Configuring & managing the Informatics computing systems

Innovative Learning Week
Wed 17th February 2016

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Programme

10.00-10.15 - Intro (Paul)

10.15-11.45 - Configuring systems with LCFG (Alastair & Stephen)

11.45-12.00 - Break

12.00-13.00 - Writing LCFG components (Paul)
all in different formats!!!
a common format

a single, definitive source of configuration information
Declarative Configuration

Configuration is data, not code
- the LCFG profiles are in XML
- we can generate the profiles in different ways
  - the existing LCFG language is very old (1994!)
  - L3 is a new, experimental language
- we can consume the profiles in different ways
  - to configure a machine
  - to do a complete security analysis of the whole site

Deployment is separate from specification
- components translate from the profile to system-specific formats
- we can use automated planning to control the deployment order

Many other systems are not “declarative”
- they specify “how” (scripts), but not “what”
- having no explicit description of the desired configuration is a big disadvantage
dependencies must be maintained manually

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there is no “higher-level” model of the system
“profiles” in xml

“source files” in LCFG language

DB service port=42

DB server “include DB service”

DB client “include DB service”

“compiler”
a single, definitive source for the service port

DB service
port=42

DB server
“include DB service”

DB client
“include DB service”

“compiler”

the server and client will always agree
common configuration for various “aspects” can be factored out into “header files”
Overall Architecture
What next?

Sessions today
› using the LCFG language to configure some existing components
› writing (or at least modifying) components

Resources
› the LCFG booklet is available online
  please do not distribute outside of Informatics
› the VM is available online
› the code is open source: www.lcfg.org

Research
› I’m interested in ...
  - language semantics (e.g. aspect composition & conflict resolution), usability, deployment & planning, ...
› Project opportunities ...
  - PhD, MSc, INF4, INF3 research, summer projects ...