

Learning Science, Culture, and Technology through Online Game-Based Virtual Environments

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Game Culture and Technology

- Games as immersive, experiential literary form -- *game play as emergent narrative*
- Gaming as rapidly growing global industry
- “Modding” and making games as practice-based *learning and career development*
- Games as *new media* and cultural form
- Game culture as *social movement*

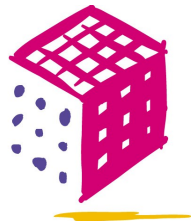
Overview

- Collaborative science learning game (SLG) environment at Discovery Science Center
 - *DinoQuest and DinoQuest Online (DQO)*
- Collaborative game world for semiconductor or nanotechnology fabrication
 - FabLab training simulator for Intel
 - Nanotech design environment for K-12 (pending)
- Collaborative virtual world for envisioning possible cultural and technological opportunities
 - Intel Research (w/ Linden Labs)
- Next-generation, client-side game engine (Rich Internet Application)
 - 2D, Side-scrolling, role-playing game engine and SDK (“DQO 2.0”)
- Games for learning to make music and music videos
- Pathway to network of science/cultural arts learning centers

Mixed reality games for informal science education for K-6 students and families



DinoQuest Research Team and Collaboratories:
Diverse Science Role Models (ethnicity, age, gender)

