

# Programación Web

## Introducción a la Web

# Programación Web

Breve repaso  
Tecnologías Web

- Tres componente definen la esencia de la tecnología Web:
  1. Un lenguaje de marcado para formatear documentos de hipertexto: **HTML** (HyperText Markup Language)
  2. Una manera de localizar los recursos sobre la red: **URL** (Uniform Resource Locator)
  3. Un protocolo para transportar mensajes sobre la red: **HTTP**

# Arquitecturas Web básicas - Base



Request HTTP

Response  
(HTML/XML)

Response  
(HTML/XML)



Servidor

```
<HTML>
<HEAD>
<TITLE> Apache Tomcat 4.1.2 </TITLE>
</HEAD>

<BODY>

</BODY>
</HTML>
```

- **Sitios Web estáticos**
  - Recursos de información
    - Solo lectura
- Aplicación Web vs. Sitio Web
  - Contenido dinámico vs. estático
- Veamos algunos ejemplos...

- Aerolíneas Argentinas

The screenshot displays the Aerolíneas Argentinas website. The top navigation bar includes the logo and links for 'Productos Opcionales', 'Aerolíneas Plus', and 'Servicios al Cliente'. The main content area is divided into two sections. On the left is the 'Vuelos' (Flights) booking form, and on the right is a promotional banner for 'Comprá en cuotas' (Buy in installments).

**Vuelos Booking Form:**

- Options:** ☒ Ida y vuelta, ☐ Ida, ☐ Múltiples Destinos
- Origen:** [Input field with search icon]
- Destino:** [Input field with search icon]
- Dates:** 18/06/2018 [Calendar icon] to 18/06/2018 [Calendar icon]
- Clase:** Economy
- Passengers:** adultos: 01, niños: 00, bebés: 00
- Button:** Buscar

**Promotional Banner:**

- Text:** Comprá en cuotas
- Subtext:** 18 cuotas sin interés
- Logo:** Banco Nación
- Interest Rate:** CFT: 0.000%
- Small Text:** COSTO FINANCIERO TOTAL EFECTIVO ANUAL

**Footer:**

- Text:** Si ya realizaste tu reserva o cambio. **PAGÁ AQUÍ**
- Text:** A quienes compraron pasajes internacionales en 2016 para viajar en 2017

# Ejemplos actuales de aplicaciones Web

## • Aerolíneas Argentinas





**¿Cuándo querés viajar?**

Seleccioná las fechas y tarifas para tu viaje. El importe corresponde a un pasajero adulto, incluye tasas e impuestos.

**Salida Viernes 09 Noviembre Buenos Aires (BUE) a Trelew (REL)**

	Domingo	Lunes	Martes	Miércoles	Jueves	Viernes	Sábado
Octubre	21 No disponible	22 No disponible	23 No disponible	24 No disponible	25 desde ARS 2883.59	26 desde ARS 1150.35 + económico	27 desde ARS 1150.35 + económico
Octubre Noviembre	28 desde ARS 2883.59	29 desde ARS 1150.35 + económico	30 desde ARS 1150.35 + económico	31 desde ARS 1150.35 + económico	01 desde ARS 1150.35 + económico	02 desde ARS 2635.45	03 desde ARS 1150.35 + económico
Noviembre	04 desde ARS 2883.59	05 desde ARS 2301.61	06 desde ARS 2575.28	07 desde ARS 3231.08	08 desde ARS 3621.38	09 desde ARS 3972.62	10 desde ARS 1150.35 + económico

# Ejemplos actuales de aplicaciones Web

- Netflix





# Ejemplos actuales de aplicaciones Web

## •Amazon

Amazon.com: drone: Toys & Games

Seguro [https://www.amazon.com/s/ref=nb\\_sb\\_noss\\_1?url=search-alias%3Daps&field-keywords=drone&rh=i%3Aaps%2Ck%3Adrone](https://www.amazon.com/s/ref=nb_sb_noss_1?url=search-alias%3Daps&field-keywords=drone&rh=i%3Aaps%2Ck%3Adrone)

NEW & INTERESTING FINDS ON AMAZON EXPLORE

amazon Try Prime

All = drone

Deals for Father's Day

Deliver to Argentina Departments Your Amazon.com Today's Deals Gift Cards EN Hello, Sign in Account & Lists Orders Try Prime Cart

1-18 of over 10,000 results for Toys & Games : "drone" Sort by Relevance

☐ FREE Shipping


All customers get FREE Shipping on orders over \$25 shipped by Amazon

Show results for

< Any Category

- Toys & Games
- Grown-Up Toys
- Hobby RC Quadcopters & Multicopters
- Toy RC Vehicles
- Hobby RC Helicopters
- Kids' Electronics
- Helicopters
- Toy Remote Control & Play Vehicles
- Hobby Remote & App Controlled Vehicles

Showing results in Toys & Games. Show instead results in All Departments.




Sponsored ⓘ

Holy Stone F181C RC Quadcopter Drone with HD Camera RTF 4 Channel 2.4GHz 6-Gyro with Altitude Hold Function, Headless Mode and One Key...

\$99<sup>99</sup> ✓prime

FREE Shipping on eligible orders




Sponsored ⓘ

Holy Stone HS200D FPV RC Drone with Camera Live Video 720P HD 120° FOV RTF WiFi Quadcopter for Beginners and Kids RC Helicopter with Altitude Hold...

\$129<sup>99</sup> ✓prime (4-5 days)

FREE Shipping on eligible orders



U818A

Sponsored ⓘ

Holy Stone U818A Drone with 720P HD Camera 2.4 GHz 6-Axis gyro RC Quadcopter for Kids with Headless Mode, One Key Return and Low Voltage Alar...

\$69<sup>99</sup> ✓prime

FREE Shipping on eligible orders

- Client-Side:
  - De base: HTML, CSS, JavaScript
  - Technology Stack: jQuery, Bootstrap, Angular, etc.
- Server-Side:
  - Capa de servicio:
    - Servidores Web
    - CGI
  - Capa de aplicación
    - Seaside, Django, Spring, Rails, Symfony, etc.
    - ¿Qué tienen en común?
- ¿Cómo se llegó hasta acá?
- ¿Qué cosas vinieron después?

# Programación Web

## Introducción a las arquitecturas Web

- Sitios Web estáticos
  - Pros:
    - Sin carga computacional, indexación, caché
  - Contras:
    - Caro de actualizar, sin personalización, sin soporte a procesos de negocio

- **Sitios dinámicos**
  - **Actividades en el servidor**
    - Manejar el request HTTP.
    - **Generar una respuesta para el request HTTP.**
    - Retornar la respuesta.

- Primeras arquitecturas
  - CGI
    - Contenido dinámico!

```
#!/usr/local/bin/perl
# hello.pl - My first CGI program

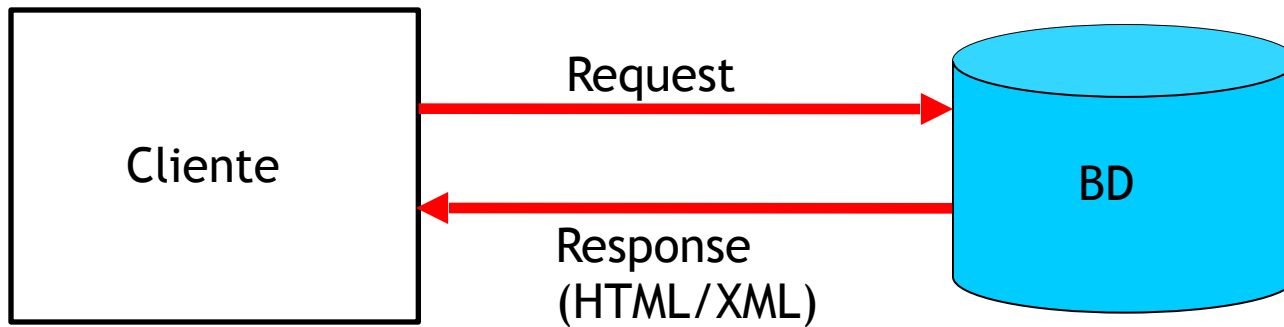
print "Content-Type: text/html\n\n";
# Note there is a newline between
# this header and Data

# Simple HTML code follows

print "<html> <head>\n";
print "<title>Hello, world!</title>";
print "</head>\n";
print "<body>\n";
print "<h1>Hello, world!</h1>\n";
print "</body> </html>\n";
```

¿Esto es el controlador?

- En general, mezclaban tanto la lógica de la aplicación como la generación de los documentos HTML.
- Oracle procedure



```
PROCEDURE pagina_tp_materia (el_dniE IN VARCHAR2,  
    id_sesion IN VARCHAR2, la_materia IN VARCHAR2,  
    el_plan IN VARCHAR2, la_sede IN VARCHAR2) IS...
```

*--Cargo los datos de la materia seleccionada*

```
SELECT *  
    INTO mat  
    FROM MATERIA  
    WHERE idmateria=la_materia;
```



```
http.print('<TABLE width=90%>');
http.print('<tr>');
http.print('<td align="Center">');
http.print('<font SIZE=4>Acta de Trabajos
  Prácticos y Promoción</font>');
http.print('</tr>');http.print('<tr>');
http.print('<td align="Center">');
http.print('<font SIZE=4><b><u>Asignatura: ' ||
  mat.nombre|| ' </u></b></font>');
http.print('</tr>');http.print('<tr>');
http.print('<td align="Center">');
http.print('<font SIZE=2>Carrera: ' ||
  reg_plan.nombre_carrera|| '-' || reg_plan.anio|| '</
font>');
http.print('</
tr>');http.print('<tr>');http.print('<td
align="Center">');
```

¿Hay modelo?

# Arquitecturas Web básicas - Primeras arquitecturas

```
<h2>PHP Form Validation Example</h2>
<p><span class="error">* required field</span></p>
<form method="post" action="<?php echo htmlspecialchars($_SERVER["PHP_SELF"]);?>">
  Name: <input type="text" name="name" value="<?php echo $name;?>">
  <span class="error">* <?php echo $nameErr;?></span>
  <br><br>
  E-mail: <input type="text" name="email" value="<?php echo $email;?>">
  <span class="error">* <?php echo $emailErr;?></span>
  <br><br>
  Website: <input type="text" name="website" value="<?php echo $website;?>">
  <span class="error"><?php echo $websiteErr;?></span>
  <br><br>
  Comment: <textarea name="comment" rows="5" cols="40"><?php echo $comment;?></textarea>
  <br><br>
  Gender:
  <input type="radio" name="gender" <?php if (isset($gender) && $gender=="female") echo "checked";?> value="female">Female
  <input type="radio" name="gender" <?php if (isset($gender) && $gender=="male") echo "checked";?> value="male">Male
  <input type="radio" name="gender" <?php if (isset($gender) && $gender=="other") echo "checked";?> value="other">Other
  <span class="error">* <?php echo $genderErr;?></span>
  <br><br>
  <input type="submit" name="submit" value="Submit">
</form>

<?php
echo "<h2>Your Input:</h2>";
echo $name;
echo "<br>";
echo $email;
echo "<br>";
echo $website;
```

¿Hay vista?

