Sink or Swim

Enhancing Pipe and Filter Diagrams

Ivan Gevirtz
ivan@alum.mit.edu
Oscar?
Yup!
Avid received an Oscar statuette representing the 1998 Scientific and Technical Award for the concept, design and engineering of the Avid Film Composer® system for motion picture editing.

http://fp.avid.com/pressroom/corp_bg.html
Sink or Swim

Enhancing Pipe and Filter Diagrams

First published: March 10, 2006

http://www.ivanism.com/Articles/SinkorSwim.html
Pipe and Filter
Media & PubSub & Streaming & Data

*disclaimer: neither complete nor to scale
*disclaimer: neither complete nor to scale
From Pipe and Filter ...
Streaming Media Example

**Live Podcaster**
- Stream
- Pusher
- Sound Card
- Codec
- Packetizer
- Network Sender
- NIC
- Sink

**Podcast Listener**
- Stream
- Pusher
- NIC
- Packet Handler
- Pool
- Jitter Buffer
- Codec
- Sound Card
- Puller
- Drain
- timing loop
- buffer
a sink

* asynch. out < buffer
(a)synch

Well
  buffer

Driver
  timing loop

Pool
  buffer

Drain
  timing loop
(a)synch

Well
buffer

Driver
Pool

buffer

timing loop

Puller
buffer

timing loop

Drain

timing loop
Sink or Swim

Enhancing Pipe and Filter Diagrams

Well < buffer
|   > Pool buffer < |
|   timing loop   |
|   Driver       > |
|   Puller < buffer |
|   timing loop   |
|   Drain        < |
|   timing loop   |

Sink or Swim
(a)synch
(a)synch

Stream > Pusher > Sink
Enhancing Pipe and Filter Diagrams

Stream > Pool buffer > Pusher > timing loop Driver > Sink or Swim > Sink
Formalized in Acme Studio
From Pipe and Filter ...

... to Sink or Swim Puzzle Pieces!

Stream > > Pusher > > Pusher > > Pusher > > Pusher > > Sink
Sink or Swim

Enhancing Pipe and Filter Diagrams

Stream > Pool buffer > Pusher > Well buffer > timing loop
< Driver buffer < Puller buffer < timing loop
< timing loop < Drain

Sink
• More Shapes:
  ○ 1 to many -- Diffusers?
  ○ many to 1 -- Combiners?
  ○ many to many -- ???

• Input to output ratios -- think gearbox!
• Blocking behavior
• Timing behavior
  ○ eg. underruns
Sink or Swim

Enhancing Pipe and Filter Diagrams

First published: March 10, 2006
http://www.ivanism.com/Articles/SinkorSwim.html

Ivan Gevirtz
ivan@alum.mit.edu
Sink or Swim

Enhancing Pipe and Filter Diagrams

Questions?

Ivan Gevirtz
ivan@alum.mit.edu
Sink or Swim

Enhancing Pipe and Filter Diagrams

Ivan Gevirtz
ivan@alum.mit.edu