LogicNets

About NASA, LUA, and Beer

Jelle Ferwerda

Co-authored with Ashwin Hirschi

Who We Are & What We Do

- Founded in 2000
- Located in Washington, DC
- Operate globally

- Software development environment for *business experts*
- Business experts make software applications unique to their organizations

Who Uses It

BRITISH COUNCIL

EARTHLINKED TECHNOLOGIES

Excela Associates Inc.

KOXKA

DEFG

cyntelix delivering information

National Aeronautics and Space Administration

FOX NETWORKS GROUP

FEDERAL AVIATION ADMINISTRATION

Ingersoll Rand Inspiring Progress™

NORTHROP GRUMMAN

Fire Farm Lighting

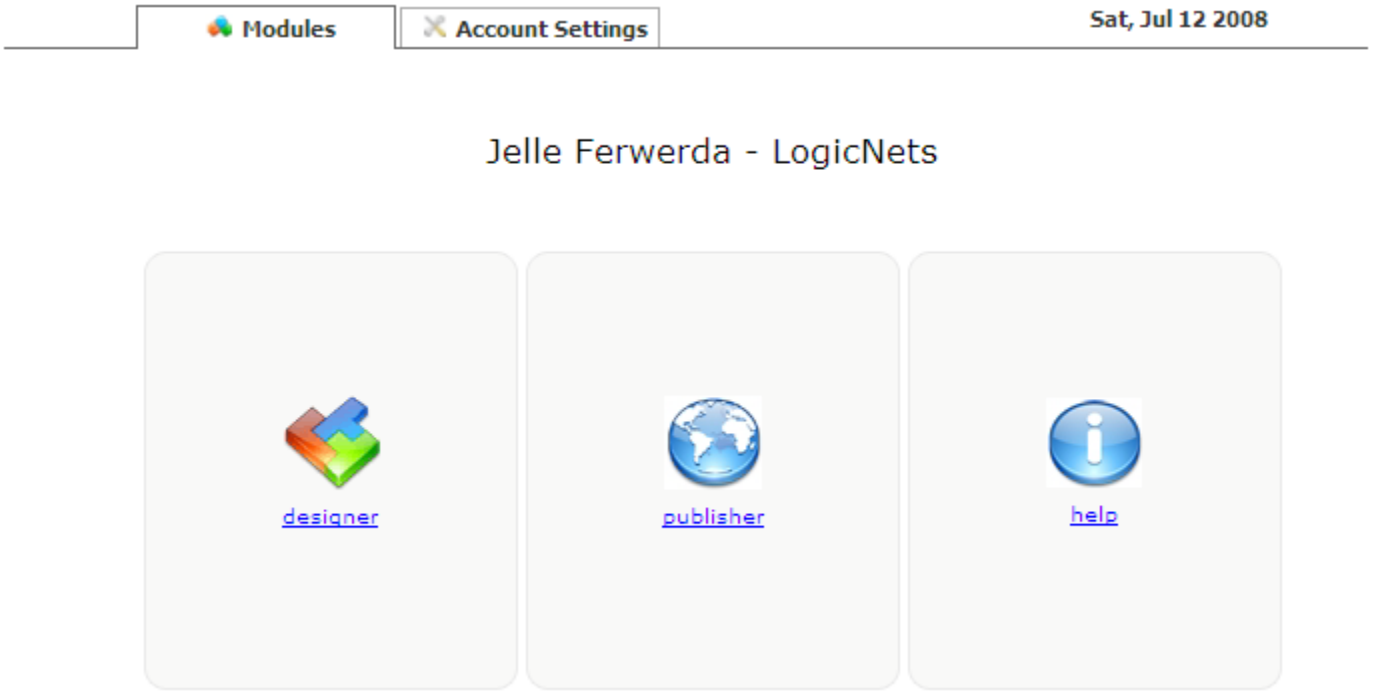
GREAT AMERICAN INSURANCE GROUP

