



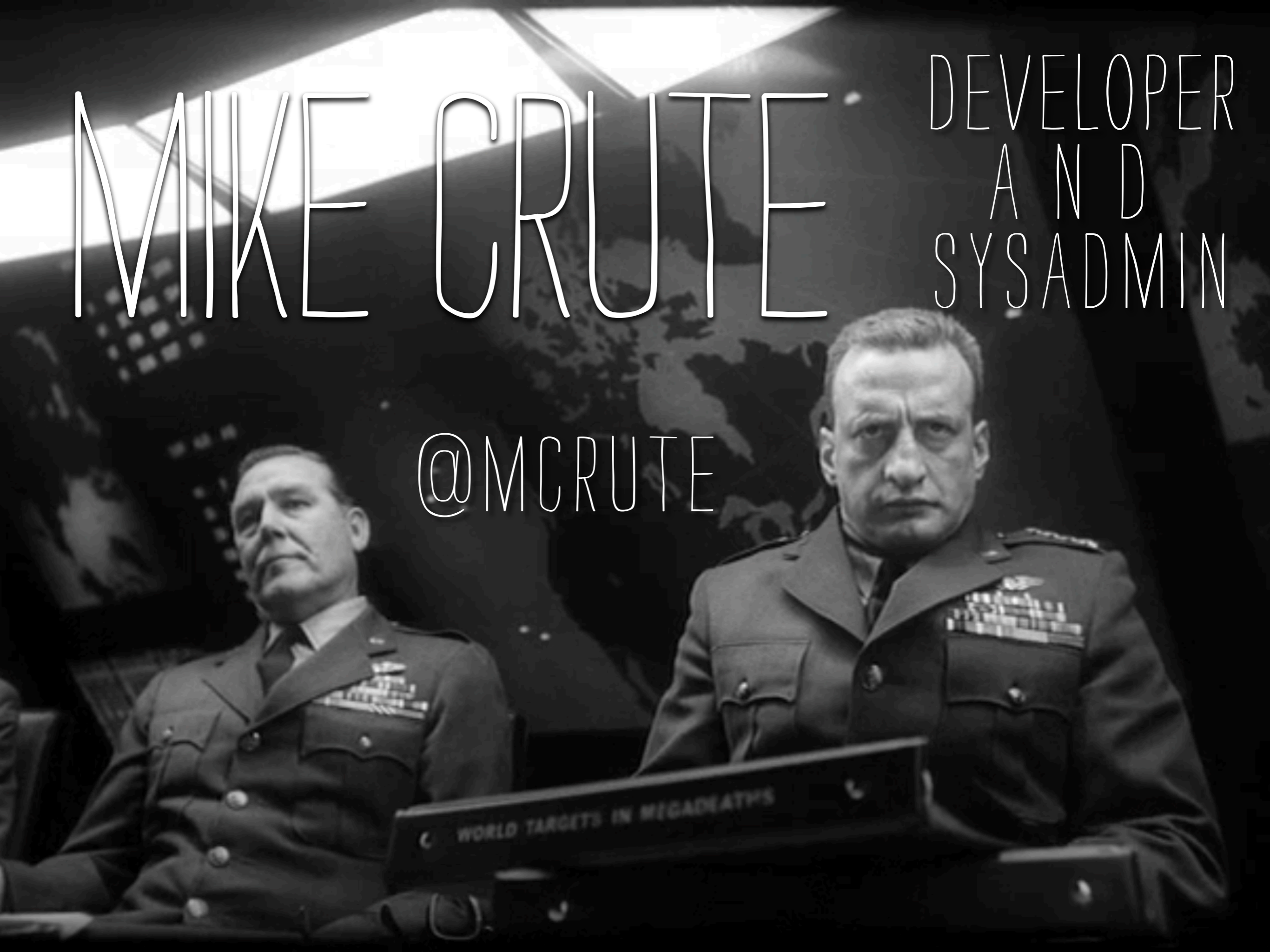
# DEVOPS

OR:  
HOW I  
LEARNED  
TO STOP  
WORRYING  
AND  
LOVE THE  
OPS TEAM

# MIKE CRUTE

DEVELOPER  
AND  
SYSADMIN

@MCRUTE



- 
- WHAT IS DEVOPS?
  - BASIC TOOLS
  - APPLICATION DEPLOYMENT
  - RUNTIME MONITORING
  - DEBUGGING THE APPLICATION

# WHAT IS DEVOPS?

U.S. AIR FORCE



# DEVELOPERS



# DEVELOPERS

- KINDA STRANGE
- LOVE SHINY NEW THINGS
- ALWAYS BREAKING MY SERVERS





ADD FEATURES TO THE SYSTEM

# OPERATIONS





# OPERATIONS

- PULL THE LEVERS AND PUSH THE BUTTONS
- EASILY EXCITED
- YELL A LOT DURING EMERGENCIES
- SAY "NO" ALL THE TIME



KEEPS THE SYSTEM STABLE AND  
FAST

# DEVOPS



# DEVOPS

- OPS WHO THINK LIKE DEVS
- DEVS WHO THINK LIKE OPS





ENABLE THE BUSINESS

A black and white photograph of a man in a dark suit and tie, sitting at a desk in a server room. He is holding a mobile phone to his ear with his right hand. The desk in front of him has a large, multi-line office phone, a laptop, and some papers. In the background, there are rows of server racks with various cables and equipment. The lighting is somewhat dim, and the overall tone is professional and focused.

