About ETAIS

- Estonian Scientific Computing Infrastructure (ETAIS) is a National Research Infrastructure of Estonia
- Provides infrastructure and support services to the research communities and R&D companies
- Consortium of 4 partners including largest universities in Estonia

etais@etais.ee
Estonian e-Infrastructure evolution

- Started with independent clusters
  - 2005+
- Federation of batch queues through BalticGrid I/II projects, integration with EGI
  - 2005-2011
- ETAIS I - resource upkeep, batch queue based intra-country sharing
  - 2011-2015
- ETAIS II - resource upkeep, accent on cloud computing and ease of access
  - 2017-2019
Project members

- University of Tartu (UT)
- National Institute of Chemical Physics and Biophysics (NICPB)
- Tallinn University of Technology (TUT)
- Information Technology Foundation for Education (HITSA)
Main users

Organizations
- Estonian Biobank
- NICPB HEP
- UT FST
- UT ISC
- EKRK
- TTU Marine Institute

Consortiums
- BBMRI ERIC
- ELIXIR
- SIME
- CLARIN ERIC
- CERN
- EGI
- Copernicus

Others
- Estonian Biocentre
- Asper Biotech AS
- Cybernetica AS
- Students
- Hackathons
- “Long tail”
## Service offering

<table>
<thead>
<tr>
<th></th>
<th>HPC (~80% of resources)</th>
<th>Cloud (~20%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compute</td>
<td>CPU/GPU, Applications</td>
<td>CPU/GPU, Applications</td>
</tr>
<tr>
<td>Storage</td>
<td>Shared file system</td>
<td>Block devices</td>
</tr>
<tr>
<td>Long-term storage</td>
<td>Tape</td>
<td>Tape</td>
</tr>
<tr>
<td>Support</td>
<td>Application support</td>
<td>Application and maintenance support</td>
</tr>
</tbody>
</table>
ETAIS Customers

- Represented as Organizations
- Engage in contractual relationship with ETAIS
  - ToS, including payment conditions
  - Delegates users to represent an organization
  - Delegates can manage their own team
- Can be a standalone person as well
Business model

- Goal is to have a sustainable RI
- Service providers expose price-lists
  - Costs are partially sponsored by the national funding
- ETAIS marketplace provides accounting and show-back
  - Marketplace operations at the moment are fully nationally funded, potentially will include a “marketplace fee”
- Common terms for users of ETAIS
  - Sponsored for smaller academical consumers
  - Chargeback for larger academical consumers
  - Invoices for R&D companies
# Sample pricing for batch queue (UT HPC)

## Provider details

<table>
<thead>
<tr>
<th>Details</th>
<th>Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price package name</td>
<td>default rocket</td>
</tr>
<tr>
<td>Price of CPU hour</td>
<td>€0.01</td>
</tr>
<tr>
<td>Price of GPU hour</td>
<td>€0.40</td>
</tr>
<tr>
<td>Price of RAM GB</td>
<td>€0.002</td>
</tr>
</tbody>
</table>
## Sample pricing for cloud resources (UT HPC)

<table>
<thead>
<tr>
<th>VPC package</th>
<th>Category</th>
<th>Max vCPU</th>
<th>Max RAM</th>
<th>Max storage</th>
<th>1 day</th>
<th>30 days</th>
<th>365 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU-intensive</td>
<td>Medium</td>
<td>64</td>
<td>128 GB</td>
<td>1.9 TB</td>
<td>€17.08</td>
<td>€512.40</td>
<td>€6,234.20</td>
</tr>
<tr>
<td>Generic</td>
<td>Medium</td>
<td>32</td>
<td>64 GB</td>
<td>1.9 TB</td>
<td>€11.88</td>
<td>€356.40</td>
<td>€4,336.20</td>
</tr>
<tr>
<td>Generic medium</td>
<td>Medium</td>
<td>20</td>
<td>40 GB</td>
<td>500 GB</td>
<td>€4.92</td>
<td>€147.60</td>
<td>€1,795.80</td>
</tr>
<tr>
<td>Memory-intensive</td>
<td>Medium</td>
<td>32</td>
<td>128 GB</td>
<td>1.9 TB</td>
<td>€14.01</td>
<td>€420.30</td>
<td>€5,113.65</td>
</tr>
<tr>
<td>Storage-intensive</td>
<td>Medium</td>
<td>64</td>
<td>128 GB</td>
<td>5.8 TB</td>
<td>€30.42</td>
<td>€912.60</td>
<td>€11,103.30</td>
</tr>
</tbody>
</table>
Marketplace design goals

