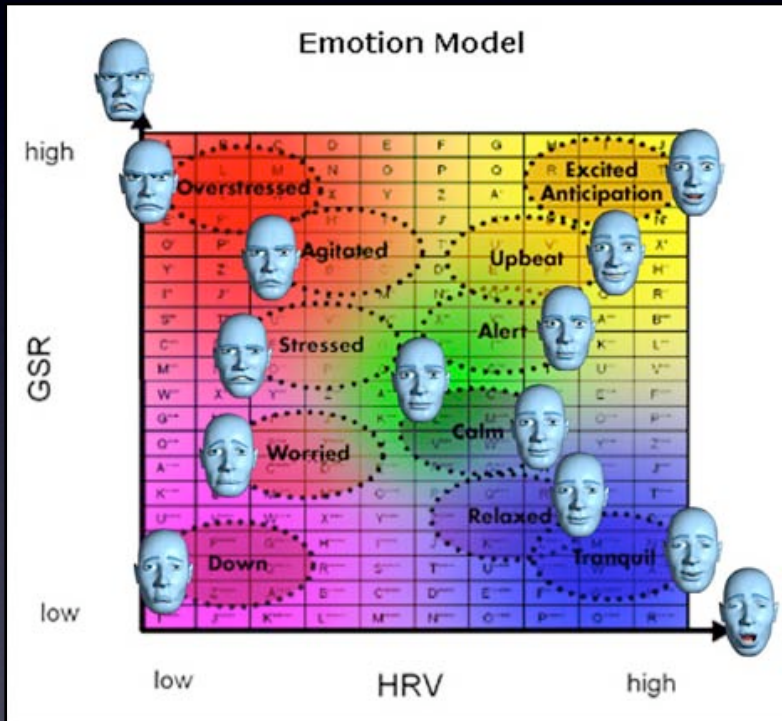
iBrowse Sample



Work & Play with iTunes



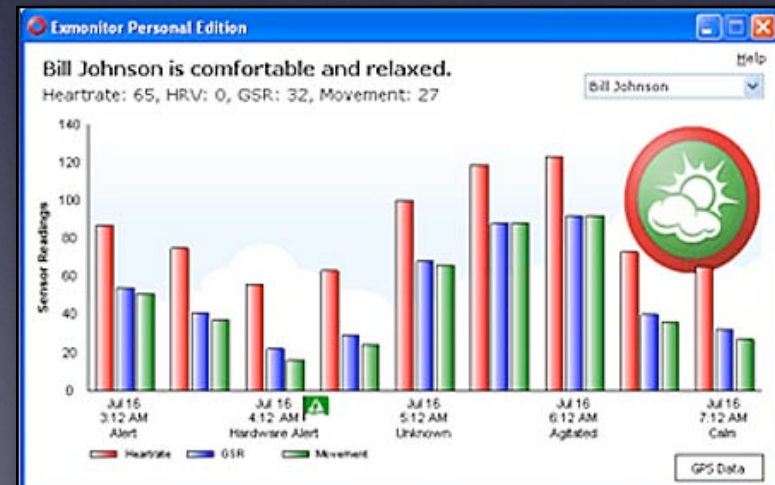
Sensor Technology



Database/Engine



Sensors



Software/Visualization

SmartPlay Desktop

(Mood Supporting)

