

Practicalities

Software development versus Software Maintenance

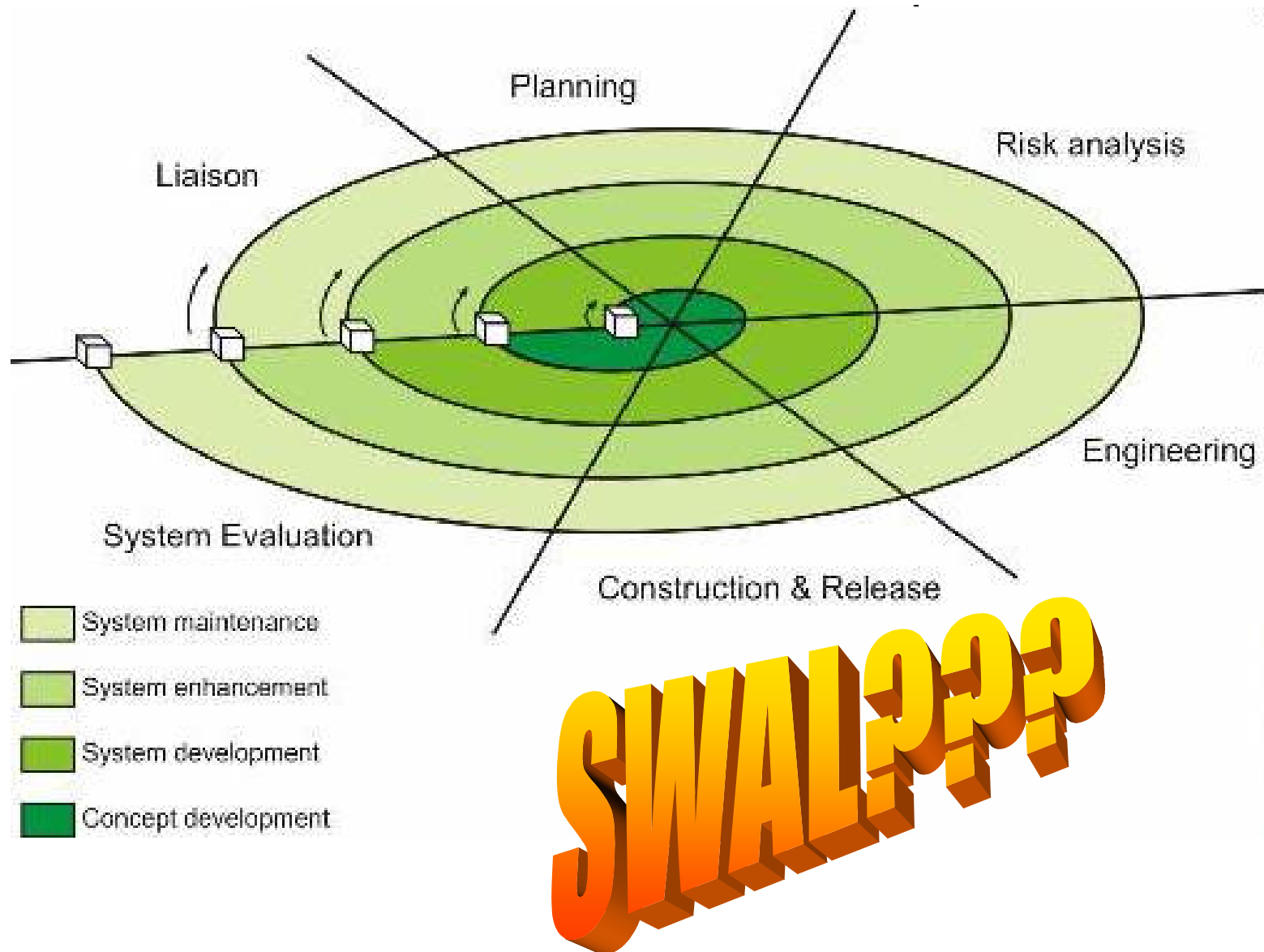
ES2 WS3-2011 Bled/Slovenia - 21/22 September 2011

