



A data collection system created for
Pixar Animation Studios.

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the scene

- ◆ Pixar uses proprietary, developed-in-house digital animation software
- ◆ Software gets new features and improvements for each upcoming movie
- ◆ It is critical that the software perform quickly and without error

measuring software performance

- ◆ People don't like slow software.
- ◆ When an artist or group of artists starts to experience slow or unresponsive software, happiness level at Pixar goes down.
- ◆ It is important for the software support team at Pixar to quickly diagnose slowness issues, for the sake of everyone's happiness... that's where the busylog comes into play...

busylog

- ◆ A new log is generated and saved to a user's local machine every time the user opens a new instance of the software.
- ◆ Which operations are logged? The operations that have been tagged in the software and that exceed .5 second of execution time.
- ◆ The log is a text file, but it is not human readable.

problem

- ◆ Busylogs are scattered across the studio on individual user's local machines.
- ◆ Busylogs are not stored in a centralized location.
- ◆ There is no way to easily browse and view log files.

solution! BusyB!

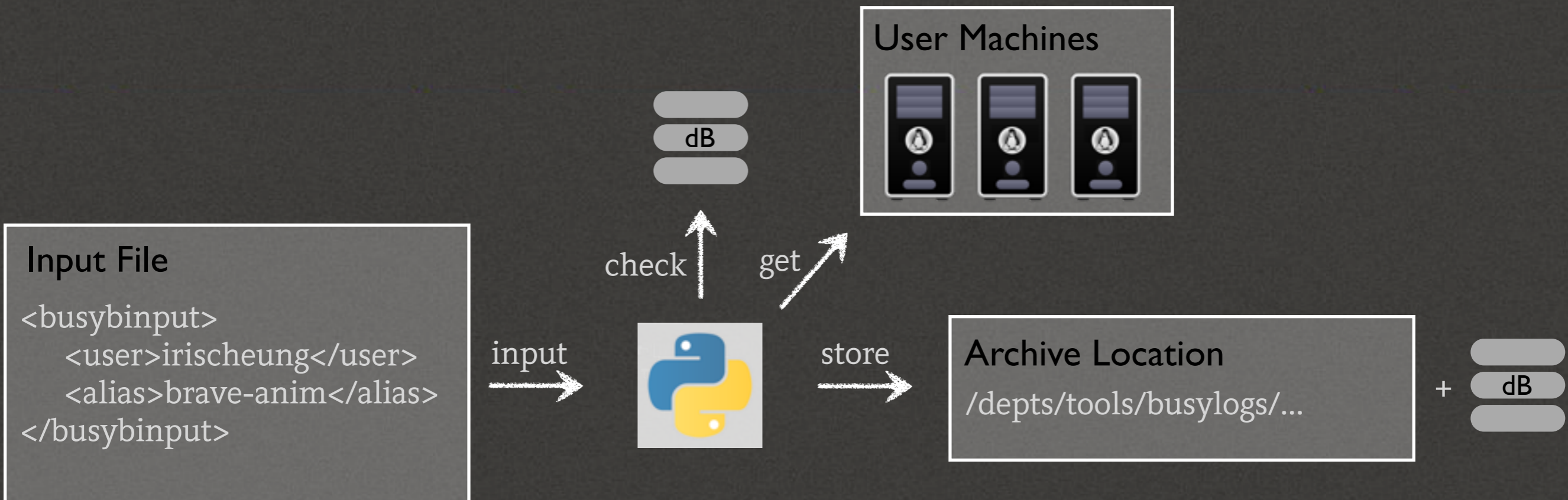
◆ File Crawler

- Collects the busylogs
- Stores them in a centralized location
- Stores a record of each log in a database

◆ Busylog Viewer

- GUI application for searching and viewing logs

File Crawler



Busylog Viewer

busyView

User(s): Mail Alias:

Session Start Date	Log Last Modified Date	User	Host	Filename	Archive Path
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All ▾