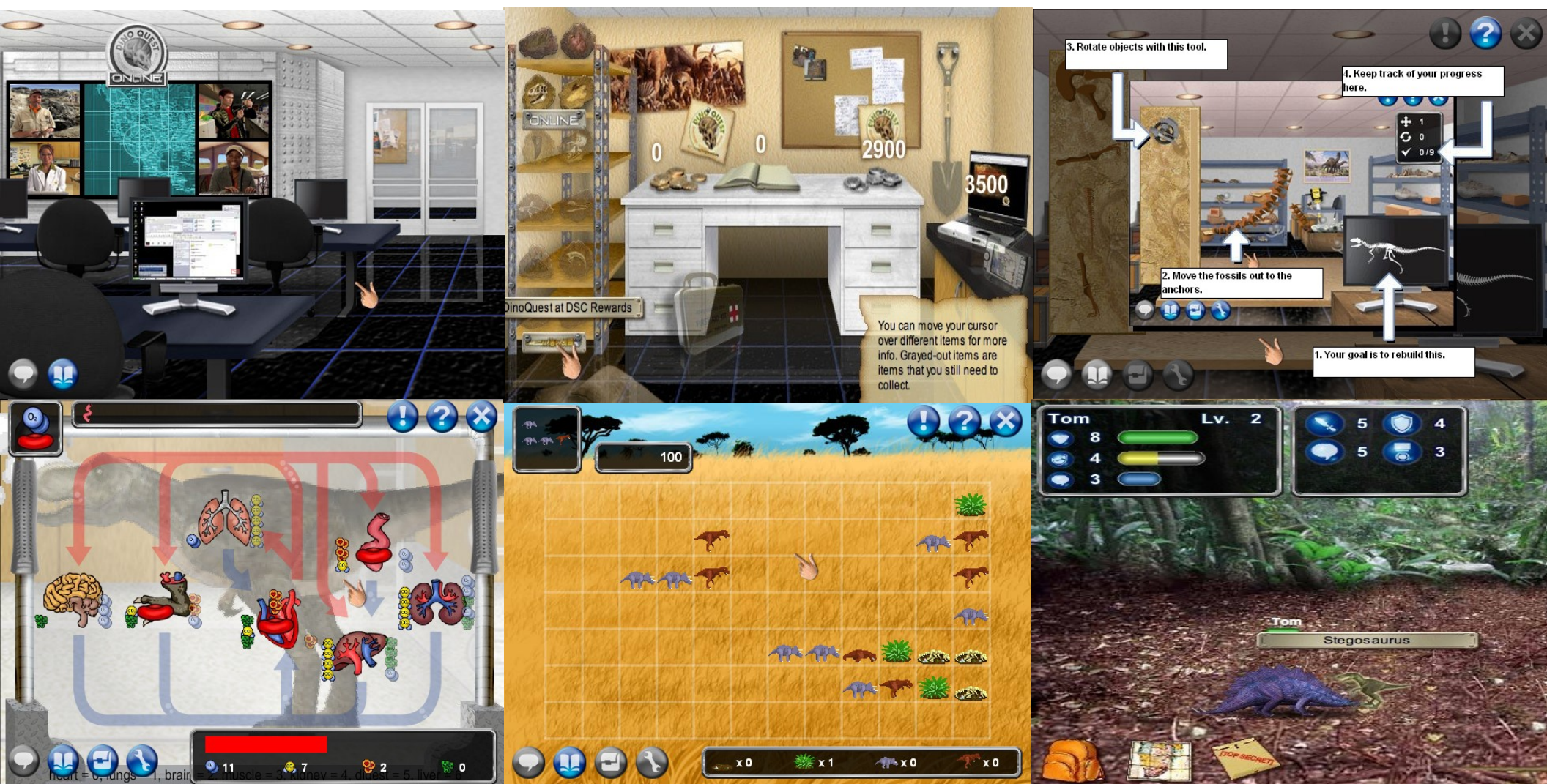


DISCOVERY
SCIENCE CENTER



<http://www.DiscoveryCube.org/>

Web-based science learning games for informal science education for K-6 students and families



<http://www.DQOnline.org/>

Envisioning collaborative virtual worlds 2010-2012



Virtual Life Demo Reel

2D, side-scrolling, WoW-inspired, role-playing game and open source game engine

Aoedipus.net



2D, side-scrolling, extensible role-playing game (engine)

- **WTF?! released May 2008**
 - 1000+ linked postings already indexed by Google within four weeks (viral marketing)
 - Global players
 - US, UK, Netherlands, Austria, Turkey, Finland, Australia, Germany, Hungary, Greece, Latvia, etc.
 - Recommendation/review sites
 - Digg, WoW Forums, Cnet News, Reddit, BoingBoing, PlayThisThing, MSN India, WIRED Blog Network, ForTheHorde (WoW Social Networking), NewGrounds, etc.
 - ISP (DreamHost) has already throttled back access to the site
 - Overview and Tutorials still online; Play now requires game download (slowly) as .zip archive

Interactive music composition application – *Composerizer*

The screenshot shows the 'SFS KIDS' website with a yellow and orange background. The top navigation bar includes links for HOME, SITE MAP, HELP!, RADIO, and a SEARCH box. The left sidebar features icons for 'INSTRUMENTS OF THE ORCHESTRA', 'THE MUSIC LAB', 'WHAT'S UP AT THE SYMPHONY?', and 'ABOUT THIS SITE'. The main content area is titled 'THE MUSIC LAB' and contains a grid of buttons for 'BASICS', 'TEMPO', 'RHYTHM', 'PITCH', 'HARMONY', 'SYMBOLS', 'INSTRUMENTATION', 'PERFORMULATOR', and 'COMPOSERIZER'. Below this grid are seven musical staves, each with a 'PLAY' button. The 'COMPOSERIZER' section at the bottom features a large staff with a 3/4 time signature and a series of empty measures for composition. It includes a 'DRAG AND DROP THE MEASURES INTO THE SPACE BELOW' instruction and controls for 'REPEAT' (ON/OFF), 'PLAY', 'STOP', and 'START OVER'.

