HOP as the *Lingua Franca* of RAPP

Ludovic Courtès
agenda

1. teams
2. RAPP
3. conclusion
teams
(define-service (home/demos/sudoku #\key (level 3))
(let ((board (init-sudoku level)))

  (HTML>
    <head>
      <base (service-base-url home/demos/sudoku (current-request))>
      <script "sudoku.scm" css "sudoku.hss")>
    </head>
    <body>
      (<div :class "sudoku-title" (<img :src "sudoku.png"))>
      (<div :class "sudoku-panel">
        (<h2>Menu</h2>)
        (<div :class "sudoku-menu">
          (<div :class "level" )>
            (map (lambda (l) )>
              (list
                (<a :href (home/demos/sudoku :level l) l) " ")>
              (iota 5 1))))>
          (<div :id "show-errors">"
            (<input :type "radio" :name "err" :checked "checked")
              :style "cursor: pointer"
              :onclick "(set! *show-errors* t)))>
          "yes"
          (<input :type "radio" :name "err" )>
            :style "cursor: pointer"
            :onclick "(set! *show-errors* f)"
          "no"
        </div>
        (<div :style "cursor: pointer; border: lpx solid #ccc; background: #eee; text-align: center; margin-bottom: 4px; margin-top: 4px;" :onclick "(show-solution)"
          "show-solution"/>
          "sudoku:"-
          hop/sudoku.hop
          88% (177,7) Hop 1941 [d,4] (Bee +2 ParEdit he Fly Fill) [board-www] 11:24 1.82 GHz>
        </div>)>
      </div>)>
    </body>
  )>

http://hop.inria.fr/#home-notepad=np:1

Done
• two-tier programming language
• native of the Web
service helloServerDate () {
    return Date.now ();
}

service hello () {
    var sdate = <DIV> { };
    return <HTML> {
        <BUTTON> {
            onclick: ~ {
                ${helloServerDate} ()
                .post (function (now) {
                  ${sdate}.innerHTML =
                    new Date (now).toString ();
                })
            }, "What time is it?"
        }, sdate
    }
}
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}

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    return <HTML> { 
        <BUTTON> { 
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                })
                , "What time is it?"
                , sdate
            }
        }
    }
}
2

RAPP
platform to deliver robotic applications for social inclusion
HTTP, JSON, etc.

C/C++

RAPP

ROS
On-Robot Protocol Soup

- cablebot, etc.
- HOP
- ROSBridge
- ROS
  - master
  - turtlesim
  - draw_square
- browser
On-Robot Protocol Soup

cablebot, etc.

HOP

ROS

master

turtlesim

draw_square

browser

Ludovic Courtès – HOP as the Lingua Franca of RAPP
On-Robot Protocol Soup

HOP

ROS

cablebot, etc.

HTTP, JSON, etc.

browser

JSON on WebSocket

XML-RPC

ROS

master
turtlesim
draw_square

Ludovic Courtès – HOP as the Lingua Franca of RAPP
On-Robot Protocol Soup

HOP

ROS

 ROSBridge

HTTP, JSON, etc.

browser

cablebot, etc.

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HTTP, JSON, etc.

JSON on WebSocket

XML-RPC

HTTP, JSON, etc.
Robot & Web Services

HOPish cloud
- RApp Store
- user profiles
- computation offloading

robot
- ROS
- HOP client lib (rowe)
- HOP

HTTP, JSON...
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Caregiver’s browser

HTTP, JSON...
Robot & Web Services

HOPish cloud
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robot
- ROS
- HOP client lib (rowe)
- HOP

HTTP, JSON

...
The RAPP Store

Dashboard

Users

<table>
<thead>
<tr>
<th>user</th>
<th>status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alice</td>
<td>inactive</td>
</tr>
<tr>
<td>Bob</td>
<td>inactive</td>
</tr>
<tr>
<td>Craig</td>
<td>active on robot-pluto-9000</td>
</tr>
</tbody>
</table>

RAPP On-Robot

Caregiver View

Craig

rehabilitation exercise, level 1

[Graph showing rehabilitation progress]
3 conclusion
HOP helps connect *robotic components* together.
summary

- HOP helps connect **robotic components** together
- connection with **Web services** made easy
summary

• HOP helps connect **robotic components** together
• connection with **Web services** made easy
• robots turned into **connected objects**
lunch time!
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