Name	Duration	Time
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busyView

User(s): Mail Alias: Go Reload

Session Start Date	Log Last Modified Date	User	Host	Filename	Archive Path
Apr 02 2012 09:53:31 AM	Apr 02 2012 02:21:00 PM	gerald	pimpcane	busyLog.w5UHB2.2012-04-02-09-53-31	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/04
Mar 27 2012 09:51:26 AM	Mar 27 2012 10:06:00 AM	gerald	pimpcane	busyLog.R2k0ti.2012-03-27-09-51-26	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 22 2012 02:04:38 PM	Mar 22 2012 02:06:00 PM	gerald	pimpcane	busyLog.23925.2012-03-22-14-04:38	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 22 2012 01:55:58 PM	Mar 22 2012 02:02:00 PM	gerald	pimpcane	busyLog.VpzRLx.2012-03-22-13-55-58	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 20 2012 04:08:04 PM	Mar 20 2012 04:09:00 PM	gerald	pimpcane	busyLog.13806.2012-03-20-16-08:04	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 20 2012 04:04:52 PM	Mar 20 2012 04:07:00 PM	gerald	pimpcane	busyLog.12403.2012-03-20-16-04:52	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 20 2012 03:52:51 PM	Mar 20 2012 03:53:00 PM	gerald	pimpcane	busyLog.9964.2012-03-20-15:52:51	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 20 2012 03:51:39 PM	Mar 20 2012 03:52:00 PM	gerald	pimpcane	busyLog.9534.2012-03-20-15:51:39	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 20 2012 03:49:49 PM	Mar 20 2012 03:50:00 PM	gerald	pimpcane	busyLog.9100.2012-03-20-15:49:49	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 20 2012 03:41:04 PM	Mar 20 2012 03:48:00 PM	gerald	pimpcane	busyLog.7510.2012-03-20-15:41:04	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 20 2012 10:53:10 AM	Mar 21 2012 01:25:00 PM	gerald	pimpcane	busyLog.23198.2012-03-20-10:53:10	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 02:03:34 PM	Mar 19 2012 02:03:00 PM	gerald	pimpcane	busyLog.28420.2012-03-19-14-03:34	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 11:21:18 AM	Mar 19 2012 02:02:00 PM	gerald	pimpcane	busyLog.9727.2012-03-19-11:21:18	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 11:13:28 AM	Mar 19 2012 11:20:00 AM	gerald	pimpcane	busyLog.6916.2012-03-19-11:13:28	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 11:11:07 AM	Mar 19 2012 11:12:00 AM	gerald	pimpcane	busyLog.6005.2012-03-19-11:11:07	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 11:07:59 AM	Mar 19 2012 11:09:00 AM	gerald	pimpcane	busyLog.5308.2012-03-19-11:07:59	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 10:55:21 AM	Mar 19 2012 10:55:00 AM	gerald	pimpcane	busyLog.2923.2012-03-19-10:55:21	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 10:48:58 AM	Mar 19 2012 10:58:00 AM	gerald	pimpcane	busyLog.958.2012-03-19-10:48:58	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 10:37:53 AM	Mar 19 2012 10:38:00 AM	gerald	pimpcane	busyLog.31250.2012-03-19-10:37:53	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 10:08:08 AM	Mar 19 2012 10:33:00 AM	gerald	pimpcane	busyLog.27365.2012-03-19-10:08:08	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 09:27:33 AM	Mar 19 2012 10:02:00 AM	gerald	pimpcane	busyLog.20672.2012-03-19-09:27:33	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03
Mar 19 2012 09:24:39 AM	Mar 19 2012 09:26:00 AM	gerald	pimpcane	busyLog.16055.2012-03-19-09-24-39	/depts/tools/busylogs/gerald/pimpcane/scratch/tmp/2012/03