Software Safety Assurance & Degraded Modes of Operations

Content

- Software development
- Software maintenance

Development versus Maintenance



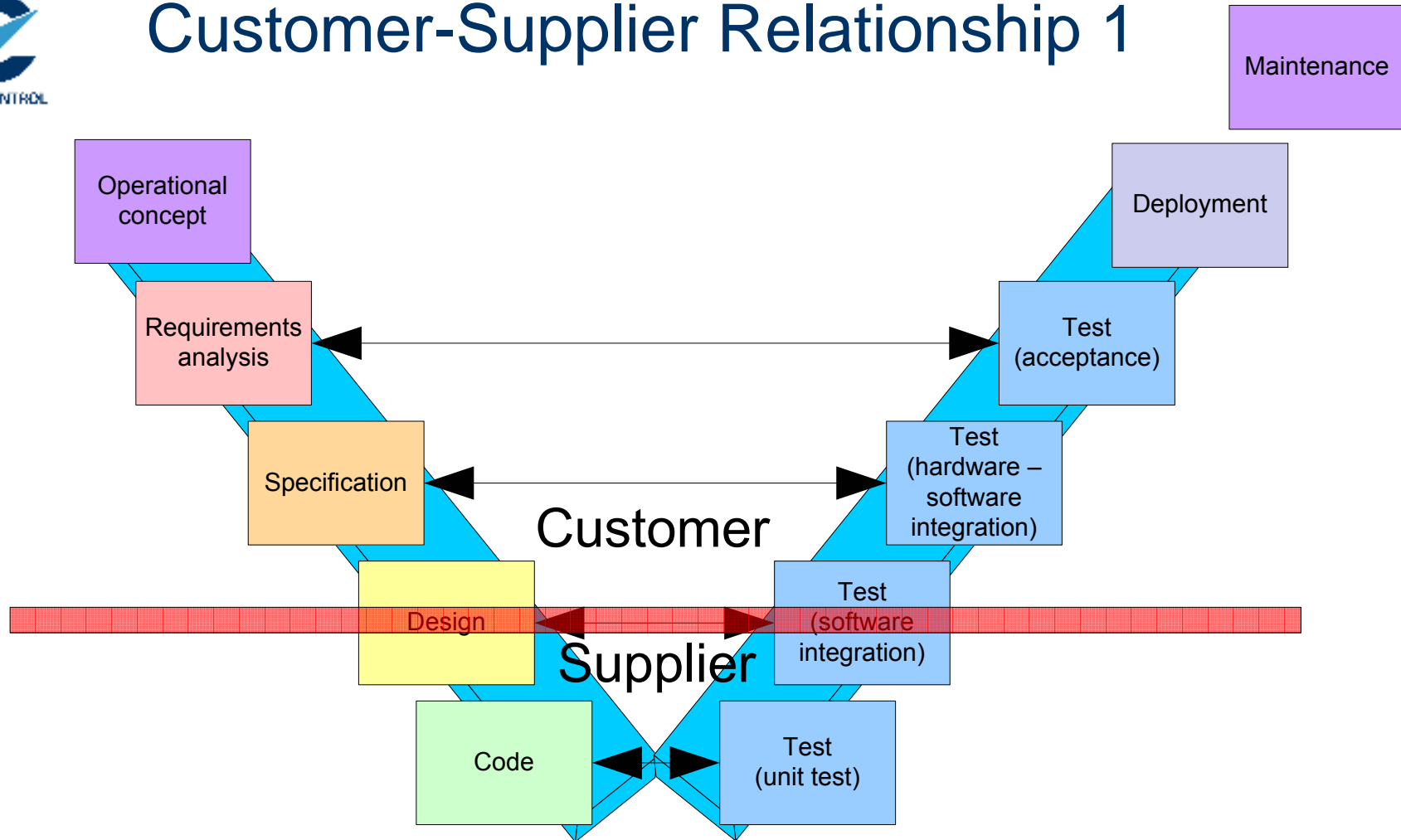
- **Software development**
- Software maintenance



