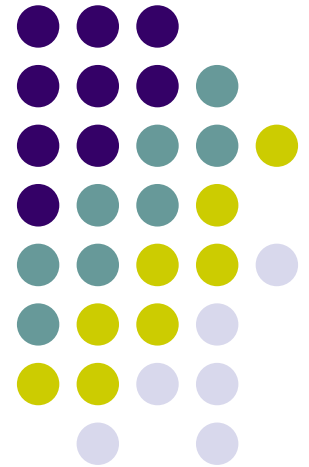


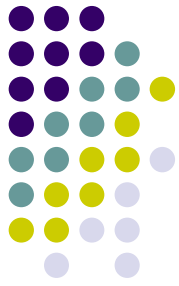
ICENI: An Open Grid Service Architecture Implemented with Jini



**Nathalie Furmento, William Lee, Anthony Mayer,
Steven Newhouse, and John Darlington**



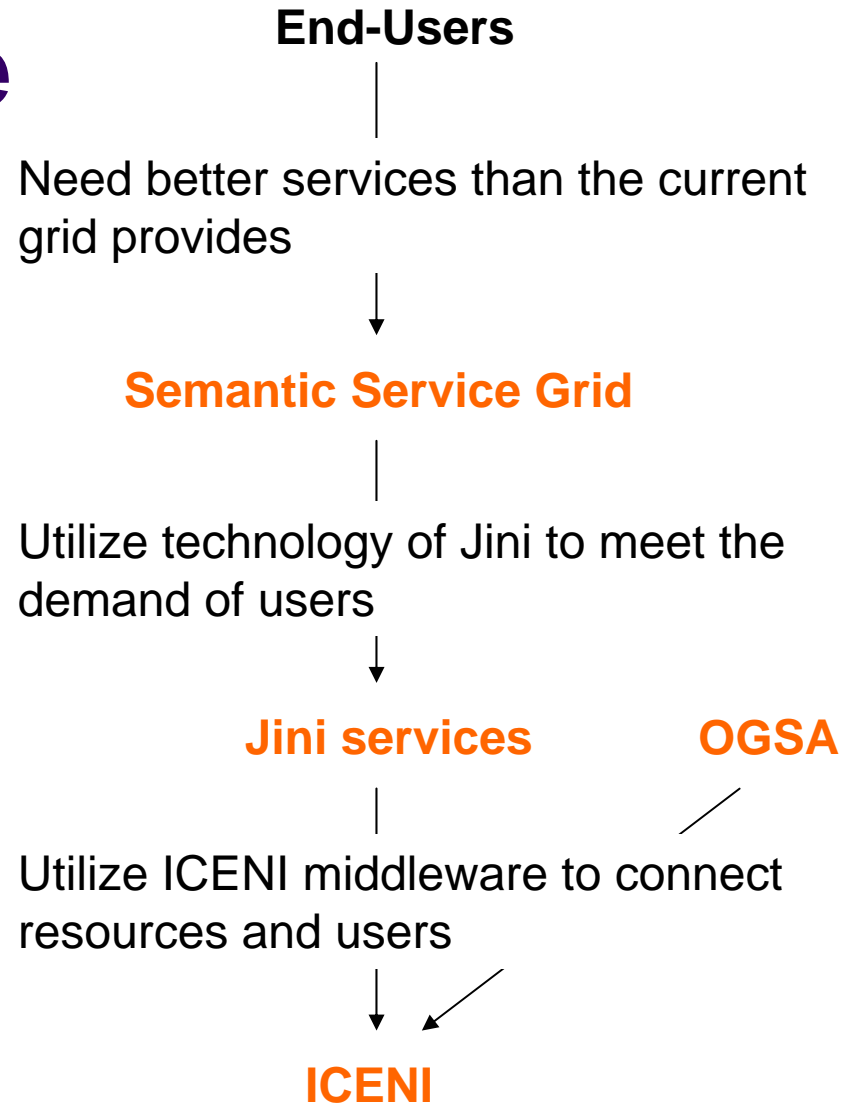
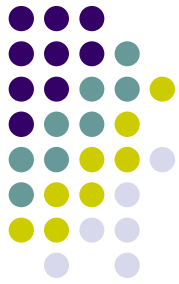
(Presentation by Li Zao, 01-02-2005, Univercity Claude Bernard Lyon 1)



Plan

- Outline
- Semantic Service Grid
- Web Service protocols
- OGSA
- Jini
- ICENI
- Conclusion
- References

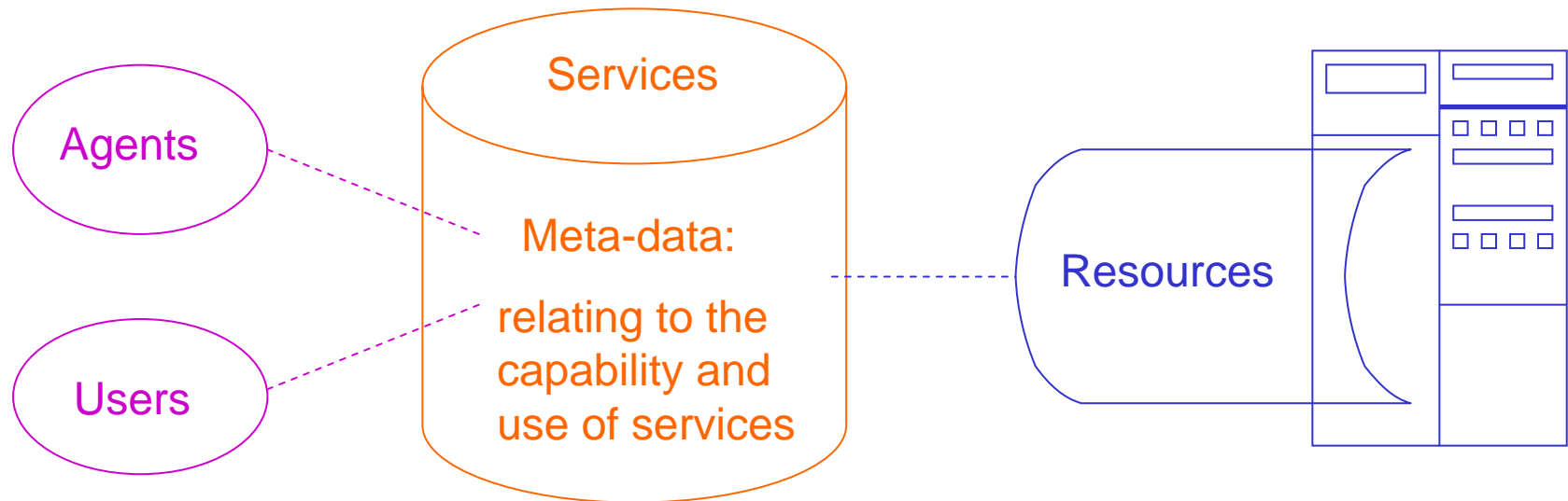
Outline

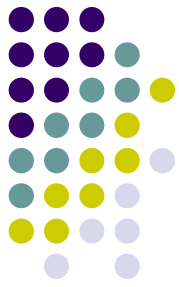




Semantic Service Grid

- an extension of the current Grid in which information and services are given well-defined meaning, better enabling computers and people to work in cooperation.





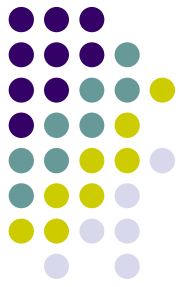
Web Services

- Web services protocols for discovering services:
 - SOAP: Simple Object Access Protocol
 - XML-based RPC protocol; common WSDL target
 - WSDL: Web Services Description Language
 - Interface Definition Language for Web services
 - UDDI: Universal Desc., Discovery & Integration
 - Directory for Web services



OGSA: Open Grid Service Architecture

- Utilizes standard Web services infrastructure
- Service orientation to virtualize resources
- From Web services:
 - Standard interface definition mechanisms:
 - multiple protocol bindings
 - multiple implementations
 - local/ remote transparency



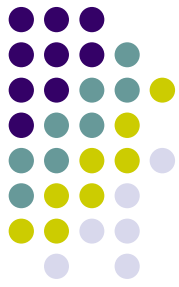
Jini: a technology of plug-and-play

Software from SUN Microsystems that seeks to simplify the connection and sharing of devices, such as printers and disc drives on a network.

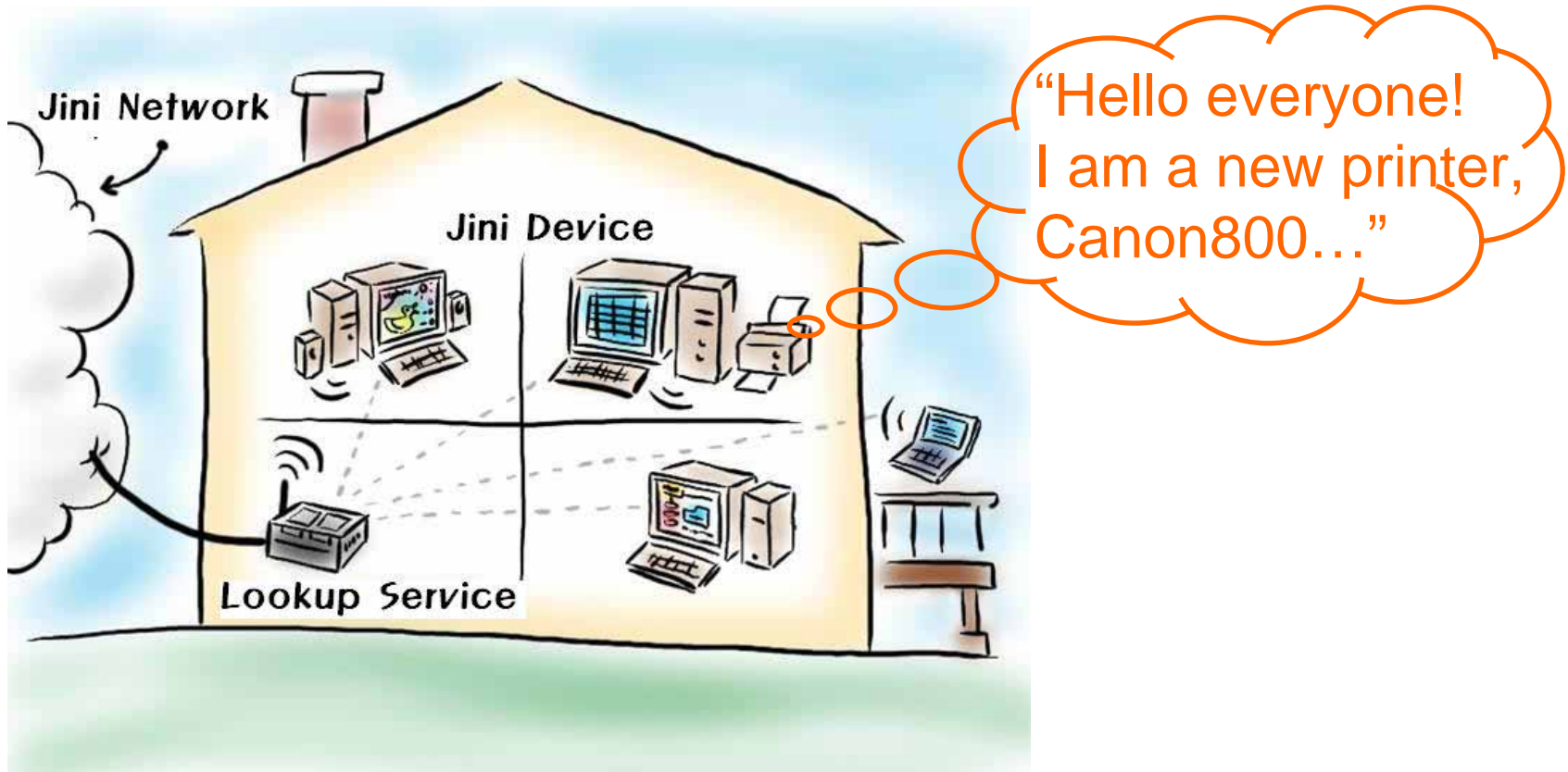
Goal:

allow people to use networked devices and services as simply as using a phone today