- Reduce complexity of finding and provisioning IT services allowed for consumption
- Provide a workspace for collaboration on IT resources for the research communities and R&D companies
- Integrate with billing and invoicing systems for show/chargeback
Waldur

- Open-source platform for hybrid resource management (MIT)
- Development is led by Estonia company OpenNode
- Used as a self-service for Oman and Estonian Government Clouds (TRL9)
- Integrates with billing and invoicing systems for show/chargeback
- Increases sustainability - ETAIS joined as a development partner
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Creation date</th>
<th>VMs</th>
<th>Storage</th>
<th>Private Clouds</th>
<th>Allocations</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference websites</td>
<td>Hosting of websites for...</td>
<td>2017-06-05 16:39</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>€71.30</td>
</tr>
<tr>
<td>My first project</td>
<td>testing</td>
<td>2017-03-22 21:31</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>€0.00</td>
</tr>
</tbody>
</table>
Project details

General | Policies | Providers
---|---|---

**Required certifications**
- Select certifications
  - Sensitive data

**FreeIPA group quota**
- ISKE M
- ETAIS Core

**Cost threshold**
- 0
- €

Estimated cost for current month: €71.30

- [ ] Disable provisioning when threshold is reached.

[Update policies]

[OK]
<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virtual machines</strong></td>
<td>Provision virtual machines (VMs) in available Providers.</td>
<td></td>
</tr>
<tr>
<td><strong>Block storage</strong></td>
<td>Provision persistent storage volumes in available Providers.</td>
<td></td>
</tr>
<tr>
<td><strong>Private clouds</strong></td>
<td>Purchase bulk resource as Virtual Private Clouds (VPC).</td>
<td></td>
</tr>
<tr>
<td><strong>Batch processing</strong></td>
<td>Create an allocation for computations in batch resources.</td>
<td></td>
</tr>
<tr>
<td>Project</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>WordPress</td>
<td>A free and open-source content management system (CMS) based on PHP and MySQL.</td>
<td></td>
</tr>
<tr>
<td>OwnCloud</td>
<td>An open source, self-hosted file sync and share app platform. Access &amp; sync your files, contacts, calendars &amp; bookmarks</td>
<td></td>
</tr>
<tr>
<td>Rocket.Chat</td>
<td>An open-source web chat that runs fully under your control</td>
<td></td>
</tr>
<tr>
<td>VŌSA</td>
<td>An open-source study environment for system administration and cyberdefense trainings.</td>
<td></td>
</tr>
</tbody>
</table>
### Provider Details

**Name**: UT HPC (Public)

**Type**: OpenStack

**Homepage**: [http://hpc.ut.ee](http://hpc.ut.ee)

**Certifications**: ISKE M

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### Physical Locations

[Map showing physical location](map)
Private clouds
Infrastructure for open and big data processing
Project workspace / Private clouds

Select provider

UT HPC (Campus)  UT HPC (Public)
Details Select Details Select
### Select Virtual Private Cloud package

<table>
<thead>
<tr>
<th>VPC package</th>
<th>Category</th>
<th>Max vCPU</th>
<th>Max RAM</th>
<th>Max storage</th>
<th>1 day</th>
<th>30 days</th>
<th>365 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter</td>
<td>Small</td>
<td>10</td>
<td>20 GB</td>
<td>200 GB</td>
<td>€2.30</td>
<td>€69.00</td>
<td>€839.50</td>
</tr>
<tr>
<td>Generic medium</td>
<td>Medium</td>
<td>20</td>
<td>40 GB</td>
<td>500 GB</td>
<td>€4.92</td>
<td>€147.60</td>
<td>€1,795.80</td>
</tr>
<tr>
<td>Large infrastructure</td>
<td>Large</td>
<td>60</td>
<td>256 GB</td>
<td>4.8 TB</td>
<td>€30.96</td>
<td>€928.80</td>
<td>€11,300.40</td>
</tr>
</tbody>
</table>

