Evolving TTCN-3 towards Object-Oriented

- Heighten appeal of TTCN-3 to users used to object-oriented programming
- Use advantages of object-oriented modelling
- Reduce TTCN-3 emulation of object-oriented features
- Allow simple access to external objects

Object-Oriented Concepts: Classes

- Modelling of objects
  - Member fields (state)
  - Virtual methods (behavior)
- Built-in classes
  - object, component, timer, port
- Allow abstraction, refinement and encapsulation
- Class extension provides subtypes
- Method overriding
- Member visibility
- public, private, protected

Provide API to external objects
- External classes

Object-Oriented Concepts: Objects

- Used by reference
- Belong to creating component context
- Provide handles to external objects
- Class discrimination (<> of =)
- Casting (cast<>)
- Direct methodfield access from inside owning component context (<>)
- Special references 'null' and 'this'
- Object-identity equality comparisons (==, !=)
- Created via constructor (<> create(...))
- Implicit memory management

Exception Handling

Cleaner test code
- separated exception handling
Cleaning up & resetting external resources
- as part of the standard
- "@finally"
Can be validated statically
- Reusing existing keywords
- exception, raise, try, catch

TTCN-3 Extension: Advanced Matching

New and powerful matching mechanisms for TTCN-3:
- Dynamic matching
  - Define your matching in form of a function
  - Templates with variable bindings
    - Field values in case of successful matching can be specified as sub-expressions of template definitions
  - Logical operators for combining matching mechanisms
  - New operators: conjunction, disjunction, restriction, and disjunction
- Repeated
  - Support to match repetitions of sub-sequence templates inside bindings
  - Restrictions for reset symbol and templates with reset restriction are relieved
  - Reset symbols and templates with reset restriction may be used as operands for the equality operator

Implementation of TTCN-3 test systems
- ETSI STF 573 "Operational Environments"
- ETSI STF 573 "TTCN-3 Interface (TR2)
- ETSI STF 573 "TTCN-3 Control Interface (TR2)"