Microservices Migration Patterns

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Hands-on Software Architect / Published Author
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@markrichardssa
migration patterns
microservices roadmap

identify logical components
identify component dependencies
flatten and refactor components
identify component groups (domains)
create remote user interface
migrate domains to macro services
migrate macro services to microservices
migration patterns

microservices roadmap

identify logical components
migration patterns
identify logical components
migration patterns
identify logical components

app.payment
migration patterns

identify logical components

app.customer.notification.sms
migration patterns

identify logical components

app.order.history
migration patterns
identify logical components
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component size refactoring

business.framework.ae

assessment  demographics  financial  health  non-financial  shared
component size refactoring

business.framework.ae

- business.framework.ae. assessment
- business.framework.ae. demographics
- business.framework.ae. financial
- business.framework.ae. health
- business.framework.ae. nonfinancial
- business.framework.ae. shared
## Component Size Analysis

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Total Components: 27
Avg Statements Per Component: 4789
Standard Deviation: 10535
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Component Size Analysis
Total Statements: 129304
Total Components: 32
Avg Statements Per Component: 4040
Standard Deviation: 4534
migration patterns

microservices roadmap

identify logical components
migration patterns
microservices roadmap

flatten and refactor components
migration patterns
flatten and refactor components
migration patterns

flatten and refactor components
migration patterns
flatten and refactor components

app.business.customer.notification.letter

email  letter  sms
app.business.customer.notification
app.business.customer
app.business
app
migration patterns

flatten and refactor components

customer info classes

app.customer

app.customer.preferences

app.customer.notification.sms

app.customer.notification

other notification classes (email, letter, etc.)
migration patterns
flatten and refactor components

app.customer

app.customer.notification

app.customer.notification.sms

app.customer.preferences
migration patterns
flatten and refactor components

app.customer

app.customer.notification

app.customer.notification.sms

app.customer.preferences
migration patterns
flatten and refactor components

app.customer

app.customer.notification

app.customer.preferences
migration patterns
flatten and refactor components

app.customer

app.customer.notification

app.customer.preferences
migration patterns
flatten and refactor components

app.customer

app.customer.notification

app.customer.preferences

app.customer.info
migration patterns
flatten and refactor components

app.customer

app.customer.notification

app.customer.preferences

app.customer.info
migration patterns
flatten and refactor components

app.customer.notification

app.customer.preferences

app.customer.info
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flatten and refactor components

app.customer.notification

app.customer.preferences

app.customer.info
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flatten and refactor components

app.customer

app.customer.notification

app.customer.preferences
migration patterns
flatten and refactor components

app.customer

app.customer.notification

app.customer.preferences

app.customer.shared
**migration patterns**

flatten and refactor components

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migration patterns
flatten and refactor components

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migration patterns
flatten and refactor components

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migration patterns
flatten and refactor components

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app.customer.notification

app.customer.notification.sms

app.customer.notification.letter
migration patterns
flatten and refactor components

app.customer

app.customer.notification

app.customer.notification.sms

app.customer.notification.letter

app.customer.notification.email
migration patterns
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app.customer.notification.email
migration patterns
flatten and refactor components

customer info classes

app.customer

app.customer.preferences

app.customer.notification.sms

app.customer.notification

other notification classes
(email, letter, etc.)
### Migration Patterns

- Flatten and refactor components

#### Example Components

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<th>app.customer.info</th>
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migration patterns

microservices roadmap

flatten and refactor components
migration patterns

microservices roadmap

identify component dependencies
migration patterns
identify components dependencies
migration patterns

identify components dependencies
migration patterns
identify components dependencies

app.shipping.fulfillment.OrderShipment

app.payment.invoicing.CustomerInvoice

import
migration patterns

identify components dependencies

component coupling analysis
migration patterns
identify components dependencies

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identify components dependencies
Sonargraph

http://www.hello2morrow.com/products/sonargraph

Sonargraph-Explorer    Java, C#, Python3
Sonargraph-Architect   Java, C#, C++, C, Python3
Code City

http://www.inf.usi.ch/phd/wettel/codecity.html
http://www.inf.usi.ch/phd/wettel/codecity.html

https://www.developertoarchitect.com/downloads/iplasma.zip
iPlasma6/tools/iPlasma/insider.sh (.bat)

https://www.developertoarchitect.com/downloads/codecity-mac.zip
Code City

http://www.inf.usi.ch/phd/wettel/codecity.html
incoming dependencies
outgoing dependencies
migration patterns

microservices roadmap

identify component dependencies
migration patterns

microservices roadmap

identify component groups (domains)
migration patterns
identify component groups (domains)
migration patterns

identify component groups (domains)

app.customer.info
app.customer.preferences
app.customer.tracking
app.customer.notification
migration patterns
identify component groups (domains)

app.order.history
app.order.cancel
app.order.placement
app.customer.wishlist
app.order.wishlist
migration patterns

identify component groups (domains)
migration patterns

identify component groups (domains)

app.shipping.fulfillment
app.shipping.tracking
migration patterns

microservices roadmap

identify component groups (domains)
migration patterns
microservices roadmap

create remote user interface
migration patterns

create remote user interface
migration patterns
create remote user interface

user interface
api access facade

customer
order management
shipping
payment
migration patterns

microservices roadmap

create remote user interface
migration patterns

microservices roadmap

migrate domains to macro services
migration patterns

migrate domains to macro services

user interface

api access facade

customer

order management

shipping

payment
migration patterns
migrate domains to macro services

user interface

- customer service
- order service
- shipping service
- payment service
migration patterns

microservices roadmap

migrate domains to macro services
migration patterns

microservices roadmap

migrate macro services to microservices
service-based vs. microservices

when do you cross the gray area from service-based architecture to microservices?
service-based vs. microservices

when do you cross the gray area from service-based architecture to microservices?
service-based vs. microservices

when do you cross the gray area from service-based architecture to microservices?
service-based vs. microservices

when do you cross the gray area from service-based architecture to microservices?

4 to 12

100’s to 1000’s
service-based vs. microservices

when do you cross the gray area from service-based architecture to microservices?

4 to 12

100’s to 1000’s
service-based vs. microservices

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100’s to 1000’s
service-based vs. microservices

when do you cross the gray area from service-based architecture to microservices?

4 to 12

100’s to 1000’s
migration patterns
migrate macro services to microservices
migration patterns
migrate macro services to microservices

client requests

user interface layer

admin
40 operations
1 user

service component

customer
200 operations
2000 users
migration patterns

migrate macro services to microservices

client requests

user interface layer

service component

module module module module
module module module module
module module module module
module module module module
module module module module

service component

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api layer

database
migration patterns
migrate macro services to microservices

client requests

user interface layer

api layer
migration patterns
migrate macro services to microservices

request driven

function-driven

data-driven

migration patterns
migrate macro services to microservices

request driven

function-driven

data-driven
migration patterns

- identify coarse-grained functional areas
- create coarse-grained microservices
- map services to data tables
- refine service granularity
- create service dependencies
- identify orchestration level
Microservices Migration Patterns

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