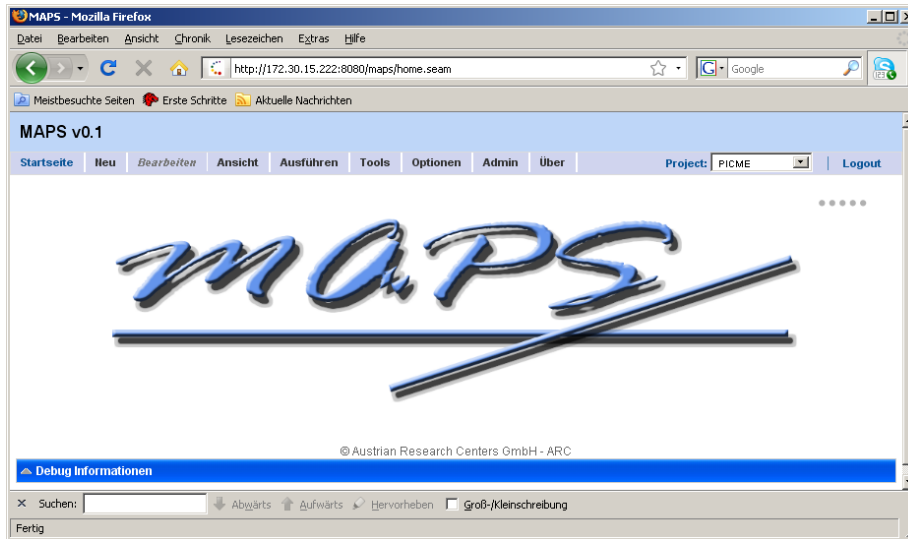




***A flexible Laboratory Management
System (LIMS) for R&D Labs***



AUSTRIAN RESEARCH CENTERS



Maps™ (Material Administration and Preparation System) is a powerful and flexible Laboratory Information Management System (LIMS) tailored at R&D laboratories. It specifically addresses the need for a permanent adaptation to changing requirements in research.

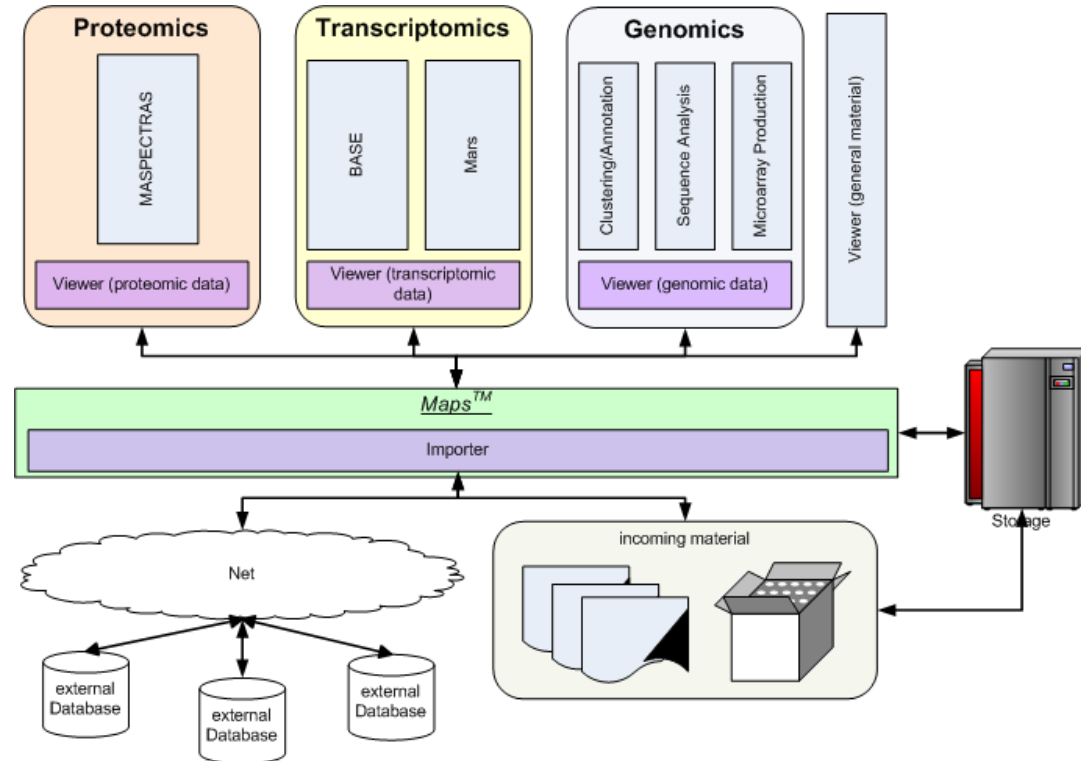
Key Issues in R&D Labs

- No restrictions on material storage and organization
- SOP (Standard Operating Procedure) support
- Adaptability of SOPs by lab staff
- Openness and adaptability to changing scientific requirements by lab staff
- Web technology for installation-free usage
- Interfacing to software being commonly used within the scientific community
- Single installation for multiple lab environments



