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Outline

- Task Computing
- Service Discovery
- Service Publishing and Management
- Conclusion and Future Works

What is “Task Computing”

- “Tasks” (what user wants to do)



Filling the gap

- “Services” (what are available)
 - Devices, Web services, Applications

Task Computing in Ubiquitous Environment



Play Jeff's Video
Dial Contact from Outlook
Weather Info of FLA, CP
...

Device

Dial Video from DV
Play (Audio) Play (Video)

OS/Application (.NET, etc.)

Open Save Print Add into Outlook
View Jeff's Video Contact from Outlook

Web Services

Map of Weather Info of

Devices



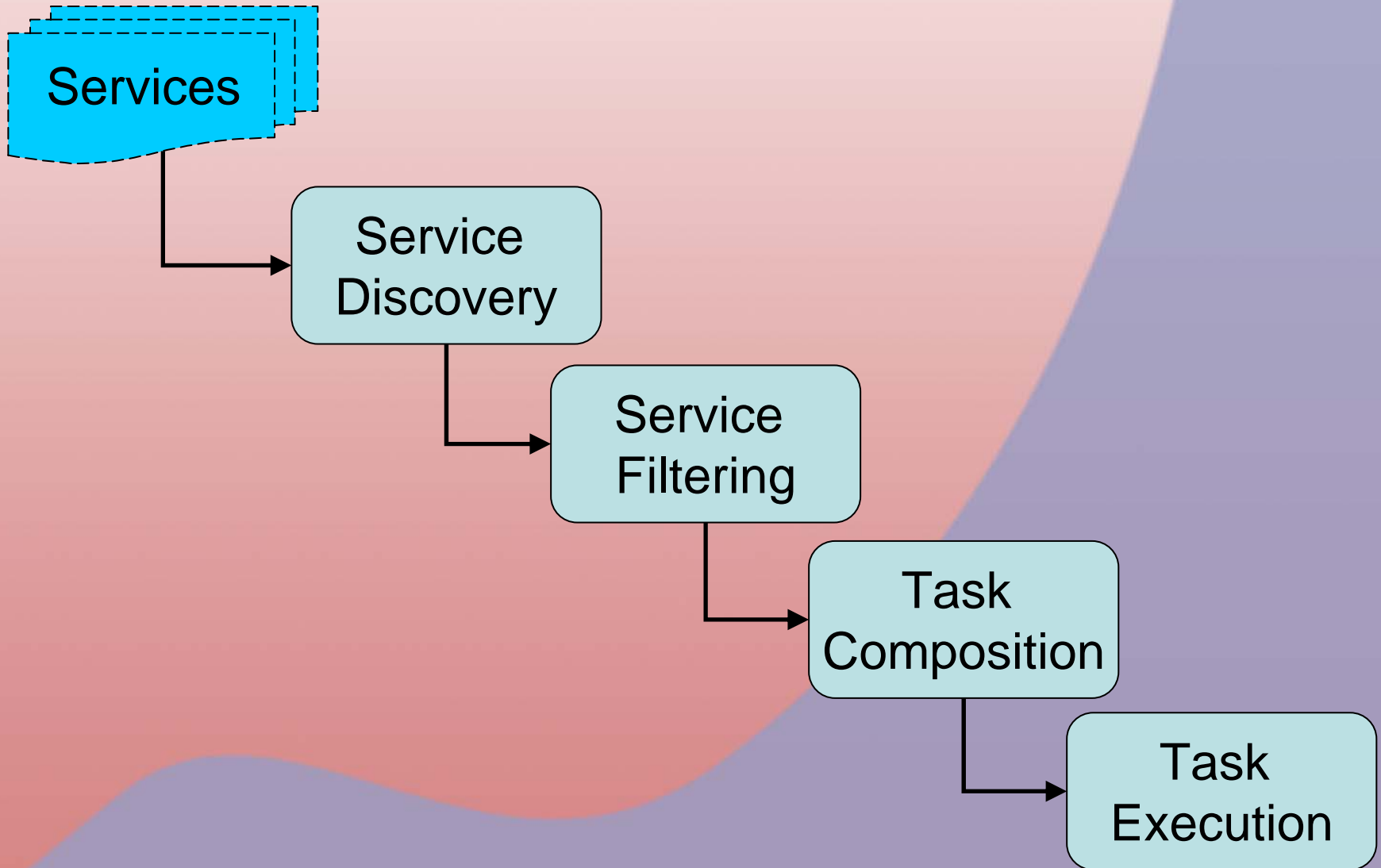
OS/Applications



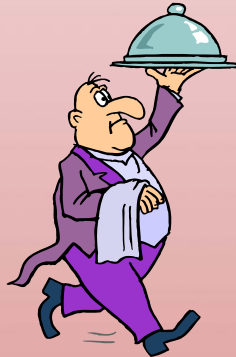
Web Pages



