

Um evento com propósito

Embarcadero Conference 2020 Online

TOOOS CONECTADOS



Um evento com propósito
Embarcadero Conference
2020 Online

Do Desktop ao Multi-Device. Do Monolito ao Microserviço

Kelver Merlotti



Legado

- ***Aquilo que se transmite à geração seguinte: herança, deixa, herdade, transmissão, patrimônio, espólio, testamento.***

Fonte: sinonimos.com.br

Legado em TI



HISTORY



PC-852 Latin 2

Zaznan

5 / 98

FOOD_CODE190

FOODCracker, Soda

QUANTITY1.00

UNITTYPEPC

CALS10.0

TOT_FAT_G0

SAT_FAT_G0

CHOLEST_MG0

COMMENTS147

LOGIC_1-

DATUM-

COMMENTS_2This is record no. 5

SUMMARY-455787.005400

FLOATING

1Info

2Polia

3Browse

4Memo

5Skok

6Zad

7Pred

8Znazat

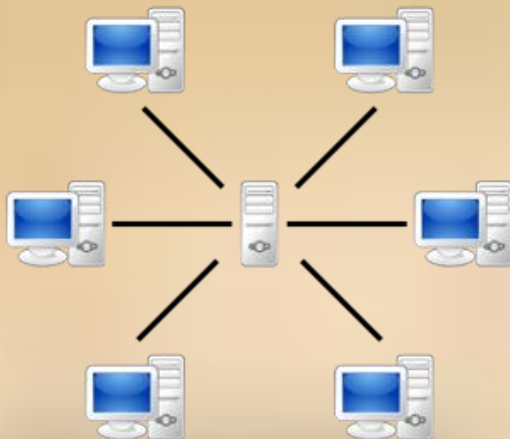
9

10Konec

```
GENSYM: C:\SYMNO\EDIT\DATA.DBF  20.0016 7.34  0  5 / 98
[ PC-852 Latin 2 ]=Zaznan
FOOD_CODE 190
FOOD Cracker, Soda
QUANTITY 1.00
UNITTYPE PC
CALC 10.0
TOT_FAT_G 0
SAT_FAT_G 0
CHOLEST_MG 0
COMMENTS 147
LOGIC_1 - -
DATUM - -
COMMENTS_2 This is record no. 5

SUMMARY -455707.005400
FLOATING
```

1Info 2Polia 3Browse 4Memo 5Skok 6Zad 7Pred 8Znazat 9 10Konec



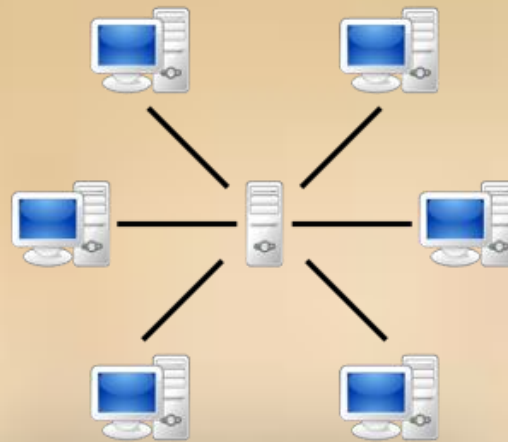

```

PC-852 Latin 2
FOOD_CODE 190
FOOD Cracker, Soda
QUANTITY 1.00
UNITTYPE PC
CALC 10.0
TOT_FAT_G 0
SAT_FAT_G 0
CHOLEST_MG 0
COMMENTS 147
LOGIC_1 -
DATUM -
COMMENTS_2 This is record no. 5

SUMMARY -455787.005400
FLOATING

```

1Info 2Polia 3Browse 4Memo 5Skok 6Zad 7Pred 8Znaza 9 10Konec



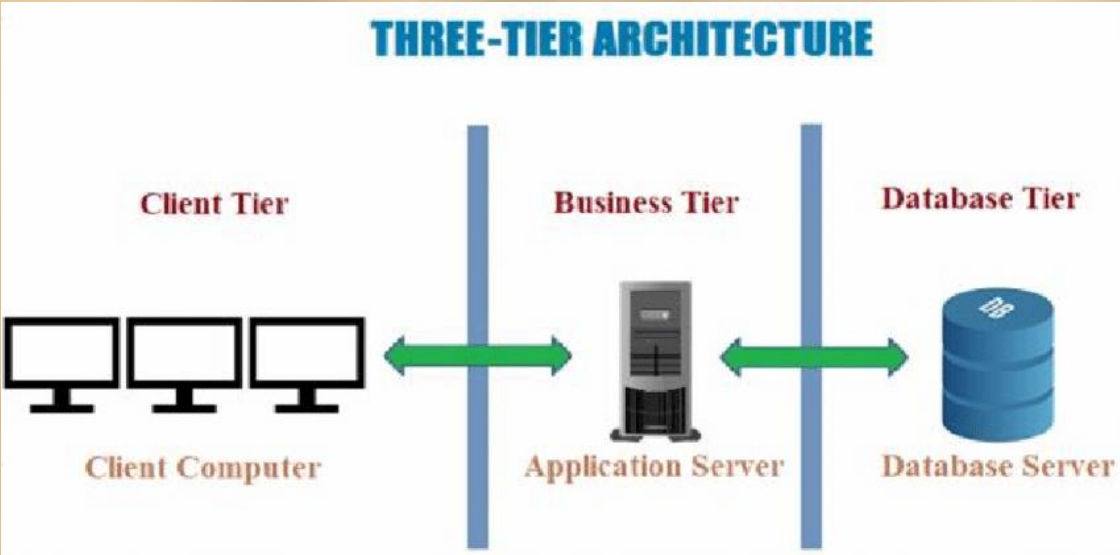
Human Population Growth Calculator 2005

country	Population	growthRate	birthRate	deathRate
Luxembourg	463690	128	1221	842
South Africa	42718530	-25	1835	2054
Saudi Arabia	25795958	244	2874	260
Nigeria	137251133	248	3824	1399
Norway	4574560	41	1189	951
China	1298847624	54	1290	692
India	1048070607	144	228	838
Japan	127333002	8	956	875
USA	293927571	92	1413	834
Sweden	8986400	18	1046	1038
United Kingdom	60270708	29	1089	1019
Pakistan	159196336	288	3122	867
Singapore	4353893	171	943	405
Malaysia	22522482	183	2237	908
Indonesia	238452952	148	3111	626
Italy	58057477	9	908	1021
Germany	82424609	2	845	1044
France	60424213	39	1234	906
Canada	32907874	92	1091	767
Mexico	104895994	118	2144	472
Egypt	76117421	183	2384	83
Sudan	39149162	264	3579	937

Results	
Country	USA
Population	293927571
growthRate (Percent)	0.92
birthRate (per 1000)	0.01413 (14.13 per 1000)
deathRate (per 1000)	0.00834 (8.34 per 1000)
rate of Natural Increase	0.00579
BIRTH	4153196.57823
DEATHS	2451355.94214
dIF	1701840.63609
old Pop (Last Year)	292225730.36391
current Population	293927571
Pop Growth	1701840.63609
New Pop	295629411.63609
Population Doubling (in X Years)	119.714538956813

Input
Country:
current Population:
growthRatePercent:
birthRate:
deathRate:

