



FreeWheel®

SERVING THE VIDEO REVOLUTION.

# Dances with Elephants

Build High Quality Product with Continuous Delivery

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FreeWheel

# The Premium Video EcoSystem



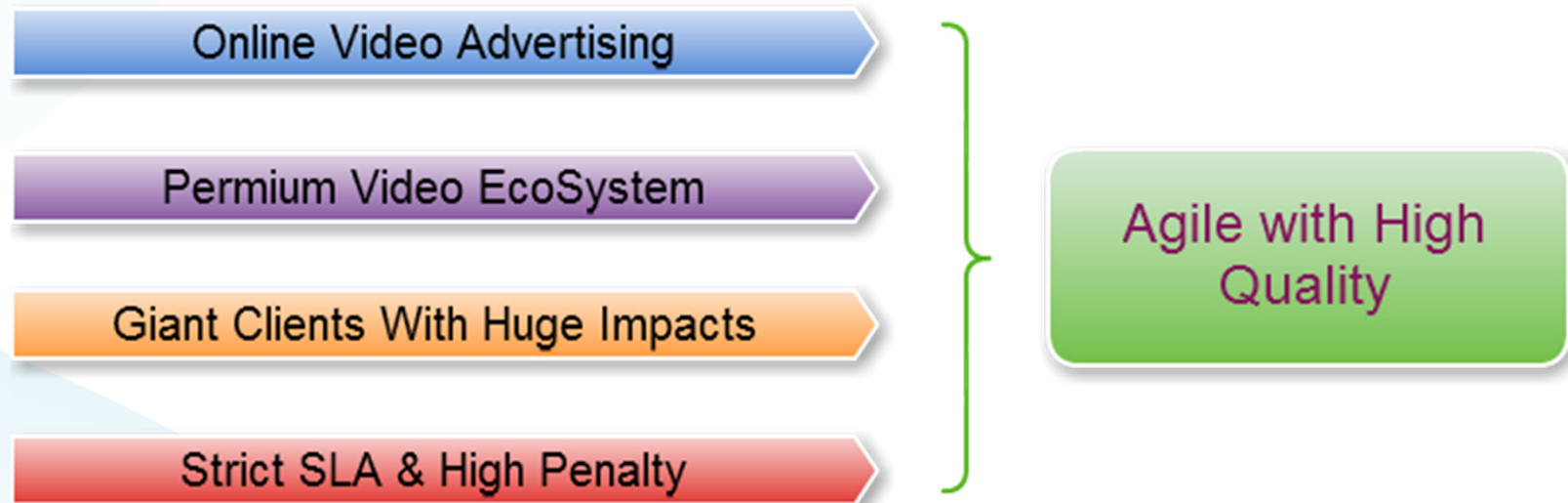
# FreeWheel Clients

				
				
				
				
				
			And more...	

# Challenges

- Technic – Common to all Internet companies
  - UI: sophisticated workflow, Enormous validations
  - Ad Serving: High performance, high availability
  - Player SDK: Diversified platforms (flash, IOS, HTML5, android, Silverlight...)
- Business – Special challenges for FreeWheel
  - Giant clients with huge impacts
  - Certification required: SAS70, MRC, IAB, and etc
  - Strict SLA and high penalty
  - Slow pace clients, but quick reaction required