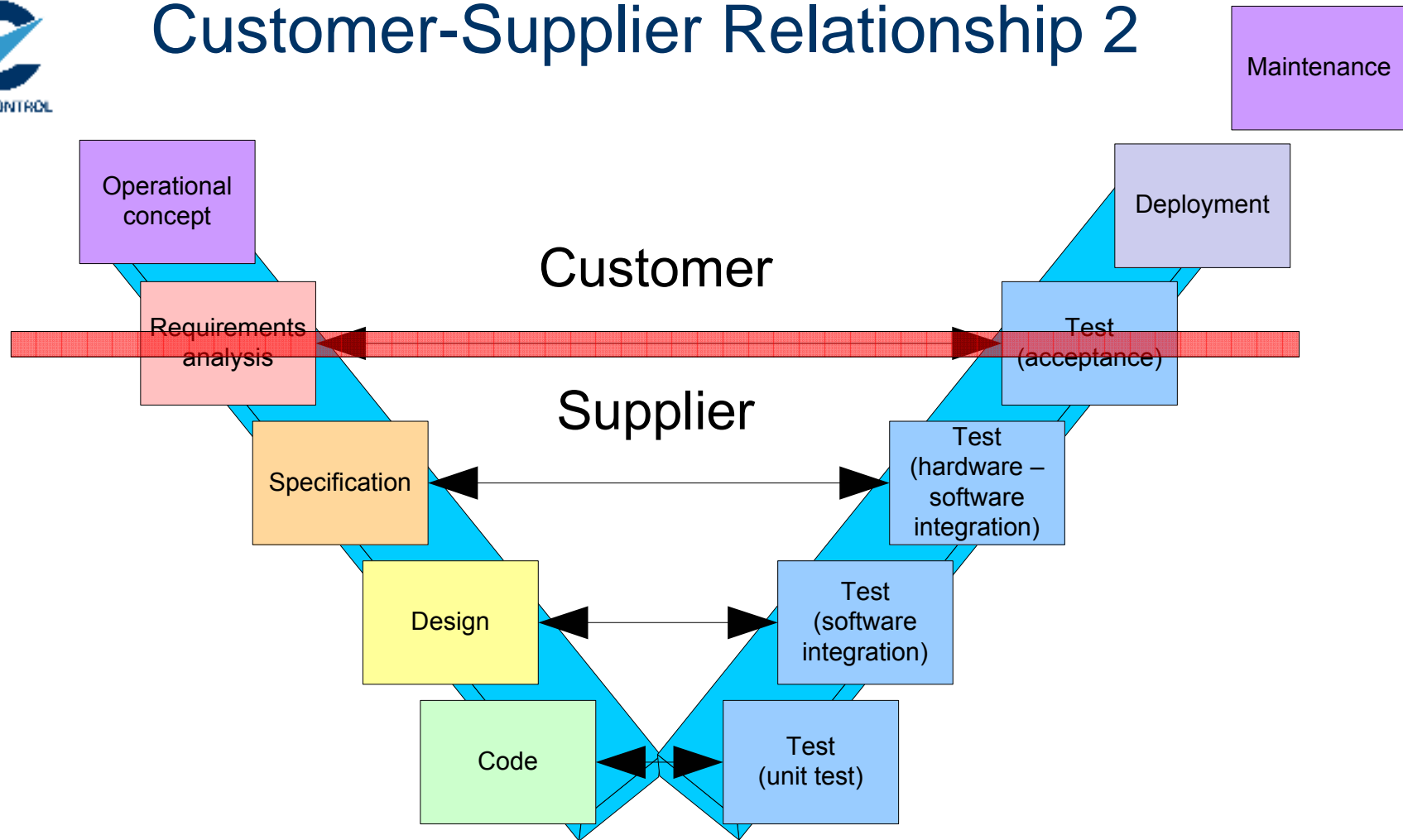
Procurement Model and Supplier Deliverables

- **Commercial Off The Shelf (COTS)**
 - Glossy brochure
 - User manual
 - In-service data?
 - Test scripts and results?
- **New Development**
 - What ever you can afford!
 - Design, code, test, safety analyses, ...
- **Legacy**
 - Limited by what is historically available