Session started: Apr 02 2012 09:53:31 AM User: gerald Machine: pimpcane All

Name	Duration	Time
Applying state	13.81	Apr 02 - 09:53:31 AM
Running P4 command 'tstat'	1.02	Apr 02 - 09:53:45 AM
Running P4 command 'diff'	0.51	Apr 02 - 09:53:46 AM
Generating GL image	0.04	Apr 02 - 09:53:46 AM
(unknown)	0.05	Apr 02 - 09:53:47 AM
Opening stage '//menv30/modchars/src/Sullivan/menv30/Sullivan_rig.menva'	5.72	Apr 02 - 09:54:12 AM
Computing differences for layer 'Sullivan_rig.menva'	1.02	Apr 02 - 09:54:18 AM
Composing Prims	0.51	Apr 02 - 09:54:19 AM
(unknown)	0.51	Apr 02 - 09:54:20 AM
Generating GL image	0.07	Apr 02 - 09:54:20 AM
Finding load dependencies	28.14	Apr 02 - 09:54:40 AM
Loading 1 prim	8.18	Apr 02 - 09:55:08 AM
Compiling /Sullivan	10.74	Apr 02 - 09:55:16 AM
(unknown)	1.54	Apr 02 - 09:55:27 AM
Scheduling for execution	0.51	Apr 02 - 09:55:28 AM
(unknown)	3.07	Apr 02 - 09:55:29 AM
Scheduling for execution	0.51	Apr 02 - 09:55:32 AM
(unknown)	2.56	Apr 02 - 09:55:32 AM
Computing values	3.07	Apr 02 - 09:55:35 AM
Generating GL image	1.20	Apr 02 - 09:55:38 AM
Executing command 'AssetqEditorBase.Refresh'	1.53	Apr 02 - 01:31:51 PM
(unknown)	0.71	Apr 02 - 01:31:53 PM
Opening stage '//menv30/modhair/src/SullivanHair/menv30/SullivanHair.menva'	0.51	Apr 02 - 01:32:16 PM
(unknown)	0.51	Apr 02 - 01:32:16 PM
Generating GL image	0.11	Apr 02 - 01:32:17 PM
Executing command 'AssetqEditorBase.Refresh'	0.51	Apr 02 - 01:32:32 PM
(unknown)	0.23	Apr 02 - 01:32:33 PM
(unknown)	0.82	Apr 02 - 01:32:34 PM
Compiling /SullivanHair	1.02	Apr 02 - 01:32:37 PM
Computing values	19.80	Apr 02 - 01:32:38 PM
(unknown)	0.22	Apr 02 - 01:35:18 PM
Loading 1 prim	2.05	Apr 02 - 01:35:23 PM
(unknown)	1.03	Apr 02 - 01:35:25 PM
Compiling /SullivanHair	0.51	Apr 02 - 01:35:26 PM
Computing values	9.18	Apr 02 - 01:35:26 PM
Setting pin variant of 'SullivanHair' to 'latest'	1.02	Apr 02 - 02:19:37 PM
(unknown)	0.51	Apr 02 - 02:19:38 PM
Compiling /SullivanHair	0.51	Apr 02 - 02:19:39 PM
Computing values	13.33	Apr 02 - 02:19:39 PM
Generating GL image	0.01	Apr 02 - 02:19:53 PM
Setting pin variant of 'SullivanHair' to 'stable'	2.05	Apr 02 - 02:19:59 PM
(unknown)	1.03	Apr 02 - 02:20:01 PM
Compiling /SullivanHair	0.51	Apr 02 - 02:20:02 PM
Scheduling for execution	0.51	Apr 02 - 02:20:02 PM
Computing values	8.89	Apr 02 - 02:20:03 PM
Executing command 'Delete'	17.38	Apr 02 - 02:20:17 PM
Populating Root Prim Paths	0.48	Apr 02 - 02:20:44 PM
Finding load dependencies	0.51	Apr 02 - 02:20:49 PM
Loading 1 prim	1.03	Apr 02 - 02:20:50 PM

busyView

User(s): Mail Alias:

Session Start Date	Log Last Modified Date	User	Host	Filename	Archive Path
Feb 10 2012 02:44:52 PM	Feb 15 2012 04:18:00 PM	bret	curly	busyLog.22045.2012-02-10-14:44:52	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 10 2012 08:38:02 AM	Feb 10 2012 09:22:00 AM	bret	curly	busyLog.24206.2012-02-10-08:38:02	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 03:30:38 PM	Feb 13 2012 08:17:00 AM	ekarson	antaeus	busyLog.15327.2012-02-09-15:30:38	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 03:25:48 PM	Feb 09 2012 03:29:00 PM	ekarson	antaeus	busyLog.14801.2012-02-09-15:25:48	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 02:58:53 PM	Feb 09 2012 03:24:00 PM	ekarson	antaeus	busyLog.11315.2012-02-09-14:58:53	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 02:55:17 PM	Feb 09 2012 02:57:00 PM	ekarson	antaeus	busyLog.9978.2012-02-09-14:55:17	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 02:38:22 PM	Feb 09 2012 02:54:00 PM	ekarson	antaeus	busyLog.7729.2012-02-09-14:38:22	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 02:36:13 PM	Feb 09 2012 02:37:00 PM	ekarson	antaeus	busyLog.7437.2012-02-09-14:36:13	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 02:32:53 PM	Feb 09 2012 02:35:00 PM	ekarson	antaeus	busyLog.7019.2012-02-09-14:32:53	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 02:22:50 PM	Feb 09 2012 02:25:00 PM	ekarson	antaeus	busyLog.5366.2012-02-09-14:22:50	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 02:12:02 PM	Feb 09 2012 02:20:00 PM	ekarson	antaeus	busyLog.4217.2012-02-09-14:12:02	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 02:04:01 PM	Feb 09 2012 02:07:00 PM	ekarson	antaeus	busyLog.3089.2012-02-09-14:04:01	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02
Feb 09 2012 01:48:37 PM	Feb 09 2012 01:48:00 PM	bret	curly	busyLog.29218.2012-02-09-13:48:37	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 01:45:22 PM	Feb 09 2012 01:45:00 PM	bret	curly	busyLog.28781.2012-02-09-13:45:22	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 01:44:32 PM	Feb 09 2012 01:44:00 PM	bret	curly	busyLog.28221.2012-02-09-13:44:32	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 01:43:45 PM	Feb 09 2012 01:43:00 PM	bret	curly	busyLog.28141.2012-02-09-13:43:45	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 01:43:25 PM	Feb 09 2012 01:43:00 PM	bret	curly	busyLog.28086.2012-02-09-13:43:25	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 01:42:40 PM	Feb 09 2012 01:42:00 PM	bret	curly	busyLog.27783.2012-02-09-13:42:40	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 01:42:15 PM	Feb 09 2012 01:42:00 PM	bret	curly	busyLog.27757.2012-02-09-13:42:15	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 01:41:38 PM	Feb 09 2012 01:41:00 PM	bret	curly	busyLog.27703.2012-02-09-13:41:38	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 01:40:28 PM	Feb 09 2012 01:40:00 PM	bret	curly	busyLog.27412.2012-02-09-13:40:28	/depts/tools/busylogs/bret/curly/scratch/tmp/2012/02
Feb 09 2012 11:44:01 AM	Feb 09 2012 02:01:00 PM	ekarson	antaeus	busyLog.20685.2012-02-09-11:44:01	/depts/tools/busylogs/ekarson/antaeus/scratch/tmp/2012/02

Session started: Feb 09 2012 02:12:02 PM User: ekarson Machine: antaeus All

Name	Duration	Time
Loading State from '/pixar/ws/users/ekarson/projects/band/arjun_pick.mproj/Session/session.menvstate'	4.66	Feb 09 - 02:12:02 PM
(unknown)	2.58	Feb 09 - 02:12:07 PM
Applying state	13.52	Feb 09 - 02:12:09 PM
(unknown)	0.52	Feb 09 - 02:12:23 PM
Opening stage '//ProjectDesktop/multishot/multishot_x015/multishot_x015.menva'	61.76	Feb 09 - 02:12:23 PM
Applying shot state	60.19	Feb 09 - 02:12:23 PM
Loading plugin 'ExtGlobalStdAvars'	3.64	Feb 09 - 02:12:23 PM
Composing Prims	35.29	Feb 09 - 02:12:27 PM
Loading layer '/usr/anim/band/modsets/inst/_versions/FarmFantasia_set/24/menv30/FarmFantasia_set.gen.menva'	18.69	Feb 09 - 02:12:27 PM
Loading layer '/usr/anim/band/modsets/inst/_versions/NearFarms_set/6/menv30/NearFarms_set.gen.menva'	4.15	Feb 09 - 02:12:46 PM
Finding load dependencies	1.04	Feb 09 - 02:13:02 PM
Loading 1221 prims	20.22	Feb 09 - 02:13:03 PM
(unknown)	1.60	Feb 09 - 02:13:25 PM
Compiling /World/anim/chars/BGParaMaleFarm_LouGroup/BGParaMaleFarm_Lou	4.15	Feb 09 - 02:13:27 PM
(unknown)	2.07	Feb 09 - 02:13:31 PM
Computing affected attributes for /World/anim/chars/BGApatMale_StantonGroup/BGApatMale_Stanton	0.52	Feb 09 - 02:13:33 PM
Compiling /World/anim/chars/BGApatMale_StantonGroup/BGApatMale_Stanton	5.18	Feb 09 - 02:13:33 PM
(unknown)	3.63	Feb 09 - 02:13:39 PM
Scheduling for execution	0.52	Feb 09 - 02:13:42 PM