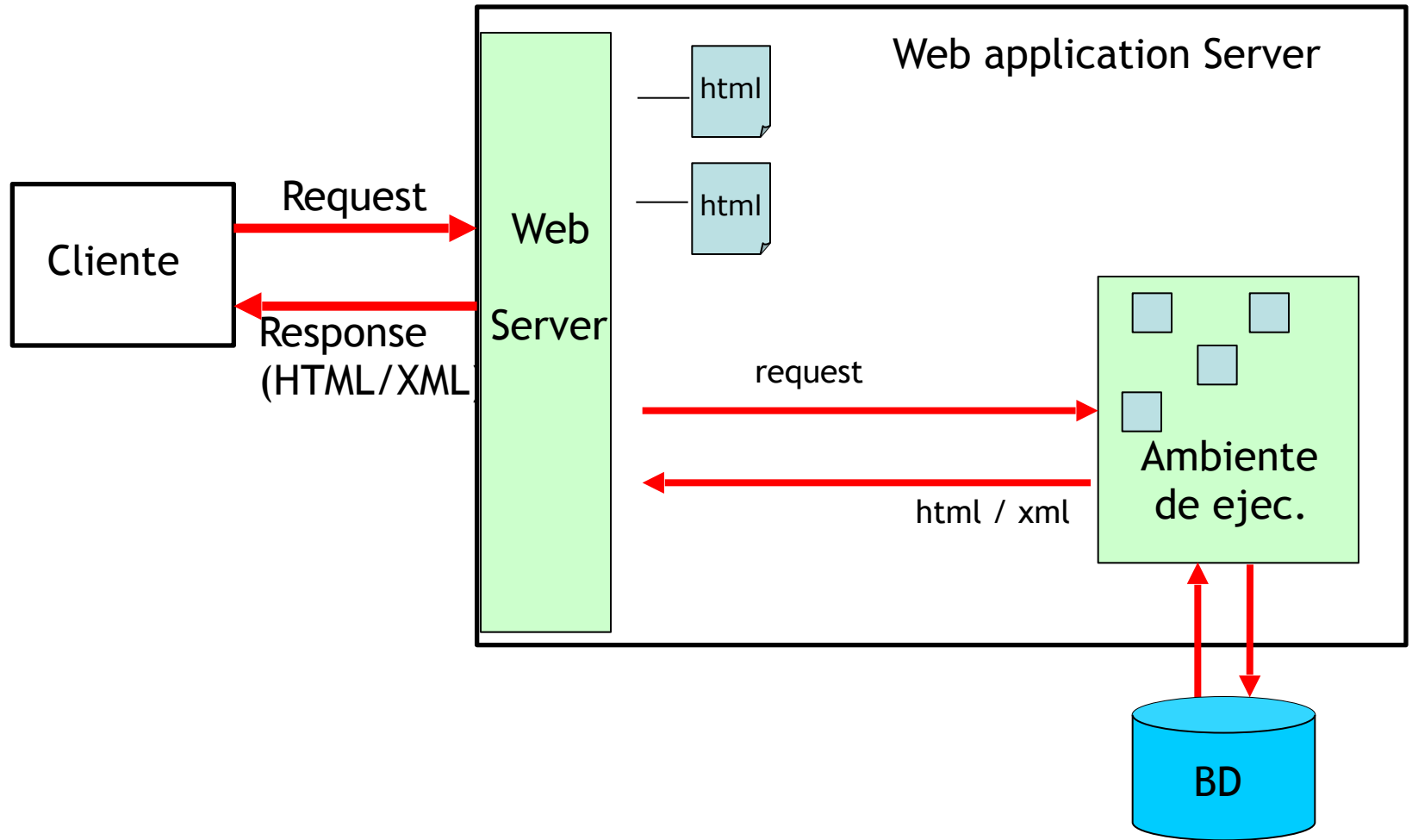
- **Desventajas:**

- Alto acoplamiento, difícil reutilización
- Conocimiento en todas las capas de la aplicación PL/SQL, BD, HTML, diseño gráfico
- Mantenimiento complejo
- Fuerte dependencia de la base de datos

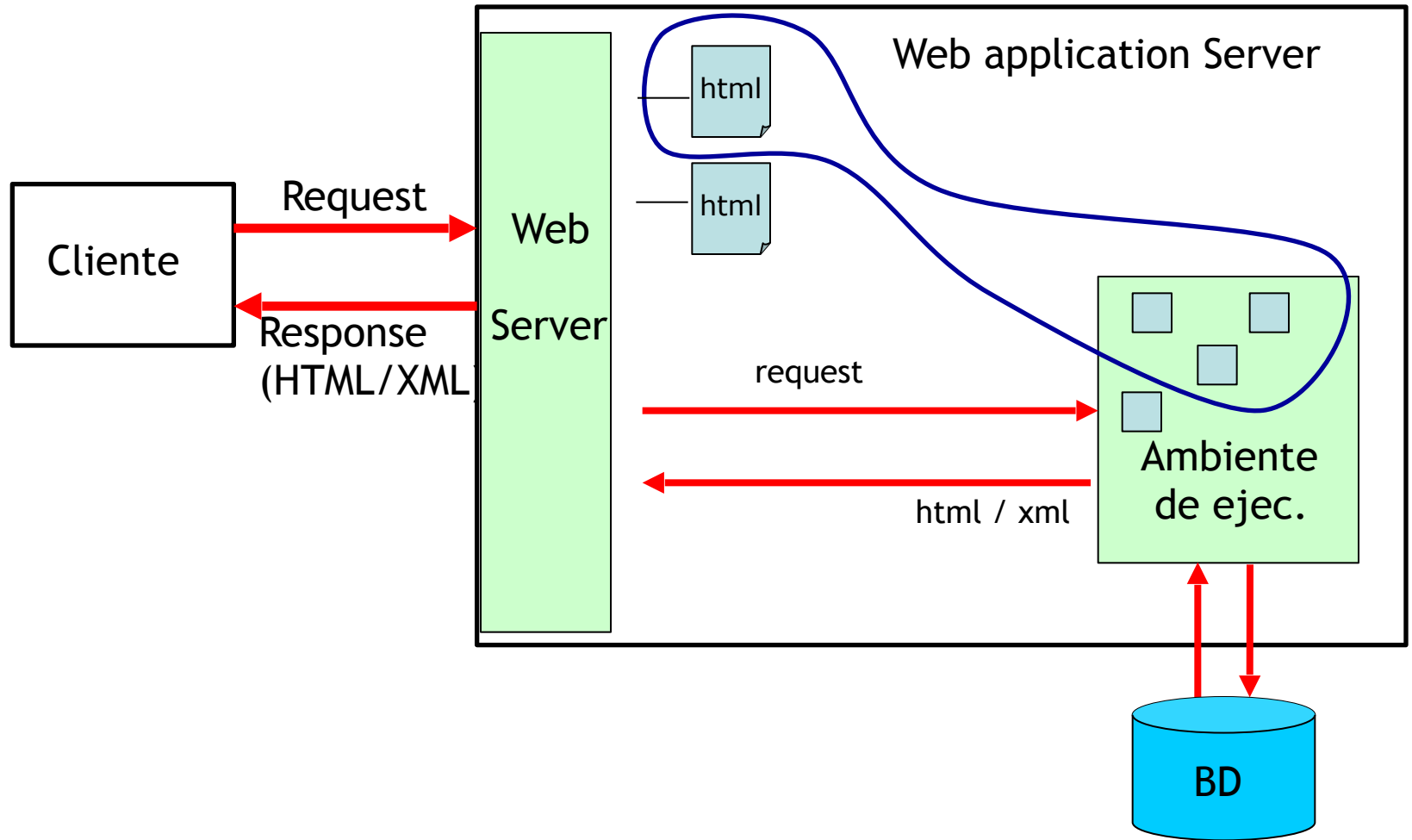
- Pensando en los ejemplos vistos...
  - Actividades del servidor
    - Manejar el request HTTP.
    - Generar una respuesta para el request HTTP.
    - Retornar la respuesta.
- Generar una respuesta para el request HTTP involucra tareas complicadas:
  - Recuperar/almacenar datos de una base de datos.
  - Aplicar complicadas reglas de negocio.
  - Personalizar contenido y aspectos de la UI a cada usuario.

- Uso de capas para separar responsabilidades
- Mayor nivel de abstracción, que nos permitan hacer aplicaciones escalables, mantenibles, reutilizables.
- Crecimiento de la web —> **Modelos de dominio complejos**
  - Idealmente querríamos poder interactuar con un modelo de objetos
- OOP: En los 60 ya habían tecnologías maduras
- WWW: Recién nace en el 89
  - Principios de los 90, contenidos dinámicos
  - Incorporación de OOP en la Web
    - Cierta herencia de OOH

# Arquitecturas Web básicas - Segunda arquitectura



## Arquitecturas Web básicas - Segunda arquitectura



**¿Cómo debería ser la parte que maneja la lógica de aplicación y genera la UI?**

- Escalable
- De fácil mantenimiento
- Bajo acoplamiento
- Que facilite el reuso
- etc.



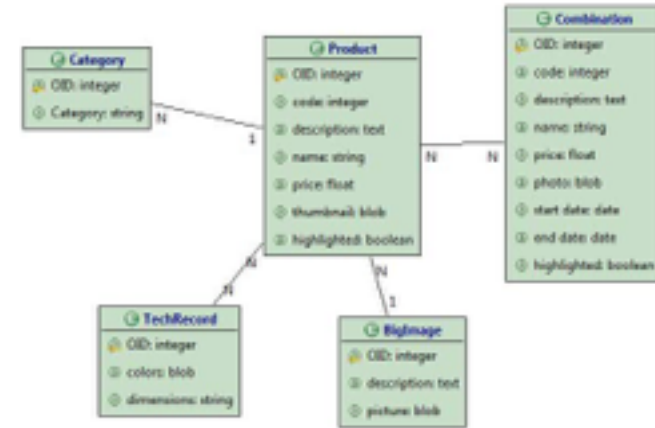
¿Cómo debería ser la parte que maneja la lógica de aplicación y genera la UI?

- Escalable
- De fácil mantenimiento
- Bajo acoplamiento
- Que facilite el reuso
- etc.