Buttons: Add New, Calculate, Info, Exit



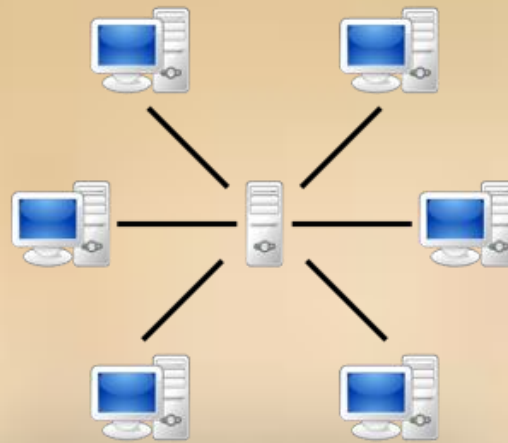
```

PC-852 Latin 2
FOOD_CODE 190
FOOD Cracker, Soda
QUANTITY 1.00
UNITTYPE PC
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TOT_FAT_G 0
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LOGIC_1 -
DATUM -
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FLOATING

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1Info 2Polia 3Browse 4Memo 5Skok 6Zad 7Pred 8Znazat 9 10Konec

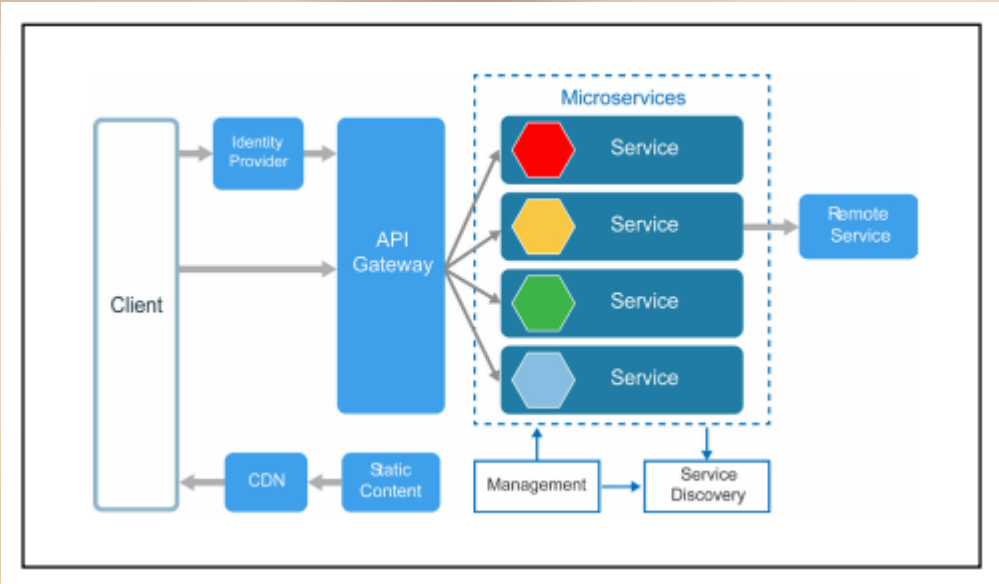
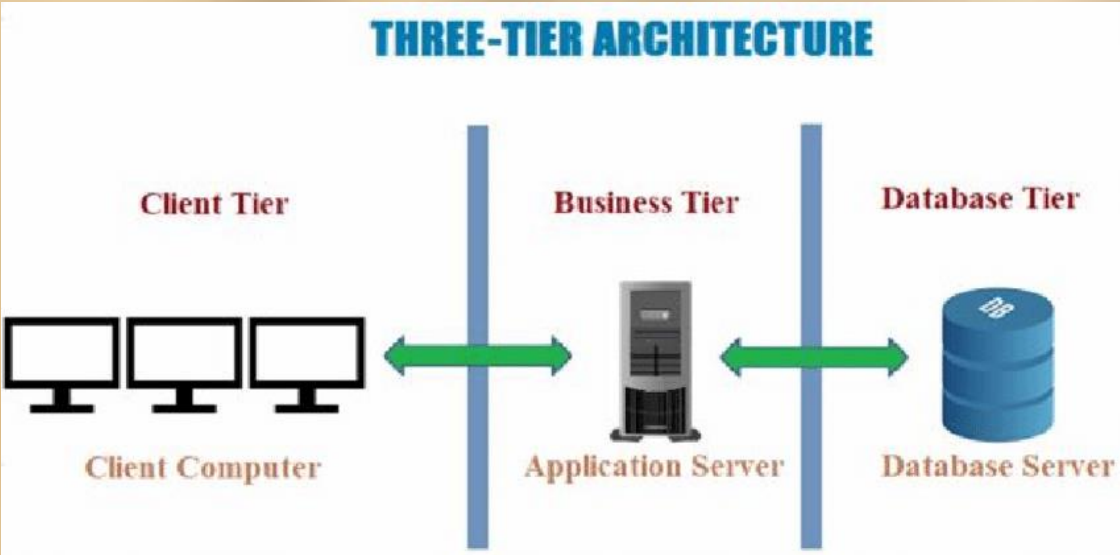


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Sweden	8986400	18	1046	1038
	28404543	267	4631	1661
United Kingdom	60270708	29	1088	1019
Pakistan	159196336	288	3122	867
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Deaths	2451355.94214
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old Pop (Last Year)	292225730.36391
current Population	293927571
Pop Growth	1701840.63609
New Pop	295629411.63609
Population Doubling (in X Years)	119.714538956813

Input Country:
 current Population:
 growthRatePercent:
 birthRate:
 deathRate:
 Add New Calculate Info Exit



Cloud

Backend

Mobile

Services

Web

Segurança

Desktop

Integração



E sobre o
Futuro?







BIG
DATA



DEEP
LEARNING



MACHINE
LEARNING



ARTIFICIAL
INTELLIGENCE



**Mas e o
Legado?**

User Interface

Business Layer

Data Interface

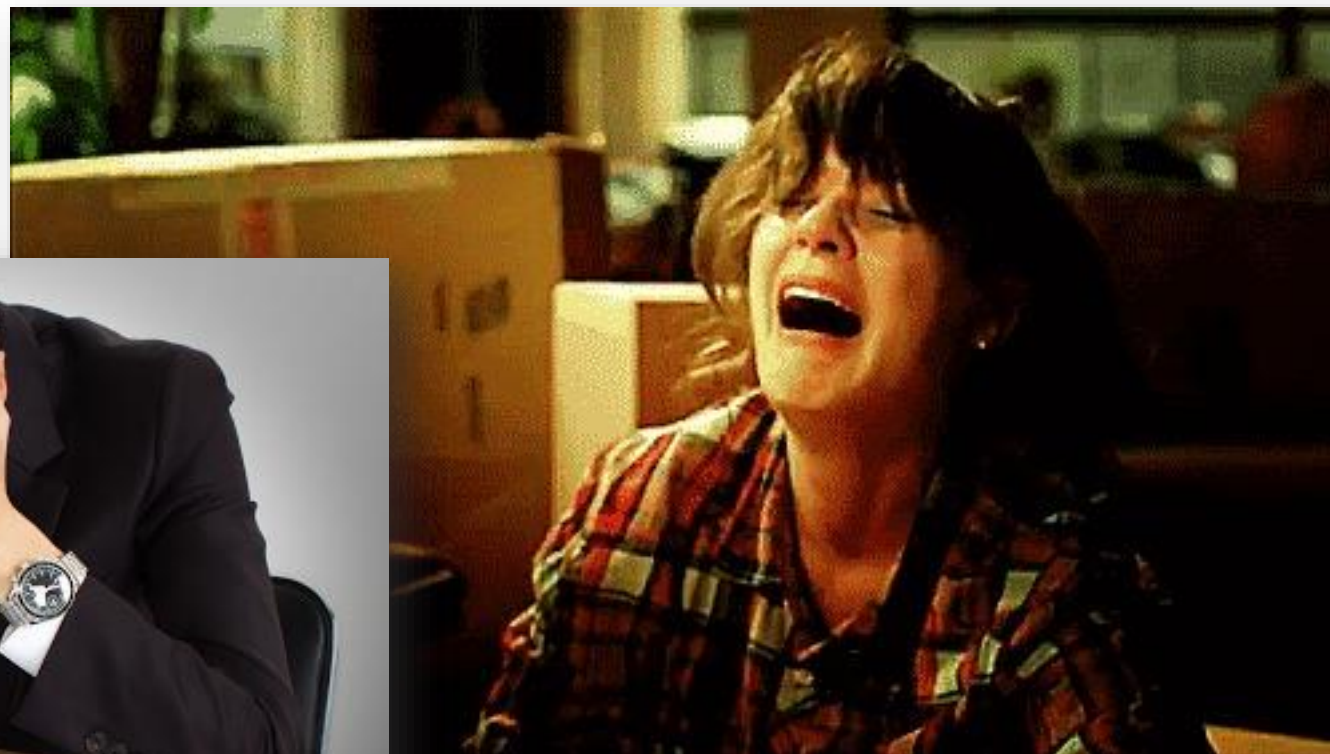


Desafios do legado

- Monolito

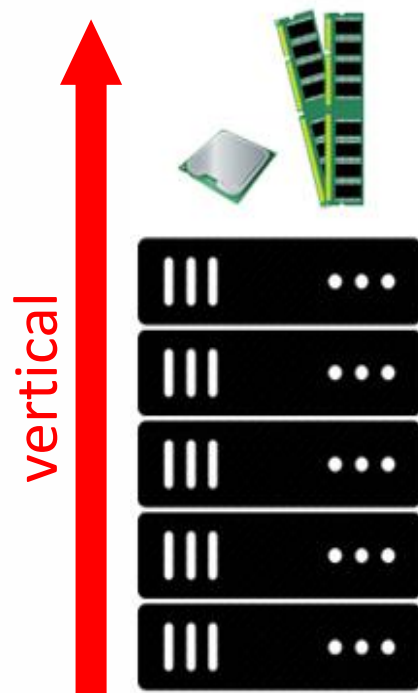
