Mobile CI/CD at TomTom

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TOMTOM

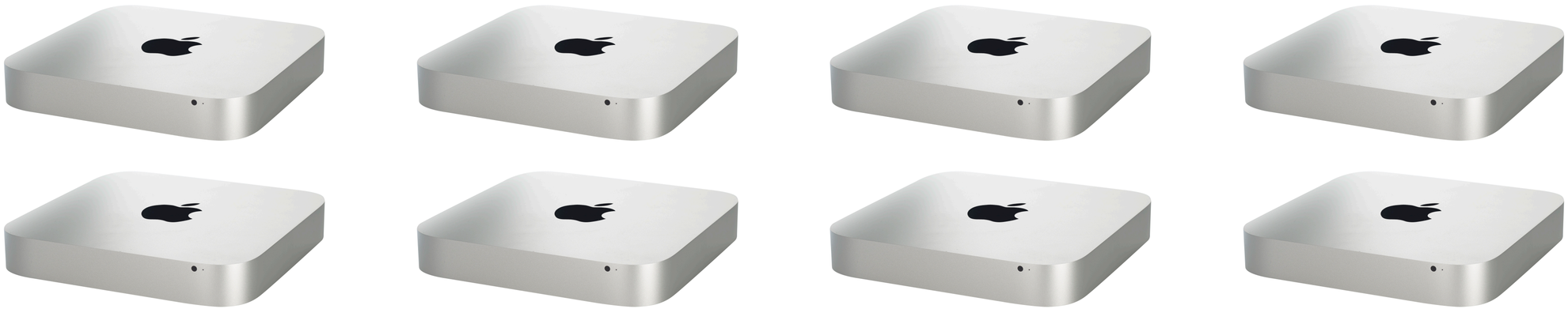
Agenda

1. Intro
2. Old setup
3. How we evolved: Fastlane integration
4. Benefits and examples
5. Q&A

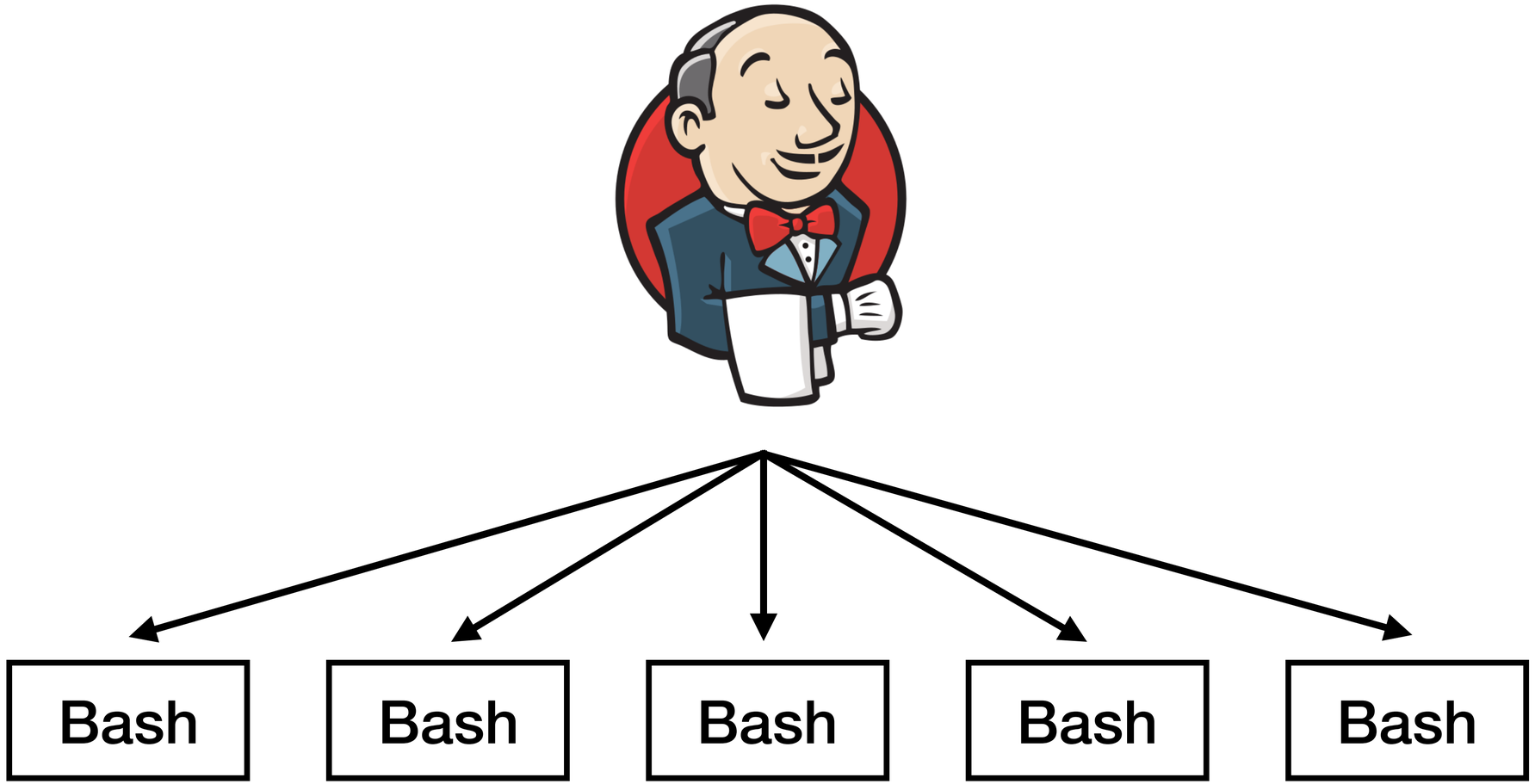
Our team

- 2 apps
- 4 locations
- 36 people in total

Our CI



3 years ago...



3 years ago...