(u 0.1	Opening stage '//ProjectDesktop/multishot/multishot_x015/multishot_x015.menva'	61.76 sec
Ap 0.1	Applying shot state	60.19 sec
Ru 0.1	Loading plugin 'ExtGlobalStdAvars'	3.64 sec
	Composing Prims	35.29 sec
	Loading layer '/usr/anim/band/modsets/inst/_versions/FarmFantasia_set/24/menv30/FarmFantasia_set.gen.menva'	18.69 sec
	Loading layer '/usr/anim/band/modsets/inst/_versions/NearFarms_set/6/menv30/NearFarms_set.gen.menva'	4.15 sec

the result

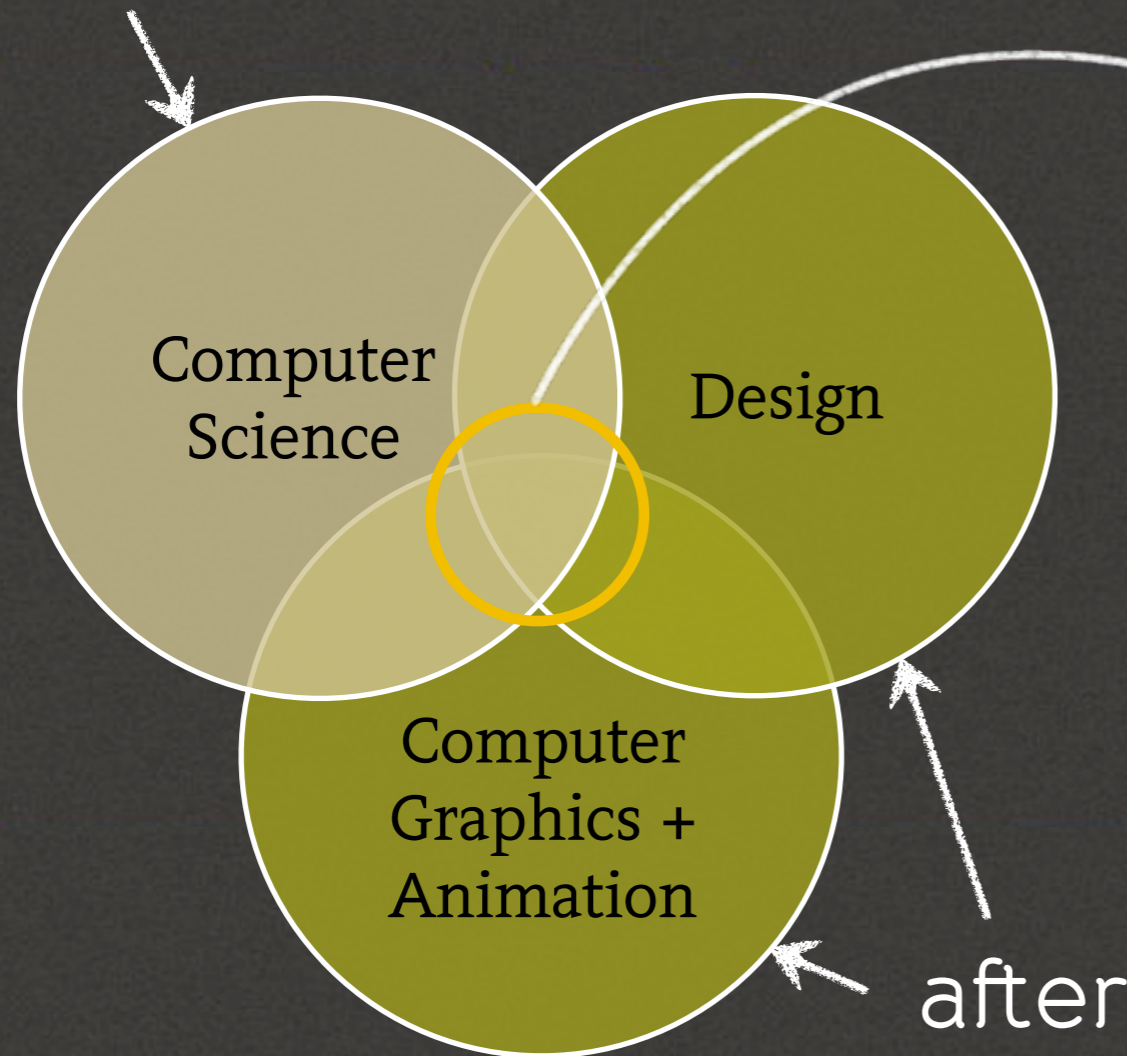
- ◆ Approx 50,000 logs were collected across 1,000 machines
- ◆ This system was deployed and being used by Pixar today.