**Model-View-Controller**

# Arquitectura - Patrón de diseño MVC

- El **Modelo**: el modelo de objetos que hacemos habitualmente.

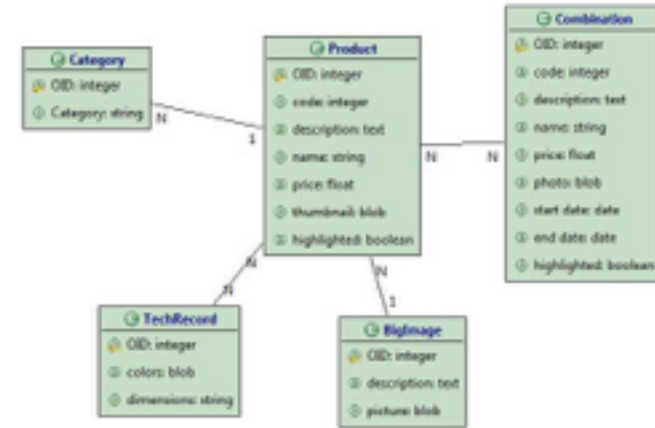


- El **Controlador**: responde a eventos, envía mensajes al modelo.
- La **Vista**: es la presentación visual al usuario de la aplicación.



# Arquitectura - Patrón de diseño MVC, reinterpretación

- El **Modelo**: el modelo de objetos que hacemos habitualmente.



- El **Controlador**: es quien define cómo se responde a los requests HTTP, que se desencadenan con las acciones del usuario.
- La **Vista**: es el componente que genera la vista para al usuario de la aplicación.



# Ejemplo de Framework MVC: django

## Modelo

```
class Todo(models.Model):  
    title = models.CharField(max_length=100)  
    description = models.CharField(max_length=500)  
    completed = models.BooleanField()  
  
    def __str__(self):  
        return self.title  
  
    def toggle(self):  
        self.completed = not self.completed
```

# Ejemplo de Framework MVC: django

## URL Dispatcher

#http://www.myapp.com/

```
urlpatterns = patterns("
    url(r'^$', home),
    url(r'^todoitems/$', list_todoitems),
    url(r'^todoitem/(?P<item_id>\d+)/details/$', details_todoitem)
)
```

# Ejemplo de Framework MVC: django

## Controlador

```
def list_todoitems(request):  
    items_list = Todo.objects.all()  
    return render_to_response("home.html", {'items_list': items_list ,})  
  
def details_todoitem (request, item_id):  
    poll = Todo.objects.get(id=item_id)  
    return render_to_response("item_details.html", {'item': item ,})
```

# Ejemplo de Framework MVC: django

## Vista

```
<html>
<head>
  <title>ToDo list</title>
</head>
<body>
  <h1>ToDo list</h1>
  <ul>
    {% for item in items_list %}
      <li>
        {{ item.title }} - Description: {{ item.description }}
      </li>
    {% endfor %}
  </ul>
</body>
</html>
```

# Ejemplo de Framework MVC: django

## Vista

```
<html>
<head>
  <title>ToDo list</title>
</head>
<body>
  <h1>ToDo list</h1>
  <ul>
    {% for item in items_list %}
      <li>
        {{ item.title }} - Description: {{ item.description }}
      </li>
    {% endfor %}
  </ul>
</body>
</html>
```

## ToDo list

- Estudiar Seaside – Description: Hacer tutorial indicado por la catedra
- Crear app Seaside – Description: Crear el componente root y configurar app





Server-Side

# Repasando...

Client-Side

Server-Side

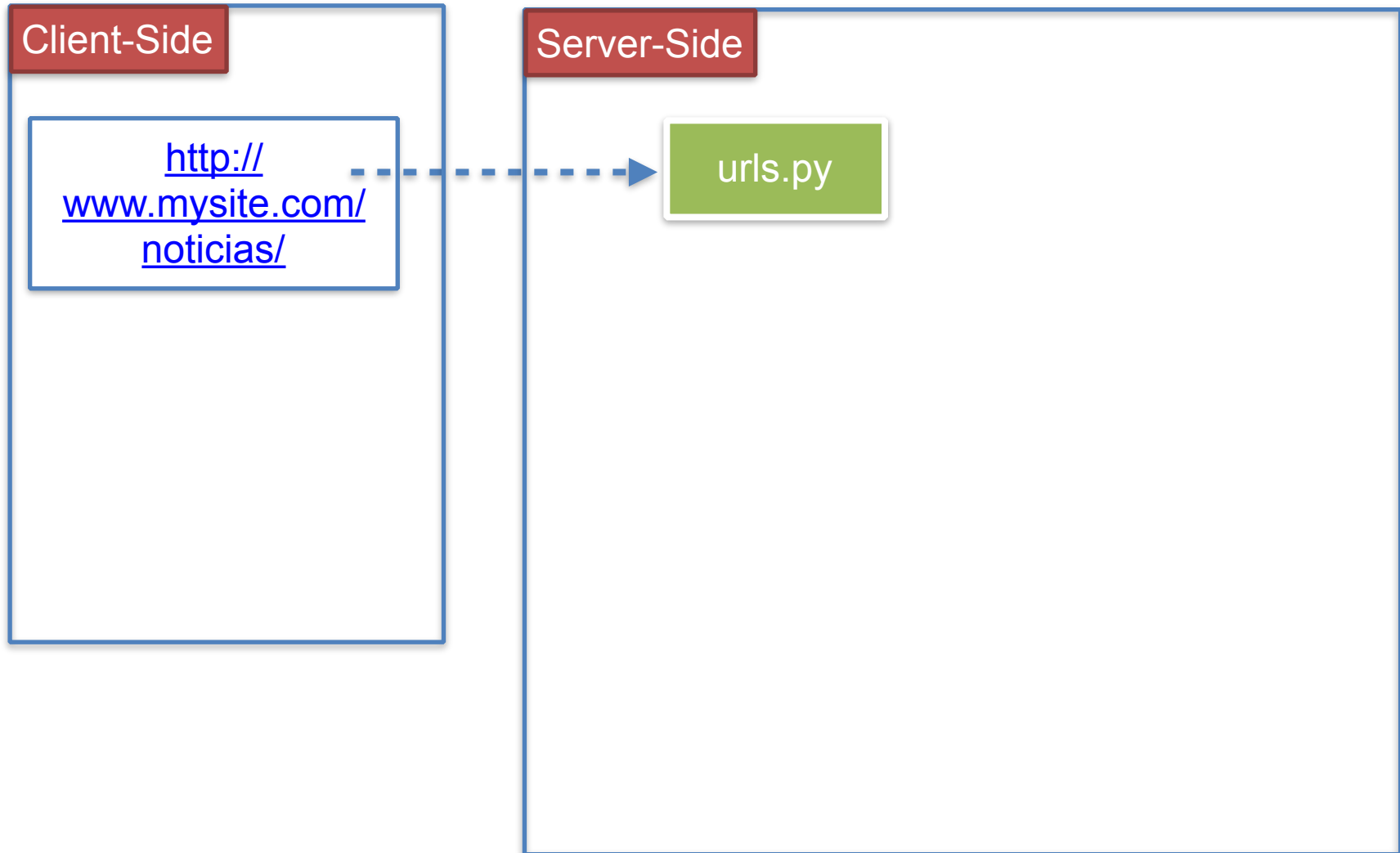
# Repasando...

## Client-Side

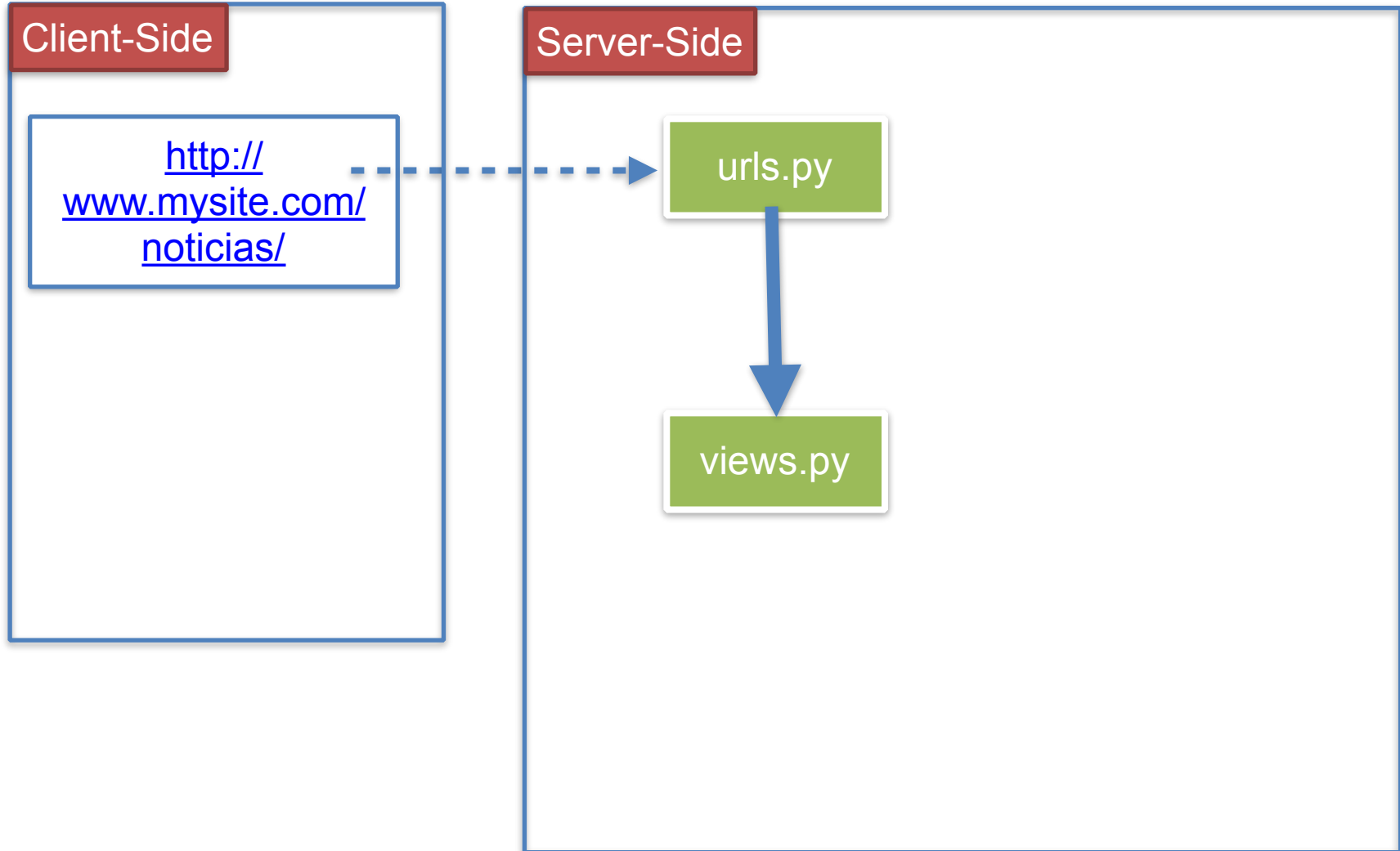
[http://  
www.mysite.com/  
noticias/](http://www.mysite.com/noticias/)