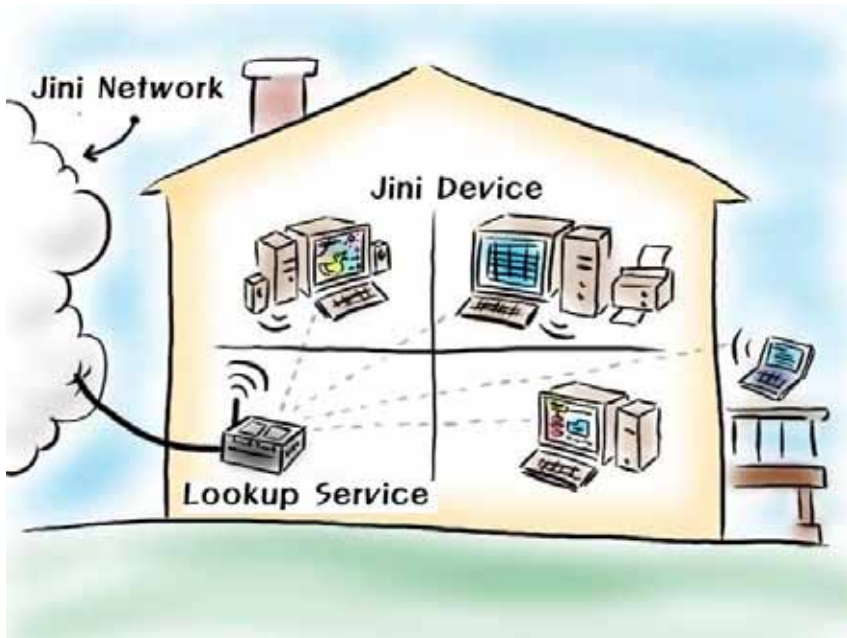
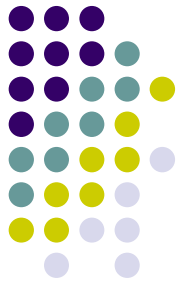




Jini: a technology of plug-and-play



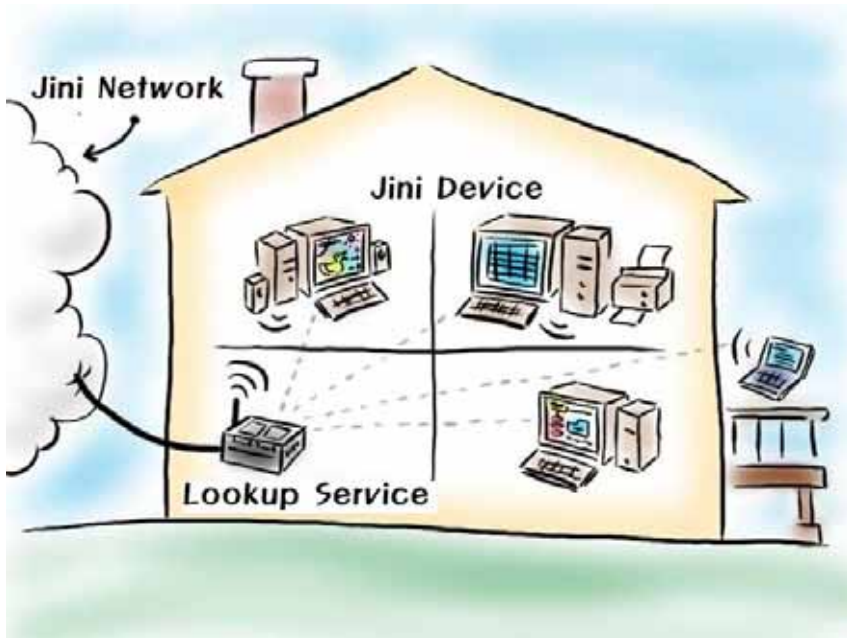
Jini: a technology of plug-and-play



- dynamic registration
- service lookup
- distributed object access
- the platform-portability provided by java



Jini: a technology of plug-and-play

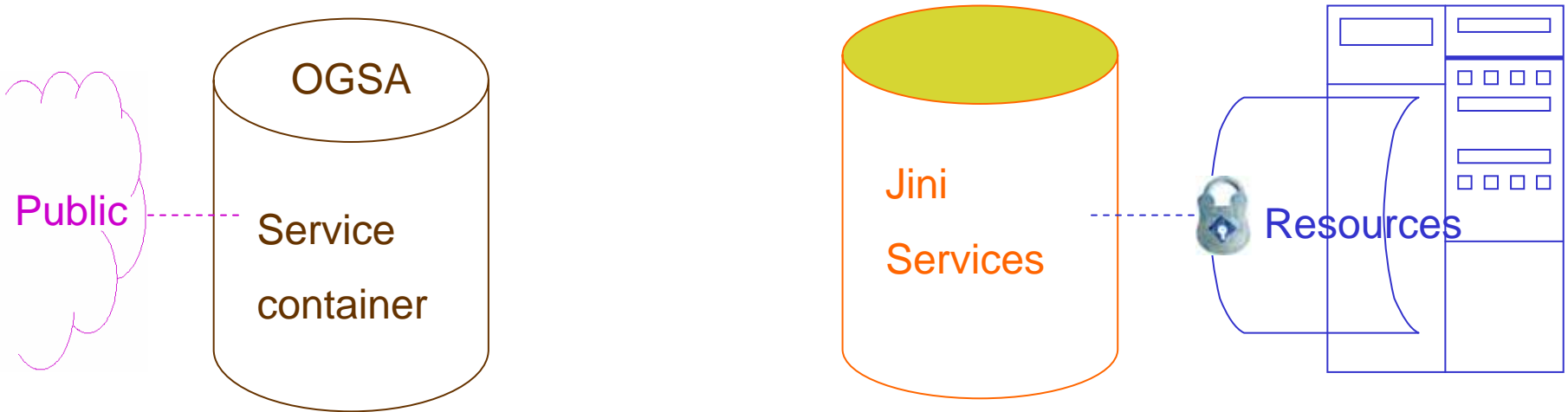
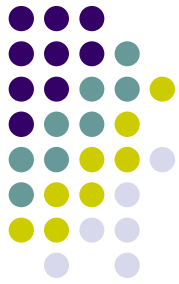


- dynamic registration
- service lookup
- distributed object access
- the platform-portability provided by java

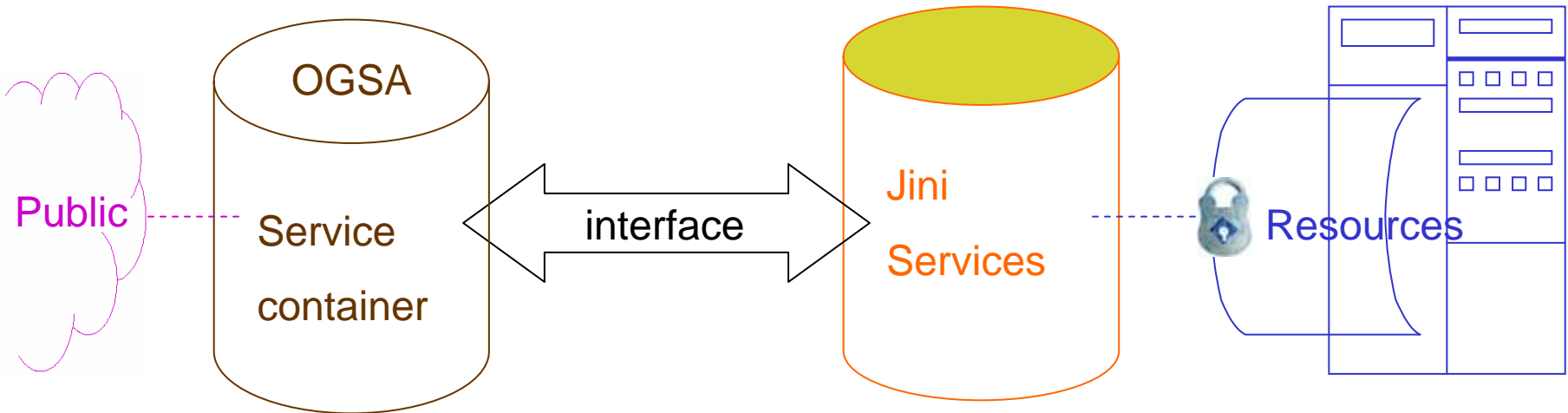
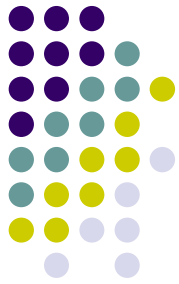


Very **practical** to make computational, software, hardware or storage resources incorporate **Jini**!

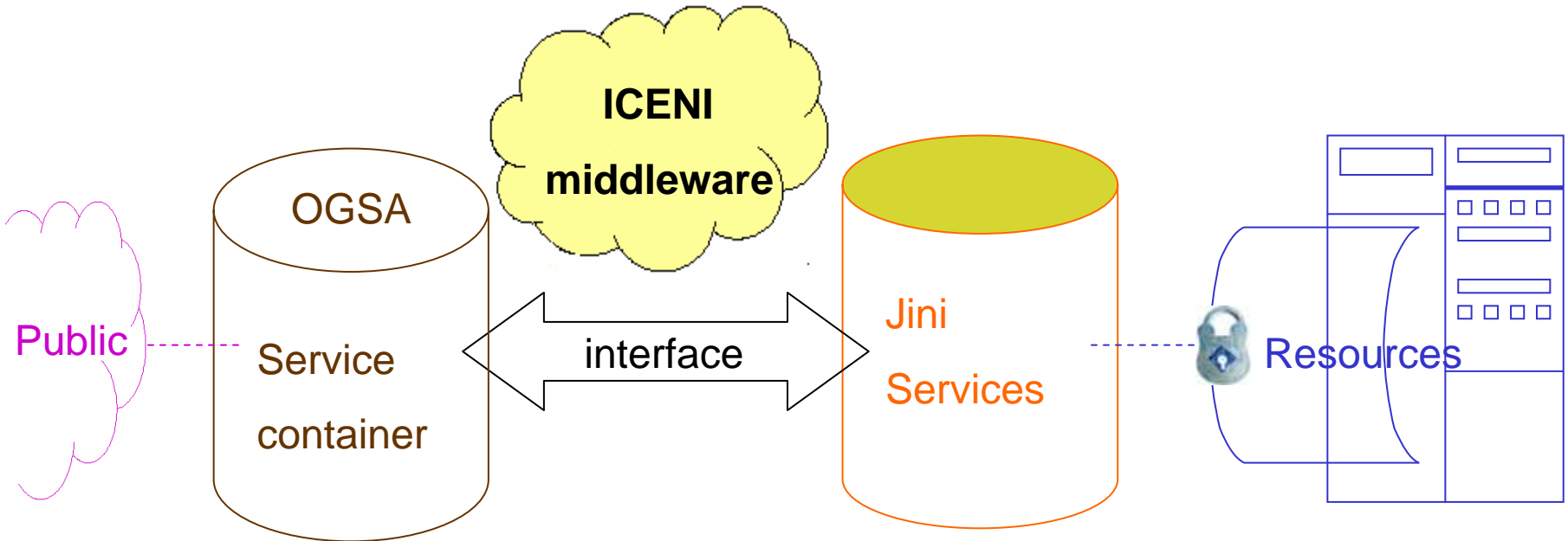
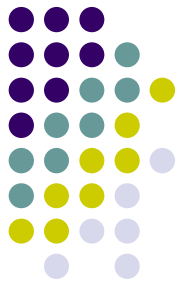
ICENI: Imperial College e-Science Networked Infrastructure



