F.M. SMUCKER COMPANY

User Manual for Interactive Product Walls

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Introduction

This document describes the computer architecture of the J.M. Smucker (JMS) Innovation Center (SIC) where interactive displays located in thirteen (13) rooms tell the story of the Smucker brands.

A content management system (CMS) supports the creation and modification of digital content and stores that content for almost all of the rooms. Display content is retrieved when the computers in each room reboot each day at 2:00 a.m. The reboot activates Manifest Ingest, a Python applet, which then queries the CMS for newly published content.

Content

Content includes PowerPoint slides, images, videos, and Fast Fourier Transform (FTT) films. Some content, including 3D objects and FTT films, is manually loaded onto the room computers and bypasses the CMS. And some rooms have touch screens and applications that are run by the Unity game engine.

Most content is authored in PowerPoint and uploaded into the CMS as .pptx files while other content is loaded onto the computer in the individual room.

A diagram of the high-level architecture for interactive displays at the SIC is on the next page.

PowerPoint Tool (PPT)

A Windows desktop exporter—or PowerPoint tool (PPT)—written in C# for the Rotunda application (or Exporter Tool) breaks down PowerPoint slides into:

- .mp4 video files
- .txt notes
- .png icons

It does this while still retaining the original .pptx format. Then all of the slides are contained in a Java Message Service or .jms zip file that is then loaded into the CMS.

Content is then controlled by the Presenter iPad app (see Presenter App on page 27) in the individual rooms or by touch screen.

As stated above, content not stored in the CMS is loaded on the individual room computers and activated by touch screens. PowerPoint slides used as a background pictures, i.e., the window showing the outside world in Coffee College, do reside in the CMS, but remain static unless edited.

The front end or user side of the CMS uses HTML with Django template language. The back end is written in Python using Django and Django REST framework.[1]

[1] REST stands for Representational State Transfer. The Django **REST framework** is a toolkit for building Web APIs.

