

SURVIVING MICROSERVICES

Minnesota Developers Conference 2018

October 3, Minneapolis, MN




Michele Leroux Bustamante
Solliance co-founder
Microservices / Security Architect

✉ michelebusta@solliance.net

🐦 [@michelebusta](https://twitter.com/michelebusta)



A white dog is sitting on the left side of the frame, looking towards the right. In the background, a throne made of many swords is visible. The scene is dimly lit, with a dark, moody atmosphere. The text is overlaid in the center of the image.

MOST SOLUTIONS
DO NOT NEED
“MICROSERVICES”

A Venn diagram consisting of three overlapping circles. The top circle is green and labeled 'Cheap'. The bottom-left circle is yellow and labeled 'Fast'. The bottom-right circle is light blue and labeled 'Good'. The circles overlap in the center, and the background is dark with a faint, repeating pattern of a person's legs and feet.

Cheap

Fast

Good

Cheap

It has to be

It cannot be

It will not be

Fast

Good





WHEN YOU PLAY THE GAME OF
MICROSERVICES

YOU PLAY
TO WIN

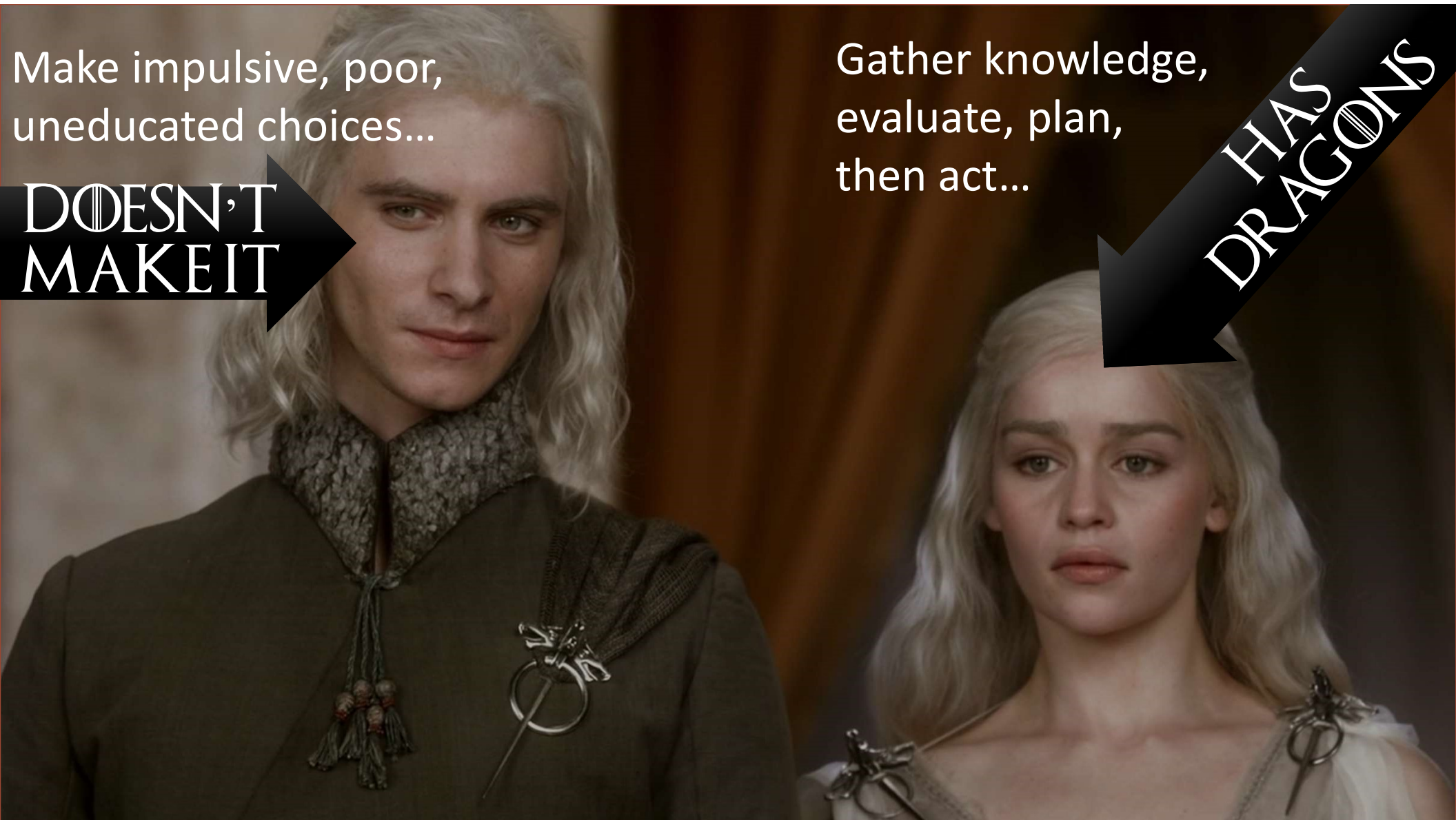
OR YOU
FAIL

Make impulsive, poor,
uneducated choices...

DOESN'T
MAKE IT

Gather knowledge,
evaluate, plan,
then act...

HAS
DRAGONS





What to Survive...

Why?

Design

Development

Troubleshooting

Eventual Consistency

Integration

Launch



MVP

The background of the image is a dark, atmospheric photograph of the Iron Throne from the television series Game of Thrones. The throne is constructed from a chaotic pile of swords and spears, with their blades and points protruding in all directions, creating a menacing and jagged silhouette. The lighting is low, highlighting the textures of the metal and the sharp edges of the weapons. Centered over this image is the text "SURVIVING 'WHY'" in a white, serif font. The word "SURVIVING" is in all caps and a larger font size than the word "WHY", which is also in all caps but enclosed in quotation marks. The overall mood is somber and contemplative.

SURVIVING
“WHY”

YOU HAD ME AT
“DOCKER”

Docker Momentum



450+

Docker EE
commercial
customers



37B

Container
downloads



15K

Job listings on
LinkedIn



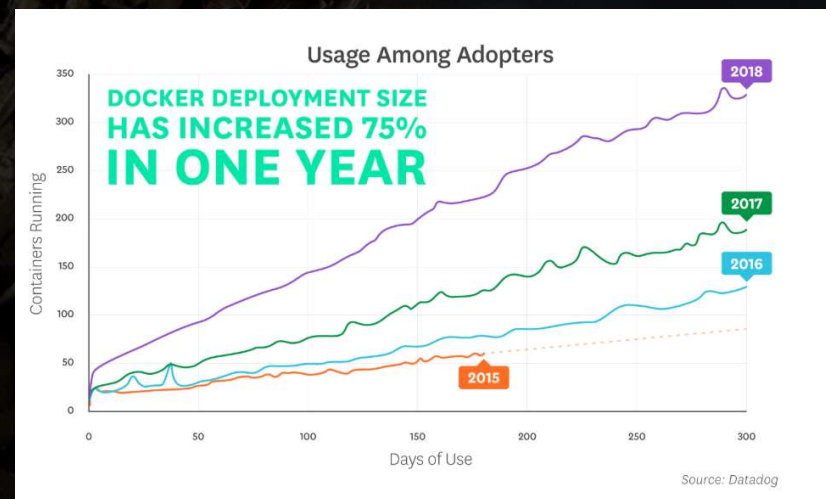
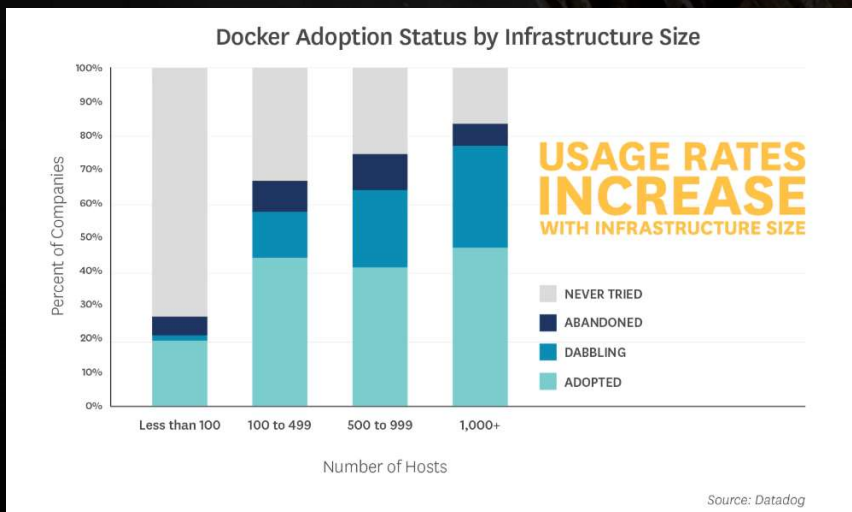
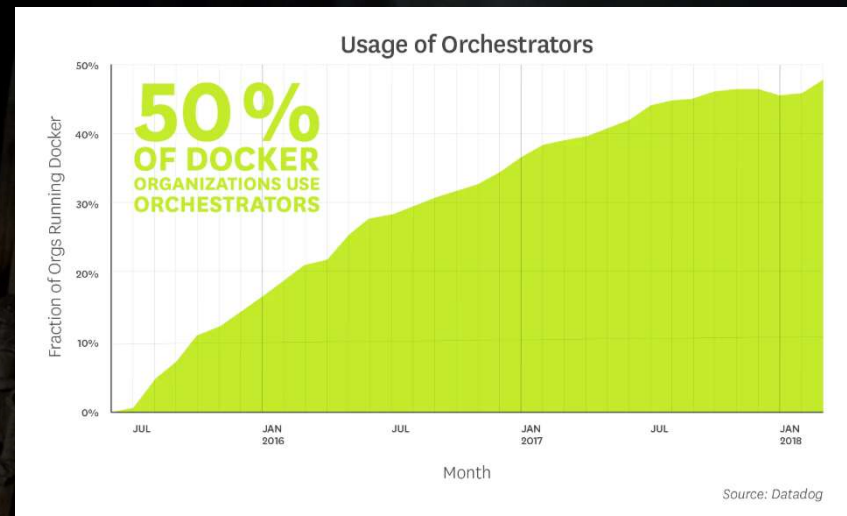
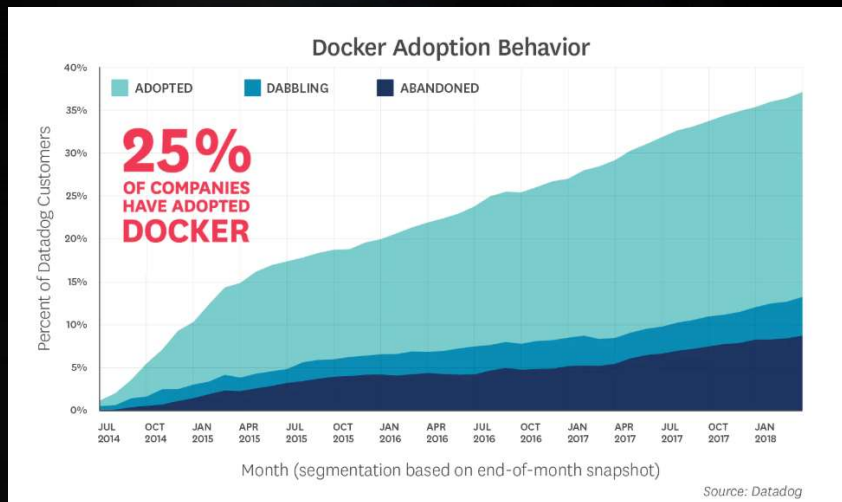
3.5M

Dockerized
apps



200+

Active Docker
user groups





“MICROSERVICES ENVY”

You know, for marketing
#containers
#microservices



Oh, like SaaS,
SOA, Cloud, PaaS?

You know, for marketing
#containers
#microservices

Monolith ->
Microservices == #winning



You know, for marketing
#containers
#microservices

Monolith ->
Microservices == #winning

Developer influence...aka
#containers are fun!



You know, for marketing
#containers
#microservices

Monolith ->
Microservices == #winning

Developer influence...aka
#containers are fun!

#containers #containers
#containers #containers



This meeting is
over...



Hey, let's do this
microservices
thing!



- Alignment of business capabilities / features
- More frequent feature releases, with confidence
- Increased system resiliency
- Improved operational visibility
- Polyglot languages / tools
- Polyglot Data
- Heterogeneous teams

Hey, let's do this
microservices
thing!
awesome might
happen.



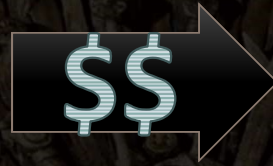
CONTAINERS
PLATFORMS
OPERATIONAL PRACTICES
DESIGN PRINCIPLES

Alignment of business capabilities / features



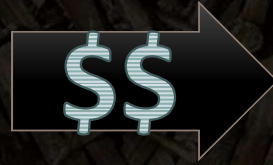
We can't meet customer demand for new features

More frequent feature releases, with confidence



Releases are filled with risk

Increased system resiliency
Improved visibility into operations



We have trouble tracking down which part of the system failed

Polyglot languages / tools
Heterogeneous teams



Our DevOps tools and infrastructure have too much variety




GOT

HBO

- Code analysis
- LOE by domain
- Existing and new resource plans
- Projected cost estimates
 - Resources
 - Cloud
 - Tooling
- Cost of business analysis
- Time estimates
- Expected ROI timeline



Without the support
of the business,
a microservices
project will not
survive



There's a
second
season?

They didn't
tell you?

The background of the image is a dark, atmospheric photograph of the Iron Throne from the television series Game of Thrones. The throne is constructed from a chaotic and dense arrangement of swords, spears, and other blades, creating a jagged and menacing silhouette. The lighting is low, highlighting the sharp edges and textures of the metal. The overall mood is dark and foreboding.

SURVIVING
“DESIGN”

Identifying Business Domains

Product
Catalogue

Recommendations

Shopping
Cart

Supply Chain
Management

Customer
Management

Payment

Fulfillment

Identity Management

Order

Identity Management Domain

User
Single Sign-On

Protocols
Single Sign-On
Single Sign-Out
...
Configuration data
User data

User
Management

Create users
Invite users
Force password reset
Activate / Inactivate users
...
User data

User
Self-Service

User self-register
Email confirmation
Forgot password
Change username / email
Change password
Enable MFA
...
User data

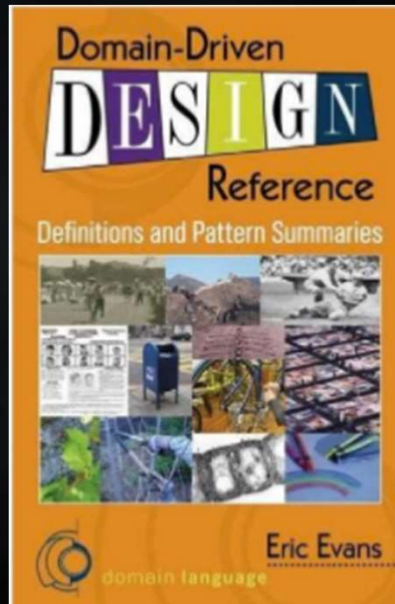
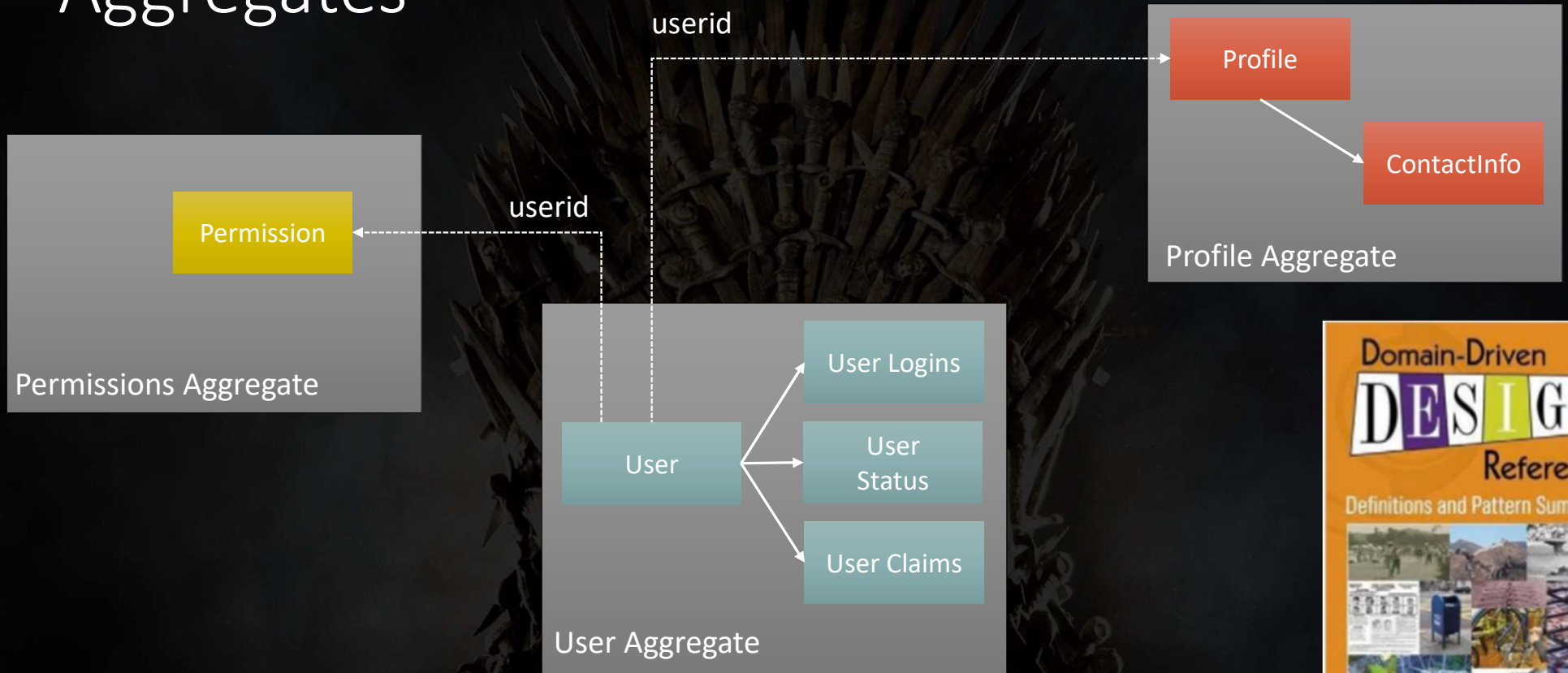
User
Permissions