Interpretation and Processing

Data from
Music Library

User-defined
Settings

System State/ Sensor Info

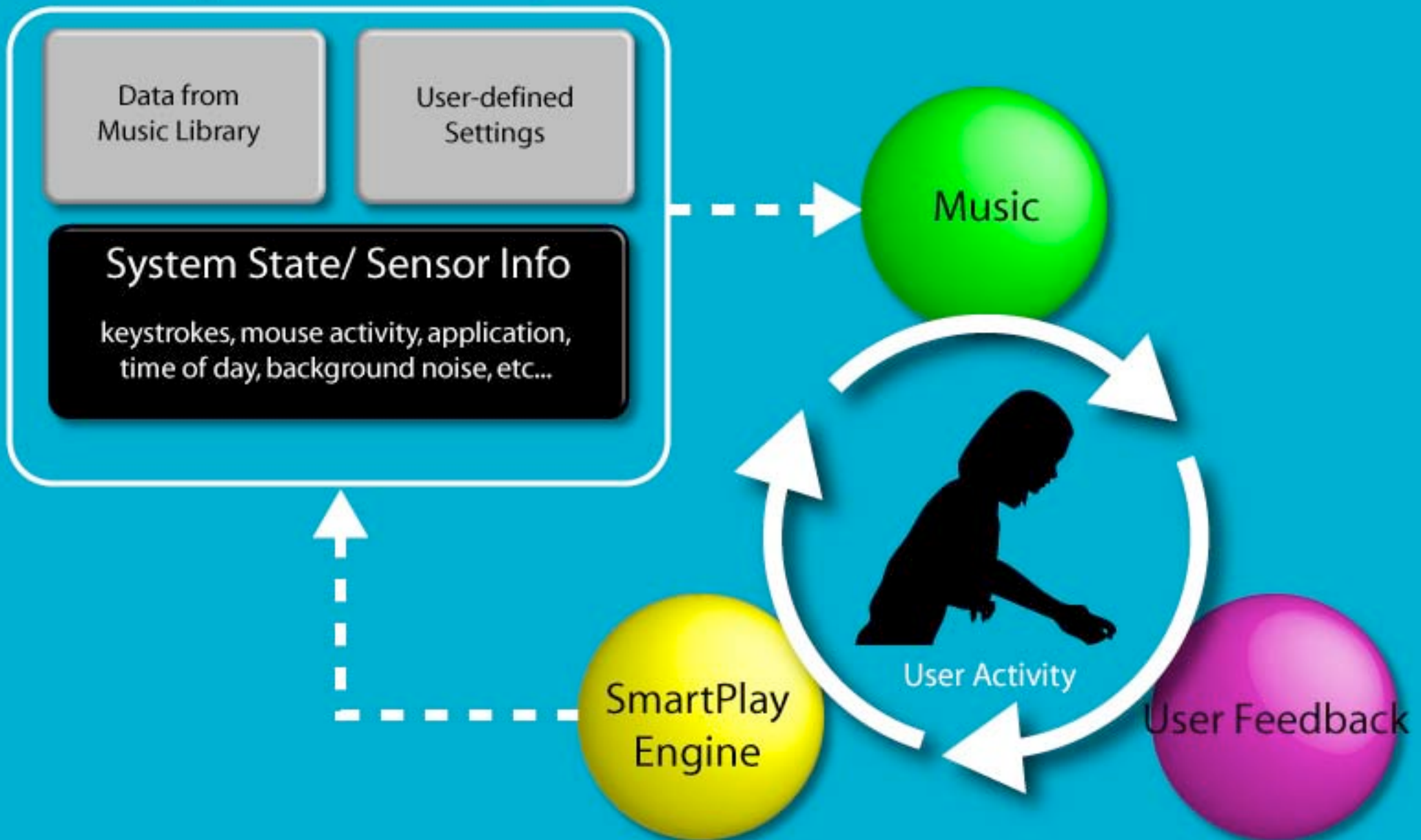
keystrokes, mouse activity, application,
time of day, background noise, etc...