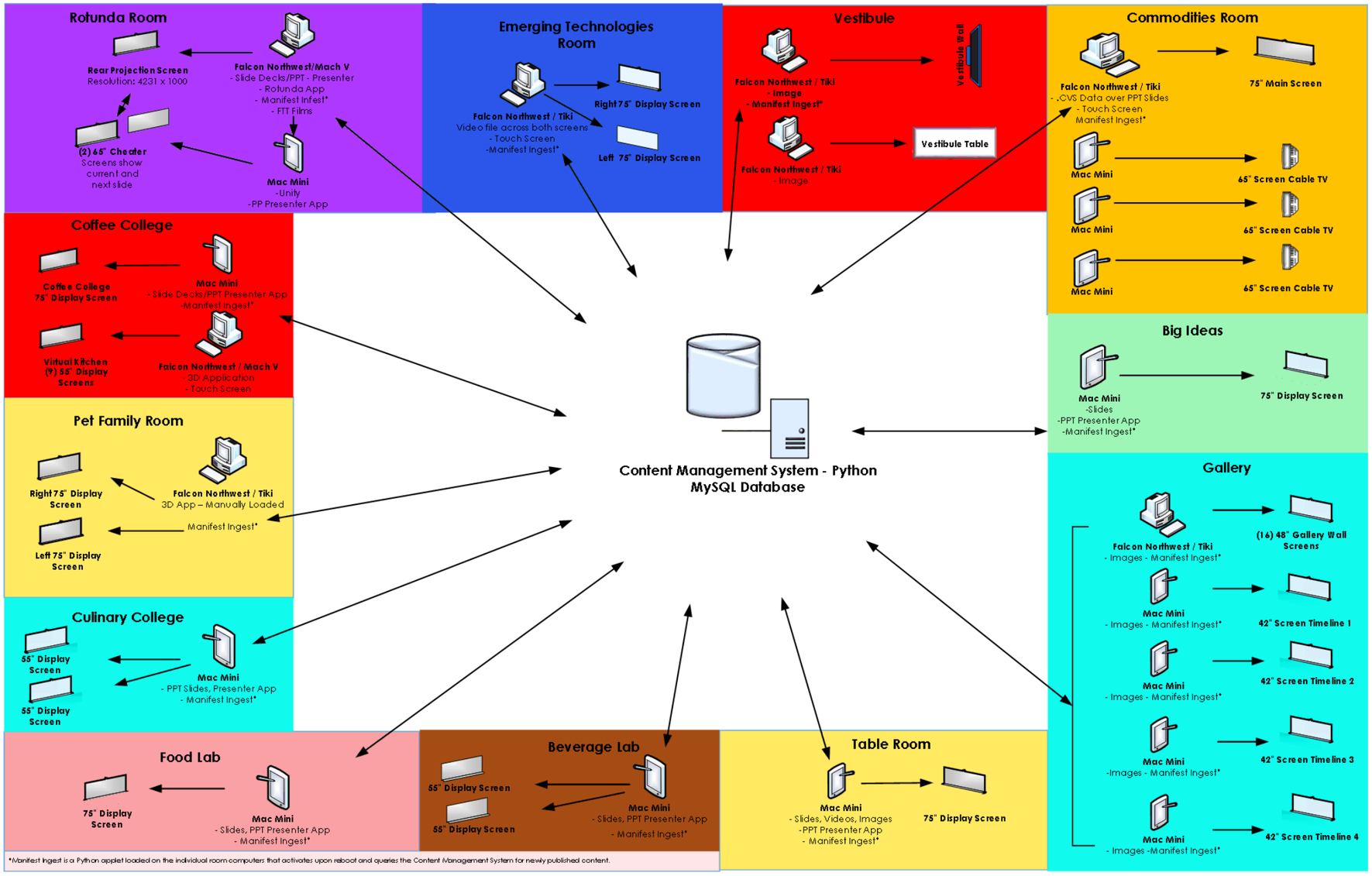


Figure 1 - FMS High Level Architecture

Rotunda

Introduction

The Rotunda room is in the Freezer Building and has the most complex architecture.

The room is equipped with a Falcon Northwest/Mach V computer with a Windows 8.x operating system. The Rotunda app loaded on the Falcon PC is a Unity application and uses TCP sockets for communication with the Presenter App.

Content includes PowerPoint slides parsed by a Windows desktop exporter tool. The computer requires virtual private network (VPN) remote desktop accounts, as well as TeamViewer credentials for access. Source code is in Perforce using a local repository. (See Figure 2 below.)

