



The Model Web (GEO Subtask AR-09-02d)

**GEO Architecture and Data Committee Meeting
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Why a “Model Web”?

The Modeller's Condition

**Its hard to make predictions,
particularly about the future**

**How can predictive capabilities be
improved?**

- Create new models
or
- Improve existing models
or
- Increase model interoperability and access



- Create new models
- or
- Improve existing models
- or
- Increase model interoperability and access

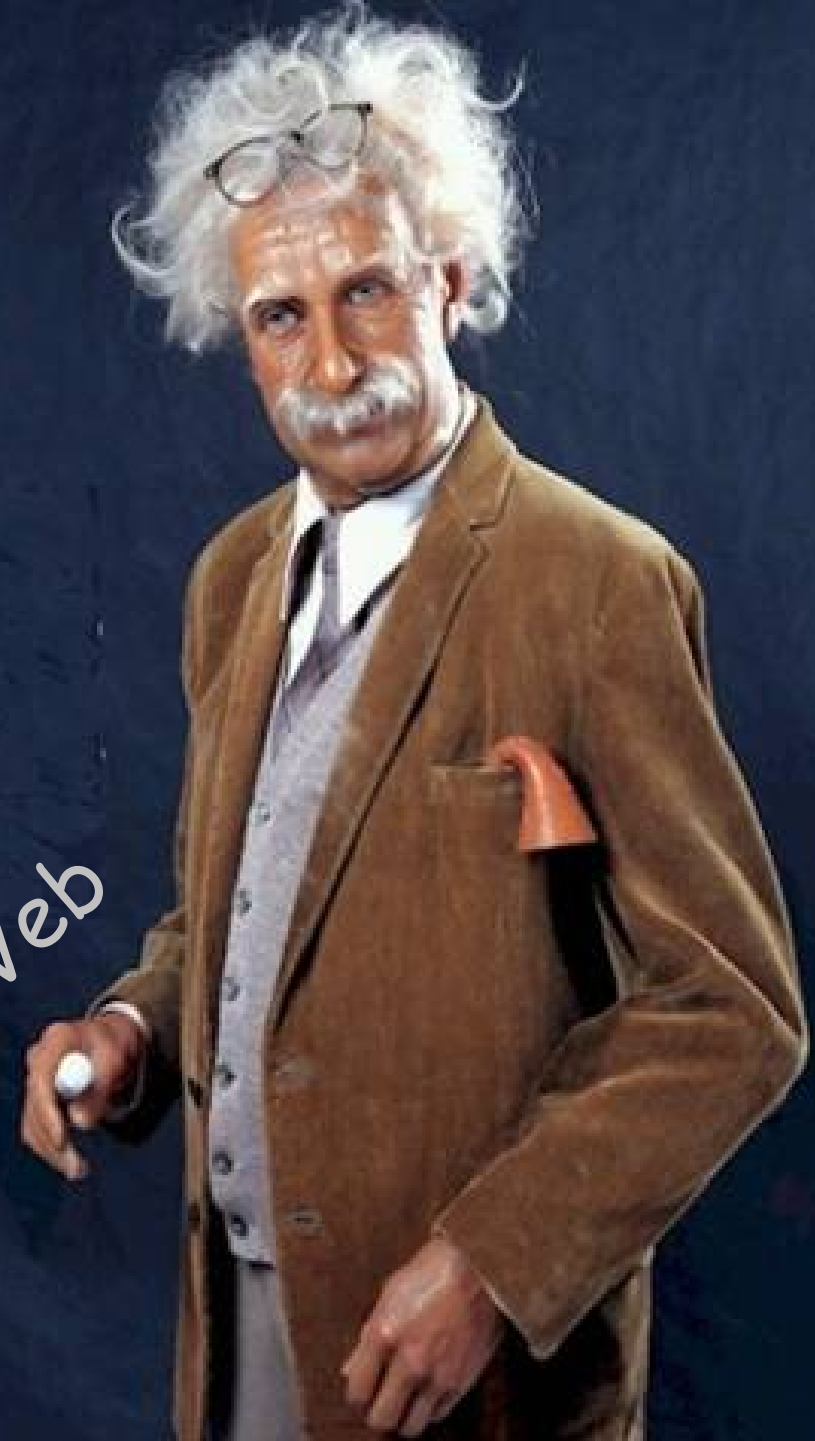
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Models as
Services



- Create new models
- or
- Improve existing models
- or
- Increase model interoperability and access

Models as Services

Model Web



Current situation

Model output

- Not regularly shared
- Rarely available as a web service



Models

- Code sometimes available
 - Helpful only for software-oriented users
- But very rarely available as a service

In other words...

