

Content Management in Cloud

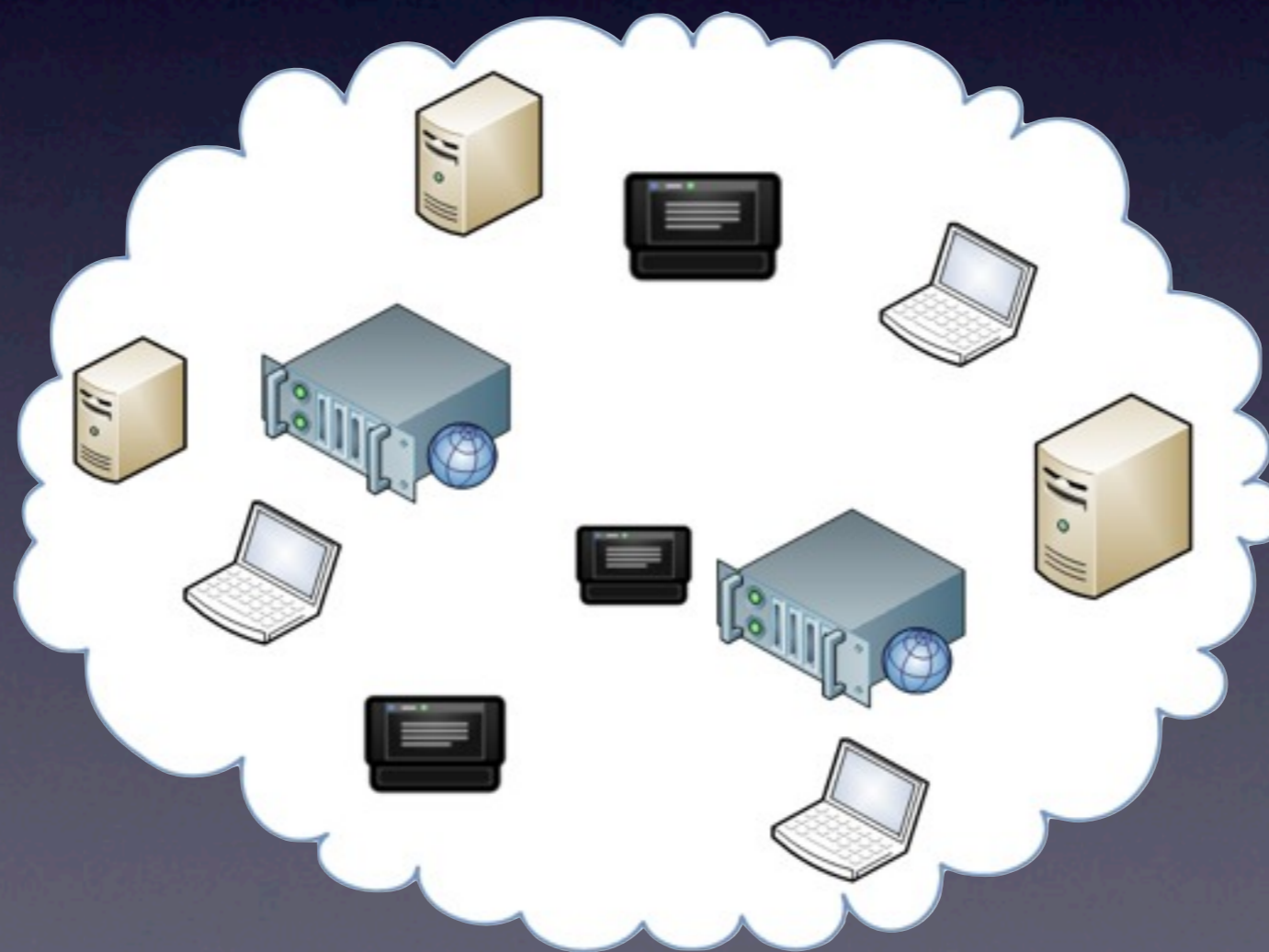
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Background

- VisualREST – distributed CMS
- Project started in summer '09 in co-operation with Nokia Research Center
- Spring 2010 Aalto University came along
- Autumn 2010 Tieto came along
- Autumn 2010 masters thesis