## Server-Side

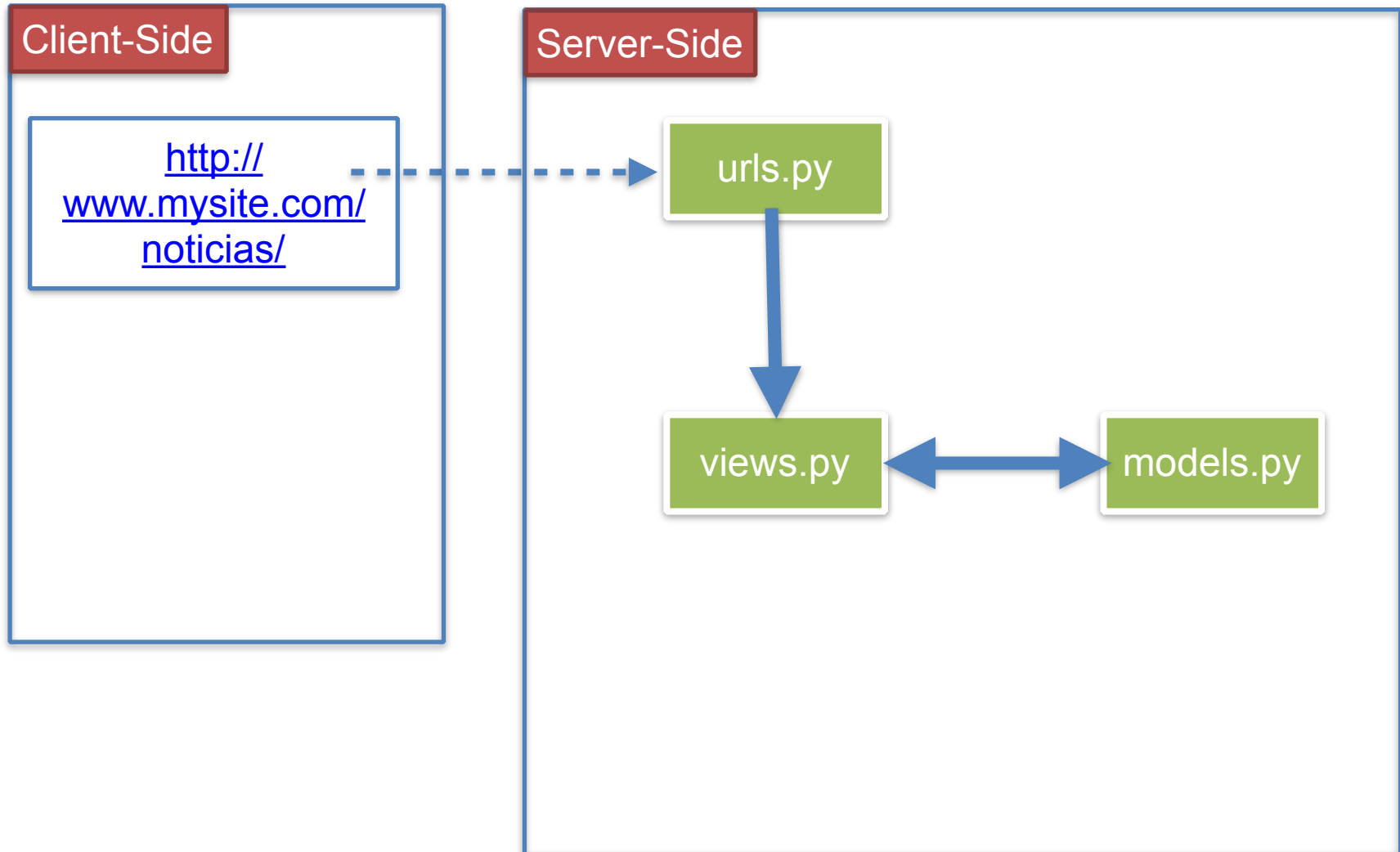
# Repasando...



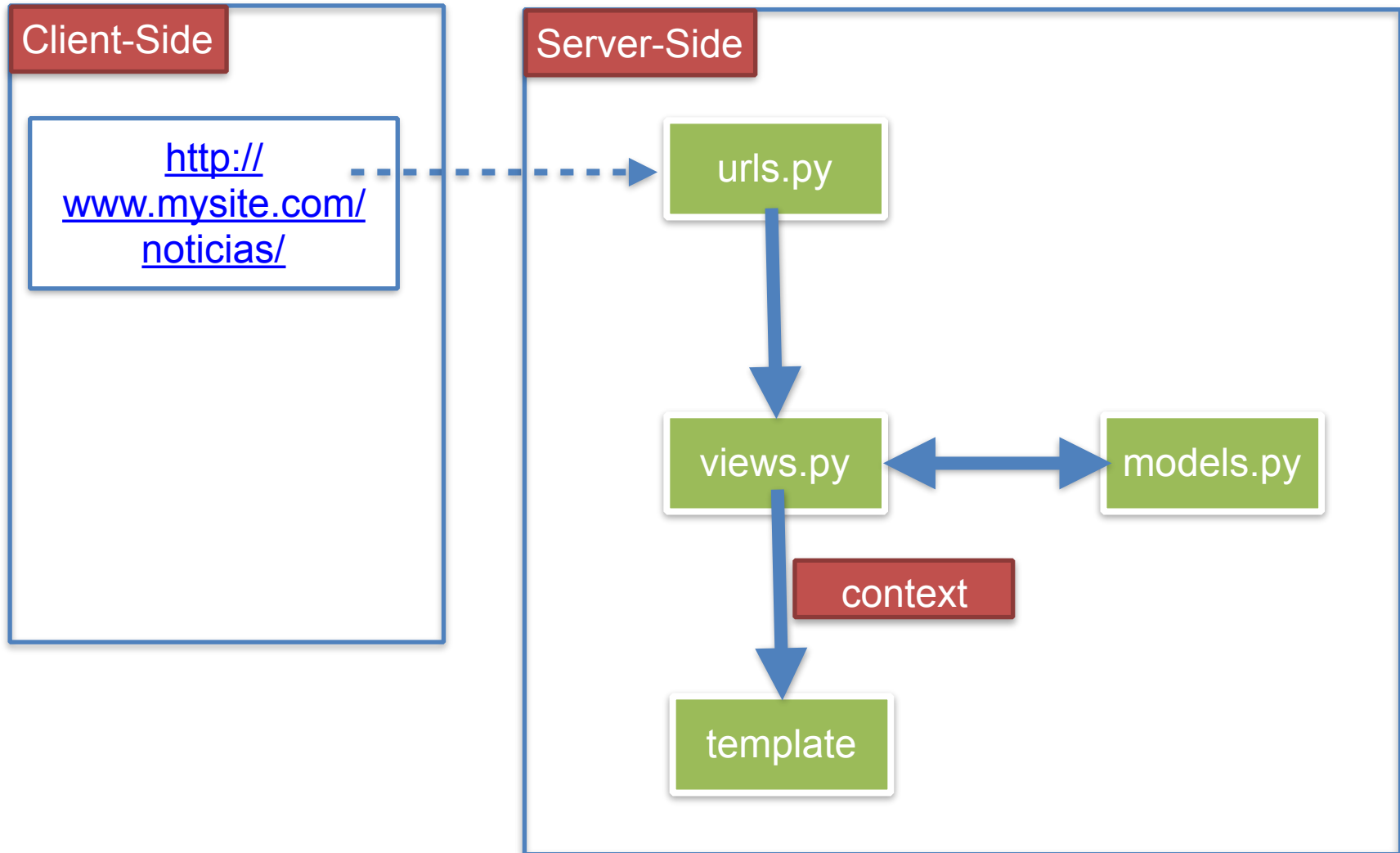
# Repasando...



