

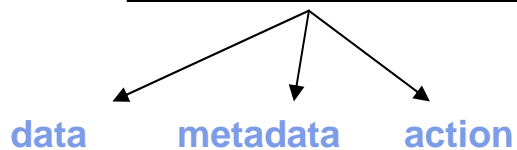
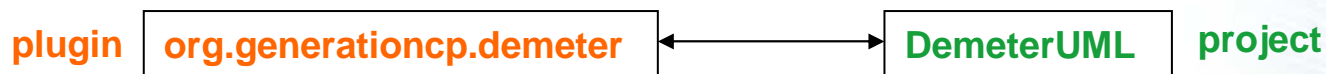


A Pantheon Web Application for mapping data retrieval

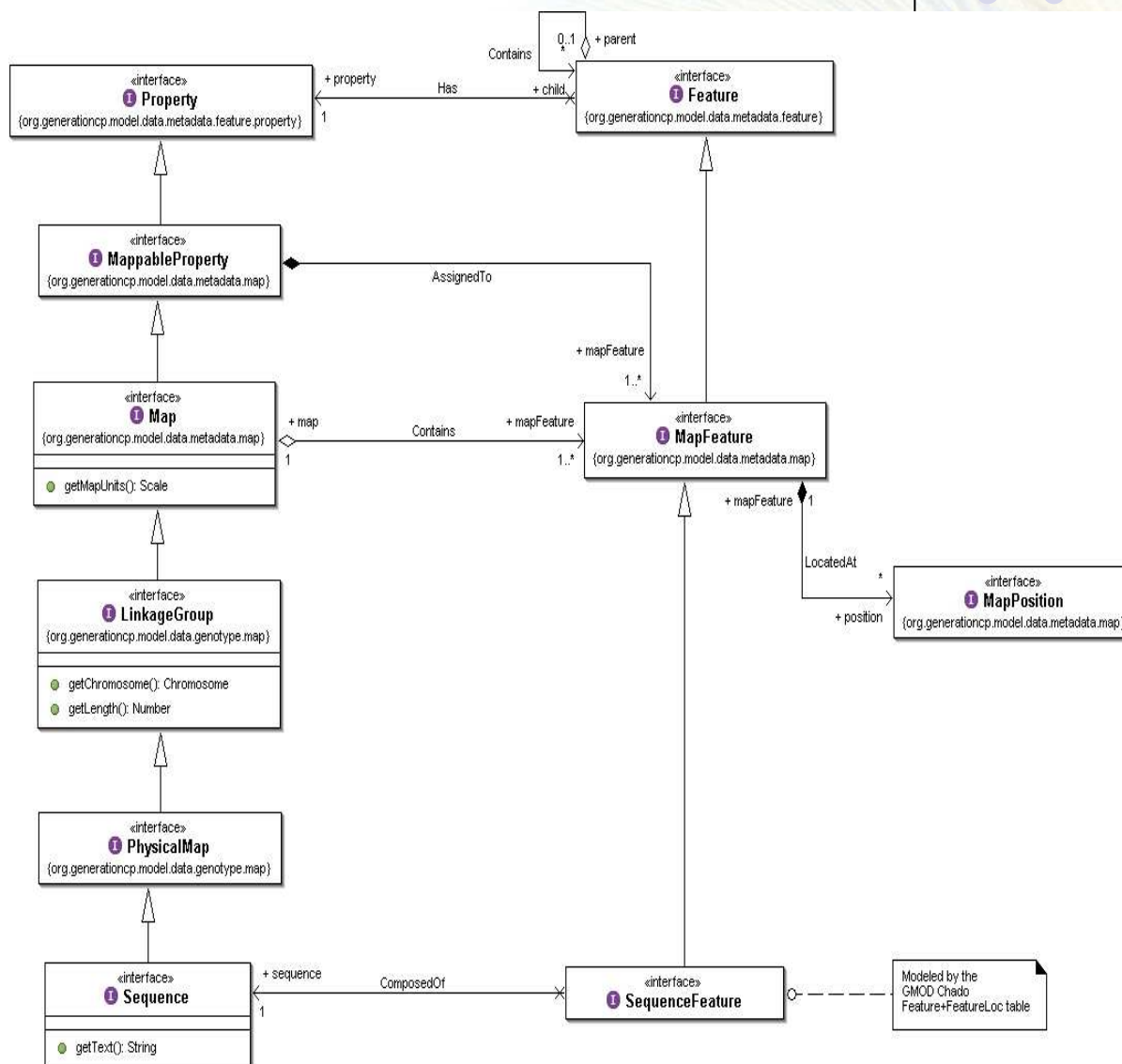


Alexis DEREPPER

Genotype/Mapping Domain Model



- org.generationcp.model.data.germplasm
- org.generationcp.model.data.germplasm.sourceGermplasm
- org.generationcp.model.data.germplasm.relationship
- org.generationcp.model.data.germplasm.neighbourhood
- org.generationcp.model.data.germplasm.foundingGermplasm
- org.generationcp.model.data.germplasm.accession
- org.generationcp.model.data.germplasm.study
- org.generationcp.model.data.phenotype
- org.generationcp.model.data.expression
- org.generationcp.model.data.expression.transcript
- org.generationcp.model.data.expression.protein
- org.generationcp.model.data.expression.experiment
- org.generationcp.model.data.expression.experiment.transcript
- org.generationcp.model.data.expression.experiment.protein
- org.generationcp.model.data.genotype
- org.generationcp.model.data.genotype.map
- org.generationcp.model.data.genotype.map.sequence
- org.generationcp.model.data.location
- org.generationcp.model.data.location.mapPosition
- org.generationcp.model.data.location.descriptors
- org.generationcp.model.data.location.environment
- org.generationcp.model.data.study
- org.generationcp.model.data.documentation



