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ANSAwise- Distributed Workflow Applications

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Abstract

Office automation has not significantly improved office productivity. One reason is that workgroup computing does not support end-to-end business processes. Workflows can automate business processes.

This module of the ANSAwise training programme describes workflows, how distributed systems can support them, and additional mechanisms and frameworks to support workflows.

Workflows must be dependable. This is impractical to achieve using conventional database transaction techniques.

The solution being offered is the use of dependable workflows within a distributed system, supported by a flexible transaction framework.

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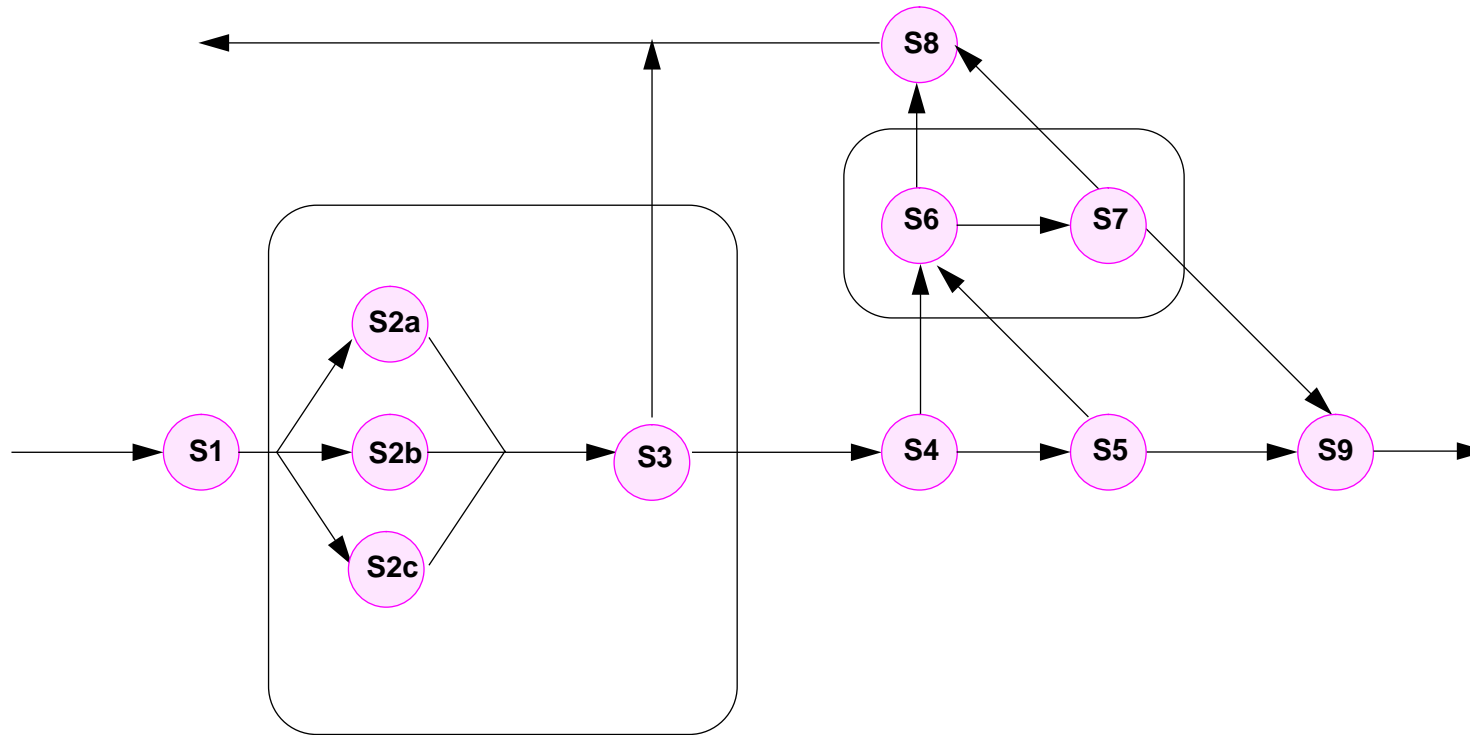
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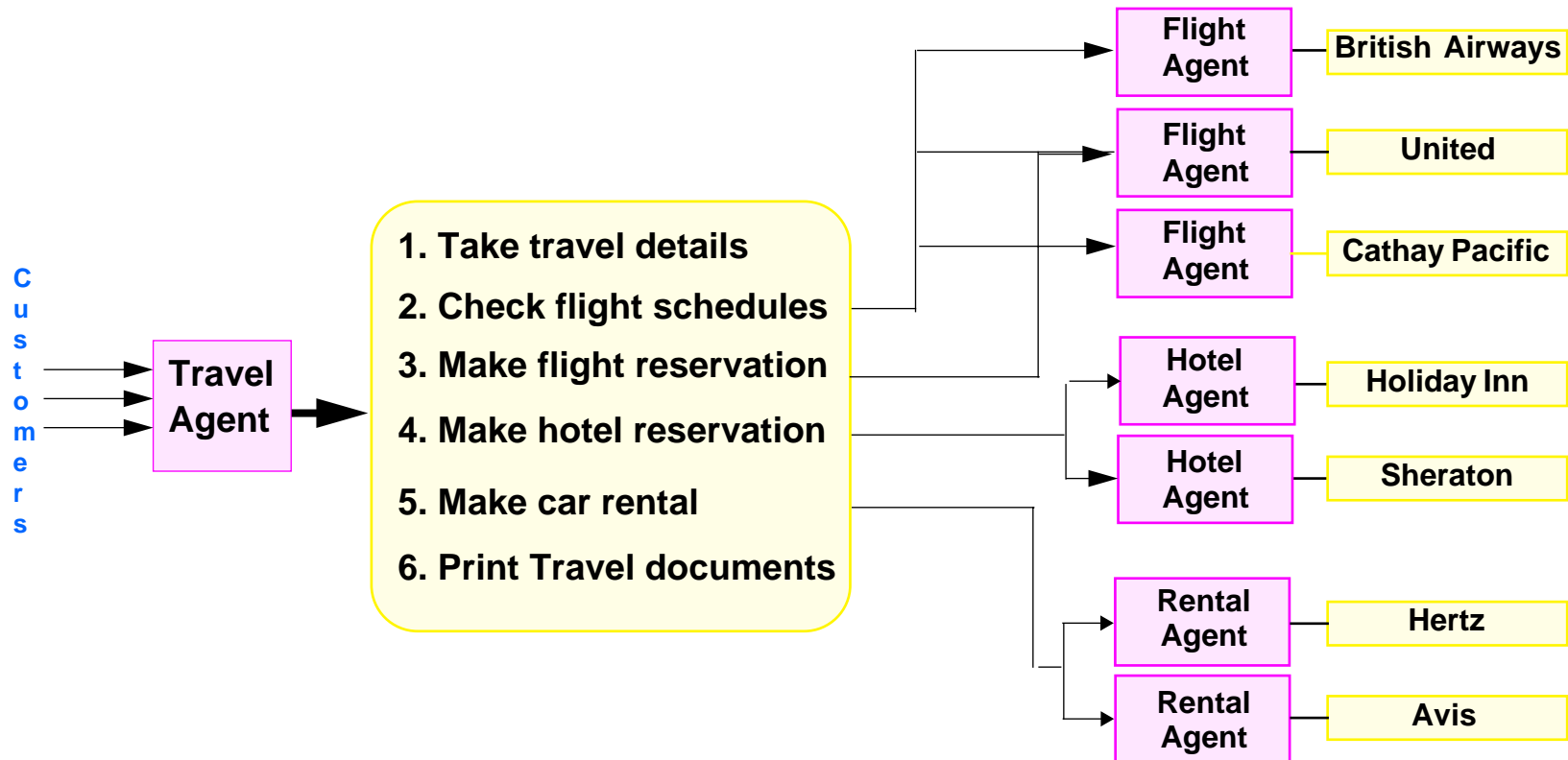