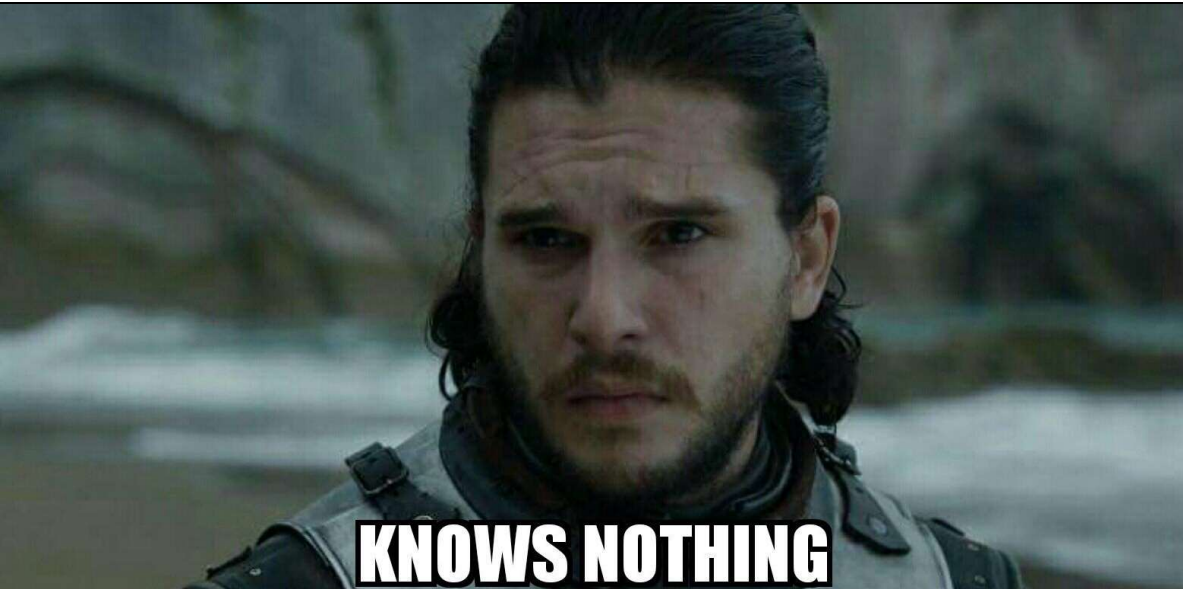
Manage tenant permissions
Manage user permissions
...
User permissions data

User
Profile

Manage user profile
...
User profile data

Aggregates





KNOWS NOTHING



KNOWS EVERYTHING



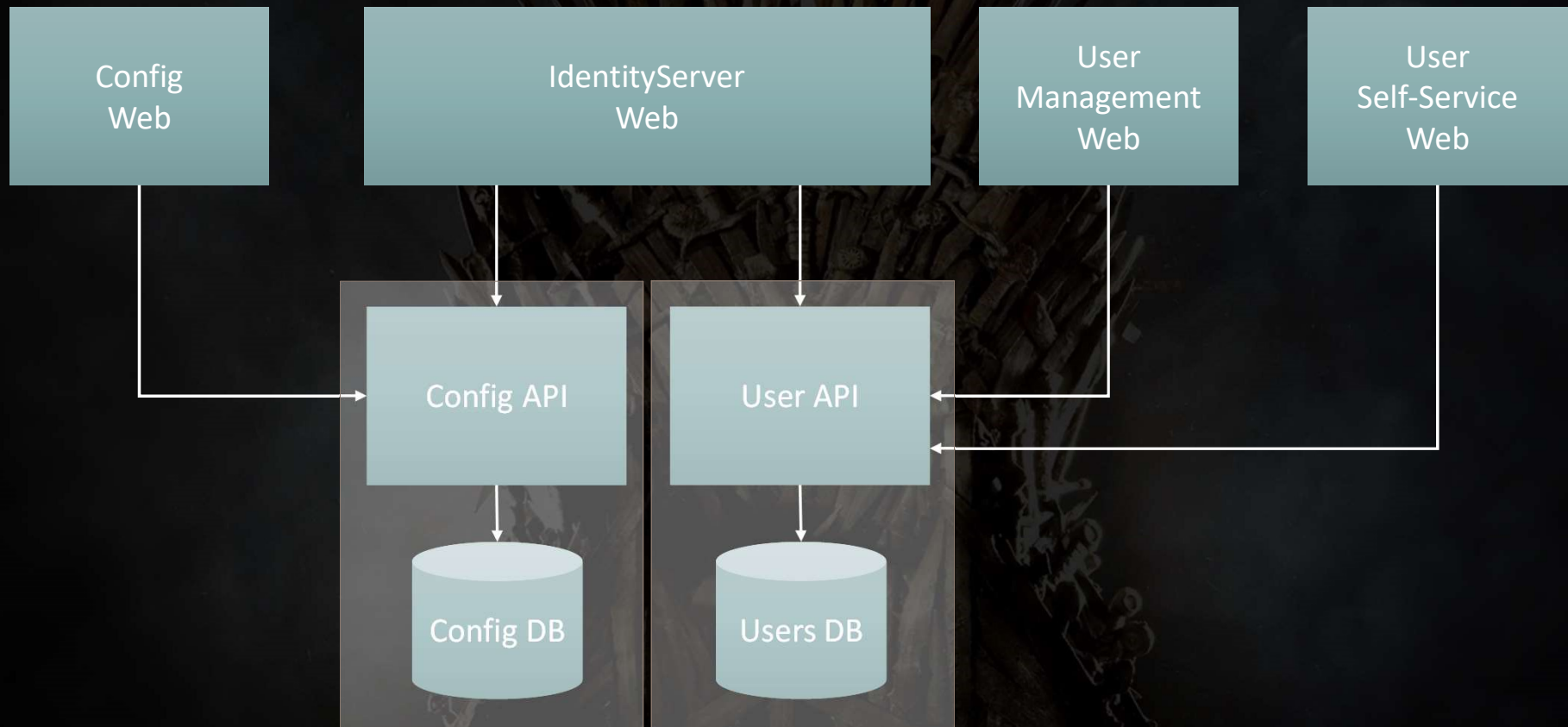
Design discussions
must include
all key players:

- stakeholders
- architects
- development
- data
- test
- devops

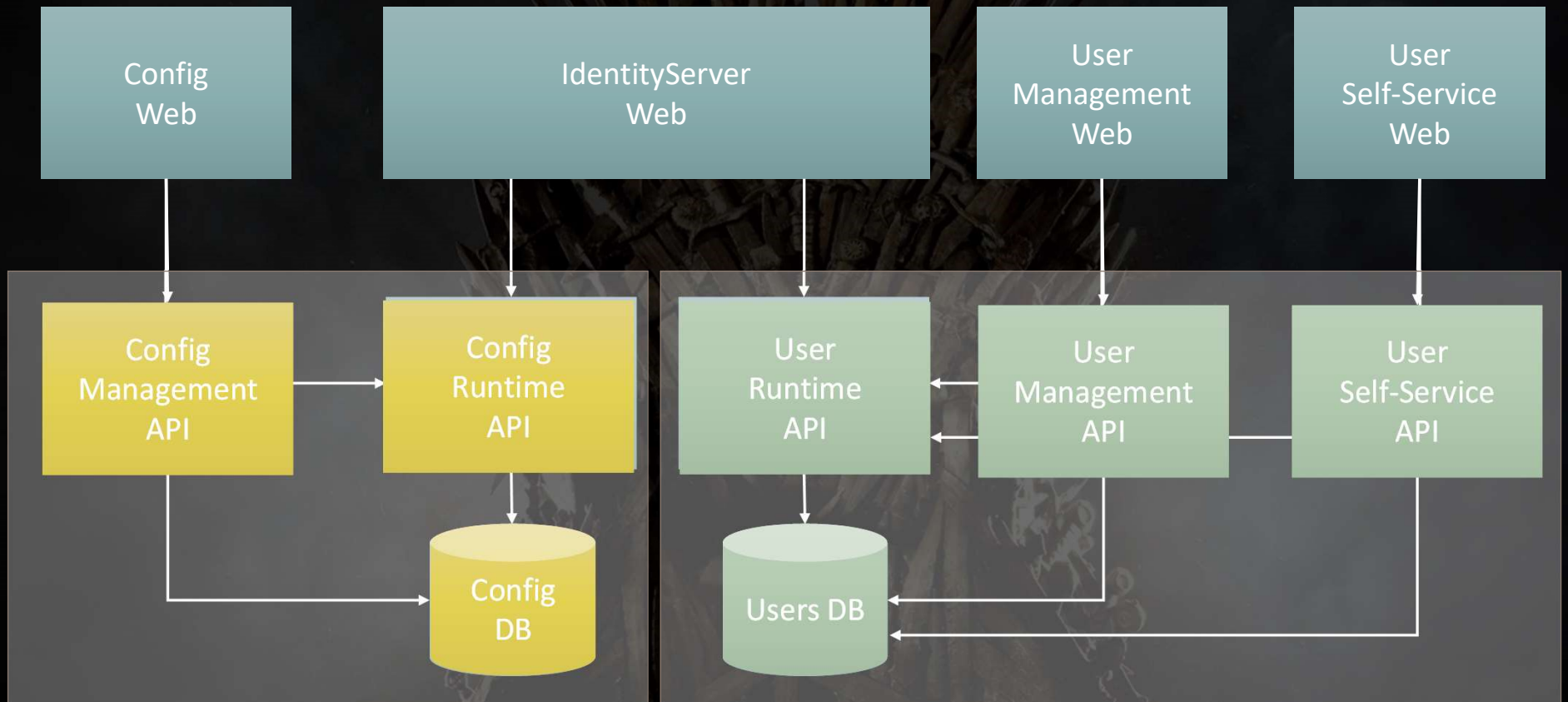
“organizations which design systems ... are constrained to produce designs which are copies of the communication structures of these organizations”