xcodebuild build

3 years ago...

```
# xcodebuild will ignore the icon sets unless the timestamp is recent
touch "${TT_SOURCE_ROOT}/Resources/Images.xcassets/AppIcon.appiconset/"*.png

for CONFIGURATION in ${TT_IPA_BUILD_CONFIGURATIONS} ; do
    check_ccache_for_configuration ${CONFIGURATION}

    for BUNDLE_ID in ${TT_APP_BUNDLE_IDS} ; do
        BUILD_SUBPATH="build/${CONFIGURATION}-${TT_BUILD_PLATFORM}"
        PRODUCTS_SUBPATH="${BUILD_SUBPATH}/Products"
        INTERMEDIATES_SUBPATH="${BUILD_SUBPATH}/Intermediates"
        APP_SUBPATH="${PRODUCTS_SUBPATH}/${TT_APP_DISPLAY_NAME}.app"

        PLIST_SUBPATH="${TT_SOURCE_ROOT}/Classes/izmir-Info.plist"
        /usr/libexec/PlistBuddy -c "Set :CFBundleVersion ${TT_APP_BUILD_NUMBER_STRING}" "${PLIST_SUBPATH}"
        /usr/libexec/PlistBuddy -c "Set :CFBundleShortVersionString ${TT_APP_VERSION_STRING}" "${PLIST_SUBPATH}"
        /usr/libexec/PlistBuddy -c "Set :CFBundleDisplayName ${TT_APP_DISPLAY_NAME}" "${PLIST_SUBPATH}"
        /usr/libexec/PlistBuddy -c "Set :CFBundleIdentifier ${BUNDLE_ID}" "${PLIST_SUBPATH}"

        if [ "$CONFIGURATION" == "Debug" ]; then
            CODE_SIGN_IDENTITY="iPhone Developer"
            PROVISIONING_PROFILE=""
        elif [ "$CONFIGURATION" == "Release" ]; then
            CODE_SIGN_IDENTITY=""
            PROVISIONING_PROFILE=$(for f in ~/Library/MobileDevice/Provisioning\ Profiles/* ; do grep -e "${BUNDLE_ID}" "$f" >/dev/null && security cms -D -i "$f" | perl -pe
                's/(data|date)>/string>/g' | plutil -convert json -r - -o -  | perl -MJSON::PP -we 'my $bundleID = shift @ARGV; use strict; my $profile =
                decode_json(join("",<>)); my $UUID = $profile->{UUID}; die "Missing UUID for profile\n" unless $UUID; my $testflight = $profile->{Entitlements}->{"beta-reports-
                active"} || 0; my $development = $profile->{Entitlements}->{"get-task-allow"}; my $appID = $profile->{Entitlements}->{"application-identifier"}; my $name =
                $profile->{Name}; do { warn "Matched provisioning profile $UUID ($name)\n" ; print $UUID; exit 0 } if !$testflight && !$development && $appID =~ m/^\w+\.
                $bundleID/; exit 1' "${BUNDLE_ID}" && break ; done || true)
