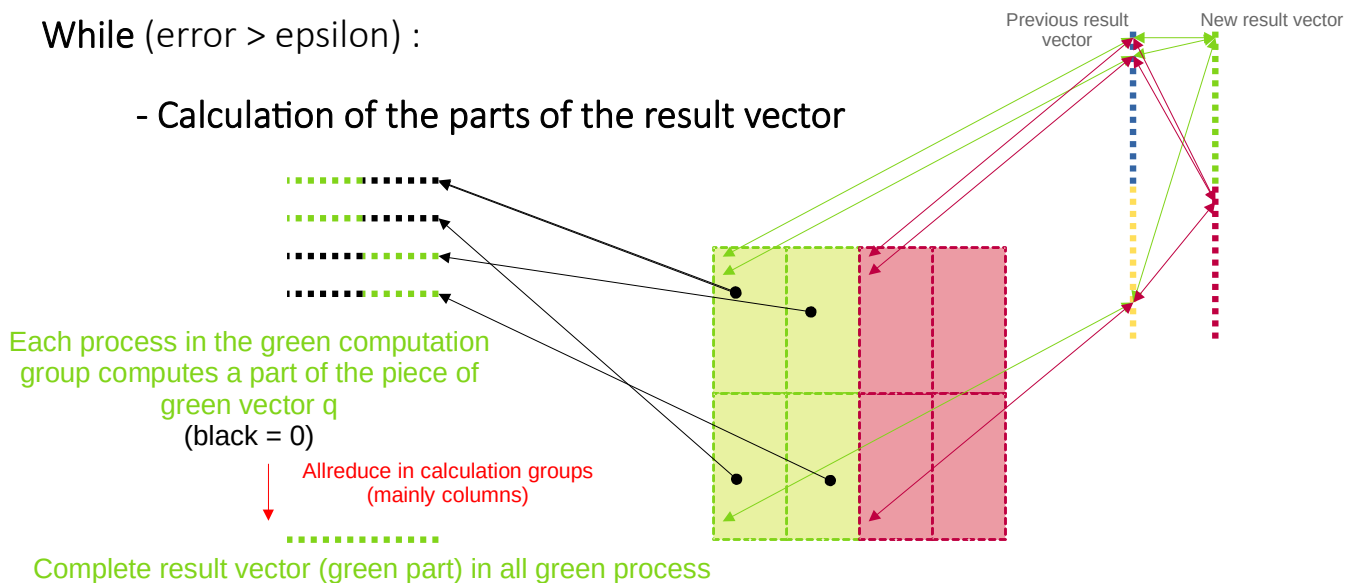# Summary of the PageRank algorithm (performed with non-normalized A)

Step by step

While (error > epsilon) :
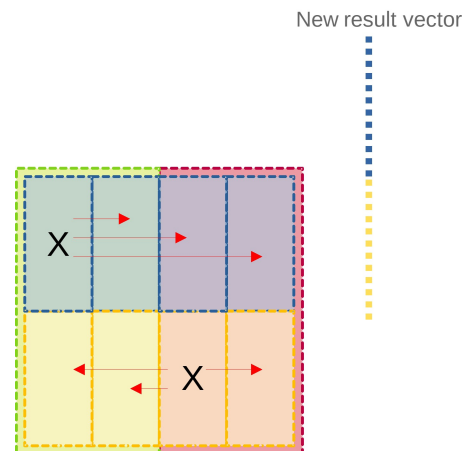
- Calculation of the parts of the result vector
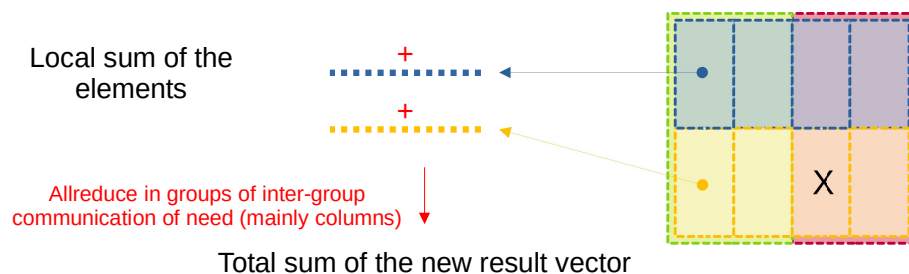
Previous result vector

New result vector

Each process in the green computation group computes a part of the piece of green vector q
(black = 0)

Allreduce in calculation groups (mainly columns)

Complete result vector (green part) in all green process

- Communication of the new parts of result vector to the processes that need them (need groups), for the next iteration

New result vector

The "root" processes ("X") communicate their part of result vector to the others processes of the same row

Broadcast on the row blocks

X

X

- Normalization of the new result vector (need the total sum)

Local sum of the elements

+

+

Allreduce in groups of inter-group communication of need (mainly columns)

X

Total sum of the new result vector

Dividing each element of the new result vector by the total sum

- Calculation of the error (new vector - old vector)

Local sum of elements of new vector – old vector

Allreduce in groups of inter-group communication of need (mainly columns)

EndWhile

Error = total sum