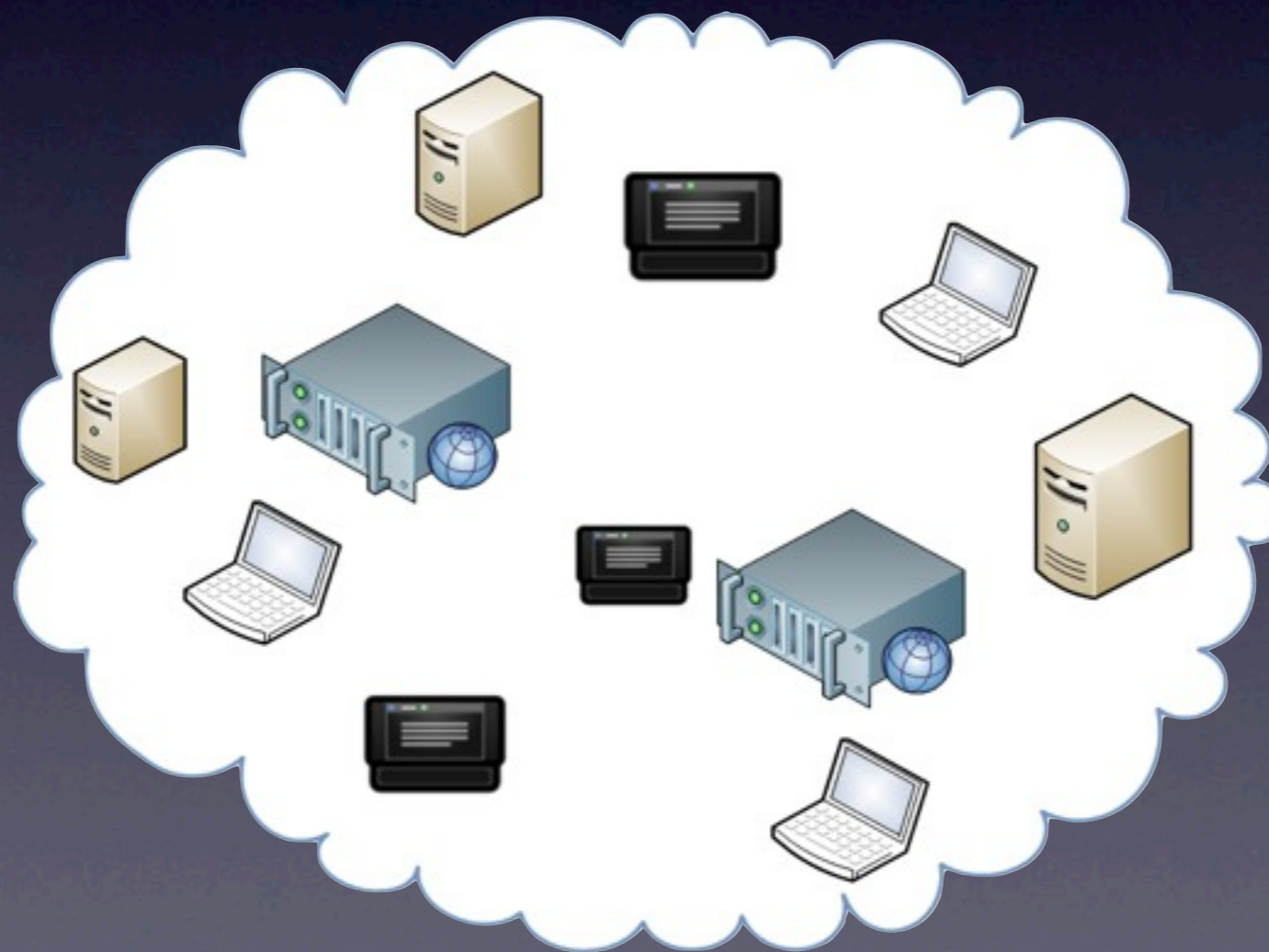
Motivations 1/2

- The amount of digital content is continuously increasing with accelerating speed.
 - More and more new ways to produce digital content are becoming available.
- ➔ Distributed heterogeneous environment.
- ➔ Devices that contain content constitutes a cloud.



