

# FESA3 Installation on Productive Systems

# Status Quo

- Currently the FESA3 Framework Installation mechanism is makefile-based
  - Resulting impact:
    - dependencies on institute-specifics, e.g. central file system, fixed installation paths and global makefiles
    - high maintenance and adaption for each FESA3 FWK installation (→ versioning!)
    - tight knitted structure to suit one central installation
    - 3<sup>rd</sup>-party components such as cmw- and timing-libraries are expected in given structure
- FESA3 Eclipse Plugin is installed directly into Eclipse using an Update-Site-URL

# Makefile-based installation

- **Advantages**

- Simplicity of maintenance of a single FESA3 FWK installation

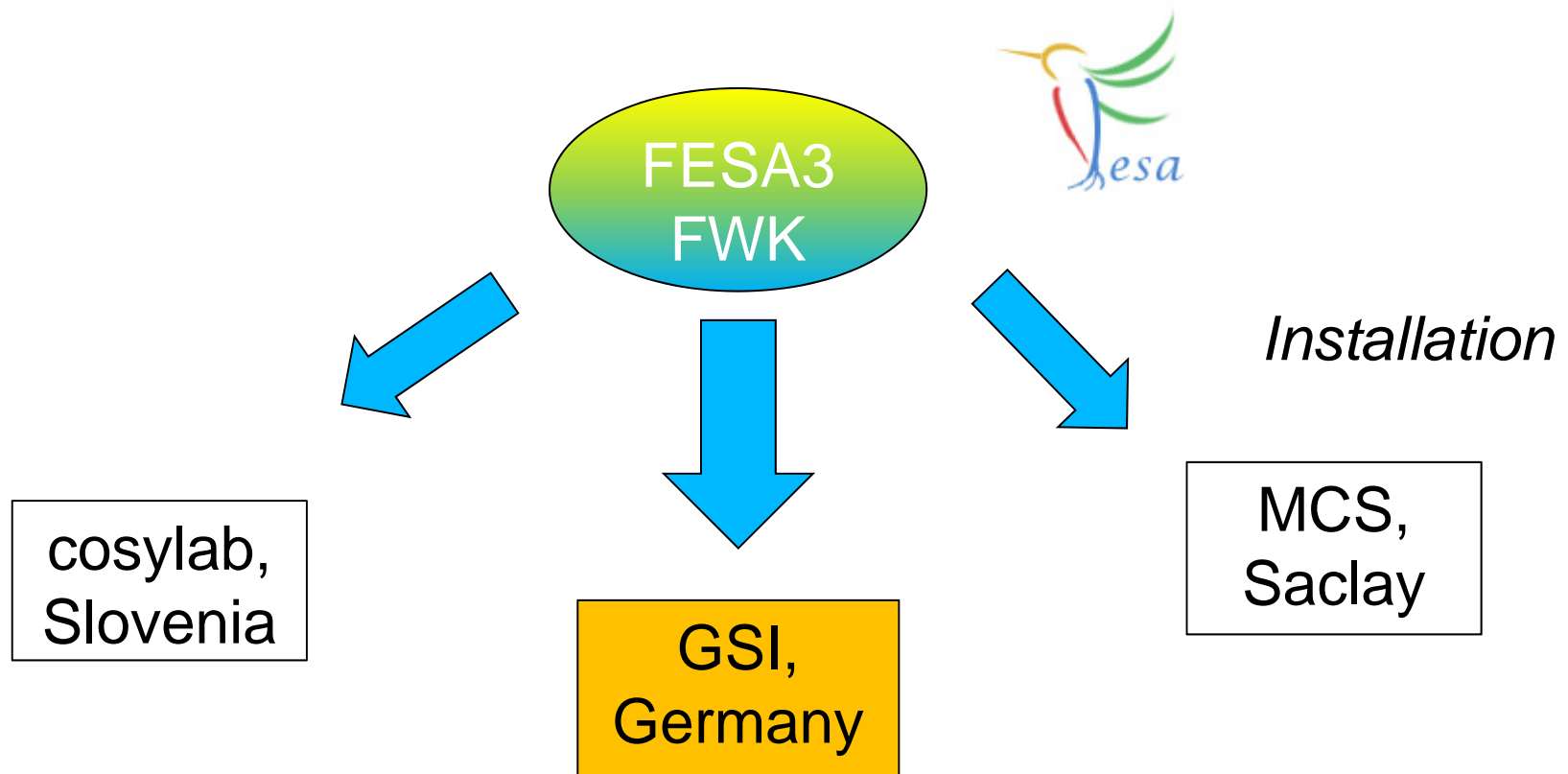
- **Disadvantages**

- Designed to work in exactly one environment
- Tight installation structure, requires certain paths and directories
- Usually new installations need to be closely checked for version (mis-)matches of the components
- Softlinks to different versions of 3<sup>rd</sup>-party components lead to intransparent structure which is difficult to maintain

# Motivation

- @GSI **productive** FESA3 installations are required in separate facilities:
  - local FESA3 development platform for device software suppliers such as Cosylab in Slovenia
  - development platform for GSI's "Mini-Control System" for the pLinac-Source in Saclay, France

# Illustration



# The Idea

- Provide an installation mechanism for distribution of FESA3 FWK and the required components to allow distribution of the FESA3 FWK to various systems
- Allow maintenance of all existing installations
  - bug-fixes
  - updates of parts such as libraries / header files / templates / ...

# FESA3 FWK Components

- FESA3 framework components
  - fesa-core / fesa-core-gsi
  - fesa-codegen / fesa-codegen-gsi
  - fesa-model / fesa-model-gsi
  - fesa-environment-gsi
  - fesa-fwk

# 3<sup>rd</sup> – Party Components

- Required 3<sup>rd</sup>-party components for FESA3 core
  - cern-cmw -log / -rbac / -rda / -serializer / -util / -drvutil / -pm / -icethreads / -omniorb / ...