Sharing and access are constrained

- **Limits the value extracted from the models**
- **Limits ability to answer important questions**

Solutions

1. Community modelling

- **Community-directed, collaborative approach to problems requiring contributions from a distributed community of modellers**

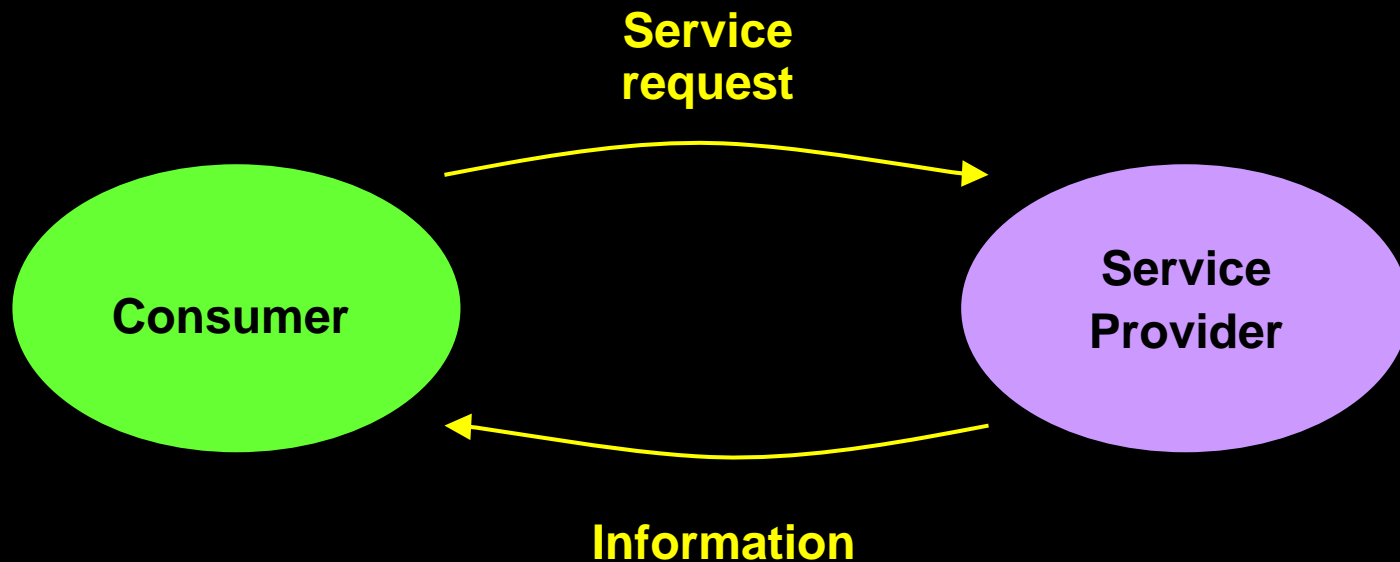
2. Shared modeling environments

- **Shared systems that can host a variety of different modellers and their models**
- **Makes model (and modeller) interaction easier**

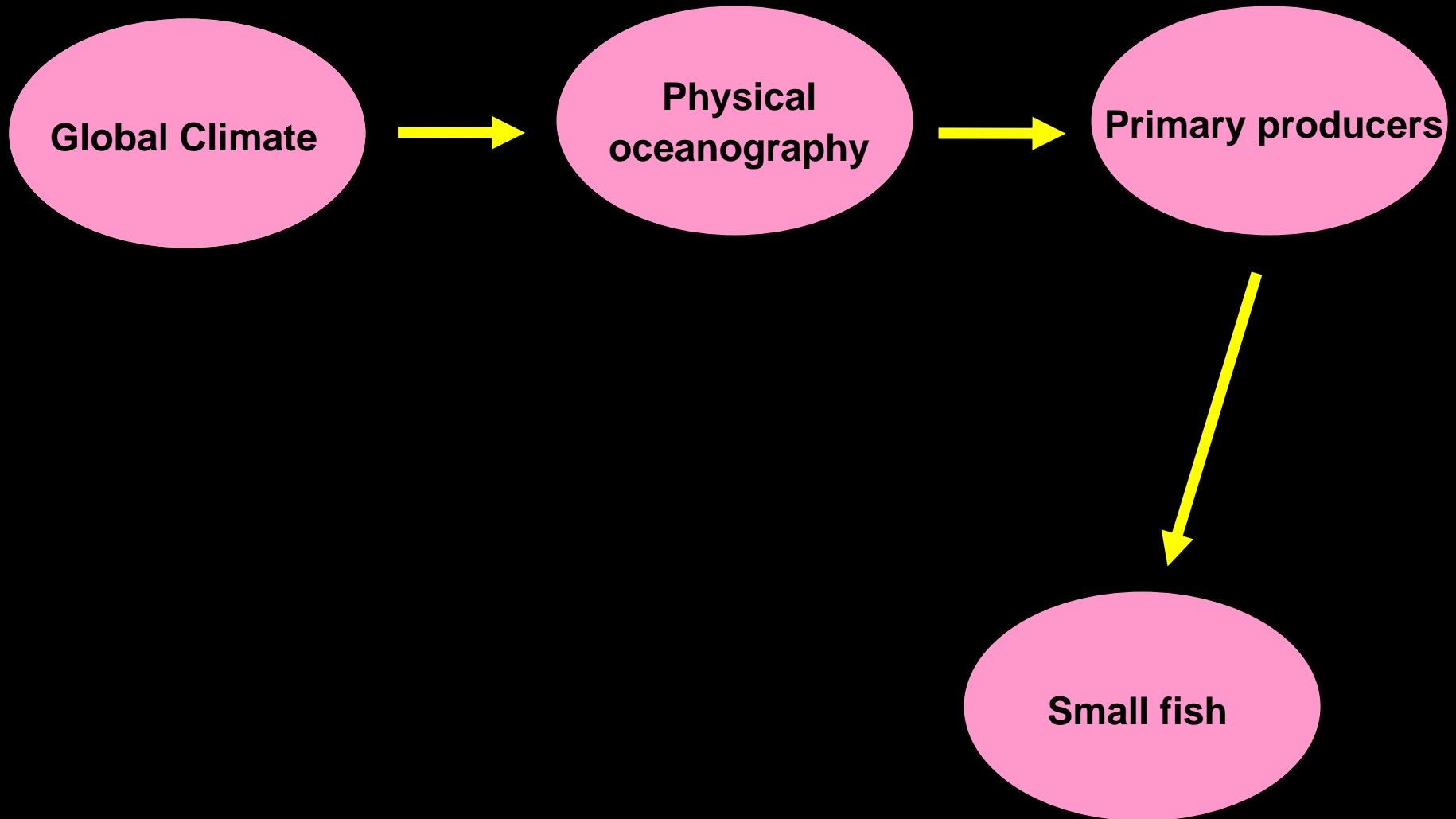
3. Models as Services...