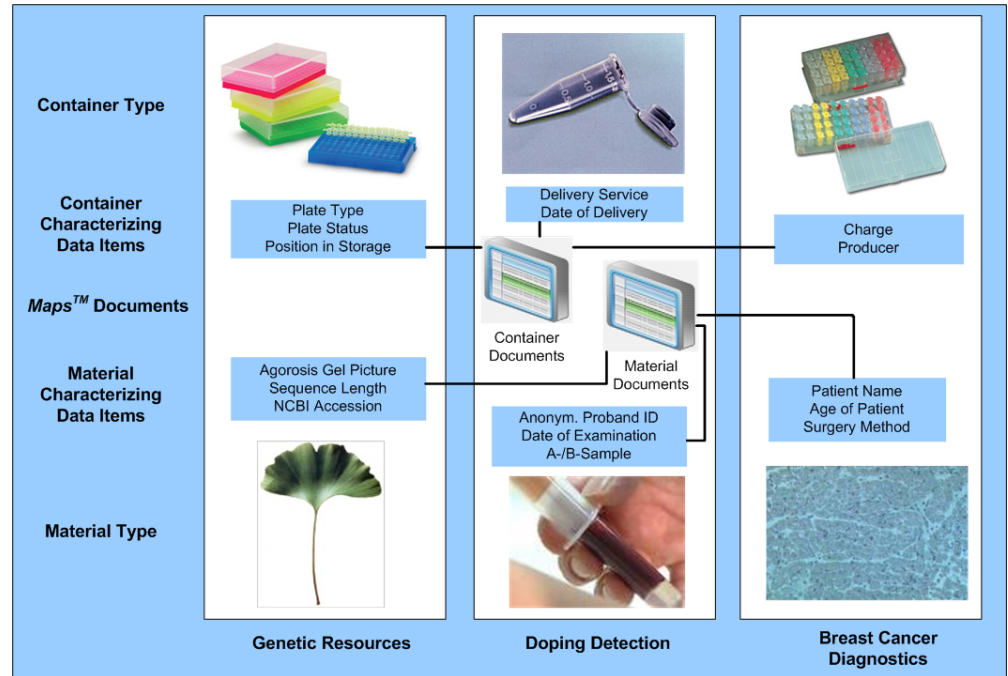
Maps™ Material and Data Flow

- Maps™ classifies data into
 - Information in the Maps™ database on local material
 - Information in external databases being related to local material
 - Processed domain-information
- Information in the Maps™ database
 - Any chunk of information on material
 - Any additional information on the containers storing material
 - All information on material processing and manipulation
- Information in External databases
 - Any external data source holding information about locally stored material can be references with links within Maps™
- Processed Domain-information
 - Omcis-data being produced from the material and data stored within Maps™ can be linked using interfaces or application-integration-techniques



Core Maps™

- Containers and Material are the core concepts of Maps™
- Both can be adapted to lab needs
- Both can be described by any kind of information, which is grouped into documents and attributes
- Documents and attributes are fully configurable for the lab staff by administration user interfaces



Concept of attachable documents and declarative attributes

- ***The concepts of attachable documents and declarative attributes allow Maps™ to be used for any field of research and development without having to be adapted by the manufacturer***
- ***Documents are represented at tabs in the user interface of Maps™***

Document and Attributes in Maps™

MAPS v0.1

Startseite | Neu | Bearbeiten | Ansicht | Ausführen | Tools | Optionen | Admin | Über | Project: PICME | Logout

1 2 3 4 5 6 7 8 9 10 11 12

A
B
C
D
E
F
G
H

Container | PICME Plate Standard Properties

Barcode	0300000545
Typ	96 well plate
Kommentar	
Lagerort	
Lagerstatus	
Erstellung	17.05.2004 16:17:46
Container Kinder	0400001058 0500003378
Container Eltern	0300000588
Gruppierungen	