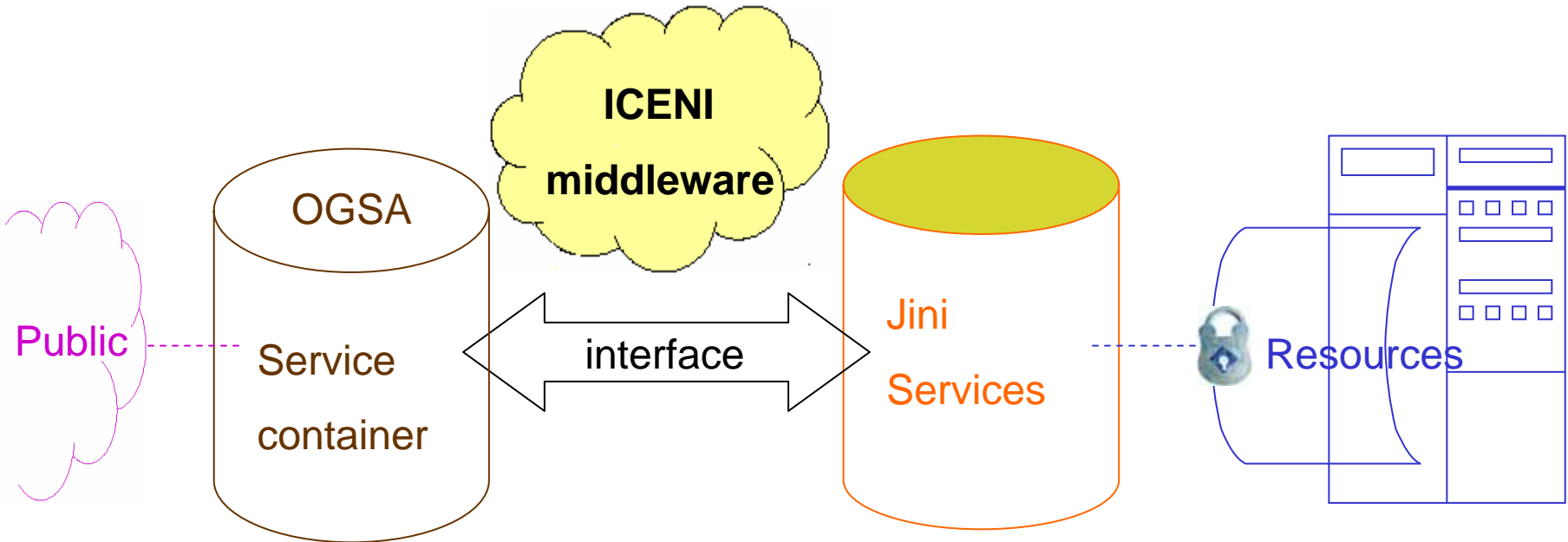
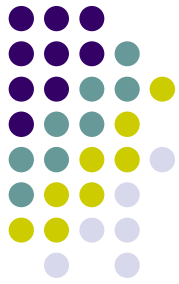
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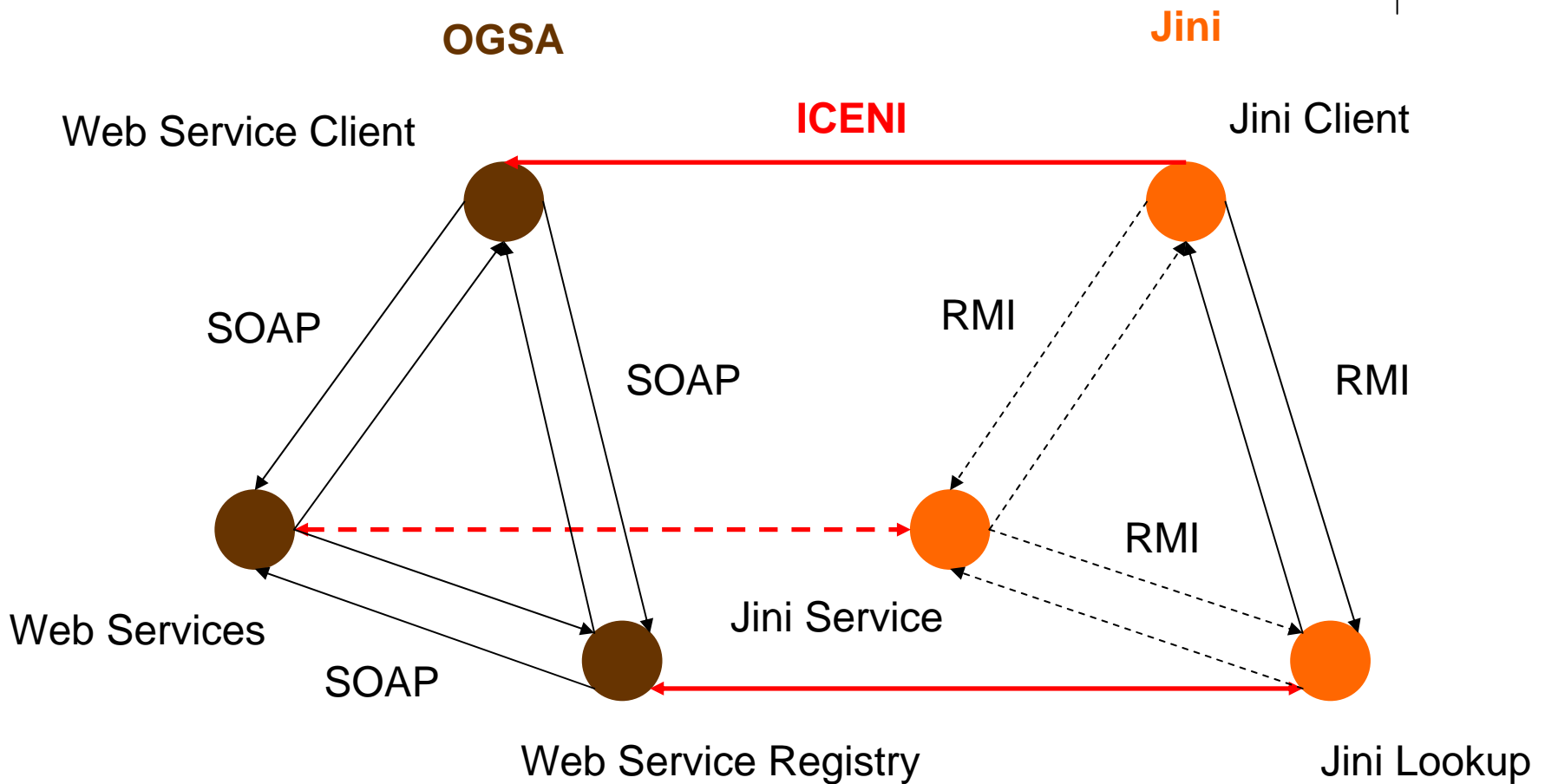
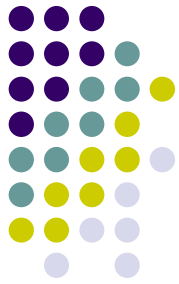


ICENI: Imperial College e-Science Networked Infrastructure



- Within ICENI, we make a clear separation between the management of a resource and its use by a wider community.