            test -z "${PROVISIONING_PROFILE}" && errorlog "buildProblem: could not find matching Ad-Hoc profile" && teamcitylog "buildProblem: could not find matching Ad-Hoc
                profile" && exit 1
        else
            errorlog "buildProblem description='Wrong build configuration'"
            teamcitylog "buildProblem description='Wrong build configuration'"
            exit 1
        fi

        xctool \
            -workspace ${TT_SOURCE_ROOT}/${TT_PROJECT_NAME}.xcworkspace \
            -scheme ${TT_PROJECT_NAME} \
            -sdk iphoneos \
            CODE_SIGN_RESOURCE_RULES_PATH='${TT_SOURCE_ROOT}/Resources/ResourceRules.plist' \
            -showTasks \
            -configuration ${CONFIGURATION} \
            -reporter pretty \
            DEBUG_INFORMATION_FORMAT=dwarf-with-dsym \
            TT_BUILD_IS_INTERNAL=${CF_BUILD_IS_INTERNAL} \
            TT_ENABLE_CRASHLYTICS=${CF_ENABLE_CRASHLYTICS} \
            POLYGLOT=${TT_ENABLE_POLYGLOT} \
            CODE_SIGN_IDENTITY="${CODE_SIGN_IDENTITY}" \
            PROVISIONING_PROFILE="${PROVISIONING_PROFILE}" \
            clean build \
            CONFIGURATION_TEMP_DIR="${TT_SOURCE_ROOT}/${INTERMEDIATES_SUBPATH}" \
            CONFIGURATION_BUILD_DIR="${TT_SOURCE_ROOT}/${PRODUCTS_SUBPATH}" \
            | grep -v -E '✓.*(Compile|Copy|Remove)|Libs.*Resources|SceneRendererData|\.png|write-file|chmod|Mapping of.* found in'

        if ! test ${PIPESTATUS[0]} -eq 0
        then
            teamcitylog "buildProblem description='Generate IPA: xctool failed.'"
            exit 1
        fi

        SYMBOLS_JSON_PATH="${TT_SOURCE_ROOT}/symbols_${CONFIGURATION}.json"
        if [ -e "${SYMBOLS_JSON_PATH}" ]; then
            teamcitylog "publishArtifacts '${SYMBOLS_JSON_PATH}'"
        fi

        mkdir -p Products
        PRODUCT_BASENAME="${TT_APP_DISPLAY_NAME}-${BUNDLE_ID}-${BUILD_NUMBER}-${CONFIGURATION}"
        rm -rf Payload && mkdir Payload && ln -s "${TT_SOURCE_ROOT}/${APP_SUBPATH}" Payload && zip -1qr "Products/${PRODUCT_BASENAME}.ipa" Payload
        tar -C ${TT_SOURCE_ROOT} -jcf "${TT_SOURCE_ROOT}/${PRODUCT_BASENAME}.dSYM.tar" ${APP_SUBPATH}.dSYM
        teamcitylog "progressMessage description='Generated product ${PRODUCT_BASENAME}.'"
    done
done
```

3 years ago...

