

---

# Continuous Integration

CS580 Advanced Software Engineering

<http://cs580.yusun.io>

November 19, 2014

Yu Sun, Ph.D.

<http://yusun.io>

[yusun@csupomona.edu](mailto:yusun@csupomona.edu)



---

CAL POLY POMONA

---

# Recap

---

{RECAP}

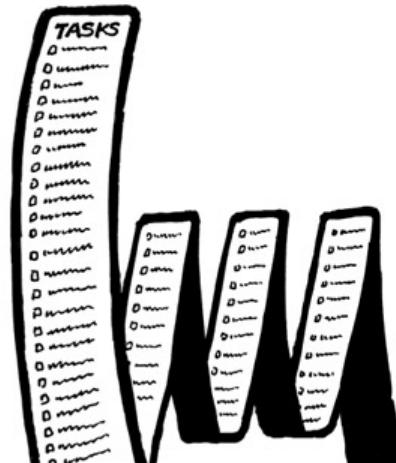


# Collect the Requirements

---



- Make it faster
- Private browsing mode
- Reading mode
- Trending web pages
- Easy to share/save pages
- Cooler UI
- ....



# Prioritize and Finalize the Features

---



Team Meeting (Business)

- Make it faster
- Reading mode
- Trending web pages
- ~~Easy to share/save pages~~
- Cooler UI
- Private browsing mode
- ....