Container Document

Well Parameter | Material Parameter

Material | Material Provider Annotation | PICME cDNA Standard Properties

Name	PtaXM0009G8G0814
Kommentar	
Externe ID	
Gewebe	PCR Product
Spezies	unknown (ignobilis)
Erstellungsdatum	2003-11-17 14:29:55.0

Attributes

Container Visualisation

Material Document

The Maps™ Workflow

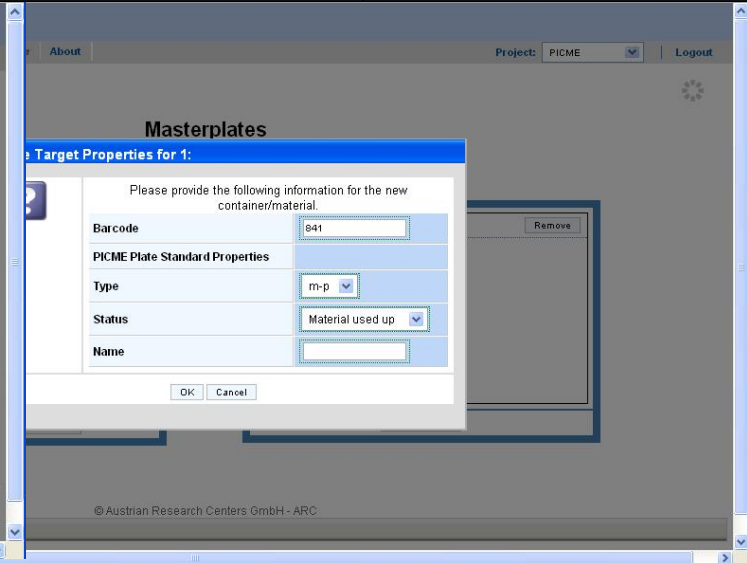
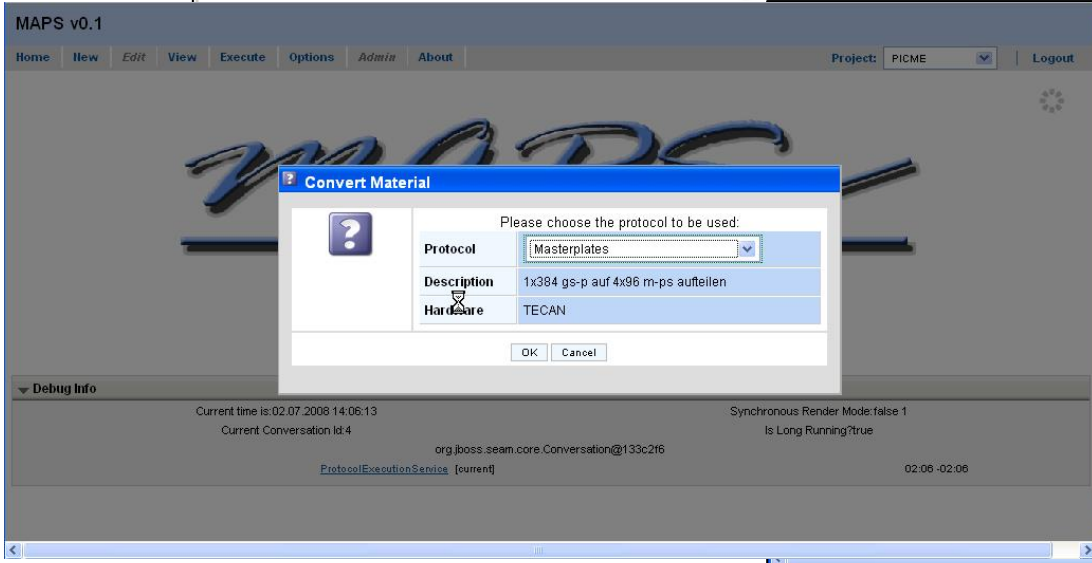
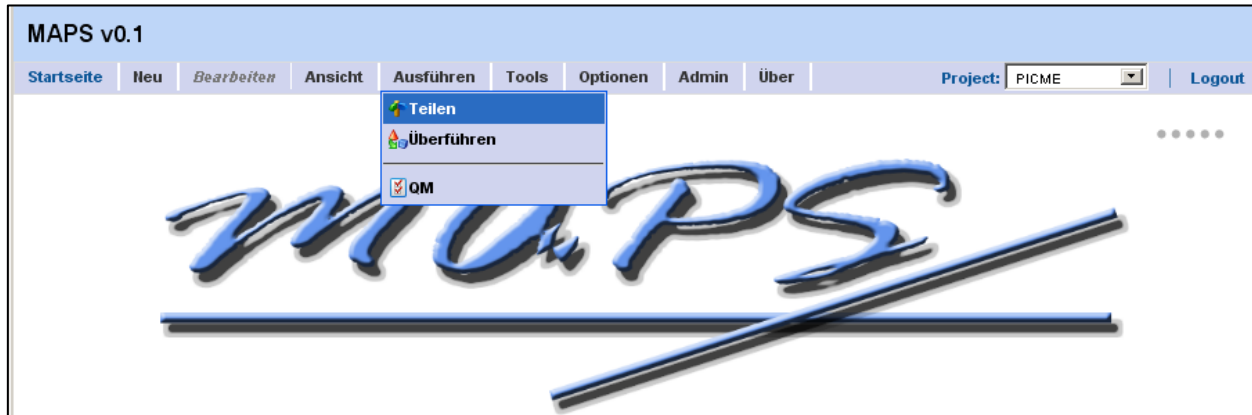
- Operations on material and containers are defined as tasks
- Tasks can be attributed with Standard Operation Procedures (SOP) as documents
- Tasks can be defined and adapted by lab staff
- Tasks can define supply usage from the underlying supply database
- Tasks can define operations on documents and attributes
- The execution of tasks is free to lab staff