Osiris : Datasource Specific Implementation

➤ Allows the access to different datasources (relational databases, web services, text files)

➤ Queries on different databases :

● CMAP via Hibernate

● GBrowse via Hibernate

● Chado via Hibernate

GMOD model databases

LOCAL

● QTL database of Gramene via Hibernate

● TropGeneDB via Biomoby Web services

REMOTE

● Other DB (medline, EMBL, interpro...) via EBI Web Services



➤ Methods of the Query classes (org.generationcp.model.action.genotype.map)

● MapQuery

```
Set getAllMapNames()
Set getMaps(String name)
Set getAllMaps()
LinkageGroup getMap(Identifier id)
Set getMaps(String name, String species)
Set getMarkersWithWildcard(String name, String species)
Set getMarkersOfMap(String name)
Set getAllSpecies()
Set getAllSpeciesNames()
Set getMarkersOfMapInMapInterval(String name, String species, String map_name, String start, String stop )
```

● MapStudyQuery

```
Set getMarkersFromMapInMapStudy(String mapName, String mapStudyName)
Set getMarkerNamesFromMapInMapStudy(String mapName, String mapStudyName)
Set getMapStudiesOfSpecies(String species)
Set getMapStudiesNamesOfSpecies(String species)
Set getMapNamesOfStudy(String studyName)
Set getMapStudies()
Set getMapsFromStudy(String mapStudyName)
GenomicMapStudy getMapStudy(String mapStudyName)
```