Model of Task Computing Application



Example of Service Publishing and Management



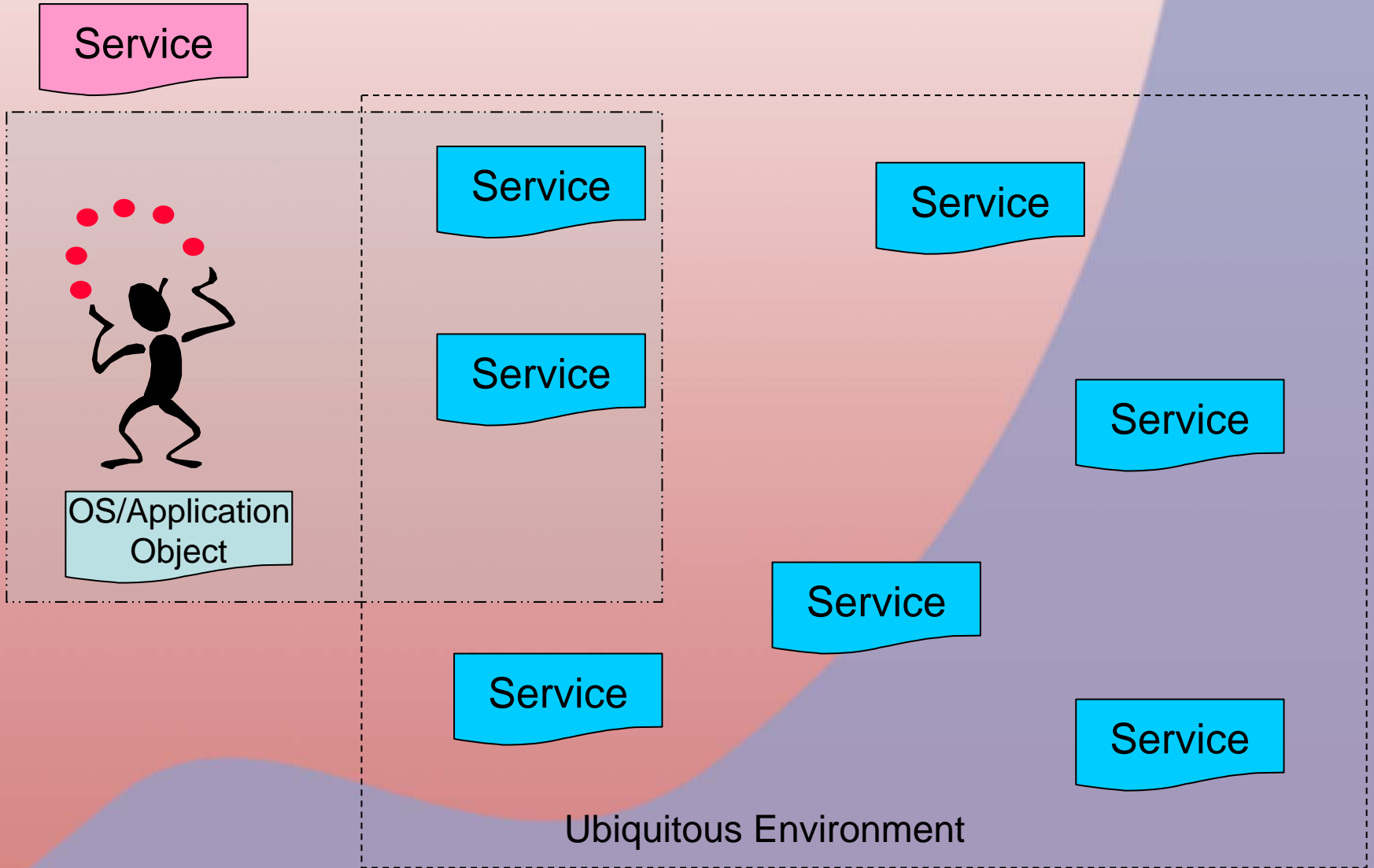
Zhexuan Song Gu

Add (Contact) into Outlook

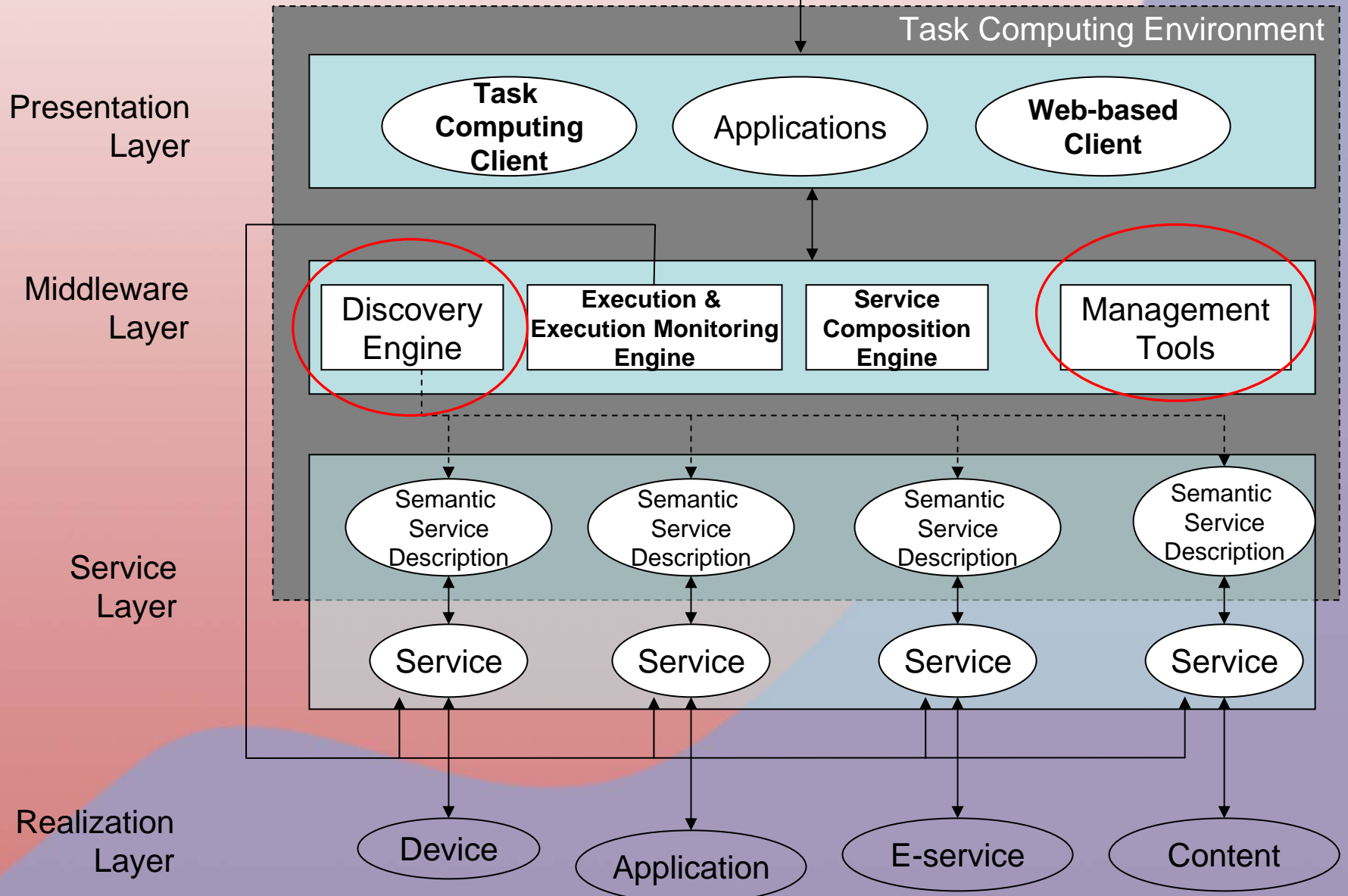
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Department: Pervasive Computing I	State:
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Service(s) found:24