Guided Workflow Execution

- Maps™ can work in a guided workflow mode if required
- Tasks are aggregated into workflows, which are executed by a workflow engine
- All steps of the workflow execution are checked and logged in detail
- For this operation mode the Maps™ Experiment Directory (EDI) is available as additional component

Maps™ Task Execution



Maps™ – Enterprise Concepts

Multiple Lab Support

- Multiple Labs can share a single *Maps™* instance by setting up virtual databases for every lab
- Virtual databases facilitate a) completely separated data pools for different labs or b) data sharing between distinct labs
- Access privileges can be set between virtual databases on a per container or material basis
- Datasets can be completely transferred from one virtual database to another (support for „test databases“)

GLP support

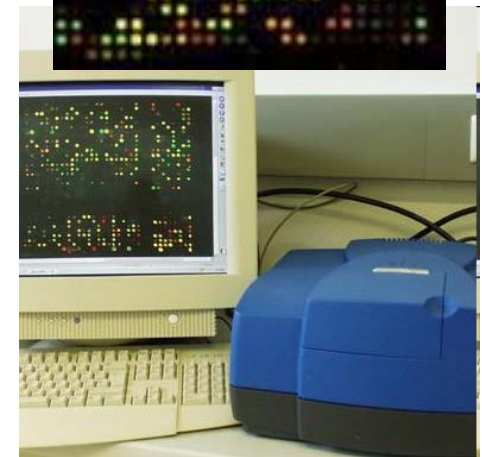
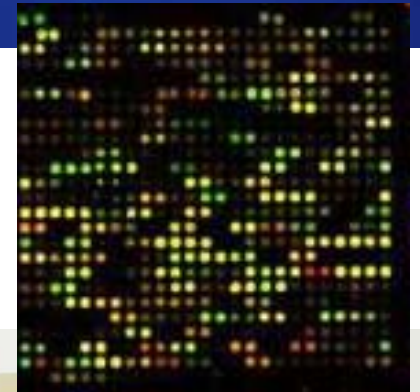
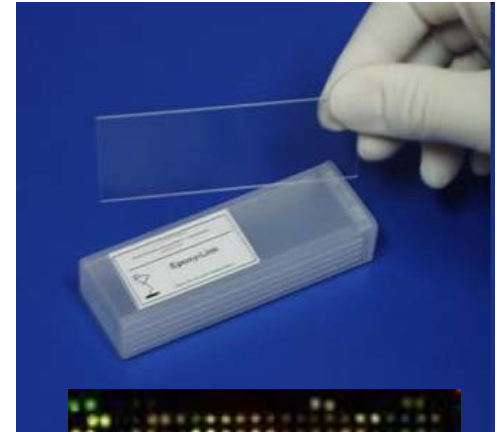
- All operations within Maps™ are recorded and stored in an application and data log
- All operations can be attributed by Standard Operation Procedures
- Every operation is therefore reversible and fully documented
- Maps™ can therefore help to build up a GLP certified environment