- 1000 lines of bash code
- No version control
- Hard to maintain
- Easy to break

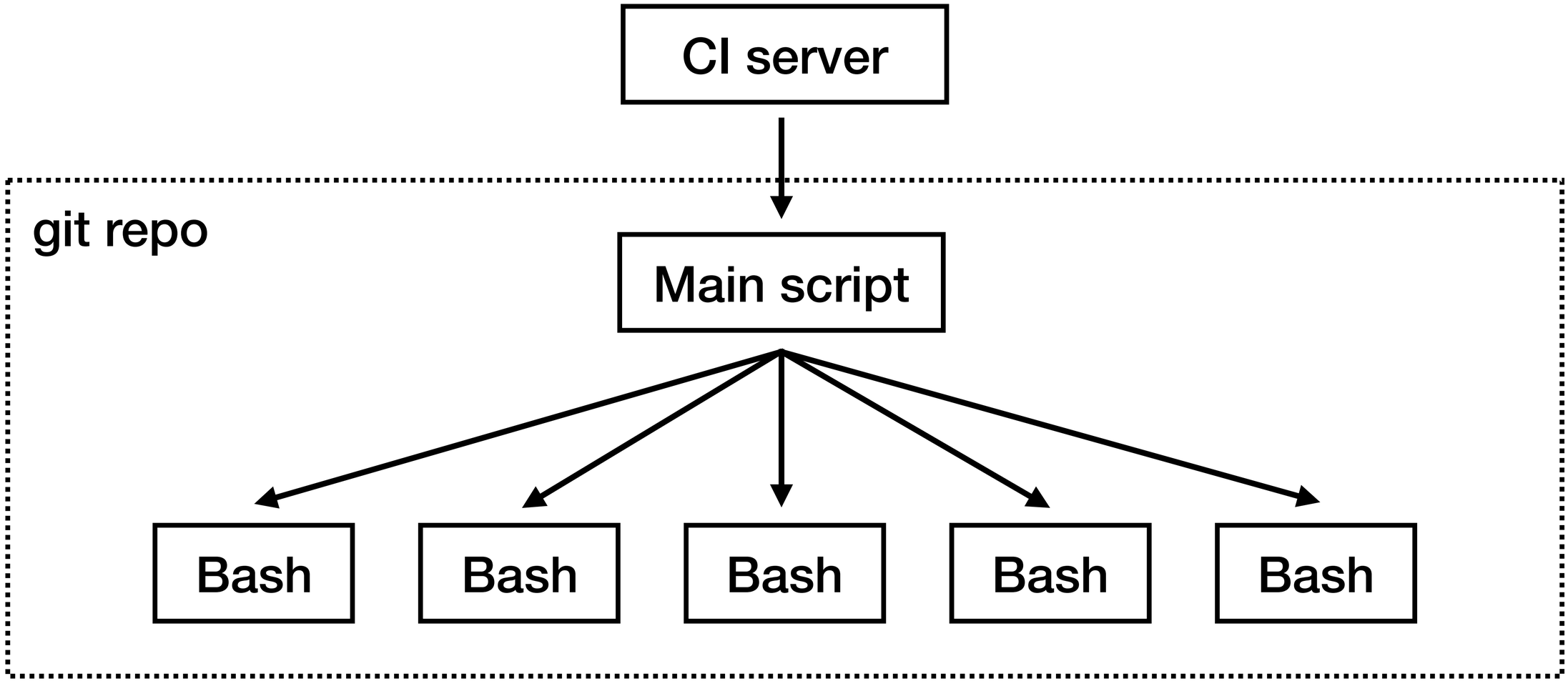
3 years ago...

That's enough!

