



Serious Gaming

Training for Disaster Management

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TNO



Content

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- › Why Serious Gaming
- › Approach
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Flood Control 2015

SOLUTIONS FOR SMART FLOOD CONTROL



- Flood Control 2015 – Serious Gaming (€400k in 2010)
- Consortium: IBM, HKV, Deltares, TNO

WWW.FLOODCONTROL2015.COM



Problems with the current solution

- › Crisis Training is expensive
 - › Example: training one city (30.000 inhabitants), two teams (25 +10 persons) → required 4 hours, 8 support staff, 2 observers
 - › External costs: $\sim 10p * 10h * \text{€}100/h = \text{€}10k$ excl. scenario dev.
- › Linear scenario
 - › Deviations are not permitted





GOAL

- › Develop a serious game to improve communication between 3 organisation's teams working in the flood control domain
 - › Safety regions (*ROT*)
 - › Water management & Dike control (*Waterschappen*)
 - › National water coordination centre (*LCO*)

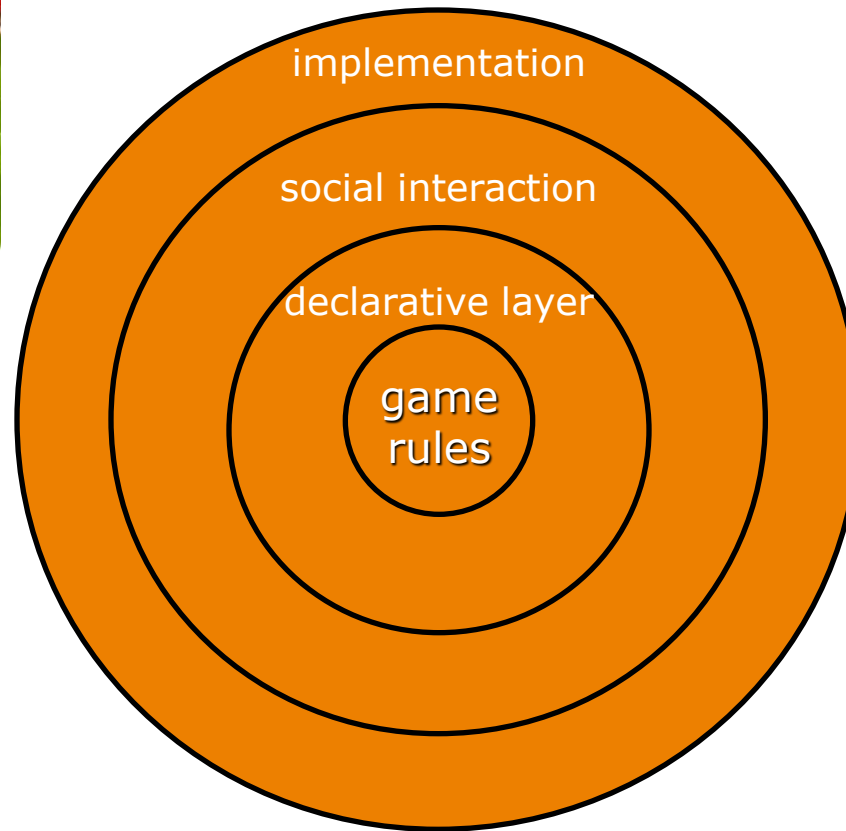


Why Serious Gaming?