Data Mining and Extensibility

- Maps™ provides a plugin interface which can be used
 - For defining lab-specific and recurring data mining operations (e.g. a storage inventory)
 - For adding functionality to Maps™ by programming lab-specific services (an NCBI data retrieval plugin is already part of Maps™)

Domain Applications

- Special purpose software can be linked to Maps™ using low-level database interfaces or high-level application interfaces
 - Genomics
 - Transcriptomics
 - Proteomics (planned)
- Currently Available
 - BASE-II (BioArray Software Environment):
The most widely used open source microarray analysis platform released by Lund University
 - ARMS (Array Management System):
A microarray production support software released by ARC



Domain Applications – Array Management System (ARMS)

- Design of cDNA microarray templates
- Generation of spotter command files
- Administration and visualisation of slides and their properties
- Storage of quality control information (hybridisation images)

ARMS v0.1

Startseite Menü Bearbeiten Suche Optionen Über

Projekt: PICME Logout

Arraydefinition

Eigenschaften Arrays

Name: Test 2

Beschreibung:

QAL File: Kein QAL File vorhanden

Platten:

Pos.	Barcode	Name	Rot.	
1	0400001006	SP01	R	🔍
2	0400002154	SP03		🔍
3	0400000522	SP14	R	🔍
4	0400000556	SP20		🔍
5	0400000556	SP20	R	🔍
6	0400000913	SP5		🔍
7	0400000913	SP5	R	🔍
8	0400000917	SP9		🔍
9	0400000917	SP9	R	🔍
10	0400000529	SP1		🔍

ARMS v0.1

ARMS v0.1

Startseite Menü Bearbeiten Suche Optionen Über

Projekt: PICME Logout

Array

Eigenschaften

Barcode: 0101

Name: Array Test 1

Arraybatch: Arraybatch Test 1

Arrayblock No. 23

Eigenschaften PICME Well Standard Properties

Position an Block: 5 / 11

Spot Index: 107

Typ: deep well

Kommentar:

Erstelldatum: 2007-10-03 15:56:40.0

Domain Applications – Bioarray Software Environment (BASE)

- The most widely used open source microarray analysis platform (Lund University)
- <http://base.thep.lu.se/>
- Administration of samples, extracts, slides, scans, hybridisations, and experiments
- Direct access from BASE to the *Maps™* slide and sample database (no data duplication – material reuse)

BASE 2.2.3+ @ base2.thep.lu.se -- Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://base2.thep.lu.se:8080/demo/ Google

File View Array LIMS Administrate Help

My 1st Project base2 (BASE 2)

Welcome to BASE

New messages
No new messages.

Projects
My 1st Project [active]

Disk usage

	Primary location		Secondary location	
	Used	Assigned	Used	Assigned
Total	0 bytes	unlimited	0 bytes	
Files	0 bytes		0 bytes	
Raw data	0 bytes		0 bytes	
Experiment	0 bytes		0 bytes	

News and announcements

2007-04-24 **Server upgraded to BASE 2.2.3+**

2007-03-14 **Server upgraded to BASE 2.2.2+**
The demo server is running a special version with web services enabled. The WSDL is available through <http://base2.thep.lu.se:8080/demo/services/Session?wsdl>

2007-02-08 **Server upgraded to BASE 2.2.1**

2007-01-14 **Server upgraded to BASE 2.1.2**

2007-01-09 **Server hardware upgrade**
Today the server hardware was upgraded to a dual quad-core Xeon CPU machine with 4GB RAM. Sorry for any inconvenience during the down time. Happy BASEing.

2006-12-03 **BASE 2 Server installed**
Welcome to your new BASE 2 server.