Service Publishing and Management



General Architecture of Task Computing



Some Facts about Task Computing Environment

- Deployment
 - Product-level Installer for All the Modules
 - USB Memory Device
- Modules
 - 9 Kinds of Clients
 - Textual (x 6), Graphical (x 2), Voice
 - 40 Kinds of Services and Dynamic Service Publishing Mechanisms
 - 8 Languages (covers approx. 2.5 billion people on this planet)

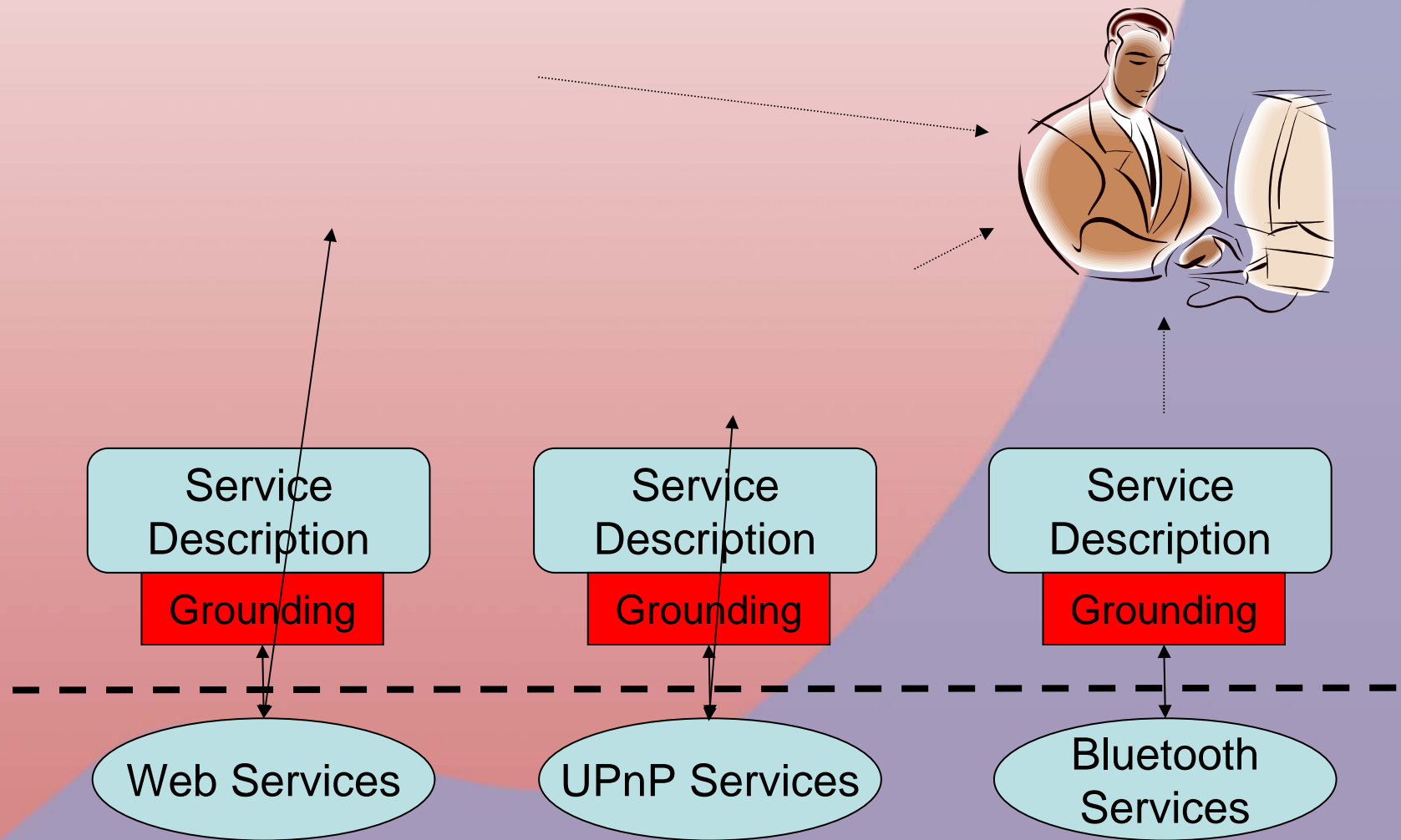
Next...