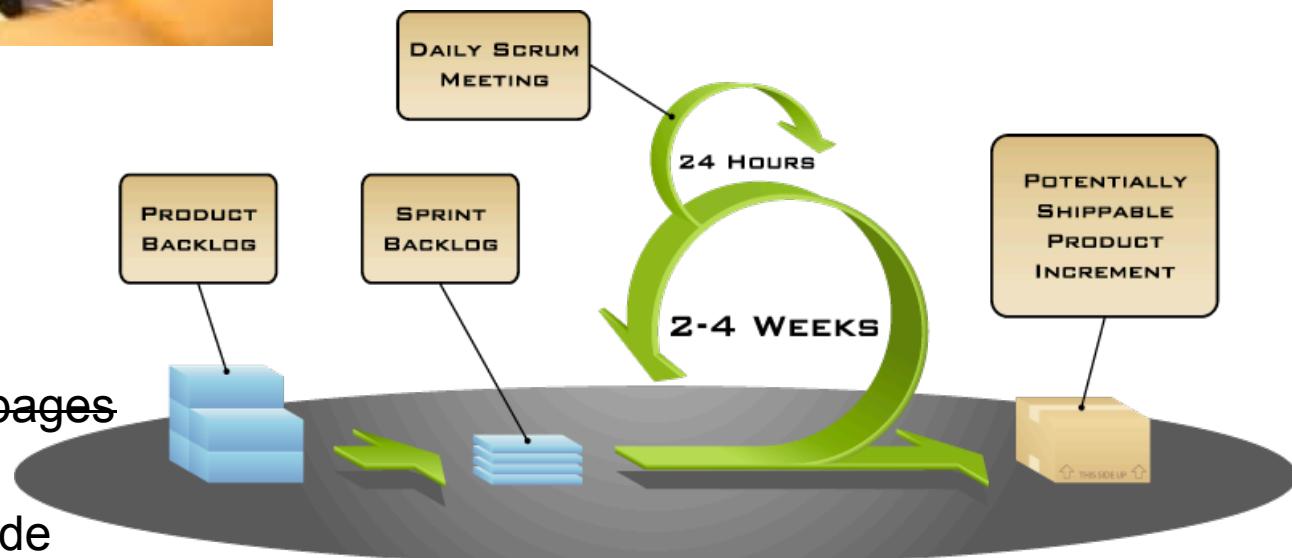


# Dev Planning Meeting

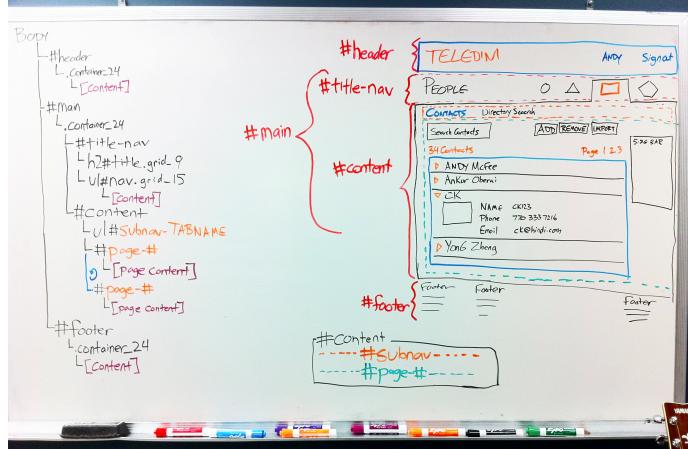


## Agile Development

- Make it faster
- Reading mode
- Trending web pages
- ~~Easy to share/save pages~~
- Cooler UI
- Private browsing mode
- ... ...

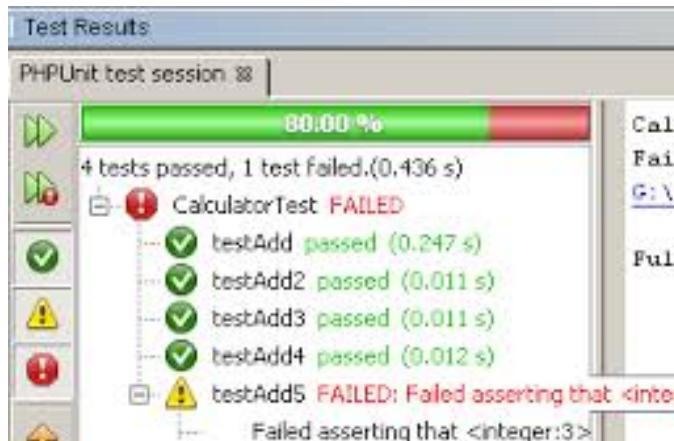


# Make the Change



## • Design

## • Implementation



## • Testing

Committing to master

Uncommitted Changes Commit

Commit summary

Select All 1 file, 25 additions, 10 deletions

application/models/vendor.php

No unsynced commits

```
112 113 }  
114 + public function geocode() {  
115 +     $address = $this->address . " " . $this->state . " "  
116 +     $this->address = $address . $this->city . " " . $this->zip . "  
117 +     if ($geocode_contents = $file_get_contents("http://50.17.210.115/maps/api/geocode/json?sensor=false&address=$raw_geocode[$geocode_contents]")) {  
118 +         $geocode_json = json_decode($geocode_contents, true);  
119 +         if (isset($geocode_json["results"]) && isset($geocode_json["results"][0])  
120 +             && isset($geocode_json["results"][0]["geometry"] && isset($geocode_json["results"][0]["geometry"]["location"])) {  
121 +                 $this->latitude = $geocode_json["results"][0]["geometry"]["location"]["lat"];  
122 +                 $this->longitude = $geocode_json["results"][0]["geometry"]["location"]["lng"];  
123 +             }  
124 +         }  
125 +     }  
126 +     // If DUNS number is updated, search for related DSBS and SAM and EPLS records.  
127 +     if ($model->changed("duns") || ($model->duns && !$model->sam_entity_name || !  
128 + $model->sync_with_dsns_and_sam_and_epls())) {  
129 +         if ($model->duns && ($model->changed("duns") || ($model->duns && !$model->sync_with_dsns_and_sam_and_epls))) {  
130 +             $model->sync_with_dsns();  
131 +             $model->sync_with_sam();  
132 +             $model->sync_with_epls();  
133 +         }  
134 +         if ($model->changed("address")) {  
135 +             $model->geocode();  
136 +         }  
137 +     }  
138 + }
```