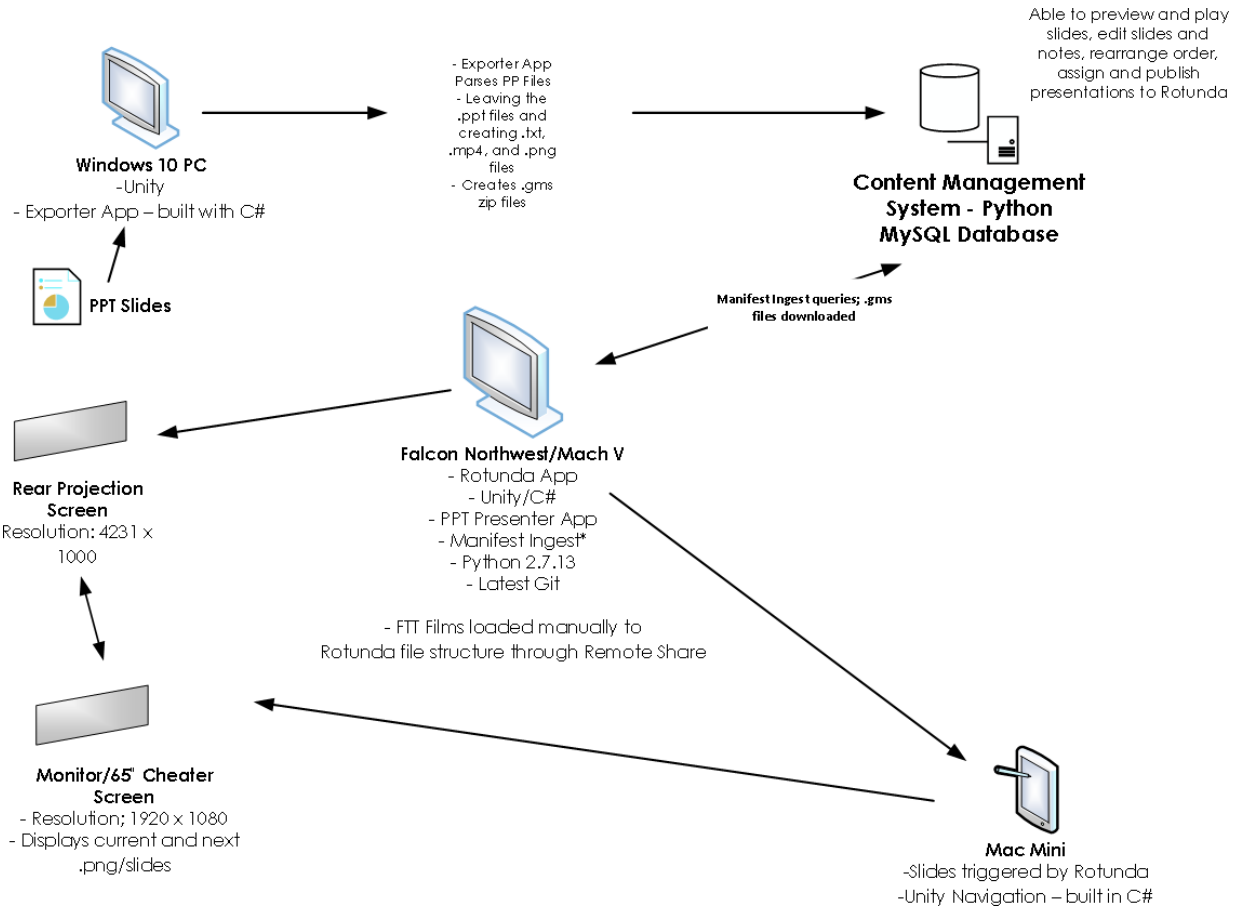


Figure 2 - Rotunda Room

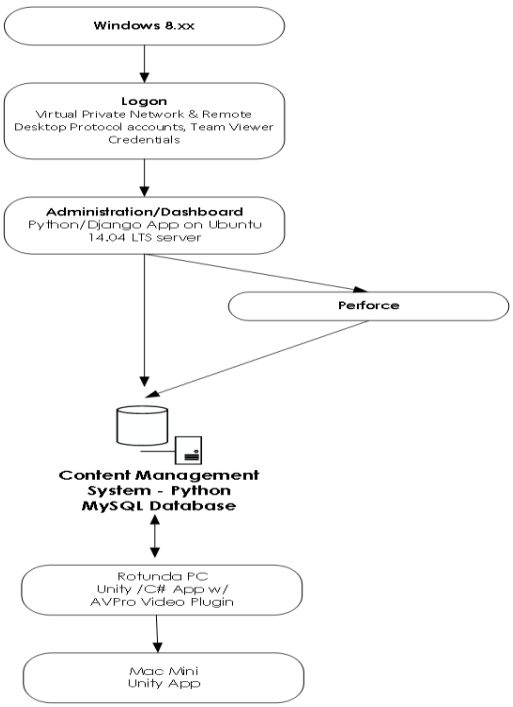
Power Point Tool (Exporter Tool) and FFT Films

To install the Rotunda app or FTT films, a connection to the JMS network is made through a remote administrator via a VPN then to a Windows server with a Microsoft remote desktop protocol (RDP) client. TeamViewer software is then used to connect from the Windows server to the Rotunda PC for file transfer. When the room computer reboots every day at 2:00 a.m., Manifest Ingest, an applet written in Python and residing on the room PC, queries the CMS for newly published content.

The Rotunda app feeds the large rear-projection system and is controlled by the Presenter App. FFT films are loaded manually onto the Falcon Northwest/Mach V room computer. The Rotunda Viewer app is a Unity app that connects to the main Rotunda app to grab the current and next slides for the 65-inch “cheater” screen through a Mac Mini.

Rotunda Administration Development

The Rotunda Room Administration is illustrated in the Figure 3 below.



Logon requires Virtual Private Network (VPN) and Remote Desktop Protocol (RDP) accounts, as well as TeamViewer credentials for access.

Once logon is complete, all apps are visible on the dashboard. Databases for the rooms are separate, but there is one front end, written in JavaScript Object Notation (JSON).

Source code is stored in the Perforce local repository.

Multiple presentations are published and stored in the CMS database (MySQL).

Slides are previewed, played, and assigned to the Rotunda app from the CMS.

Figure 3 - Rotunda Room Administration

Rotunda Content Pipeline

The diagram (Figure 4) on the next page illustrates the content pipeline. PowerPoint slides are loaded onto a Windows 10 PC that has the Exporter App.

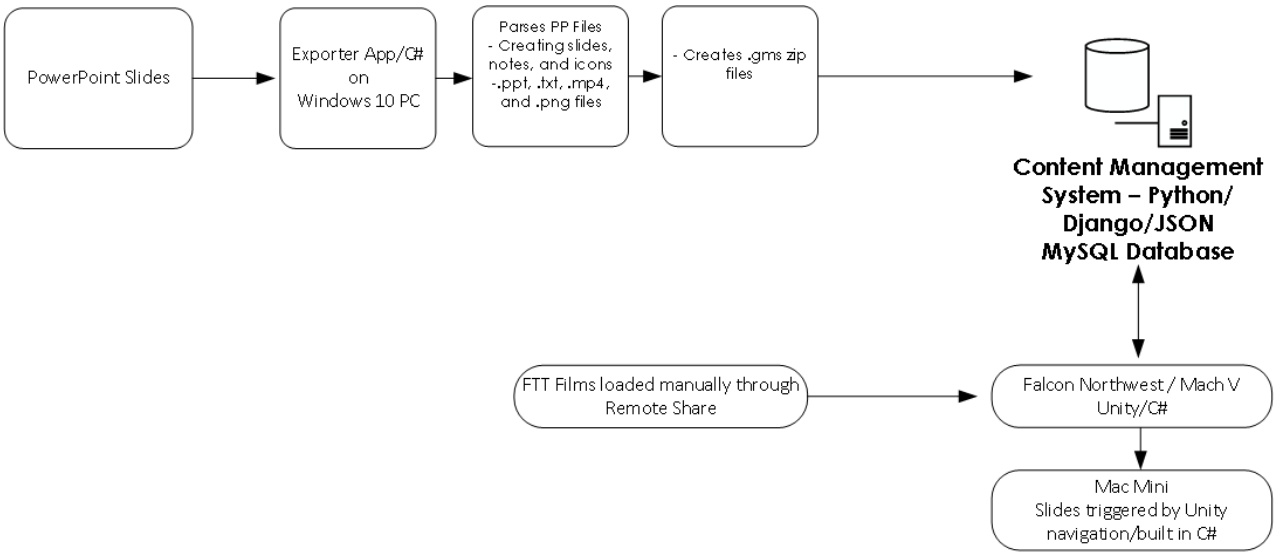


Figure 4 - Rotunda Content Pipeline

As noted earlier, the PPT (Exporter Tool) parses the PowerPoint slides, creating—in addition to the .pptx files—.txt, .mp4, and .png files (notes, videos, and icons), and packages the files in a compressed .jms file. The .jms file is then uploaded to the content management system.