LOWERING THE RISK OF CHANGE  
THROUGH TOOLS AND CULTURE



IT'S ABOUT COMMUNICATION

A black and white photograph of a man in a military uniform sitting at a desk in a control room. He is holding a telephone receiver to his ear. The room is filled with various pieces of electronic equipment, including a large console with many buttons and a keyboard in the foreground. In the background, there are several racks of equipment with circular dials and labels. The overall atmosphere is professional and focused.

USEFUL AT ANY SIZE COMPANY



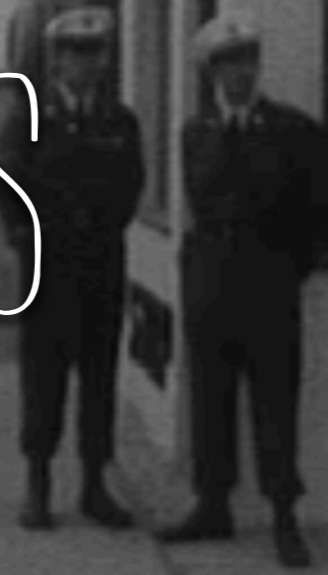
# BASIC TOOLS

NO WINE WITH STRATEGIC AIR COMMAND  
*Peace*  
IS OUR  
PROFESSION

PEACE IS OUR PROFESSION  
STRATEGIC AIR COMMAND  
**BURPELSON**  
AIR FORCE BASE  
RE-EMBARKMENT SOON

AFTER THE WRECK  
COMES THE ACCOUNTING

**STOP**



# SHARED VERSION CONTROL

- CONFIGS AND CODE LIVE IN THE SAME PLACE
- ANYONE CAN SEE EVERYTHING
- GITHUB AND BITBUCKET ARE GREAT FOR THIS

# TESTING

- INTEGRATION TESTS FOR THE SYSTEM
- INTEGRATION TESTS FOR THE INFRASTRUCTURE
- END TO END TESTS FOR THE SYSTEM

# CONTINUOUS INTEGRATION



- BIG AND VISIBLE
- SHOW ALL THE BUILDS AND TESTS
- CAN EVEN USE THIS TO TRIGGER RELEASES

# INTEGRATION ENVIRONMENTS



- STAGING ENVIRONMENT
- SHOULD LOOK LIKE PRODUCTION
- DEVELOPERS SHOULD BE ABLE TO DEPLOY HERE
- DEVELOPERS HAVE ROOT HERE

**CAUTION**  
EXPLOSIVE BOLTS—BOMB DOORS

SAFE

SAFE

# APPLICATION DEPLOYMENT

CAUTION

FIRING SWITCH

INSTRUCTIONS  
1. HOLD COVER OFF  
2. PULL HANDLE (CENTER)  
3. SWITCH DOWN  
4. RELEASE HANDLE BY  
MOVING EITHER SIDE. CAUTION