SFS KIDS
FUN WITH MUSIC

HOME SITE MAP HELP! RADIO SEARCH GO

THE MUSIC LAB

BASICS TEMPO RHYTHM PITCH
HARMONY SYMBOLS INSTRUMENTATION
PERFORMULATOR **COMPOSERIZER**

PLAY PLAY PLAY PLAY PLAY PLAY PLAY

COMPOSERIZER™ DRAG AND DROP THE MEASURES INTO THE SPACE BELOW

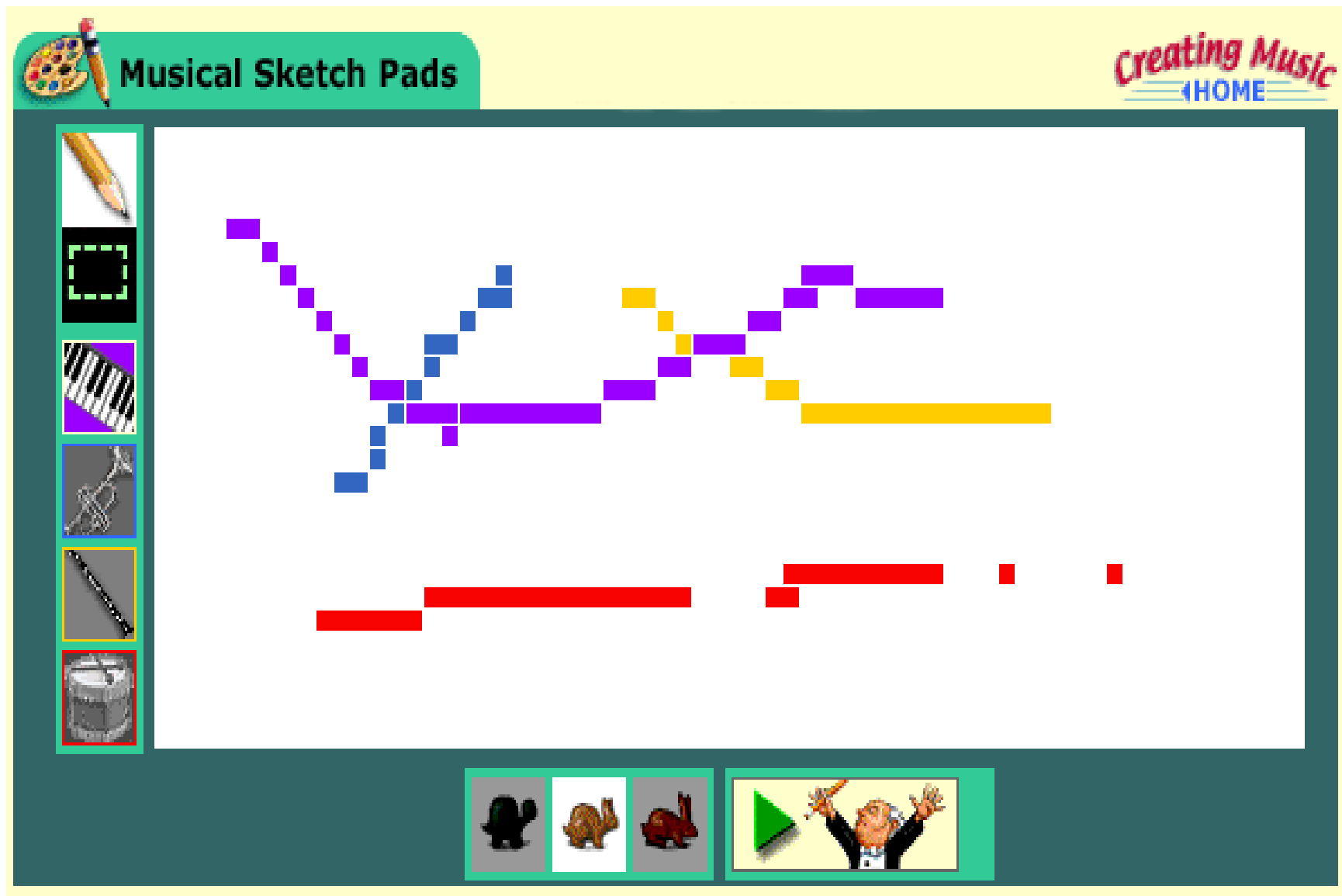
3/4

REPEAT: ☐ ON ☐ OFF PLAY STOP START OVER

ABOUT THIS SITE

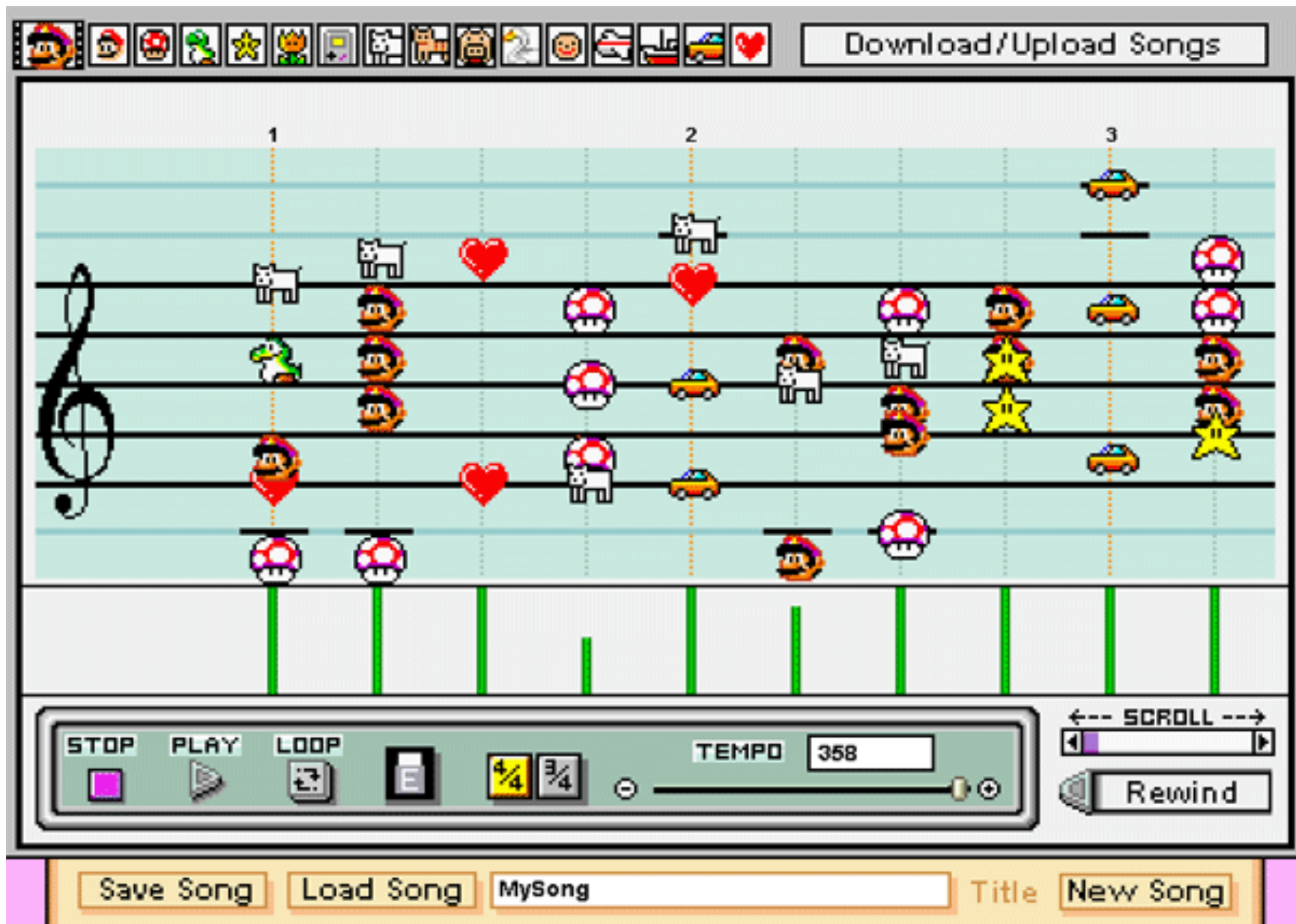