Motivations 2/2

- Managing content manually is unsustainable solution and leads to a swelling problem because of the challenging and time-consuming nature of the content management. Also memory is often used in an inefficient way.
- Users are also willing to share their content with their friends.



Approach – Metadata

- According to the taskforce's [1] definition content consists of:
 - Metadata (*suom. metatieto*)
 - Essence (*suom. essentia*)
- Metadata is used for describing the content
- "Essence in this context is the raw programme material itself, represented by pictures, sound, text, video, etc. The essence carries the actual message or information"
- Hard or impossible to find/manage content without metadata
- ➔ Metadata is the key for content management
- ➔ The more content has been described with metadata the easier it is to find.

[1] The Society of Motion Picture and Television Engineers (SMPTE) and the European Broadcasting Union (EBU)

Approach – REST

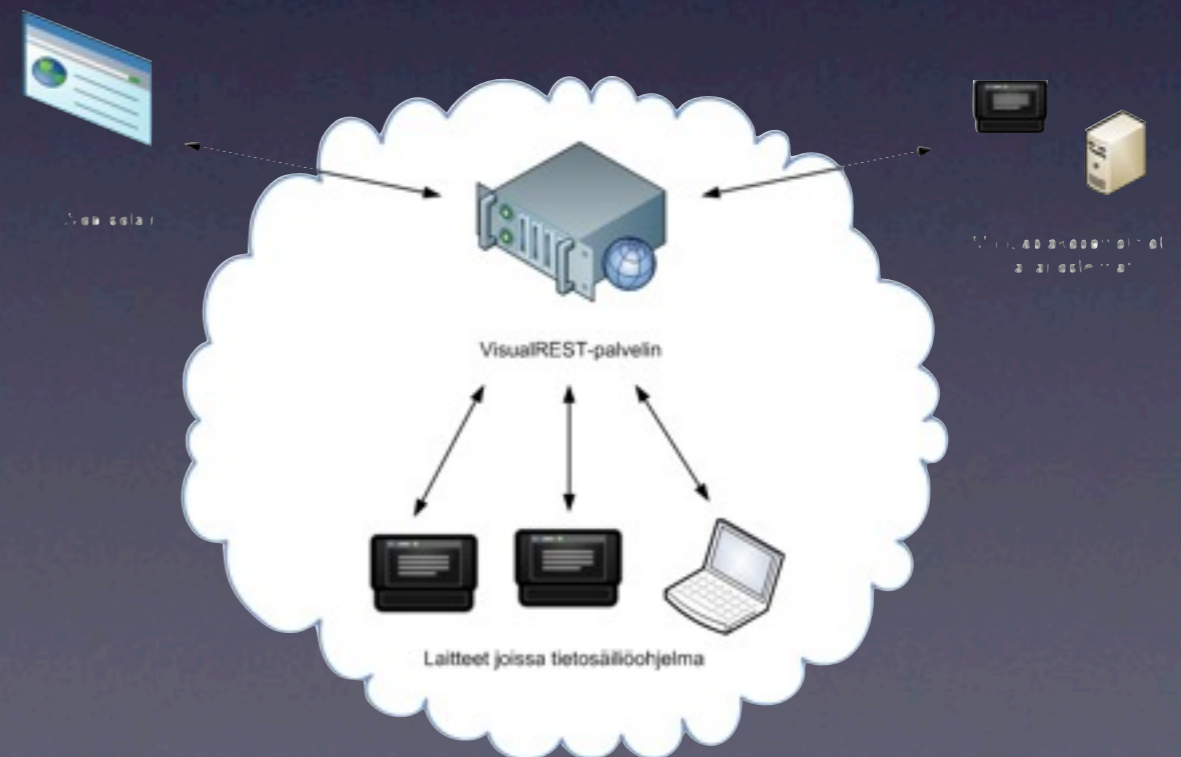
- Content as a resource.
- Users and their devices can be regarded as resources.
- Metadata as a resource.
- REST offers uniform and intuitive way for users to manage content in all of their devices.
 - ➔ All the objects have a unique ID
 - ➔ CRUD operations for resources.
- Homogenizes the physical structure and type of the devices.
 - ➔ Easier to manage.