Desafios do legado

- Manutenção



Desafios do legado

- Escalabilidade

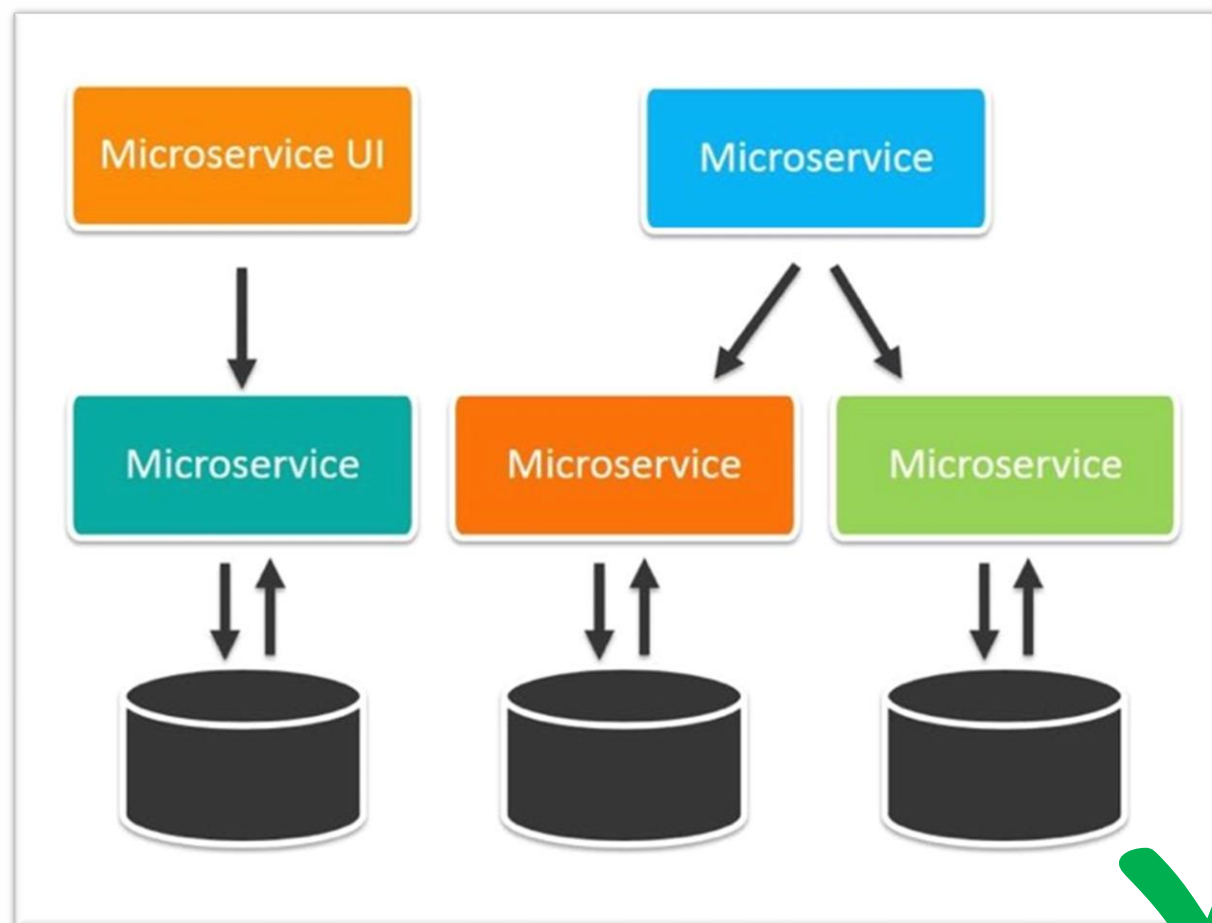
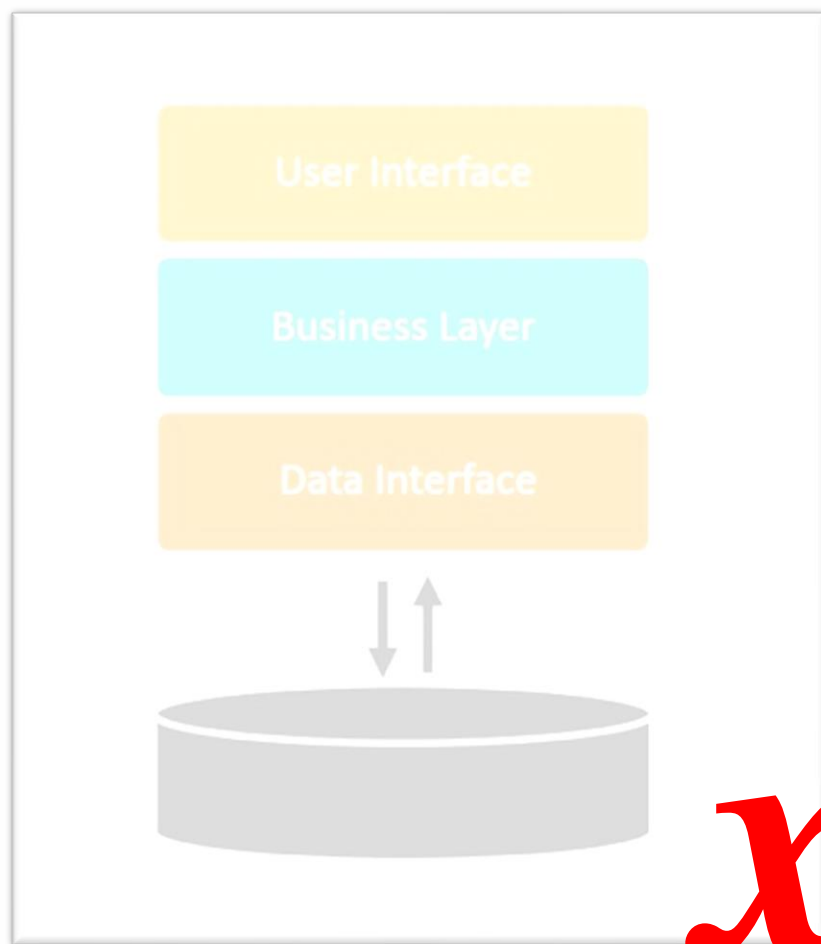


Desafios do legado

- Elasticidade



Microservice como alternativa



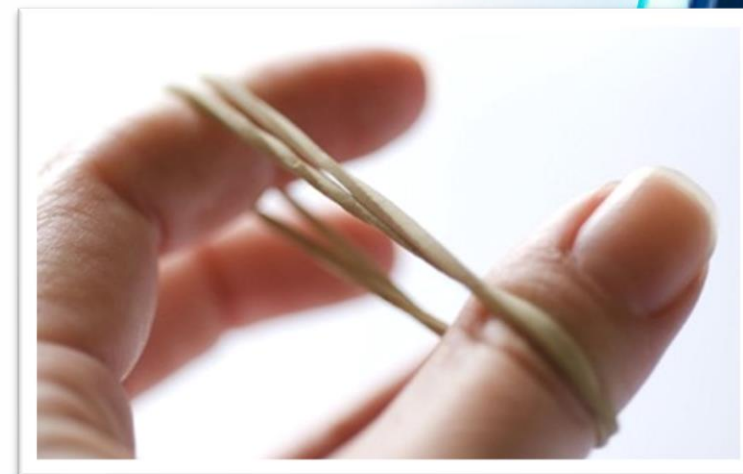
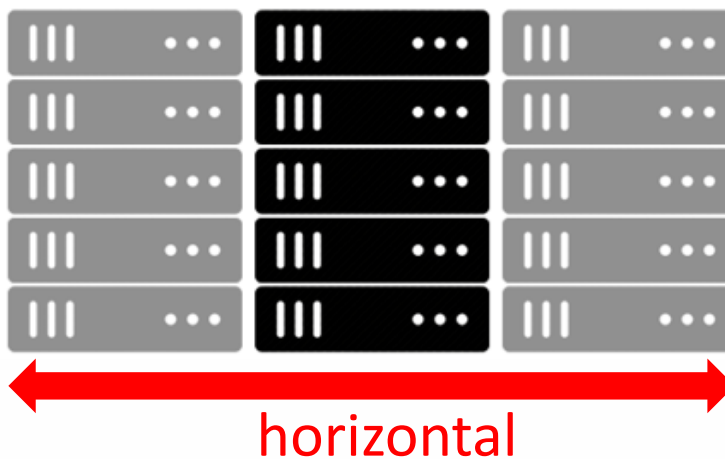
Um Microservice é...

- Grupo de pequenas e bem definidas responsabilidades
- Altamente testável e manutenível
- Desacoplado
- Deploy independente
- Estruturado com base nos recursos do negócio
- Tocado por uma equipe pequena

Um Microservice NÃO é...

- Bala de prata
- Receita de bolo
- Religião, Partido político nem time de futebol

Resultados possíveis



Nada de reinventar a roda:

<https://microservices.io>

CUIDADO: Não tente voar antes de aprender a andar!

Anti-pattern: Trying to fly before you can walk

Voar

DevOps

Correr

Dirigido a domínio
(DDD)

Passos
largos

Orientação a objetos

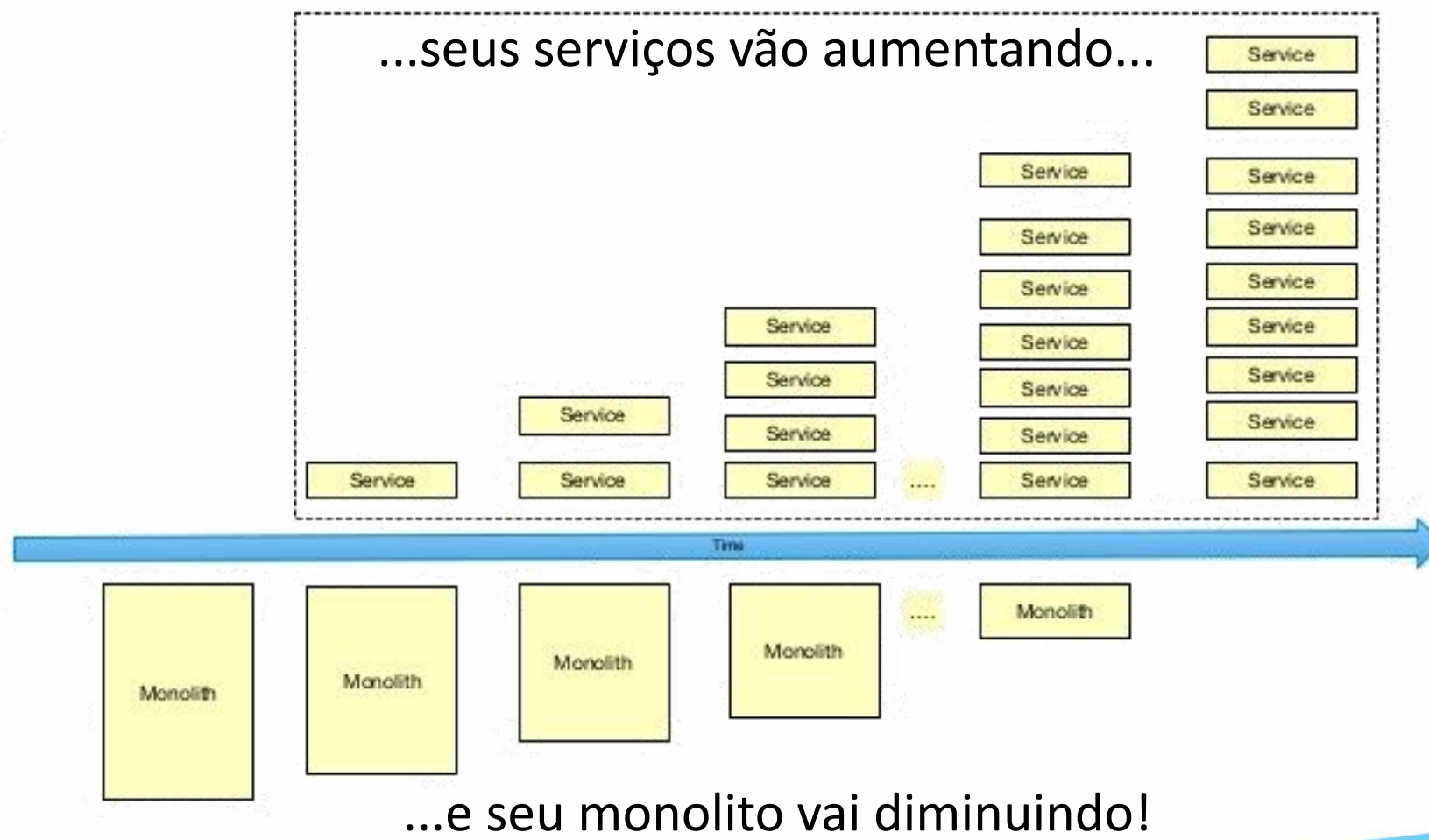
Caminhar

Teste automatizado

Engatinhar

Clean Code

Faça incremental: ao longo do tempo...



E a migração?

- Planejamento
- Teste
- Refactorings
 - Reduzir acoplamentos
 - Extrair regras de negócio
- Teste
- Criar serviços
- Teste
- Integrar com o “legado”
- Teste, **muito** teste

Desktop



Enterprise Devices



Mobile



Gadgets & Wearables



Data



 **embarcadero**[®]
An Idera, Inc. Company



Form1

- btnBuscarCEP
- btnGravar
- edtCEP
- edtCPF
- edtLimite
- edtNome
- FDConnection
- memEndereco
- qryCEP
