```
                    ┌─────────────────────────────────┐
                    │  Input s = 0, M_s, r_simul      │
                    └─────────────────────────────────┘
                                    │
         No                         ▼
    ┌──────────────────────  |M_s| > 1  ◄──────────────────────────┐
    │                             │                                 │
    │                             │ Yes                             │
    │              ┌──────────────────────────────────┐            │
    │              │ n_target = ⌈r_simul · |M_s|⌉,    │   ┌─────────────────────────┐
    │              │ n_event = 0                       │   │ Merge all the pairs of  │
    │              └──────────────────────────────────┘   │ areas;                  │
    │                             │                        │ free all the blocked    │
    │                             ▼                        │ areas;                  │
    │                   n_event < n_target and    No       │ increase s by n_event;  │
    │          ┌──────  free areas exist  ───────────────► │ create M_s              │
    │          │                  │                        └─────────────────────────┘
    │          │                  │ Yes
    │          │                  ▼
    │          │   ┌──────────────────────────────────┐
    │          │   │ Select the least important area  │
    │          │   │ a_least from the free areas      │
    │          │   └──────────────────────────────────┘
    │          │                  │
    │          │                  ▼
    │          │   ┌──────────────────────────────────┐
    │          │   │ Find the most compatible         │
    │          │   │ neighbor a_nbr                   │
    │          │   └──────────────────────────────────┘
    │          │                  │
    │  ┌────────────┐   No         ▼
    │  │ block      │◄──────  a_nbr is free
    │  │ a_least    │             │
    │  └────────────┘             │ Yes
    │          ▲                  ▼
    │          │   ┌──────────────────────────────────┐
    │          │   │ Define an event of a_least and   │
    │          │   │ a_nbr; increase n_event by 1     │
    │          │   └──────────────────────────────────┘
    │          │                  │
    │          │                  ▼
    │          │   ┌──────────────────────────────────┐
    │          └───│ Block surrounding neighbors of   │
    │              │ a_least and a_nbr                │
    │              └──────────────────────────────────┘
    │                             │
    │                             ▼
    │              ┌─────────────────────────────────────────┐
    └─────────────►│ Output merging events of all the steps  │
                   └─────────────────────────────────────────┘
```

Flowchart text content:

- **Input** $s = 0$, M_s, r_{simul}
- $|M_s| > 1$ — No / Yes
- $n_{target} = \lceil r_{simul} \cdot |M_s| \rceil$, $n_{event} = 0$
- $n_{event} < n_{target}$ and free areas exist — Yes / No
- Select the least important area a_{least} from the free areas
- Find the most compatible neighbor a_{nbr}
- a_{nbr} is free — No / Yes
- block a_{least}
- Define an event of a_{least} and a_{nbr}; increase n_{event} by 1
- Block surrounding neighbors of a_{least} and a_{nbr}
- Merge all the pairs of areas; free all the blocked areas; increase s by n_{event}; create M_s
- Output merging events of all the steps

(a) $\longrightarrow$ **(b)**

tGAPTopolObject

+ imp_low: double
+ imp_high: double
+ state_low: integer
+ state_high: integer

Face

+ face_id: integer
+ imp_own: double
+ feature_class: integer
+ area: numeric
+ pip_geometry: point
+ mbr_geometry: box2d

+ getGeometry(): polygon

Edge

+ edge_id: integer
+ start_node_id: integer
+ end_node_id: integer
+ left_face_id_low: integer
+ right_face_id_low: integer
+ left_face_id_high: integer
+ right_face_id_high: integer
+ geometry: polyline

FaceHierachy

+ face_id: integer
+ parent_face_id: integer

2

1..*

2

1,2

Settings

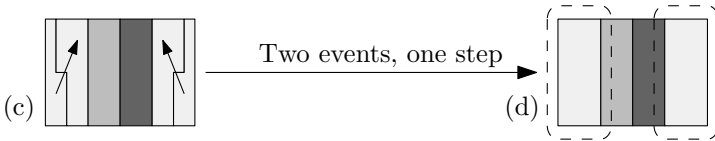Zooming factor: 1

Zooming duration (s): 1

Panning duration (s): 1

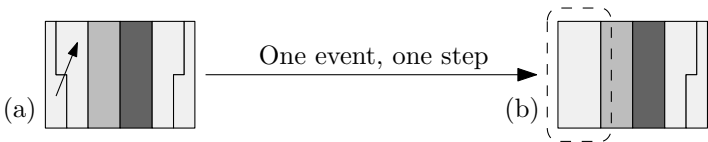Boundary width (mm): 0.2

Layers

☑ Example-7

Opacity:1

Color adapting: ☑

(a) One event, one step (b)

(c) Two events, one step (d)

Interaction settings

zooming factor

( ) 0.25   ( ) 0.5   (●) 1   ( ) 2   ( ) 4

zooming duration (short-long)

short (0s) |————[ ]————————| long (5s)

panning duration (short-long)

short (0s) |———[ ]—————————| long (5s)

Displaying settings

boundary width

line-width value (mm): 0.2

narrow |——[ ]——————————| wide

Close

Face

+ face_id: integer
+ imp_own: double
+ feature_class: integer
+ area: numeric
+ geometry: polygon
+ pip_geometry: point
+ mbr_geometry: box2d

ParentFace

+ parent_face_id: integer
+ face_id_winner: integer
+ face_id_loser: integer

1,2

1..*

tGAPTopolObject

+ imp_low: double
+ imp_high: double
+ state_low: integer
+ state_high: integer

Edge

+ edge_id: integer
+ start_node_id: integer
+ end_node_id: integer
+ left_face_id_low: integer
+ right_face_id_low: integer
+ left_face_id_high: integer
+ right_face_id_high: integer
+ geometry: polyline

1..*

2

Node

+ node_id: integer
+ geometry: point