Customer-Supplier Relationship 1

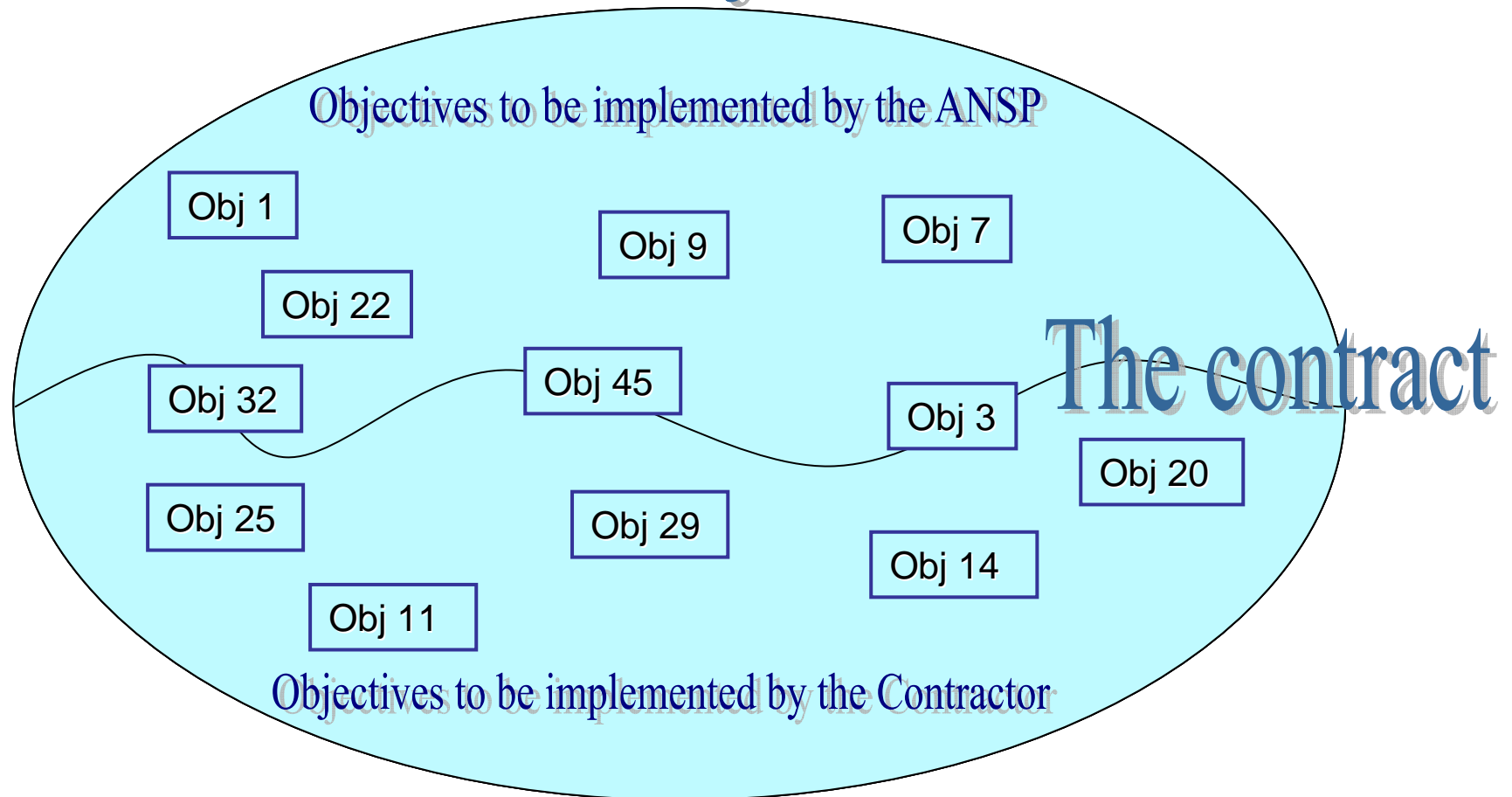


Customer-Supplier Relationship 2



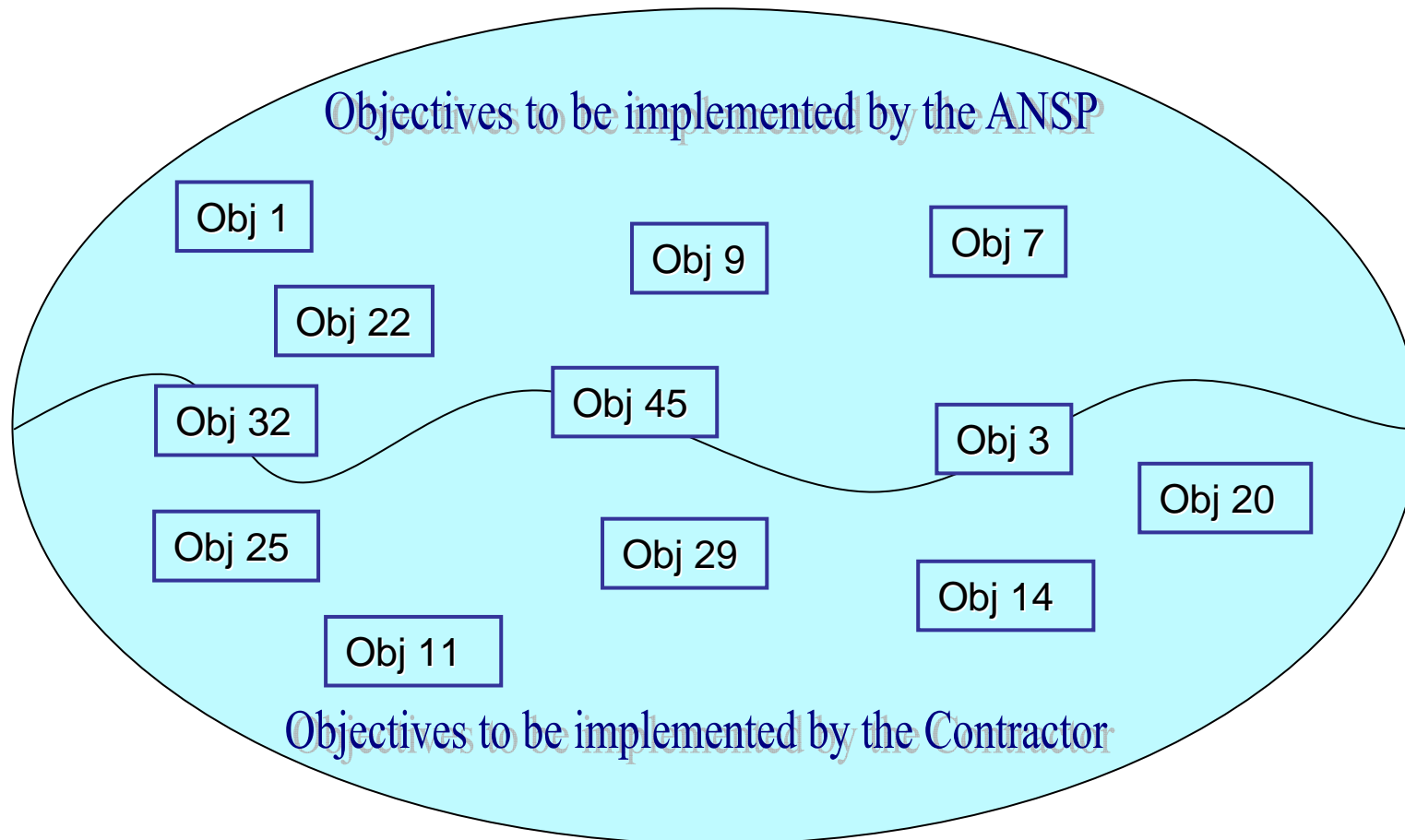
Who does what?

ED-153 Objectives



What if...

The ANSP develops the software?



What Safety Assurance might the supplier deliver?