- qryGravaCliente

Cadastro de Cliente

Nome

CPF

Limite de Crédito

CEP

Buscar CEP

FDConnection

qryCEP

qryGravaCliente

Gravar

Monolito.dproj - Projects

- SkyOne2020
- Monolito.exe
 - Build Configurations (Debug)
 - Target Platforms (Win32)
 - Unit1.pas
- MonolitoRefatorado.exe
- MonolitoRefatoradoIsolado.exe
- CEPs.bpl
- MonolitoChamandoServicoCEPs.exe

Action

ActiveControl

Align

AlignWithMargin

AlphaBlend

AlphaBlendValue

Anchors

AutoScroll

AutoSize

BiDiMode

BorderIcons

BorderStyle

BorderWidth

Caption

alNone

False

False

255

[akLeft,akTop]

False

False


bdLeftToRight

[biSystemMenu,biMinimi

bsSizeable

0

Cadastro de Cliente

 Cadastro de Cliente

Nome

CPF Limite de Crédito

CEP

Rua Dr Luiz Migliano
Jd. Caboré
São Paulo/SP

Classes

- TForm1(TForm)
 - Published
 - edtNome: TLabelEdit
 - edtCPF: TLabelEdit
 - edtLimite: TLabelEdit
 - edtCEP: TLabelEdit
 - btnBuscarCEP: TButton
 - memEndereco: TMemo
 - btnGravar: TButton
 - qryCEP: TFDQuery
 - qryGravaCliente: TFDQuery
 - FDConnection: TFDConnection
 - qryGravaClienteNOME: TStringFi

Object Inspector

Form1 TForm1

Properties Events

Action

ActiveControl

Align ☒ alNone

AlignWithMargin ☐ False

AlphaBlend ☐ False

AlphaBlendValue 255

Anchors [akLeft,akTop]

AutoScroll ☐ False

AutoSize ☐ False

BiDiMode bdLeftToRight

BorderIcons [biSystemMenu,biMinimi

BorderStyle bsSizeable

BorderWidth 0

Caption **Cadastro de Cliente**

Quick Edit... Quick Edit Icon... Bind Visually...

All shown