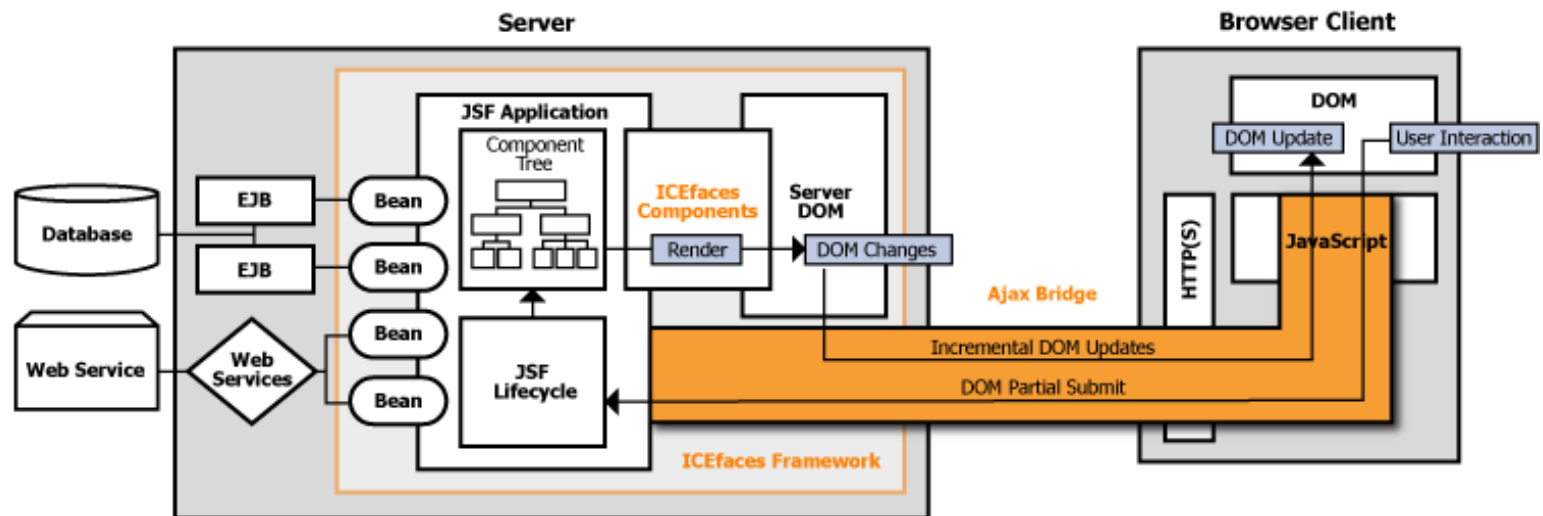
Help
Help...
Report a bug...

The development of BASE is in part supported by the Knut and Alice Wallenberg Foundation through the SWEGENE consortium, the Swedish Cancer Society, and Lund University. This server administered by: [Jari Häkkinen](#)

Done

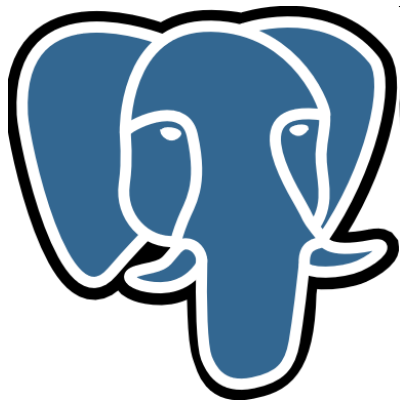
Truely Web-based Architecture

- *Maps™* is organized as a truely web-based multi-tier application
- The *Maps™* server is running at a dedicated server computer at the customers institute
- The *Maps™* client is a standard web browser without any additional software component requirements
 - Current Internet Explorer and Firefox versions are supported



Open Source Technologies

- *Maps™* is completely based on open source technologies
 - ⇒ No expenses for third party components
- Multi Tier Architektur
 - Database Layer – PostgreSQL
 - Application Layer – EJB, SEAM, IceFaces, JSF, JSP
 - Presentation Layer – HTML, CSS
- jBPM Workflow-Engine



About Us

PICME (Platform for Integrated Clone Management) – <http://www.picme.at> – is a part of the Austrian Research Centers GmbH – ARC (<http://www.arcs.ac.at>), a non profit research organization which is ÖNORM EN ISO 9001:2000 certified.

PICME is a Plant EST Resource Centre and Repository working along the Open Source Principle of sharing our Products and Services with the General Public. We store and have organized a variety of Plant ESTs that have been provided to us by our partner network. These resources from different species can be accessed as microarrays or single clones for research purposes. Our aim is to support the international plant research community.

Our 5-year experience in large scale data management and processing has led to the development of state-of-the-art data organization, mining and analysis software products being specifically useful for R&D institutions.

Mag. Silvia FLUCH

Biogenetics/Natural Resources - PICME
Austrian Research Centers GmbH – ARC

silvia.fluch@arcs.ac.at

+43-50550-3530

2444 Seibersdorf, AUSTRIA

Austrian Research Centers GmbH - ARC

Tech Gate Vienna
Donau-City-Straße 1
1220 Vienna, AUSTRIA