- Task Computing
- **Service Discovery**
- Service Publishing and Management
- Conclusion and Future Works

Service Discovery

- Procedure to find services that are available in the environment
- Separate semantic service descriptions and service implementations
- Support multiple discovery mechanisms and ranges

Separation of Service Description and Service Implementation



Separation of Service Description and Service Implementation

- Service discovery \Rightarrow discovery of the service descriptions of services
- Provide multiple aspects of a single service
- Sharing services becomes extremely easy

Multiple Discovery Mechanisms and Ranges

- Task Computing Client exploits multiple service discovery mechanisms
- Different discovery mechanisms are more suited for different discovery ranges

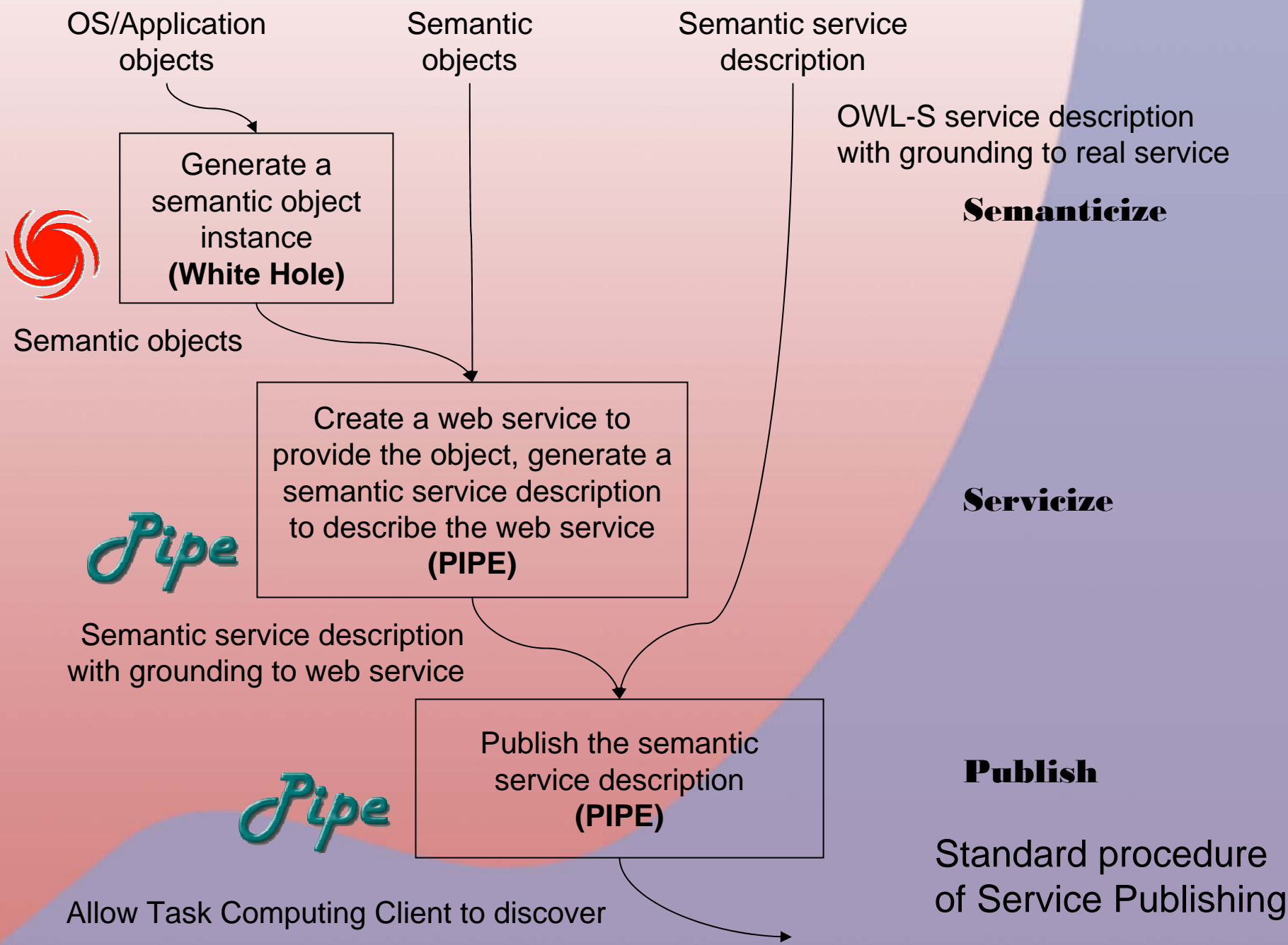
Discovery Range	Example Discovery Mechanisms
Private	File system, socket, registry
Group by Subnet	UPnP, JINI
Group by Interest	Publish/subscribe model, community directory
Public	Open semantic service directory