# Repasando...

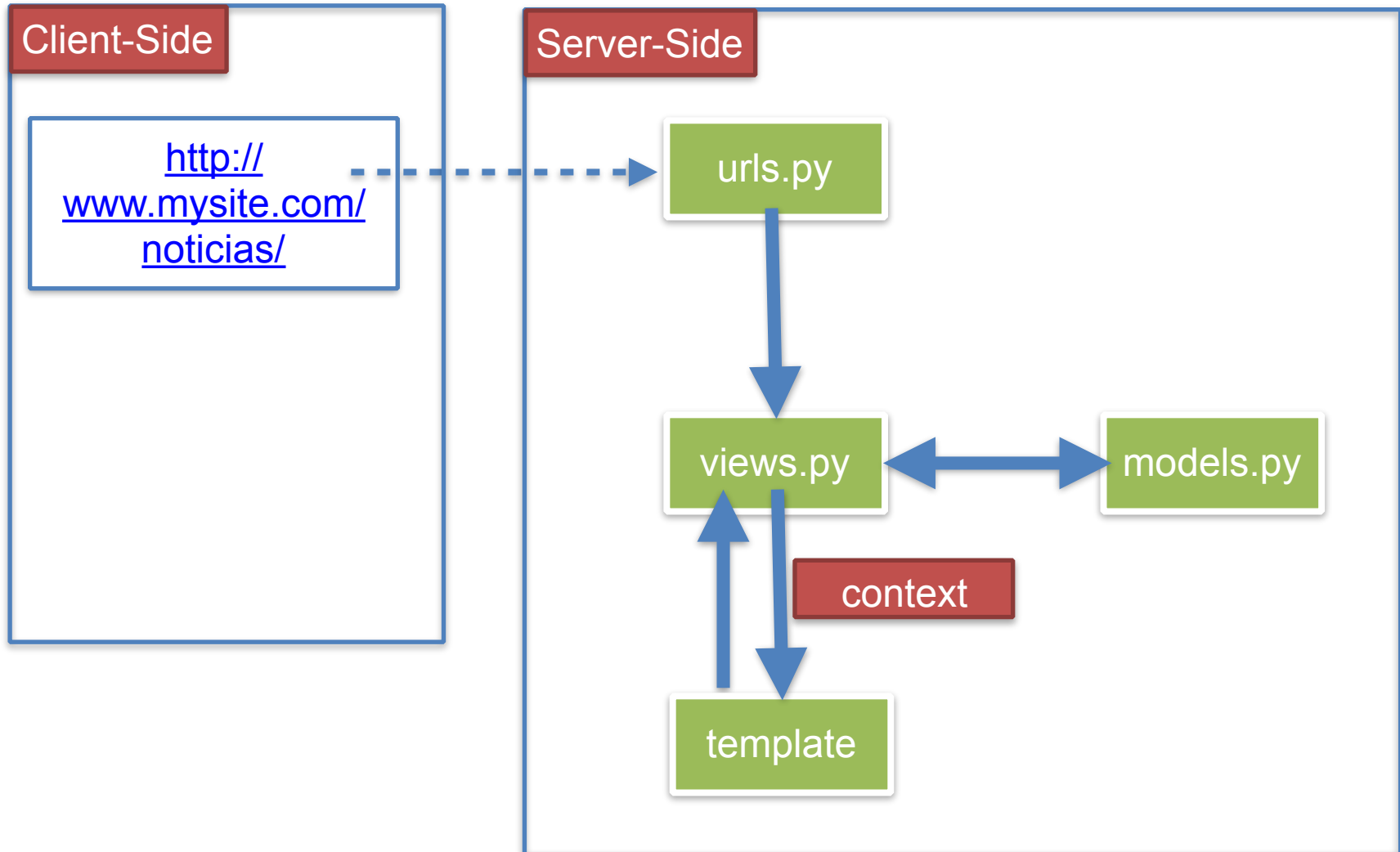


# Repasando...

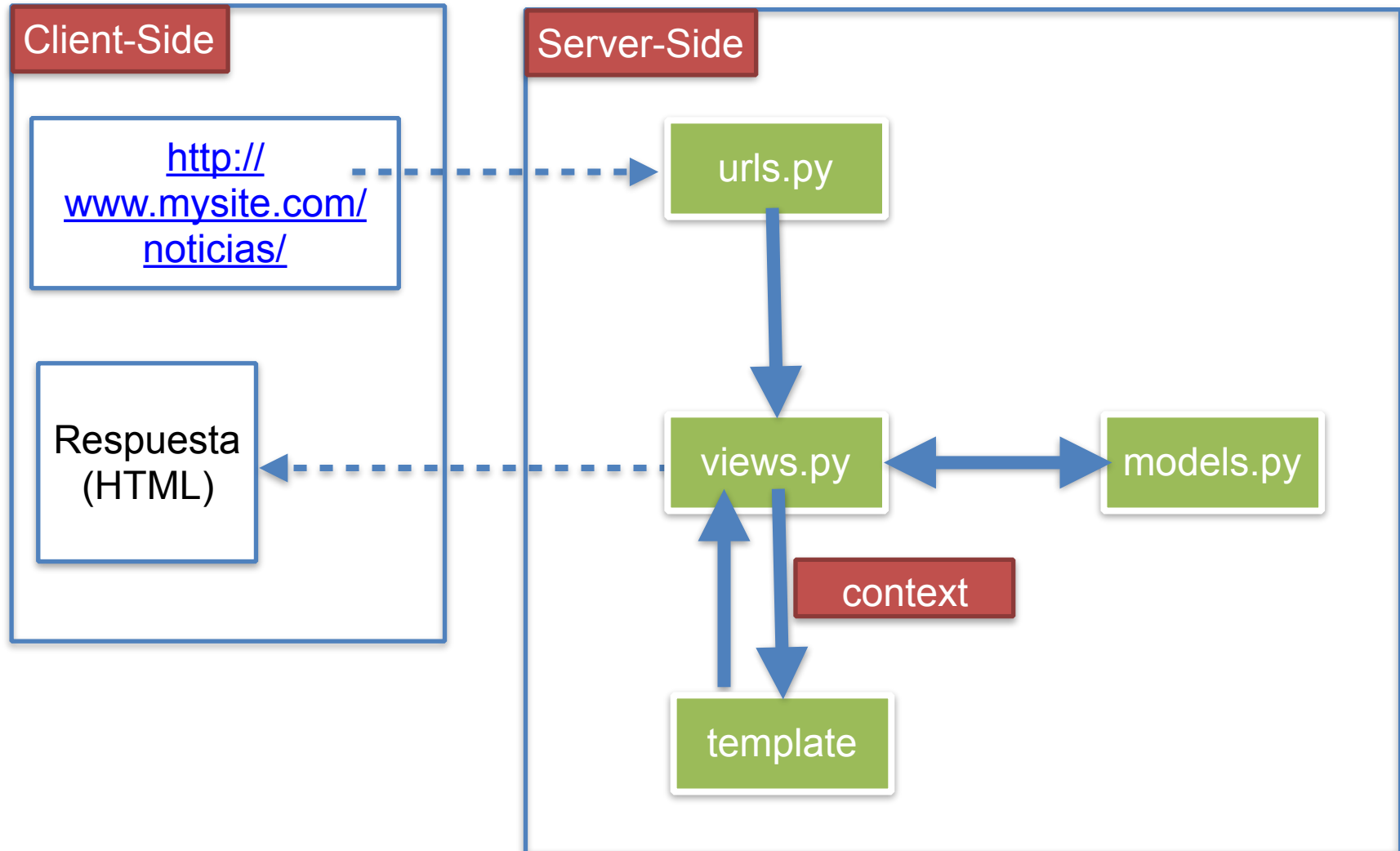




# Repasando...



# Repasando...



- Definición de clase Cliente

```
class Cliente(models.Model):
    nombre = models.CharField("Nombre",max_length=256)
    apellido = models.CharField("Apellido",max_length=256)

    def set_nombre(self,unString):
        self.nombre = unString

    def __unicode__(self):
        return "%s %s" % (self.nombre, self.apellido)
```

# Ejemplo de Framework MVC: django, modelo persistente

- Variables de clase referencian un “tipo de campo de base de datos”
- Variables de instancia referencian valores concretos para esos “tipos de datos”

```
class Cliente(models.Model):
    nombre = models.CharField("Nombre",max_length=256)
    apellido = models.CharField("Apellido",max_length=256)

    def set_nombre(self,unString):
        self.nombre = unString

    def __unicode__(self):
        return "%s %s" % (self.nombre, self.apellido)
```

- Punto de Extensión:
  - models.Model

```
__init__():
    ...
    setattr(self, name, value)
    ...
```

# Ejemplo de Framework MVC: django, modelo persistente

```
class Operacion(models.Model):
    monto = models.IntegerField("Monto")
    cuenta = models.ForeignKey(CuentaBancaria)
    pendiente = models.BooleanField("Confirmada", default=True)

    def __init__(self, *args, **kwargs):
        super(Operacion, self).__init__(*args, **kwargs)
        self.operar()

    def __operar__(self):
        pass

    def operar(self):
        if self.pendiente:
            self.__operar__()
            self.confirmar()

    def confirmar(self):
        self.pendiente = False
        self.save()
```

# Ejemplo de Framework MVC: django, modelo persistente

```
class Operacion(models.Model):
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            self.confirmar()

    def confirmar(self):
        self.pendiente = False
        self.save()
```

<Operacion object - 4>

cuenta=<CuentaBancaria object - 6>

monto=3

pendiente=False

# Ejemplo de Framework MVC: django, modelo persistente

```
class Operacion(models.Model):  
    monto = models.IntegerField("Monto")  
    cuenta = models.ForeignKey(CuentaBancaria)  
    pendiente = models.BooleanField("Confirmada", default=True)
```

<Operacion class object>

cuenta=<ForeignKey object>

monto=<IntegerField object>

pendiente=<BooleanField object>

```
self.pendiente = False  
self.save()
```

```
def __init__(self, *args, **kwargs):  
    super().__init__(*args, **kwargs)
```

<Operacion object - 4>

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<Operacion class object>

cuenta=<ForeignKey object>

monto=<IntegerField object>

pendiente=<BooleanField object>

```
self.pendiente = False  
self.save()
```

save()

<Operacion object - 4>

cuenta=<CuentaBancaria object - 6>

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# Ejemplo de Framework MVC: django, modelo persistente

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<Operacion class object>

cuenta=<ForeignKey object>

monto=<IntegerField object>

pendiente=<BooleanField object>

```
def __init__(self, *args, **kwargs):  
    super().__init__(*args, **kwargs)
```

monto	cuenta	pendiente	id
			4

```
self.pendiente = False  
self.save()
```

save()

<Operacion object - 4>

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# Ejemplo de Framework MVC: django, modelo persistente

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<Operacion class object>

cuenta=<ForeignKey object>

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```
def __init__(self, *args, **kwargs):  
    super().__init__(*args, **kwargs)
```

monto	cuenta	pendiente	id
			4

3

```
self.pendiente = False  
self.save()
```

save()

<Operacion object - 4>

cuenta=<CuentaBancaria object - 6>

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# Ejemplo de Framework MVC: django, modelo persistente

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```

<Operacion class object>

cuenta=<ForeignKey object>

monto=<IntegerField object>

pendiente=<BooleanField object>

```
def __init__(self, *args, **kwargs):  
    super().__init__(*args, **kwargs)
```

monto	cuenta	pendiente	id
3			4

3