Music

SmartPlay
Engine

User Activity

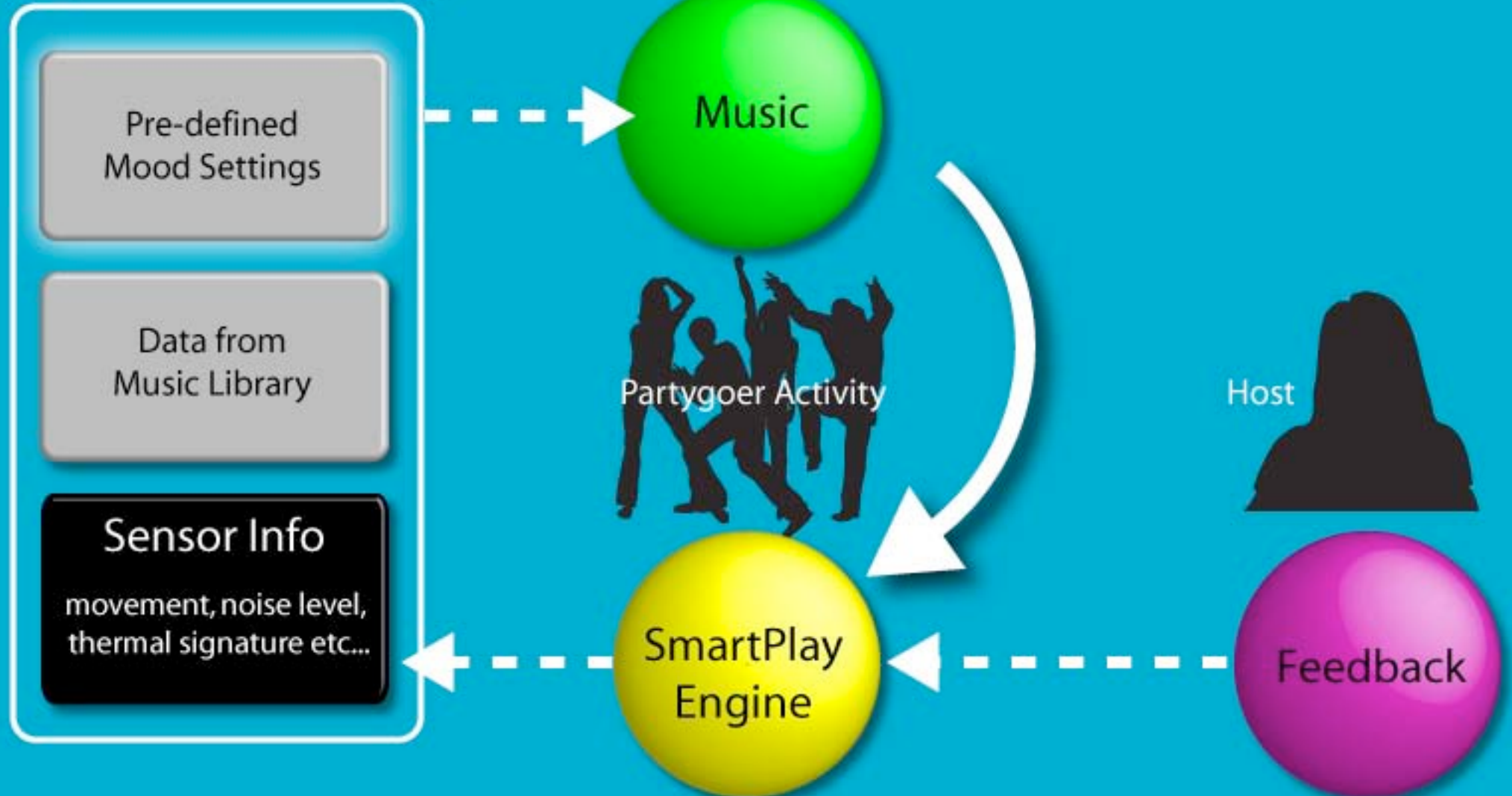
User Feedback



SmartPlay Party Mode

(Mood Inducing)

Interpretation and Processing





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SmartPlay

iTunes

Red Hot Chili Peppers
21st Century
0:02 - 4:49

View Search

LIBRARY

- Music
- Movies
- TV Shows
- Podcasts
- Radio

STORE

- iTunes Store
- Purchased

PLAYLISTS

- Party Shuffle
- 90's Music
- Music Videos
- My Top Rated
- Recently Added
- Recently Played
- Top 25 Most Played
- Word Smart
- all together
- CD - Heading back to A2
- CD - Heading back to A2
- chill
- etc

Selected Item

Viewing Camera 1

SENSOR STATUS

- Motion
- Temperature
- Noise Level
- Beats Per Minute

MOODS

- Light Conversation
- Swinging Cocktails
- Slow Down
- Fast Dance
- Line Dancing
- Romantic
- Time to Go Home

Name	Time	Artist	Album	Genre	My Rating	Play Count	Last Play
21st Century	4:22	Red Hot Chili Pep...	Stadium Arcadium	Rock			
12 - Girl Named Sandoz	3:34						
Let It Loose	5:18	The Rolling Stones	The Departed (Music ...	Soundtrack			
Skit 1	1:16	DANGERDOOM	Occult Hymn	Hip-Hop			
The Tiger (Feat Sergio Pizzorn	5:25	Dj Shadow	The Outsider	Hip-Hop			
Sound Of A Gun	4:18	Audioslave	Revelations	Rock			
I'm Shipping Up to Boston	2:33	Dropkick Murphys	The Departed (Music ...	Soundtrack			
i_hear_voices_pt._3_(prod._by_	2:18	ghostface	ghostface_meets_mf...	Other			
it aint nuttin (all so simple rza remix)	3:42	mf doom	operation ironman dis...	hiphop			
10.The Line Up	4:25	MF Doom	The Doomilation Bootleg	Hip-Hop			
Smiley	3:30						
02 - Bodies	4:12						