future work

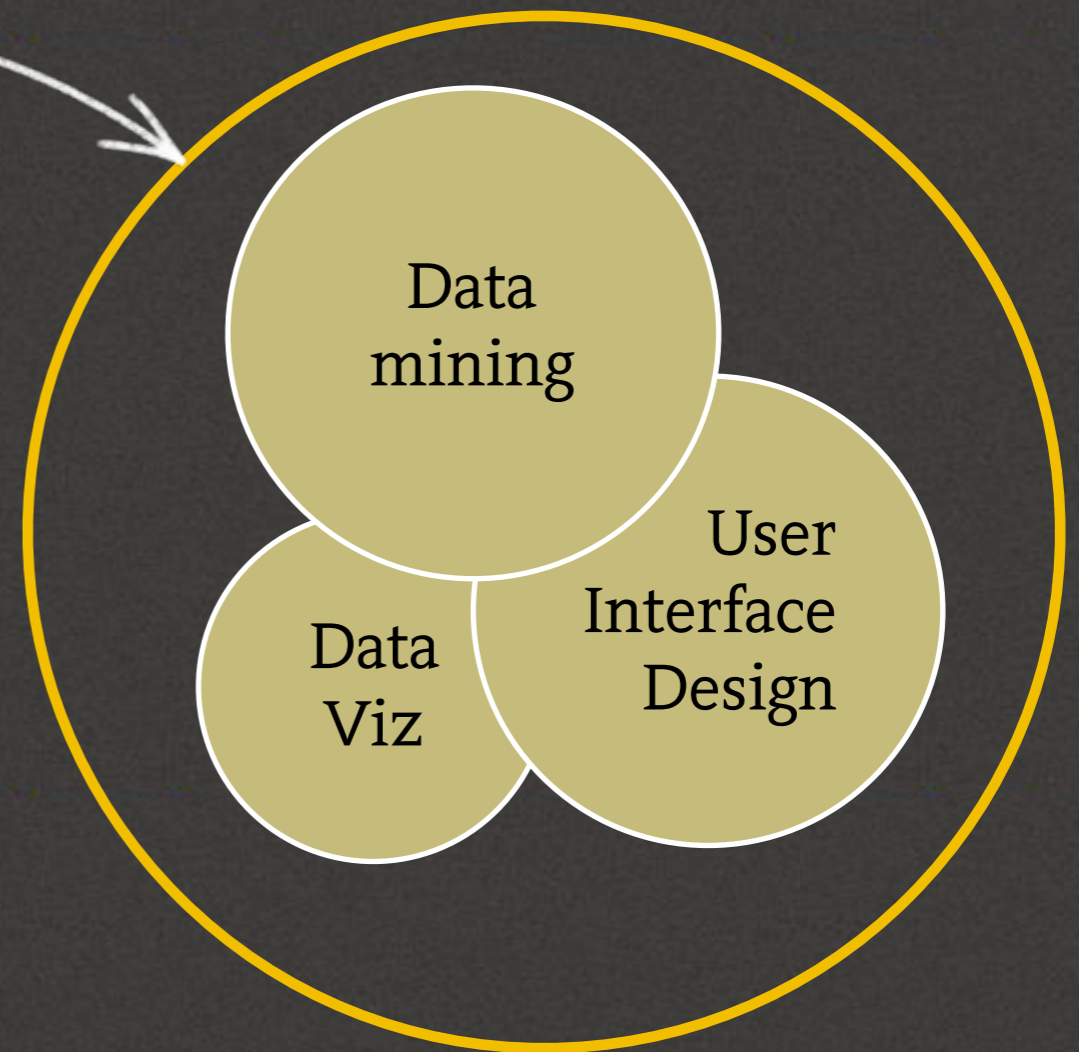
- ◆ Associate busylog files with other software log files to determine correlation or causation of slowness.

tying it together

before



Final Project



Special thanks to the supportive people at
Pixar that helped make this project happen:

Ian Buono
Kitt Hirasaki
Ethan Karson
Mckay Farley
Jason Williams
Sowmya Natarajan