When the room PC reboots, Manifest Ingest, a Python applet, queries the CMS for newly published content. Then, when the Rotunda app is loaded, whatever presentations and FTT films have been published in CMS appear on the main menu.

FFT films are manually loaded onto the room computer through remote share.

Virtual Kitchen and Coffee College

Introduction

The Coffee College Room, as illustrated in Figure 5 below, houses the Virtual Kitchen, which is a complex content delivery system. A Falcon PC Mach V is the room computer and has a 3D application written in Unity/C#. The Unity asset bundles for the Virtual Kitchen are loaded manually, and the 3D objects appear on nine 55-inch touch- activated display screens.

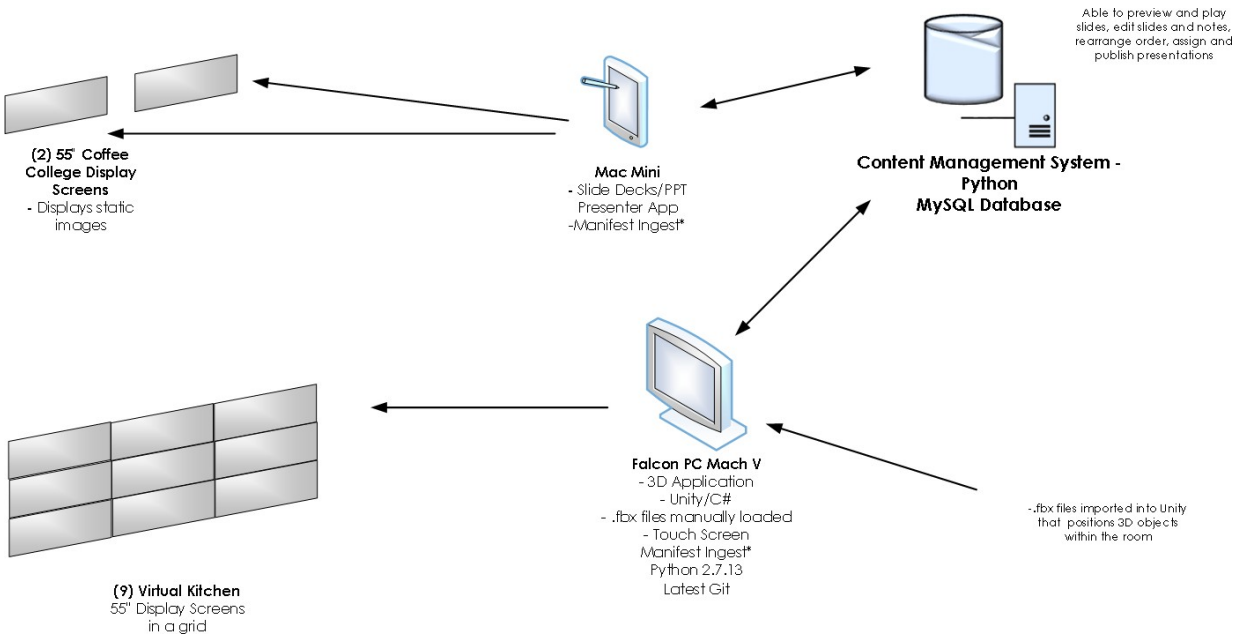


Figure 5 - Coffee College and Virtual Kitchen

Coffee College also has a 75-inch display screen that displays slides from the CMS.

Pet Family Room

Introduction

A Falcon Northwest/Tiki is the room PC. It renders a 3D environment, with Unity asset bundles displayed on a 75-inch touch screen (right screen). The room computer has Manifest Ingest, which queries the CMS for newly published content.

The architecture of the room is illustrated in Figure 6 below.