641 songs, 1.9 days, 2.86 GB



Scenario I: Desktop SmartPlay

Typical Scenario

Scenario I: Desktop SmartPlay

Typical Scenario





Scenario I: Desktop SmartPlay

Typical Scenario

Launch Tammy's Computer

Scenario I: Desktop SmartPlay

Chaotic Scenario



Scenario I: Desktop SmartPlay

Chaotic Scenario



Norah Jones
Album: Come Away with Me
Song: Don't Know Why

Scenario I: Desktop SmartPlay

Chaotic Scenario

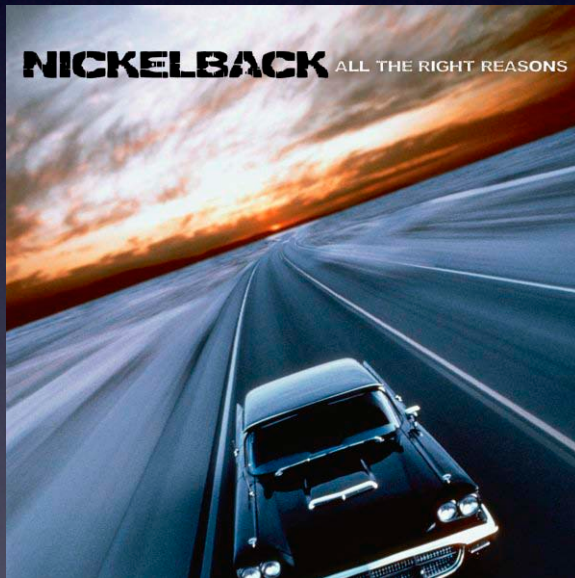


Norah Jones
Album: Come Away with Me
Song: Don't Know Why



Scenario I: Desktop SmartPlay

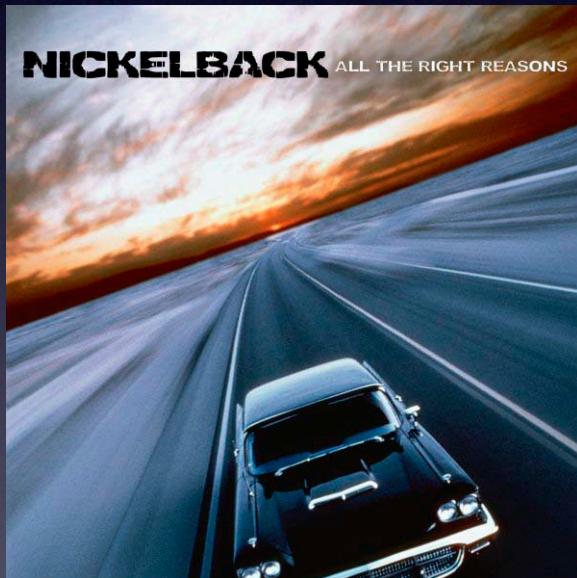
Chaotic Scenario



Nickelback
Album: All The Right Reasons
Song: Far Away

Scenario I: Desktop SmartPlay

Chaotic Scenario



Nickelback
Album: All The Right Reasons