Requirements for CMS

1. From end-users and content point of view, the content should be placed to a safe and reachable location right after content has been created.
2. Content should be easy to search and navigate.
3. Content management system needs to keep track from where the content is accessed and place the content as close as possible.
4. As much metadata as possible should be created and linked to the content right after the content has been created.
5. CMS should support describing the content with arbitrary and heterogeneous metadata.
6. CMS should provide a uniform interface for all the resources in heterogeneous environment.
7. Distributed CMS should offer a efficient way to access content with user-specific settings.

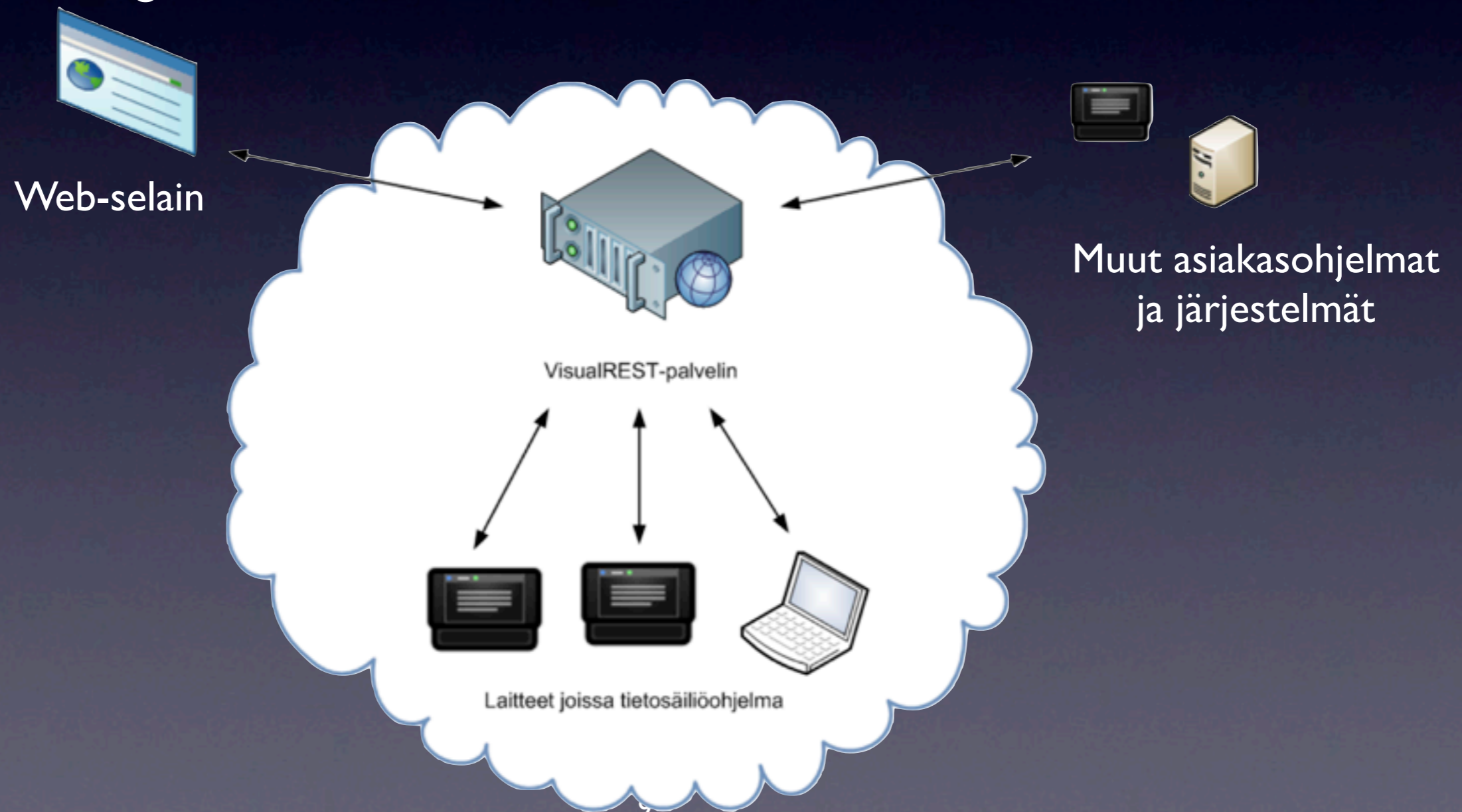
VisualREST 1/3