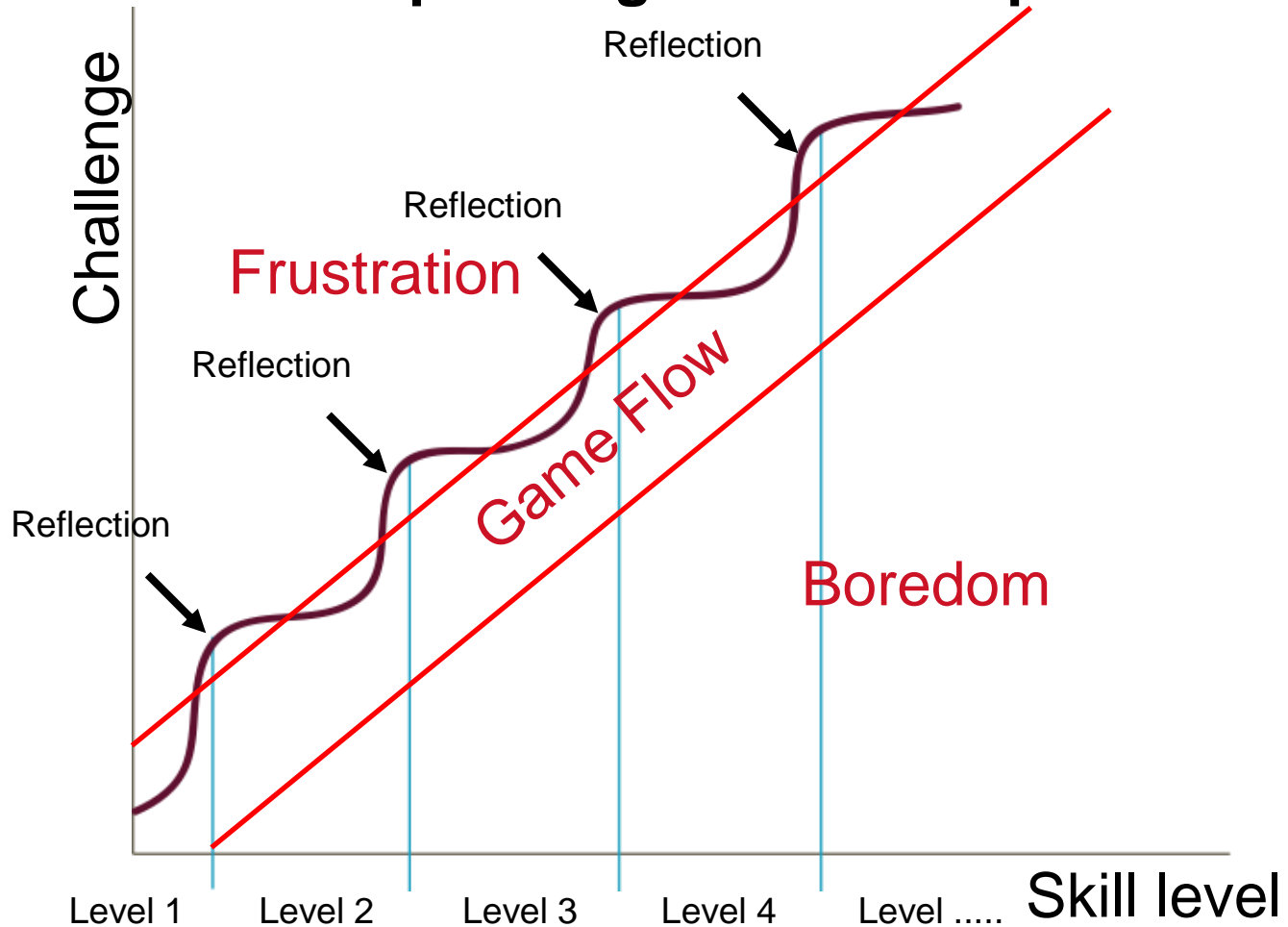
1. Game Effectivity



Based on model
of Jeroen van Mastrigt (HKU)