  - timing-libraries tgm / tgv / tim
- Necessary for running software developed with FESA3:
  - CMW directory server for RDA access
  - Database



# Different Installation Mechanism

- A different installation management allows to roll-out the same version of the FESA3-FWK to different systems easily and independently
- **Packet manager** allow to encapsulate components into packages and to define dependencies between packages
  - clearer structure
  - improves versioning and dependencies of components
  - orientation on "Linux standards"

# PROs and CONs of RPMs

- **PROs**

- Simple **installation** of coupled / depending packages on different systems for system administrators
- **Inter-package versioning** between components
- **Building of packages from SOURCES in SVN**
- **Different FESA3 major version installations in parallel**
- Possible replacement of hand-knitted makefile-based installation mechanism of FESA FWK components
- For each update and bug-fix a patch must be provided per concerned package → optimal for distribution to different sites

# PROs and CONs of RPMs

- **CONs**

- Introduces additional "technology" to FESA3 FWK
- @GSI: packaging of 3<sup>rd</sup>-party components such as the middleware, the timing-libraries, etc. are required
- Local installations for development are not easily possible

# Installation Folder Structure I

- Base directory: `opt/fesa/`
- Contents of `/opt/fesa/fesa-3rdparty`

```
/opt/fesa/  
|-- 3.0-beta -> .  
|-- fesa-3rdparty  
|   |-- 3.0-beta  
|       |-- include  
...  
|   |   |-- rda -> /opt/cern/rda/2.8.14/include  
|   |   |-- tim -> /opt/cern/tim/0.0.1/include  
|   |-- lib  
|       |-- i686  
...  
|   |   |   |-- libRDA.a -> /opt/cern/rda/2.8.14/lib/i686/libRDA.a
```

# Installation Folder Structure II

- Contents of /opt/fesa/fesa-fwk

```
| -- fesa-fwk
|   `-- 3.0-beta
|       |-- fesa-codegen -> ../../fesa-codegen/3.0-beta
|       |-- fesa-codegen-gsi -> ../../fesa-codegen-gsi/3.0-beta
|       |-- fesa-model -> ../../fesa-model/3.0-beta
|       `-- fesa-model-gsi -> ../../fesa-model-gsi/3.0-beta
```