Models as services

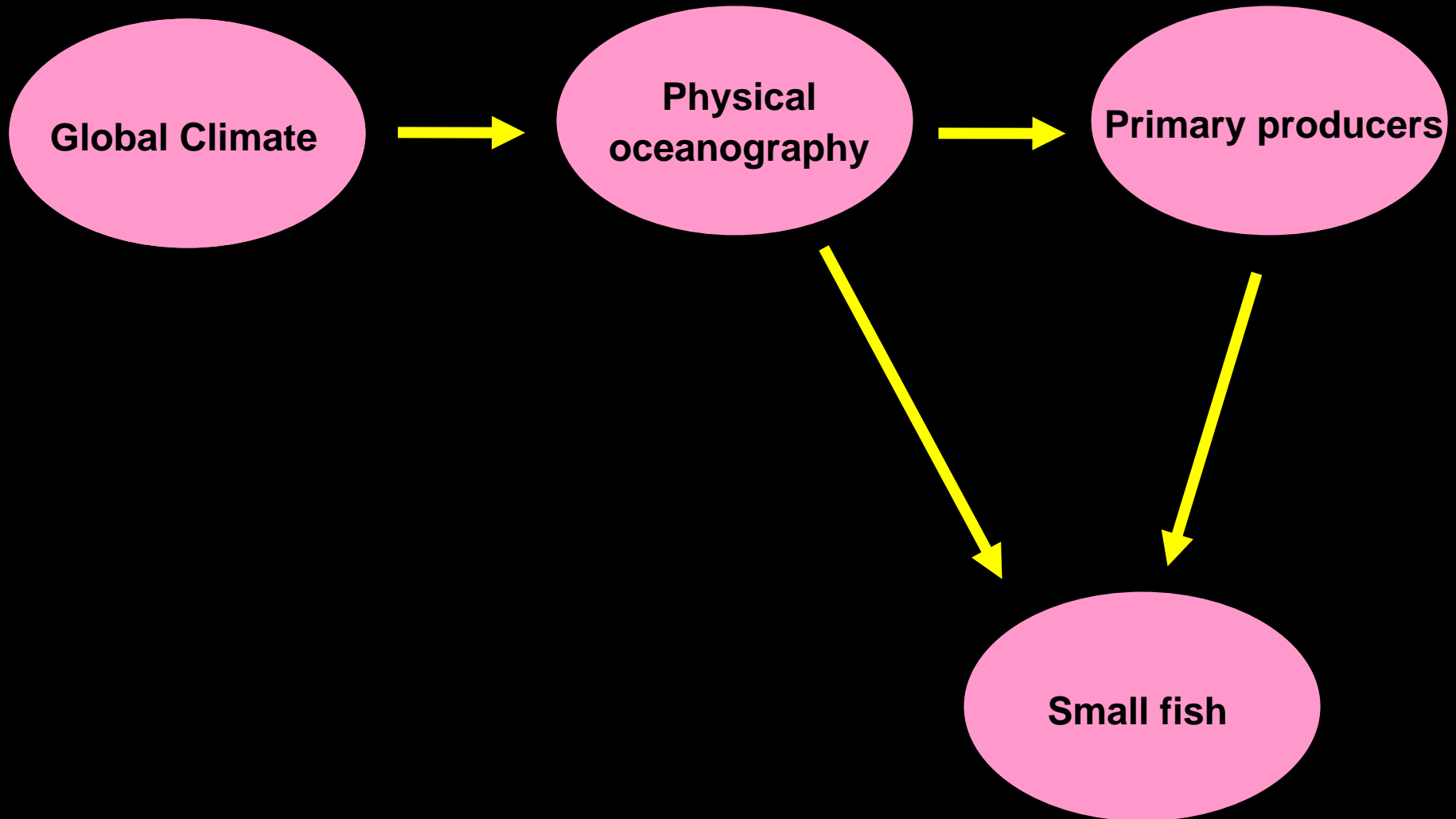
- ❑ **Service: provision of a product upon request**
- ❑ **Service Oriented Architecture**