Song: Far Away



Scenario I: Desktop SmartPlay

Chaotic Scenario



Nelly Furtado
Album: Loose
Song: Maneater

Scenario I: Desktop SmartPlay

Chaotic Scenario



Nelly Furtado
Album: Loose
Song: Maneater



Scenario I: Desktop SmartPlay

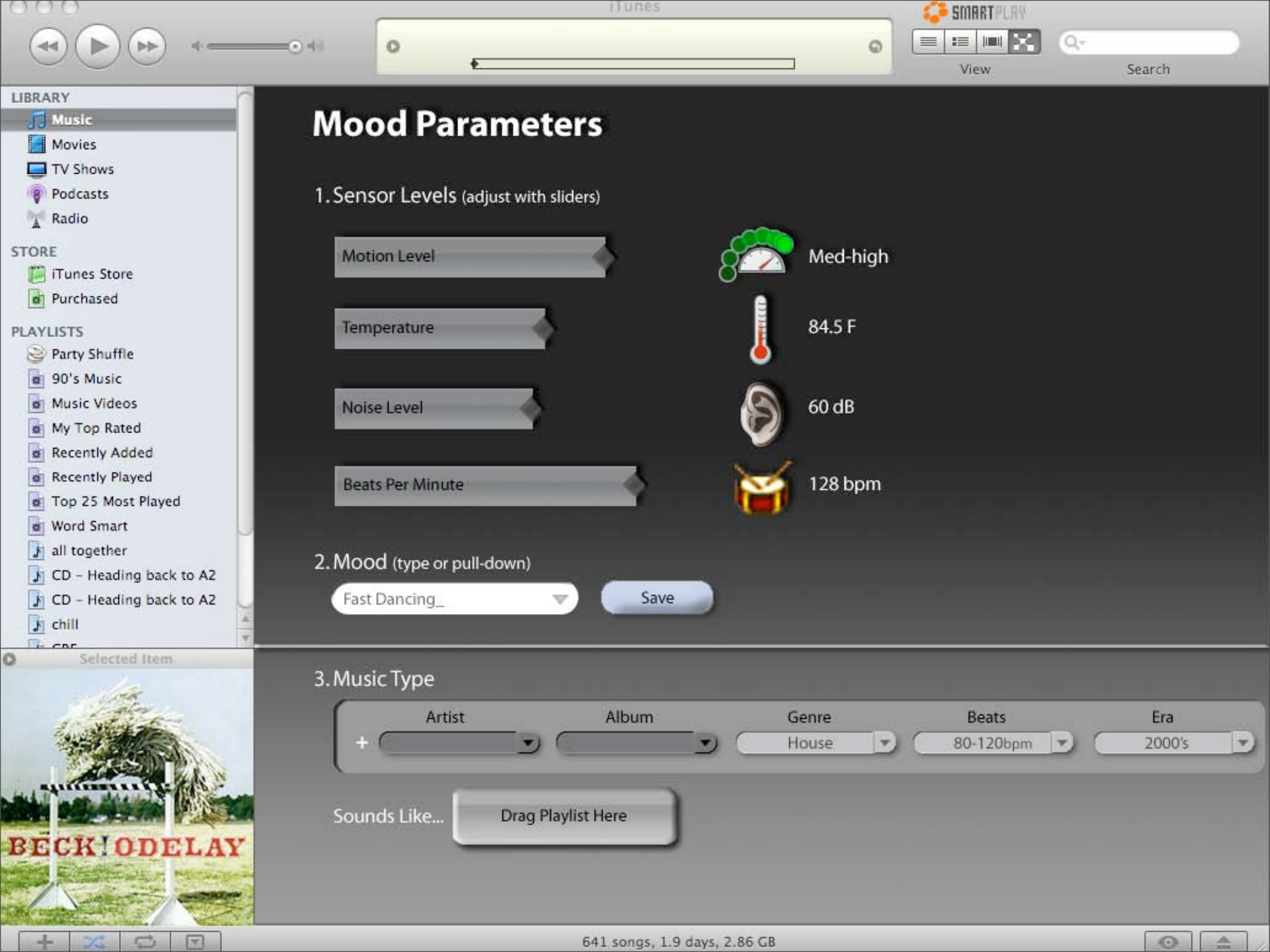
Chaotic Scenario



The Wallflowers
Album: Bringing Down the Horse
Song: One Headlight

Night Time Scenario





Mood Parameters

1. Sensor Levels (adjust with sliders)

Motion Level



Med-high

Temperature



84.5 F

Noise Level



60 dB

Beats Per Minute



128 bpm

2. Mood (type or pull-down)

Fast Dancing_

Save

3. Music Type

Artist

Album

Genre

Beats

Era

+

House

80-120bpm

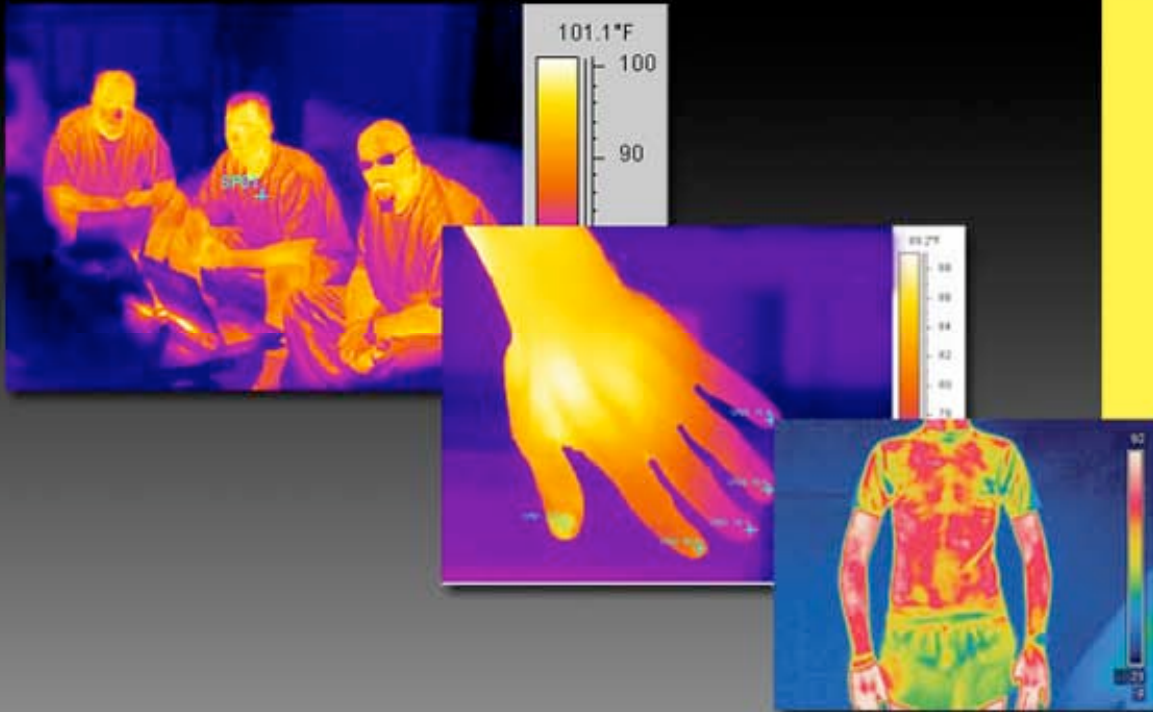
2000's

Sounds Like...