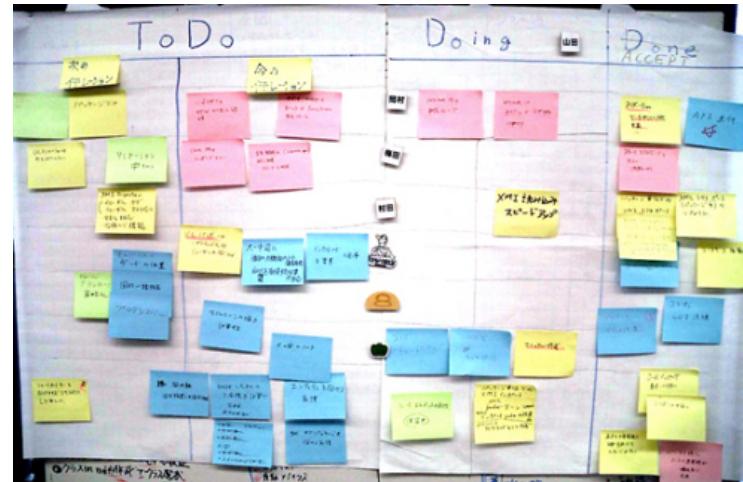
## • Code Review

# Build & Deployment

---



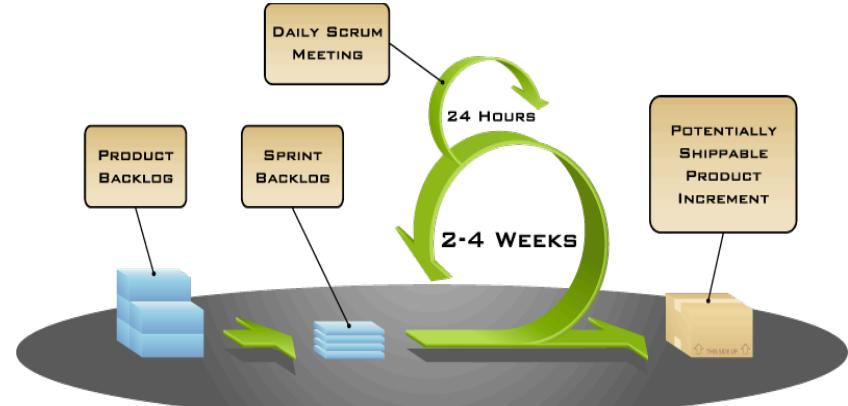
# Track the Development Progress



- Daily Scrum

