Semantically Grounded Briefings

DAML PI Meeting

May 25-26, 2004 New York
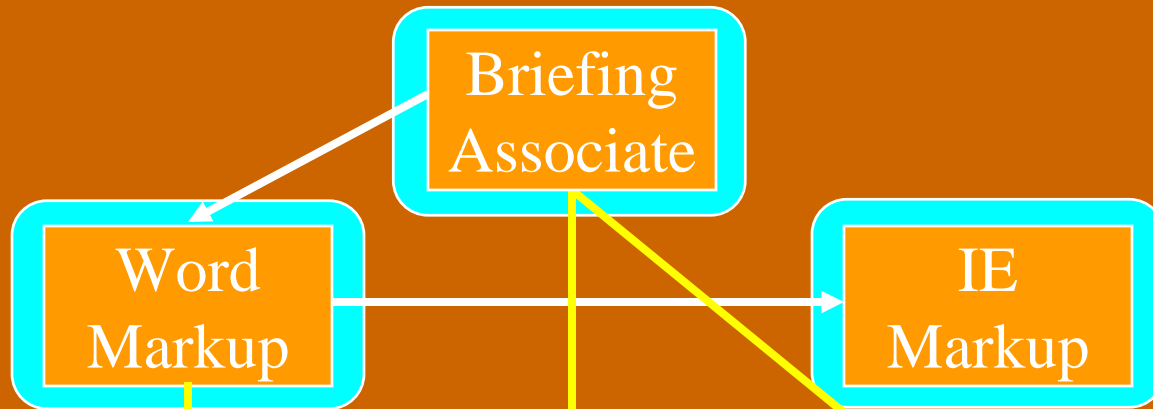
Bob Balzer

Neil Goldman

Marcelo Tallis

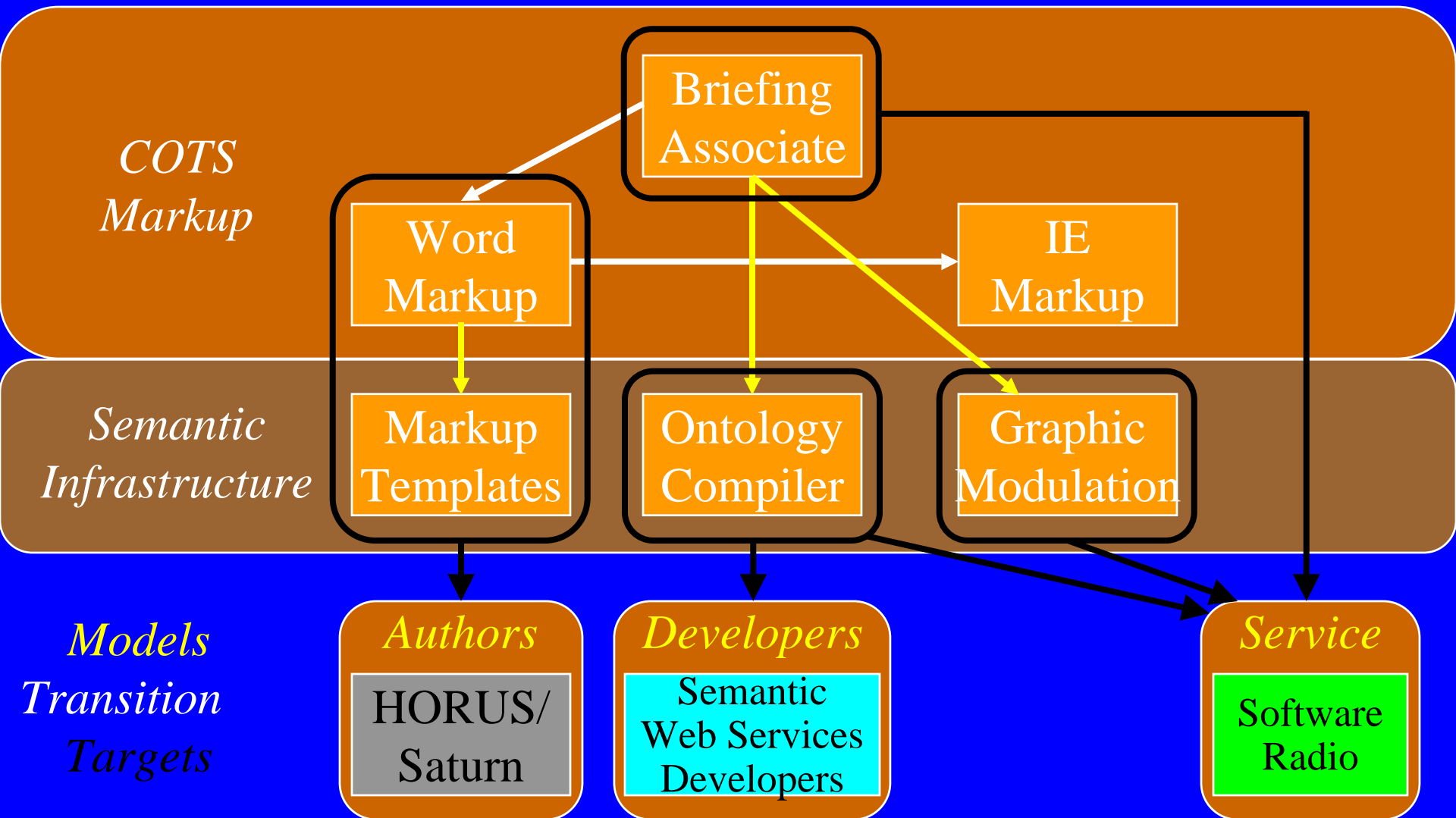# Tool Development

Ontology "Compiler"
Produces

- Static typed OO programming language library

- Providing terminology and semantics of a *specific* ontology

- Library implementation tailored by annotations

Ontology

Annotations

Mounted as a
Web Service

Ontology
Compiler

mr.teknowledge.com/ontlibgen

Other Libraries
and code

Linker