# Installation Folder Structure III

- Contents of /opt/fesa/fesa-core

```
|-- fesa-core
|   |-- 3.0-beta
|       |-- include
|           |-- fesa-core
|               |-- Core / DataStore / Diagnostic / ... / Server
|       |-- lib
|           |-- i686
|               |-- libfesa-core.a
```

# Example Installation Command

```
root@as1520 ~]# yum install fesa-gsi-3.0-beta
Loaded plugins: downloadonly, rhnplugin, security Excluding
  Packages in global exclude list Finished Setting up Install
  Process Resolving Dependencies
--> Running transaction check
---> Package fesa-gsi-3.0-beta.x86_64 0:3.0.beta-gsi01 set to be
    updated

[snip, dependency resolution]

--> Finished Dependency Resolution
```

# Example Dependency Resolution

Dependencies Resolved

```
=====
Package                Arch  Version      Repository    Size
=====
Installing:
 fesa-gsi-3.0-beta      x86_64 3.0.beta-gsi01  gsi-acc-arch 1.8 k
Installing for dependencies:
 cern-directory-client-1.1.0 x86_64 1.1.0-gsi01   gsi-acc-arch 154 k
 cern-drvrutil-0.0.1     x86_64 0.0.1-gsi01   gsi-acc-arch 72 k
 cern-dscrt-0.0.1       x86_64 0.0.1-gsi01   gsi-acc-arch 72 k
 cern-err-0.0.1         x86_64 0.0.1-gsi01   gsi-acc-arch 76 k
 cern-icethreads-1.0.0  x86_64 1.0.0-gsi01   gsi-acc-arch 51 k
 cern-omniorb-4.1.2     x86_64 4.1.2-gsi01   gsi-acc-arch 1.0 M
 cern-pm-2.9            x86_64 2.9-gsi01     gsi-acc-arch 97 k
 cern-rbac-3.4.1        x86_64 3.4.1-gsi01   gsi-acc-arch 849 k
 cern-rda-2.8.14        x86_64 2.8.14-gsi01  gsi-acc-arch 2.6 M
 cern-serializer-1.0    x86_64 1.0-gsi01     gsi-acc-arch 63 k
 cern-tgm-0.0.1         x86_64 0.0.1-gsi01   gsi-acc-arch 79 k
 cern-tgv-0.0.1         x86_64 0.0.1-gsi01   gsi-acc-arch 12 k
 cern-tim-0.0.1         x86_64 0.0.1-gsi01   gsi-acc-arch 49 k
 fesa-3rdparty-3.0-beta x86_64 3.0.beta-gsi01  gsi-acc-arch 3.5 k
 fesa-base              x86_64 1.0.0-gsi01   gsi-acc-arch 2.4 k
 fesa-codegen-3.0-beta  x86_64 3.0.beta-gsi01  gsi-acc-arch 52 k
 fesa-codegen-gsi-3.0-beta x86_64 3.0.beta-gsi01  gsi-acc-arch 11 k
 fesa-core-3.0-beta     x86_64 3.0.beta-gsi01  gsi-acc-arch 9.1 M
 fesa-core-gsi-3.0-beta x86_64 3.0.beta-gsi01  gsi-acc-arch 1.3 M
 fesa-environment-gsi-3.0-beta x86_64 3.0.beta-gsi01  gsi-acc-arch 19 k
 fesa-fwk-3.0-beta      x86_64 3.0.beta-gsi01  gsi-acc-arch 2.6 k
 fesa-fwk-gsi-3.0-beta  x86_64 3.0.beta-gsi01  gsi-acc-arch 2.4 k
 fesa-model-3.0-beta    x86_64 3.0.beta-gsi_01  gsi-acc-arch 114 k
 fesa-model-gsi-3.0-beta x86_64 3.0.beta-gsi01  gsi-acc-arch 27 k
=====
```

Transaction Summary

```
=====
Install      25 Package(s)
Upgrade      0 Package(s)
=====
```

```
Total download size: 16 M
Is this ok [y/N]: N
Exiting on user Command
Complete!
```





- Questions?