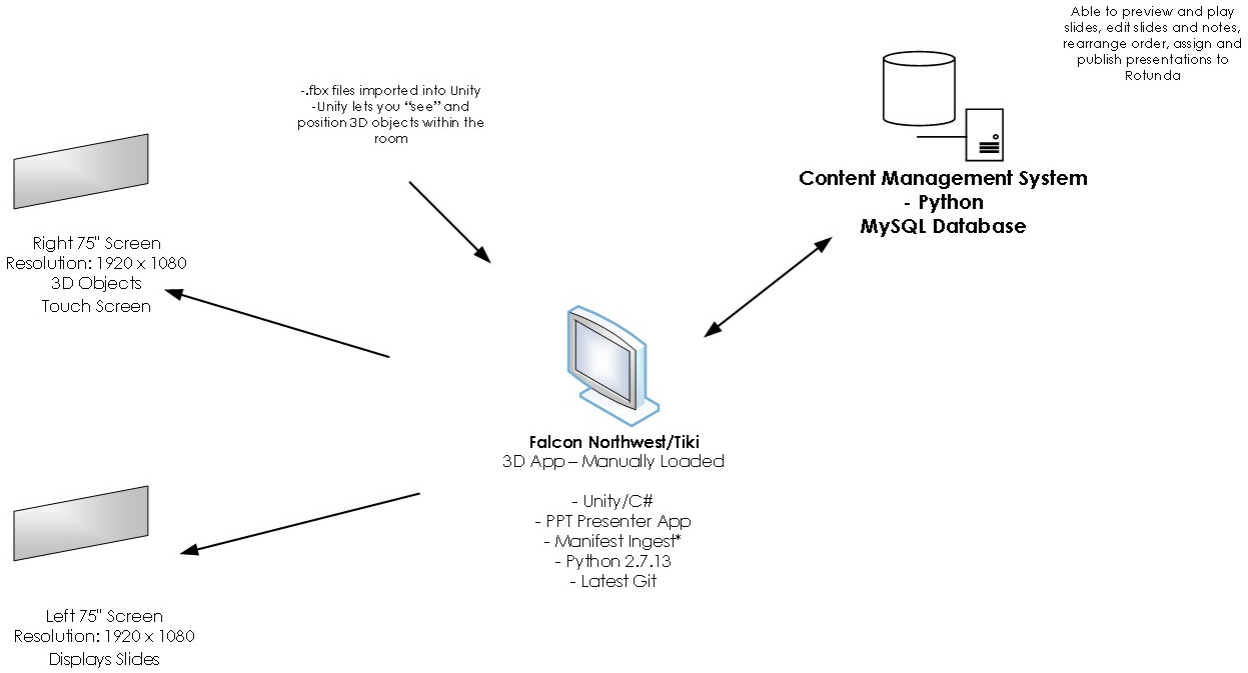


Figure 6 - Pet Family Room

Emerging Technologies

Introduction

The room computer is a Falcon Northwest / Tiki. Video is streamed across two screens. Air, Actionscript 3, Adobe Animate, Python 2.7.13, GitBucket, and Manifest Ingest*. (See Figure 7 below.)

