a4a MSE coding contract (aka API)
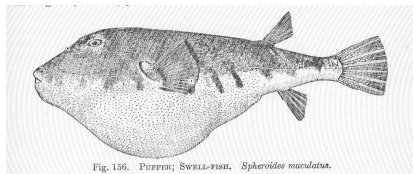
Course on Management Strategies Evaluation with FLR and a4a
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Fig. 156. PUFFER; SWELL-FISH. *Spheroides maculatus.*

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Joint Research Centre
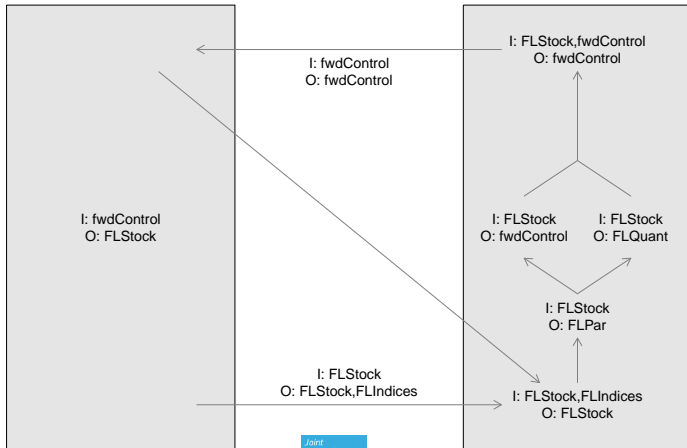European Commission

attribution: Hugh McCormick Smith

Application programming interface (API)

Contract between the client (module method) and the server (mp method), such that if the client makes a request in a specific format, it will always get a response in a specific format.

Application programming interface (API)

➔ input/output model
➔ interface with modules (mseCtrl)
➔ naming convention

input/output model

input/output model

Note that 'args' and 'tracking' will always be passed to the module functions.

mseCtrl

```
showClass("mseCtrl")

## Class "mseCtrl" [package "mse"]
##
## Slots:
##
## Name:     method      args
## Class: function      list
##
## Known Subclasses: "FLoem", "FLiem"


mseCtrl()


## Method:
## function ()
## NULL
## <bytecode: 0x55f2db1614c8>
## Arguments:
## list()
```

naming convention

Part of the contract is the naming convention for objects to be carried out across modules during the MSE loop.

stk : FLStock

idx : FLIndices

genArgs : list with generic arguments

tracking : FLQuant with information about each year events

ctrl : fwdControl object

Next

Hands-on !

available modules

- **OM**

  fwd.om : OM projection

  hyperstability.fb : OM fleet dynamics with hyperstability

- **OEM**

  perfect.oem : OEM that passes OM directly to EST, used mostly for development

  sampling.oem : OEM that adds uncertainty to catch at age and abundance indices, replicates common sampling process

- **Estimator**

  length.est : Estimator of mean length in the catch

  perfect.sa : Estimator that passes stk directly, used mostly for development

  sca.sa : Estimator that applies a4a sca default models

available modules

▶ Parametrization of HCR

movingF.phcr : hcr paramerization that estimates reference points every x years like benchmark

indicator.phcr : hcr parametrization for indicator (data limited)

▶ HCR

movingF.hcr : hcr that tries to achieve a F target which changes with time

fixedF.hcr : HCR that tries to achieve a specific F target

ices.hcr : ICES hcr

indicator.hcr : hcr using indicator (data limited)

available modules

- Implementation system

    tac.is : output implementation system that controls catches, mimics ICES short term forecast to set TAC in the following year

    effort.is : input implementation system

    indicator.is : implementation system using indicator, changes decision based on ratio between indicator and reference

- Technical measures

    mpa.tm : technical measures mimicking changes in selection pattern intended by using MPA

- IEM

    noise.iem : implementation error model that adds random noise to management objective based on statistical distribution