— *M. Conway, 1968*

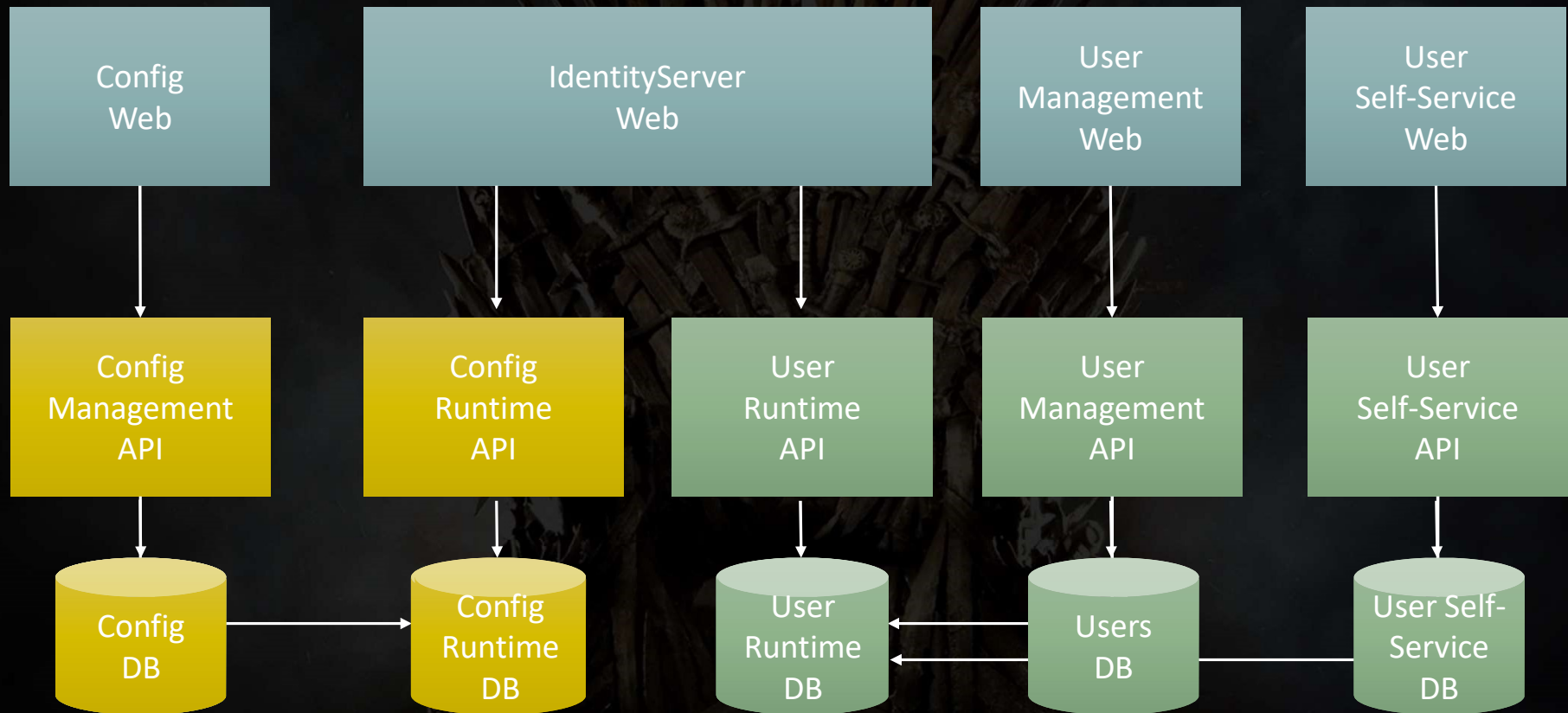
Shared APIs



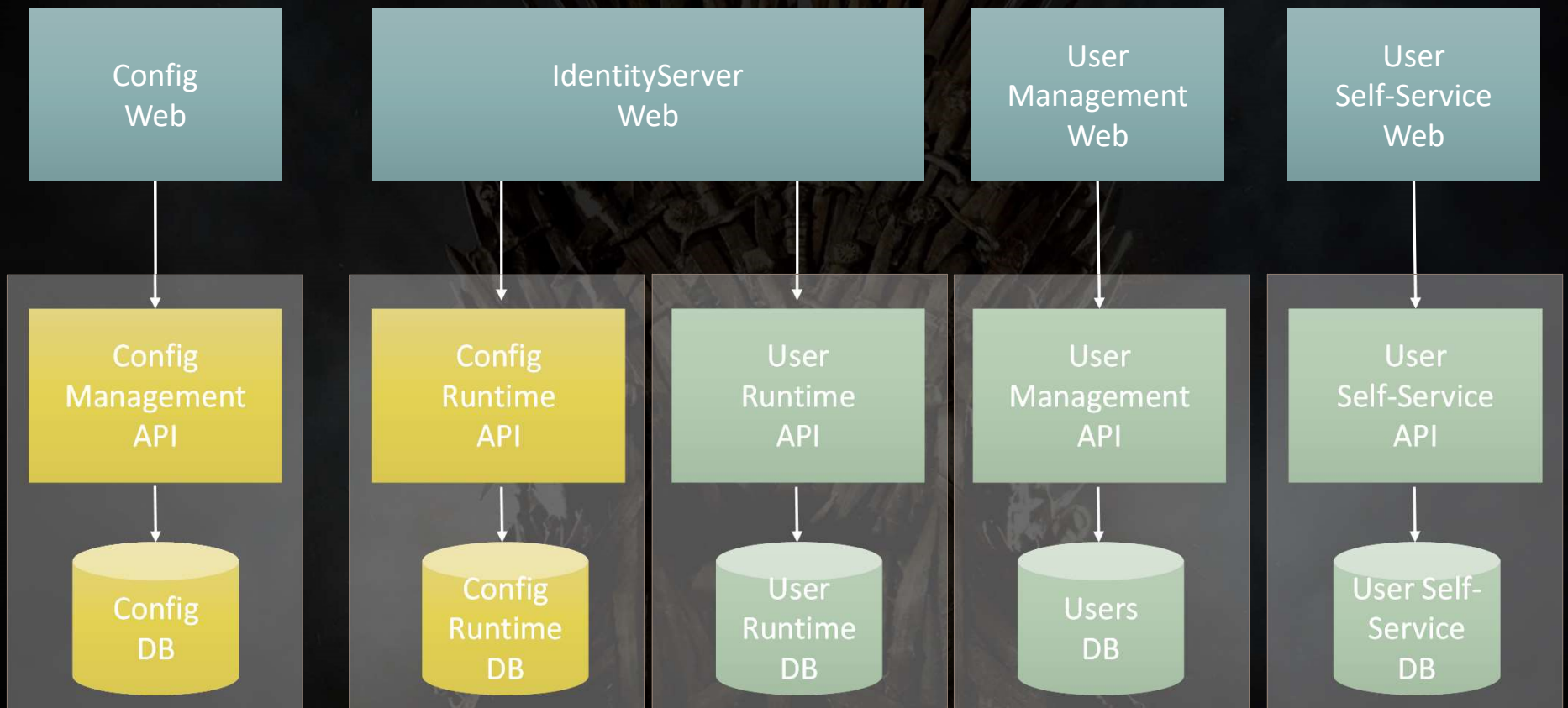
Shared aggregates



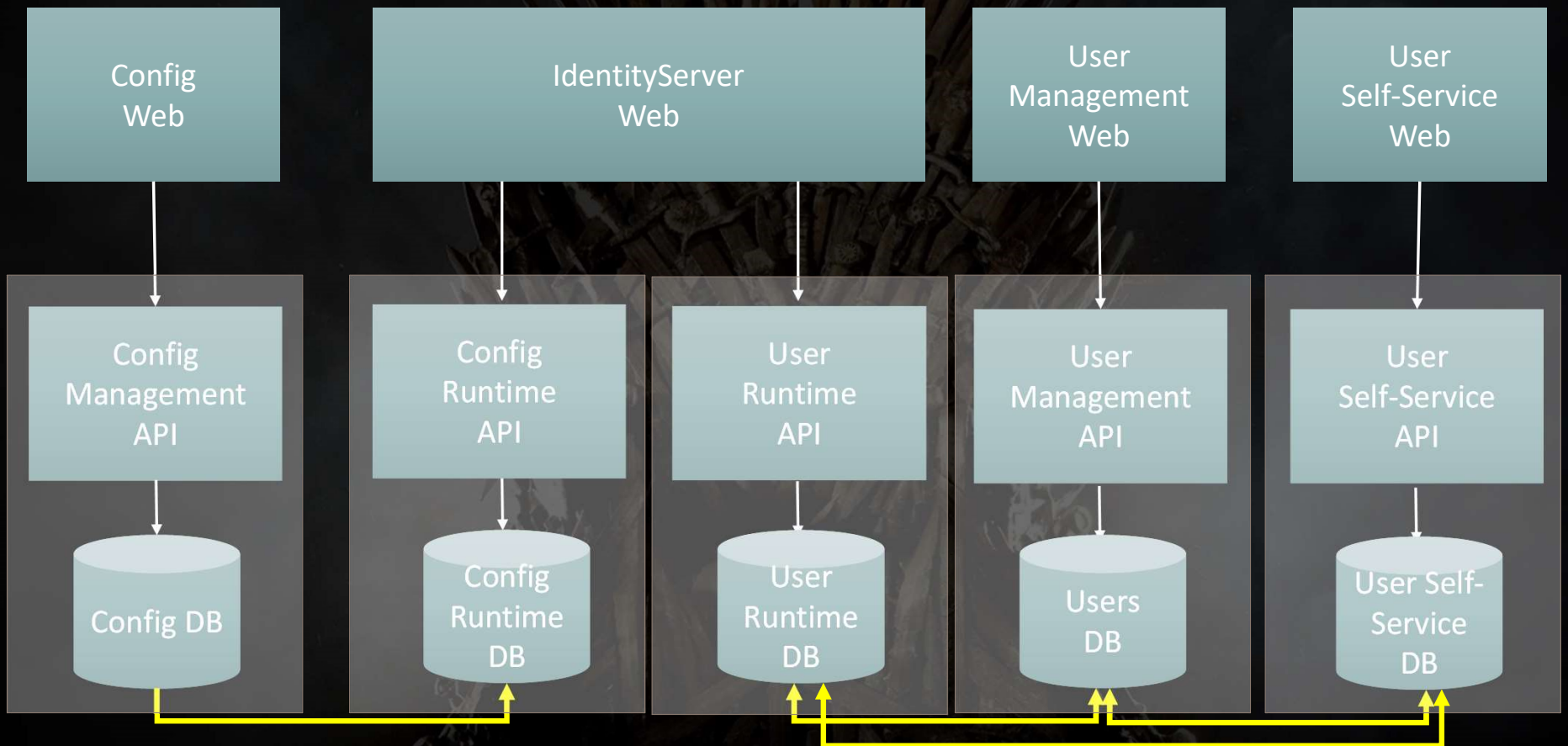
Full stack isolation



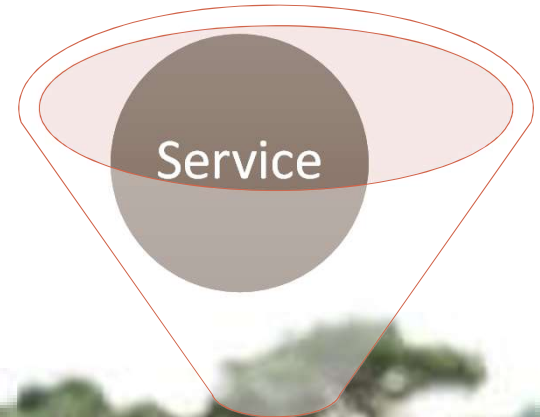
Full stack isolation



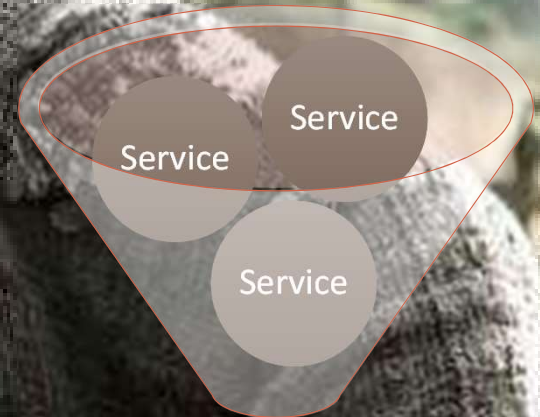
Eventual consistency



HAD ONE JOB



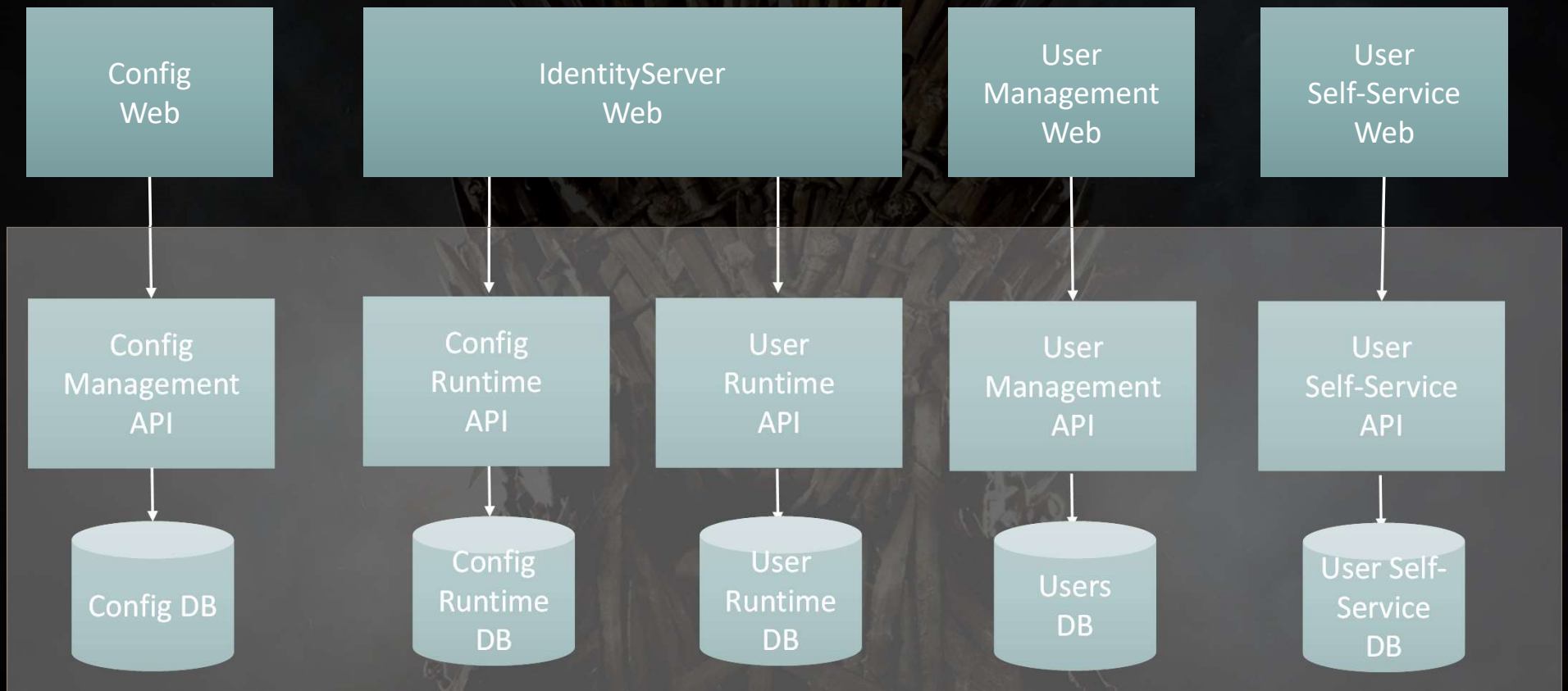
Microservice



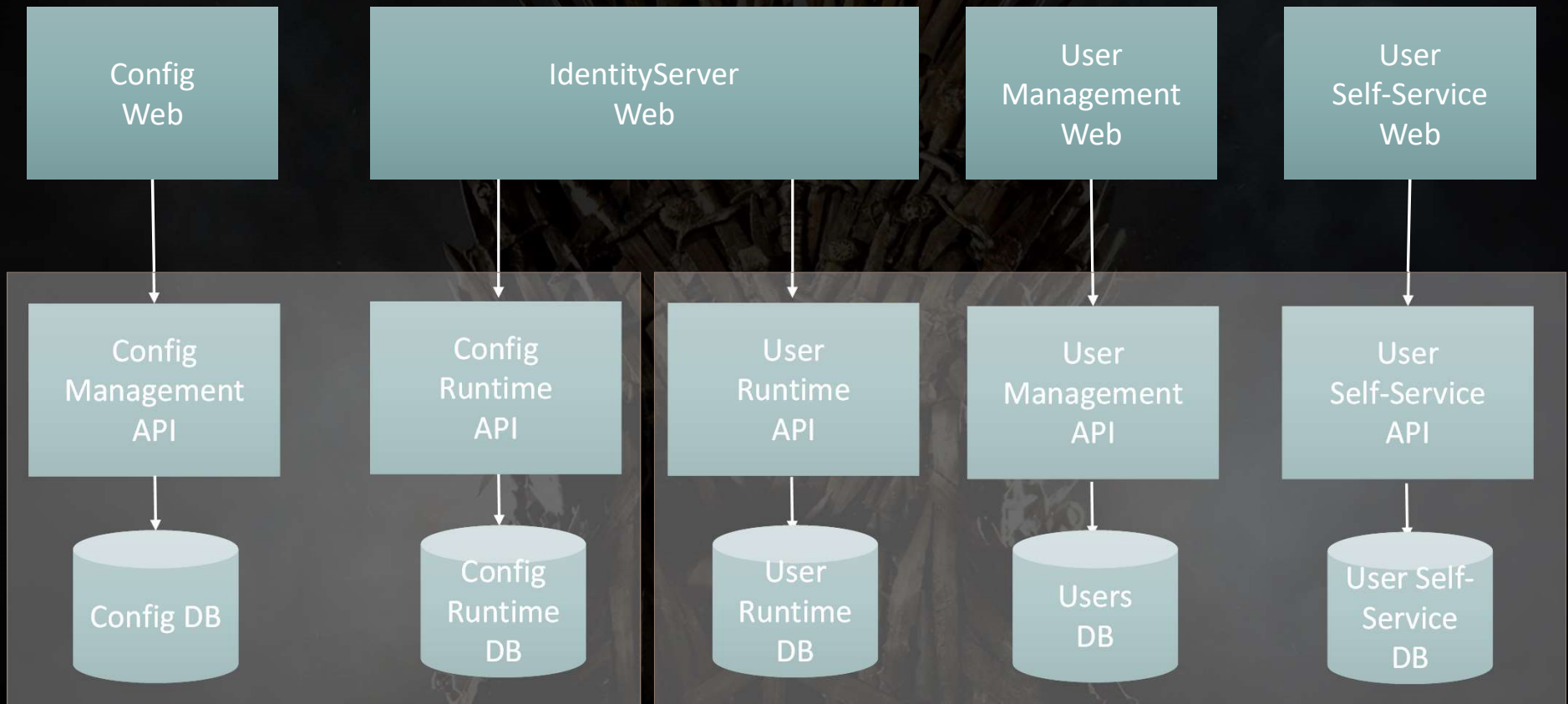
Microservice

DID IT

One microservice?



Two microservices?