Distributed Workflow Applications





Business Trip Reservation





What does 'workflow' mean?

- *Document management?*
- *Electronic mail?*
- *Electronic forms?*

...Process automation



Process automation and workgroup computing (groupware)

- *Office automation and the personal computer have simplified tasks*
 - *but office productivity has barely risen in the last 10 years*
- *Groupware still concentrates on group tasks, not processes*
 - *productivity gains will come from automating end-to-end business processes, using workflows*

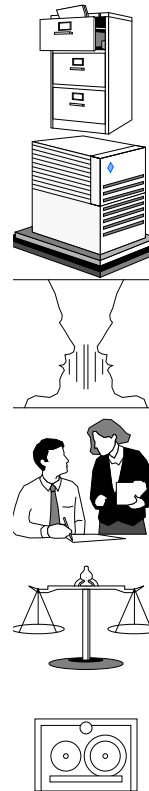


Workflow is distributed - in time and space

	Same Time	Different Time (predictable)	Different Time (unpredictable, ad hoc)
Same Place	Meeting facilitation	Work sharing/ shift work	Team rooms
Different Place (predictable)	Conferencing	Electronic mail	Collaborative authoring
Different Place (unpredictable, ad-hoc)	Interactive multicast seminars	Bulletin boards	<i>Workflow</i>