● GeneQuery

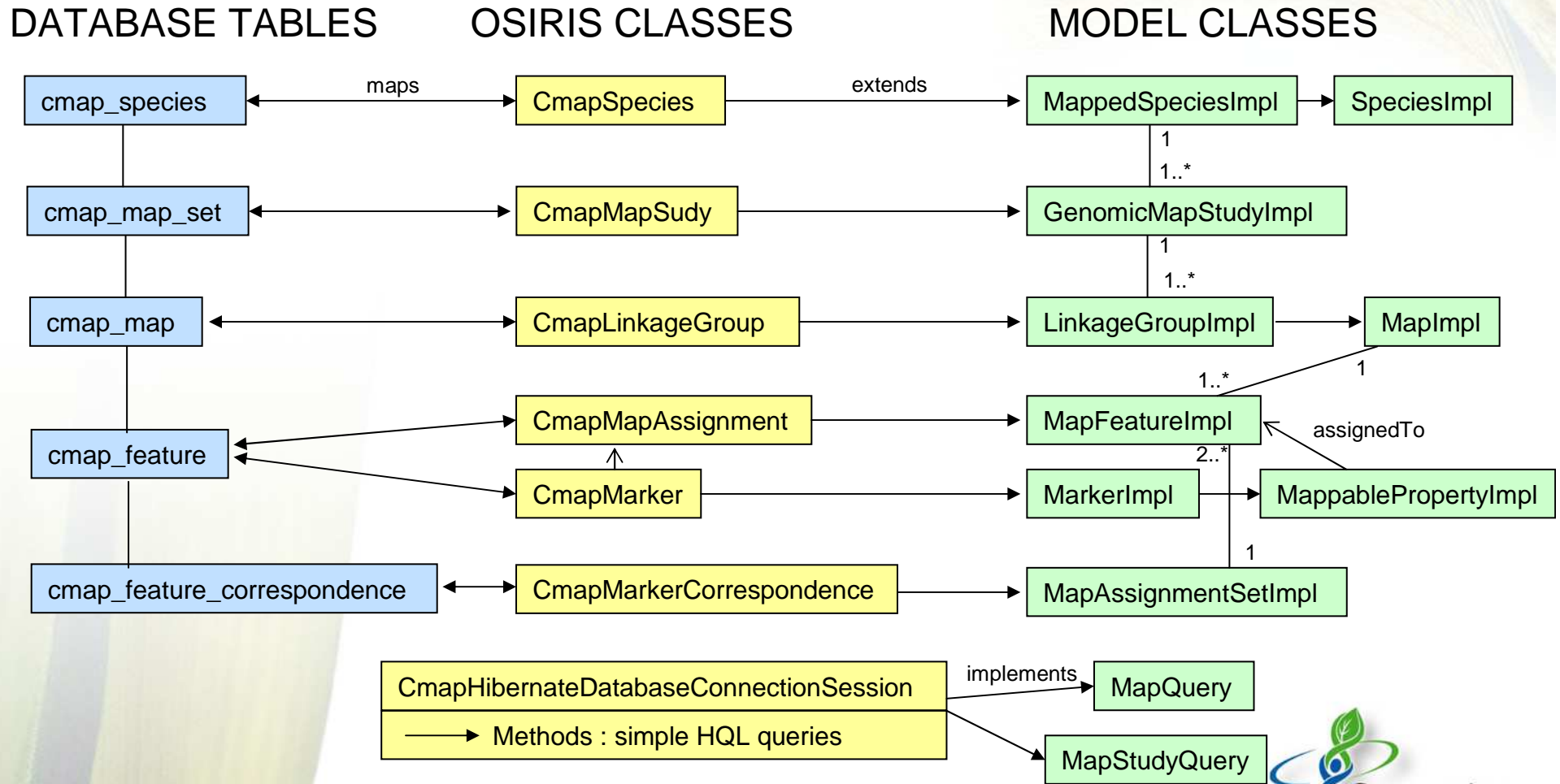
```
Gene getGene(Identifier geneName)
NucleotideSequence getSequence(Gene gene)
Set searchGeneByKeyWord(String name)
Set getGeneNamesWithWildcard(String name)
Set getGenesOnChromosome(String chromosomeNumber)
Set getGenesOnChromosomeAtPositions(String chromosomeNumber,String start, String stop)
Set getGenes(String keyword, String geneName, String chromosome, String start, String stop)
Gene getGene(String name)
String getInfoAccession(String database, String accession)
```

● QTLQuery, SequenceQuery...



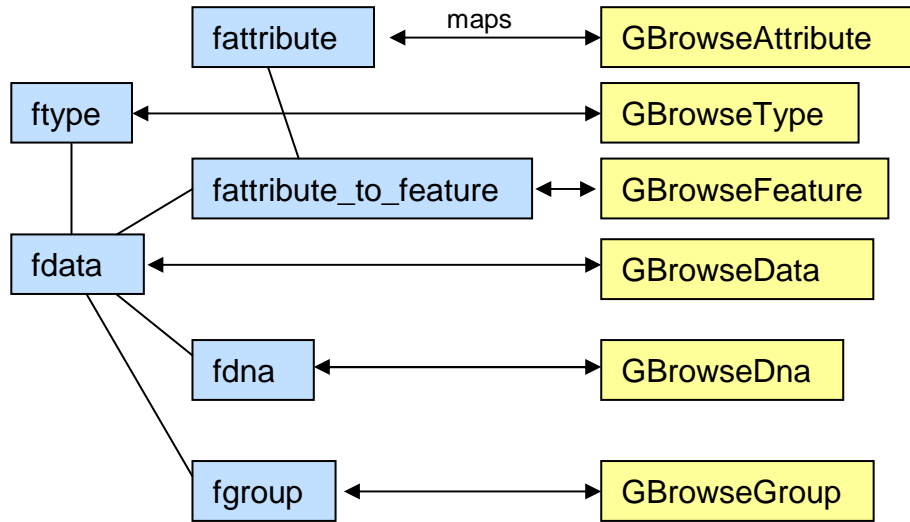
➤ Hibernate : Object Relational Mapping (ORM) Tool