“IT’S EASY TO LOVE A THEORY”

-Jim Counts, Solliance

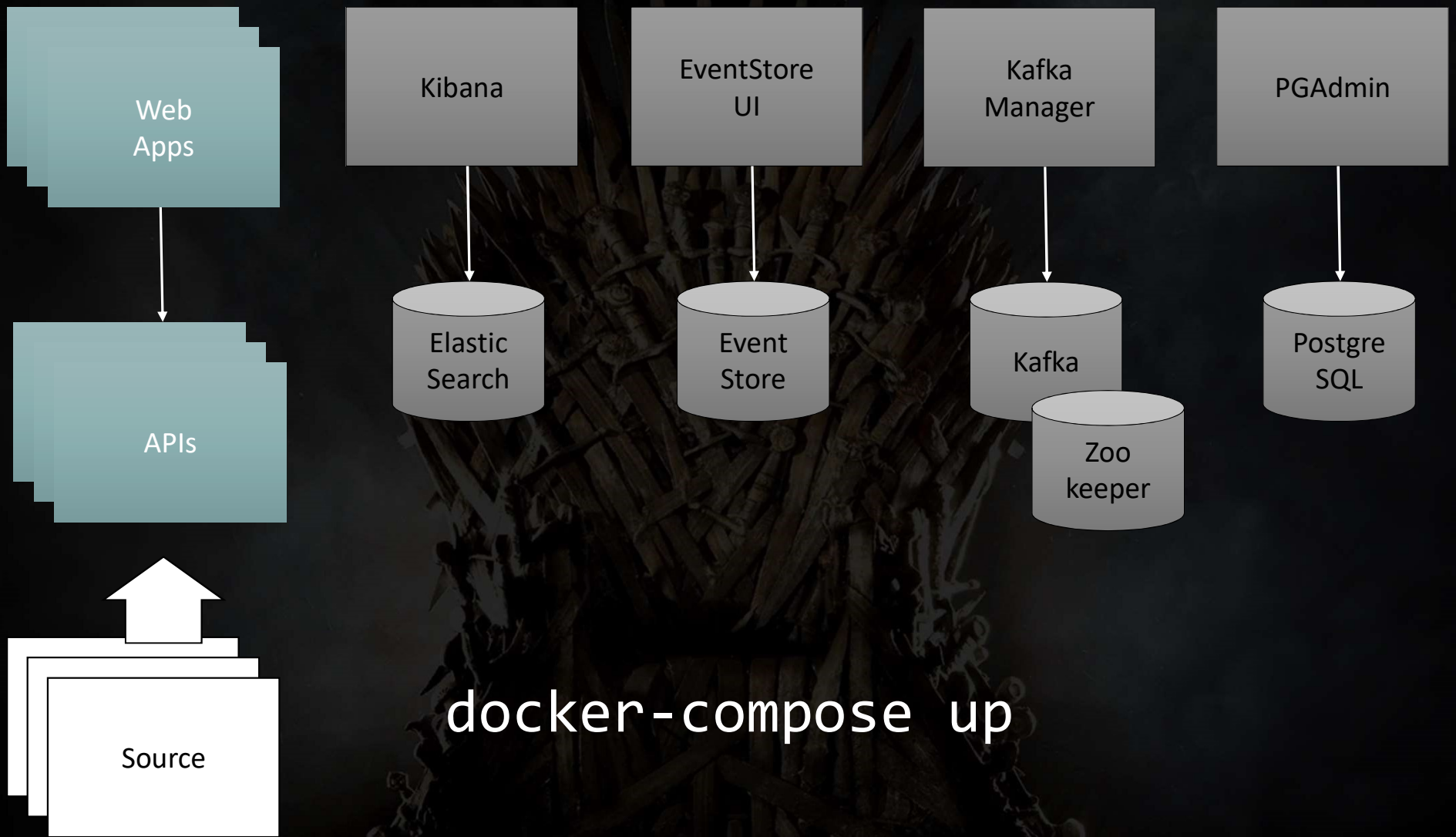


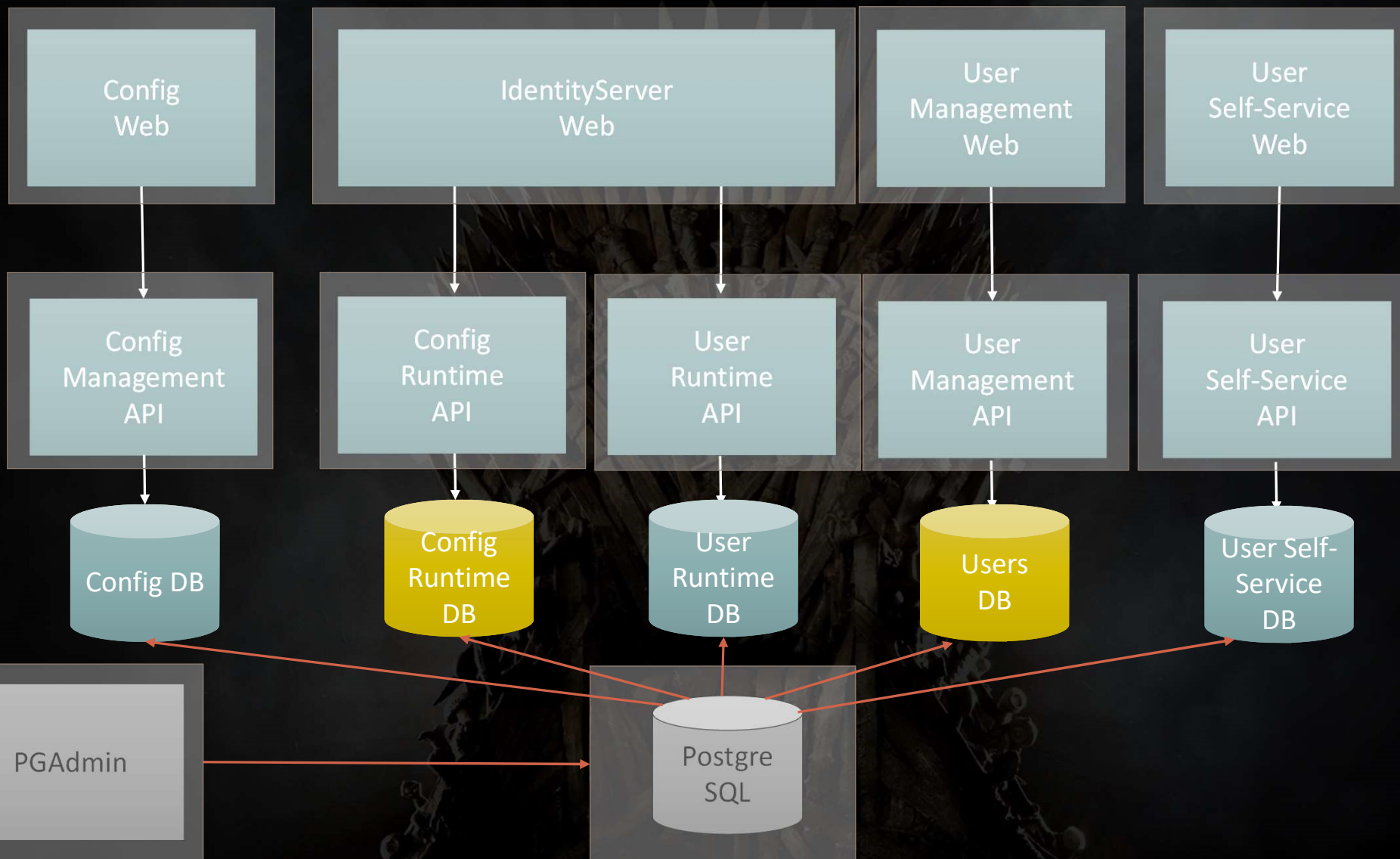
BE
HERE



The background of the image is a dark, atmospheric photograph of the Iron Throne from the television series Game of Thrones. The throne is constructed from a chaotic and dense arrangement of swords, spears, and blades, all pointing in various directions. The lighting is dramatic, highlighting the sharp edges and textures of the metal against a dark, smoky or misty background. The overall mood is somber and menacing.

SURVIVING
“DEVELOPMENT”