Drag Playlist Here

BECK! ODELAY

iSense



Thermal Imaging Camera



SmartPlay Visualization





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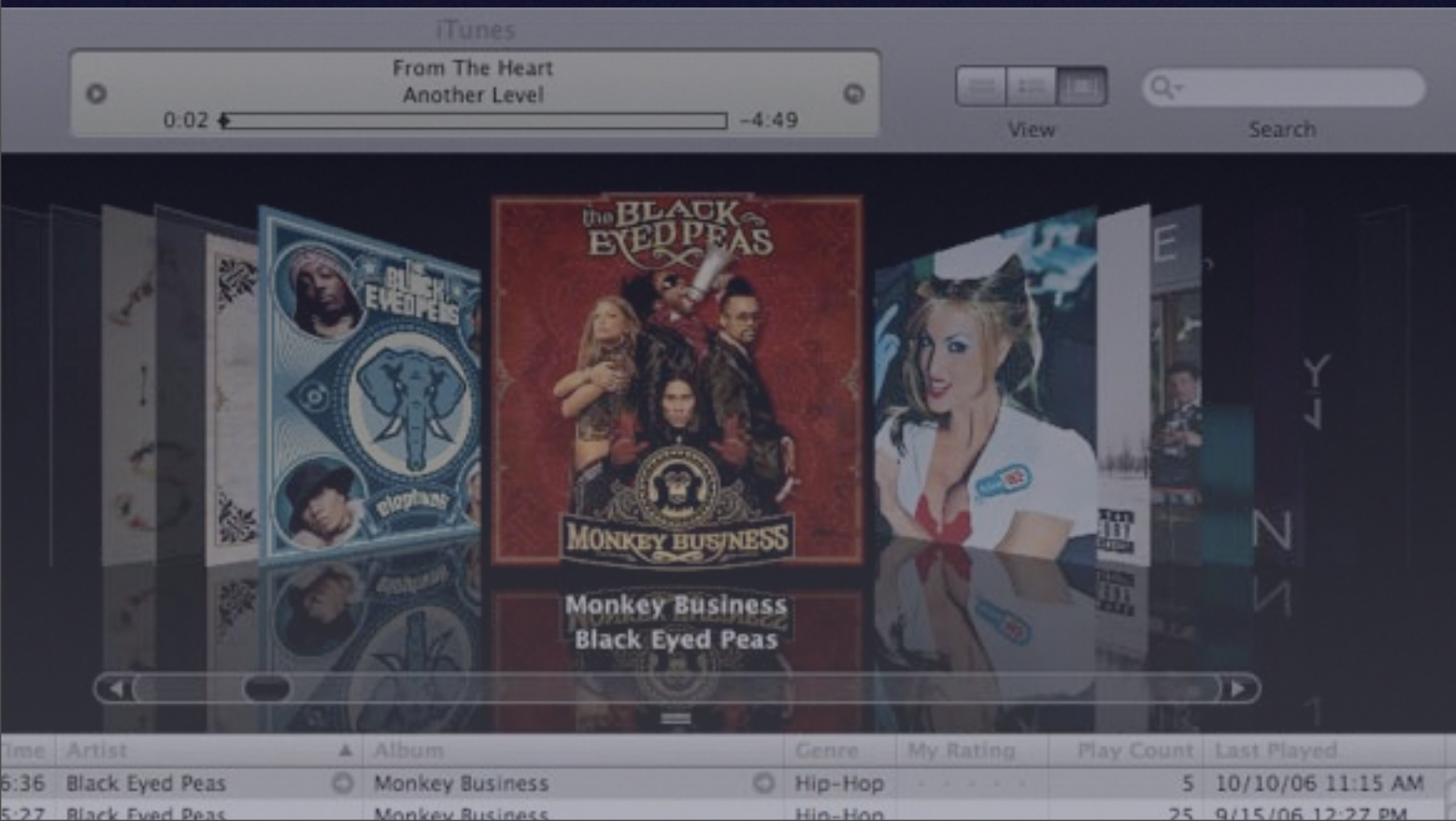
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Launching iBrowse





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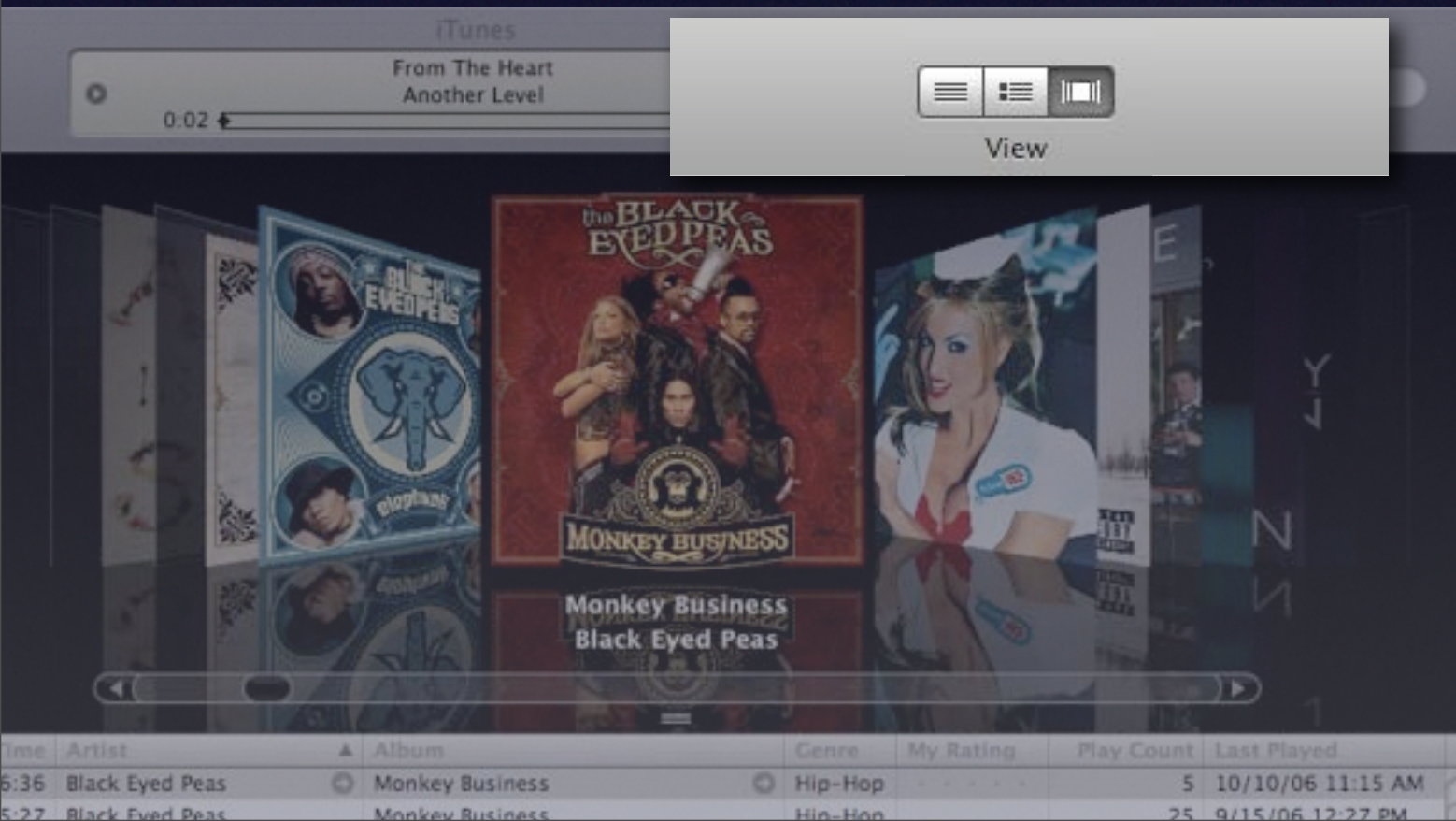
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Design Solutions

