The Design of Everyday APIs

Design APIs like everyday things

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1. PURPOSE

2. USABILITY

3. CONSTRAINTS
What is an API's purpose?
KITCHEN RADAR 3000

3 years warranty!
Military grade magnetron!
Read user manual before first use!

Kitchen Radar 3000
Magnetron On
# DEFRÖST

<table>
<thead>
<tr>
<th>Heating power</th>
<th>Cheat sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>Hold</td>
</tr>
<tr>
<td>Medium</td>
<td>7s</td>
</tr>
<tr>
<td>Low</td>
<td>11s</td>
</tr>
<tr>
<td>Defrost</td>
<td>13s</td>
</tr>
</tbody>
</table>
WRÖNG PURPOSE

TERRIBLE INTERFACE
API

INTERFACE FOR PEOPLE
if <power> is high
    turn magnetron on
    wait for <duration>
    turn magnetron off
else
    if <power> is medium
        cycle = 7s
    else if <power> is low
        cycle = 11s
    else if <power> is thaw
        cycle = 13s
    end if
for <duration>
    turn magnetron on
    wait for <cycle>
    turn magnetron off
    wait for <cycle>
end for
end if

heat food at <power> for <duration>
2. HOW TO DESIGN USABLE APIS?
STRAIGHTFORWARD API

1. REPRESENTATIONS

2. INTERACTIONS

3. FLOWS
GET /wum
GET /alarm-clock
REPRESENTATIONS

1536138951

2018-05-09T09:15:51

DATA FORMATS
"countdown": 43020

"alarm": "08:00"
INTERACTIONS

Regular

Very Hot

Cool

1000

1500

500

Prg

Perm. Press

RPM

Start

Half load

Gent. Mot.
INTERACTION ÖNS

WHYYYYY
INTERACTIONS

Program
- Cotton
- Wool
- Silk
- Synthetic

Start

Temperature
- 60°C

Spin Speed
- 1500 rpm
INTERACTIONS

ERROR
DOOR NOT CLOSED

60°C  1500 rpm

Temperature  Spin Speed

Cotton  Program  Shirts
Wool  Jeans  Synthetic

Start
Finished in 45:00

Temperature 60°C
Spin Speed 1500 rpm
INTERACTIONS

- **Regular**: Prg
- **Very Hot**: Tmp
- **Temp**: Hot
- **RPM**: 1000
- **Half load**: Start
- **Program**: Cotton, Wool, Silk, Synthetic
- **Shirts**, **Jeans**: Start
- **Temperature**: 60°C
- **Spin Speed**: 1500 rpm
INTERACTIONS

{ "prg": "regular", 
  "tmp": "cool", 
  "rpm": 1000, 
  "hl": true 
}

{ "program": "cotton" }

INPUTS
400 BAD REQUEST
{"message": "door not closed"}
INTERACTIONS

200 OK

202 ACCEPTED
{"finishedIn": "00:45:00"}

SUCCESS FEEDBACK
STRAIGHTFORWARD ÄPI

1. REPRESENTATIONS

2. INTERACTIONS

3. FLOWS
FLOWS
FLOWS
FLOWS
Prevent errors

Aggregate
PREDICTABLE API

1. CONSISTENT

2. ADAPTABLE

3. DISCOVERABLE
CONSISTENT DESIGN

Diagram of a washing machine control panel with options for different materials (Cotton, Wool, Silk, Synthetic), programs (Shirts, Jeans), and settings (Temperature, Spin Speed). The control panel is connected to a media player interface labeled "Awesome API mix #1" with playback controls including play, stop, previous, next, and pause buttons.
CONSISTENT DESIGN

SELF-CONSISTENT
CONSISTENT DESIGN

SELF-CONSISTENT

CONSISTENT ACROSS ORGANIZATION
CONSISTENT DESIGN

SELF-CONSISTENT

CONSISTENT ACROSS ORGANIZATION

COMMON PRACTICES & STANDARDS
PREDICTABLE API

1. CONSISTENT

2. ADAPTABLE

3. DISCOVERABLE
ADAPTABLE DESIGN
ADAPTABLE DESIGN

PAGINATION, SORT, FILTER
ADAPTABLE DESIGN

PAGINATION, SORT, FILTER

CONTENT NEGOTIATION
ADAPTABLE DESIGN

PAGINATION, SORT, FILTER

CONTENT NEGOCIATION

INTERNATIONALIZATION
ADAPTABLE DESIGN

PAGINATION, SORT, FILTER

CONTENT NEGOCIATION

INTERNATIONALIZATION

DATA SELECTION
TOO MUCH ADAPTABLE

WHYYYYY
PREDICTABLE API

1. CONSISTENT

2. ADAPTABLE

3. DISCOVERABLE
DISCOVERABLE DESIGN
DISCOVERABLE DESIGN

“currentPage”: 2,
“lastPage”: 10
"_links": {
  "self": "/books/123",
  "authors": "/books/123/authors"
}

DISCOVERABLE DESIGN

HYPERMEDIA
OPTIONS /BOOKS

200 OK
Allow: GET, POST
3. CONSTRANGED API DESIGN
CONSTRAINED API DESIGN

1. USER

2. PROVIDER
USERS CONTEXT
LATENCY/GRANULARITY
USERS CONTEXT

LATENCY/GRANULARITY

FREQUENCY/WEBHOOKS, STREAMING
USERS CONTEXT

LATENCY/GRANULARITY

FREQUENCY/WEBHOOKS, STREAMING

VOLUME/BATCH, BULK
CONSTRAINED API DESIGN

1. USER

2. PROVIDER
PROVIDER'S CONTEXT
PROVIDER'S CONTEXT

SCALABILITY/RATE LIMITING
PROVIDER'S CONTEXT

SCALABILITY/RATE LIMITING

PERFORMANCE/ASYNCHRONOUS
PROVIDER'S CONTEXT

SCALABILITY/RATE LIMITING

PERFORMANCE/ASYNCHRONOUS

NOT 24-7/NO GO