SAN FRANCISCO SYMPHONY

Making Music, Morton Subotnick, Interactive CDROMs



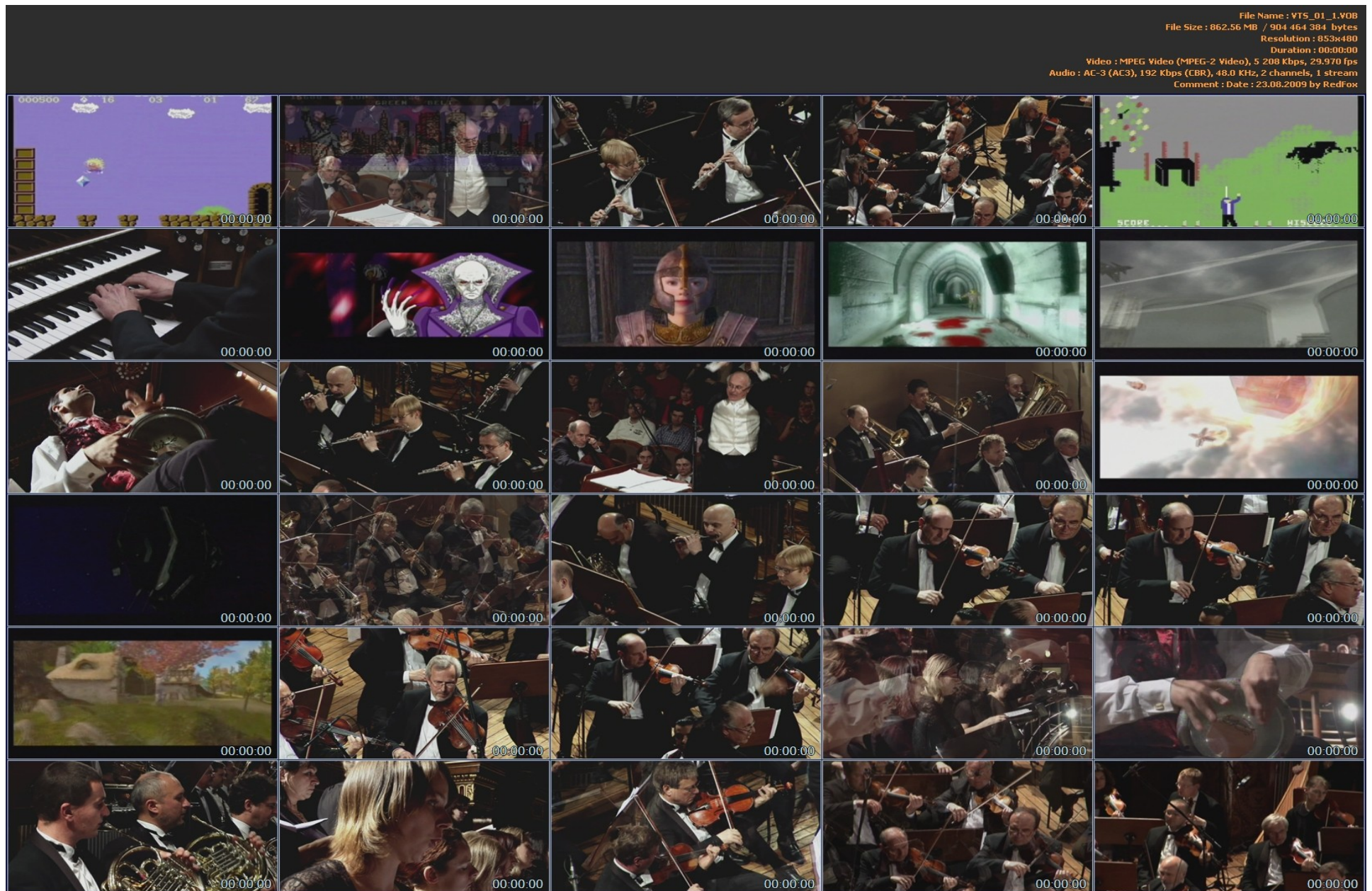
www.creatingmusic.com

2D, side-scrolling, music composition game – *Mario