

**MICHIGAN STATE**  

---

**UNIVERSITY**

# Alpha Presentation

## Integration & Testing Suite for ADAS Sensors

### The Capstone Experience

Team Bosch

Jana Holderbaugh

Jesse McClay

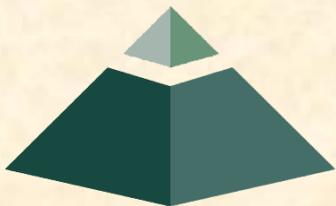
Evan Martin

Wei Li

Nick Grenn

Department of Computer Science and Engineering  
Michigan State University

Fall 2019



*From Students...  
...to Professionals*

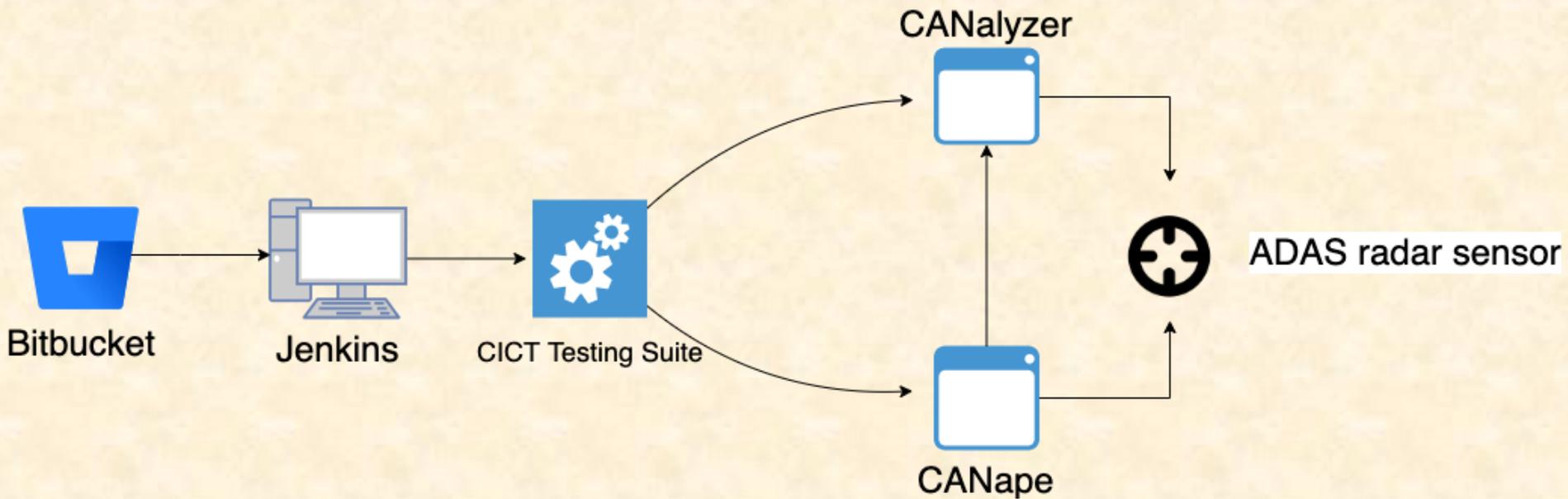
# Project Overview

---

- Bosch developers are working on code for their Advanced Driver Assistance System radars
- We are building a testing suite that will automate flashing of new hexcode onto radars
- Certain hardware tests will run in testing suite before a sensor gets to a vehicle
- Saves crucial time in development process



# System Architecture



# Pipeline Dashboard

The screenshot shows the Jenkins Pipeline Dashboard in a web browser. The browser address bar shows 'localhost:8080/blue/pipelines/'. The Jenkins logo is in the top left, and navigation tabs for 'Pipelines' and 'Administration' are in the top right. A 'Logout' button is also visible. Below the navigation is a search bar for 'Pipelines' and a 'New Pipeline' button. A 'Favorites' section highlights the 'teambosch' pipeline with a green bar, showing it is on the 'master' branch and was last updated 'a day ago'. Below this is a table of pipelines with columns for NAME, HEALTH, BRANCHES, and PR.