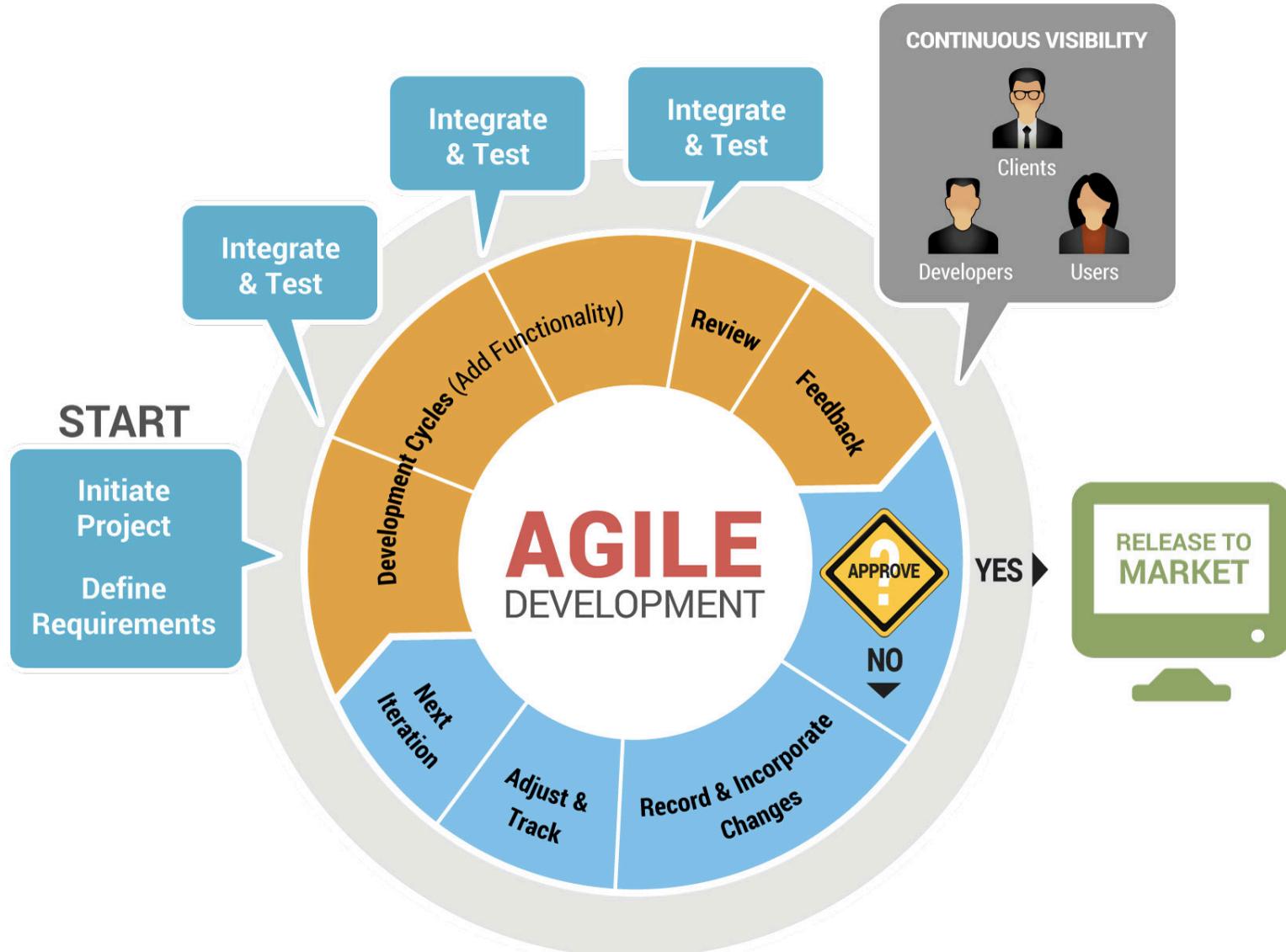


- Sprint Meeting

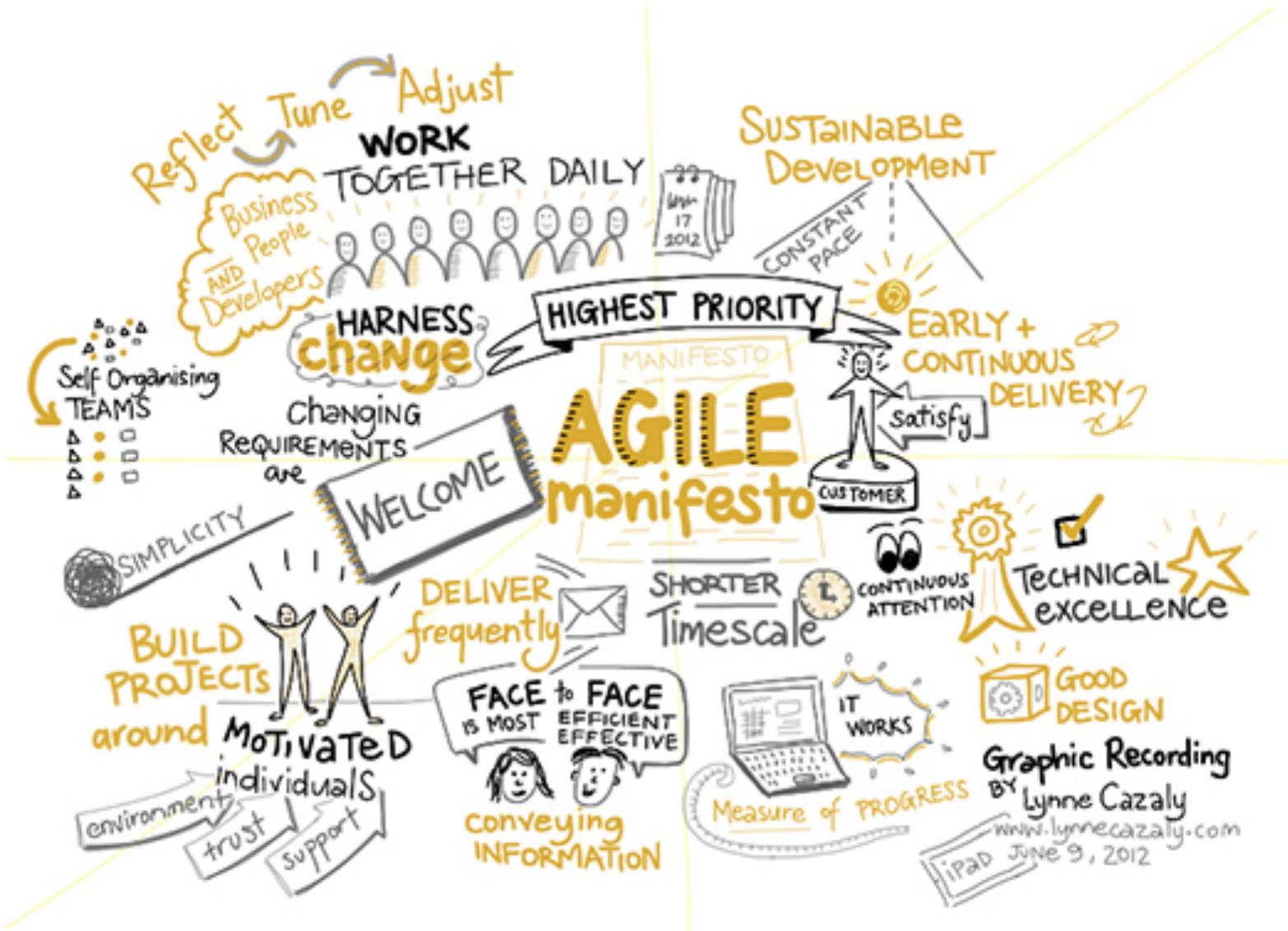


COPYRIGHT © 2005, MOUNTAIN GOAT SOFTWARE