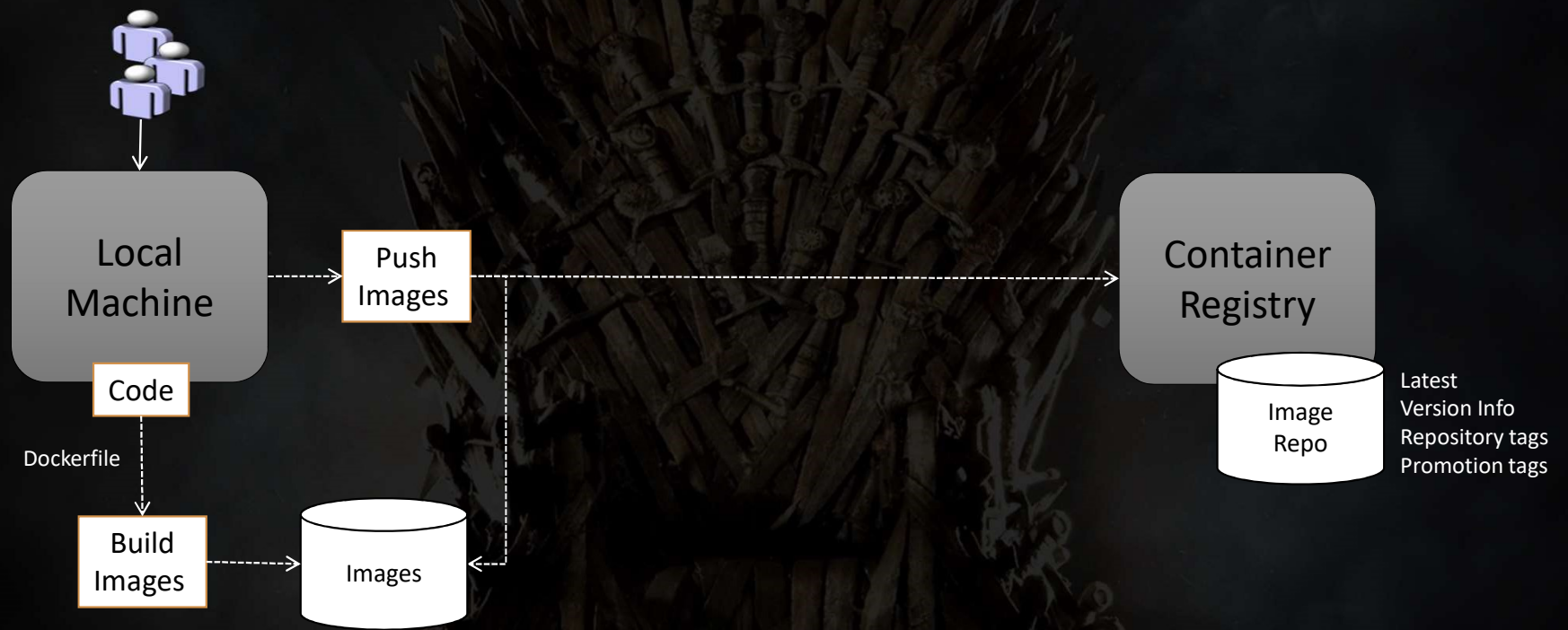




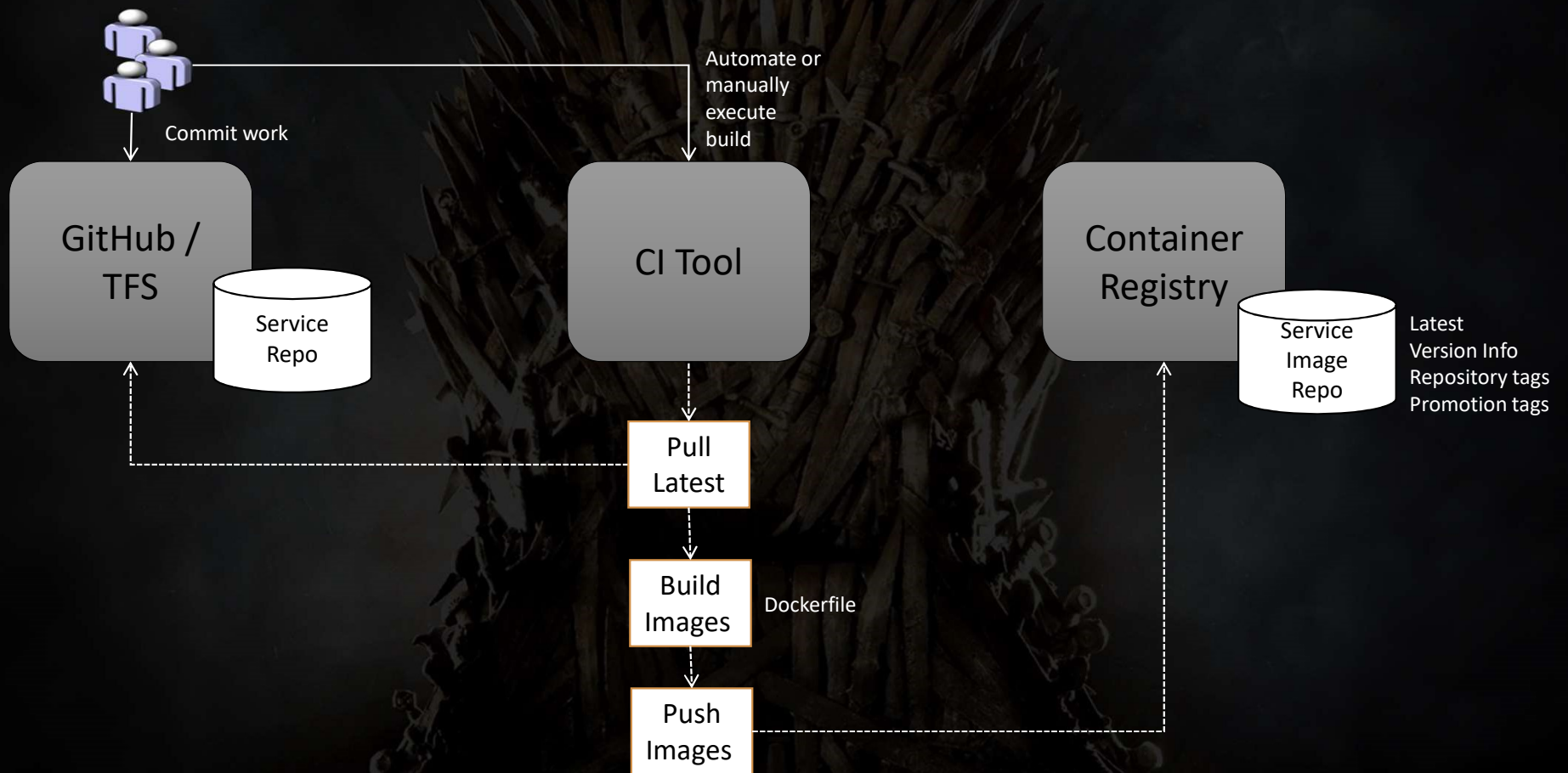


WORKS ON MY MACHINE

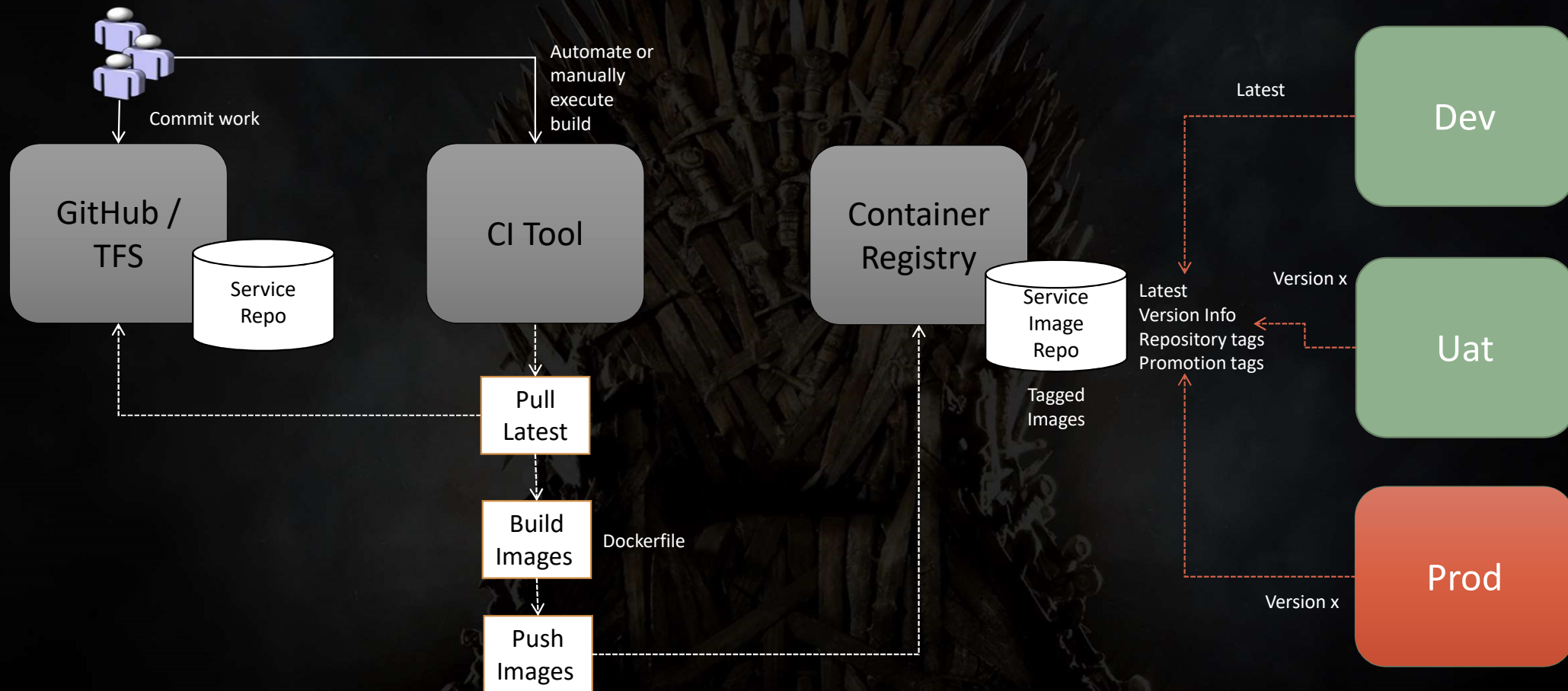
Image Registry



Automated Image Builds / Tagging



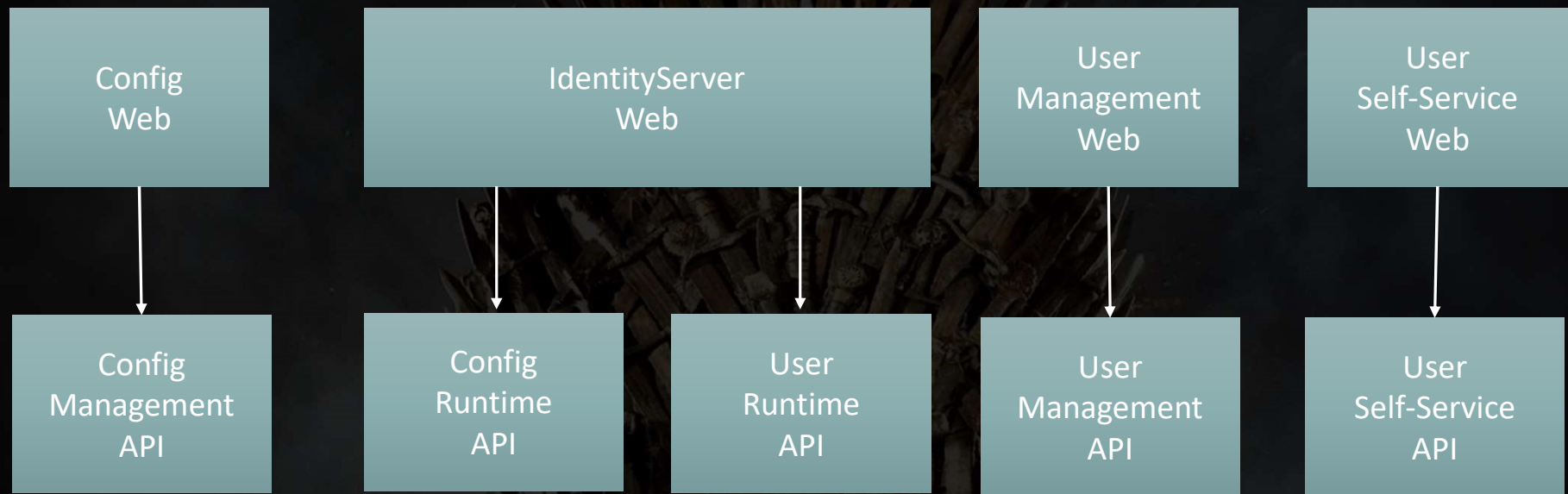
Immutable images, and deployment



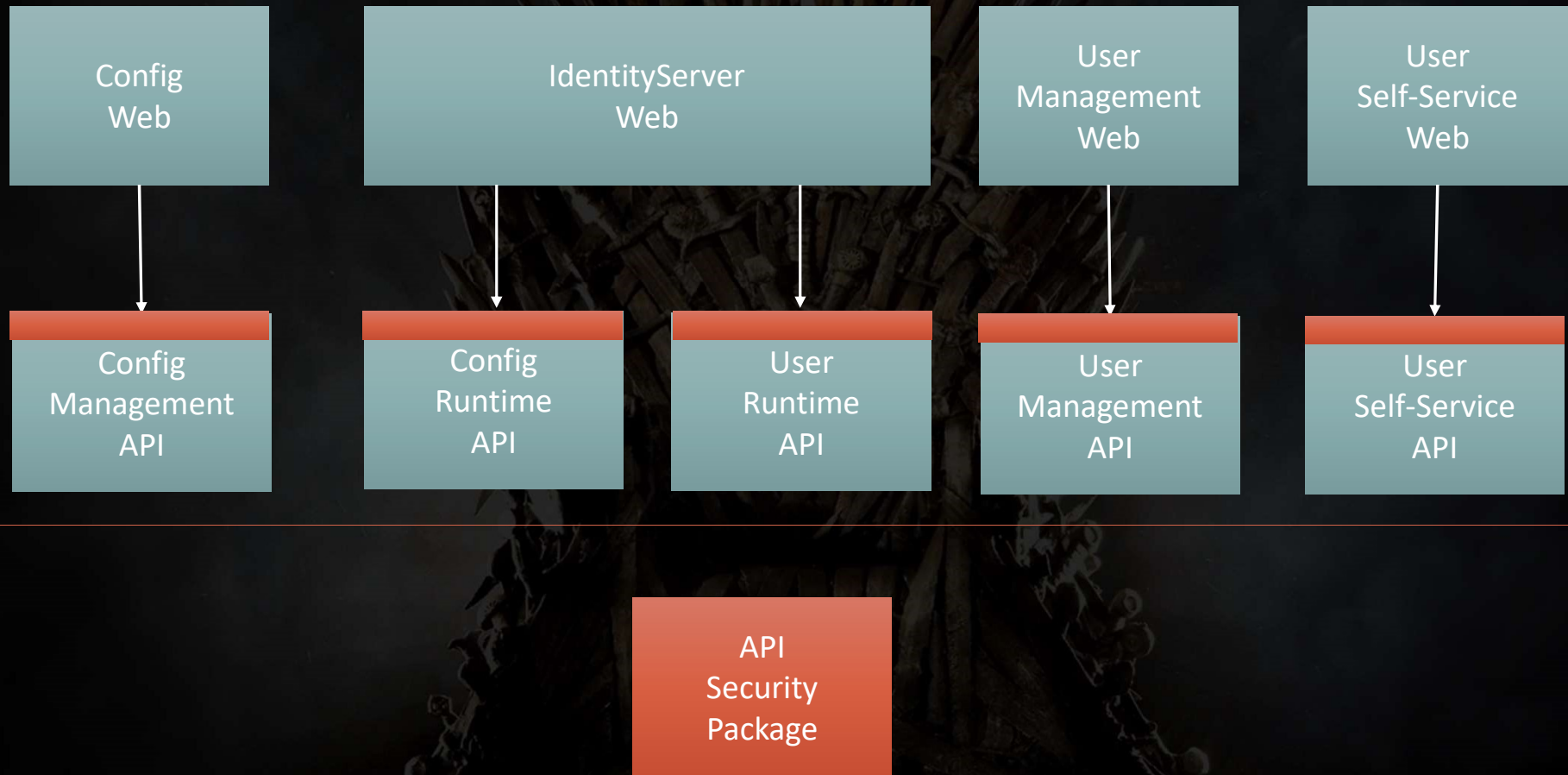
The background of the image is a dark, atmospheric shot of the Iron Throne from the television series Game of Thrones. The throne is constructed from numerous swords and spears, with their blades and points protruding in all directions, creating a menacing and sharp appearance. The lighting is low, highlighting the metallic textures and the chaotic arrangement of the weapons.

DO NOT USE
“LATEST”
IN PRODUCTION

One service, one source repo, one image repo



Shared code – tsk tsk



The background of the image is a dark, atmospheric photograph of the Iron Throne from the television series Game of Thrones. The throne is constructed from numerous swords, with their blades pointing upwards and outwards, creating a dense, spiky silhouette against a dark, smoky or misty background. The lighting is dramatic, highlighting the metallic texture of the blades.

PREPARE TO REFACTOR
AGAIN
AND AGAIN
AND AGAIN



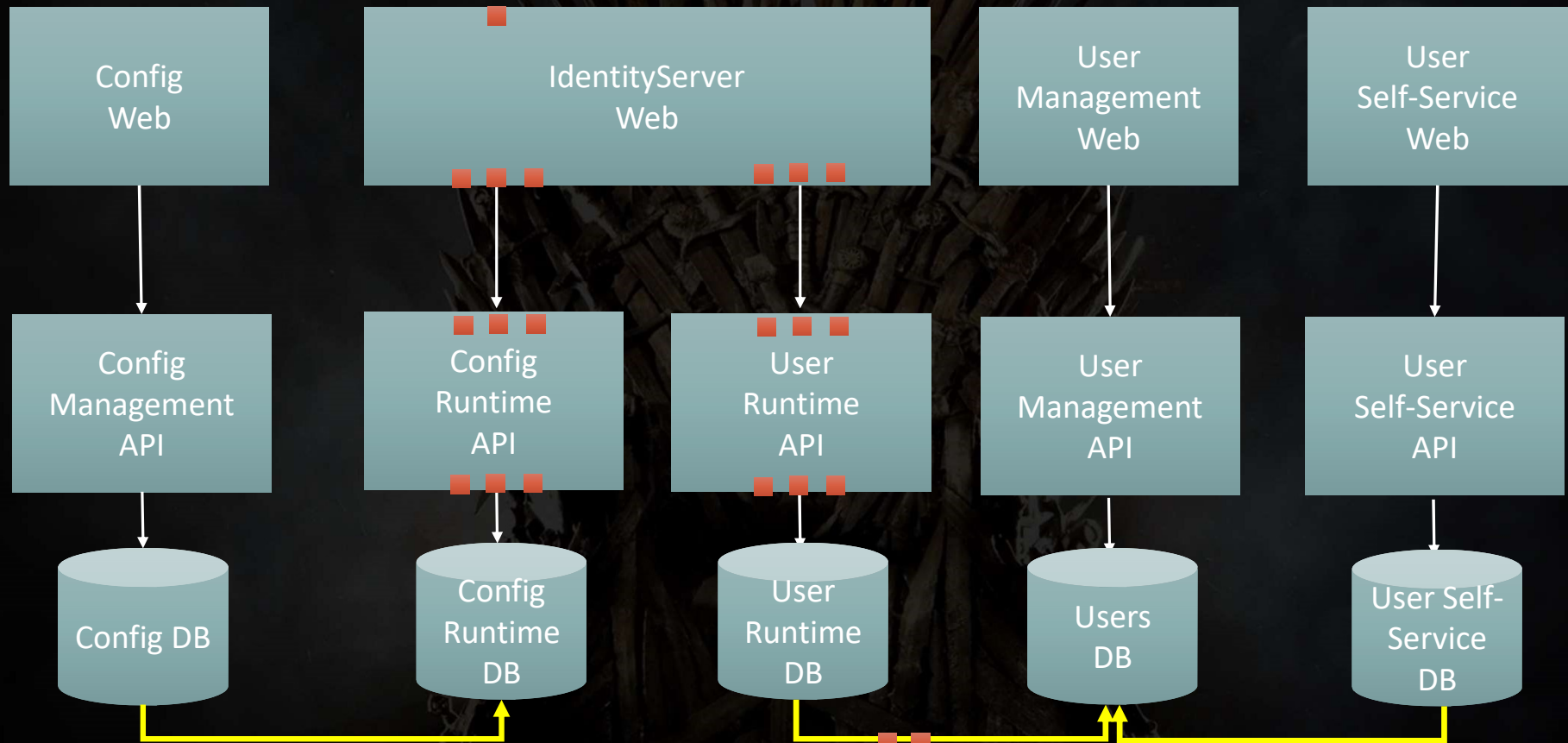
SURVIVING
“TROUBLESHOOTING”



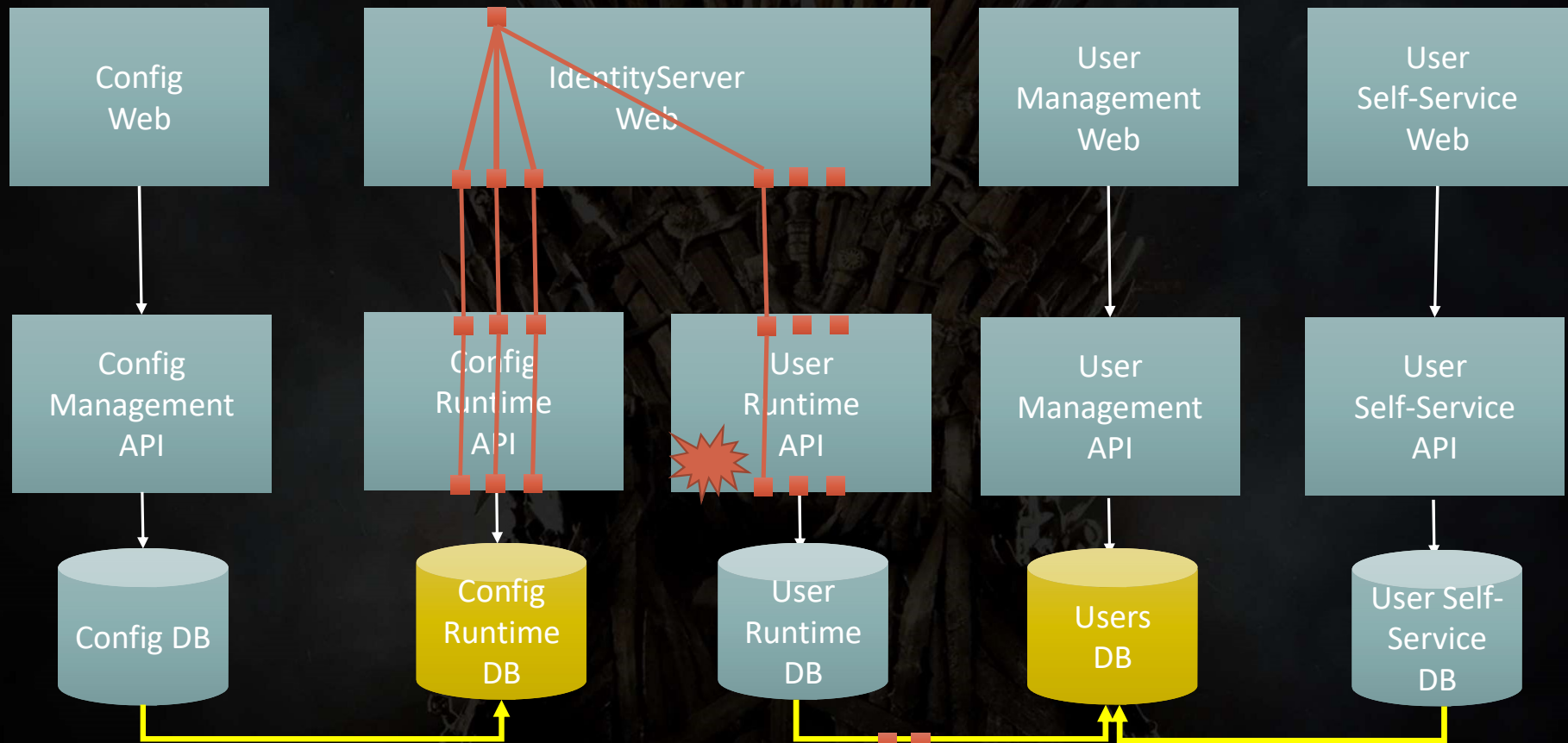
IF YOU DON'T WRITE LOGS
YOU WON'T HAVE THEM...