2. Keep the right level and pace



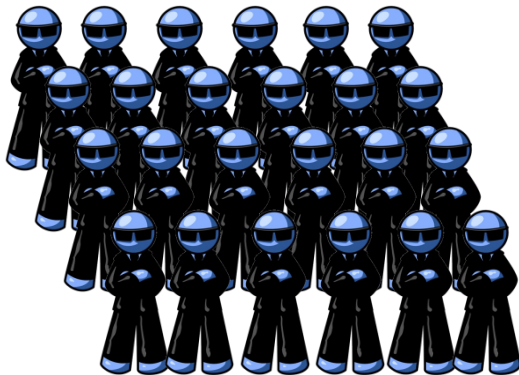


3. Practice in a safe & relevant environment



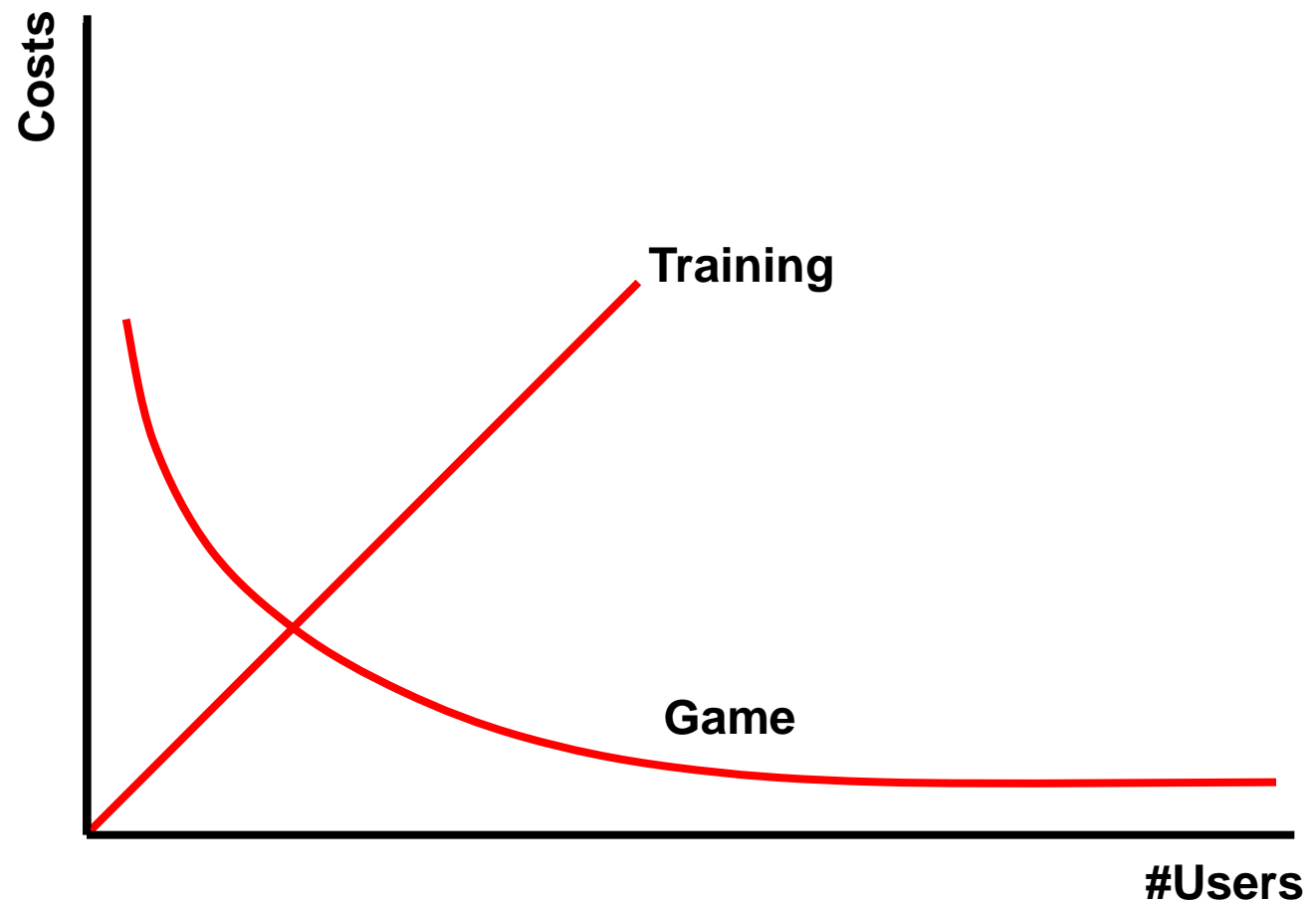


4. Efficiency





5. Scalability





6. Just in time, not just in case



1953



Approach – what we have

- › TNO
 - › HLA (DIS)
 - › IMB (HLA+1): a dedicated, simplified form of HLA
 - › Many models with IMB connector
- › IBM
 - › WebSphere process server
 - › Maximo Asset Mgmt system
- › Deltares
 - › LCO Game
- › HKV
 - › Evacuation model (SPOEL)
 - › Scenario development expertise



