

Potentialities

A potentiality is a sequence of states that a system could pass through. It also encodes the potential change of state if it communicates with the exterior world.

```
open import PredP
open Pred

module PotP (Msg :  $\mathcal{U}^+$ )  $\mathcal{V}$  (Cm : Pred (Pred Msg  $\mathcal{V}$ ) ( $\mathcal{U} \sqcup \mathcal{V}$ ))  $\mathcal{W}$  (Cp : Pred ( $\Sigma$  Cm)  $\mathcal{W}$ )
where

  open import FCP { $\mathcal{W} = \mathcal{U} \sqcup \mathcal{V}^+ \sqcup \mathcal{W}^+$ } Msg  $\mathcal{V}$  Cm

  open  $\Sigma$ Pred
```

BSet is a predicate on the messages that are received or accepted by a system.

&PSet is an abstract structure of the system, that will be used to check if the system reduces.

```
BSet =  $\Sigma$  Cm
&PSet =  $\Sigma$  Cp
```

```
open import FunctorP
open import Final-CoAlgebraP

Fpot : Functor ( $\mathcal{U} \sqcup \mathcal{V}^+ \sqcup \mathcal{W}^+$ )
Fpot =
  ( $\lambda X \rightarrow X \times \&PSet \times FC X$ )
, ( $\lambda f (x, \&ps, ((mp, fm), (ap, fa))) \rightarrow$ 
    $f x, \&ps, (mp, \lambda x c \rightarrow f (fm x c)), (ap, \lambda x c \rightarrow f (fa x c))$ )
, ( $\lambda f g x \rightarrow refl$ )
,  $\lambda x \rightarrow refl$ 

Pot = Final-CoAlgebra Fpot
```