VAT is not included.
# Private clouds

Infrastructure for open and big data processing

Project workspace / Resources / Private clouds

Show 10 entries

<table>
<thead>
<tr>
<th>Name</th>
<th>Provider</th>
<th>State</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>g48-vpc-1</td>
<td>UT HPC (Public)</td>
<td>OK</td>
<td>Actions</td>
</tr>
<tr>
<td>g48-vpc-2</td>
<td>UT HPC (Public)</td>
<td>OK</td>
<td>Actions</td>
</tr>
<tr>
<td>g48-vpc-3</td>
<td>UT HPC (Public)</td>
<td>OK</td>
<td>Actions</td>
</tr>
<tr>
<td>g48-vpc-4</td>
<td>UT HPC (Public)</td>
<td>OK</td>
<td>Actions</td>
</tr>
<tr>
<td>rooftop</td>
<td>UT HPC (Public)</td>
<td>OK</td>
<td>Actions</td>
</tr>
<tr>
<td>texta.ee</td>
<td>UT HPC (Public)</td>
<td>OK</td>
<td>Actions</td>
</tr>
</tbody>
</table>
OpenStack Tenant

State: OK
Provider: UT HPC (Public)
Created: 3 months ago, 2017-05-04 21:19

UUID: 11c6eb4153a34e01b8d5e2d0e26f52e
Backend ID: 011eb459e8854acb92ccdcfc520a0c7
Package: Large infrastructure / Large (60 vCPU, 251 GB storage)

<table>
<thead>
<tr>
<th>Audit log</th>
<th>Networks</th>
<th>Security groups</th>
<th>Floating IPs</th>
<th>Quotas</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

Floating IP count: 1 of 50
Instances count: 1 of 30
Network count: 1 of 10
RAM: 64 GB of 256 GB
Security group count: 6 of 100
Security group rule count: 11 of 100
Snapshots count: 0 of 50

Snapshots size: 0 of
Storage: 251 GB of 4.8 TB
Subnet count: 1 of 10
vCPU count: 16 of 60
Volumes count: 2 of 50
Volumes size: 251 GB of
## Team

### Users

<table>
<thead>
<tr>
<th>Member</th>
<th>E-mail</th>
<th>Owner</th>
<th>Project manager in:</th>
<th>System administrator in:</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna Leontjeva</td>
<td><a href="mailto:anna.leontjeva@ut.ee">anna.leontjeva@ut.ee</a></td>
<td>-</td>
<td>UT Social Impact Data Hack (Autumn 2017)</td>
<td>No projects are assigned to this role.</td>
<td>Details</td>
</tr>
<tr>
<td>Ivar Koppel</td>
<td><a href="mailto:ivar.koppel@ut.ee">ivar.koppel@ut.ee</a></td>
<td>✔</td>
<td>No projects are assigned to this role.</td>
<td>No projects are assigned to this role.</td>
<td>Details</td>
</tr>
<tr>
<td>Victor Mireyev</td>
<td><a href="mailto:victor.mireyev2@gmail.com">victor.mireyev2@gmail.com</a></td>
<td>✔</td>
<td>No projects are assigned to this role.</td>
<td>No projects are assigned to this role.</td>
<td>Details</td>
</tr>
</tbody>
</table>

### Invitations

<table>
<thead>
<tr>
<th>Member</th>
<th>E-mail</th>
<th>Owner</th>
<th>Project manager in:</th>
<th>System administrator in:</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

### Permissions log

<table>
<thead>
<tr>
<th>Member</th>
<th>E-mail</th>
<th>Owner</th>
<th>Project manager in:</th>
<th>System administrator in:</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Technical overview

- Open-source (MIT license)
- REST API server (Python/Django)
  - API-first design approach
  - Relies on ElasticSearch, Redis, Postgresql, Celery
  - Integrates with Atlassian ServiceDesk, Zabbix, Grafana
- Frontend portal (Angular/React)
- Packaged into RHEL7 RPMs
- Docker/CaaS packaging in progress
- Code resides on Github
Marketplace Status

- Deployment (Done) - https://minu.etais.ee
- Integration with TaaT/eduGain (Done)
- Marketplace customized to match ETAIS needs (In QA)
- Beta-testing (In progress - you are welcome to join!)
- Integration of service providers (In progress)
- Payment processing (Pending, ETA 12.2017)
- Production (Pending, ETA 1.2018)
Roadmap

- Integration of data management services
  - Improving on FAIR principles
  - Data registration services
  - Data policy management

- Experts-as-a-Service
  - Ability to request support for a specific action (application packaging, data curation, setup of conference web-sites, operations, etc)

- Cross-border integration of service providers
  - Initial discussions under way
  - Integration with service catalogues / federated marketplaces

- Organization theming
  - Allow to set organization domain to provide a more domain-specific

etais@etais.ee
Thanks!

Live demo is available at your convenience

ilja@etais.ee