- Enable to map from Java classes to database tables
- CMAP



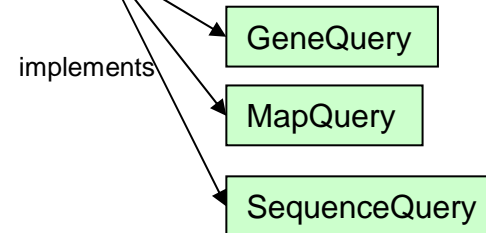
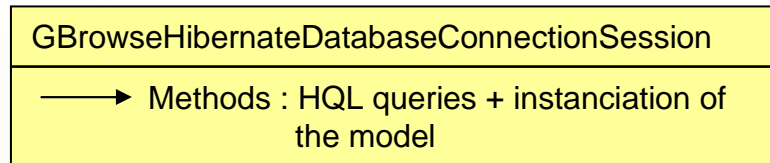
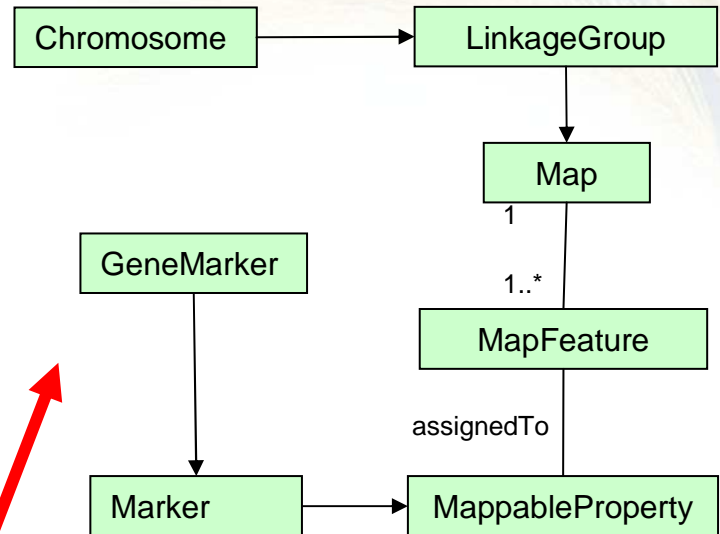
● GBrowse

DATABASE TABLES



OSIRIS CLASSES(POJOs)

MODEL CLASSES



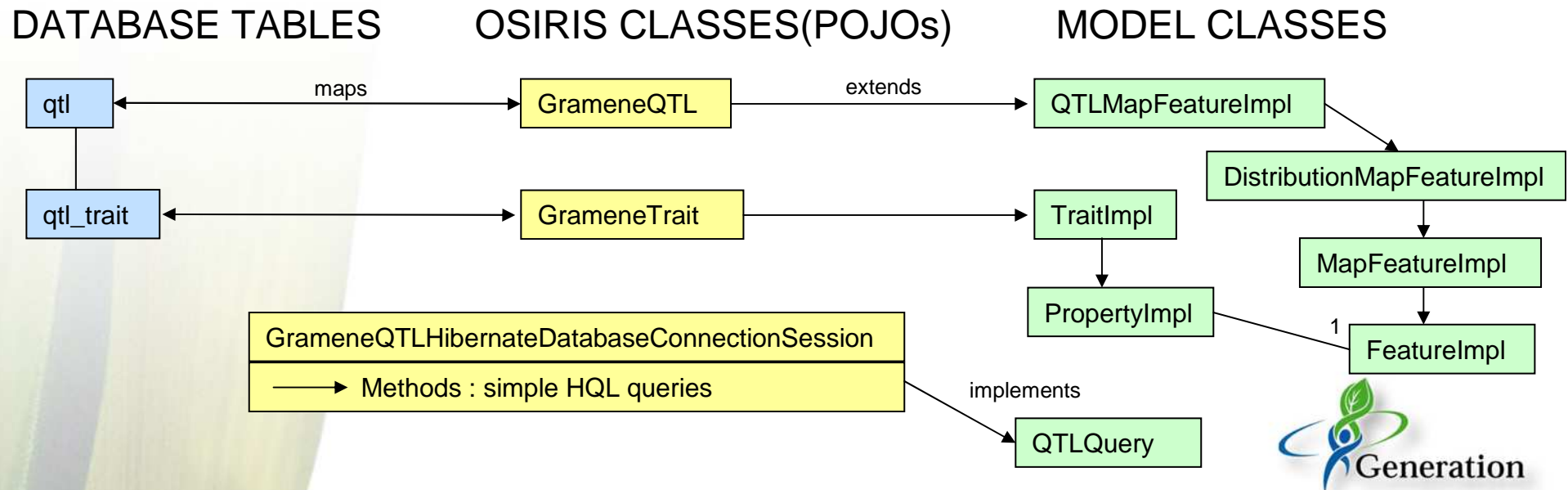
```

<hibernate-mapping>
  <class name="org.generationcp.datasources.db.hibernate.gbrowse.GBrowseChromosome">
    <subselect>
      SELECT g.gid, g.gname
      FROM fgroup g
      join fdata d on d.gid = g.gid
      join ftype t on t.ftypeid = d.ftypeid
      where g.gclass = 'Sequence' and t.fsource = 'chromosome'
    </subselect>
    <synchronize table="fgroup"/>
    <synchronize table="fdata"/>
    <synchronize table="ftype"/>
    <id name="id" type="int" column="g.gid">
      <generator class="assigned"/>
    </id>
    <property name="label" column="g.gname" type="string"/>
  </class>
</hibernate-mapping>