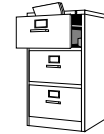
Fundamental workflow activities

- *Look-up (search and retrieval)*
- *Computation*
- *Communication*
- *Negotiation*
- *Decision*
- *Archiving*





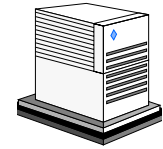
Supporting workflow activities - Look-up



- *Look-up (search and retrieval) activities*
 - access to high-performance search engines
 - indexing, cataloguing, and abstracting services
 - 'intelligent agents'
- *Distributed systems allow these to be integrated*
 - providing a single point of enquiry
 - the average worker spends 50-80% of a task looking for information to complete it



Supporting workflow activities - Computation

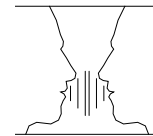


- ***Computation services***
 - embodying business rules (e.g. credit control)
 - providing specialist analytical services (e.g. scientific, manufacturing, financial): 'number crunching'
- ***Such services are already available to your organization***
 - distributed systems can integrate them



Supporting workflow activities - Communication

- ***Communication services***
 - universal connectivity: e-mail now, video-conferencing soon
 - integrated voice and data
 - information filtering
- ***These services are already widely available...***
- ***...but system and network management is expensive***
- ***Distributed systems can help manage the communications infrastructure itself***



Fundamental workflow activities - Negotiation

- *Early automation attempts tried to reduce ambiguity...*
 - by forcing people to be explicit about their offers and responses
 - literally, “I promise to deliver X by next Thursday”
- *... This legalistic approach was unpopular*
- *Later attempts have taken a less direct approach*
 - but still cannot cope with the *social* nature of work and the importance of nuances
- *Support for negotiation is an area of research*





Supporting workflow activities - Decision

- ***Decision services***

- meeting support and decision tracking
- design and quality assessment
- planning and policy support
- authorization



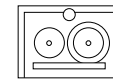
- ***Distributed systems can support multi-disciplinary teams***

- by interconnecting and federating different meeting support systems



Fundamental workflow activities - Archiving

- ***Archiving services***



- Dependable long-term storage
- Cost-effective and transparent data migration

- ***A traditional strength of the mainframe***

- legacy systems can be readily integrated into distributed systems
- distributed systems will accommodate scalable 'data warehouses'



Two styles of workflow

- ***“Heads-up” - you are ‘outside’ the process***
 - product design
 - financial control
- ***“Heads-down” - you are ‘inside’ the process***
 - tele-sales
 - customer service
- ***Practical workflows fall between these extremes***



Workflow and business knowledge

- *Knowing the operation of your own business is your best advantage*
 - “IT is not a sustainable advantage”
- *This process knowledge is dispersed across the organization*
 - it is impractical to keep teams of key personnel permanently together
- *Workflows allow you to reuse the process knowledge*
 - accelerating complex processes, for example ‘design to manufacturing’



Workflow

- **Collection of tasks organised to accomplish some business process**
- **Workflows specify**
 - **business structure**
 - **human/computer tasks**
 - **task ordering and synchronisation**
 - **control flow/data flow/resource usage**
- **Workflows enable:**
 - **many human sequential tasks -> concurrent computer tasks**
 - **reuse of existing computer system/services**
- **Workflows underpin:**
 - **high-level graphic/script languages/tools -> rapid assembly**
 - **rapid installation/provisioning/reconfiguration of services**