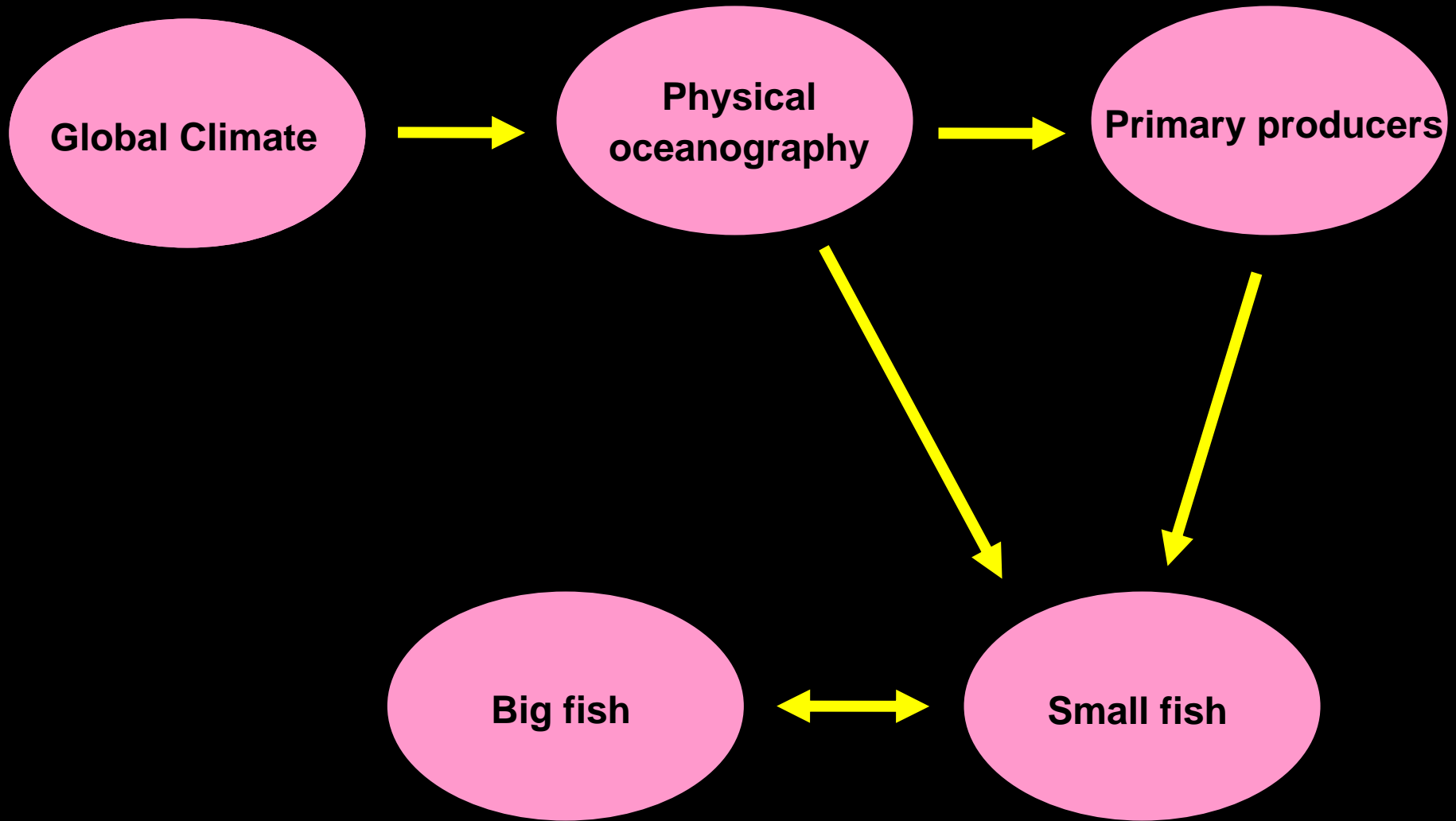
Models as services



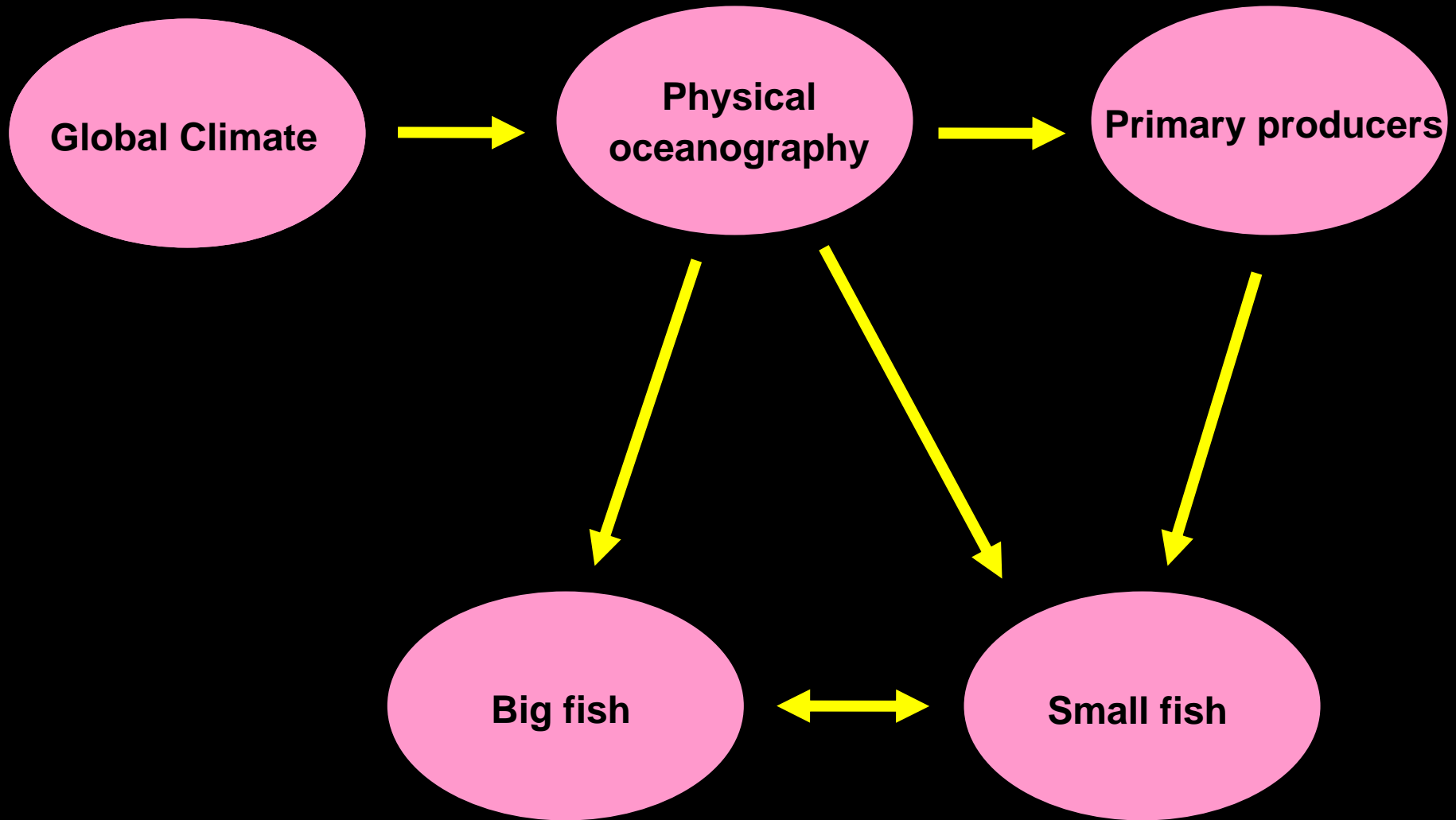