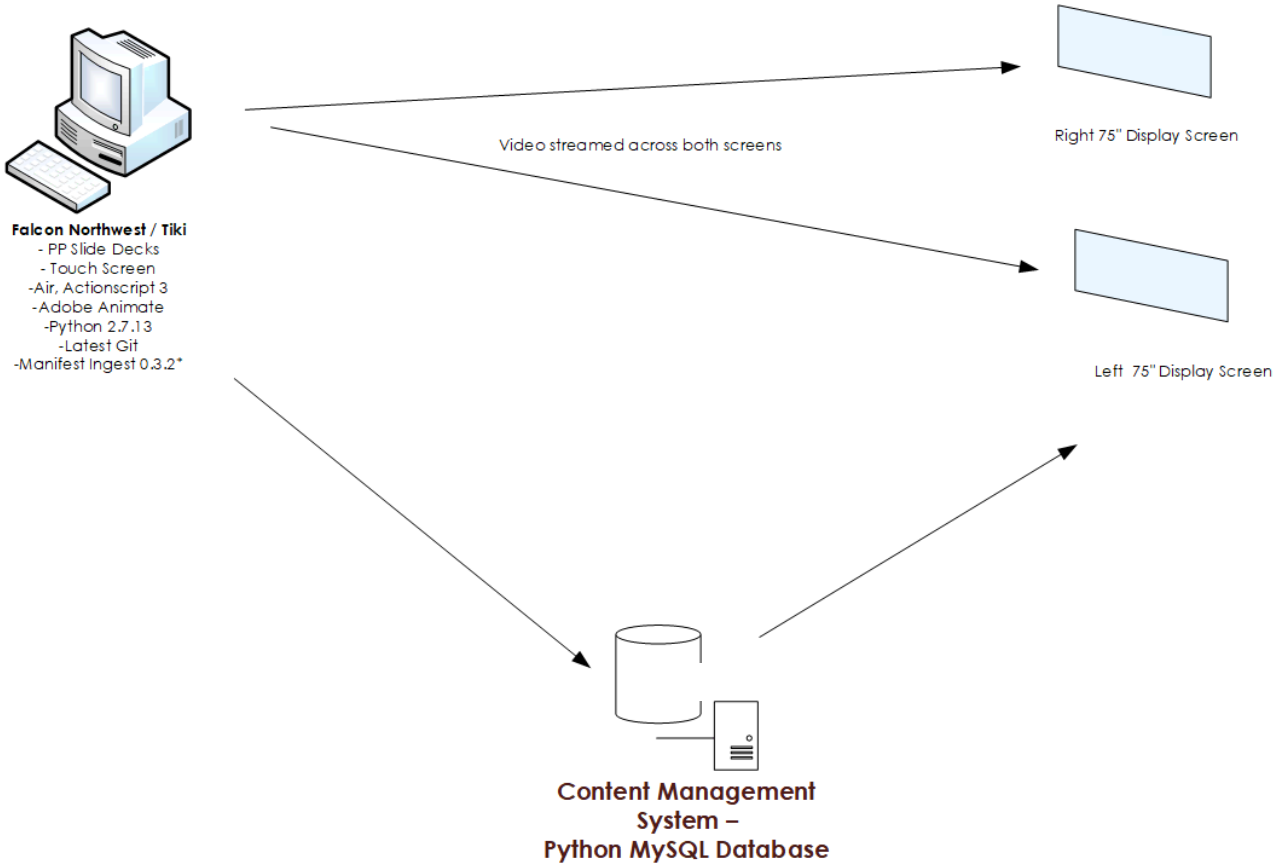


Figure 7 - Emerging Technologies Room

Commodities

Introduction

The Commodities Room PC is a Falcon Northwest/Tiki. (See Figure 8 below.)

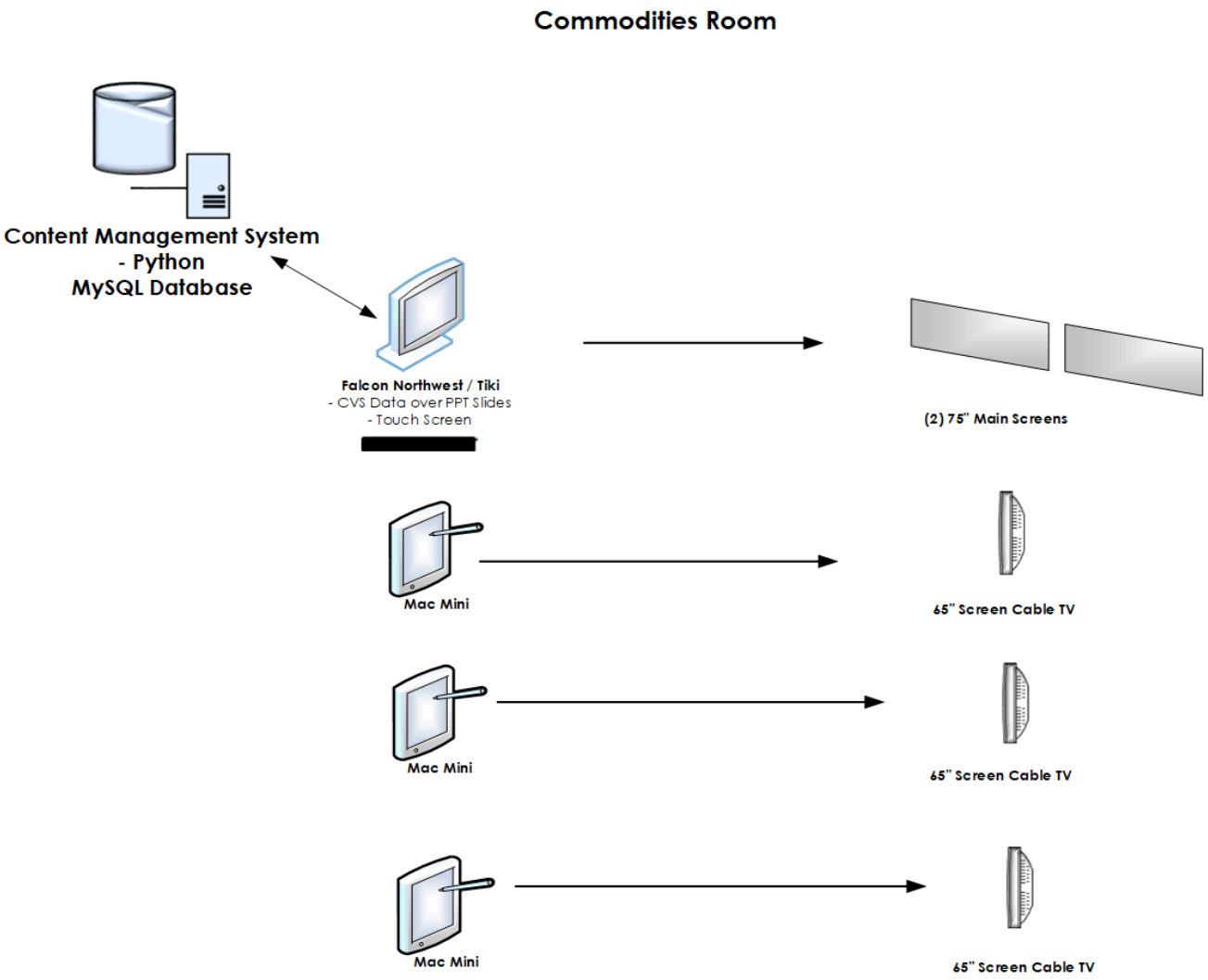


Figure 8 - Commodities Room

Coffee House

Introduction

Guests meet in the Coffee House in the main lobby when they first arrive and have breakfast and coffee before proceeding to the Table Room for kickoff. The Coffee Room displays present a static image of the day's agenda. The content is comprised of image files (1920 x 1080 .jpg files) that are fed to the Coffee House computer (Mac Mini) via the CMS. (See Table 1 below.)