# Agile Development



# Agile Development



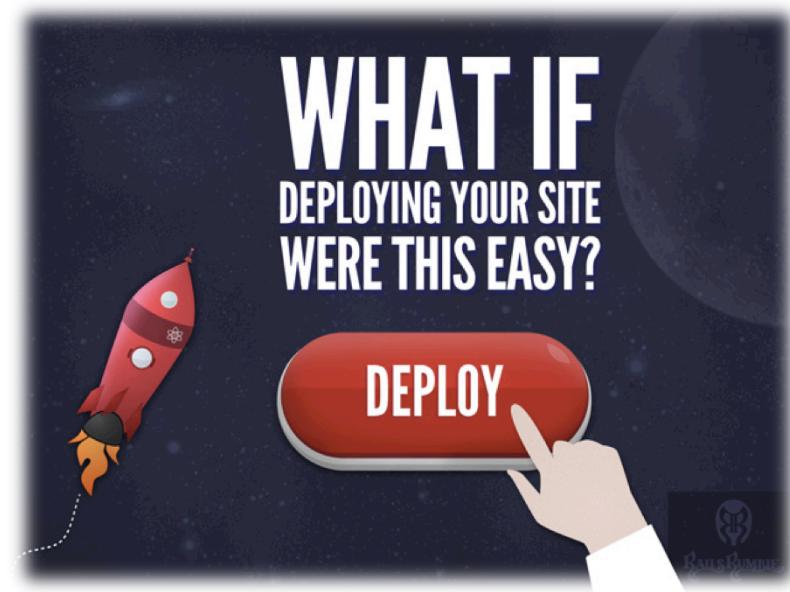
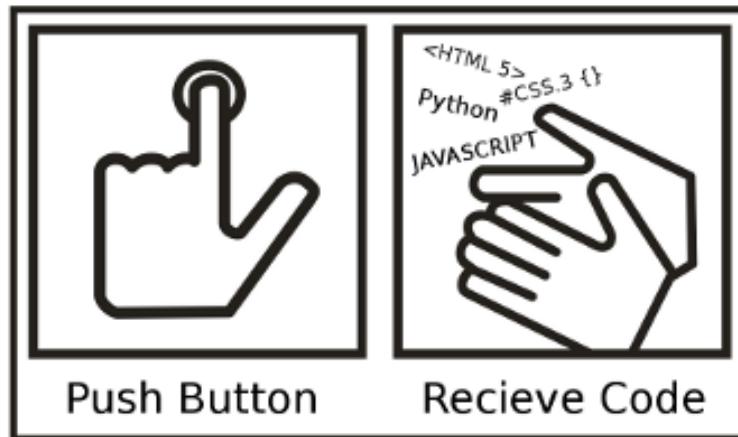
# Agile is NOT Trivial