-Captain Obvious

End to end tracing



End to end visibility



February 5th 2018, 09:12:19.643	Executed DbCommand ("4"ms) [Parameters="@p16='?' (Size = 450), @p0='?' (Size = 4000), @p1='?' (Size = 4000), @p17='?' (Size = 4000), @p2='?' (Size = 256), @p3='?' (Size = 4000), @p4='?' (Size = 4000), @p5='?' (Size = 4000), @p6='?' (Size = 4000), @p7='?' (Size = 256), @p8='?' (Size = 256), @p9='?' (Size = 256), @p10='?' (Size = 4000), @p11='?' (Size = 4000), @p12='?' (Size = 4000), @p13='?' (Size = 4000), @p14='?' (Size = 256)", CommandType='Text', CommandTimeout='30']" <pre> SET NOCOUNT ON; UPDATE [appidentity].[AspNetUsers] SET [AccessFailedCount] = @p0, [ConcurrencyStamp] = @p1, [Email] = </pre>
February 5th 2018, 09:12:19.635	Executed DbCommand ("8"ms) [Parameters="@__normalizedUserName_0='?' (Size = 256)", CommandType='Text', CommandTimeout='30']" <pre> SELECT TOP(1) [u].[Id], [u].[AccessFailedCount], [u].[ConcurrencyStamp], [u].[Email], [u].[EmailConfirmed], [u].[Firstname], [u].[Lastname], [u].[LockoutEnabled], [u].[LockoutEnd], [u].[NormalizedEmail], [u].[NormalizedUserName], [u].[PasswordHash], [u].[PhoneNumber], [u].[PhoneNumberConfirmed], [u].[SecurityStamp], [u].[TwoFactorEnabled], [u].[UserName] FROM [appidentity].[AspNetUsers] AS [u] </pre>
February 5th 2018, 09:12:19.611	Executed DbCommand ("6"ms) [Parameters="@__request_subjectId_0='?' (Size = 450)", CommandType='Text', CommandTimeout='30']" <pre> SELECT TOP(1) [uu].[Id], [uu].[AccessFailedCount], [uu].[ConcurrencyStamp], [uu].[Email], [uu].[EmailConfirmed], [uu].[Firstname], [uu].[Lastname], [uu].[LockoutEnabled], [uu].[LockoutEnd], [uu].[NormalizedEmail], [uu].[NormalizedUserName], [uu].[PasswordHash], [uu].[PhoneNumber], [uu].[PhoneNumberConfirmed], [uu].[SecurityStamp], [uu].[TwoFactorEnabled], [uu].[UserName] FROM [appidentity].[AspNetUsers] AS [uu] </pre>
February 5th 2018, 09:12:19.590	Entity Framework Core "2.0.0-rtm-26452" initialized "AppIdentityDbContext" using provider "Microsoft.EntityFrameworkCore.SqlServer" with options: "MigrationsAssembly=Identity.User.Core "
February 5th 2018, 09:12:19.589	EmailVerifyRequest: <pre> {"subjectId":"ada2b33b1e414722a65c541838e47c06","Password":"BetaPassword!","Token":"CfDj8NEXk6dbqZpFmZjT+8Ei9tc1Ab/h2+1CEzx+C+t1P4qn70Gp72kY8oYhK2ZGbcCs54I1YkN92bScjpf3NBhw7uXS6VFD8z+RckxfiFH2/U9odCEEXTqLHuWgXY66kV8t67TBwimGwp7oCKUIaLMDxRoiVDrE/OPDO6G0JLspTOLYH6omsSN4bgwTL4lEMhsuebdh+okH9OwGIUt8lguVvVvMaE0vHuHA4e4ZpXVNo47G38c8WhAr1vXuUDhwIXPzKw="} </pre>
February 5th 2018, 09:12:19.585	EmailVerifyAsync
February 5th 2018, 09:12:19.566	Executing action method "Identity.User.Profile.Controllers.SignupController.EmailVerify (Identity.User.Profile)" with arguments (["Identity.User.Core.Models.EmailVerifyRequest"]) - ModelState is valid
February 5th 2018, 09:12:19.506	Starting http request
February 5th 2018, 09:12:19.502	Calling email verify api
February 5th 2018, 09:12:19.491	Executing action method "Identity.User.Profile.Web.Controllers.AccountController.EmailConfirm (Identity.User.Profile.Web)" with arguments (["Identity.User.Profile.Web.Models.ServiceModels.EmailVerifyRequest"]) - ModelState is valid

Start of activity



End of activity

February 5th 2018, 09:12:19.842	Executed action "Identity.User.Profile.web.Controllers.HomeController.Error (Identity.User.Profile.web)" in 6.2451ms
February 5th 2018, 09:12:19.839	Executing ViewResult, running view at path "/Views/Shared/Error.cshtml".
February 5th 2018, 09:12:19.836	Executing action method "Identity.User.Profile.web.Controllers.HomeController.Error (Identity.User.Profile.web)" with arguments (null) - ModelState is valid
February 5th 2018, 09:12:19.801	An unhandled exception has occurred: Object reference not set to an instance of an object.
February 5th 2018, 09:12:19.799	Executed action "Identity.User.Profile.web.Controllers.AccountController.EmailConfirm (Identity.User.Profile.web)" in 313.0206ms
February 5th 2018, 09:12:19.789	Executing ViewResult, running view at path "/Views/Shared/Error.cshtml".
February 5th 2018, 09:12:19.787	response: {"Success":false,"Errors":["PasswordRequiresDigit: Passwords must have at least one digit ('0'-'9')."]}
February 5th 2018, 09:12:19.767	Executed action "Identity.User.Profile.Controllers.SignupController.EmailVerify (Identity.User.Profile)" in 226.3521ms
February 5th 2018, 09:12:19.764	EmailVerifyResponse: {"Success":false,"Errors":["PasswordRequiresDigit: Passwords must have at least one digit ('0'-'9')."]}
February 5th 2018, 09:12:19.764	Executing ObjectResult, writing value "Microsoft.AspNetCore.Mvc.ControllerContext".
February 5th 2018, 09:12:19.759	HTTP request completed in 253
February 5th 2018, 09:12:19.684	{"type":"EmailConfirmationFailed","message":{"Reason":"AddPasswordAsync failed","UserName":"alvin-beta@email.com","SubjectId":"ada2b33b1e414722a65c541838e47c06","MessageId":"7928a69c185c4746a34b45e862674bbe","ActivityId":"0HLBCDT6U106J:00000001","CausationId":"b5726a65b8bf46dcb1d8113fda11b756","CorrelationId":"16a7958384c0494a839bbef0eff2855f","CreatedAt":"2018-02-05T08:12:19.677433+00:00","OriginId":"Identity.User.Profile.web"}}
February 5th 2018, 09:12:19.677	Email verify failed: ada2b33b1e414722a65c541838e47c06 alvin-beta@email.com AddPasswordAsync failed
February 5th 2018, 09:12:19.677	Identity.Domain.Messages.EmailConfirmationFailed
February 5th 2018, 09:12:19.667	User "ada2b33b1e414722a65c541838e47c06" password validation failed: "PasswordRequiresDigit".

Informative

```
February 5th 2018, 09:12:19.764 EmailVerifyResponse: {"Success":false,"Errors":["PasswordRequiresDigit: Passwords must have at least one digit ('0'-'9')."]}
```

LOGS SHOULD BE MEANINGFUL

```
February 5th 2018, 09:12:19.585 EmailVerifyAsync
```

Wut?

```
February 5th 2018, 09:12:19.801 An unhandled exception has occurred: Object reference not set to an instance of an object.
```

Not informative
But, something to act on

DEBUG WITH YOUR LOGS

Time	_source
▶ October 19th 2017, 07:41:23.059	ActivityId: OHL8MJ54FKIH0:00000001 @timestamp: October 19th 2017, 07:41:23.059 level: Information messageTemplate: Executed action {ActionName} in {ElapsedMilliseconds}ms message: Executed action "Identity.Config.Runtime.Controllers.HealthController.Get (Identity.Config.Runtime)" in 1.0328ms ActionName: Identity.Config.Runtime.Controllers.HealthController.Get (Identity.Config.Runtime) ElapsedMilliseconds: 1.033 EventId.Id: 2 SourceContext: Microsoft.AspNetCore.Mvc.Internal.ControllerActionInvoker ActionId: 96975f2d-
▶ October 19th 2017, 07:41:23.058	ActivityId: OHL8MJ54FKIH0:00000001 @timestamp: October 19th 2017, 07:41:23.058 level: Information messageTemplate: Executing Controller method {ControllerName} with arguments ({Arguments}) - ModelState is {ValidationState} message: Executing Controller method "Identity.Config.Runtime.Controllers.HealthController.Get (Identity.Config.Runtime)" with arguments (null) ModelState is Valid ActionName: Identity.Config.Runtime.Controllers.HealthController.Get (Identity.Config.Runtime) Arguments: ValidationState: Valid EventId.Id: 1
▶ October 19th 2017, 07:41:23.058	ActivityId: OHL8MJ54FKIH0:00000001 @timestamp: October 19th 2017, 07:41:23.058 level: Information messageTemplate: Executing ObjectResult, writing value {Value}. message: Executing ObjectResult, writing value "Microsoft.AspNetCore.Mvc.ControllerContext". Value: Microsoft.AspNetCore.Mvc.ControllerContext EventId.Id: 1 SourceContext: Microsoft.AspNetCore.Mvc.Internal.ObjectResultExecutor ActionId: 96975f2d-6ccf-4c8d-aa2c-5a2a0f45b2c6 ActionName: Identity.Config.Runtime.Controllers.HealthController.Get (Identity.Co
▶ October 19th 2017, 07:41:23.058	ActivityId: OHL8MJ54FKIH0:00000001 @timestamp: October 19th 2017, 07:41:23.058 level: Information messageTemplate: Entity Framework Core {version} initialized '{contextType}' using provider '{provider}' with options: {options} message: Entity Framework Core "2.0.0-rtm-26452" initialized "ConfigurationDbContext" using provider "Microsoft.EntityFrameworkCore.SqlServer" with options: "MigrationsAssembly=Identity.Config.Core " version: 2.0.0-rtm-26452 contextType: ConfigurationDbContext provider: Microsoft.EntityFr

Necessary?

```
February 5th 2018, 09:12:19.643 Executed DbCommand ("4"ms) [Parameters=["@p16='?' (Size = 450), @p0='?' (Size = 4000), @p1='?' (Size = 4000), @p17='?' (Size = 4000), @p2='?' (Size = 256), @p3='?' (Size = 4000), @p4='?' (Size = 4000), @p5='?' (Size = 4000), @p6='?' (Size = 4000), @p7='?' (Size = 256), @p8='?' (Size = 256), @p9='?' (Size = 256), @p10='?' (Size = 4000), @p11='?' (Size = 4000), @p12='?' (Size = 4000), @p13='?' (Size = 4000), @p14='?' (Size = 256)"], CommandType='Text', CommandTimeout='30']  
""SET NOCOUNT ON;  
UPDATE [appidentity].[AspNetUsers] SET [AccessFailedCount] = @p0, [ConcurrencyStamp] = @p1, [Email] =  
February 5th 2018, 09:12:19.635 Executed DbCommand ("8"ms) [Parameters=["@_normalizedUserName_0='?' (Size = 256)"], CommandType='Text', CommandTimeout='30']  
""SELECT TOP(1) [u].[Id], [u].[AccessFailedCount], [u].[ConcurrencyStamp], [u].[Email], [u].[EmailConfirmed], [u].[Firstname], [u].[Lastname], [u].[LockoutEnabled], [u].[LockoutEnd], [u].[NormalizedEmail], [u].[NormalizedUserName], [u].[PasswordHash], [u].[PhoneNumber], [u].[PhoneNumberConfirmed], [u].[SecurityStamp], [u].[TwoFactorEnabled], [u].[UserName]  
FROM [appidentity].[AspNetUsers] AS [u]  
February 5th 2018, 09:12:19.611 Executed DbCommand ("6"ms) [Parameters=["@_request_subjectId_0='?' (Size = 450)"], CommandType='Text', CommandTimeout='30']  
""SELECT TOP(1) [uu].[Id], [uu].[AccessFailedCount], [uu].[ConcurrencyStamp], [uu].[Email], [uu].[EmailConfirmed], [uu].[Firstname], [uu].[Lastname], [uu].[LockoutEnabled], [uu].[LockoutEnd], [uu].[NormalizedEmail], [uu].[NormalizedUserName], [uu].[PasswordHash], [uu].[PhoneNumber], [uu].[PhoneNumberConfirmed], [uu].[SecurityStamp], [uu].[TwoFactorEnabled], [uu].[UserName]  
FROM [appidentity].[AspNetUsers] AS [uu]  
February 5th 2018, 09:12:19.590 Entity Framework Core "2.0.0-rtm-26452" initialized "AppIdentityDbContext" using provider "Microsoft.EntityFrameworkCore.SqlServer" with options: "MigrationsAssembly=IdentityUser.Core "  
February 5th 2018, 09:12:19.589 EmailVerifyRequest:  
{ "subjectId": "ada2b33b1e414722a65c541838e47c06", "password": "BetaPassword!", "token": "CfDj8NEXk6dbqZpFmZjT+8Ei9tc1Ab/h2+1CEzx+C+t1P4qn70Gp72kY8oYhK2ZGbcCs54I1YkN92bScjpf3NBhw7uX5ovFD8z+RckxfiFH2/U9odCEEXTqLHuWgXY66kV8t67TBwimGwp7oCKUIaLMDxRoiVDrE/OPDO6G0JLspTOLYH6omsSN4bgwTL41EMhsuebdh+okH9owGIut81gUvVvMaE0vHuHA4e4pZpXVNo47G38c8WhAr1vXuUDhwIXPzKw=" }  
February 5th 2018, 09:12:19.585 EmailVerifyAsync  
February 5th 2018, 09:12:19.566 Executing action method "Identity.User.Profile.Controllers.SignupController.EmailVerify (Identity.User.Profile)" with arguments (["Identity.User.Core.Models.EmailVerifyRequest"]) - ModelState is valid  
February 5th 2018, 09:12:19.506 starting http request  
February 5th 2018, 09:12:19.502 Calling email verify api  
February 5th 2018, 09:12:19.491 Executing action method "Identity.User.Profile.Web.Controllers.AccountController.EmailConfirm (Identity.User.Profile.Web)" with arguments (["Identity.User.Profile.Web.Models.ServiceModels.EmailVerifyRequest"]) - ModelState is valid
```