ICENI Web Services



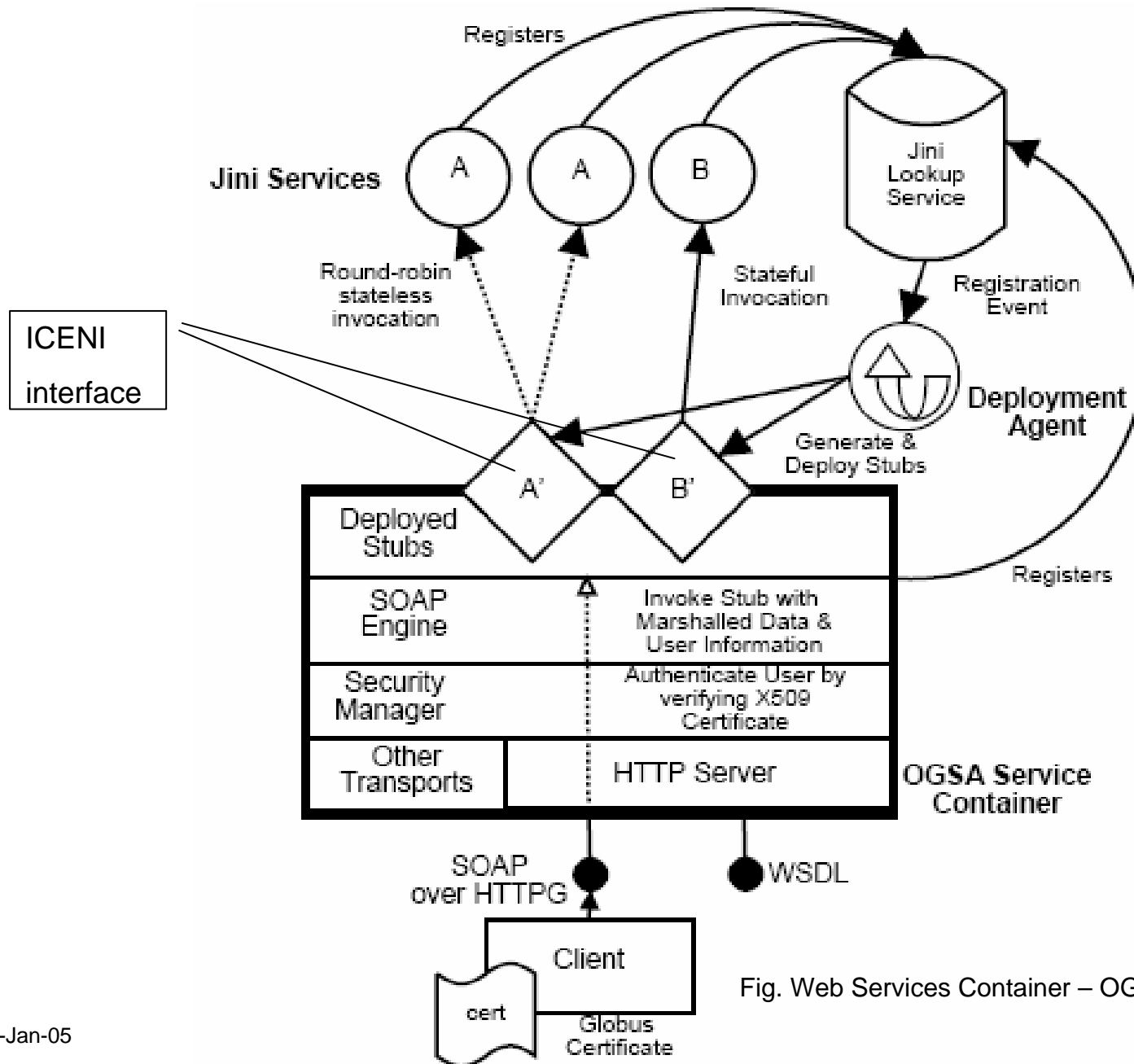
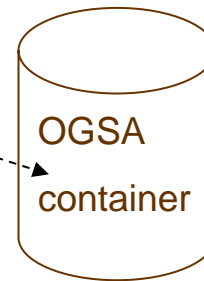
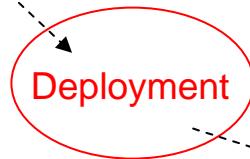
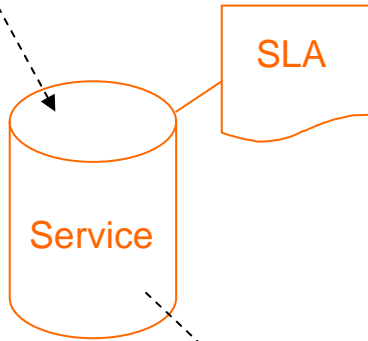
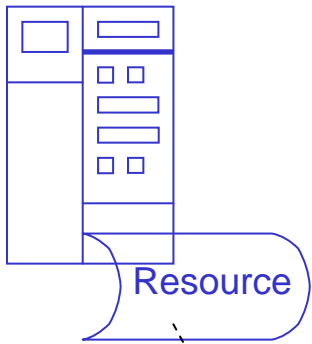
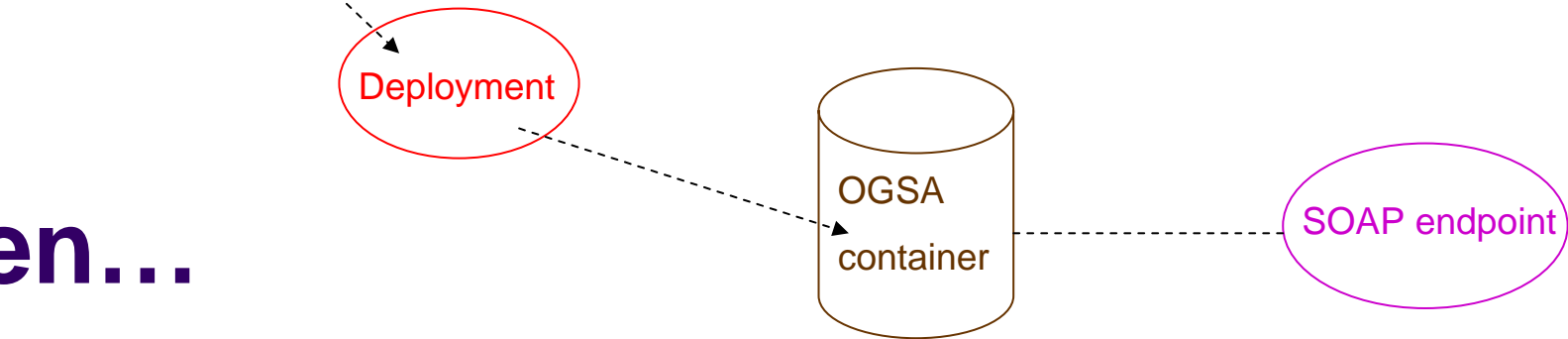
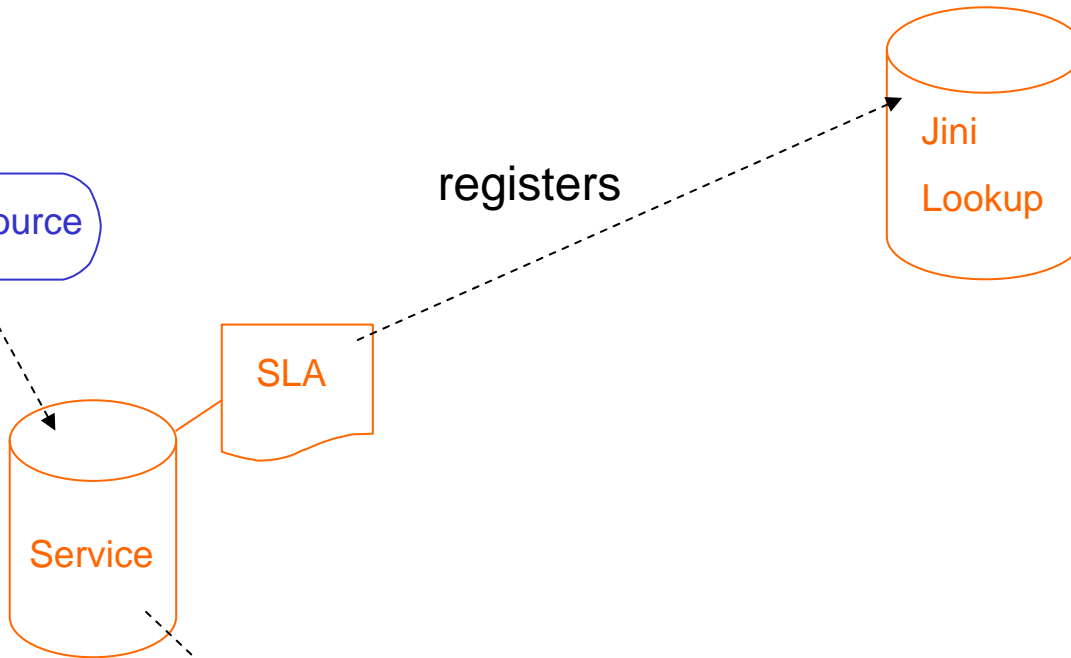
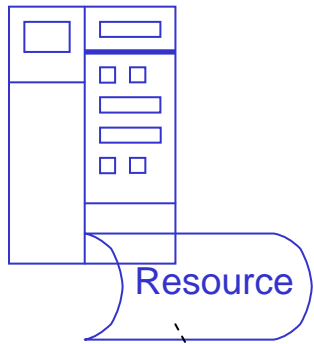


Fig. Web Services Container – OGSA & Jini Integration

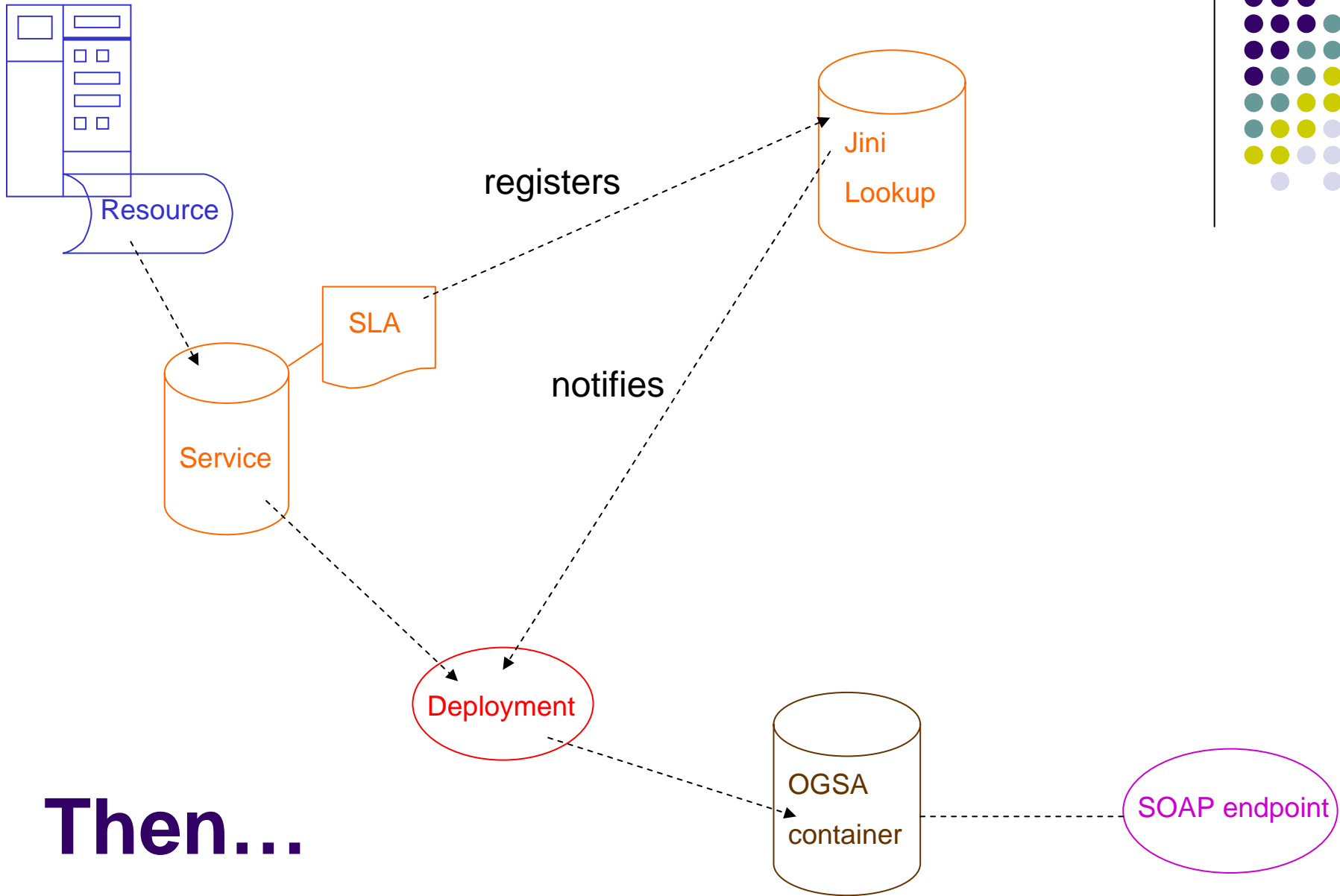


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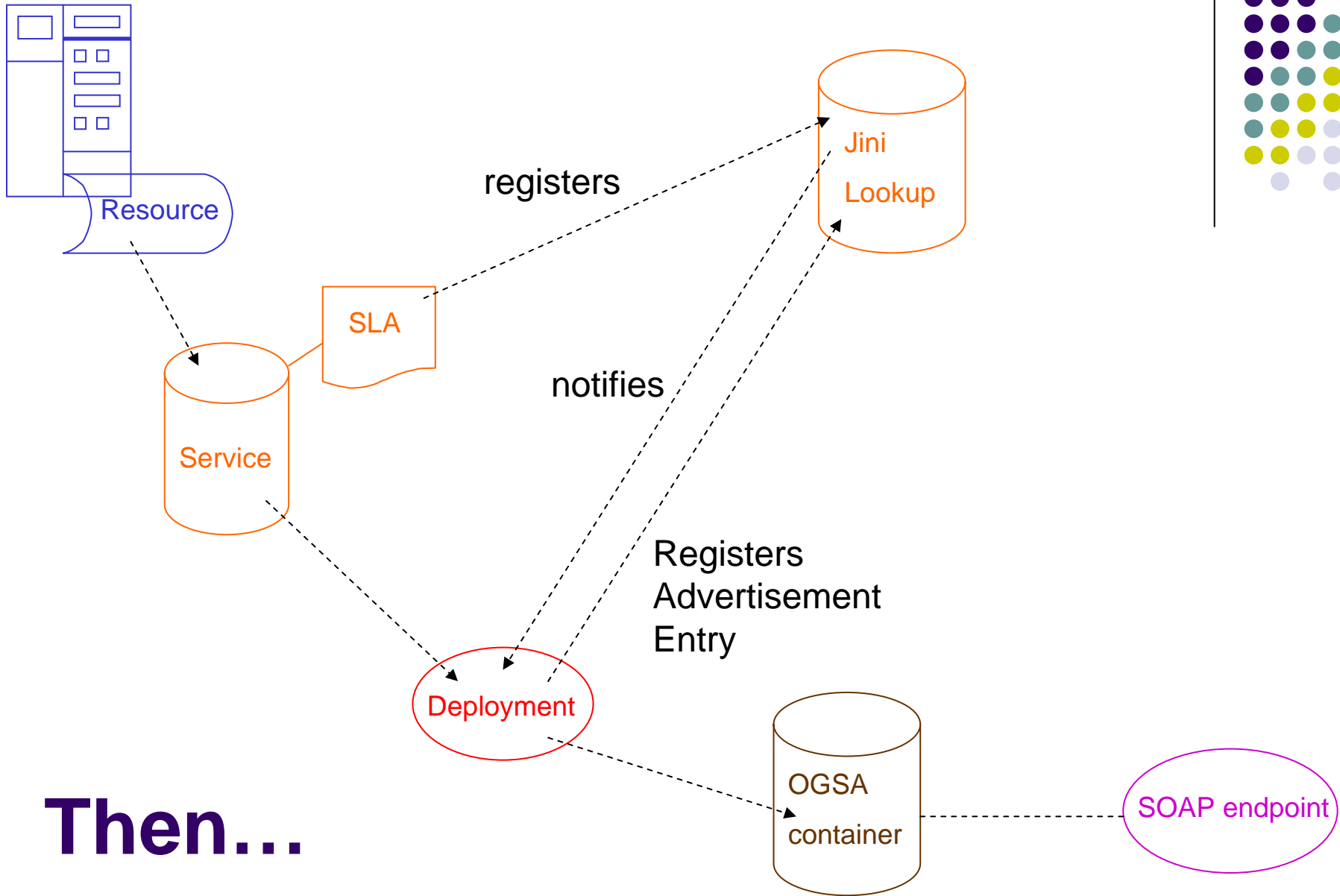


Then...