---



# How to Ensure Fast Deployment?

---



# How to Ensure Quality?

---



# How to Manage Cycles in Large-Scale?

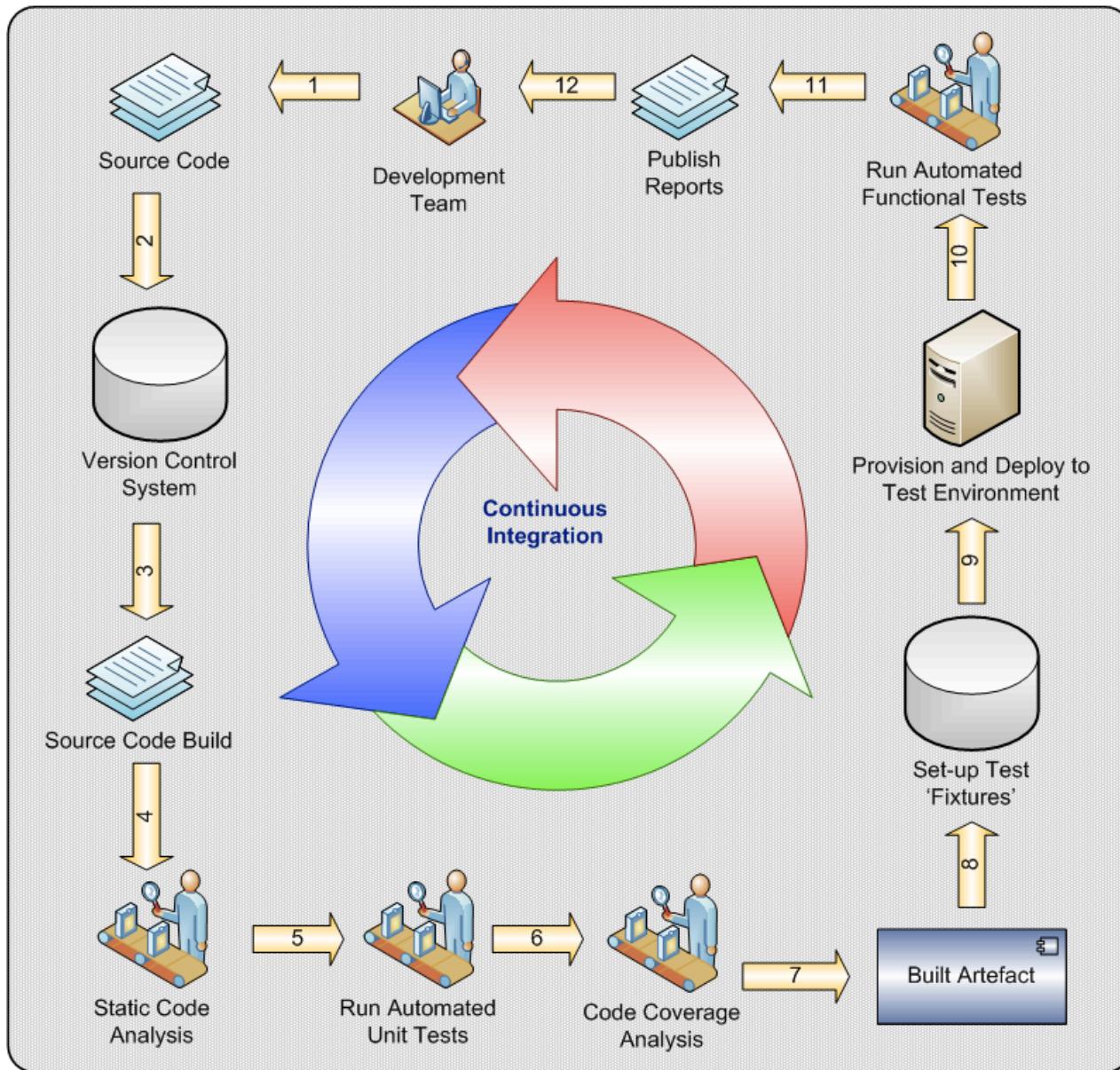
---

Amazon's deployment service (Apollo)