```

implementation
{$R *.dfm}

procedure TForm1.btnBuscarCEPClick(Sender: TObject);
begin
    qryCEP.Open('select * from CEPS where CEP = :CEP',
                [edtCEP.Text],
                [ftString]);

    try
        if not qryCEP.IsEmpty then
            memEndereco.Lines.Add(
                qryCEP.FieldByName('logradouro').AsString + sLineBreak +
                qryCEP.FieldByName('bairro').AsString + sLineBreak +
                qryCEP.FieldByName('cidade').AsString + '/' +
                qryCEP.FieldByName('uf').AsString + sLineBreak);
        else
            ShowMessage('CEP não encontrado');
        finally
            qryCEP.Close;
        end;
    end;

procedure TForm1.btnGravarClick(Sender: TObject);
var
    LimiteMaximo: Real;
begin
    if Trim(edtCPF.Text).Length <= 3 then
    begin
        ShowMessage('CPF Inválido!');
        edtCPF.SetFocus;
        abort;
    end;

    LimiteMaximo := StrToInt(edtCPF.Text[1]) * 100;
    if StrToFloatDef(edtLimite.Text, 0) > LimiteMaximo then
    begin
        ShowMessage('Limite inválido. Valor máximo: ' +
            FormatSettings.CurrencyString +

```

Monolito.dproj - Projects

- SkyOne2020
 - Monolito.exe
 - Build Configurations (Debug)
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 - Unit1.pas
 - MonolitoRefatorado.exe
 - MonolitoRefatoradoIsolado.exe
 - CEPs.bpl
 - MonolitoChamandoServicoCEPs.exe

C:\EVENTS\SKYONE2020\Monolito\Unit1.pas

Monolito... Model Vi... Data Expl... Multi-De...

Palette

- Delphi | Individual Files
- Modeling
- Other | Unit Test
- Delphi
- Delphi | Windows
- Delphi | Multi-Device
- Other | Web
- Other
- Delphi | DataSnap
- Delphi | Web
- Delphi | RAD Server
- Delphi | Inheritable Items
- Delphi | Database
- Delphi | IntraWeb


```
{ $R *.dfm }
```

```
procedure TForm1.btnBuscarCEPClick(Sender: TObject);
```

```
begin
```

```
    qryCEP.Open('select * from CEPS where CEP = :CEP',  
                [edtCEP.Text],  
                [ftString]);
```

```
    try
```

```
        if not qryCEP.IsEmpty then
```

```
            memEndereco.Lines.Add(
```

```
                qryCEP.FieldByName('logradouro').AsString + sLineBreak +  
                qryCEP.FieldByName('bairro').AsString + sLineBreak +  
                qryCEP.FieldByName('cidade').AsString + '/' +  
                qryCEP.FieldByName('uf').AsString + sLineBreak)
```

```
        else
```

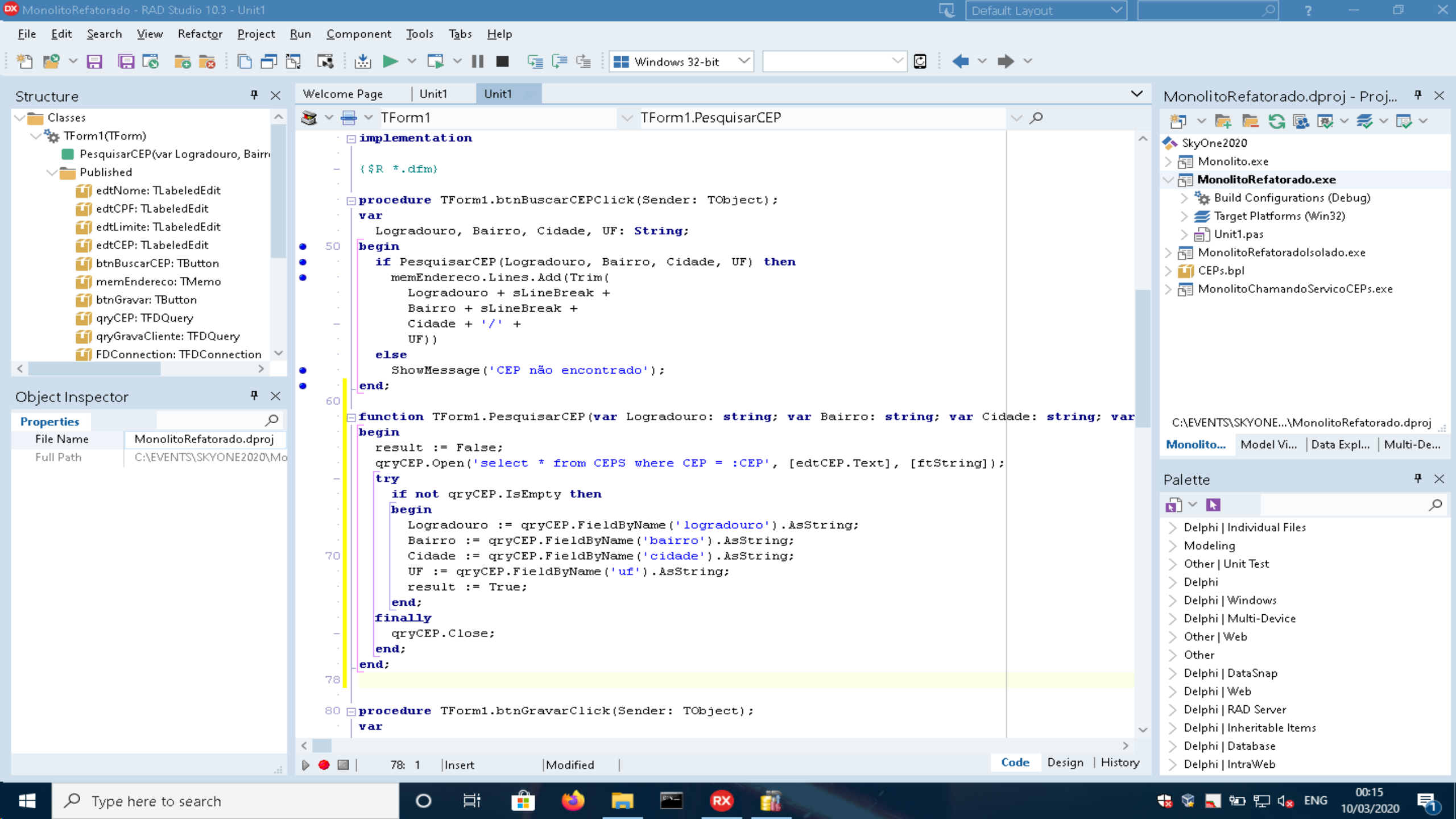
```
            ShowMessage('CEP não encontrado');
```

```
    finally
```

```
        qryCEP.Close;
```

```
    end;
```

```
end;
```



TFORM1

TFORM1.PesquisarCEP

```
implementation
{ $R *.dfm }

procedure TForm1.btnBuscarCEPClick(Sender: TObject);
var
    Logradouro, Bairro, Cidade, UF: String;
begin
    if PesquisarCEP(Logradouro, Bairro, Cidade, UF) then
        memEndereco.Lines.Add(Trim(
            Logradouro + sLineBreak +
            Bairro + sLineBreak +
            Cidade + '/' +
            UF))
    else
        ShowMessage('CEP não encontrado');
end;

function TForm1.PesquisarCEP(var Logradouro: string; var Bairro: string; var Cidade: string; var
begin
    result := False;
    qryCEP.Open('select * from CEPS where CEP = :CEP', [edtCEP.Text], [ftString]);
    try
        if not qryCEP.IsEmpty then
            begin
                Logradouro := qryCEP.FieldName('logradouro').AsString;
                Bairro := qryCEP.FieldName('bairro').AsString;
                Cidade := qryCEP.FieldName('cidade').AsString;
                UF := qryCEP.FieldName('uf').AsString;
                result := True;
            end;
        finally
            qryCEP.Close;
        end;
    end;
end;
```



```

var
  Form1: TForm1;

40
implementation

  {$R *.dfm}

uses
  untDmCep;

procedure TForm1.btnBuscarCEPClick(Sender: TObject);
var
  Logradouro, Bairro, Cidade, UF: String;
50
begin
  if dmCep.PesquisarCEP(editCEP.Text, Logradouro, Bairro, Cidade,
    memEndereco.Lines.Add(Trim(
      Logradouro + sLineBreak +
      Bairro + sLineBreak +
      Cidade + '/' +
      UF))
  else
    ShowMessage('CEP não encontrado');
  end;
60

```