Oh dear

Poor man's solution to end to end

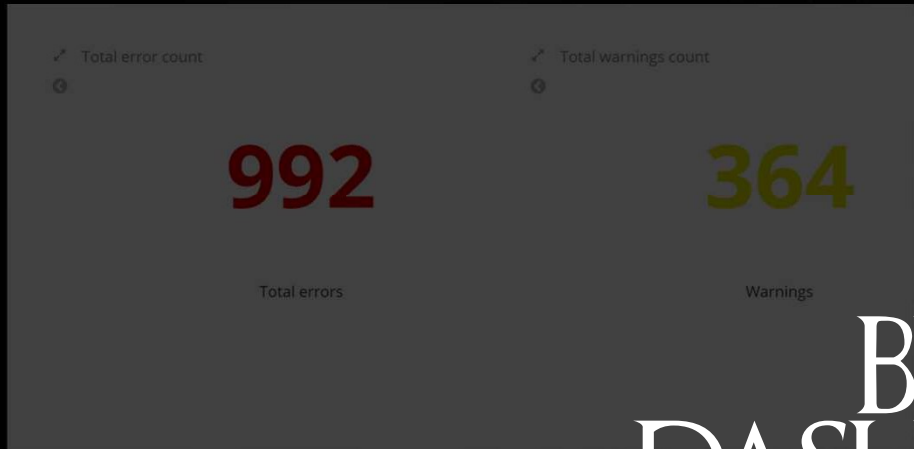
Start of activity

Group logs by microservice

Kibana



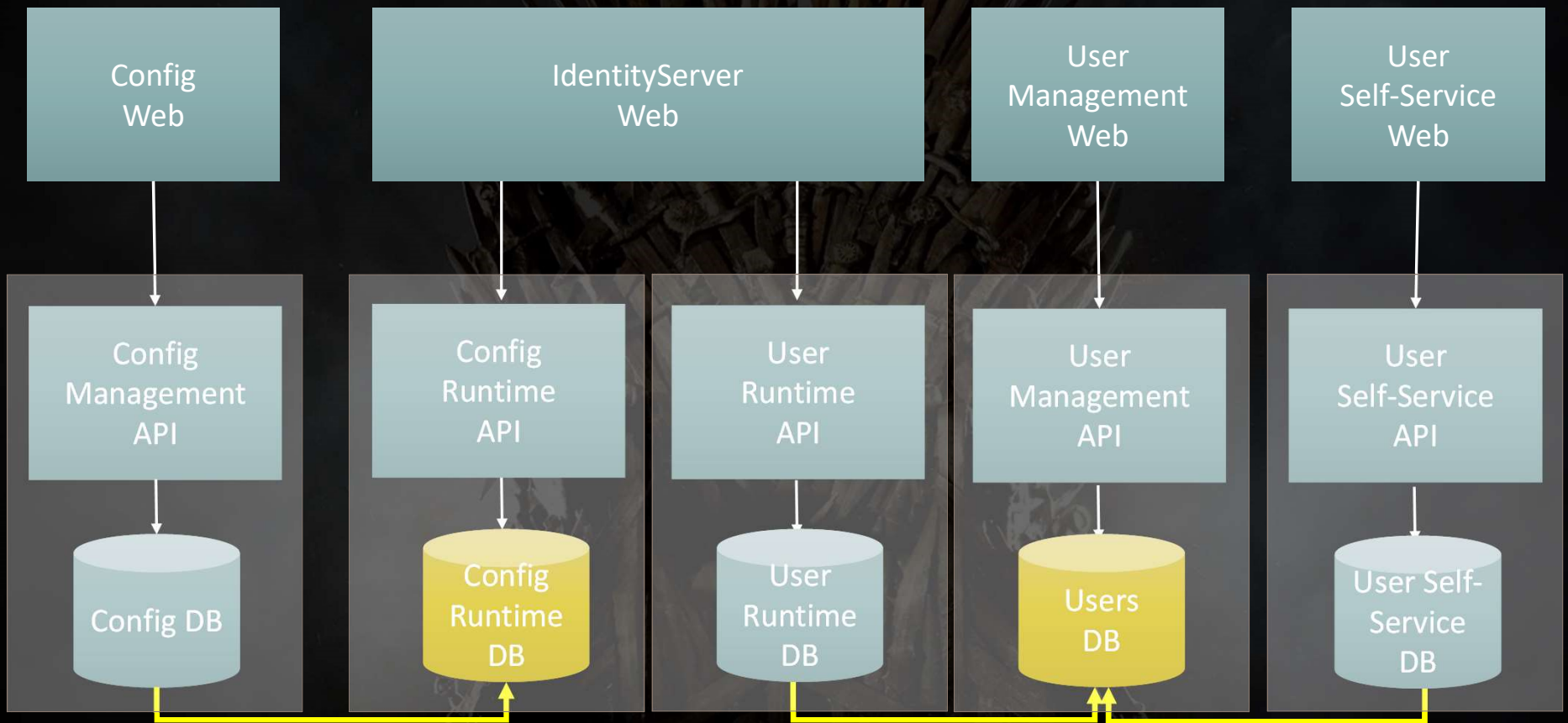
BUILD DASHBOARDS



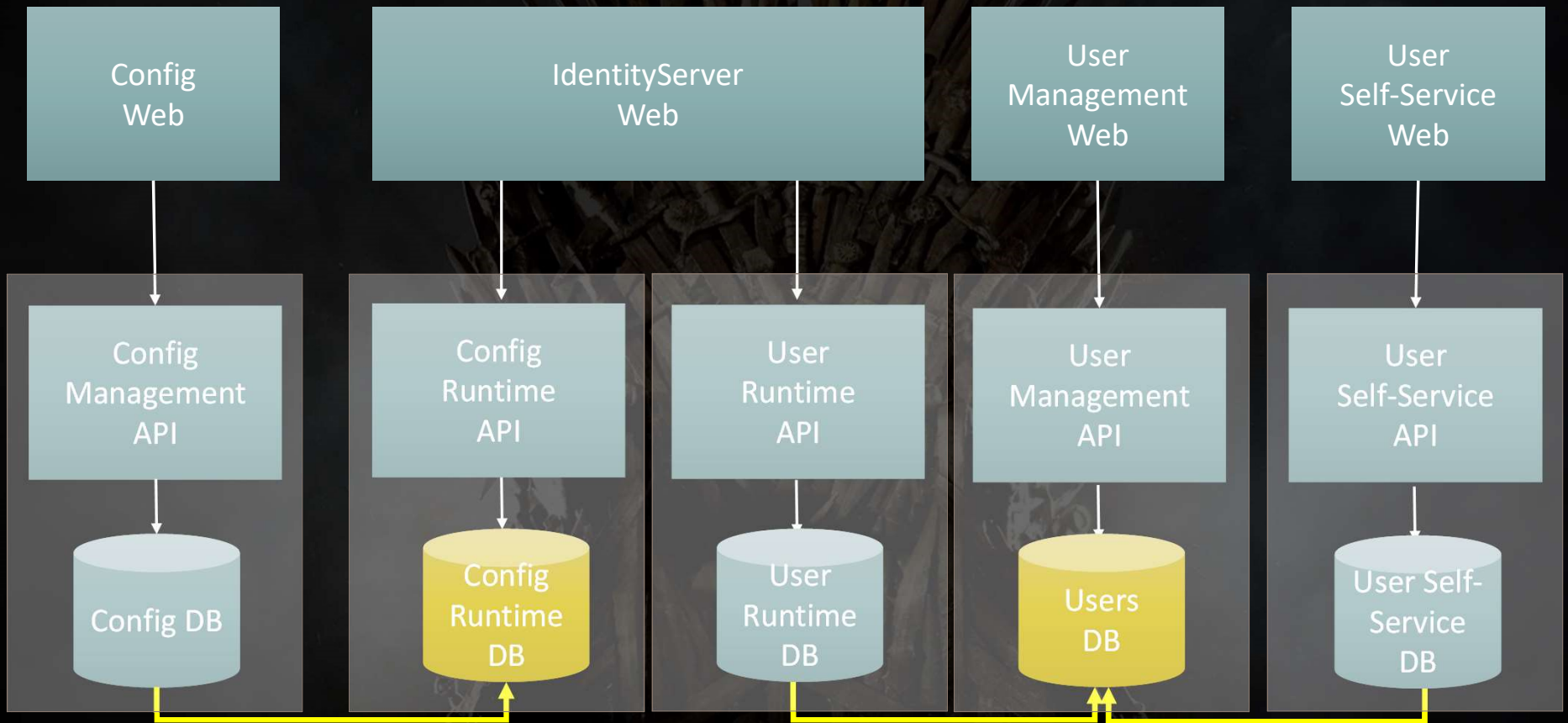
The background of the image is a dark, atmospheric shot of the Iron Throne from the television series Game of Thrones. The throne is constructed from a chaotic pile of swords, with their blades pointing upwards and outwards, creating a jagged, menacing silhouette against a dark, smoky or misty background. The lighting is low, highlighting the metallic texture of the blades and the intricate, brutal design of the seat.

SURVIVING
“EVENTUAL CONSISTENCY”