Models as services



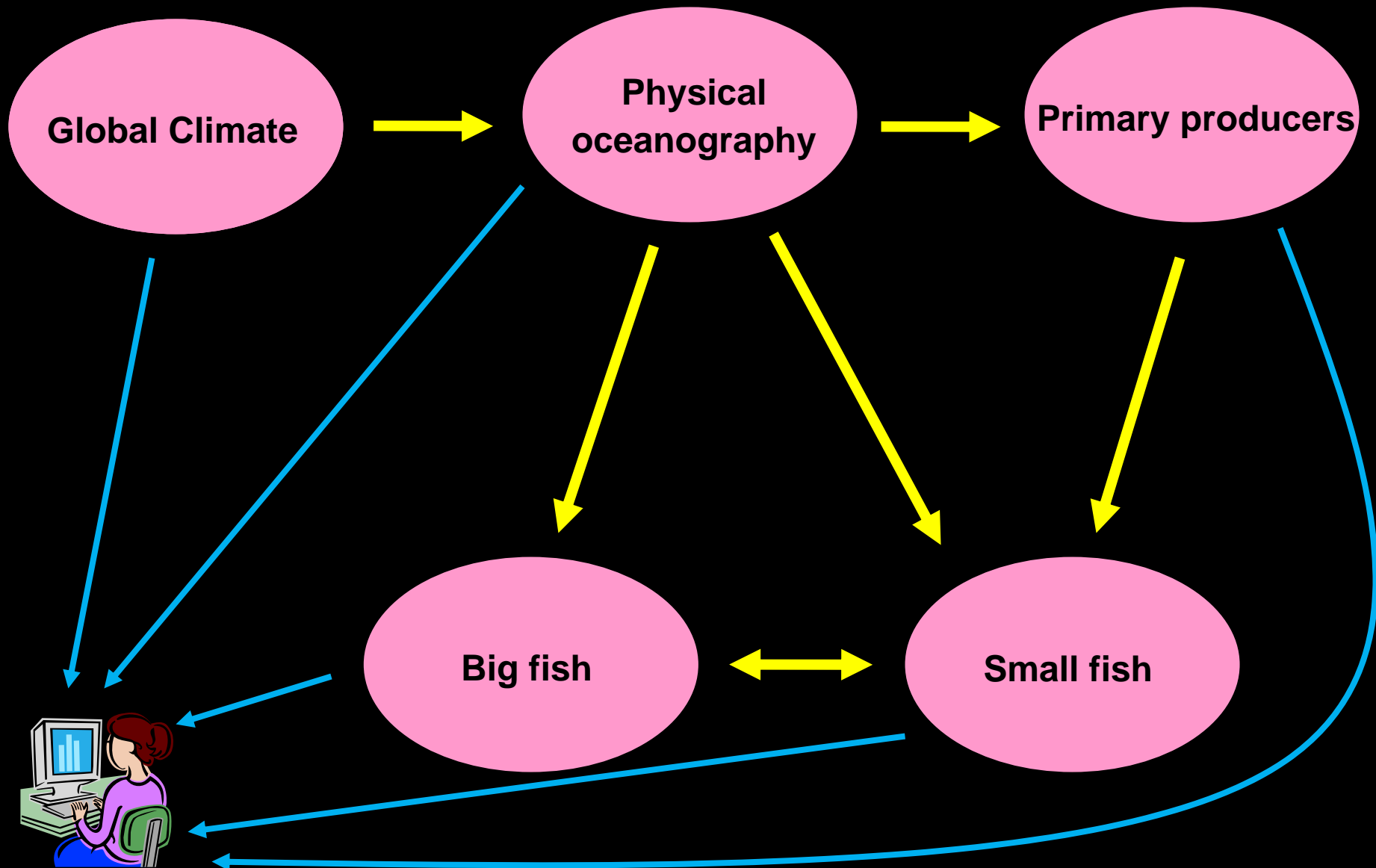
Models as services



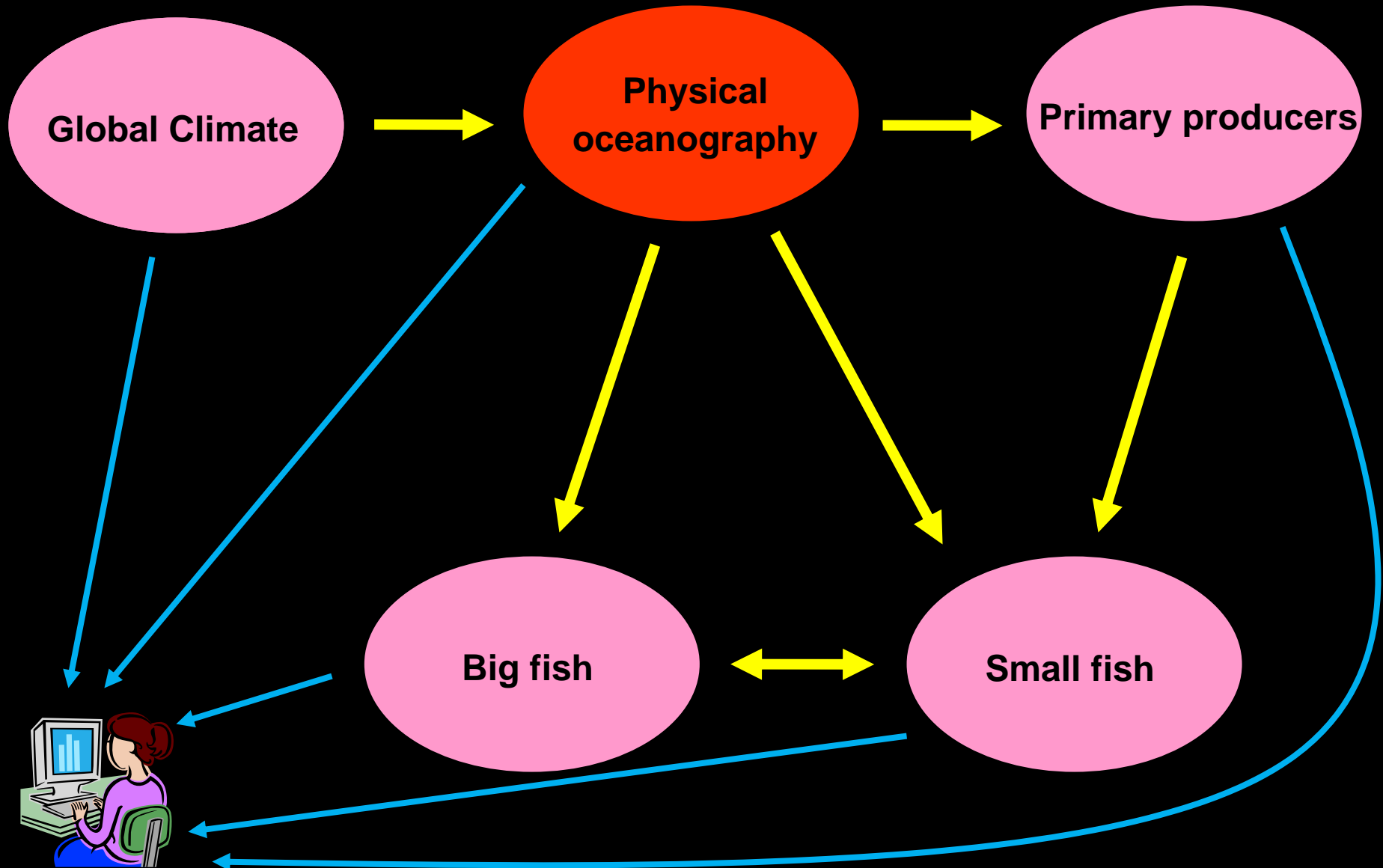
Models as services



Models as services



Keystone models



Benefits of “models as services”