Kirkwood COMMUNITY COLLEGE

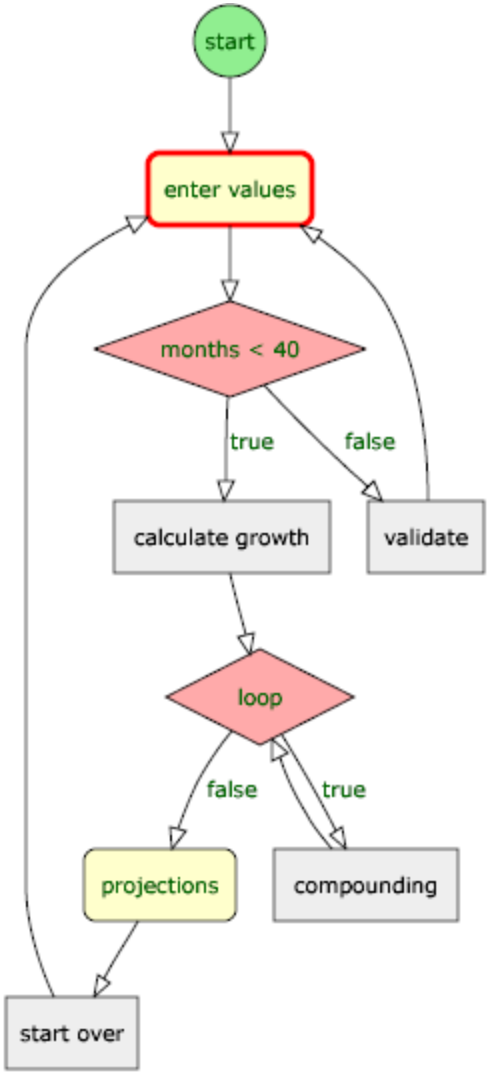
PEMBRIDGE PB1

THERMO KING

LogicNets System



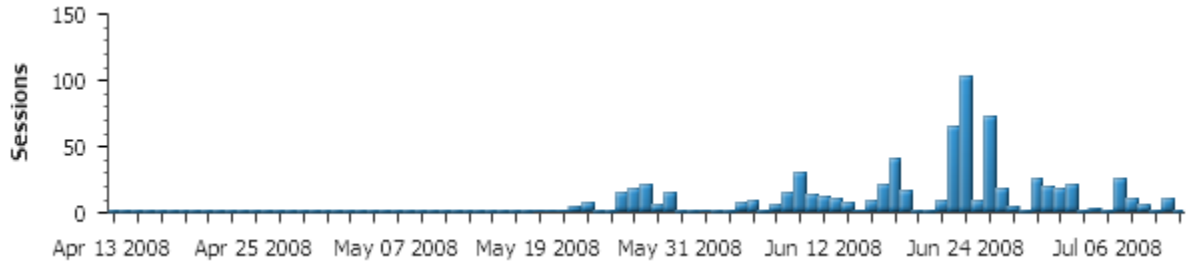
Designer



- Target audience: Business experts!
- Define applications as logicnets
- Nodes represent:
  - Forms
  - Rules / Routers
  - Call nodes
  - Process (server based actions)

Publisher

- Publish as web applications
- Track usage
- Collect feedback
- Publish as stand-alone applications

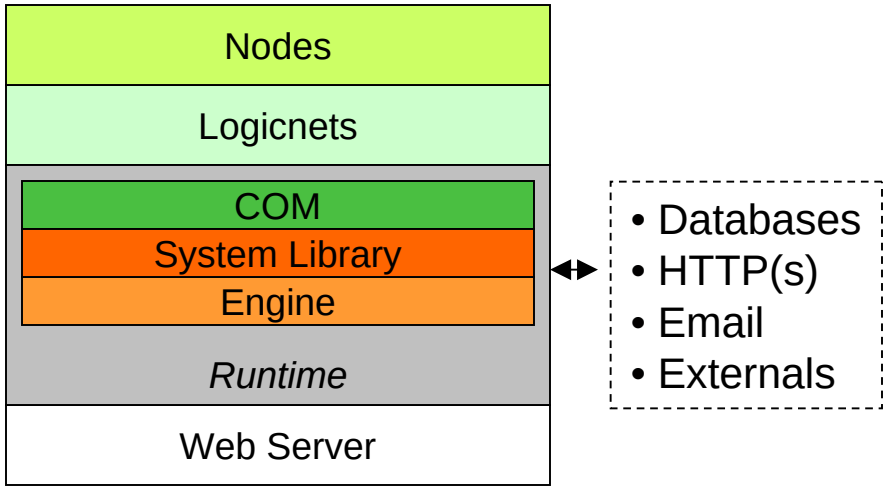


Implementation Requirements

- Performance
- Scalability
- Stability
- Flexibility
  - Easy to add new functionality
  - Ability to work with a dispersed team