Application
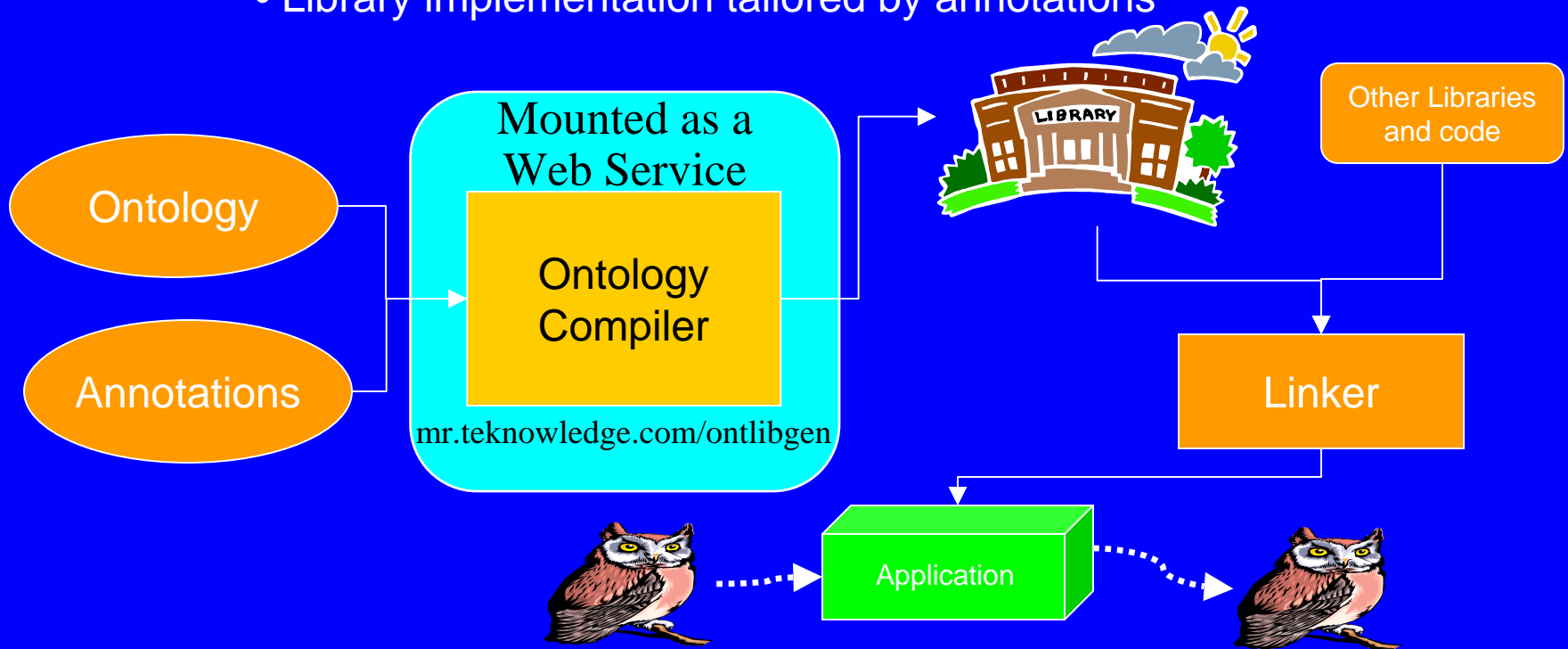
Technology Transition

COTS Markup

Semantic Infrastructure

Models Transition Targets

Briefing Associate

Word Markup

IE Markup

Markup Templates

Ontology Compiler

Graphic Modulation

Authors
HORUS/ Saturn

Developers
Semantic Web Services Developers

Service
Software Radio

Continual 1 year in future

Software Radio Code-Synthesis

Briefing Associate

Graphic Model

SWRI AM Code

SWRI Generator

C

Teknowledge Software Radio Synthsizer

Ensures Consistency

Matlab Code

(in MCode)