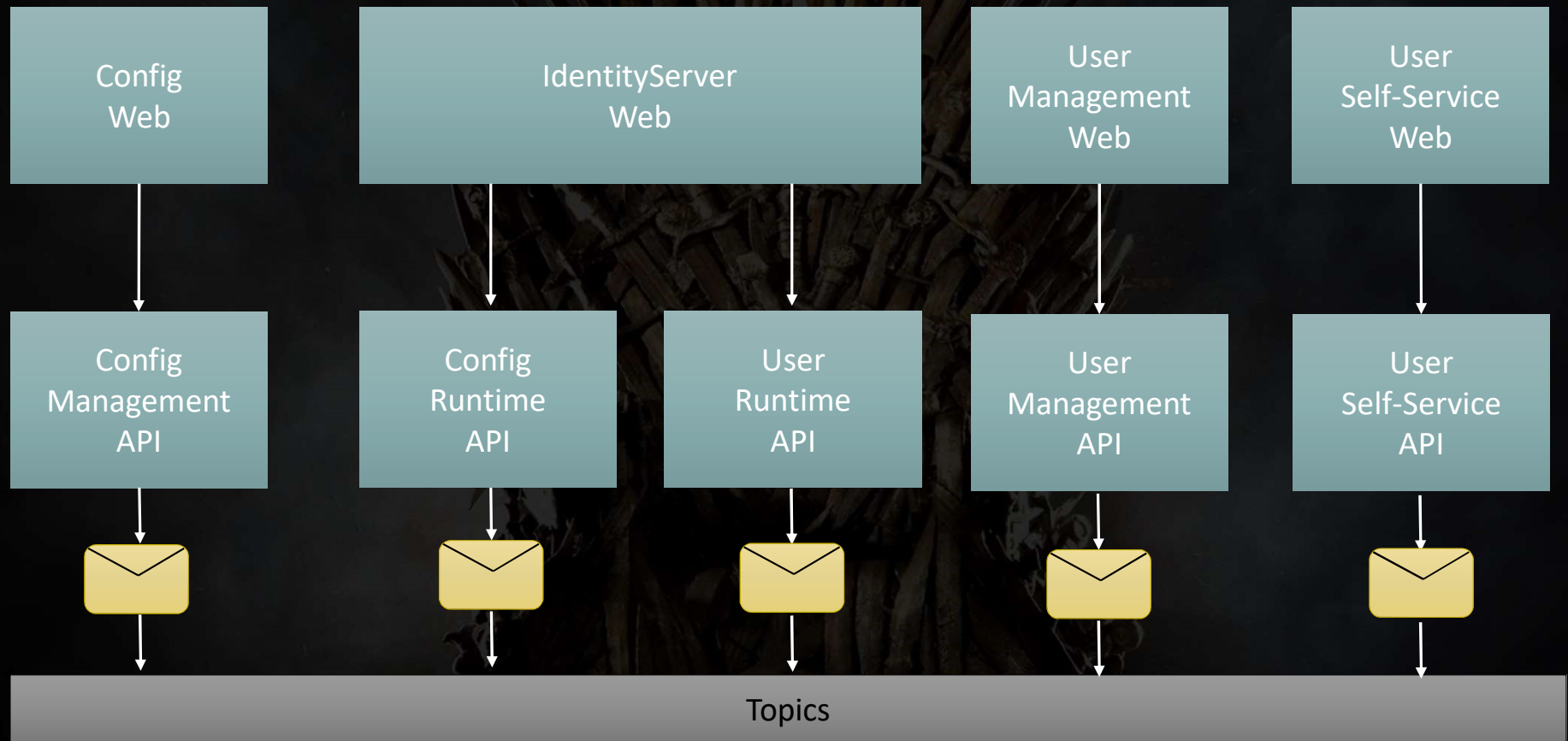
Eventual consistency



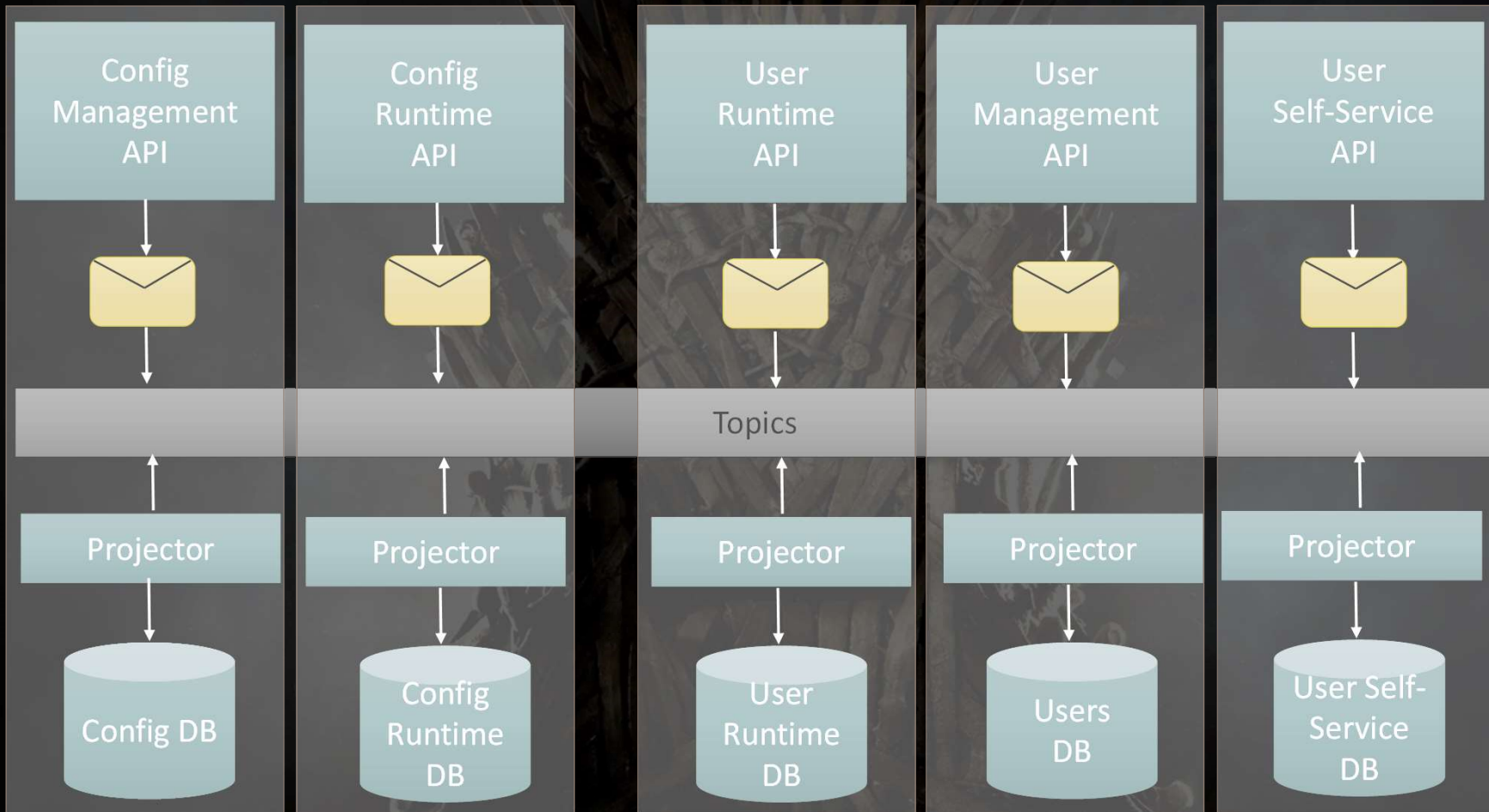
Messaging-based solution



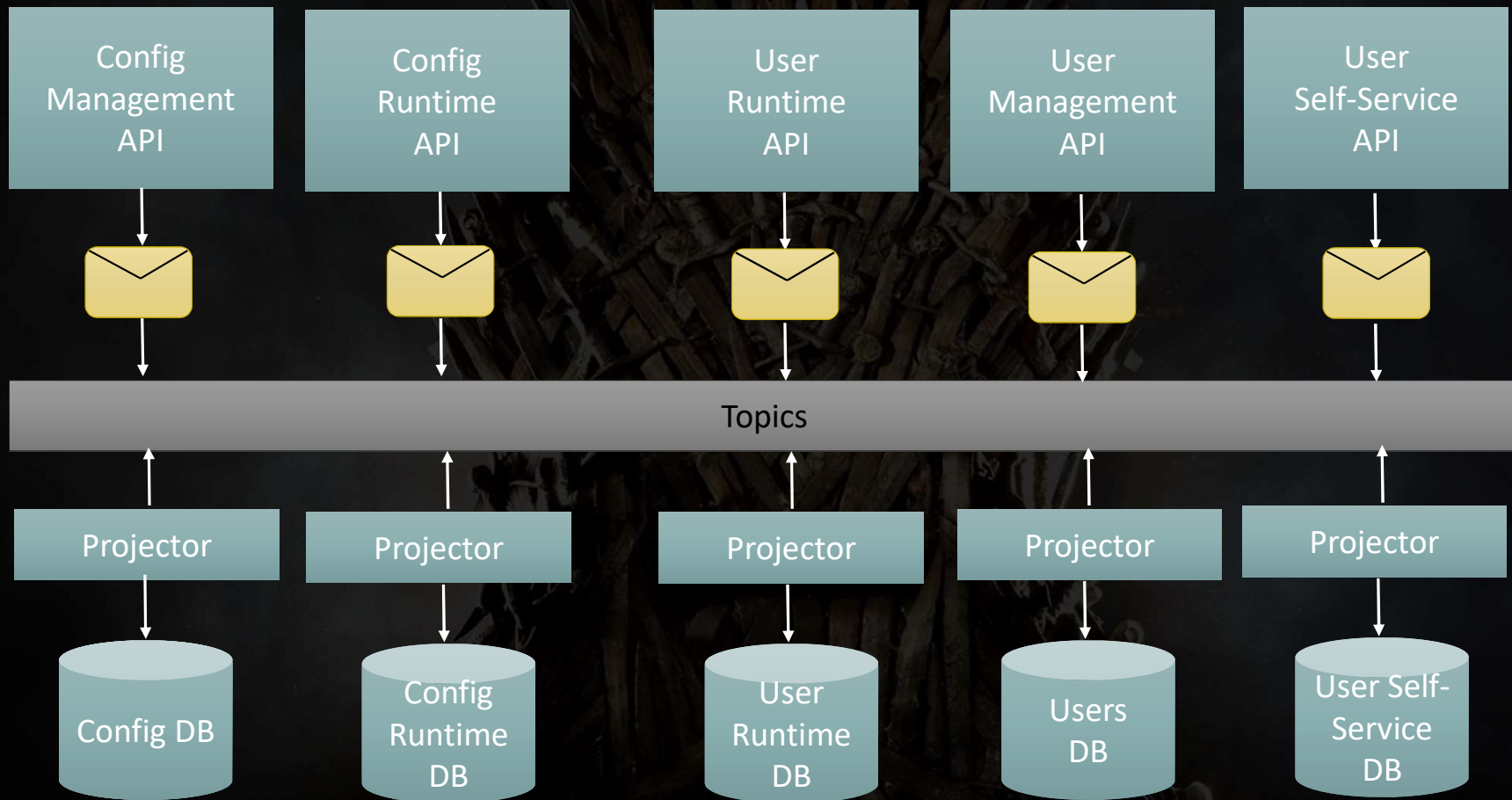
Messaging-based solution



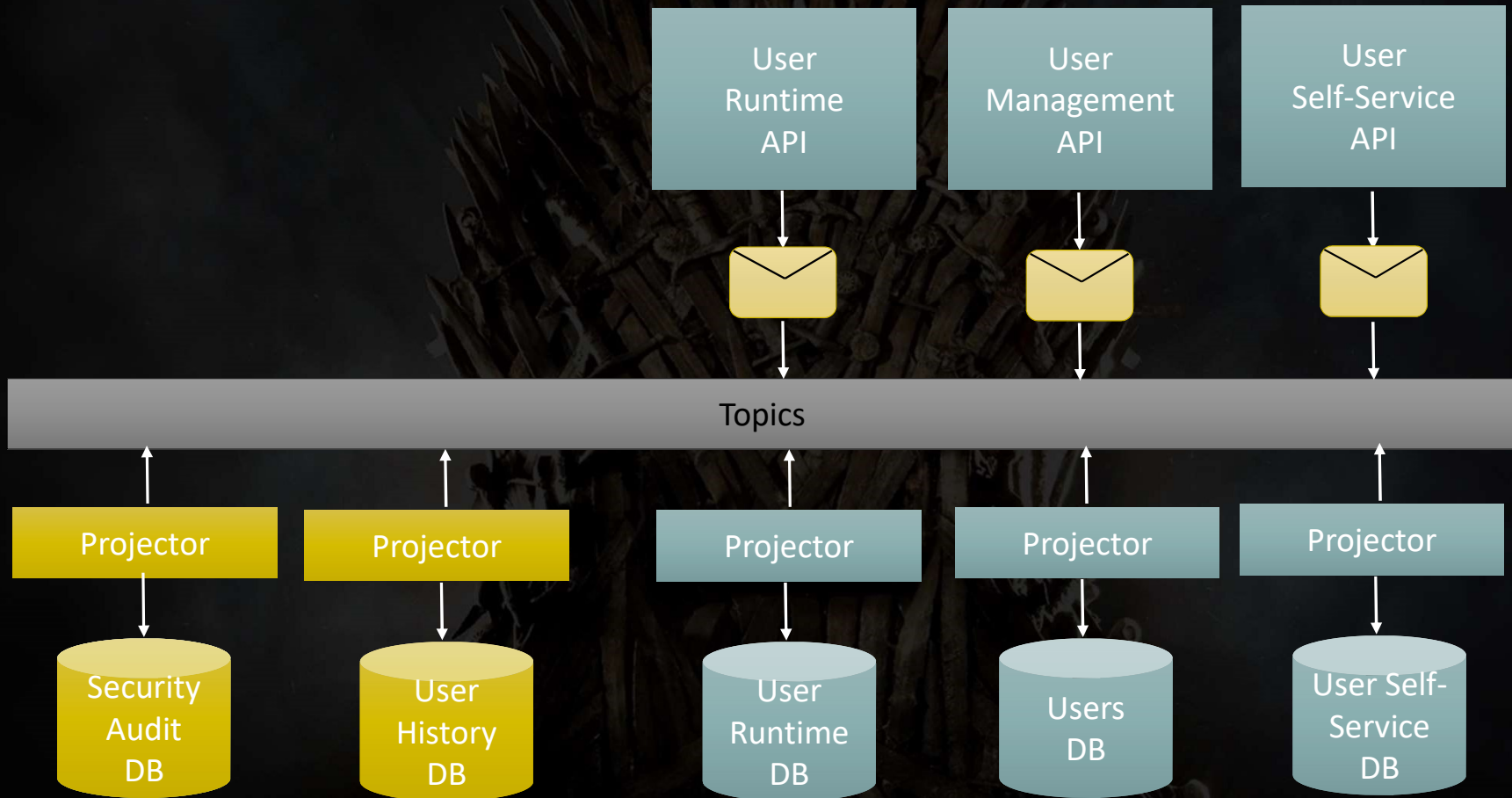
Projecting data



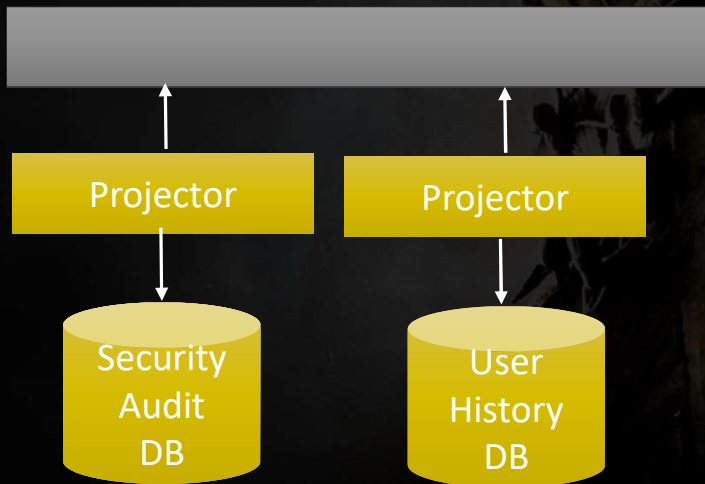
History / Audit



History / Audit

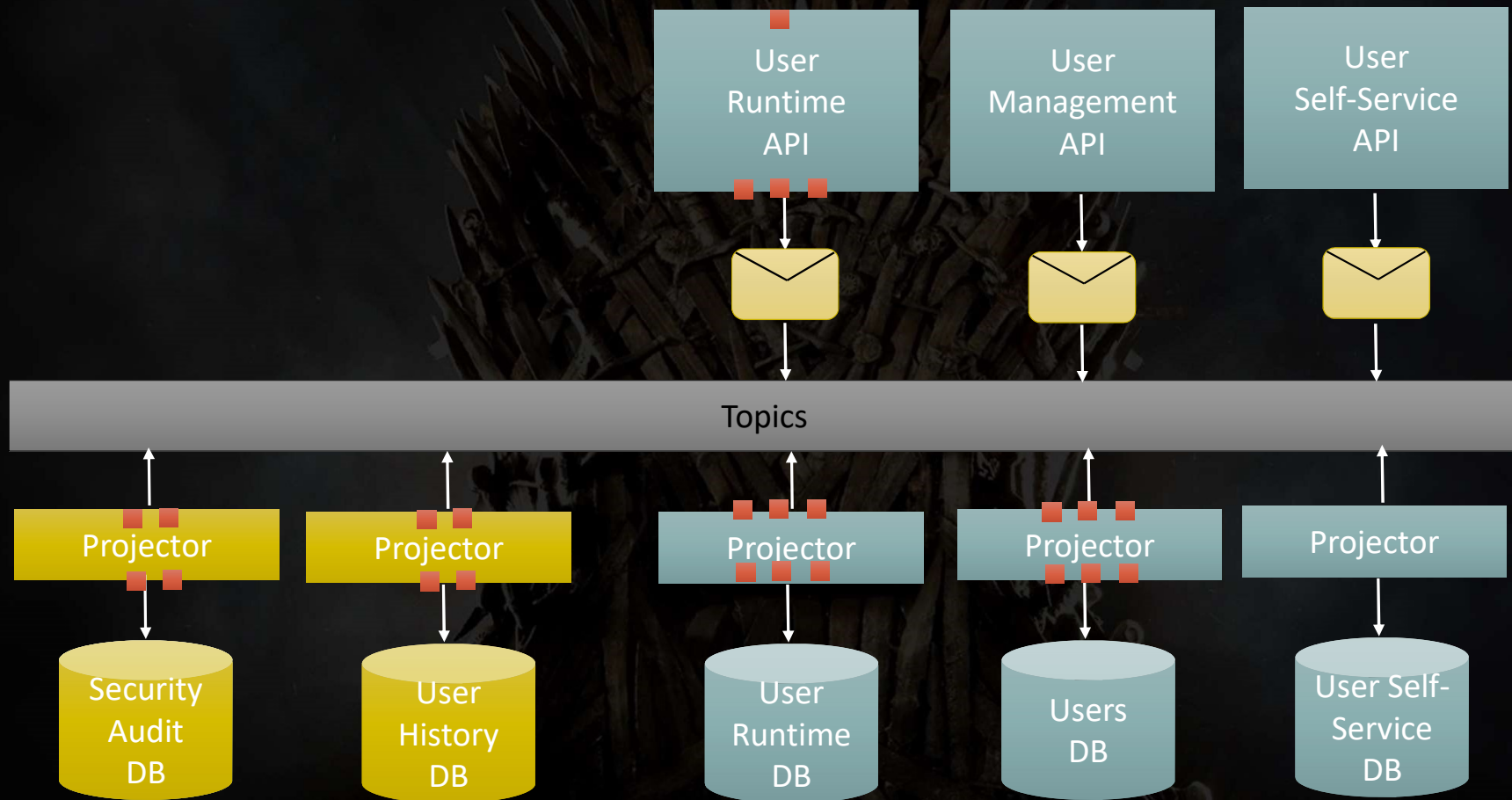


History / Audit



```
{
  "id": "fd5b1598-f1d5-4282-9965-d6ed4e002ba3",
  "UserName": "ducky",
  "__messageType": "UserCreated"
},
{
  "id": "2d1c14b0-8973-407c-8ea5-d920ba930afe",
  "UserName": "ducky",
  "__messageType": "EmailConfirmed"
},
{
  "id": "5931c660-e91c-41d2-84a4-8f8ea3608b4a",
  "UserName": "ducky",
  "__messageType": "UserLoggedIn"
},
{
  "id": "6a75ee38-9355-4548-9462-70b8a4ec0d07",
  "UserName": "ducky",
  "__messageType": "UserLoggedOut"
},
{
  "id": "b8f563cf-0555-4151-8c58-36ba72e3bbc6",
  "UserName": "ducky",
  "__messageType": "UserLoginFailed"
},
{
  "id": "2334a700-69c3-4de4-9572-7782a790c526",
  "UserName": "ducky",
  "__messageType": "UserLockedOut"
},
{
  "id": "12809b61-dc76-486d-ae39-b5a364e22d2f",
  "UserName": "ducky",
  "__messageType": "UserUnlocked"
},
},
```

Messaging and end-to-end visibility




The background of the image is a dark, atmospheric photograph of the Iron Throne from the television series Game of Thrones. The throne is constructed from a chaotic and dense arrangement of swords, spears, and blades, all pointing in various directions. The lighting is dramatic, highlighting the sharp edges and textures of the metal against a dark, smoky or misty background. The overall mood is somber and menacing.

SURVIVING
“INTEGRATION”



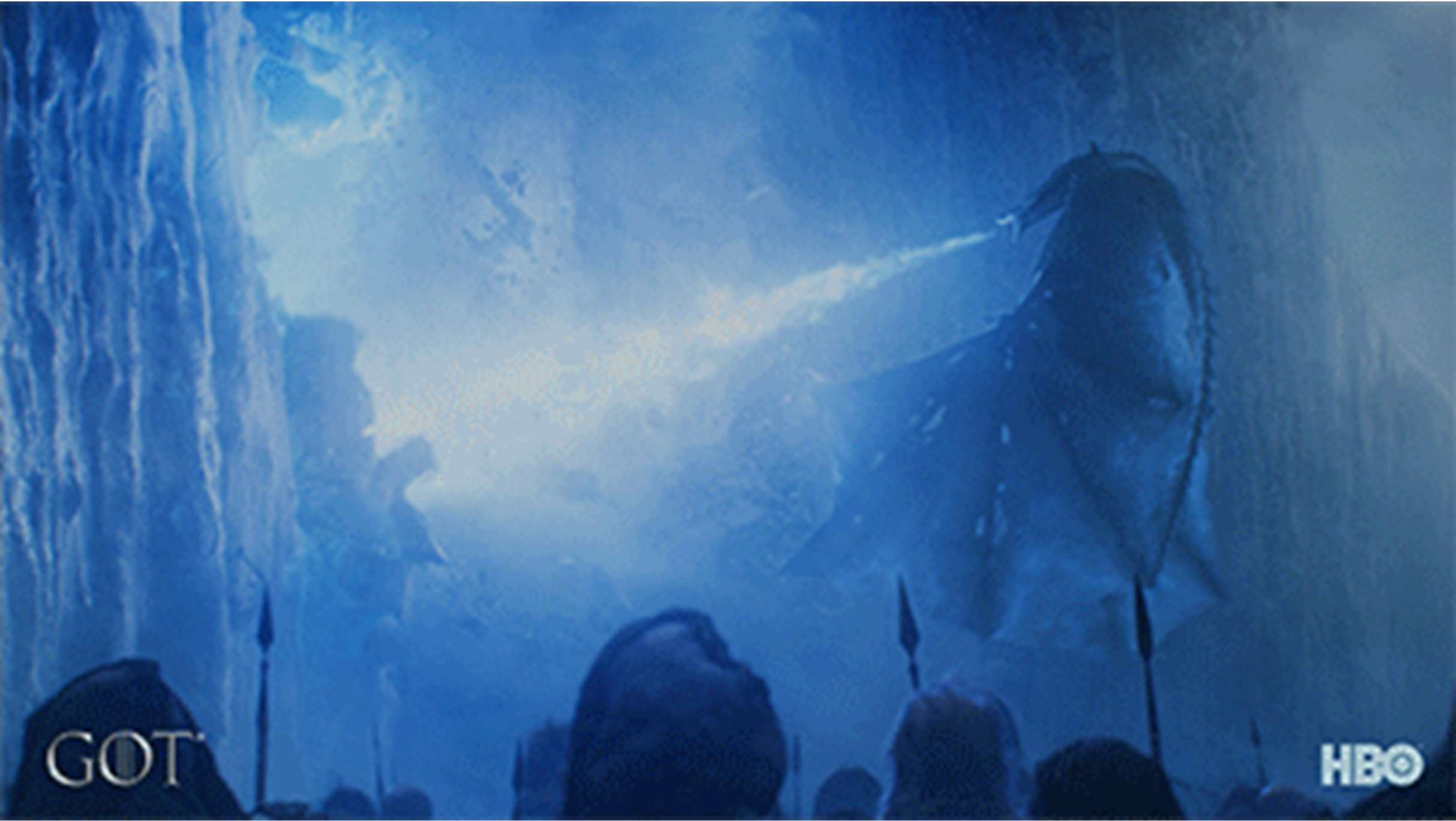
UNIT
TESTING

The background of the image is a dark, atmospheric photograph of the Iron Throne from the television series Game of Thrones. The throne is constructed from numerous swords and spears, with their blades and points protruding in all directions, creating a menacing and sharp silhouette against a dark, smoky or misty background. The lighting is low, highlighting the metallic textures and the sharp edges of the weapons.

CONSUMERS
MUST PROVIDE THE
TEST CASES



UNIT
TESTING



GOT

HBO

The image features the Iron Throne from the television series Game of Thrones, rendered in a dark, moody, and somewhat desaturated style. The throne is the central focus, with its intricate structure of swords and spears visible. The background is a dark, hazy grey, creating a somber and intense atmosphere. Overlaid on the throne is the text "SURVIVING LAUNCH" in a white, serif font. The word "SURVIVING" is on the top line, and "LAUNCH" is on the bottom line, enclosed in quotation marks. The text is centered horizontally and positioned in the upper-middle part of the frame.

SURVIVING
“LAUNCH”



YOUR
USERS

YOUR
SOLUTION



Launch day...
prepare to
fail.



“HOW MANY TIMES MUST I SAY NO
BEFORE YOU UNDERSTAND?”

-DAENERYS TARGARYEN

I want to see drills.
I want to see disaster
recovery.
I want to see standard
operating procedures
(SOPs).



SOMEONE
IS GOING TO TAG LATEST
AND BOOM

IT'S IN PRODUCTION



IT'S A FULL TIME JOB

LOOKING FOR
WAYS TO FAIL



“ONCE YOU’VE ACCEPTED
YOUR FLAWS,
NO ONE CAN USE THEM
AGAINST YOU.”

TYRION LANNISTER

It has to be
Good

Why?
Design
Development
Troubleshooting
Eventual Consistency
Integration
Launch

It cannot be
Fast

POC 6 – 12 weeks min, 3-5 services
MVP 5 – 8 months min, full features

MVP + 6 months, add 5 – 25 services
MVP + 12 months, add 25-50 services
...
Adding 100s of services
becomes easy after that


Note: these are examples only

It will not be
Cheap

POC 150,000 USD
MVP 400,000 USD

MVP + 6 months 100,000 USD
MVP + 12 months 75,000 USD
...
Maybe keep some expertise on hand
50,000 USD / yr

Note: these are examples only

The background of the slide is a dark, atmospheric image of the Iron Throne from the television series Game of Thrones. The throne is constructed from numerous swords and spears, with their blades and points protruding in all directions, creating a menacing and sharp silhouette against a dark, smoky or misty background. The lighting is low, highlighting the metallic textures and the sharp edges of the weapons.

CAN YOU
SURVIVE
MICROSERVICES ?



WINTER IS
COMING