Journey begins

- Move scripts to our repo
- Simplify setup on CI server as much as possible

One script to rule them all



One script to rule them all

One script to rule them all

- Swift is not a scripting language

One script to rule them all

- Swift is not a scripting language
- Breaks with every Xcode update


fastlane

fastlane

scan

Pilot

gym

deliver

snapshot

sigh

match


fastlane


deliver

fastlane

scan

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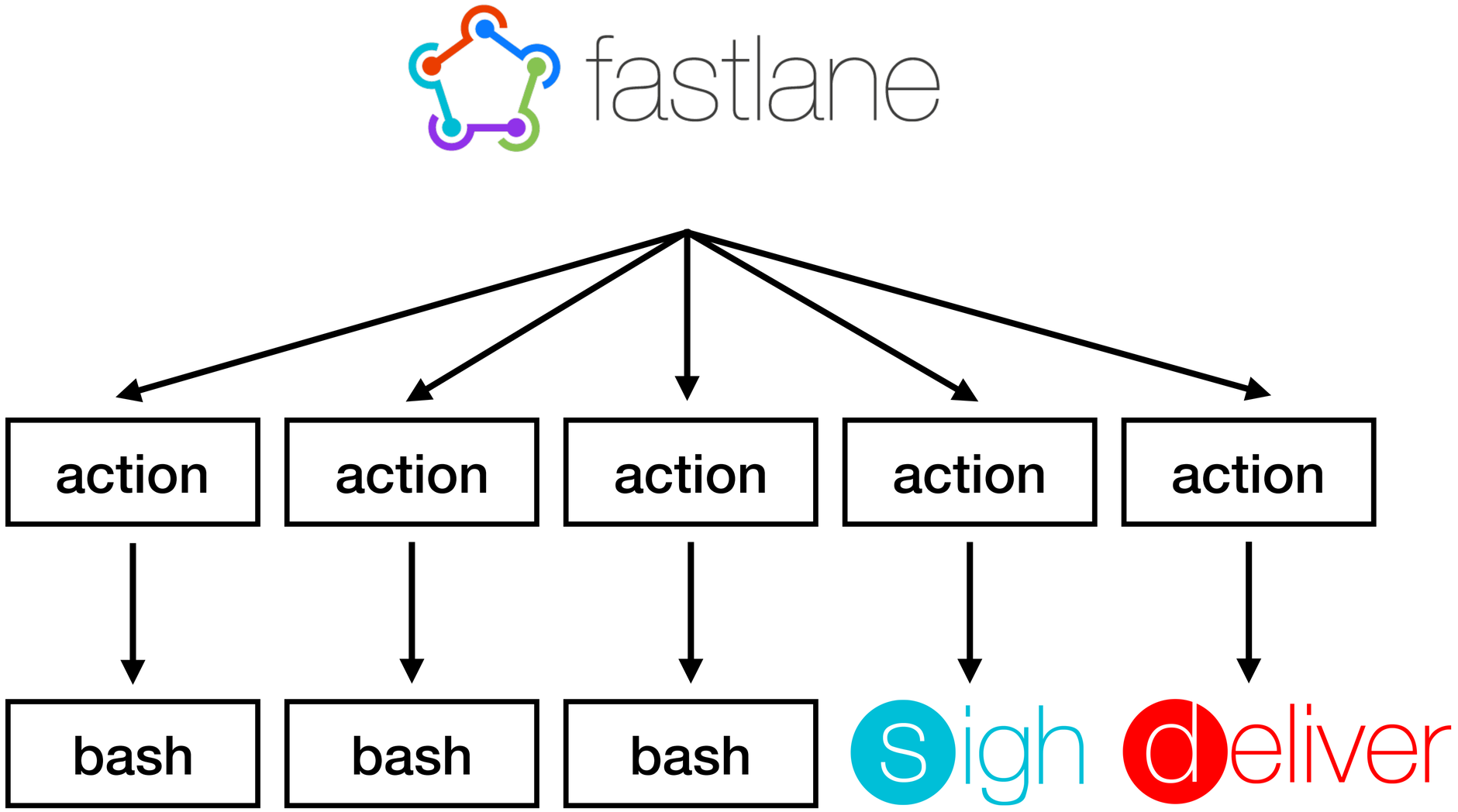
fastlane
action
action
action
action
action
bash
bash
bash
sigh
deliver


```
module Actions
    class TtIpaAction < Action
        def self.run(params)
            sh './Tools/install/generateIpa.sh'
        end
    end
end
```


```
module Actions
    class TtAppstoreAction < Action
        def self.run(params)
            config = params[:config]

            team_id = config[Config::DEVELOPMENT_TEAM]
            ipa = TTCommon.ipa_path_for_itunesconnect(config, team_id)

            other_action.appstore(
                app_identifier:    config[Config::BUNDLE_ID],
                username:          config[Config::ITUNES_AUTOMATION_USERNAME],
                team_id:           team_id,
                ipa:               ipa,
                app_version:       config[Config::APP_VERSION],
            )
        end
    end
end
```


```
desc 'Generate ipa and do all related actions if needed (like resigning ipa for the App Store distribution).'
lane :build do
    if config[Config::MARK_ICON]
        tt_icon
    end

    tt_ipa

    if config[Config::RESIGN]
        tt_resign
    end

    if config[Config::ENTERPRISE_RESIGN]
        tt_enterprise_resign(config: config)
    end
end
```


```
desc 'Do various post-build actions, like uploading to iTunesConnect, etc. Primarly used on CI.'
lane :postbuild do
    if config[Config::RUN_ANALYSIS]
        tt_analysis
    end

    if config[Config::CRASHLYTICS_BETA_UPLOAD]
        tt_crashlytics_beta(config: config)
    end

    if config[Config::TESTFLIGHT_PUBLISH]
        tt_testflight(config: config)
    end

    if config[Config::APPSTORE_PUBLISH]
        tt_appstore(config: config)
    end

    if config[Config::SLACK_ON_SUCCESS]
        tt_slack(config: config)
    end
end
```