# Business & Challenges of FreeWheel

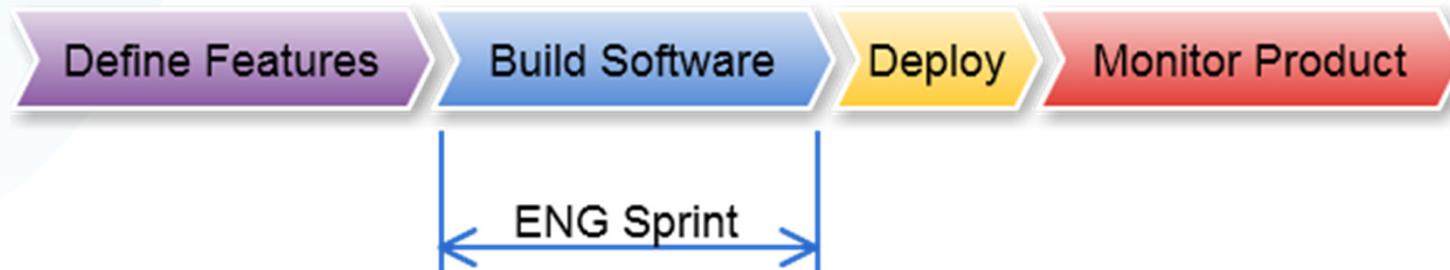




# Dances with Elephants

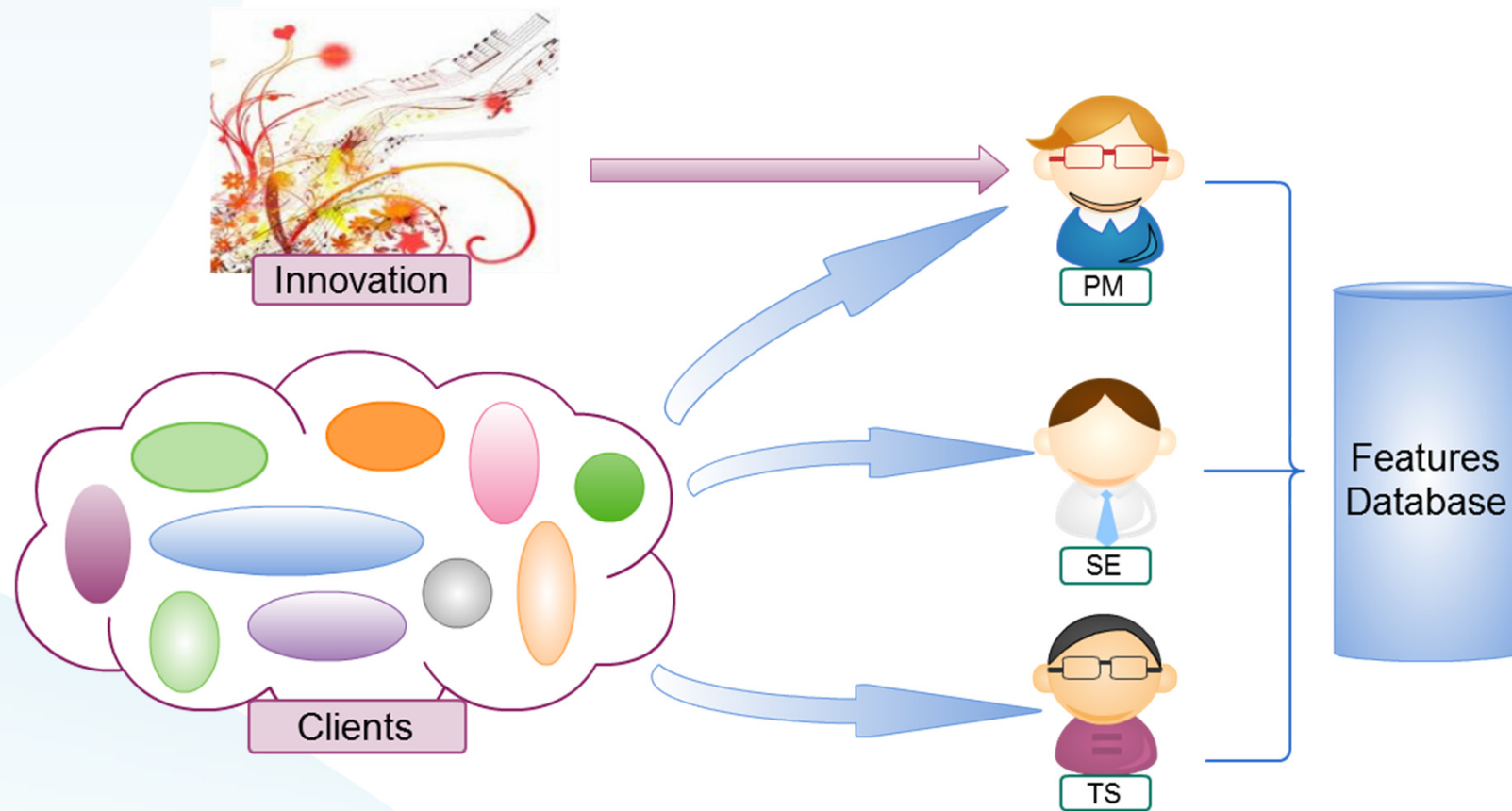


# Continuous Delivery



1. Mind Your Step: Define Features
2. Continuous Integration: Build Software
3. Managed Deployment
4. Continuous Testing in Production

# 1. Mind Your Step: Features Database





# 1. Mind Your Step: Scrum

FreeWheel Calendar										
Version	Field Force Rank Due	PM Force Rank Due	Engineering Soft Commit	Engineering Final Commit	PM Design Due	Code Begins	Release Date	Release Day Of Week	Release Day-of-Month (Hilighted if too early/late in month)	Duration (Days) (Input) Weeks
	PM Force Rank -2w	Eng Soft Commit 1w	Eng Final Commit - 1W	PM Design Due - 1W	Code Begins - 1W	Previous version release date	2009/4/15			
v2.4	3/2/2009	3/16/2009	3/23/2009	3/30/2009	4/8/2009	4/8/2009	6/9/2009	周二	9	