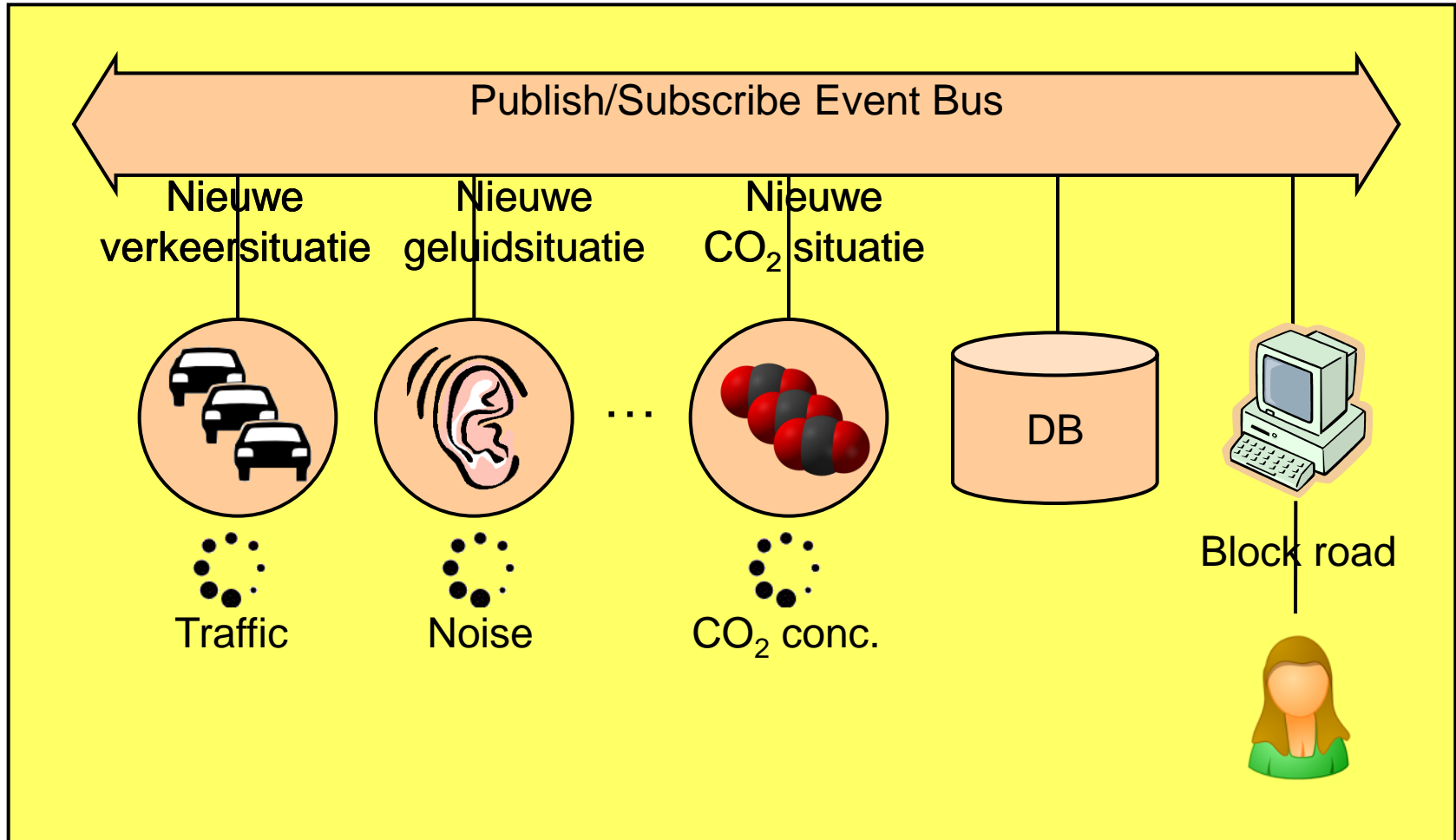
Approach – what we chose

- › Many discussions between IBM & TNO
 - › IMB bus + models

- › Reasons:
 - › Ease of Installation (5 minutes vs 2 weeks)
 - › Ease of use
 - › Future cost of ownership (freeware IMB bus vs €80k per processor for WebSphere process server)
 - › Availability of useful models / tools