```
self.pendiente = False  
self.save()
```

save()

<Operacion object - 4>

cuenta=<CuentaBancaria object - 6>

monto=3

pendiente=False

# Programación Web

Tendencias en arquitecturas  
en los últimos años

# Arquitecturas - hacia el cliente

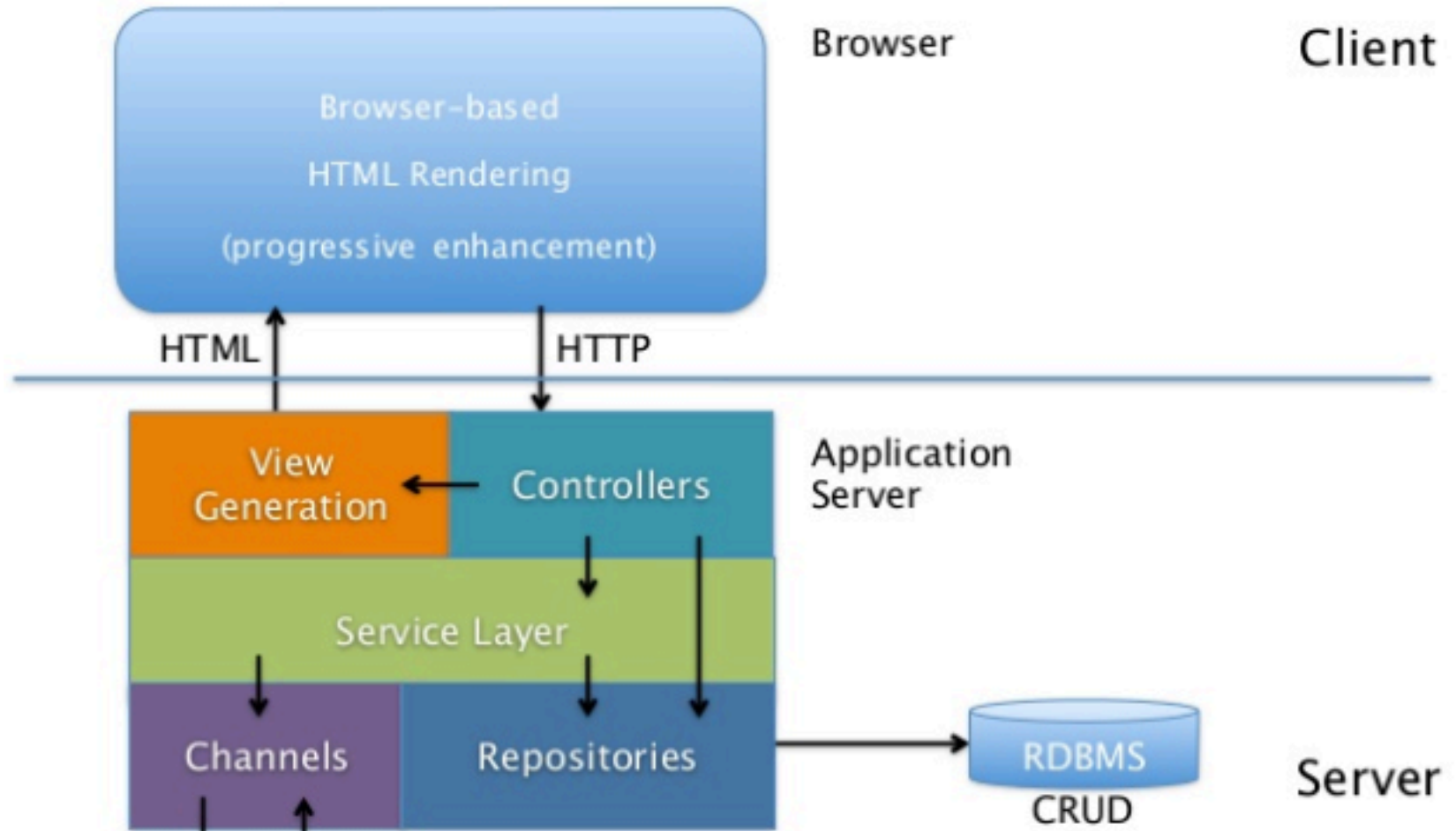
- Proliferación de la Web
- Requerimientos de interacción en aplicaciones Web
  - RIA
- Evolución de la tecnología:
  - AJAX, HTML5, JavaScript
    - WebWorkers, WebStorage, etc
- y del uso de la tecnología
  - Responsive design, BigPipe
- y de la tecnología en general



# Arquitecturas - hacia el cliente

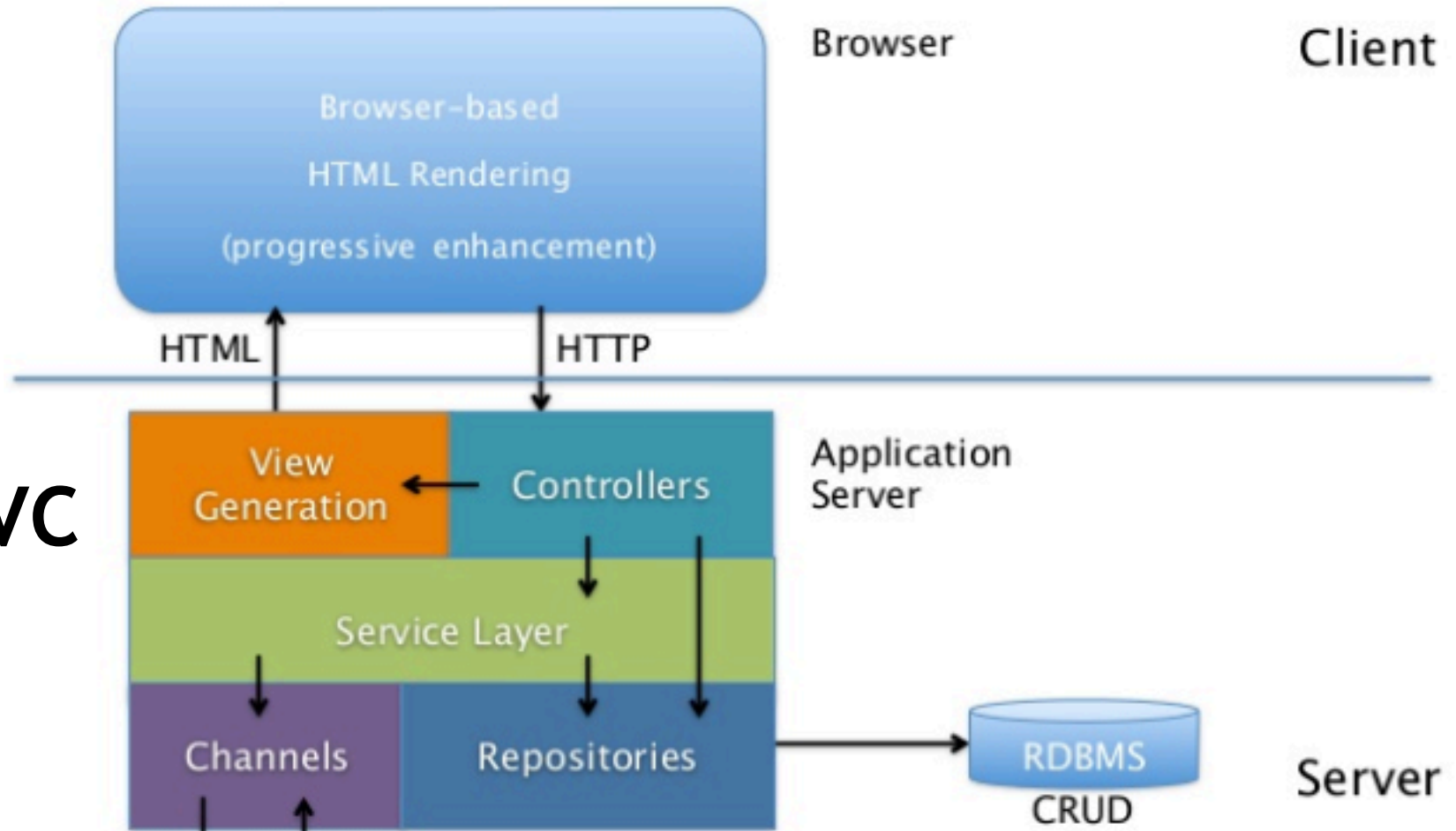
	Week	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27	Week 28	Week 29	Week 30	Week 31	Week 32	Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39	Week 40	Week 41	Week 42	Week 43	Week 44	Week 45	Week 46	Week 47	Week 48	Week 49	Week 50	Week 51	Week 52	Week 53	Week 54	Week 55	Week 56	Week 57	Week 58	Week 59	Week 60	Week 61	Week 62	Week 63	Week 64	Week 65	Week 66	Week 67	Week 68	Week 69	Week 70	Week 71	Week 72	Week 73	Week 74	Week 75	Week 76	Week 77	Week 78	Week 79	Week 80	Week 81	Week 82	Week 83	Week 84	Week 85	Week 86	Week 87	Week 88	Week 89	Week 90	Week 91	Week 92	Week 93	Week 94	Week 95	Week 96	Week 97	Week 98	Week 99	Week 100	Week 101	Week 102	Week 103	Week 104	Week 105	Week 106	Week 107	Week 108	Week 109	Week 110	Week 111	Week 112	Week 113	Week 114	Week 115	Week 116	Week 117	Week 118	Week 119	Week 120	Week 121	Week 122	Week 123	Week 124	Week 125	Week 126	Week 127	Week 128	Week 129	Week 130	Week 131	Week 132	Week 133	Week 134	Week 135	Week 136	Week 137	Week 138	Week 139	Week 140	Week 141	Week 142	Week 143	Week 144	Week 145	Week 146	Week 147	Week 148	Week 149	Week 150	Week 151	Week 152	Week 153	Week 154	Week 155	Week 156	Week 157	Week 158	Week 159	Week 160	Week 161	Week 162	Week 163	Week 164	Week 165	Week 166	Week 167	Week 168	Week 169	Week 170	Week 171	Week 172	Week 173	Week 174	Week 175	Week 176	Week 177	Week 178	Week 179	Week 180	Week 181	Week 182	Week 183	Week 184	Week 185	Week 186	Week 187	Week 188	Week 189	Week 190	Week 191	Week 192	Week 193	Week 194	Week 195	Week 196	Week 197	Week 198	Week 199	Week 200	Week 201	Week 202	Week 203	Week 204	Week 205	Week 206	Week 207	Week 208	Week 209	Week 210	Week 211	Week 212	Week 213	Week 214	Week 215	Week 216	Week 217	Week 218	Week 219	Week 220	Week 221	Week 222	Week 223	Week 224	Week 225	Week 226	Week 227	Week 228	Week 229	Week 230	Week 231	Week 232	Week 233	Week 234	Week 235	Week 236	Week 237	Week 238	Week 239	Week 240	Week 241	Week 242	Week 243	Week 244	Week 245	Week 246	Week 247	Week 248	Week 249	Week 250	Week 251	Week 252	Week 253	Week 254	Week 255	Week 256	Week 257	Week 258	Week 259	Week 260	Week 261	Week 262	Week 263	Week 264	Week 265	Week 266	Week 267	Week 268	Week 269	Week 270	Week 271	Week 272	Week 273	Week 274	Week 275	Week 276	Week 277	Week 278	Week 279	Week 280	Week 281	Week 282	Week 283	Week 284	Week 285	Week 286	Week 287	Week 288	Week 289	Week 290	Week 291	Week 292	Week 293	Week 294	Week 295	Week 296	Week 297	Week 298	Week 299	Week 300	Week 301	Week 302	Week 303	Week 304	Week 305	Week 306	Week 307	Week 308	Week 309	Week 310	Week 311	Week 312	Week 313	Week 314	Week 315	Week 316	Week 317	Week 318	Week 319	Week 320	Week 321	Week 322	Week 323	Week 324	Week 325	Week 326	Week 327	Week 328	Week 329	Week 330	Week 331	Week 332	Week 333	Week 334	Week 335	Week 336	Week 337	Week 338	Week 339	Week 340	Week 341	Week 342	Week 343	Week 344	Week 345	Week 346	Week 347	Week 348	Week 349	Week 350	Week 351	Week 352	Week 353	Week 354	Week 355	Week 356	Week 357	Week 358	Week 359	Week 360	Week 361	Week 362	Week 363	Week 364	Week 365	Week 366	Week 367	Week 368	Week 369	Week 370	Week 371	Week 372	Week 373	Week 374	Week 375	Week 376	Week 377	Week 378	Week 379	Week 380	Week 381	Week 382	Week 383	Week 384	Week 385	Week 386	Week 387	Week 388	Week 389	Week 390	Week 391	Week 392	Week 393	Week 394	Week 395	Week 396	Week 397	Week 398	Week 399	Week 400	Week 401	Week 402	Week 403	Week 404	Week 405	Week 406	Week 407	Week 408	Week 409	Week 410	Week 411	Week 412	Week 413	Week 414	Week 415	Week 416	Week 417	Week 418	Week 419	Week 420	Week 421	Week 422	Week 423	Week 424	Week 425	Week 426	Week 427	Week 428	Week 429	Week 430	Week 431	Week 432	Week 433	Week 434	Week 435	Week 436	Week 437	Week 438	Week 439	Week 440	Week 441	Week 442	Week 443	Week 444	Week 445	Week 446	Week 447	Week 448	Week 449	Week 450	Week 451	Week 452	Week 453	Week 454	Week 455	Week 456	Week 457	Week 458	Week 459	Week 460	Week 461	Week 462	Week 463	Week 464	Week 465	Week 466	Week 467	Week 468	Week 469	Week 470	