Green Software

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Knowledge Network Green Software #KNGS

March 2011
Wirth’s Law
*a.k.a. the great Moore’s Law compensator*

“Software is getting slower more rapidly than hardware becomes faster.”

Hardware became more powerful, but does your word processor run faster?

Do you need results of a search query while you are still typing it?

<table>
<thead>
<tr>
<th>Windows version</th>
<th>Processor</th>
<th>Memory</th>
<th>Hard disk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows XP[7]</td>
<td>233 MHz</td>
<td>64 MB</td>
<td>1.5 GB</td>
</tr>
<tr>
<td>Windows 7[9] (2009)</td>
<td>1 GHz</td>
<td>1 GB</td>
<td>16 GB</td>
</tr>
</tbody>
</table>
Hardware consumes energy

Why?

Because software tells it to.
“The most strategic aspect of energy efficient computing will be the evolution of application software to facilitate system-wide energy efficiency.”

Towards Energy-Efficient Computing
by David J. Brown (Sun Microsystems) and Charles Reams (Cambridge University)
Power Loss Chain

Extended version ...

Performing the right work?

Performing the work right?

Computational efficiency

Functional necessity

Algorithmic inefficiency

Optimal cycles and storage

Frivolous features

Useful work

Percentages are indicative only

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Taxonomy

- **Greening by IT**
  - Green Grid
  - Green Data Center
  - Green Hardware

- **Greening of IT**
  - Green Software
  - Green Software Development

- **Data retention**
  - Responsiveness
  - Graphical presentation

- **Functional necessity**
  - Computational efficiency

- **Algorithms**
  - Data structures
  - Protocols

- **Environment**
  - Rework
  - Maintainability
  - Testability
Knowledge Network Green Software

Sustainable Application Scan

Software Energy Footprint Lab
Software Energy Label

*The • on the horizon*

**Software Energy Label**

- Standard criteria
- Meaningful rating
- Certification
- Allow consumers / procurement officers to recognize Green Software

**Challenges**

- What should be the target of evaluation?
  
  *application – specific release – specific installation – development and test process*

- What characteristics should be captured?
  
  *energy consumption – scalability – co-existence*

- On what indicators can software applications be compared?
  
  *consumption per user – per transaction – per feature*

- How can acceptable thresholds for these indicators be determined?
Invitation "Green Application Hosting, join the green discussion"

Green IT is all about cost reduction by reducing energy consumption. The way how owners of software applications design, develop, and deploy is a determining factor in the energy need. However, in traditional hosting contracts cost reduction due to energy savings do not necessarily directly benefit the application owners.

Summary

Date
Tuesday May 8, 2012

Time
14:45 - 18:30 uur

Location
Schuberg Philis, Schiphol-Rijk

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