SeedMe

Your results from disk to device

Stream Encode Explore and Disseminate My Experiments

SeedMe name inspired by
Seed: proliferate and grow
Acknowledgements
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Apple Inc. : Provided test hardware/software on loan during conceptualization phase

National Science Foundation
This material is based upon work supported by the National Science Foundation under Grant No. OCI-1235505
Presentation Overview

- Situate context & define problem
- Introduce SeedMe
- Sample use cases
- Sample end user interaction
- Q & A
Computation Cycle

- Abstract
- Monitor
- Analyze
- Compute/Ingest
- Post Process
- Validate
Many customers

Direct Access
- Not All Members Have Access
- Need Exact Location + Permissions

Derived Products
(Preliminary Results)
(Transient Content)

Direct Web Sharing
- Inflexible Security Policy

Derived Products (Preliminary Results) (Transient Content)
Sharing Derived Products

(Many customers)

Email
- Download + Send
- Scattered Results
- Can’t share larger content
- Manual

Webpage
- Download + Upload
- Handle Privacy
- Significant time commitment
- Manual

Cloud Drive
- Download + Upload
- Cannot describe content
- Manual
Compute

Anticipate

React

Waterworld (1995)
Pitfalls in sharing derived content

- Download
- Upload
- Download
  (Round Trip + 1)

- Video Encoding Complexity

- Missing Easy Automation

- How To Describe & Discuss Content

- Replication & Scalability
## Why not use existing tools?

<table>
<thead>
<tr>
<th>Features</th>
<th>SeedMe</th>
<th>Dropbox &amp; GDrive</th>
<th>YouTube &amp; Vimeo</th>
<th>Flickr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geared for research and researchers</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Upload Method</td>
<td>Command line, API, Web Browser</td>
<td>API, Web Browser</td>
<td>Web Browser, API</td>
<td>Web Browser</td>
</tr>
<tr>
<td>Sharing</td>
<td>Public, Group, Private</td>
<td>Public, Group, Private</td>
<td>Public, Private</td>
<td>Public</td>
</tr>
<tr>
<td>Metadata Capability</td>
<td>Yes</td>
<td>None</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>Periodic Updates</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>File sharing</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Image Sharing</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Video Sharing</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Limited</td>
</tr>
<tr>
<td>Encode Sequence to video</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Video Frame Rate</td>
<td>Arbitrary</td>
<td>NA</td>
<td>29.97, 30,Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Video Resolution</td>
<td>Arbitrary</td>
<td>No</td>
<td>Up to HD</td>
<td>Up to HD</td>
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<tr>
<td>Video Download</td>
<td>Yes</td>
<td>Yes</td>
<td>Vimeo only</td>
<td>No</td>
</tr>
<tr>
<td>Migrate to another service</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Color Code</th>
<th>Desirable</th>
<th>Limiting</th>
<th>Crippling</th>
</tr>
</thead>
</table>

[SeedMe.org]
SeedMe offers you to

• Seamlessly seed (upload) your research content
• Share and access your content
• Generate dashboards for your simulation or expt.
• Describe your content (everything is not a file)
• Discuss your work, right next to your content

Features and Benefits

Ubiquitous
Access your results anywhere on any device

Near Real Time
Track progress from your simulation or instrument

Sequence to Video
Convert sequence of images to videos at desired frame rate

Security
All your communications with SeedMe are encrypted

Collaborate
Discuss & keep your colleagues updated with latest results at one spot

Share and Reuse
Share your research results and reusable content widely

Automate
Easily integrate your scripts, workflow or app using SeedMe tools

Privacy
Control access to your content with private, group or public privileges
SeedMe Architecture

Ingest (Atomic or Recurring) → Instant Processing (Text, Images) → Batch Processing (Videos) → Notification → Responsive Content Access

Ingest Temp Storage → Web Cluster → Mirrored Storage → Encode Cluster

Phones → Tablets → Desktops
SeedMe Collection

Ticker
(Text)
Ephemeral

Plots
(Image)

Sequences
(Image set)

Videos
(video)

Files
(Catch all)

Privacy + Collaborators
(Public, Group, Private) + (emails)

Meta Data
(Title, Description, Tags, Key Value Pairs, Credits, License)
SeedMe: How it Works

1. SignUp
2. Create Collection
3. Set Privacy & Sharing
4. Set Metadata
5. Upload Content
   - Update as desired

- Web Browser
- Command Line or REST (Automate scripts, workflow or app)
- Phone or Tablet or Computer (Web Browser)
- View or Download on Web
SeedMe Interactions

• Create Collection (CLI, API, Web Browser)
• Update Collection (CLI, API, Web Browser)
• View Collection (Web Browser only)
# Use Case: Sequence to Video

## Sequences of images are generated by
- Visualizations
- Confocal scans
- Time lapse recording

## Requirements
- Frame rate
- High Quality Encoding
- Universal playback
- Automation

### seedme.cmd
```
seedme.cmd -t "Seq Collection" \ 
-sp "sample/sequences/steam" \ 
-st "sequence title" \ 
-sd "Desc of sequence" \ 
-sr "5" \ 
-se 
```

# Collection title
# Seq Path
# Seq Title
# Seq Description
# Seq frame Rate
# Trigger Seq Encode

Command line example, but you can upload content simply via Web Browser
Use Case: Create Dashboards

Results from simulations, instruments, analysis
- Files
- Plots
- Sequences
- Videos

Requirements
- Managed Sharing
- Universal access
- Automation

Command line example, but you can upload content simply via Web Browser:

```
seedme.cmd -t "Quick Start" \
-privacy group \
-email nobody@sdsc.edu \
-notify \
-pp "sample/plots/node.png" \
-sp "sample/sequences/steam" \
-vp "sample/videos/air.mp4" \
-fp "sample/files/doc.pdf"
```

# Collection title
# Privacy
# Share
# Notify (not automatic)
# Plot Path
# Seq Path
# Video Path
# File Path
Use Case: Monitor

**Computation state**
- Progress %
- Progress parameters
- Last file created

**Requirements**
- Sharing
- Universal access
- Automation

```cmd
seedme.cmd -t "Progress Tracking" \ # Create new Collection

seedme.cmd -update 29643 \ # Update collection ID
-tic "step 1" \ # Ticker Text
-tic "step 2" \ # Ticker Text
-fp "sample/files/doc.pdf" # File Path
```

Command line example, but you can upload content simply via Web Browser.
Use Case: Share & Reuse

Disseminate

Share and reuse content

- IPython notebook
- State files from vis tools
- R scripts
- Matlab scripts

Applications Exploring:

‘Save to SeedMe’

- Kepler Workflow
- VisIt software
- YT software

Integrate SeedMe Python Module or write your own REST client
Demo: Web Browser

Types of Collections: My  Shared  Public

http://www.seedme.org/collections

You may Add, Edit and Notify collaborators

Add a new collection
https://www.seedme.org/collections/add

View a collection with monitoring info
https://www.seedme.org/collection/14924

View a collection with variety of content
https://www.seedme.org/collection/16567
Demo: Command Line Interaction

Create a new collection

Add image seq. + create video from it

Setup sharing

Notify Group

seedme.cmd -title "SeedMe Quick Start"
Getting Started

Interaction
- Web Browser
- Standalone executable (command line)
- Python module with API (demo.py)
- Curl

Information
- Quick Start Guide
- Use Cases
- Documentation
- Tips for C, Fortran codes
- Blog