First Implementation

2000 - 2004

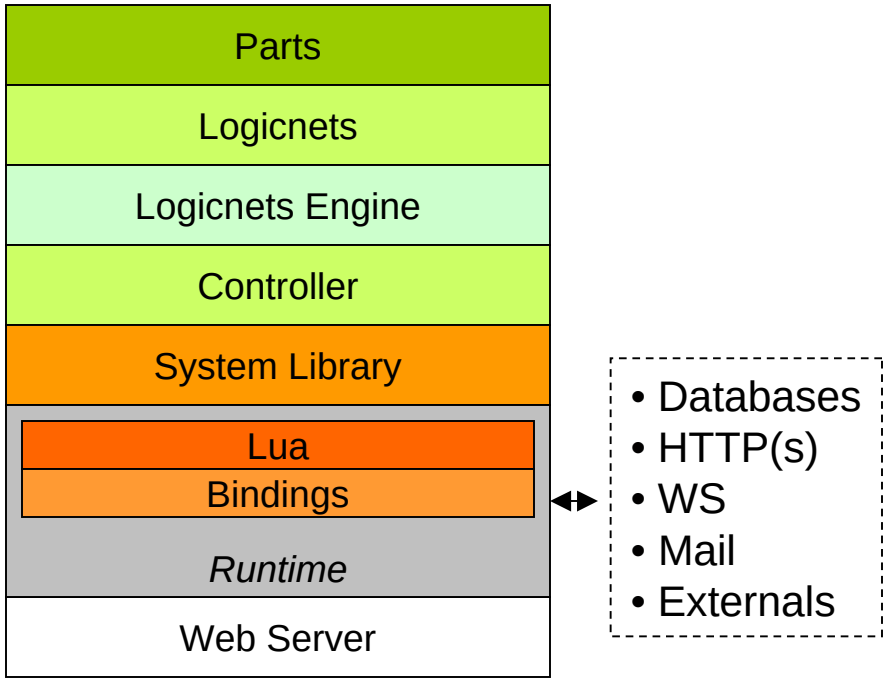


Over time:

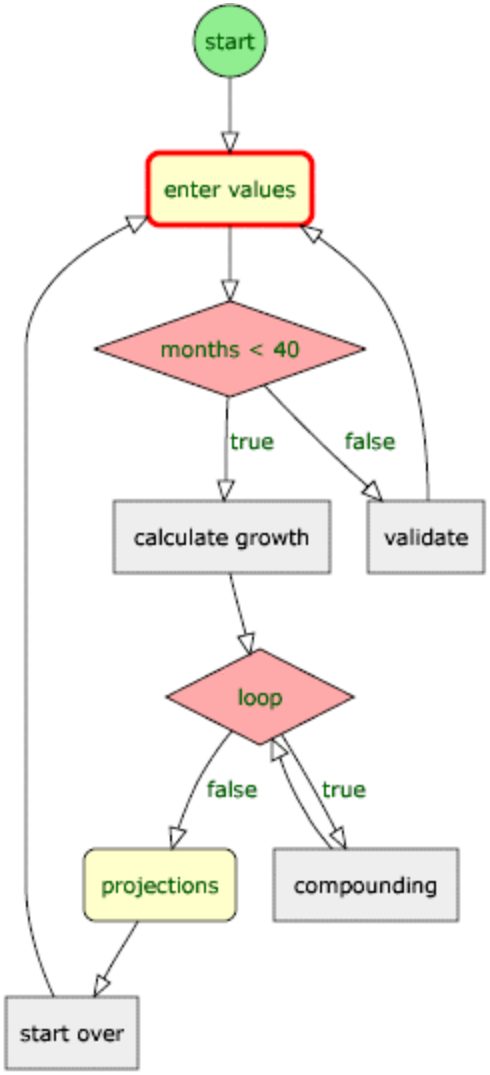
- Flexibility…engine is too static, node level is too generic
- Performance…more customers leads to bad performance
- Stability…not as stable as necessary