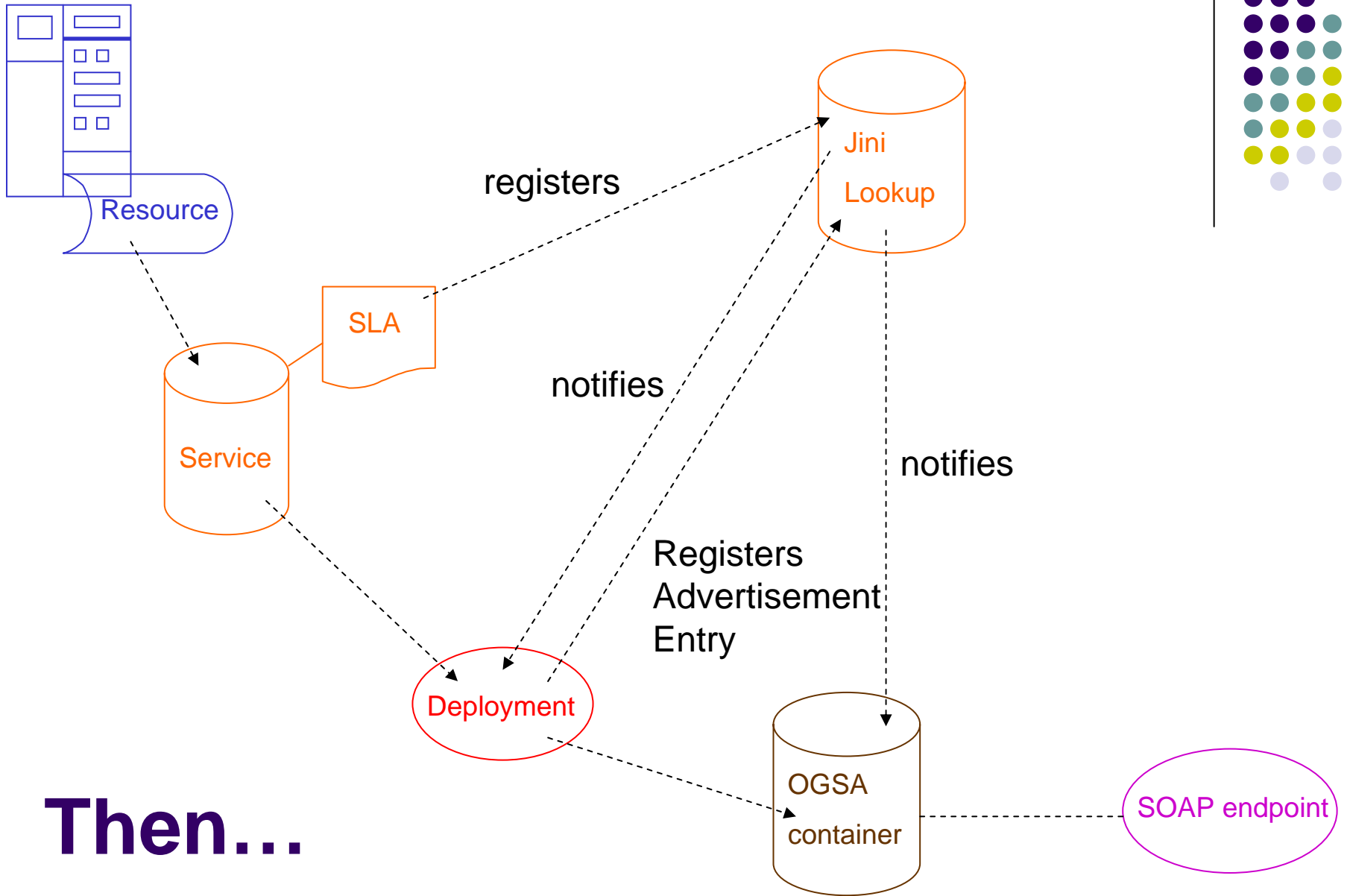
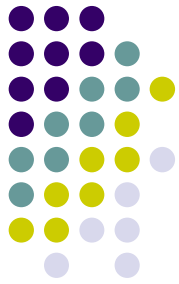




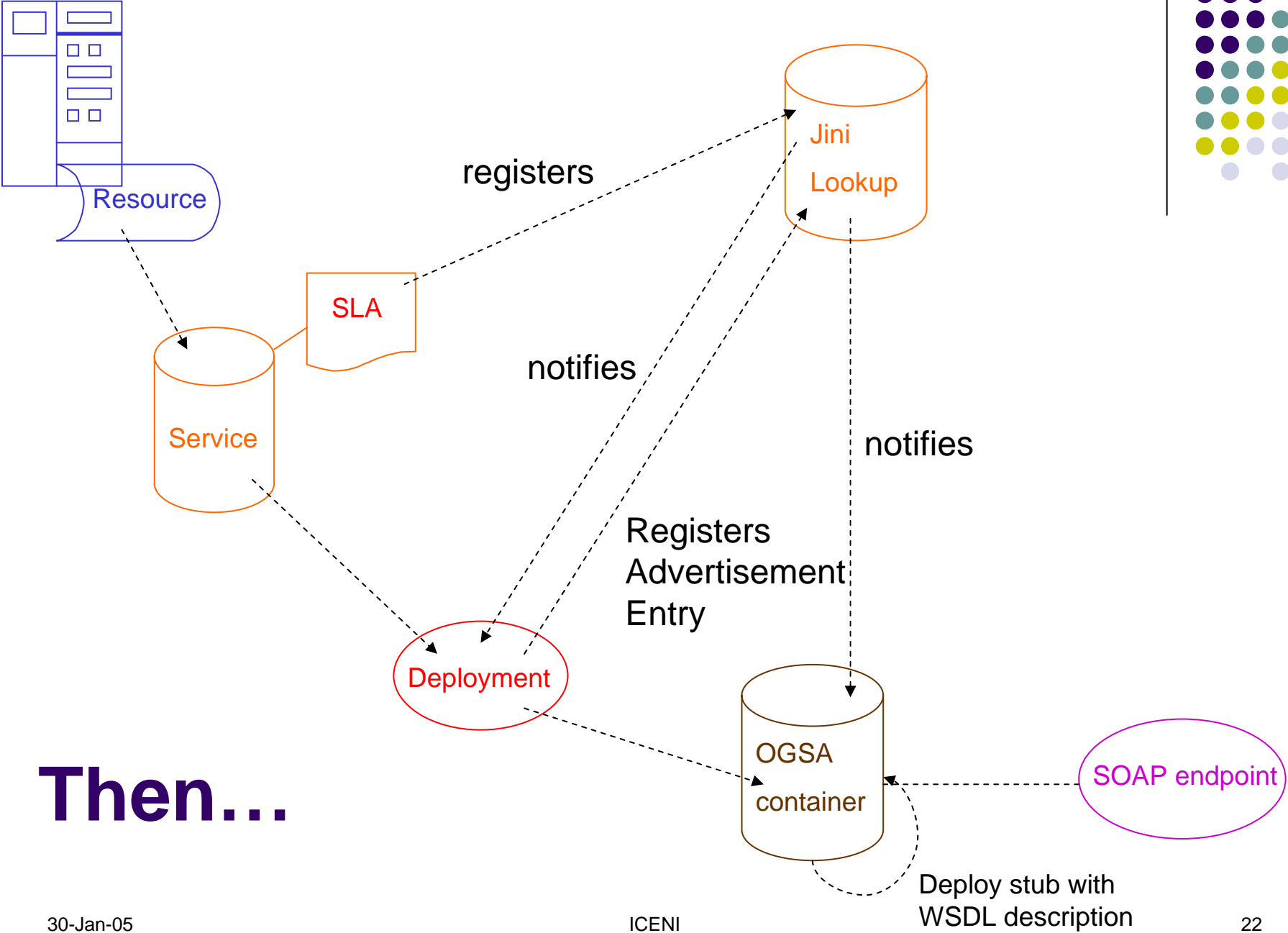
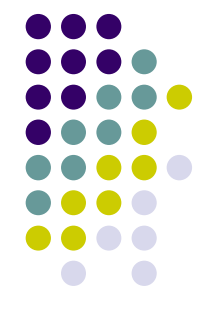
Then...



Then...

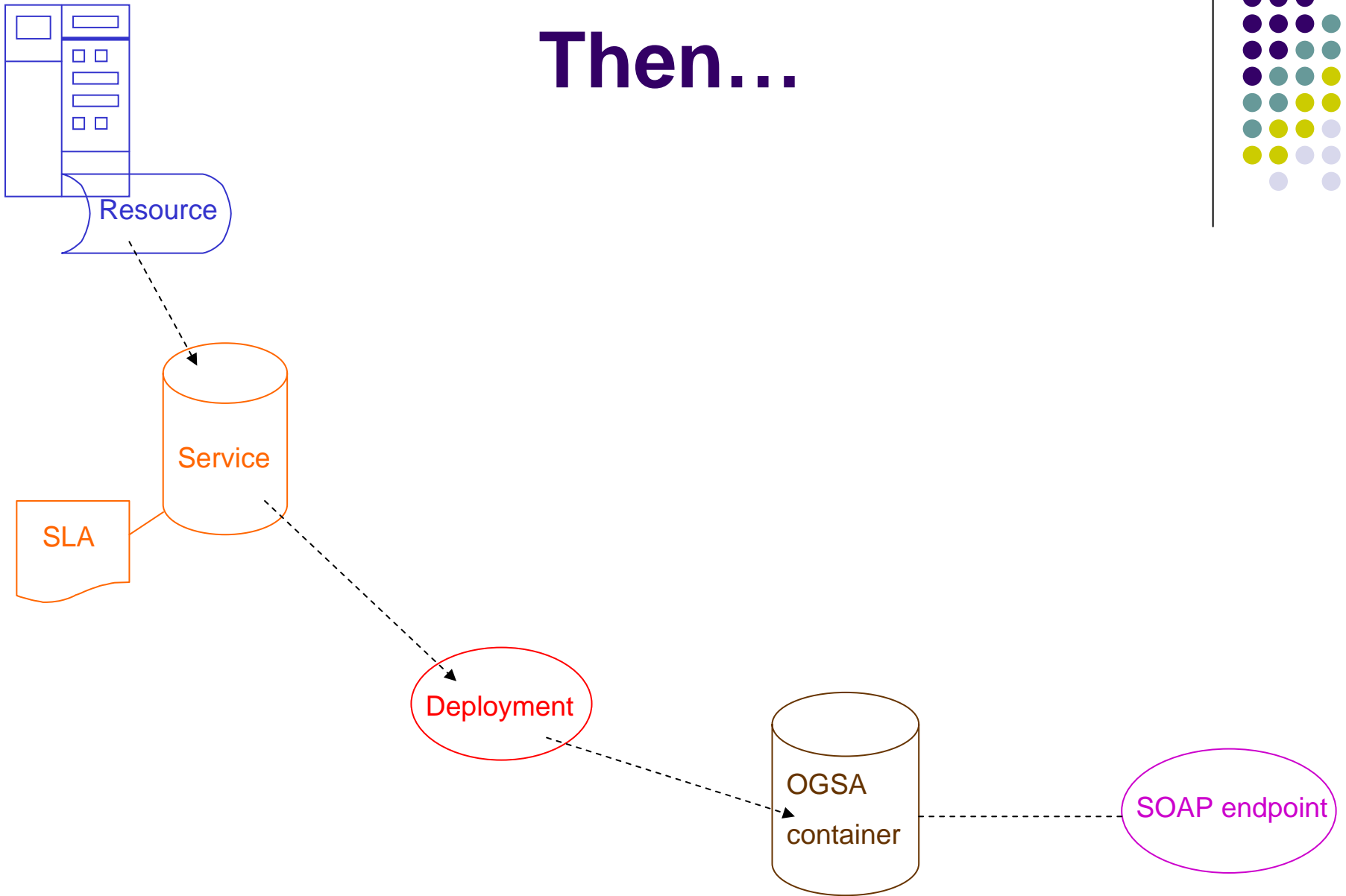
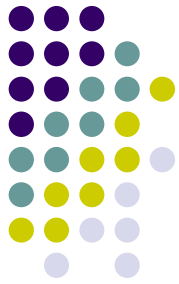