Paint Composer*, c. 1993



Bohemian Rhapsody

Video Game Live – Game music symphonic performances



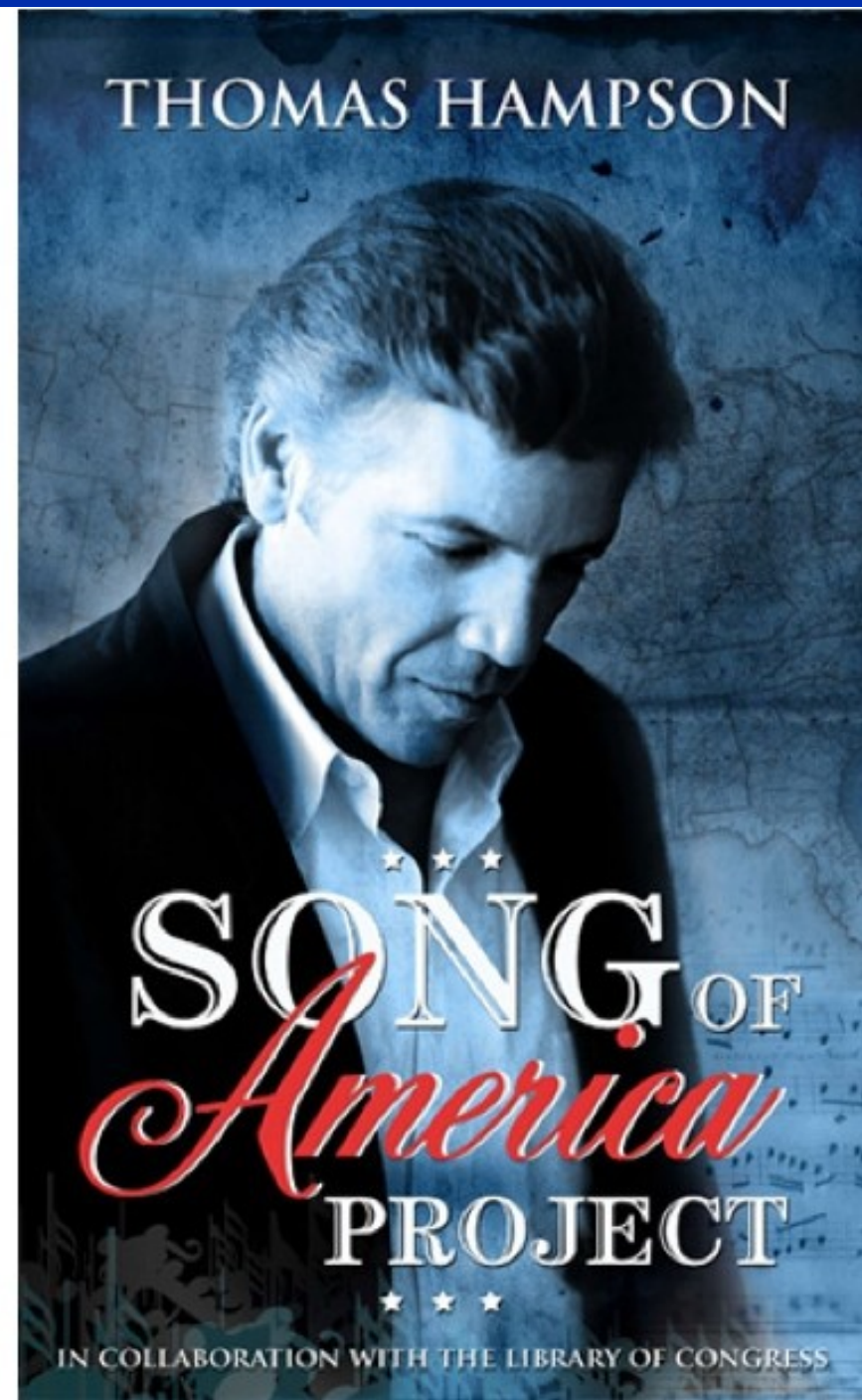
Song of America Project – Music video creation game