```

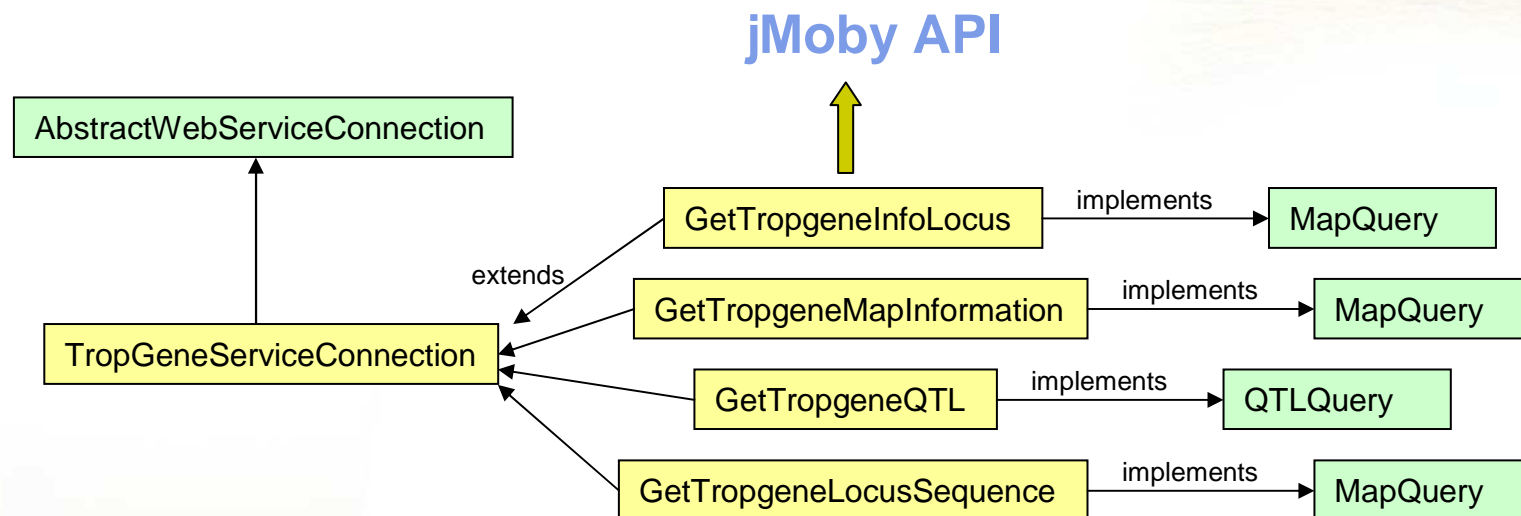


● QTL database of Gramene



➤ Web services

- Biomoby Web services



- EBI web services

DbFetch

➤ Biomoby datatypes proposal for Genotype/Mapping