NAME	HEALTH	BRANCHES	PR
bosch_bitbucket_freestyle		-	-
teambosch		1 failing	-
boschradarsoftware		-	-
boschradartesting		-	-

1.19.0 · Core 2.176.3 · e743640 · 3rd September 2019 04:20 PM



# Successful Pipeline Build

The screenshot displays the Jenkins pipeline build interface for a pipeline named 'bosch\_multibranch\_pipeline'. The interface shows a successful build with a duration of 14 seconds. The build is triggered by a 'Branch event' on the 'test' branch, with commit '068d238'.

The pipeline flow diagram illustrates the following steps:

- Start
- Build (Successful)
- Parallel execution of:
  - Python Tests (Successful)
  - Radar Test 1 (Successful)
  - Radar Test 2 (Successful)
- Google Tests (Successful)
  - Google Test 1 (Successful)
  - Google Tests (Successful)
- End

The console output shows the following message:

```
Google Tests / Google Tests - <1s  
✓ > Running Google Tests — Print Message <1s
```



# Failed Pipeline Build

The screenshot shows a Jenkins pipeline build interface. The pipeline is named "teambosch" and is currently on branch "test". The build was triggered by a "Branch event" and is 14 seconds old. The pipeline consists of the following stages:

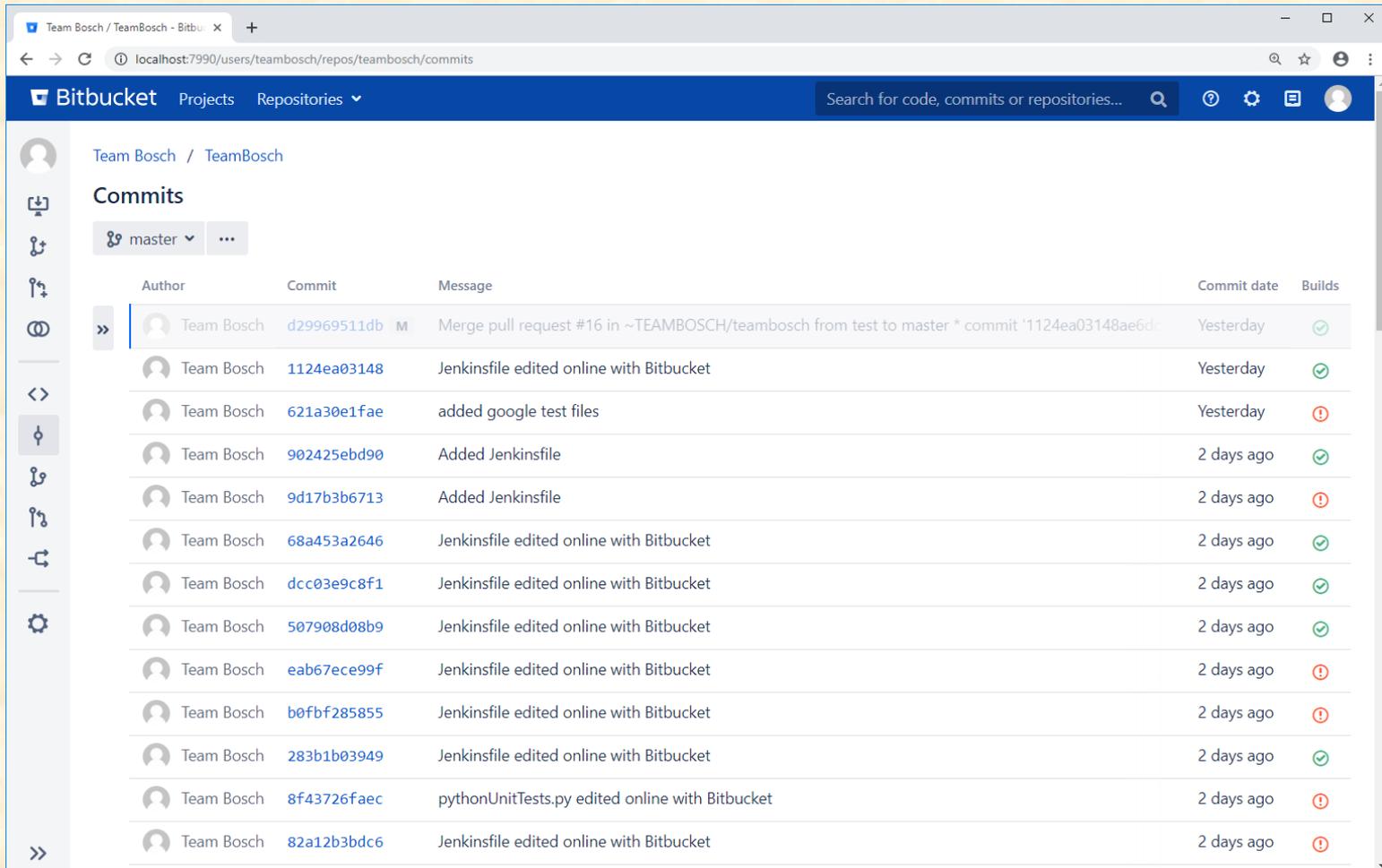
- Start
- Build (Successful)
- Python Tests (Failed)
  - Python Tests (Successful)
  - Radar Test 1 (Failed)
  - Radar Test 2 (Failed)
- Google Tests (Skipped)
- End