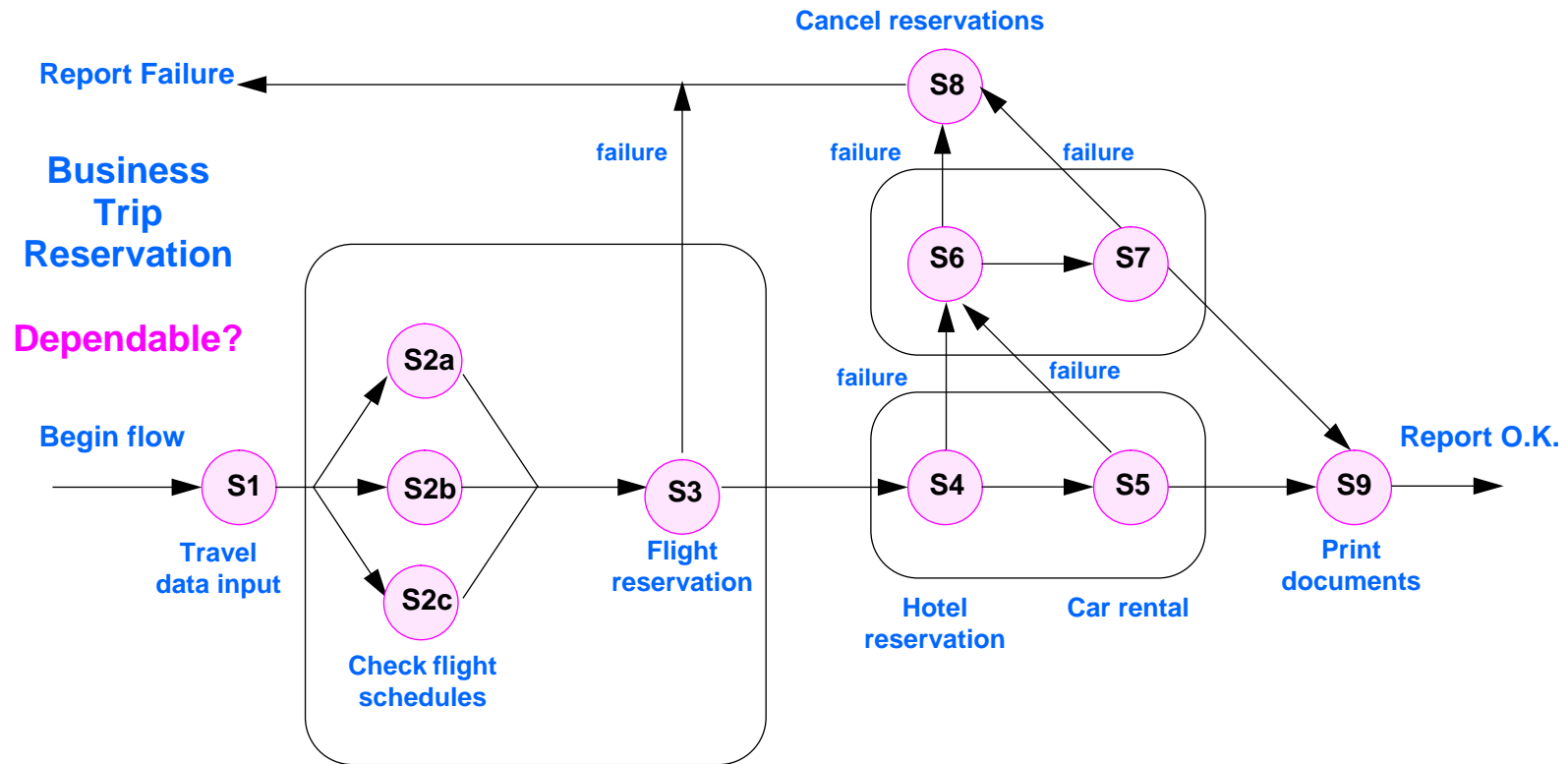


Workflows in the real world

- *Activities do not always run smoothly*
- *Workflows require coordination*
 - interoperability to link together activities
 - dependability to cope with failure
 - flexibility to cope with process change
 - ... they must be managed



Business Trip Workflow





Dependability

- ***All workflows must be able to cope with failure***
 - they must be dependable

- ***More than 50% of white-collar work is correction/rework***
 - dependable workflow applications can reduce this...
 - ... by designing in failure tolerance

- ***Dependable workflows give assurance***
 - instilling management confidence in business processes
 - enabling automated workflows that cross organizational boundaries



Mechanisms for dependable workflows

- ***Traditional Database transactions are a basic mechanism...***
 - for recovery from failure (all-or-nothing atomicity)
 - for independence (serializability)
- ***... but they are too rigid for workflow activities***
 - activities can continue for days, weeks, or months!
 - activities cannot be isolated from each other
- ***Extended transaction models are possible***
 - relaxing the isolation between activities
- ***A flexible transaction framework is also required***
 - to control the activities for a particular application



Workflow applications using ANSA technology

- *Document image management product*
- *Newspaper story retrieval system*
- *Customer Service for major utility*



Summary

- ***Workflows support business processes***
 - ***the way organizations actually work***
- ***Distributed systems are a natural match for workflows***
- ***Distributed systems require a flexible transaction framework***



More information

- ***For more information on flexible transaction frameworks***
 - **see “Flexible Transaction Framework for Dependable Workflows” (APM.1263)**