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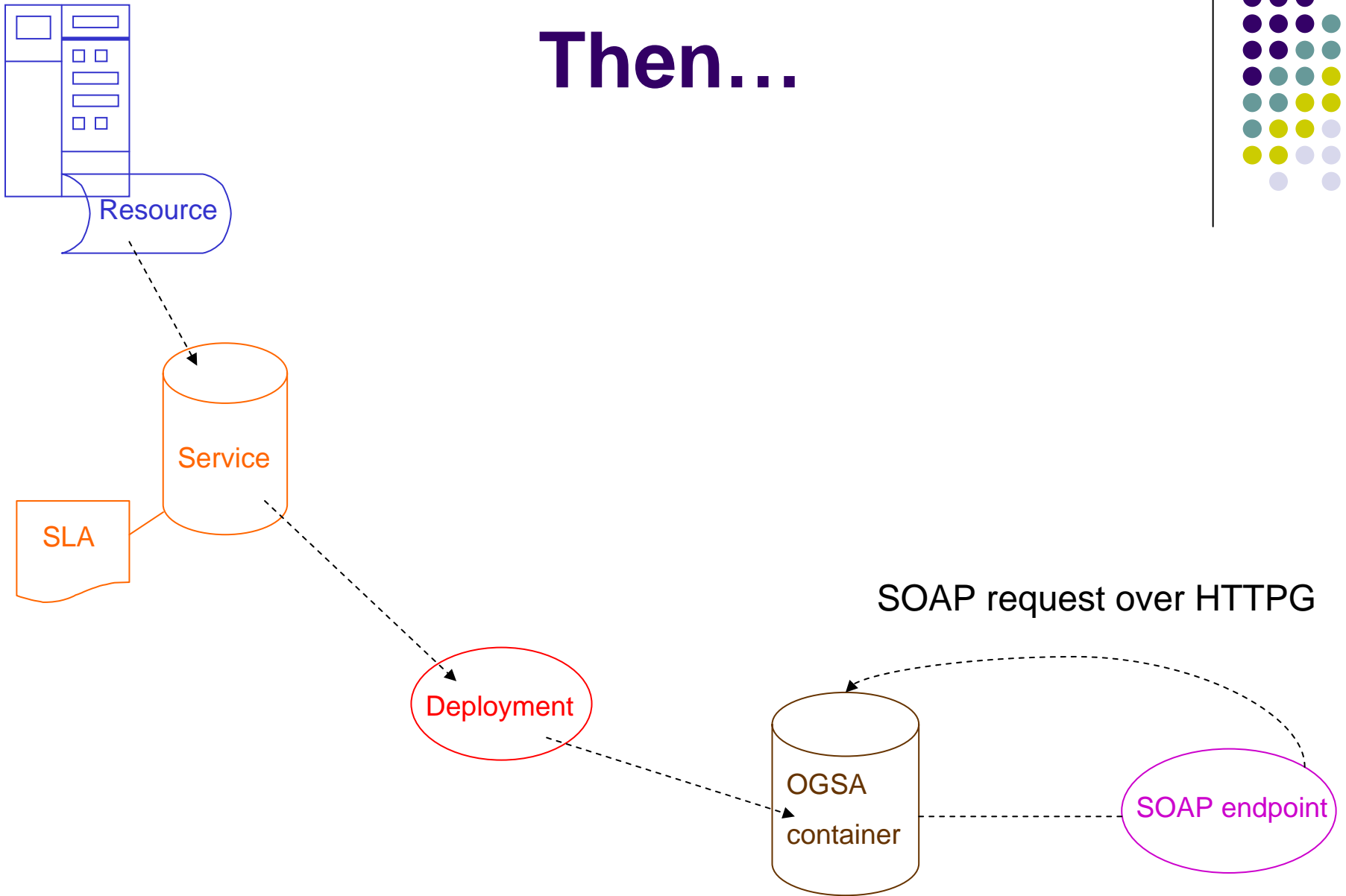
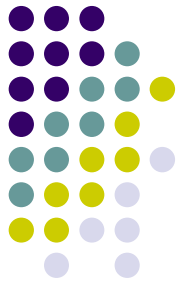


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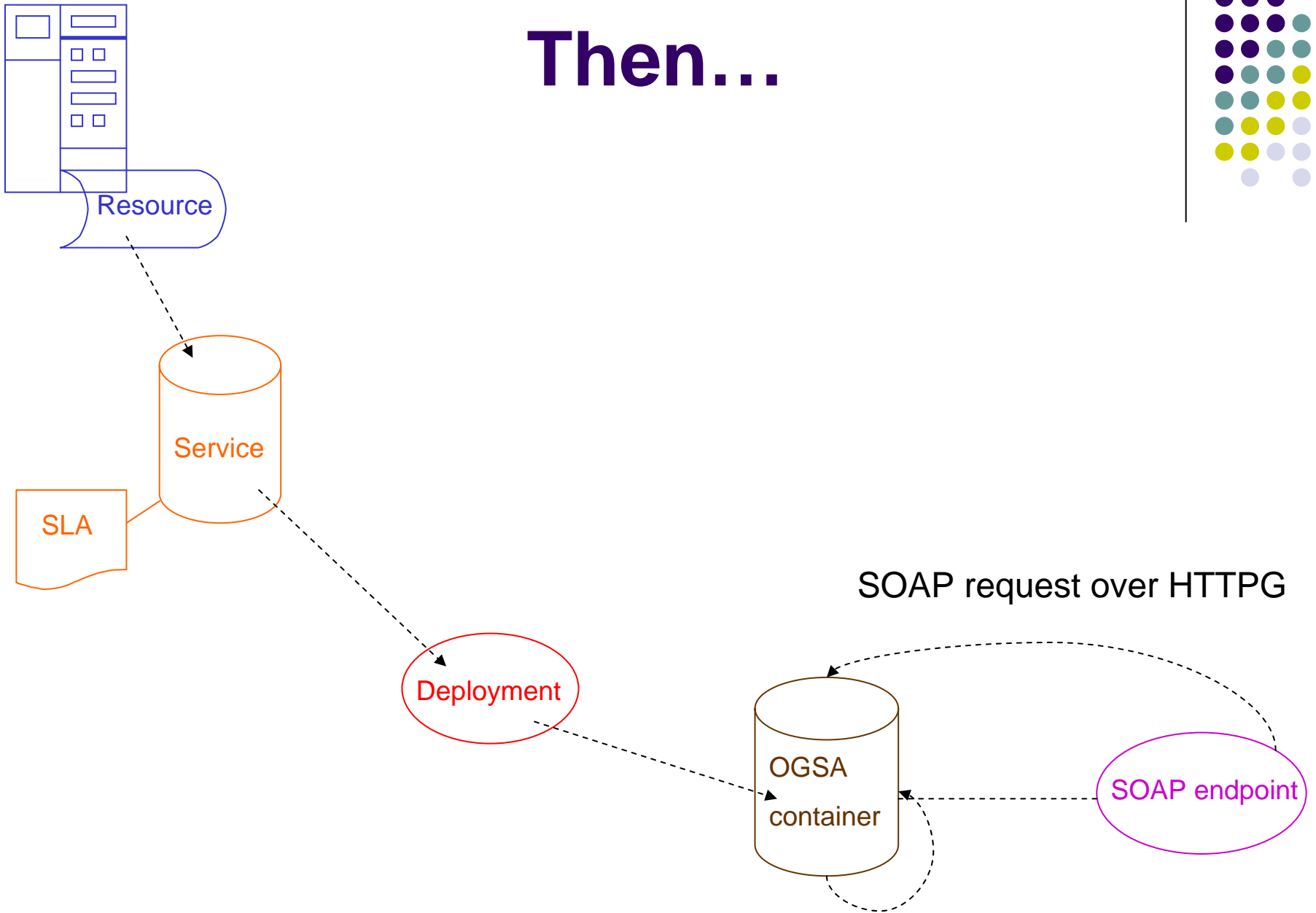
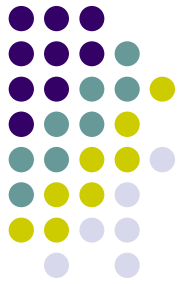
Then...



