



🎯 DevOps@TGT

our journey to microservices
and the cloud

hello

1,795 stores

341,000 team members

54 years of service



6

HQ locations

38

distribution centers

3

data centers



heather mickman senior director platform engineering
@hmickman

topics
du jour

why

when

who

what

how



why
setting
the
stage

our scale of business continues
to grow

- team members
- transactions
- new business capabilities



when
not as
long ago
as it
feels



2012

2013

2014

2015

2016

change agents

grassroots

senior
leadership

CIO +
build out

architecture

who
change
agents

2012

2013

2014

2015

2016



what

core
concepts
& key
messages



2012

2013

2014

2015

2016

- continuous integration
- infrastructure as code
- social coding
- empowered + learning culture

we
believe
that to
succeed
...



**great things
never come
from comfort
zones**

**try and fail
but *never*
fail to try**

**whatever you
do, make it
great**

**I'm not here to be average,
I'm here to be *awesome***

results
realized
were
growth
in ...

2012 2013 2014 2015 2016

- # of APIs
- scale
- deployments
- Grassroots!





dawn of
a new
era ...

2012

2013

2014

2015

2016

**growing the
movement**

internally

- host 3 internal conferences: DevOps, Agile
- launch internal social media community

externally

- More present in the local tech community: DevOps Days Mpls, hackathons

.....

**delivering
important
results**

- 30 APIs
- 80 deployments per week
- monthly volume of +500M calls
- <10 incidents per month

2015

a big
year in
many
ways ...



- new CIO
- new operating model
- new org structure

mike mcnamara
chief information & digital officer



2012

2013

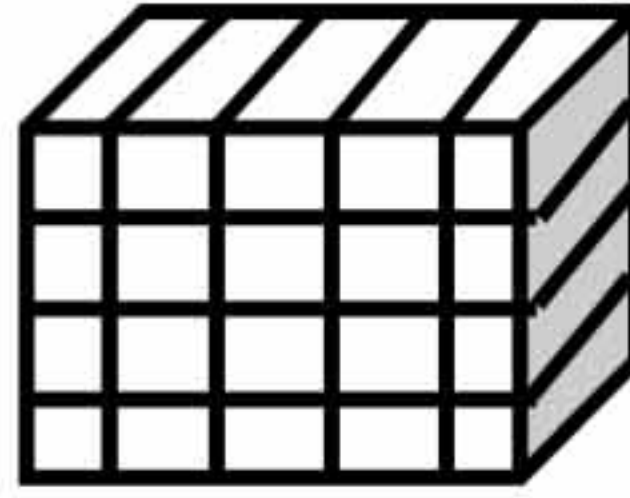
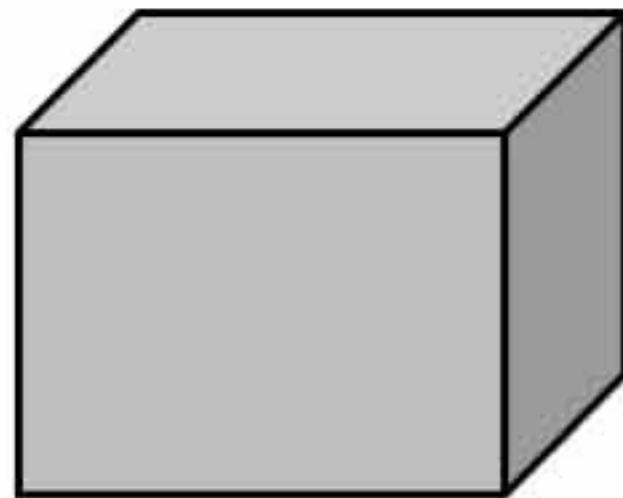
2014

2015

2016



two important "behind the scenes"
shifts



monolithic site
design to modular
components



transition cloud
providers
(telco to public)

valuable
insights
and
learning

2012

2013

2014

2015

2016

1

developers want to ship

not manage infrastructure

onboard time ~ 30 days

2

immutable infrastructure

give devs what they want

onboard time ~ 5 days

- remove friction points
- make everything self-service

how to engineer a cloud

2012

2013

2014

2015

2016



kubernetes



openstack™



Spinnaker



Grafana



elastic



kibana



GRAPHITE



VARNISH
CACHE



1 platform to manage
across public and private
clouds



2012 2013 2014 2015 2016

	fall/winter 2015	fall/winter 2016
deployment method(s)	config mgmt tool	spinnaker
# of platforms	1	1.5 ☺
# of teams	3	25
# of applications	3	42
# of deploys per day	2-3	90
# of minutes to production	~1,440	~5



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learn,
decide,
share,
and move
forward

2012

2013

2014

2015

2016

- continue learning from what went right and what could go better
- architecture decision to take everything to the cloud
- continue scaling the dojo to teach all the things



if asked
for
advice ...

be **CURIOUS**

never stop questioning, learn how to do something better

empower **CHANGE**

set an example ... do it

inspire **CULTURE**

empower the team and inspire learning

be **BOLD**

never settle for the status quo

be **ACCOUNTABLE**

own your failures with as much gusto as your successes



**follow our journey,
keep in touch**



@hmickman



#DOTGT