```

var
  dmCep: TdmCep;

implementation

  {%CLASSGROUP 'Vcl.Controls.TControl'}
  30  {$R *.dfm}

  function TdmCep.PesquisarCEP(const ACEP: string; var Logradouro: string;
    var Bairro: string; var Cidade: string; var UF: string): Boolean;
  begin
    35    result := False;
    qryCEP.Open('select * from CEPS where CEP = :CEP', [ACEP], [ftString]);
    try
      if not qryCEP.IsEmpty then
      begin
        40        Logradouro := qryCEP.FieldName('logradouro').AsString;
        Bairro := qryCEP.FieldName('bairro').AsString;
        Cidade := qryCEP.FieldName('cidade').AsString;
        UF := qryCEP.FieldName('uf').AsString;
        result := True;
      end;
    finally
      qryCEP.Close;
    end;
  end;
50
end.

```

```
procedure TCepResource1.GetItem(const AContext: TEndpointContext; const ARequest
var
    LItem: string;
    LDM: TdmCep;
    LLogradouro, LBairro, LCidade, LEstado: String;
    LJSONObj: TJSONObject;
begin
40    LItem := ARequest.Params.Values['item'];

    if LItem.Trim.Length < 5 then
        AResponse.RaiseBadRequest('Invalid param length');

    LDM := TdmCep.Create(nil);
    try
        if LDM.PesquisarCEP(LItem, LLogradouro, LBairro, LCidade, LEstado) then
            begin
                LJSONObj := TJSONObject.Create;
50                LJSONObj.AddPair('logradouro', LLogradouro);
                LJSONObj.AddPair('bairro', LBairro);
                LJSONObj.AddPair('cidade', LCidade);
                LJSONObj.AddPair('estado', LEstado);

                AResponse.Body.SetValue(LJSONObj, True);
            end
            else
                AResponse.RaiseNotFound(LItem + ' not found');
        finally
60            LDM.Free;
        end;
    end;
end;
```



REST Debugger

Embarcadero Technologies

Request

Request Parameters Authentication Connection

Method: GET URL: http://localhost:8080/cep/05711001

Content-Type:

Custom body:

Send Request

New Request

Load Request

Response

http://localhost:8080/cep/05711001

200 : OK - 104 bytes of data returned. Timing: Pre: 0ms - Exec: 94ms - Post: 109ms - Total: 203ms

Headers Body Tabular Data

Content is valid JSON

JSON Root Element:

```
{
  "logradouro": "Rua Dr Luiz Migliano",
  "bairro": "Jd. Caboré",
  "cidade": "São Paulo",
  "estado": "SP"
}
```

Proxy-server disabled

Content is valid JSON

JSON

```
{
  "logradouro": "Rua Dr Luiz Migliano",
  "bairro": "Jd. Caboré",
  "cidade": "São Paulo",
  "estado": "SP"
}
```



```

procedure TForm1.btnBuscarCEPClick(Sender: TObject);
var
    Logradouro, Bairro, Cidade, UF: String;
begin
    if dmCep.PesquisarCEP(edtCEP.Text, Logradouro, Bairro, C
        memEndereco.Lines.Add(Trim(
            Logradouro + sLineBreak +
            Bairro + sLineBreak +
            Cidade + '/' +
            UF))
    else
        ShowMessage('CEP não encontrado');
end;

```

```

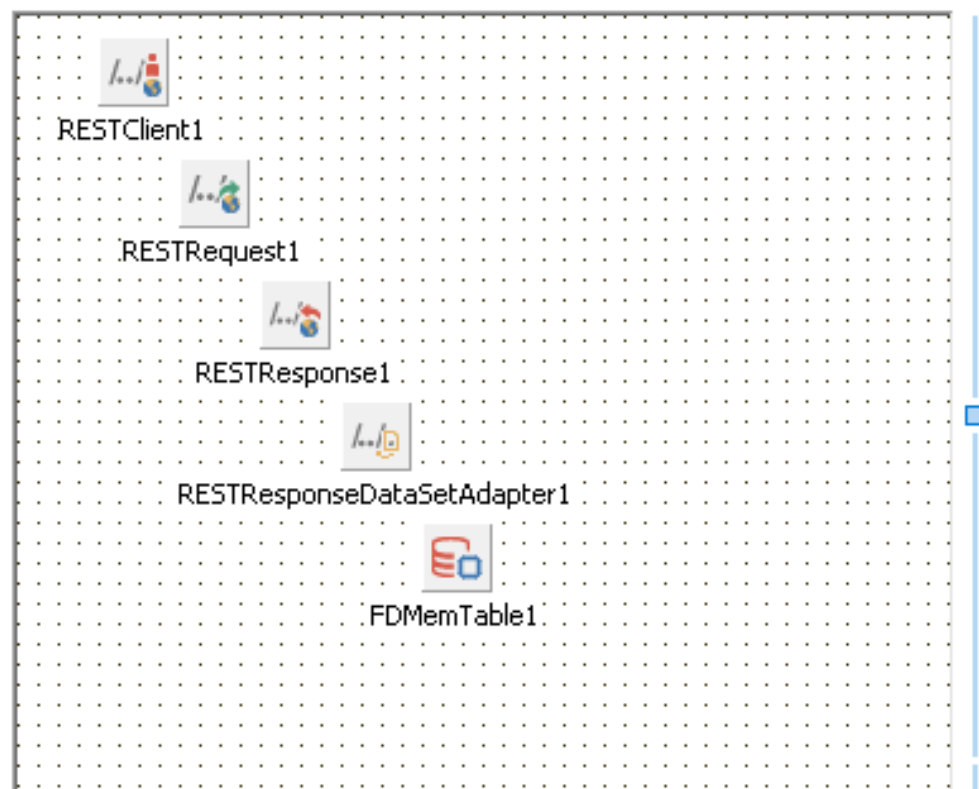
implementation

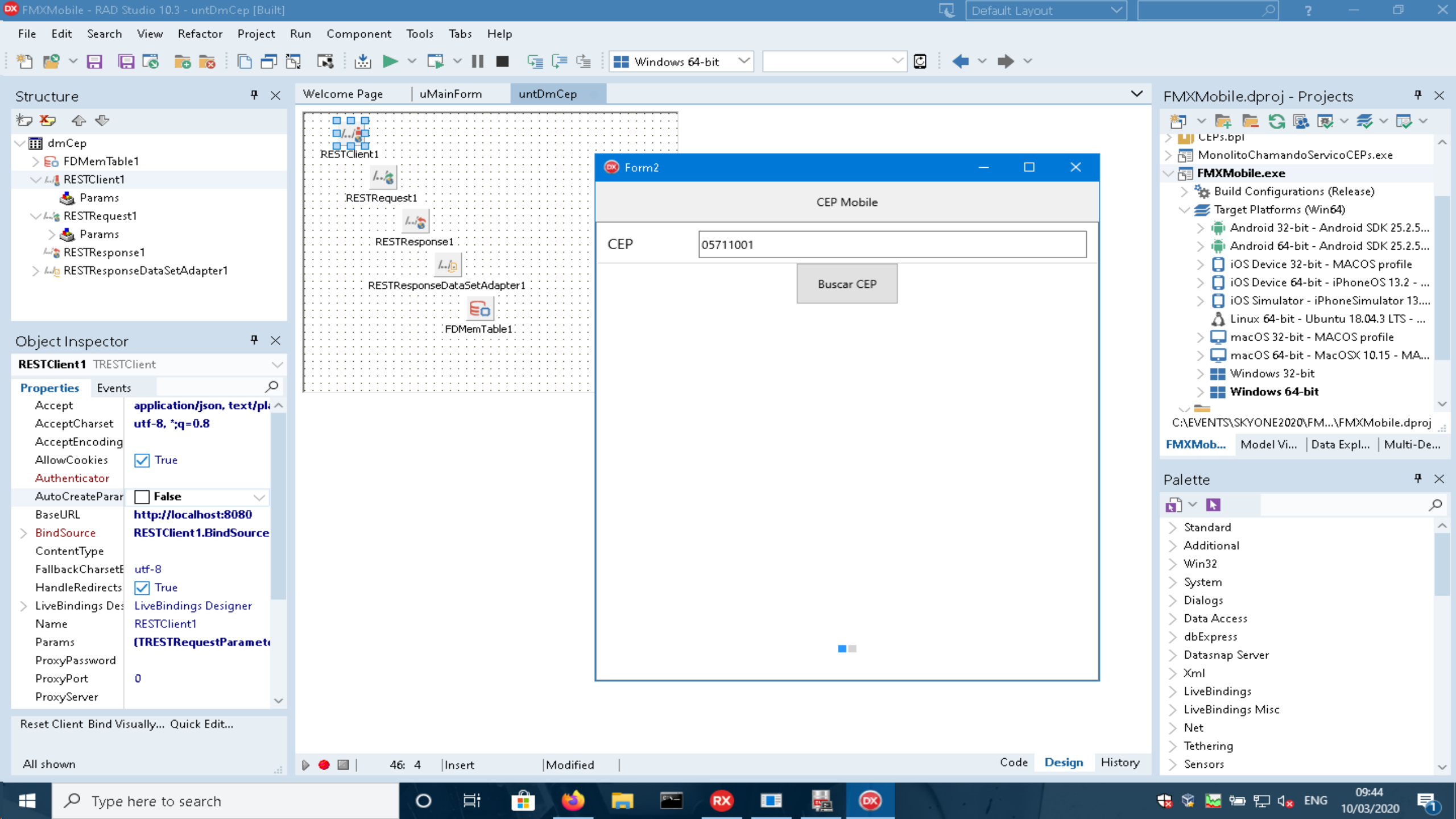
{%CLASSGROUP 'Vcl.Controls.TControl'}
{$R *.dfm}