Next...

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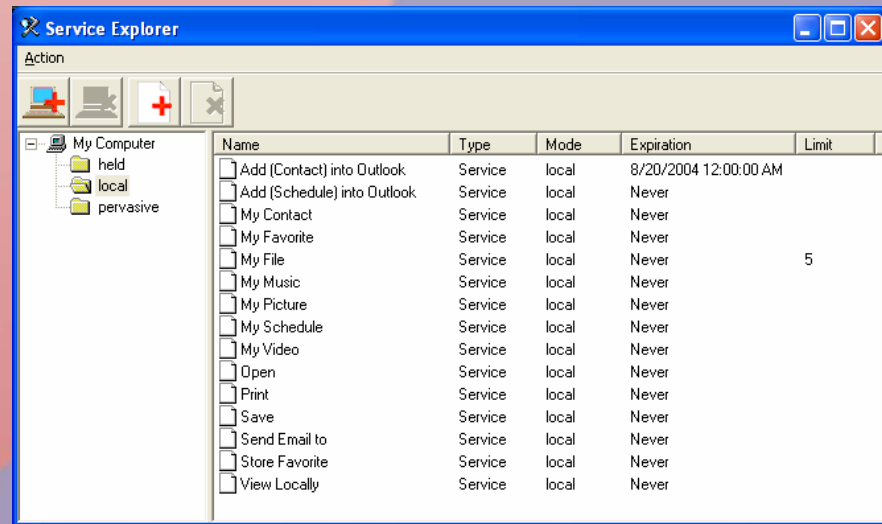
Service Publishing

- Dynamic creation of services
 - Wrap and publish an existing service
 - Publish an instance providing service to share an object
- Three steps to publish a service
 - Semanticize
 - Servicize
 - Publish



Service Management

- Manage services that are published by user
- Manage services that are published by others under their permission
- Service Explorer
 - Switch discovery range
 - Expiration time
 - Invocation limit
 - Name and Description



Finally...

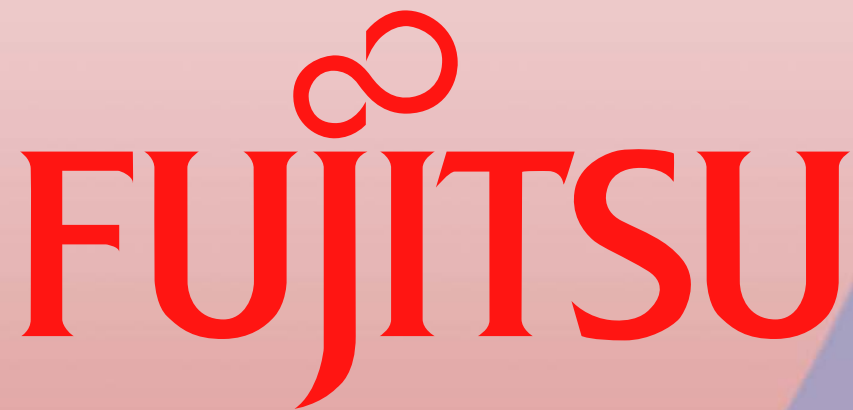
- Task Computing
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Conclusion and Future Works

- Separation of service implementation and service description are crucial in ubiquitous environment
- Service publishing provides an easy way for user to add existing objects into the Task Computing framework
- Future works
 - More discovery mechanisms
 - Security

More Resources of Task Computing

- Web site
 - <http://tc.flacp.fujitsulabs.com>
- Version 1.0 release (limited license for universities only)
- Demo



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THE POSSIBILITIES ARE INFINITE