- More sharing / improved access
 - Less reinvention
 - Facilitates new science
 - Enhances integrated management and decision support
-
- Over time, a Model Web gradually develops...

Model Web: 10+ year vision (1/2)

- ❑ **Distributed network of interoperating models**
- ❑ **Communication via web services**
- ❑ **Grows organically within framework of broad goals and data exchange standards**

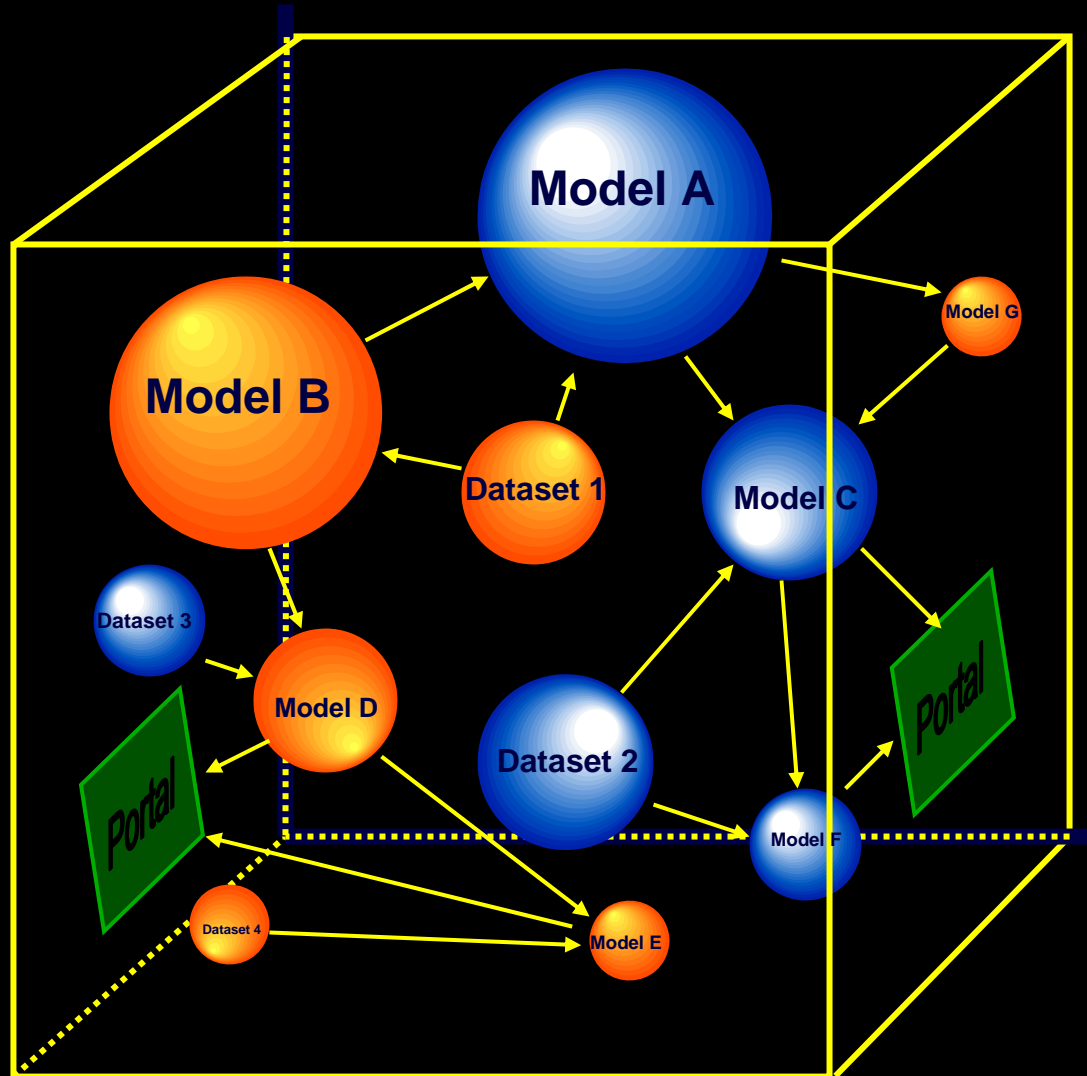


Model Web: 10+ year vision (2/2)