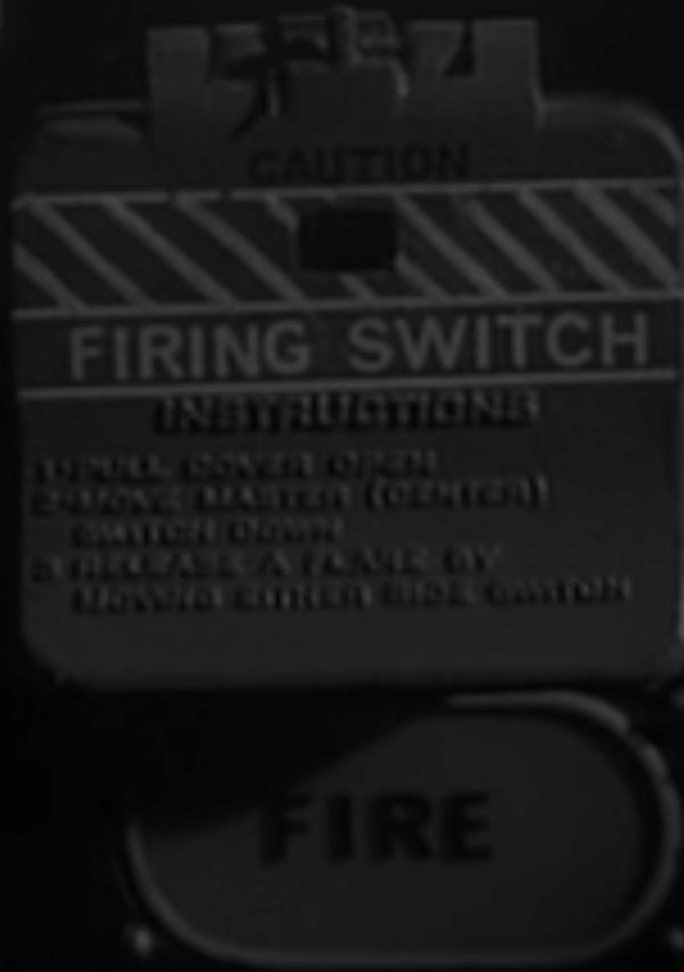
FIRE

# TOOLS OF THE TRADE

- CONFIGURATION MANAGEMENT TOOLS
- PACKAGE MANAGERS

# CONFIGURATION

- STATIC CONFIGURATION
- PER ENVIRONMENT CONFIG
- SERVICE LOCATIONS
- SECRETS





# DEPLOYMENT TECHNIQUES

- BY HAND
- RSYNC
- BITTORRENT
- DISTRIBUTION PACKAGE MANAGERS

SAFE

SAFE

FIRING SWITCH

INSTRUCTIONS

1. PULL COVER OFF  
2. PULL HANDLE (CENTER)  
3. SWITCH DOWN  
4. RELEASE HANDLE BY  
MOVING EITHER SIDE. CAUTION

FIRE

# SCALING

- PORTABLE CODE
- ISOLATE UNRELATED SERVICES
- SWITCHES/GRACEFUL DEGRADATION (GARGOYLE)





# RUNTIME MONITORING

# TOOLS OF THE TRADE

- LOG MANAGEMENT (SPLUNK)
- REALTIME MONITORING (NAGIOS)
- STATISTICS COLLECTION (STATSD, GANGLIA)
- VISUAL/GRAPHING TOOLS (CACTI, MRTG)
- SCRIPTABLE INTERFACES (REST/CURL, SNMP)

# LOGGING

- ISOLATION OF SUBSYSTEMS / GRANULAR CONFIGURATION
- USE LEVELS CORRECTLY
- GREP IS KING
- SESSION IDENTIFICATION

# DON'T BE PRETTYLOG

```
+-----+  
| D | 2012-07-28 07:51:38 | UCS | 6578 | 1922 |  
|-----|  
| credit_card.processor |  
|-----|  
| <e>f7fbba6e0636f890e56fb...</e> |  
+-----+
```

# DON'T BE PRETTYLOG

```
./bin/de_prettylog.py  
./bin/unpretty.py  
./bin/wtfprettylog.py
```

# EXCEPTION TRACKING

- TRACK ALL EXCEPTIONS
- SENTRY
- NEW RELIC
- BUG TRACKER INTEGRATION



# STATISTICS

- PROVIDE STATISTICAL INFORMATION WHEN POSSIBLE
- NOT EVERYTHING HAS TO BE AGGREGATED

# NAGIOS

- SIMPLE PING TESTS
- HTTP CHECKS
- PASSIVE CHECKS
- CUSTOM ACTIVE CHECKS

# SNMP

- STANDARD COLLECTION INTERFACE
- CAN PROVIDE INDIVIDUAL STATS OR COLLECTIONS OF STATS
- WORKS NICELY WITH CACTI
- NET-SNMP IS EASY TO EXTEND

# MANAGING ERRORS

- REPETITIVE ERRORS ARE DEATH
- SOMETIMES FIXES AREN'T POSSIBLE WITHOUT MOVING CODE
- HAVE SOME WAY TO SILENCE ERRORS TEMPORARILY
- CONTINUE LOGGING SILENCED ERRORS

# DEBUGGING

NUCLEAR WARHEAD  
HANDLE WITH CARE

HI THERE!

NUCLEAR WARHEAD  
HANDLE WITH CARE

DEAR JOHN

# TOOLS OF THE TRADE

- GREP
- MSSH
- SPLUNK
- FILTERS / PETIT / ARTIFICIAL IGNORANCE
- MANAGEMENT INTERFACES

# LOGGING

- PROVIDE DETAILED LOG BOXES FOR EACH ROLE
- SHOULD LOG EVERYTHING AT DEBUG LEVEL
- RUNS ~10% OF PRODUCTION TRAFFIC

# CONSOLE

- INTERACTIVE SHELL TO POKE THE APPLICATION
- INTERACTIVE DATABASE SHELLS
- SHOULD HAVE READ/WRITE ACCESS



# SCRIPT EVERYTHING

- COMMON TASKS SHOULD BE SCRIPTED
- SCRIPTS SHOULD BE RUNNABLE BY SUPPORT TEAMS
- DOCUMENT YOUR SCRIPTS
- COMMIT THOSE SCRIPTS

# MANAGEMENT INTERFACES

- EMPOWER USERS TO SOLVE THEIR OWN PROBLEMS
- DON'T OVERWHELM THEM WITH DETAILS
- CODE MOVES SHOULD NOT BE NECESSARY



QUESTIONS?



THANK YOU