Week 471	Week 472	Week 473	Week 474	Week 475	Week 476	Week 477	Week 478	Week 479	Week 480	Week 481	Week 482	Week 483	Week 484	Week 485	Week 486	Week 487	Week 488	Week 489	Week 490	Week 491	Week 492	Week 493	Week 494	Week 495	Week 496	Week 497	Week 498	Week 499	Week 500	Week 501	Week 502	Week 503	Week 504	Week 505	Week 506	Week 507	Week 508	Week 509	Week 510	Week 511	Week 512	Week 513	Week 514	Week 515	Week 516	Week 517	Week 518	Week 519	Week 520	Week 521	Week 522	Week 523	Week 524	Week 525	Week 526	Week 527	Week 528	Week 529	Week 530	Week 531	Week 532	Week 533	Week 534	Week 535	Week 536	Week 537	Week 538	Week 539	Week 540	Week 541	Week 542	Week 543	Week 544	Week 545	Week 546	Week 547	Week 548	Week 549	Week 550	Week 551	Week 552	Week 553	Week 554	Week 555	Week 556	Week 557	Week 558	Week 559	Week 560	Week 561	Week 562	Week 563	Week 564	Week 565	Week 566	Week 567	Week 568	Week 569	Week 570	Week 571	Week 572	Week 573	Week 574	Week 575	Week 576	Week 577	Week 578	Week 579	Week 580	Week 581	Week 582	Week 583	Week 584	Week 585	Week 586	Week 587	Week 588	Week 589	Week 590	Week 591	Week 592	Week 593	Week 594	Week 595	Week 596	Week 597	Week 598	Week 599	Week 600	Week 601	Week 602	Week 603	Week 604	Week 605	Week 606	Week 607	Week 608	Week 609	Week 610	Week 611	Week 612	Week 613	Week 614	Week 615	Week 616	Week 617	Week 618	Week 619	Week 620	Week 621	Week 622	Week 623	Week 624	Week 625	Week 626	Week 627	Week 628	Week 629	Week 630	Week 631	Week 632	Week 633	Week 634	Week 635	Week 636	Week 637	Week 638	Week 639	Week 640	Week 641	Week 642	Week 643	Week 644	Week 645	Week 646	Week 647	Week 648	Week 649	Week 650	Week 651	Week 652	Week 653	Week 654	Week 655	Week 656	Week 657	Week 658	Week 659	Week 660	Week 661	Week 662	Week 663	Week 664	Week 665	Week 666	Week 667	Week 668	Week 669	Week 670	Week 671	Week 672	Week 673	Week 674	Week 675	Week 676	Week 677	Week 678	Week 679	Week 680	Week 681	Week 682	Week 683	Week 684	Week 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796	Week 797	Week 798	Week 799	Week 800	Week 801	Week 802	Week 803	Week 804	Week 805	Week 806	Week 807	Week 808	Week 809	Week 810	Week 811	Week 812	Week 813	Week 814	Week 815	Week 816	Week 817	Week 818	Week 819	Week 820	Week 821	Week 822	Week 823	Week 824	Week 825	Week 826	Week 827	Week 828	Week 829	Week 830	Week 831	Week 832	Week 833	Week 834	Week 835	Week 836	Week 837	Week 838	Week 839	Week 840	Week 841	Week 842	Week 843	Week 844	Week 845	Week 846	Week 847	Week 848	Week 849	Week 850	Week 851	Week 852	Week 853	Week 854	Week 855	Week 856	Week 857	Week 858	Week 859	Week 860	Week 861	Week 862	Week 863	Week 864	Week 865	Week 866	Week 867	Week 868	Week 869	Week 870	Week 871	Week 872	Week 873	Week 874	Week 875	Week 876	Week 877	Week 878	Week 879	Week 880	Week 881	Week 882	Week 883	Week 884	Week 885	Week 886	Week 887	Week 888	Week 889	Week 890	Week 891	Week 892	Week 893	Week 894	Week 895	Week 896	Week 897	Week 898	Week 899	Week 900	Week 901	Week 902	Week 903	Week 904	Week 905	Week 906	Week 907	Week 908	Week 909	Week 910	Week 911	Week 912	Week 913	Week 914	Week 915	Week 916	Week 917	Week 918	Week 919	Week 920	Week 921	Week 922	Week 923	Week 924	Week 925	Week 926	Week 927	Week 928	Week 929	Week 930	Week 931	Week 932	Week 933	Week 934	Week 935	Week 936	Week 937	Week 938	Week 939	Week 940	Week 941	Week 942	Week 943	Week 944	Week 945	Week 946	Week 947	Week 948	Week 949	Week 950	Week 951	Week 952	Week 953	Week 954	Week 955	Week 956	Week 957	Week 958	Week 959	Week 960	Week 961	Week 962	Week 963	Week 964	Week 965	Week 966	Week 967	Week 968	Week 969	Week 970	Week 971	Week 972	Week 973	Week 974	Week 975	Week 976	Week 977	Week 978	Week 979	Week 980	Week 981	Week 982	Week 983	Week 984	Week 985	Week 986	Week 987	Week 988	Week 989	Week 990	Week 991	Week 992	Week 993	Week 994	Week 995	Week 996	Week 997	Week 998	Week 999	Week 1000
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# Arquitecturas - hacia el cliente



# Arquitecturas - hacia el cliente

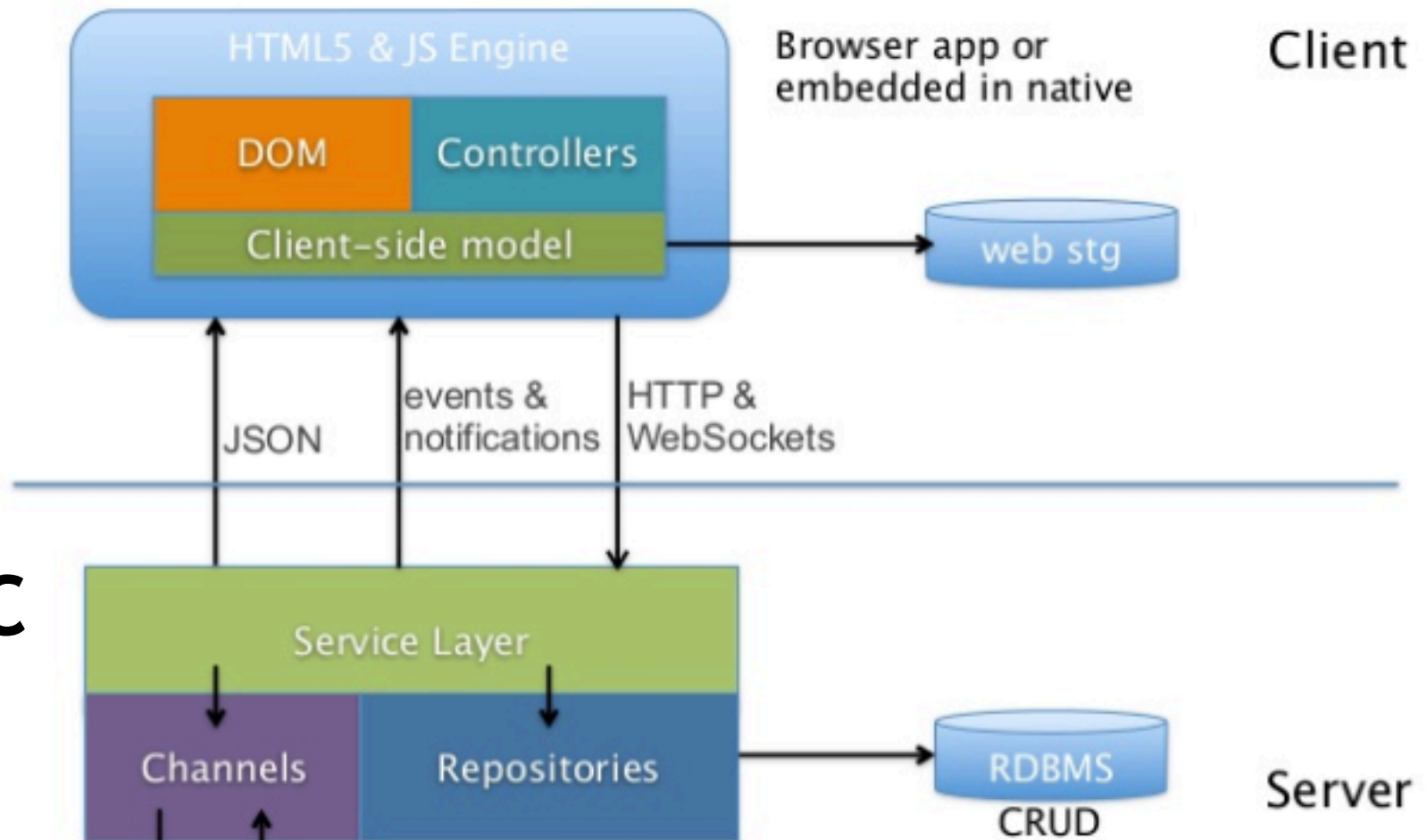
MVC





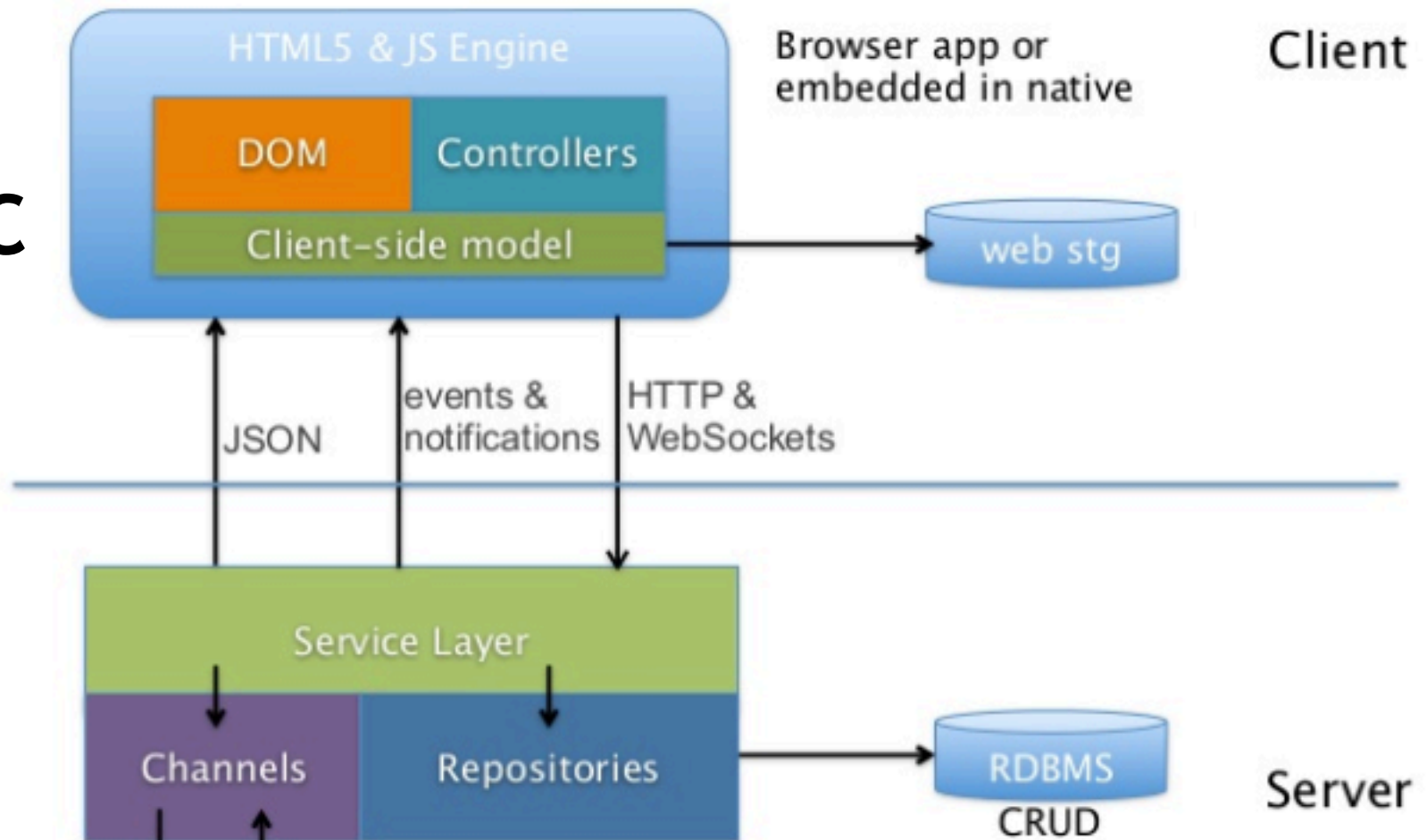
# Arquitecturas - hacia el cliente

MVC



# Arquitecturas - hacia el cliente

MVC



## todos



*What needs to be done?*



Task 1



Task 2



Task 3



Task 4

- Motivación básica
  - Mayor complejidad en el cliente
  - SinglePage applications
    - Mucha interacción
    - Implicancias técnicas
      - Manipulación del DOM
      - Manipulación del modelo subyacente
      - Manejo de información asincrónicamente

# Ejemplo de Tecnología client-side: Angular.js

- MVC, ¿de nuevo?
  - Model-view viewmodel (MVVM)



# Ejemplo de Tecnología client-side: Angular.js