The Lua Implementation

2004 - Now



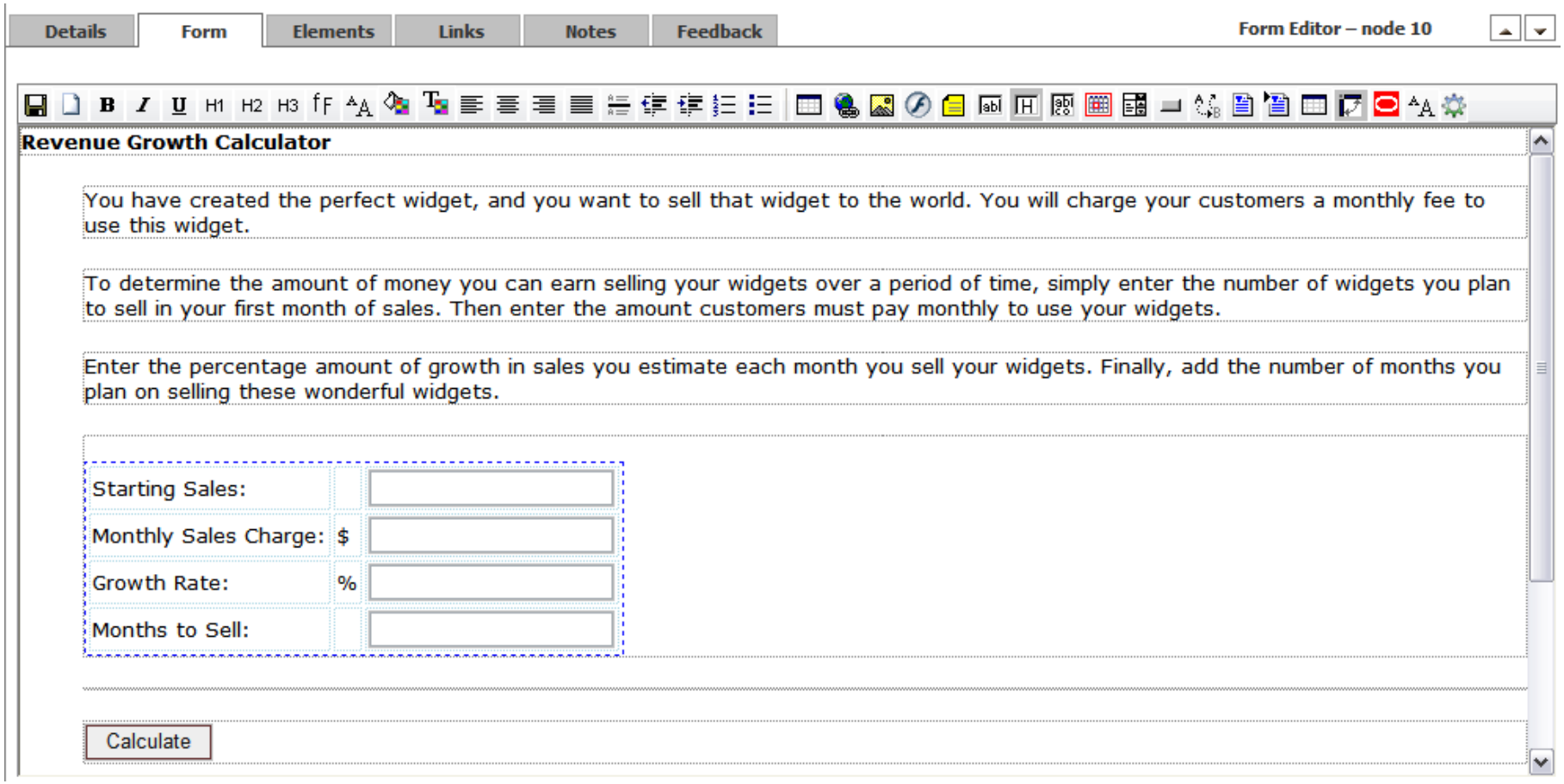
Logicnets in Lua



- Each Logicnet is translated into Lua tables containing the Net and Node properties
- Each Node contains composition of parts defined as Lua tables
- Each part's behavior is mapped to corresponding Lua script

LogicNets

Form Node Editor UI



LogicNets

Form Node Lua Translation

```
node {
        can_start = 1,
        outputs = {
                {
                        target = 70
                }
        },
        parts = {
                "<P><STRONG>Revenue Growth Calculator</STRONG></P>\n<BLOCKQUOTE dir=lt
                {
                        _name = "table_test"
                },
                "<TBODY>\n<TR>\n<TD>Starting Sales:</TD>\n<TD></TD>\n<TD>",
                {
                        type = "text",
                        data_type = "numeric",
                        _name = "text_input",
                        path = "res.growth",
                        location = "res",
                        validation_text = "Please enter a number in this field.",
                        var = "growth",
                        default = "10",
                        validation = "mandatory"
                },
                "</TD></TR>\n<TR>\n<TD>Monthly Sales Charge:</TD>\n<TD>$</TD>\n<TD>",
                {
                        type = "text",
                        data_type = "numeric",
                        _name = "text_input",
                        path = "price",
                        location = "",
                        validation_text = "Please enter a number in this field.",
                        var = "price",
                        default = "",
                        validation = "mandatory"
```

Advantages

- Flexibility
  - Many previous core services are now dynamic, including the engine
  - One part relates to one Lua script
- Performance
  - Much(!) faster scripts
  - No XML overhead
  - Runs as cgi implementation
- Stability
  - A different world

Demonstration

NASA Partnership

- Space Act Agreement (SAA): Intelligence modeling and runtime environment for autonomous robotic systems

  - Procedural Reasoning System
  - No programming
  - Require flexibility to add new behavior, etc.

Applications

- Application: Color Configurator
  - Refrigeration cabinets sales reps use the color configurator to change cabinet color schemes on the fly
- Application: Emergency Action Plan Generator
  - 10,000 sports productions per year
  - Different venues, different production teams
  - Every production requires new Emergency Action Plan
- Application: Performance Tracker
  - Quality and Sales reps
  - Collect product quality information and market intelligence with Blackberry's
  - Aggregate and analyze data for management reporting