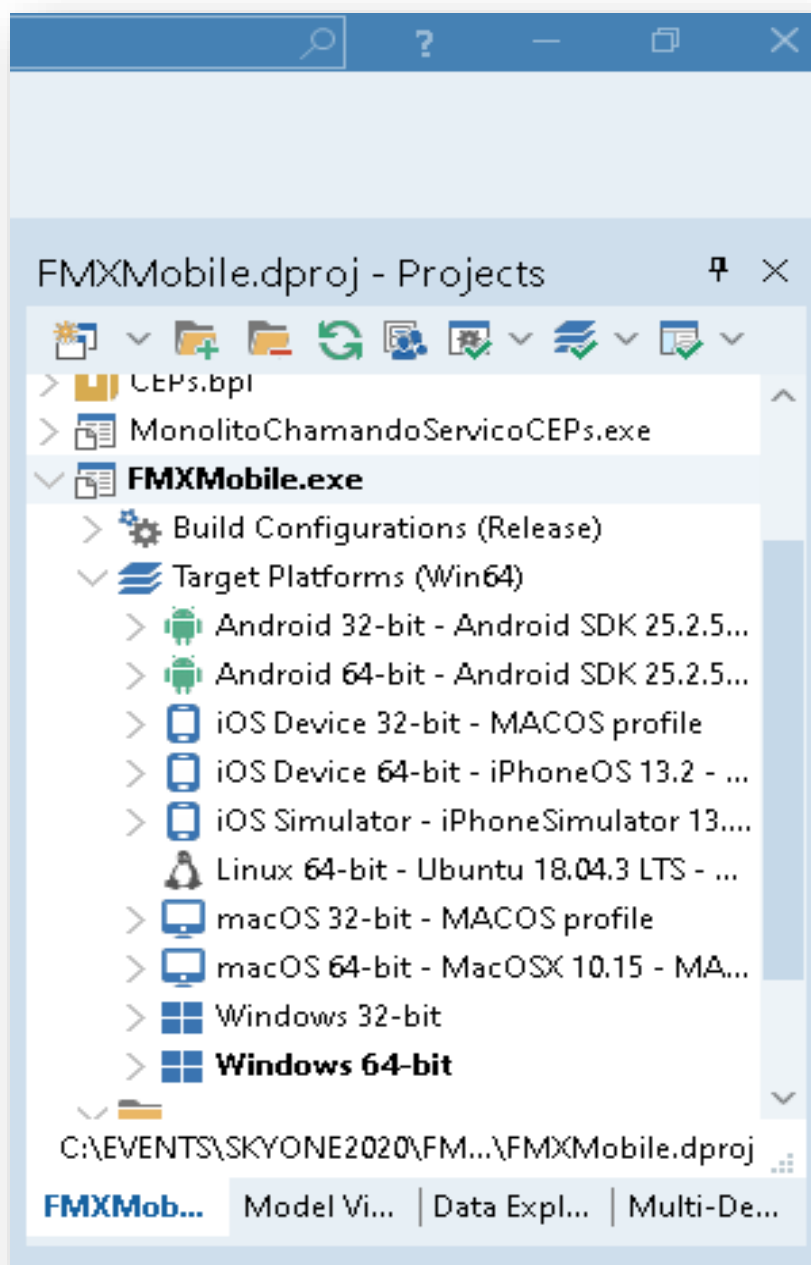
function TdmCep.PesquisarCEP(const ACEP: string; var Logradouro: string;
    var Bairro: string; var Cidade: string; var UF: string): Boolean;
begin
    result := False;