Table 1 - Coffee House Display Information

Location	IP Address	Software Stack	Content	Display Info
Lobby		Mac OS	Image files - 1920 x 1080 .JPG	2 - 55" screens
		Adobe Air		
		Coffee House App		
		[redacted]		

Coffee College

Introduction

Guests learn about coffee production in the Coffee College. There is one (1) 75-inch display (1920 x 1080) that presents full-screen PowerPoint slides. The content is fed to the Coffee College computer (Mac Mini) via the CMS. The Presenter App on the Presenter iPad controls the content. The Virtual Kitchen, described previously, is in Coffee College as well. (See Table 2 below.)

Table 2 - Coffee College Display Information

Location	IP Address	Software Stack	Content	Display Info
Coffee College Room		Mac OS	Power Point files - 1920 x 1080 .PPTX	1 - 75”
		Power Point Control		
		[redacted]		

Beverage Lab

Introduction

The Beverage Lab presents information about JMS beverage products. There are two (2) 55-inch displays (1920 x 1080) that present full-screen PowerPoint slides. Thecontent is fed into the Beverage Lab computer (Mac Mini) via the CMS. (See Table 3 below.). The

.

Table 3 - Beverage Lab Display Information

Location	IP Address	Software Stack	Content	Display Info
Beverage Lab		Mac OS	Power Point files - 1920 x 1080 .PPTX	2 - 55”
		Power Point Control		
		[redacted]		

Food Lab

Introduction

The Food Lab presents guests with information about food products such as baking products and spreads. A 75-inch display (1920 x 1080) presents full-screen PowerPoint slides. Content is fed to the Food Lab computer (Mac Mini) via the CMS. (See Table 4 below.) The Presenter App on the Presenter iPad provides control.

Table 4 - Food Lab Display Information

Location	IP Address	Software Stack	Content	Display Info
Food Lab		Mac OS	Power Point files - 1920 x 1080 .PPTX	1 - 75”
		Power Point Control		
		[redacted]		

Culinary College

Introduction

Guests learn about the Culinary College. There are two (2) 55-inch displays (1920 x 1080) that display full-screen PowerPoint slides. The content is fed to the Food Lab computer (Mac Mini) via the CMS. (See Table 5 below.) The Presenter App on the Presenter iPad controls content.

Table 5 - Culinary College Display Information

Location	IP Address	Software Stack	Content	Display Info
Culinary College		Mac OS	Power Point files - 1920 x 1080 .PPTX	2 - 55”
		Power Point Control		
		[redacted]		

Big Ideas

Introduction

The Big Ideas room presents a learning experience for guests. There are two (2) 55-inch displays (1920 x 1080) that present full-screen PowerPoint slides. The content is fed to the Food Lab computer (Mac Mini) via CMS. (See Table 6 below.) The Presenter App that is on the Presenter iPad controls content.

Table 6 - Big Ideas Display Information

Location	IP Address	Software Stack	Content	Display Info
Big Ideas Room		Mac OS	Power Point files - 1920 x 1080 .PPTX	1 - 75”
		Power Point Control		
		[redacted]		

Table Room

Introduction

The Table Room is where visits start and finish. There is one (1) 75-inch display (1920 x 1080) that presents full-screen PowerPoint slides. The content is fed to the Food Lab computer (Mac Mini) via CMS. The Presenter App on the Presenter iPad controls content.

There are also multiple digital picture frames which display customer specific images for a visit. These images are managed by the CMS. (See Table 7 below.)

Table 7 - Table Room Display Information

Location	IP Address	Software Stack	Content	Display Info
Table Room		Mac OS	Power Point files - 1920 x 1080 .PPTX	1 - 75”
		Power Point Control	Images (.JPG files)	Digital Picture Frames
		[redacted]		
		Table Room App		
		Adobe Air		

Vestibule Wall

Introduction

Guests meet in the Vestibule area outside the main facility before a visit. The logo of the visiting company is on the display and is not interactive. Content is comprised of image files (600 x 400 .PNG) that are fed to the Vestibule Wall computer via the CMS). (See Table 6 below.)

Table 8 - Vestibule Wall Display Information

Location	IP Address	Software Stack	Content	Display Info
Vestibule		Windows 10	Image files – 600 x 400 .PNG	1 LED Panel
		Unity		
		Vestibule Wall App		

Vestibule Table

Introduction

As stated above, the Vestibule area outside the main facility is where guests meet before a visit. The Vestibule Table has built in displays that show the visiting company's information. The contents are fed to the table's computer via the CMS. (See Table 9 below.)

Table 9 - Vestibule Table Display Information

Location	IP Address	Software Stack	Content	Display Info
Vestibule		Windows 10	Image Files- .JPG	2 – 55" Touch Displays
		Unity		
		Vestibule Table App		

Gallery Wall

Introduction

The Gallery Wall in the main lobby entrance provides guests with a multi-image presentation of JMS products. The 16 displays are arranged as a video wall and are not interactive. The contents are image files of various dimensions that can be arranged in the CMS. (See Table 2 below.)