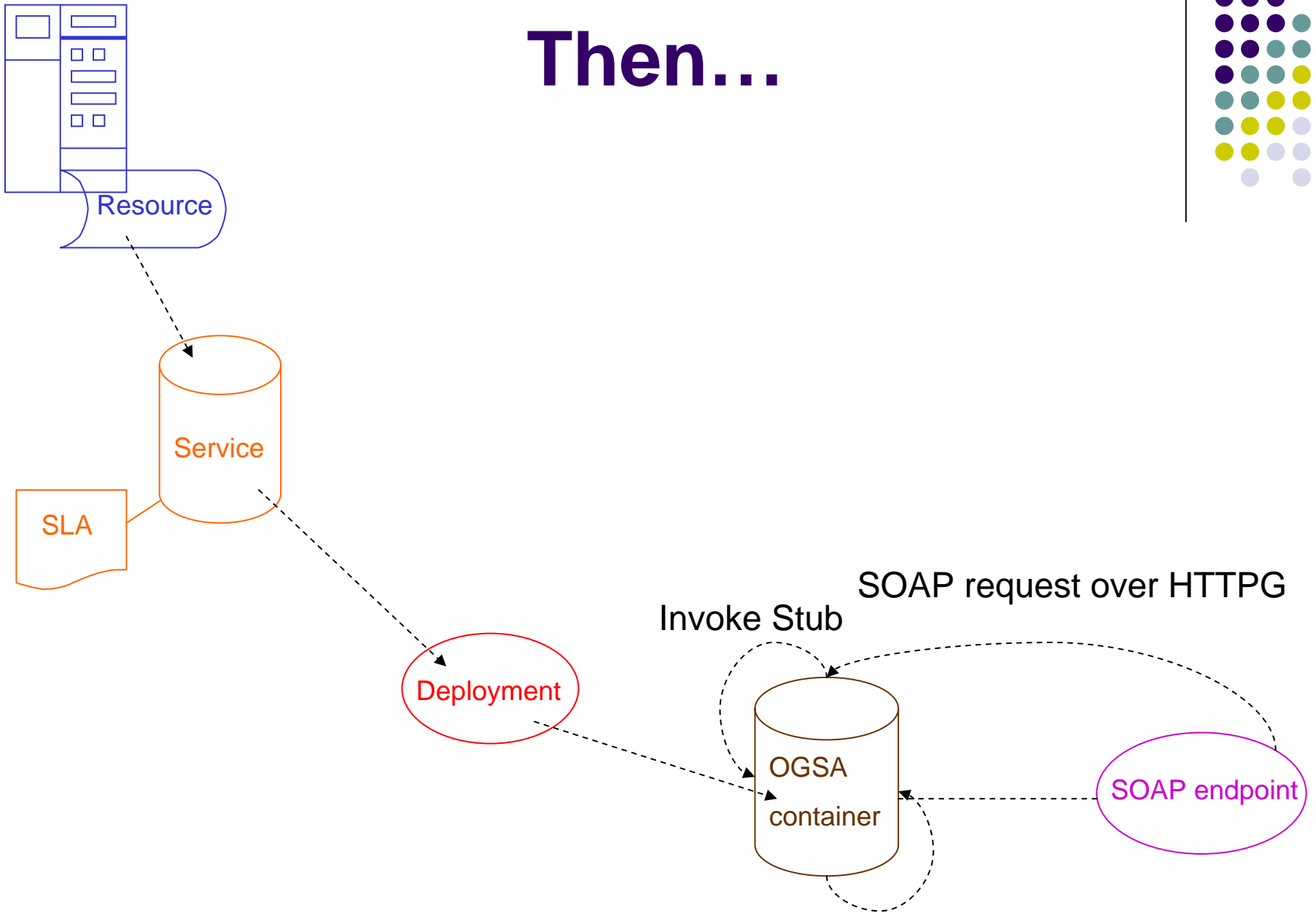
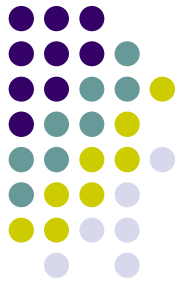
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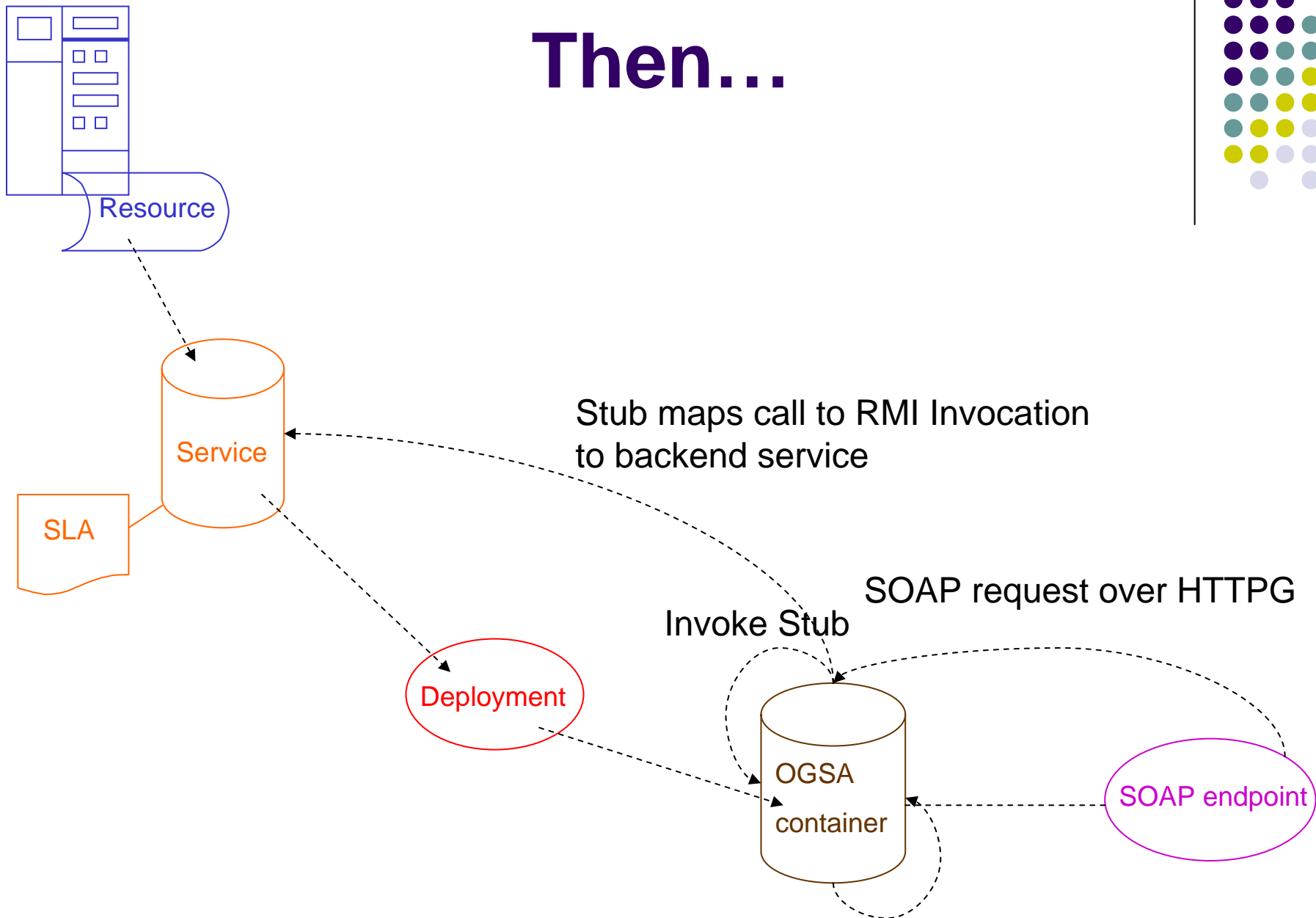
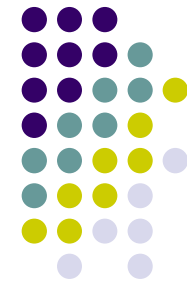
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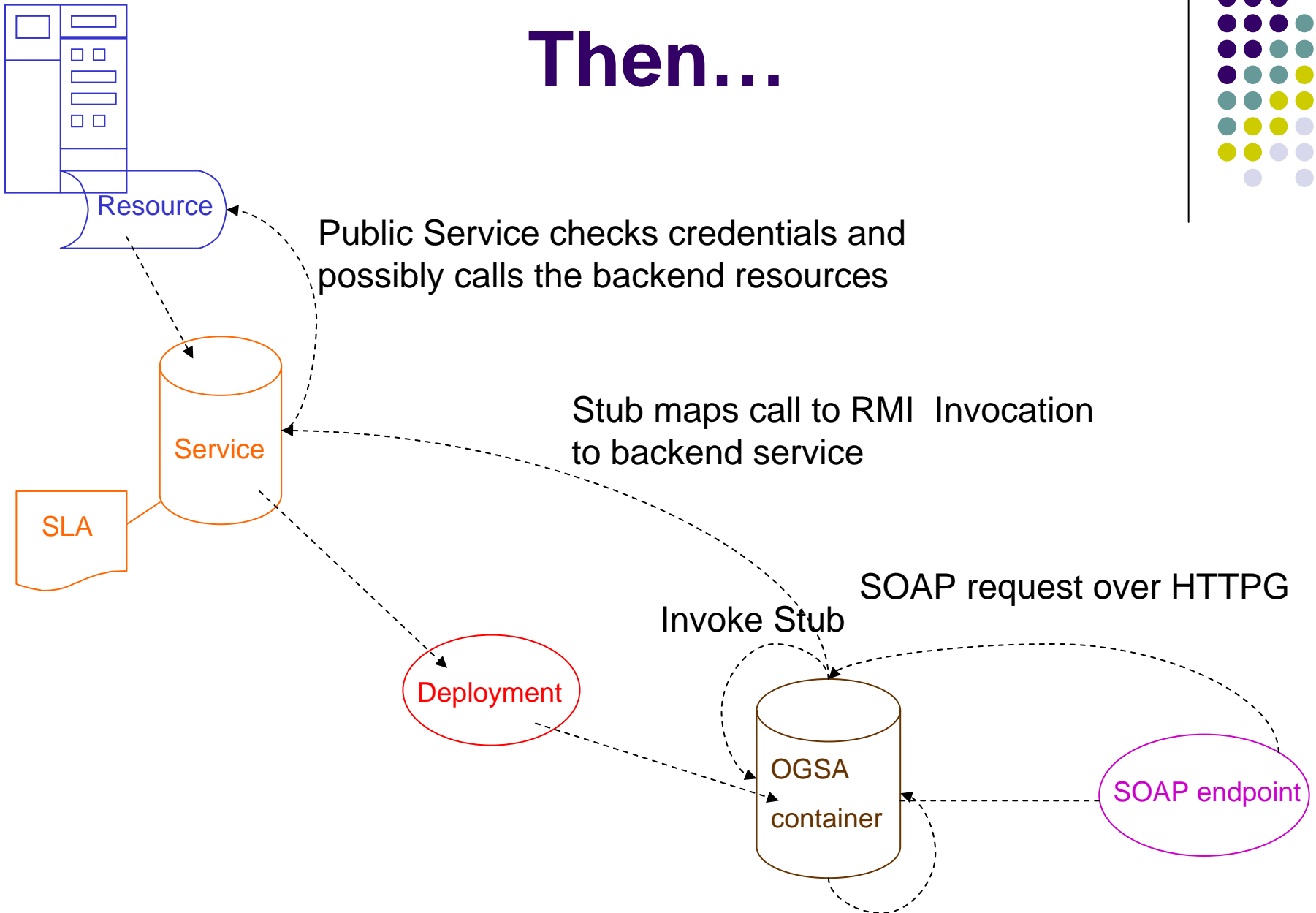
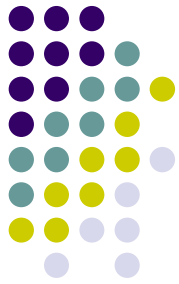
Then...



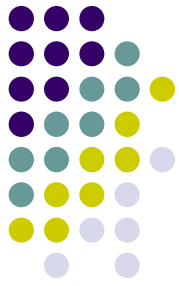
Then...



Then...