Pushed **50 million** deployments in the last 12 months  
(95 every minute)

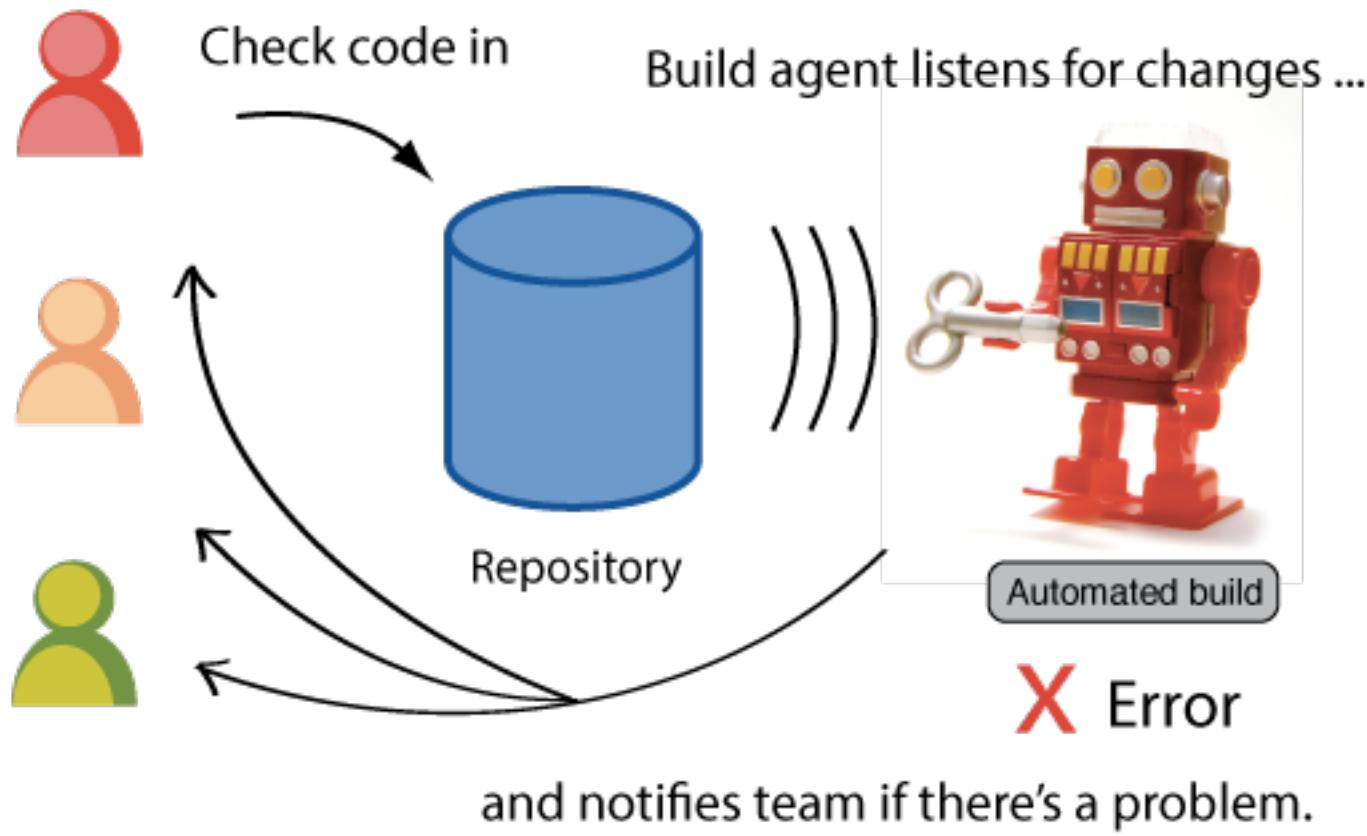


# Continuous Integration

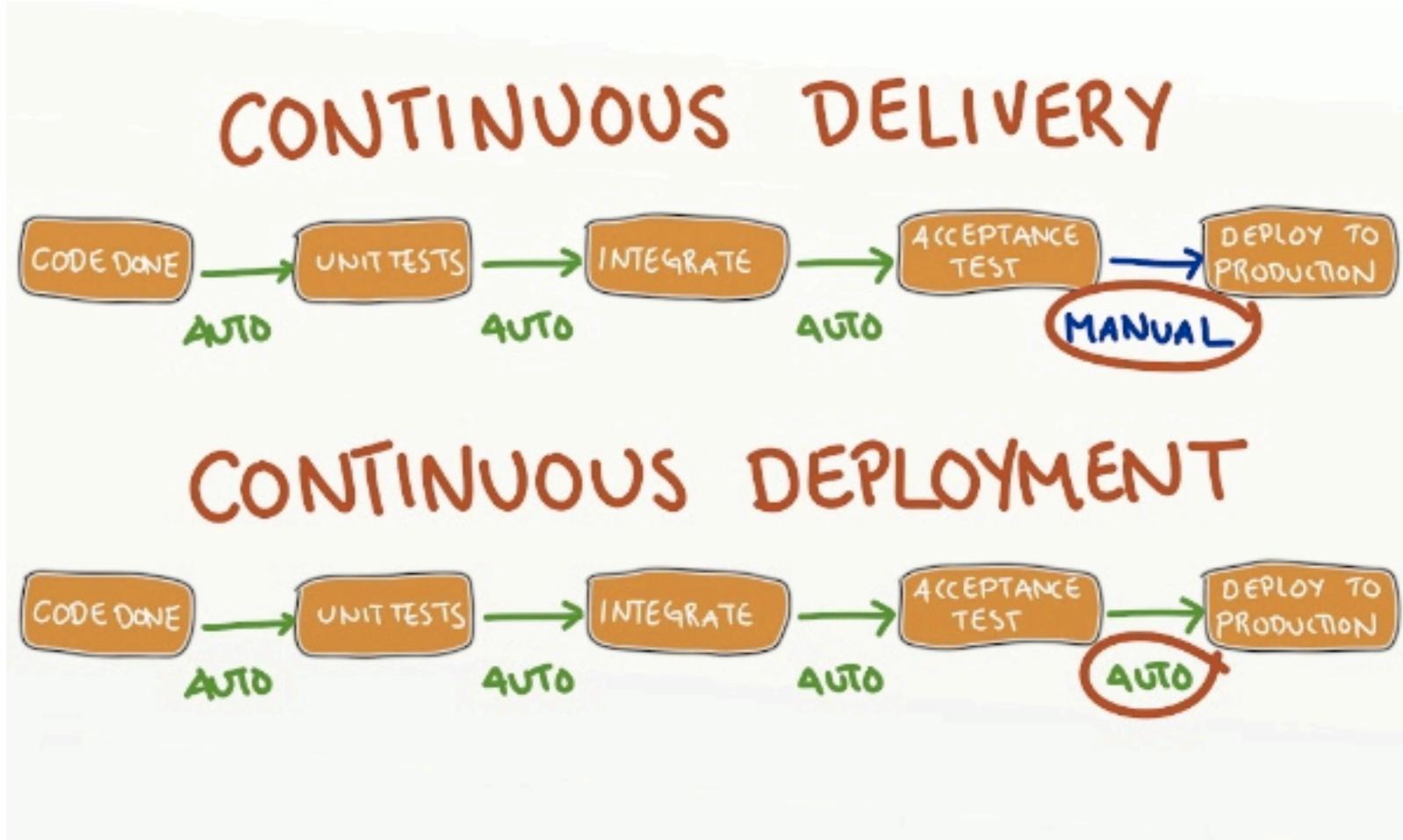


# Automated Build and Testing

Developers



# Automated Deployment



# Centralized Management

---



# Goal of Continuous Integration

---

