

# Self-Adapting Concurrency: The DMonA Architecture

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## Target applications

## Flow based internet services and underlying system software

#### Peak loads

- S Slash-dot effect
- S Not feasible to over-provision resources

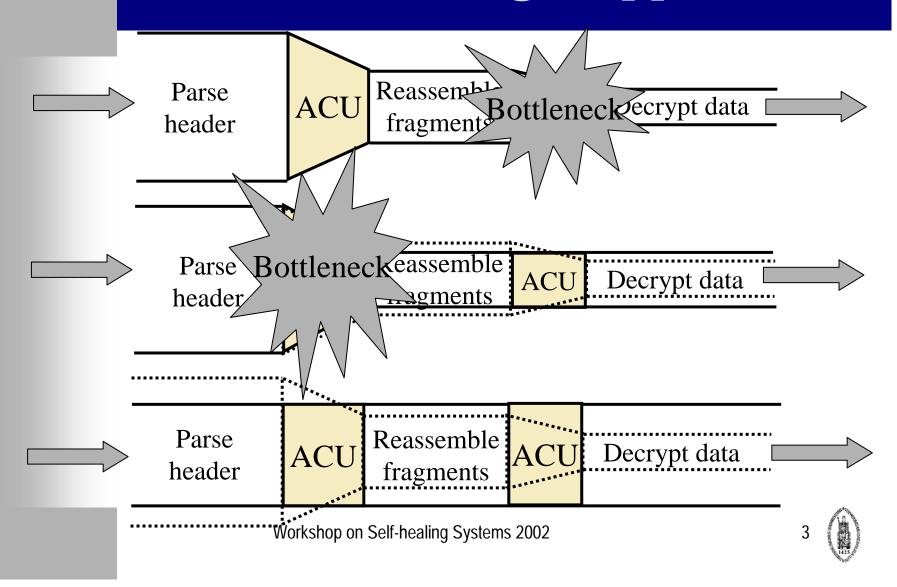
#### Varying request types

- Static vs. dynamic web requests
- S Varying security needs (types of encryption)





### Target applications





## New ideas/approaches

Component architecture (DiPS)
Pluggable self-healing architecture (DMonA)

Anonymous component interaction (DiPS) Separation of concerns

Functional vs. concurrency units (DiPS)

Functionality vs. management (DMonA)





## Self-healing aspects of DMonA

#### DMonA architecture

#### Self-monitoring & interpreting

S Analysis & state sensors

#### Prescribing appropriate measures

S Pluggable monitor strategies

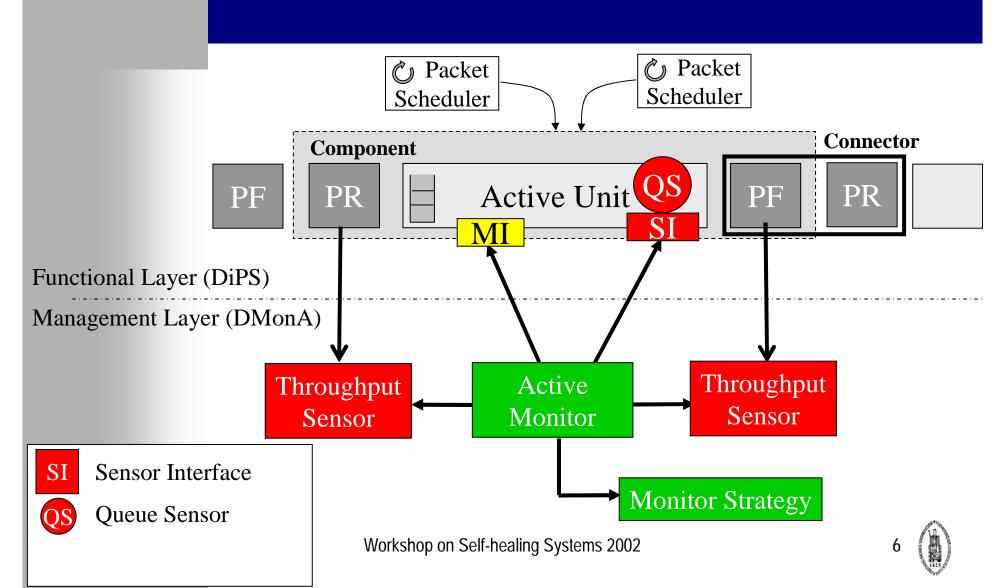
#### Self-healing

- § Management interface
- S Dynamic concurrency control for
  - improving performance
  - Graceful degradation



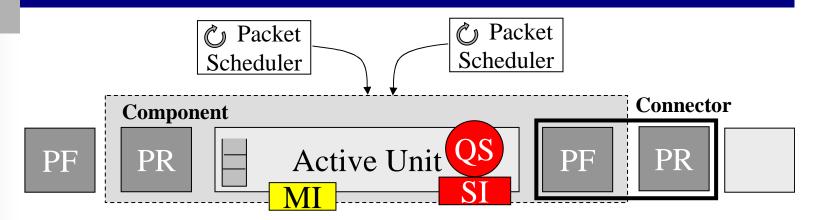


### DMonA architecture





### DMonA architecture



Functional Layer (DiPS)

Management Layer (DMonA)





### Conclusion

Behavior adaptability (Concurrency)

Separation of management and functionality

Reuse of functional DiPS components DMonA is a runtime pluggable extension





## Ongoing work

Functional adaptability (Hot swapping)
Combination of hot swapping extension with DMonA

Environment sensors

Available system resources





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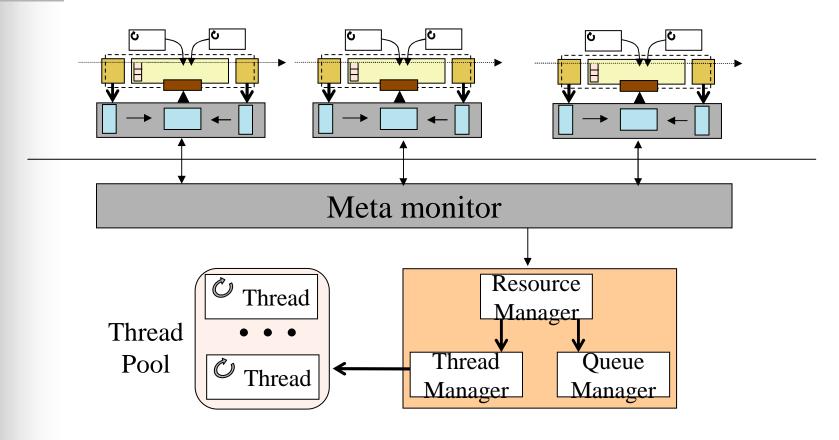
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## Static & Dynamic Management





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