Matlab Simulator

DSP Simulations
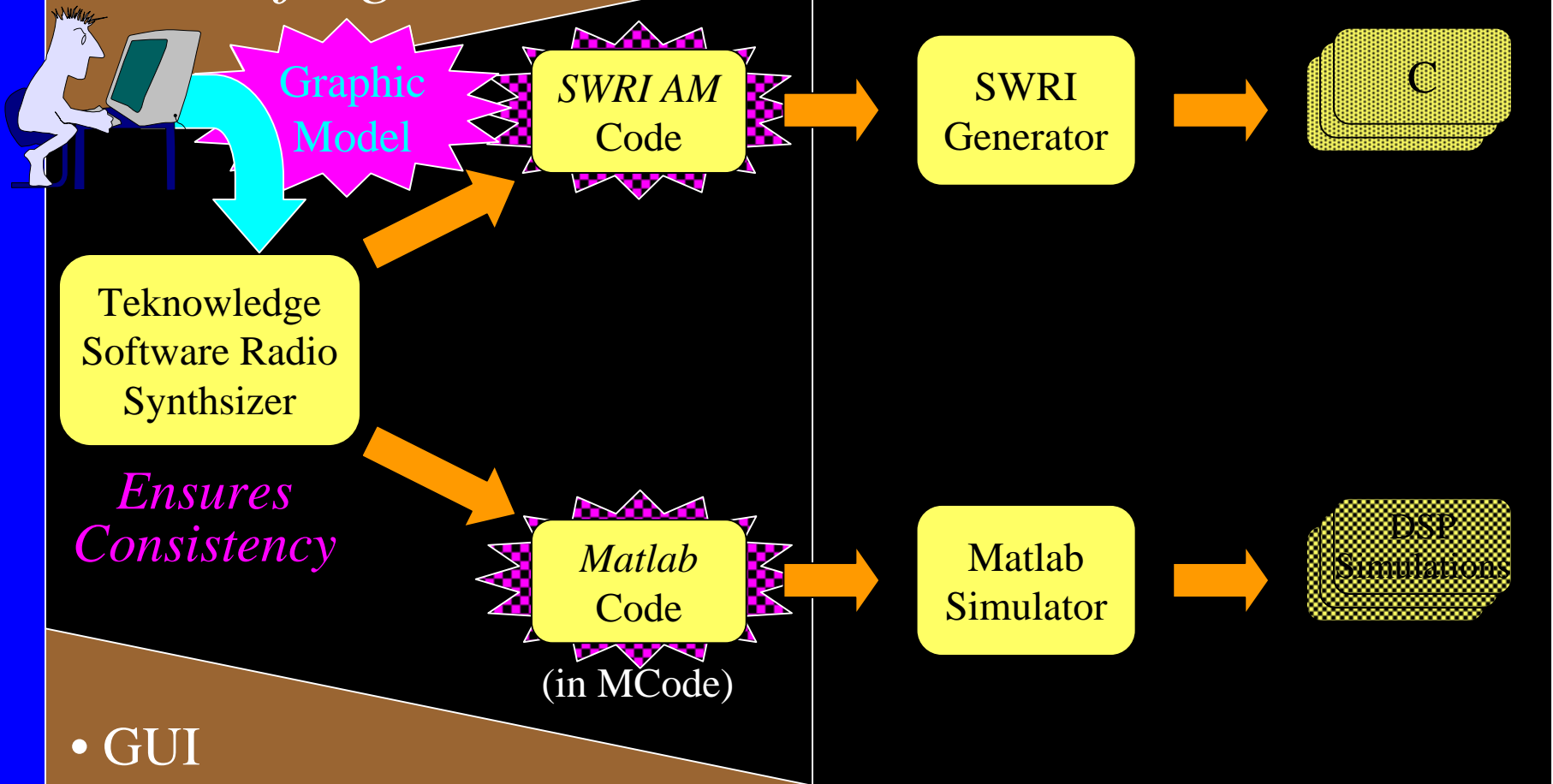
- GUI
- Well-Formedness Analyzer
- Synthesizer

DEMO

Target   Improvement: 10X
Measured Improvement: 100X

2nd Software Radio Transition Success Rapid Service Development

- Common SubExpression Elimination   DEMO
  - Analyzer built and debugged in 2 weeks (1 person)
  - Why We Were Able To Do It So Quickly

    => Existing Infrastructure (no changes required)

    1. Ontology for Domain
    2. Type-Safe Development Language for Domain (ontology compiler)
    3. Relational Abstraction
    4. Existing Analysis of Designs in that Domain
       a. logical connections between opblocks (producers/consumers)
       b. Execution order (=> Linear Analyzer)
    5. Comprehensive COTS GUI
  - Embedded Design Analyzer (additional 3 days (over 2 weeks))

    1 Required Infrastructure Upgrade (combine embedded models)

FY04 Plans

- Hibernate
  - Till GFY05 Spring (~ Jan 2005)
- FY05 Plans
  - Saturn Transition: author summary markup (narrow domain)
  - Briefing Associate
    - Import OWL ontology: use enriched type library
      from Ontology Compiler
  - Word & IE
    - Import Briefing Associate Analyzer Infrastructure
  - Ontology Compiler
    - Imported ontologies as referenced type libraries
    - Performance annotations (e.g. unneeded indexes)
  - Graphic Modulation
    - Annotations based on derived properties
    - Publish graphic annotations in OWL