**Space Computing with Group Key Agreement (LOKI)**

Daniel Robert Kerr

**Problem:**
- Shared spaces are inherently public
- Members in space computing can come and go (ad hoc)
- Space service broker doesn’t explicitly know group members (workers)

**Conclusion:**
Secure Space Communication that can be initiated by a space service broker with management of a group of ad hoc services is needed.

**Objective:**
A group key agreement framework (LOKI) for space computing environments (LOKI – Location independent group Key Interactive management)

**Approach:**
- Literature Review
  - Group Key Agreement
  - Space Computing
- Analysis of space group management
- LOKI requirements and architecture
- Develop LOKI methodology
- LOKI design
- LOKI implementation
- Verification and validation of LOKI

**Schedule**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature Review</td>
<td>August 2007</td>
</tr>
<tr>
<td>Analysis</td>
<td>September 2007</td>
</tr>
<tr>
<td>LOKI requirements and architecture</td>
<td>October 2007</td>
</tr>
<tr>
<td>Develop LOKI methodology</td>
<td>November 2007</td>
</tr>
<tr>
<td>LOKI design</td>
<td>December 2007</td>
</tr>
<tr>
<td>LOKI implementation</td>
<td>January 2007</td>
</tr>
<tr>
<td>Verification and validation of LOKI</td>
<td>February 2007</td>
</tr>
<tr>
<td>Thesis Defense</td>
<td>March 2007</td>
</tr>
</tbody>
</table>

**Benefits:**
- Secure ad hoc space group management
- Secure space exertion oriented programming model
- Simplified management of group keys
- Secure communication between inherently public object space
- Friendly and intuitive user agent attached to space service broker
- Friendly and intuitive user agent for space-oriented grid computing

**Diagram:**
- Red coloring designates group
- Diagram showing relationships between space, service grid, and users.