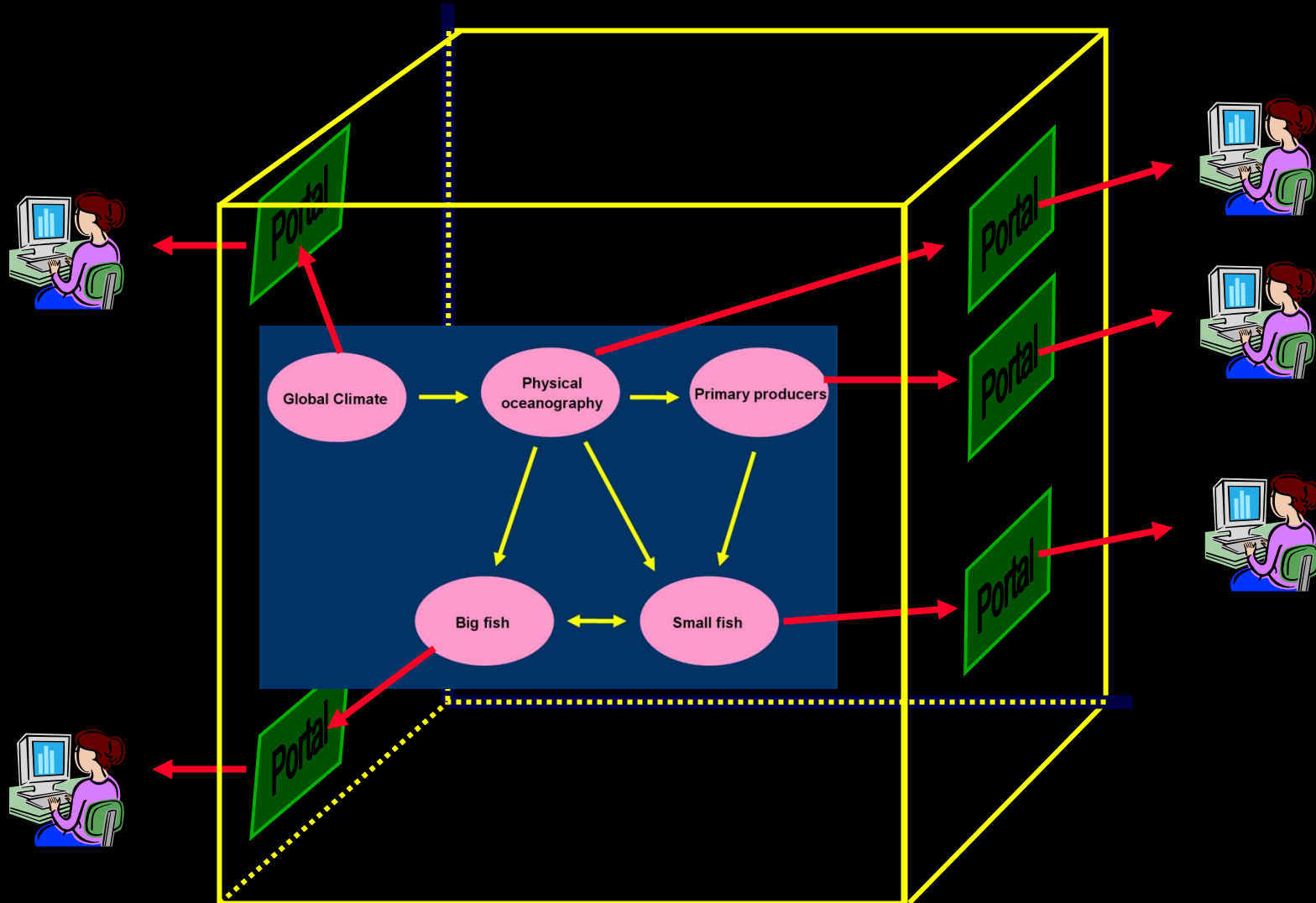
- Models maintained, operated, served independently**
- Scope includes physical, chemical, biological, ecological processes**
- Web access provided to researchers, managers, public...**



Model and data space



Real model and data space



Status

- Broadening approach slightly to include “Shared modeling environments”**
 - **Related activity**
- White paper and workshop delayed**
 - **Competing activities on Model Web POC’s time (Geller), and funding**
- New plan**
 - **White paper: Dec 09**
 - **Workshop planning: Nov 09 – Jan 09**

Status: Related projects

□ EuroGEOSS (EC FP7)

- **Work Package 2 (lead: Stefano Nativi)**
- **“Multidisciplinary Interoperability”**
- **Includes support for development of multi-model systems**

□ Status

- **Funded May 2009 to June 2012**
- **Collecting requirements from:
Biodiversity, Forestry, and Drought SBA
Communities**

Status: Related projects

□ “UncertWeb” (EC FP7)

- **Work Package 2 (lead: Stefano Nativi)**
- **“Chaining and discovery services for models under uncertainty”**
- **Use scenarios considered:**
 - **Biodiversity and climate change**
 - **Land use, agriculture, policy & climate change**
 - **Local air quality forecasting**
 - **Individual activity in the environment**

□ Status

- **Proposal now in negotiation phase to determine scope and funding levels (phase ends 4 Nov 2009)**

Thank you