v2.5	4/27/2009	5/11/2009	5/18/2009	5/25/2009	6/2/2009	6/9/2009	7/15/2009	周三	15	36 5.1
v2.6	6/1/2009	6/15/2009	6/22/2009	6/29/2009	7/8/2009	7/15/2009	8/13/2009	周四	13	29 4.1
v2.7	6/29/2009	7/13/2009	7/20/2009	7/27/2009	8/6/2009	8/13/2009	9/23/2009	周三	23	41 5.9
v2.8	8/17/2009	8/31/2009	9/7/2009	9/14/2009	9/16/2009	9/23/2009	11/4/2009	周三	4	42 6.0
v2.9	9/21/2009	10/5/2009	10/12/2009	10/19/2009	10/28/2009	11/4/2009	12/16/2009	周三	16	42 6.0
v2.10	11/2/2009	11/16/2009	11/23/2009	11/30/2009	12/9/2009	12/16/2009	1/20/2010	周三	20	35 5.0
v2.11	12/7/2009	12/21/2009	12/28/2009	1/4/2010	1/13/2010	1/20/2010	3/3/2010	周三	3	42 6.0
v2.12/3.0	1/18/2010	2/1/2010	2/8/2010	2/15/2010	2/24/2010	3/3/2010	4/13/2010	周二	13	41 5.9
v3.1	3/1/2010	3/15/2010	3/22/2010	3/29/2010	4/6/2010	4/13/2010	5/19/2010	周三	19	36 5.1
v3.2	4/5/2010	4/19/2010	4/26/2010	5/3/2010	5/12/2010	5/19/2010	6/23/2010	周三	23	35 5.0

NOTE: 30% ENG resources reserved for refactoring & emergency!