```
<body>
  <h2>Todo</h2>
  <div ng-controller="TodoCtrl">
    <span>{{remaining()}} of {{todos.length}} remaining</span>
    [ <a href="" ng-click="archive()">archive</a> ]
    <ul class="unstyled">
      <li ng-repeat="todo in todos">
        <input type="checkbox" ng-model="todo.done">
        <span class="done-{{todo.done}}">{{todo.text}}</span>
      </li>
    </ul>
    <form ng-submit="addTodo()">
      <input type="text" ng-model="todoText" size="30"
        placeholder="add new todo here">
      <input class="btn-primary" type="submit" value="add">
    </form>
  </div>
</body>
```

# Ejemplo de Tecnología client-side: Angular.js

```
<body>
  <h2>Todo</h2>
  <div ng-controller="TodoCtrl">
    <span>{{remaining}}</span>
    [ <a href="#archive">Archive</a> ]
    <ul class="list-group">
      <li ng-repeat="todo in todos">
        <input type="checkbox"/> {{todo.text}}
        <span>{{todo.done ? 'done' : ''}}</span>
      </li>
    </ul>
    <form ng-submit="addTodo">
      <input type="text" value="{{todoText}}"/>
      <input type="submit" value="Add"/>
    </form>
  </div>
</body>
```

```
<script>
function TodoCtrl($scope) {
  $scope.todos = [
    {text:'learn angular', done:true},
    {text:'build an angular app', done:false}];

  $scope.addTodo = function() {
    $scope.todos.push({text:$scope.todoText, done:false});
    $scope.todoText = '';
  };

  $scope.remaining = function() {
    var count = 0;
    angular.forEach($scope.todos, function(todo) {
      count += todo.done ? 0 : 1;
    });
    return count;
  };

  $scope.archive = function() {
    var oldTodos = $scope.todos;
    $scope.todos = [];
    angular.forEach(oldTodos, function(todo) {
      if (!todo.done) $scope.todos.push(todo);
    });
  };
}
</script>
```

- **Thin clients**

- El usuario utiliza un cliente estándar sin necesidad de ningún software adicional.
- Se requiere una capacidad computacional mínima.
- HTML4

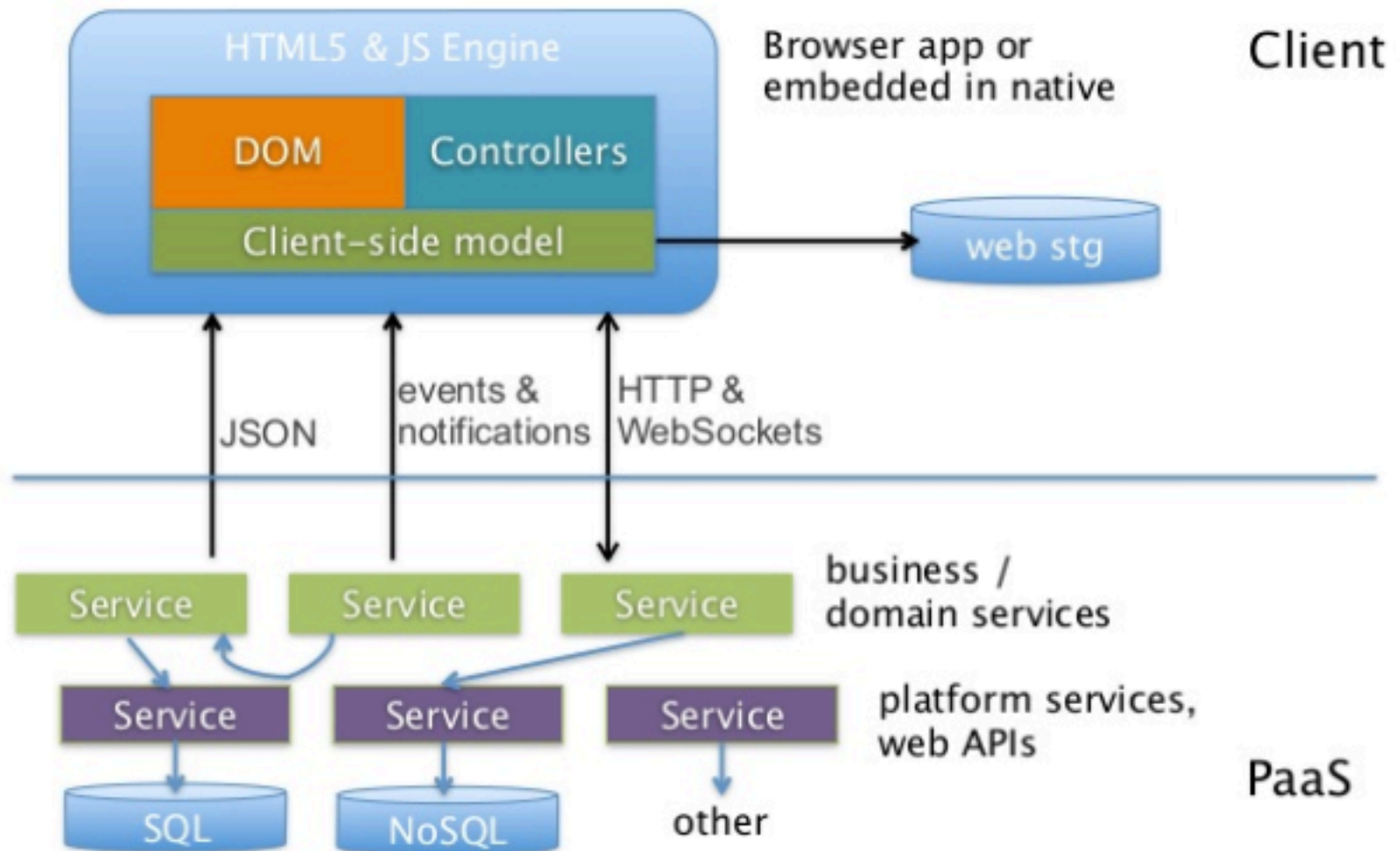
- **Thick clients**

- Reducen la carga de comunicación por red.
  - Reducen la carga de trabajo en el servidor
- Se aprovecha de la capacidad de procesamiento osiosa que tienen los clientes.
- Por ejemplo, Gmail modo offline

- ... Angular2, React



# Arquitecturas - hacia el cliente



# Programación Web

## Conclusiones

# Conclusiones

- La evolución de la Web
  - Web 1.0, Web 2.0
  - RIA
- En la solución de estas complejidades
  - Han entrado en juego soluciones anteriores
    - Incorporación OOP en la Web
    - MVC en su 1era aplicación en la Web
    - MVC en su 2da aplicación en la Web
    - Uso del observer en aplicaciones client-side
- Importancia de los patrones