    RESTResponse1.ResetToDefaults;
    RESTRequest1.Params.ParameterByName('num').Value := ACEP;
    try
        RESTRequest1.Execute;
        if (RESTResponse1.StatusCode = 200) and Assigned(RESTResponse1.JSONValue)
        then
            begin
                Logradouro := RESTResponse1.JSONValue.GetValue<string>('logradouro');
                // FDMemTable1.FieldName('logradouro').AsString;
                Bairro := FDMemTable1.FieldName('bairro').AsString;
                Cidade := FDMemTable1.FieldName('cidade').AsString;
                UF := FDMemTable1.FieldName('estado').AsString;
                result := True;
            end;
        except
            on E: Exception do
                begin
                    // fazer o log da falha na requisição...
                end;
            end;
    end;
end;

```







Form2

CEP Mobile

CEP 05711001

Buscar CEP

■ ■

Form2

< Voltar CEP Mobile

05711001
CEP

Rua Dr Luiz Migliano
Logradouro

Jd. Caboré
Bairro

São Paulo/SP
Cidade/UF

■ ■

Form2

CEP Mobile

CEP

05711001

Buscar CEP

Form2

← Voltar

CEP Mobile

05711001

CEP

Rua Dr Luiz Migliano

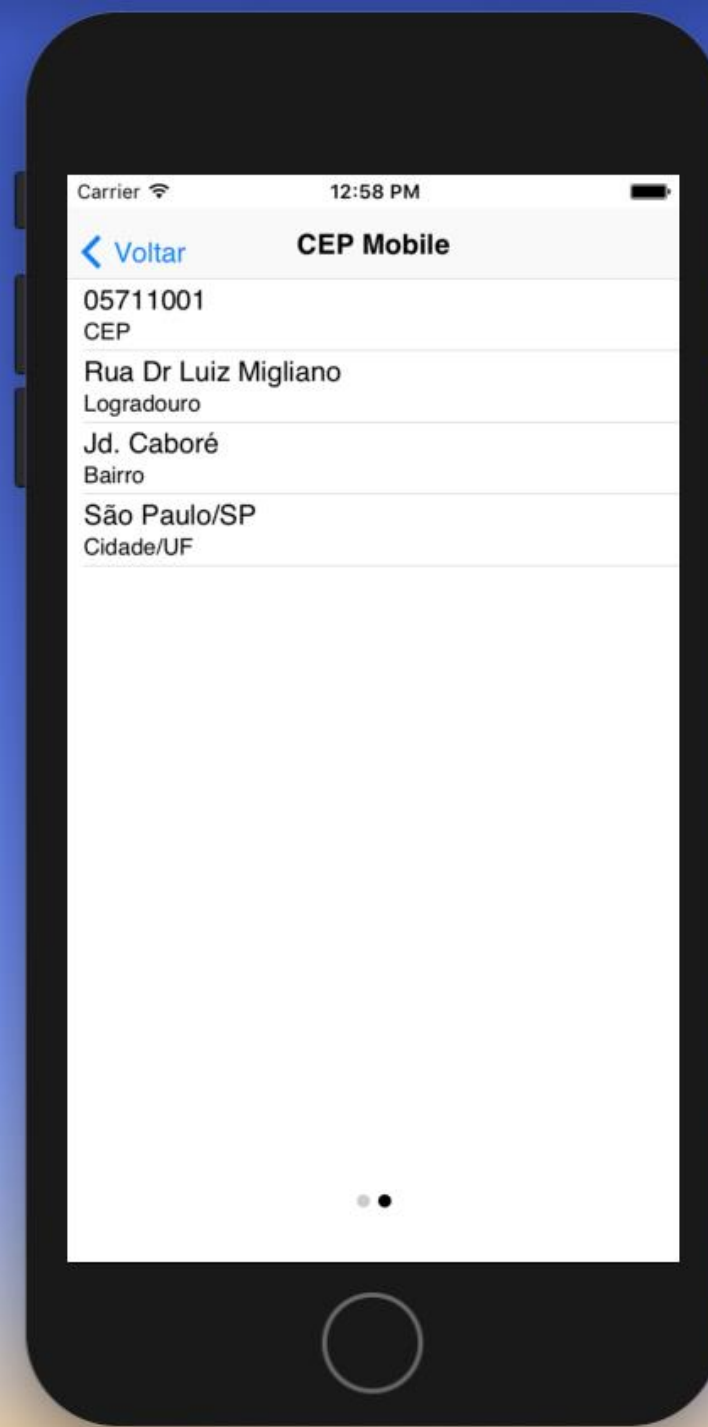
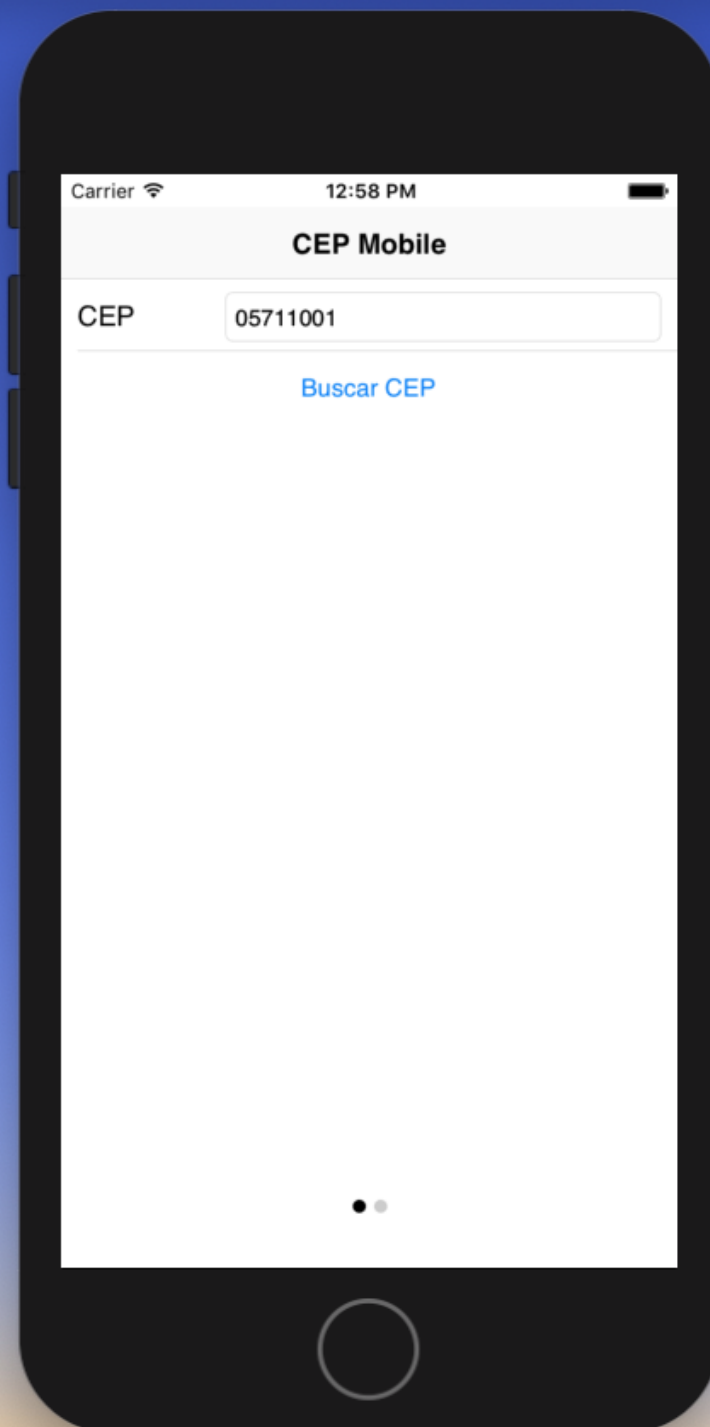
Logradouro

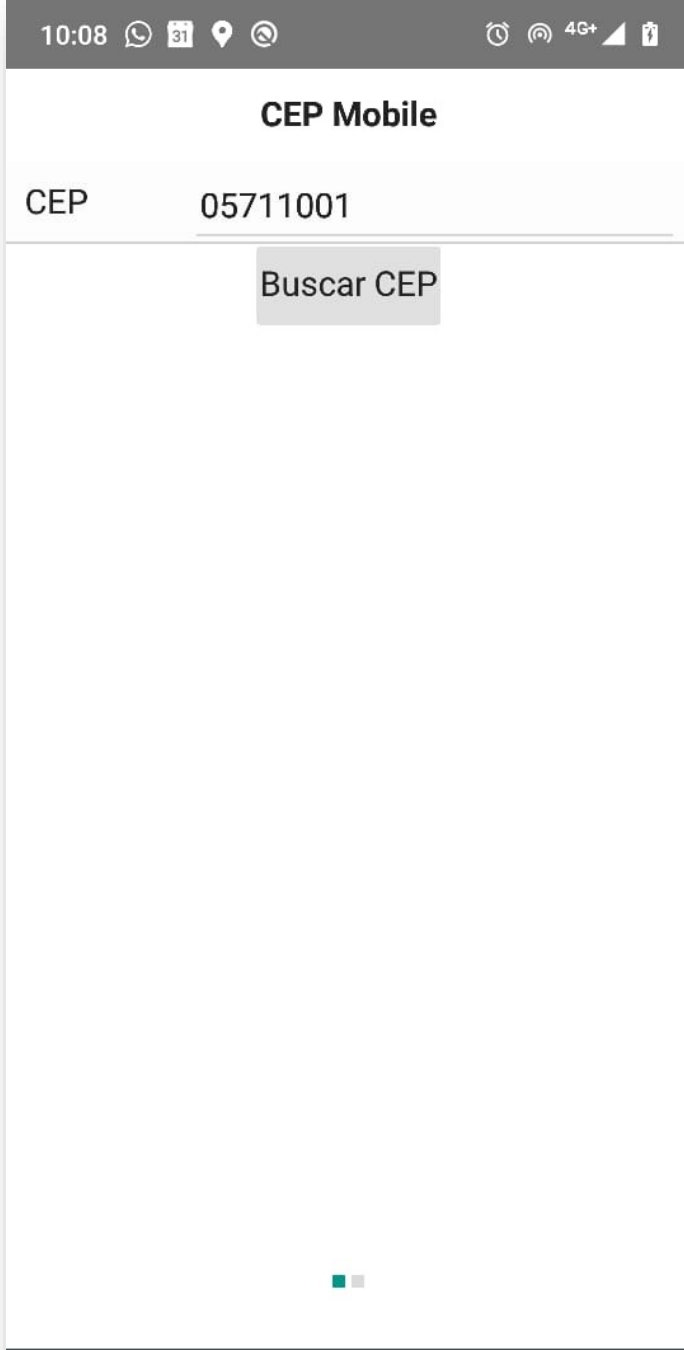
Jd. Caboré

Bairro

São Paulo/SP

Cidade/UF





Revisando até aqui...

- ✓ Planejamos
- ✓ Reestruturamos
 - ✓ Reduzindo acoplamentos
 - ✓ Extraindo regras de negócio
- ✓ Criamos um micro serviço (prontos para a nuvem)
- ✓ Integramos com o “legado”
- ✓ Estendemos para
 - ✓ MacOS
 - ✓ Linux
 - ✓ Android
 - ✓ iOS

Grandes poderes, grandes responsabilidades!



Desafios da nova arquitetura

- Testes automatizados
- Deploy (Proxy, Balance)
- Segurança (OAuth2, tokens, SSL)
- Log e monitoramento
- Big Data

O que mais eu preciso conhecer?



Vem Microservice!!!



Slides e exemplos:



<https://cutt.ly/Cgk9b64>

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OBRIGADO