HMA-FO Project Meeting

ESRIN / Frascati, 2009-09-18
(Part of) The OGC Quilt

- WCS-T
- WCS
- WCPS
- CS-T
- CQL
- CS-W

Data flow:
- Feature (FE) to WFS-T, WFS
- Coverage to WMS
- Meta to CS-W

Layers:
- Feature (FE)
- Coverage (WMS)
- Meta (CQL, CS-T)

Operations:
- WFS-T
- WCS-T
**WCPS**

- Standard for multi-dimensional raster language
  - Web Coverage Service (WCS) & Web Processing Service (WPS) embeddings

- "SQL for coverages": ad-hoc navigation, extraction, aggregation, analysis
  - Formal mathematical evaluation model
  - Expressive power: image & signal processing, statistics …except recursion → safe

```python
for cov1 in (coverageList),
    ...
    covn in (coverageList)
    [ where condition(cov1,...,covn) ]
return processingExpr(cov1,...,covn)
```
"From MODIS scenes M1, M2, and M3, the absolute of the difference between red and nir, in HDF-EOS"

```python
for c in (M1, M2, M3):
    return encode(abs(c.red - c.nir), "hdf")
```
"From MODIS scenes M1, M2, and M3, the absolute of the difference between red and nir, in HDF-EOS"

- ...but only those where nir exceeds 127 somewhere

```python
for c in (M1, M2, M3)
    where
        some( c.nir > 127 )
    return
        encode
            abs( c.red - c.nir ),
            "hdf"
```

(hdf$_A$, hdf$_C$)
"From MODIS scenes M1, M2, and M3, the absolute of the difference between red and nir, in HDF-EOS"

- ...but only those where nir exceeds 127 somewhere
- ...inside region R

```python
for c in (M1, M2, M3), r in (R)
    where
        some(nir > 127 and R)
    return
        encode
            abs(c.red - c.nir),
            "hdf"
```

(hdf\textsubscript{A})
for $A$ in ( A ),
    $B$ in ( B )
return encode(
    ( ( $A$.nir - $A$.red) / ($A$.nir + $A$.red) )
    - ( ( $B$.nir - $B$.red) / ($B$.nir + $B$.red) )
) [ x(x1:x2), y(y1:y2) ],
"tiff"
)
for $A$ in (A)
return encode(
  ( 
    ($A.nir - $A.red) / ($A.nir + $A.red) 
  )
  [x(x1:x2), y(y1:y2)],
  "array" )

for $B$ in (B)
return encode(
  ( 
    ($B.nir - $B.red) / ($B.nir + $B.red) 
  )
  [x(x1:x2), y(y1:y2)],
  "array" )