Config

```
base:
    # Server environment to use.
    # Values: staging, preproduction, production
    environment: staging

    # Is build internal or not.
    # Internal builds includes logging, debug menu and other debug features.
    internal_build: true

    # Send crash reports to Crashlytics.
    crashlytics: false

    # Possible values: "default" or Xcode version string: "10.0", "9.4.1", etc.
    xcode_version: "default"

    ...
```

Config

```
tc_app_a_testflight:
    include_config: base

    internal_build: false
    build_configuration: release
    resign: true
    testflight_publish: true
    slack_on_success: true
```

Config

```
tc_app_a_testflight:
    include_config: base

    internal_build: false
    build_configuration: release
    resign: true
    testflight_publish: true
    slack_on_success: true
```

On TeamCity:

Custom script: *

Enter build script content:

```
bundle exec fastlane ci_job config:tc_app_a_testflight
```

On TeamCity

App A Debug

App A Smoke Tests

App A TestFlight

App A AppStore

App B Debug

App B Unit Tests

App A Crashlytics

App A TestFlight

On TeamCity

App A Debug

Enter build script content:

```
bundle exec fastlane ci_job config:tc_app_a_debug
```

App A Smoke Tests

Enter build script content:

```
bundle exec fastlane ci_job config:tc_app_a_smoke_tests
```

App A TestFlight

Enter build script content:

```
bundle exec fastlane ci_job config:tc_app_a_testflight
```

App A AppStore

Enter build script content:

```
bundle exec fastlane ci_job config:tc_app_a_appstore
```

App B Debug

Enter build script content:

```
bundle exec fastlane ci_job config:tc_app_b_debug
```

App B Unit Tests

Enter build script content:

```
bundle exec fastlane ci_job config:tc_app_b_unit_tests
```

App A Crashlytics

Enter build script content:

```
bundle exec fastlane ci_job config:tc_app_b_crashlytics
```

App A TestFlight

Enter build script content:

```
bundle exec fastlane ci_job config:tc_app_b_testflight
```

Dev perspective

```
./install.sh
```

Dev perspective

```
./install.sh

./install.sh environment:preproduction internal_build:false
```

Dev perspective

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./install.sh

./install.sh environment:preproduction internal_build:false

./install.sh config:tc_app_a_smoke_tests
```

Dev perspective

```
./install.sh

./install.sh environment:preproduction internal_build:false

./install.sh config:tc_app_a_smoke_tests

bundle exec fastlane ci_job config:tc_app_a_smoke_tests xcode:10.0
```

Benefits

- Simple setup
- Good scalability
- Easy to adjust for any needs
- Faster on-boarding
- No dependencies on specific CI server

Questions?

Contact info: https://dvor.me