Song of America 2009

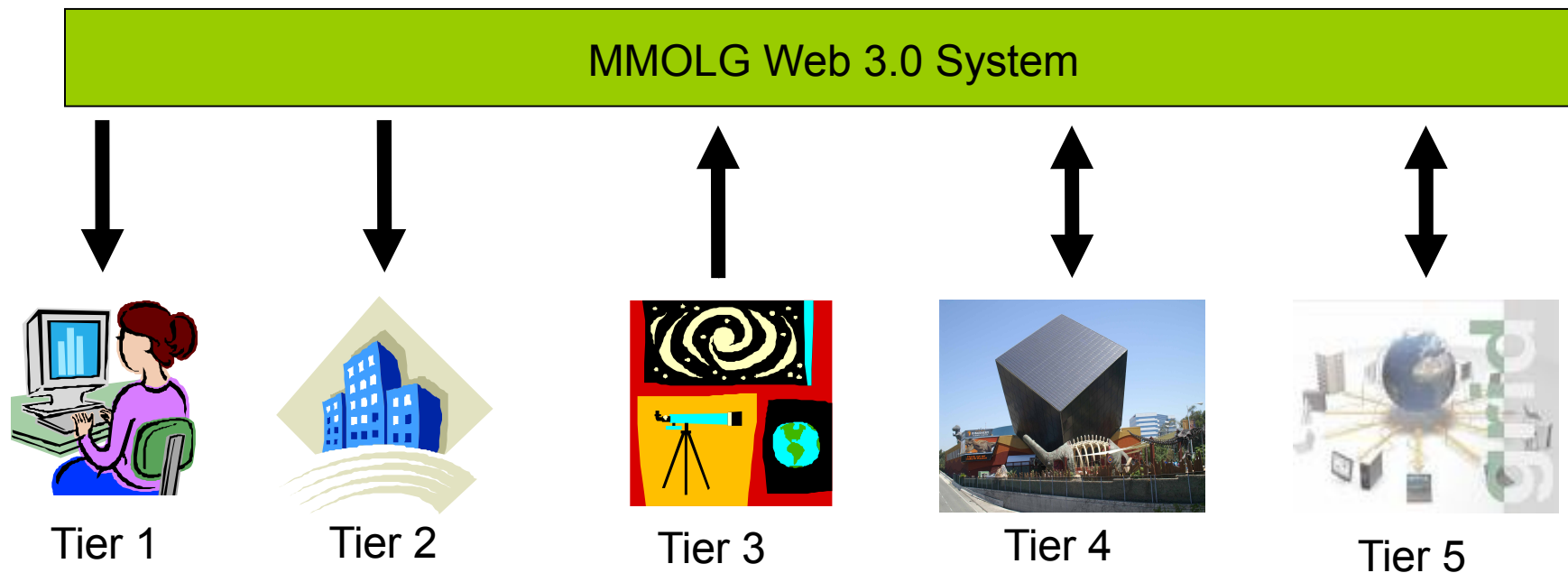
Thomas Hampson's 2009 "Song of America" Project, in Collaboration with the Library of Congress, Celebrates the 250th Anniversary of the First American Song

Hampson Gives Twelve "Song of America" Recitals between July 2009 and February 2010 and Sings Orchestral Concerts with American Songs at Summer Festivals and with the New York Philharmonic

On July 9, 2009 Thomas Hampson resumes the enthusiastically acclaimed "Song of America" project he developed with the Library of Congress and introduced in the 2005-06 season. This season's national celebration additionally commemorates the 250th anniversary of what is recognized to be the first song written by an "American" ("My Days Have Been So Wondrous Free", composed in 1759 by Philadelphian Francis Hopkinson). Drawing on the unparalleled collection of American songs housed at the Library of Congress, Hampson will present a unique series of recitals, educational activities, exhibitions, recordings, cybercasts and interactive online resources. Some recital venues will have lobby exhibitions of facsimiles from music archives of the Library, and joint efforts with local academic and cultural partners are planned to give a wide range of listeners access to America's history as told through its rich array of song. A dedicated web site that will develop into a large-scale database of American composers, poets/writers, their songs, texts, and links to deeper resources will be launched in conjunction with the tour dates.



Goal: Develop cyberinfrastructure for networked learning game environments



Tier 1: Individual player connection: your Internet connection at home.

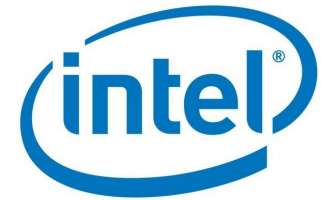
Tier 2: Local institutional connection: library, science center, museum, school.

Tier 3: Regional science/cultural center provides local exhibit content connected online.

Tier 4: "Gateway" science/cultural centers provide open interfaces and extensible content.

Tier 5: Science/Culture Games Grid: **Massive Multiplayer Online Learning Games and collaboration infrastructure** for informal K-12 science/cultural education

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