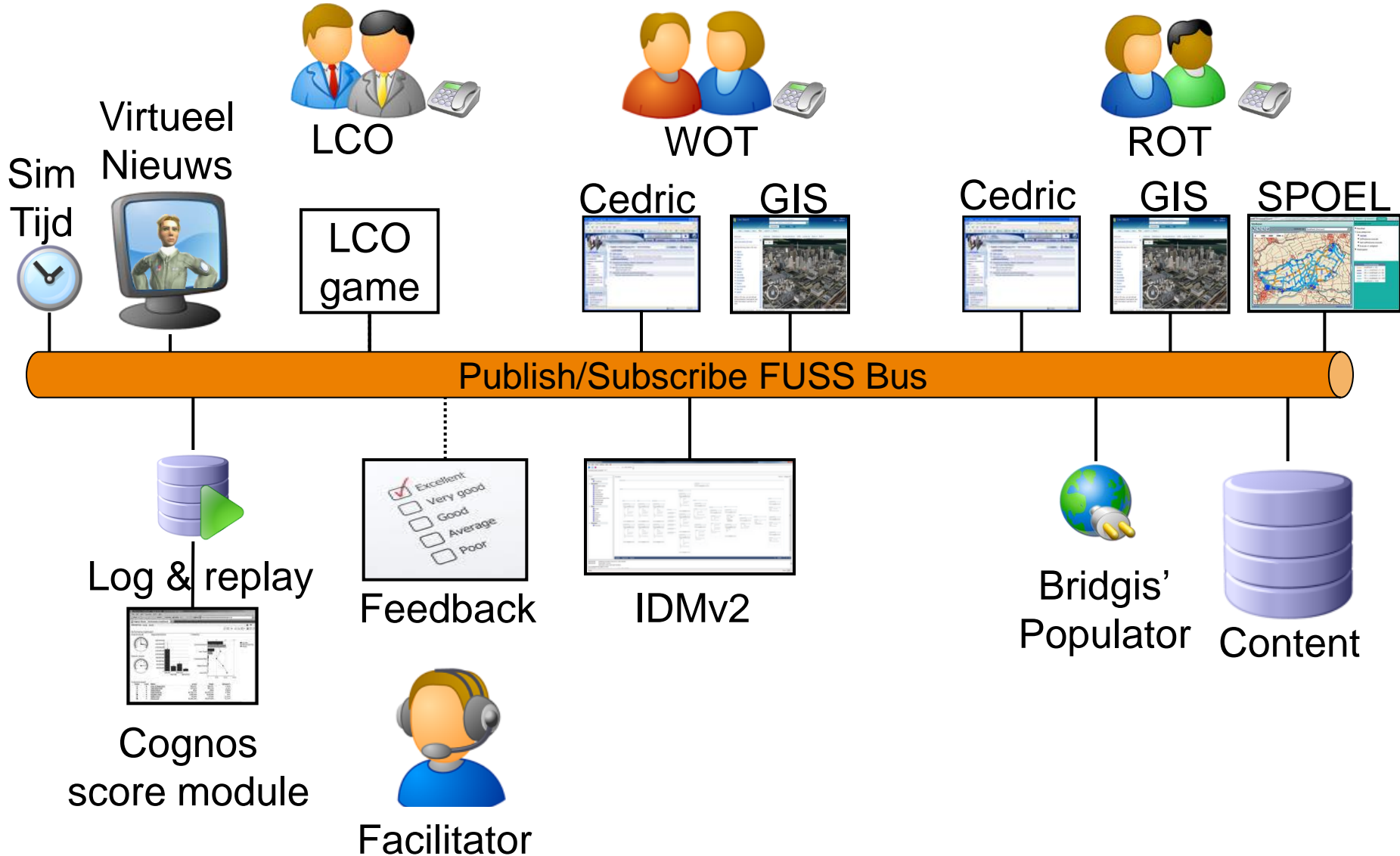
Example IMB bus: City planning with Urban Strategy