# 1. Mind Your Step

- Limited Resources
- Don't be afraid to share your plans with clients
  - Pre-release notes, release note
  - Keep Schedule
- Manage clients' expectation
  - Things can't be perfect at once
  - Beta

## 2. Continuous Integration

- Centralized Integration Server
  - Unified tools / libraries
  - Coding style, syntax check
  - Triggered by check-in, or periodically
  - Integrated with automated testing
  - Email Notification
- Automated Testing
  - Frameworks
    - Units / E2E
  - Quick / Full Mode
    - Test Cases Prioritization



## 2. Continuous Integration: AdServer

**case name:** 16677 **status:** FAILED **owner:** Lu,Qin **description:** Daypart targeting, Ignore COMPLETED status in ad\_tree\_node table  
**wiki:** <http://wiki.dev.freewheel.tv/x/voEZAg>,,,,,,,,,,,<http://wiki.dev.freewheel.tv/x/CgQgAg>

[View base](#)[View new](#)[View debug log](#)[View test case info](#)[Update base](#)

7 of 7 tests run was failed in last 7 times.

Failed time	Comment
2011-07-19 14:04:09	
2011-07-19 13:59:45	
2011-07-19 07:16:51	
2011-07-18 07:37:46	
2011-07-17 06:35:04	
2011-07-16 06:34:29	
2011-07-15 07:24:42	

[\[Expand All\]](#)

```
cmp is starting...base(/regression/regression/regression/base/16677.log),new(/regression/regression/regression/new/16677.log)
```

```
[ERROR] =====Begin to process **request_16677_Daypart_targeting_xml**=====
```

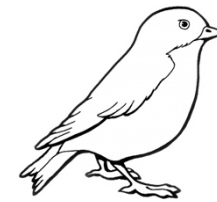
```
[ERROR] =====Begin to process **request_16889_hard_stop_xml**=====
```

```
[ERROR] =====Begin to process **request_16889_hard_stop_1_xml**=====
```

```
[ERROR] =====Begin to process **request_16889_soft_stop_xml**=====
```

### 3. Deployment: Staging

- Staging Environment



Simplified, fully Operational

### 3. Deployment: Staging

- Deployment rehearsal before production release
- Identify bugs in “real” environment
- Staging Environment
  - Mini production using virtualization tech
  - Real traffic:
    - Replay
  - Production-level monitoring
- It DOES help!
  - AdServer crashed because of special cookies



### 3. Deployment: Phase Rollout

- Upgrade apps in multiple phases
  - Predefined groups, data centers



- Pros
  - Less risky
  - Natural fallback
- Cons
  - Complexity
  - Compatibility test

### 3. Deployment: Automation

- Deployment Automation
  - Staging ✗ Phase Rollout ✗ Releases = ?
  - Operation Infrastructure Project
- Validation automation
  - Deployment, instead of features
  - Quick validation
  - Intuitive results

[illegible]

## 4. Continuous Testing in Production

System monitors

- Disk / CPU / IO / Network
- App Alerts / Errors

External monitors

- Gomez

They are not enough!

Real user simulation in production:

- Dedicated client pages
- Browser simulator to generate designed events
- Player  $\leftrightarrow$  AdServer  $\leftrightarrow$  Reporting
- Check final reporting results

## 4. Continuous Testing in Production

From: notifier@freewheel.tv Sent: 2011/6/14 (周二) 07:45  
To: NOC - FreeWheel  
Cc:  
Subject: [FAILED]Data Integrity Validation Result @2011-06-13

Dear Users,

The data integrity testing was finished at 2011-06-13 23:45:20, but find some cases failed.  
See the case details below. We are working on fixing the problems.  
File location: /export/data/ads-log/log/run

**Failed Case Count: 4/678**

**Instance : oltpdb01.fwmrm.net**

Daily Check						
Timezone	Case Id	Event Date	Metrics	Expected Result	DI Test Result	Query
GMT+0	8SectionSpecificVideos(SDNY)	2011-06-12	Impressions	110576	101360	select sum(ad_views) from q_inventory_feedback where network_id = 10305 and transaction_type in ("CRO", "R") and event_date between 20110601 and 20110612
GMT+0	8SectionSpecificVideos(SDNY)	2011-06-12	Impressions	110576	101360	select sum(ad_views) from q_inventory_feedback where network_id = 10305 and transaction_type in ("CRO", "R") and event_date between 20110601 and 20110612





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Q & A

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