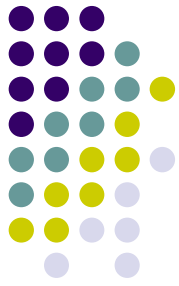


SLA: Service Level Agreement



- Defined in each service to specify the individuals, groups and organizations that are able to use the resources provided by that service

Example: XML doc. describing a SLA



```
<?xml version="1.0" encoding="UTF-8"?>

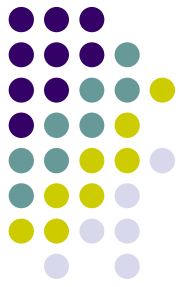
<contract
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://www.iceni.ac.uk/xmlSchema/contract"
  xsi:schemaLocation="http://www.iceni.ac.uk/xmlSchema/contract
                      /vol/iceni/icpc-core/data/xml/grid/contract/CONTRACT.xsd"
  duration="1200">

  <allow>
    <entity type="person" name="CN="JohnDoe,OU=doc.ic.ac.uk,O=LeSGrid,C=UK"/>
  </allow>

  <deny startDay="friday" startHour="13" stopDay="sunday">
    <entity type="group" name="ICPC"/>
  </deny>

  <allow stopDay="saturday" stopHour="20">
    <entity type="organisation" name="EUDataGrid"/>
  </allow>

</contract>
```



SLA: Service Level Agreement

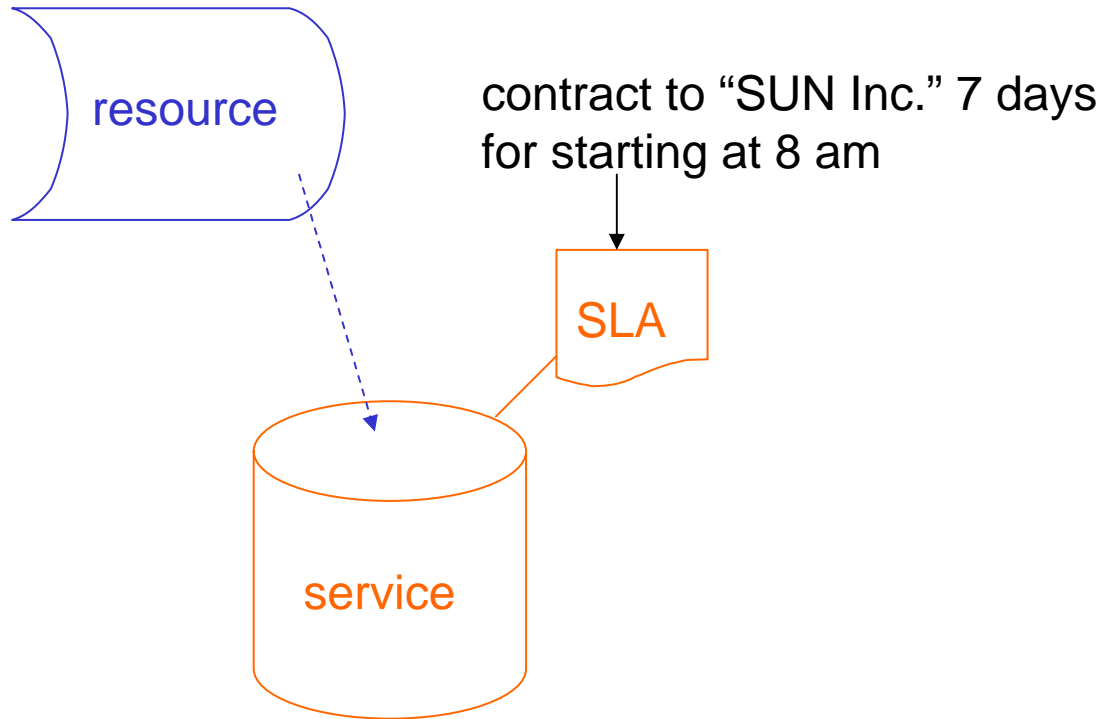
- Defined in each service to specify the individuals, groups and organizations that are able to use the resources provided by that service

Note:

If a new service is the subset of a existing service, the new contract (SLA) has to be a sub-contract of the existing contract

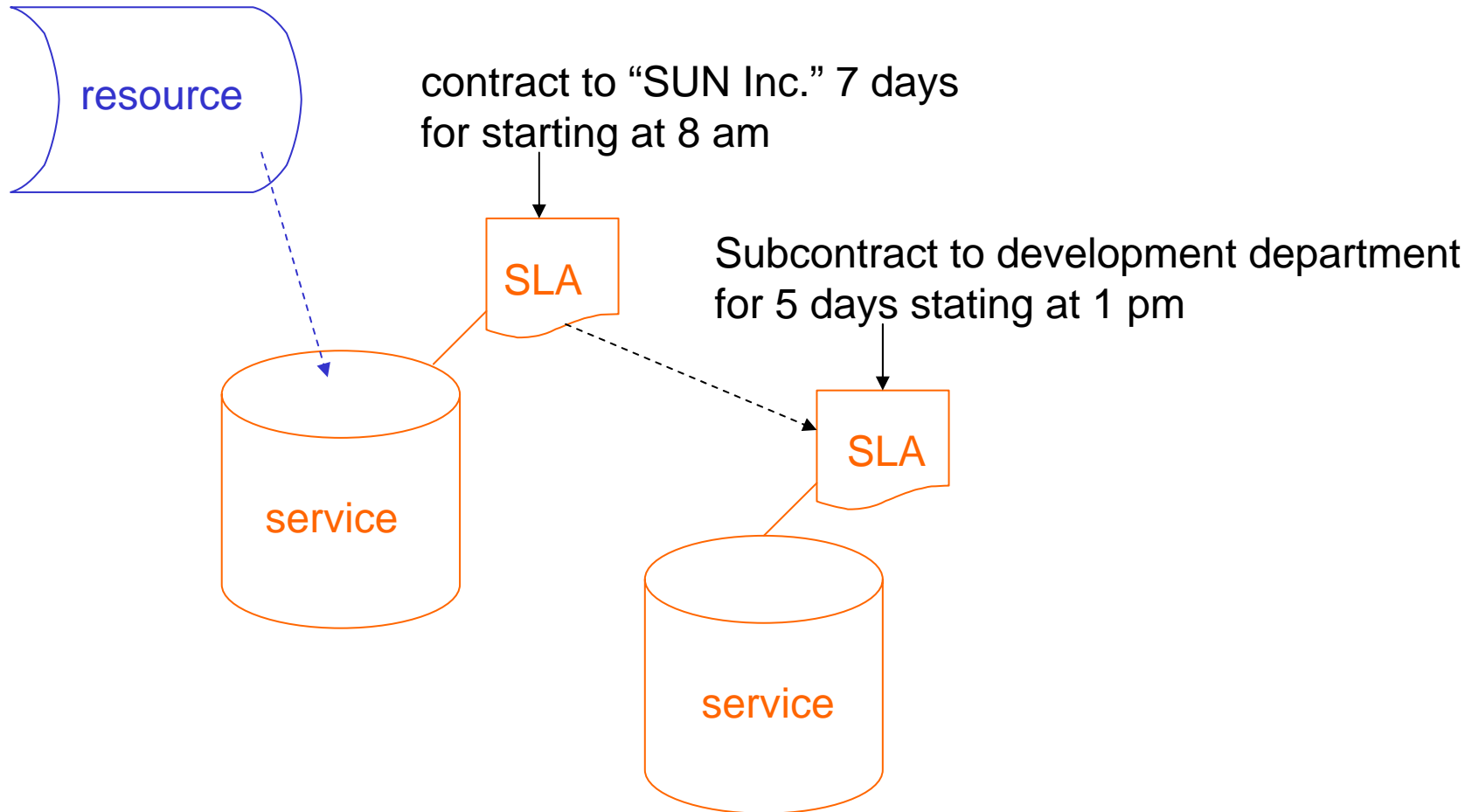


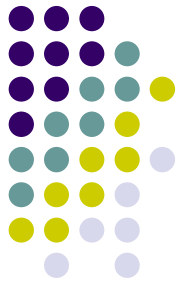
Example of sub-contract



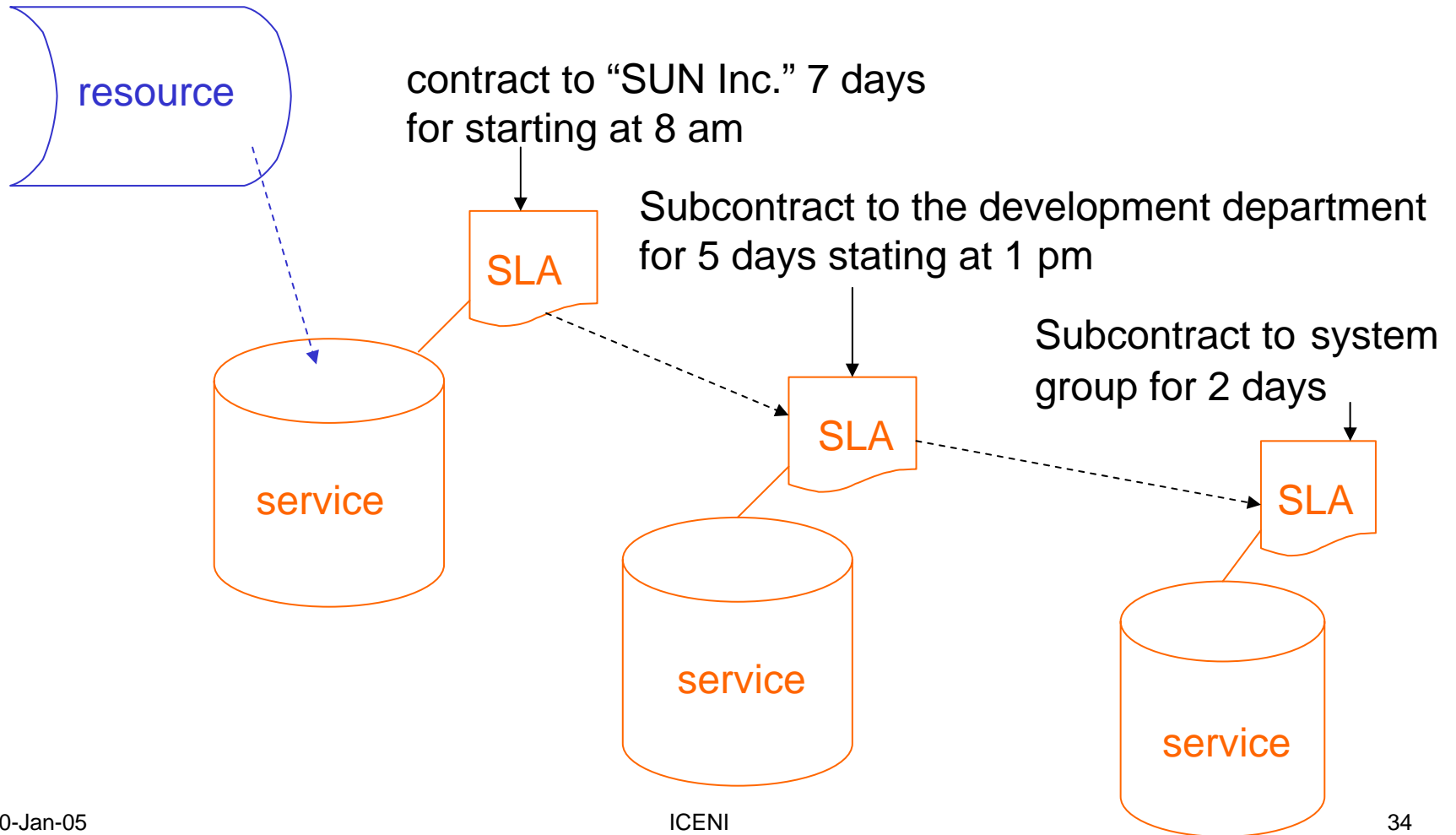


Continue...

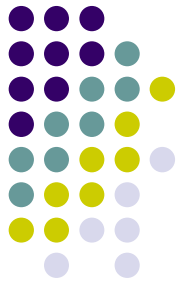




Continue...



Conclusion



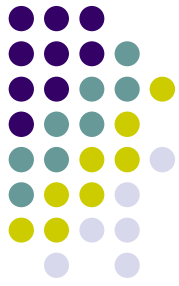
ICENI:

- Interoperable and Integrated Grid Middleware
- Service Oriented Architecture (SOA) with rich Meta-data Description
- Augment Component Programming Model
- Service Federation govern by Usage Policy and Service Level Agreement
- Foundation for higher-level services and Autonomous Composition



References

- N. Furmento, A. Mayer, S. McGough, S. Newhouse, T. Field, and J. Darlington. ICENI: Optimisation of Component Applications within a Grid Environment
- I. Foster, C. Kesselman, J. M. Nick, and S. Tuecke. The Physiology of the Grid: An open Grid Services Architecture for Distributed Systems Integration
- N. Furmento, A. Mayer, S. McGough, s. Newhouse, T. Field, and J. Darlington. An Integrated Grid Environment for Component Applications.
- <http://www.lesc.ic.ac.uk/iceni/>



Question - Time