Table 10 - Gallery Wall Display Information

Location	IP Address	Software Stack	Content	Display Info
Lobby		Windows 10	Image files - .JPG	16 – 48” Displays
		Unity		

Gallery Table (Timelines)

Introduction

The Gallery Table (aka Timelines) is the main lobby entrance is where guests see an interactive presentation of JMS brands and products. The four (4) displays are arranged as a table and are interactive. The content is a combination of image files (400 x 400) and text that is managed in the CMS. (See Table 11 below.)

Table 11 - Gallery Table (Timelines) Display Information

Location	IP Address	Software Stack	Content	Display Info
Lobby		Mac OS	Image files – 400 x 400 .JPG	4 – 42" Touch Displays
		Unity	Text	

iPad Applications

Introduction

The following four (4) iPad applications are used by visitors:

- Pet App
- Recipe App
- Size of the Prize App
- Coffee App

The Presenter App controls all the rooms in the Smucker Innovation Center (SIC).

Some iPad applications are created with XCode and some with Unity. All iPad apps are compiled and loaded with XCode.

Pet App

Introduction

The Pet App. (See Table 12 below.)

Table 12 - Pet App Display Information

Developed with	Uses Content from CMS	Other Programming	Content	End User
Unity	NO		Text & Images	Guest

Recipe App

Introduction

The Recipe App displays recipes managed in the CMS. Content is a combination of images and text. Once loaded to the iPad, the end user sees a picture of the finished food item, the ingredients, and the instructions for making it. (See Table 13 below.)

Table 13 - Recipe App Display Information

Developed with	Uses Content from CMS	Other Programming	Content	End User
XCode	YES		Text & Images	Guest

Size of the Prize App

Introduction

The Size of the Prize App. (See Table 14 below.)

Table 14 - Size of the Prize App Display Information

Developed with	Uses Content from CMS	Other Programming	Content	End User
XCode	YES		Text & Images	Guest

Appendix A – Windows Installation and Preparation

- [**Pre-Work**] Backup the machine using Windows Image Backup ('wbadmin start backup -backuptarget:E: -include:C: -allCritical'). Once the backup is complete, remove the backup drive.
- [**Windows Install**] Connect the USB Windows 10 install drive. Boot to the Install media (Press Delete during the boot process. Navigate to the 'Boot' tab, and near the bottom select 'UEFI: Sandisk …'). Once Windows setup has started, choose a 'custom' installation.
- [**Windows Install**] Delete all previous hard disk partitions. Once done, select the empty drive, and click 'next' to allow Windows setup to reformat the drive automatically.
- [**Windows Install**] Once prompted for a username, use 'gocouser', and the password specified by Joe.
- [**Windows**] Once on the Windows desktop, Set the network card to the proper address. The format is as follows:
IP Address: 172.16.1.xx
Subnet Mask: 255.255.255.0
Gateway: 172.16.1.1
DNS 1: 10.1.3.133
DNS 2: 10.1.3.134
- [**Windows**] Disable the Wireless network card. (Right click, choose 'disable' from the menu)
- [**Windows**] Change Hostname to 'CPU-XXX'. Replace 'XXX' with the proper number the PC you are replacing. Wait to Reboot.
- [**Teamviewer Setup**] Download and install Teamviewer 11. During install choose 'Both personal and corporate use', and 'I don't want to set up a Teamviewer Account right now'. When prompted for a password for unattended access, use the default GoCo password of 'goco4545'. Once the program starts, click the gear icon to open the settings. In the 'General' section, set 'Incoming LAN connections' to 'Accept exclusively'. Add GoCo password. Test connectivity with GoCo. At this point, they can start loading the content on the PC. Warn them when you need to reboot.
- [**Windows**] Disable Screen and PC sleep.
- [**Windows**] Activate Windows (Key location on Install Media)
- [**Windows**] Start Windows Updates
- [**Windows**] Change Desktop Scaling to 100% from 150%.
- [**Windows**] Configure PC to automatically Log in (run 'control userpasswords2')
- [**Windows**] Reboot. This is necessary to apply the scaling options and PC name. If you not reboot, the room applications will not start properly, and run in a window that is too small.
- [**Windows**] Confirm that the screen layout is proper in the room. Adjust the PC monitor arrangement settings to correct any issues.
- [**Windows**] Test audio in the room. Adjust the pc sound output device if needed.
- [**Windows**] Configure the dual touch screen functionality. (run 'shell:::{80F3F1D5-FECA-45F3-BC32-752C152E456E}' and choose 'setup'. Follow the on screen prompts)
- [**Windows**] Confirm the proper sound device. Set this to the proper output via the Playback Devices menu.
- [**Windows**] Set to 'Eastern' time zone.
- [**Windows**] Install JMS Fonts from Archive
- [**Windows**] Install JMS Web Certificates from Archive
- [**Windows**] Install JMS Office from Archive

- [**Windows**] Open Control Panel, and Pen and Touch settings. At the bottom are some checkboxes that visually reflect the touch screen input. If on Commodities, enable both checkboxes. If on Emerging Tech or Pet Family, disable both checkboxes.