The console output for the failed "Radar Test 1" step is as follows:

```
Python Tests / Radar Test 1 - <1s
x > python pythonUnitTests.py -- Windows Batch Script <1s
✓ > Notify Bitbucket Instance <1s
```



# Bitbucket Build Statuses



The screenshot shows the Bitbucket interface for the 'Team Bosch' repository. The 'Commits' section is active, displaying a list of commits. The table below summarizes the visible data from the screenshot.

Author	Commit	Message	Commit date	Builds
Team Bosch	d29969511db	Merge pull request #16 in ~TEAMBOSCH/teambosch from test to master * commit '1124ea03148ae6d...	Yesterday	✓
Team Bosch	1124ea03148	Jenkinsfile edited online with Bitbucket	Yesterday	✓
Team Bosch	621a30e1fae	added google test files	Yesterday	⊘
Team Bosch	902425ebd90	Added Jenkinsfile	2 days ago	✓
Team Bosch	9d17b3b6713	Added Jenkinsfile	2 days ago	⊘
Team Bosch	68a453a2646	Jenkinsfile edited online with Bitbucket	2 days ago	✓
Team Bosch	dcc03e9c8f1	Jenkinsfile edited online with Bitbucket	2 days ago	✓
Team Bosch	507908d08b9	Jenkinsfile edited online with Bitbucket	2 days ago	✓
Team Bosch	eab67ece99f	Jenkinsfile edited online with Bitbucket	2 days ago	⊘
Team Bosch	b0fbf285855	Jenkinsfile edited online with Bitbucket	2 days ago	⊘
Team Bosch	283b1b03949	Jenkinsfile edited online with Bitbucket	2 days ago	✓
Team Bosch	8f43726faec	pythonUnitTests.py edited online with Bitbucket	2 days ago	⊘
Team Bosch	82a12b3bdc6	Jenkinsfile edited online with Bitbucket	2 days ago	⊘



# What's left to do?

---

- Get CANape to open when Jenkins runs the script
- Verification of Radar flashing using CANalyzer
- Implement Google Tests into Jenkins
- Distributed computing for Jenkins tests
- Test failure notifications



# Questions?

---

?

?

?

?

?

?

?

?

?