KISS IMB Bus

```
imbClient = new IMBClient();  
imbClient.InitializeConnection();  
imbClient.Publish("ChannelA", new XmlSerializer(typeof(Message)));  
  
imbClient.IncomingEventObject += IncomingEventObject;  
imbClient.Subscribe("ChannelB", new XmlSerializer(typeof(Message)));  
...  
private void IncomingEventObject(string pEventName, object pObject)  
{  
    if (pObject is Message) DoSomething((Message)pObject);  
}
```





Scenario Editor & Execution Manager (SEEM)

The screenshot displays the Simulation Designer application window. The title bar reads "Simulation Designer" and the menu bar includes "File", "Edit", "Tools", "Debug", and "Help". The main workspace is titled "Simulation" and contains a complex flowchart of simulation elements. On the left, a "Search" panel lists categories: "Auto" (TimedEmail), "Simulation" (InitializeSimulation, Email, ManualSwitch, NewsFlash, TelephoneCall, VariableDelay, WaitUntilSimulationTime, RadioMessage, SendMessage, Placeholder), "Basic" (Assign, If, Parallel, Sequence, Switch, While, WriteLine), and "Flowchart" (Flowchart). The bottom status bar shows the time "08:03:00.000", the message "Initializing simulation time at 31-1-2011 8:03:00", and "Placeholder. Function: Description: Actie vanaf zijde Facilitator. Hoe handbediende trigger te doen?". The system tray at the bottom right shows "Ready" and "Zoom 100%".



Dr.ir. Erik Vullings
Serious Gaming

Simulation

- InitializeSimulation
- Email
- ManualSwitch
- NewsFlash
- TelephoneCall
- VariableDelay
- WaitUntilSimulationTime
- RadioMessage
- SendMessage
- Placeholder

Basic

- Assign
- If
- Parallel
- Sequence
- Switch <>
- While
- WriteLine

Flowchart

- Flowchart

Gemeenten

WaitUntilSimulationTime

Run at 31 - 1 - 2011 15 : 40

Drop Activity

TelephoneCall

Caller "Gemeente Rotterdam"

Callee "WOT"

CallFilePath *Path to the audio file*

Email

From "Gemeente Rotterdam"

To "ALL"

CC *Comma separated list of names*

Title "Verzoek om informatie"

Urgent

Attachments *Attachments are currently*

"verzoek om info over ..."

Simulation Designer

File Edit Tools Debug Help

1 x 31-1-2011 8:03:01

Swimlane_Act1_versie0.20 X

Search

Autocomplete Simulation

Simulation

InitializeSimulation

Email

ManualSwitch

NewsFlash

TelephoneCall

VariableDelay

WaitUntilSimulationTime

RadioMessage

SendMessage

Placeholder

Basic

Assign

If

Parallel

Sequence

Switch <>

While

WriteLine

Flowchart

Flowchart

Variables Arguments Imports

08:03:00.000 Initializing simulation time at 31-1-2011 8:03:00

08:03:00.020 Placeholder. Function:

Description: Actie vanaf zijde Facilitator.

Hoe handbediende trigger te doen?

08:03:03.463

Ready

08:03:00.000 Initializing simulation time at 31-1-2011 8:03:00

08:03:00.020 Placeholder. Function:

Description: Actie vanaf zijde Facilitator.

Hoe handbediende trigger te doen?

08:03:03.463



Experiment ROT+WOT+LCO, 16/11/2011





Conclusions

- › Positive:
 - › “Learning experience was similar to other trainings”
 - › No need for support staff, only for observing
 - › Assuming setup has been done
 - › Non-linear scenarios are supported too

- › Improvements are needed too:
 - › Telephony support was missing
 - › Preferred their own IT environment (email, tools, etc.)



Future work

- › Installation package
 - › Freeware or open source

- › Telephony support
 - › VoIP → record time, callers
 - › Optionally with checklist
 - › Optionally with chat dialogs

- › Internet version to facilitate installation time