- As cloud computing and distributed systems in general, also VisualREST tries to abstract away the physical structure and complicated processes from user perspective.
- Devices are executing container program that is versioning and generating/extracting metadata from the content.
- Metadata stored on the server so it can always be reached when connected.
- Essence stored and versioned in the devices.



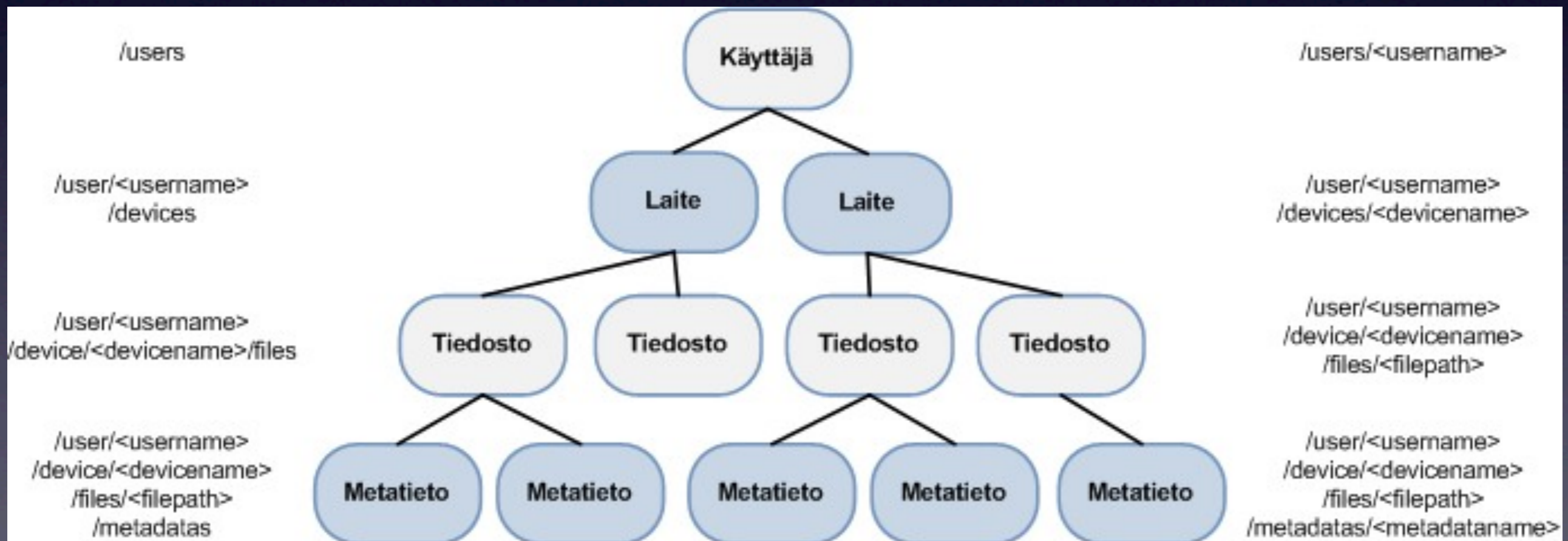
VisualREST 2/3

- Server provides REST API for container programs and other systems.
 - ➔ Queries can be appended to URIs.
 - ➔ Results are given in Atom feed and HTML.



VisualREST 3/3

- Resources are forming hierarchy levels.
 - ➔ Forms the structure of resource URIs.
 - ➔ Resources can be managed as groups.
 - ➔ Searches can be focused more closely.



DEMO

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Questions???