# Research Project

Domain-Specific Languages for Analysing Contracts



#### 2. Overview

Pioneer approach to describing financial contracts through a DSL

Peyton Jones et al., 2000

DSL for Introduction of blame assignment

Generalization of the previous approach: DSLs for specifying exchange of resources

Andersen et al., 2006

DSL for Financial contracts with focus on language robustness

### 3. Example Contract

#### Camcorder Rental

- Paragraph 1. Party A agrees to rent a camcorder from Party B for 10 days.
- Paragraph 2. Party A agrees to pay Party B 350 € per day rented according to the terms set out below.
- Paragraph 3. Party A agrees to pay the full amount upon renting the camcorder.
- Paragraph 4. If Party A fails to return the camcorder before the rental period has ended they are subject to pay the regular daily rate aggravated by 50 % until the equipment is returned.

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### 4. Our Solution — The Language

```
Scala
// Agent type
case class Agent(name: String)
// Resource type
sealed trait Resource
case class Item(name: String) extends Resource
case class MonetaryValue(amount: Double) extends Resource
// Event type
case class Transaction(ins: Agent, rec: Agent, res: Resource, time: Date)
```

### 4. Our Solution — The Language

```
Scala
// Contract type
sealed trait Contract {...}
case class Commitment(val f: Transaction => Option[Contract]) extends Contract
case class Or(val cl: Contract, val c2: Contract) extends Contract
case object Succ extends Contract
case object Fail extends Contract
```



#### 6. Remarks

Section 3.3.4 Last Payment

Figure 1.2 → Figure 3.1

Section 4.1.3 History-Sensitive Commitments (R10)

ordered <= max → ordered >= max

Thank you!

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