Day
Scenario

Night
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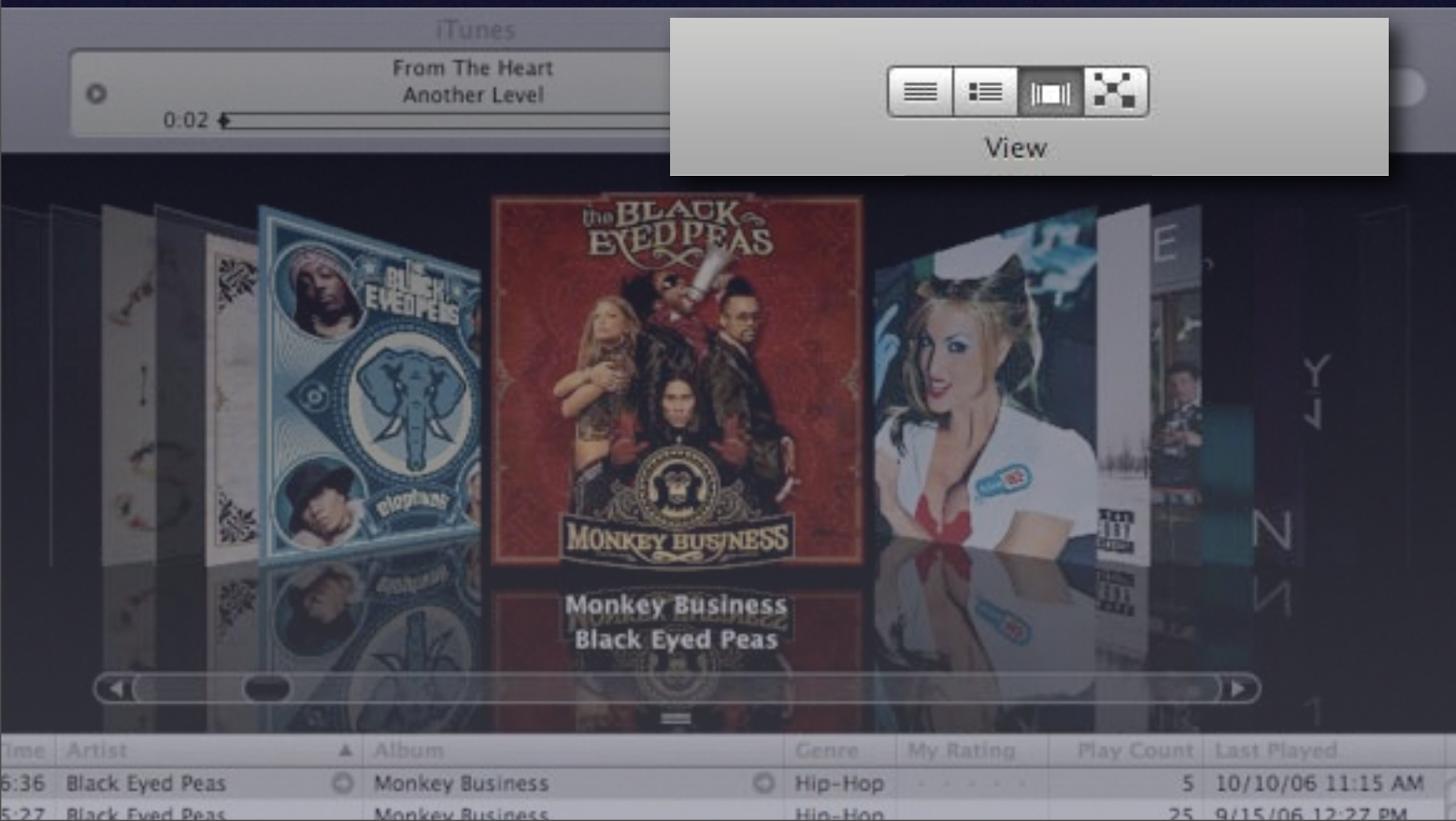
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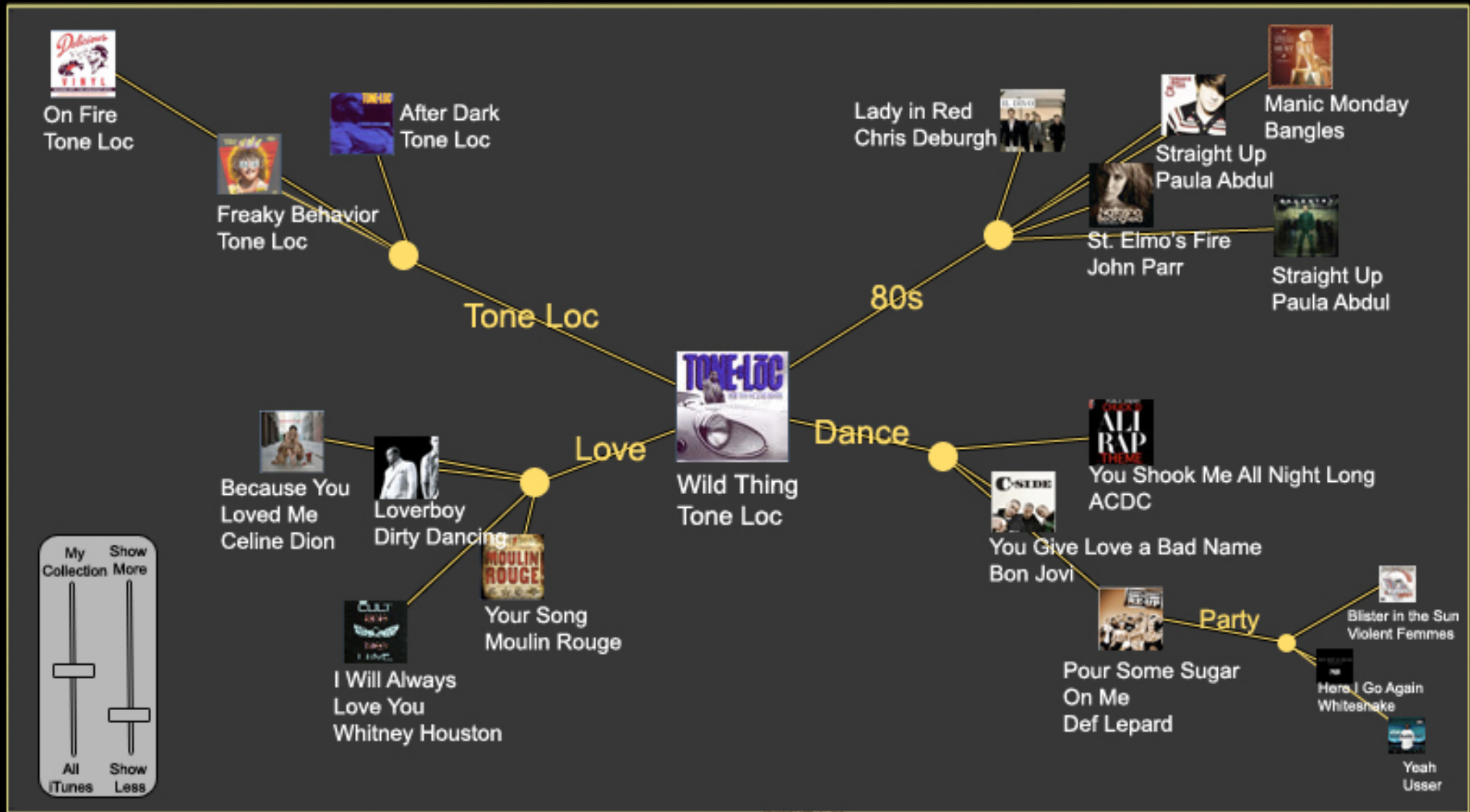
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Launching iBrowse





Conclusions

- Many improvements to iTunes with minimal additional user investment
- Adaptive interface - step towards the future
- iBrowse + SmartPlay
- Caution: Cognitive aspects of the system must be considered



Introduction

Methods
& Findings

Design Solutions

Scenario 1

Scenario 2



Questions?