- System Safety Assurance Argument (unlikely)
 - Customer and supplier placed in difficult situation
 - Supplier unlikely to fully understand how the software will be used operationally
- Software Safety Assurance Argument (possible)
 - Customer and supplier need to work collaboratively
- Evidence (likely)
 - Customer left to make safety assurance argument
- Nothing (unlikely)
 - Customer responsible for all Safety Assurance

Content

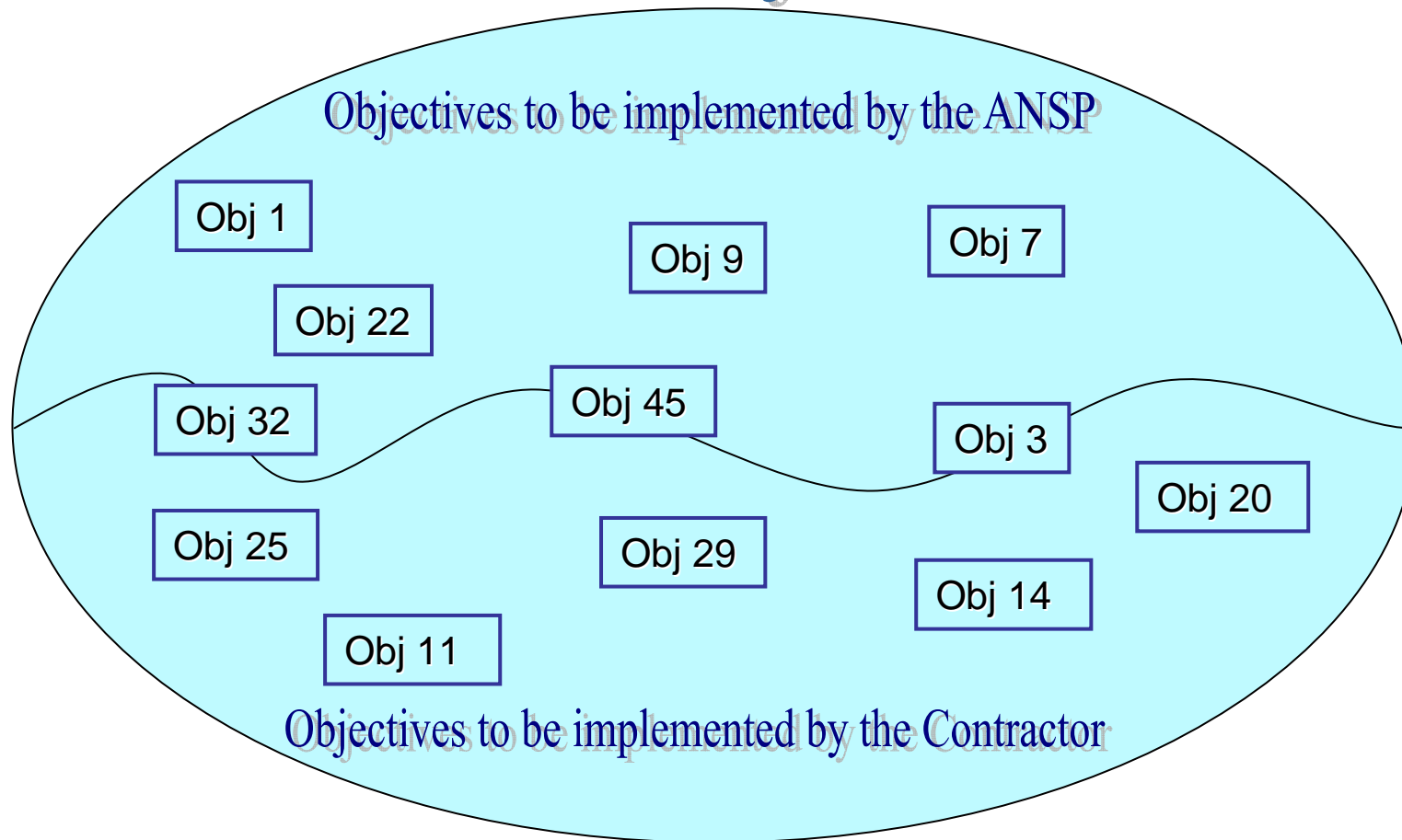
- Software development
- **Software maintenance**



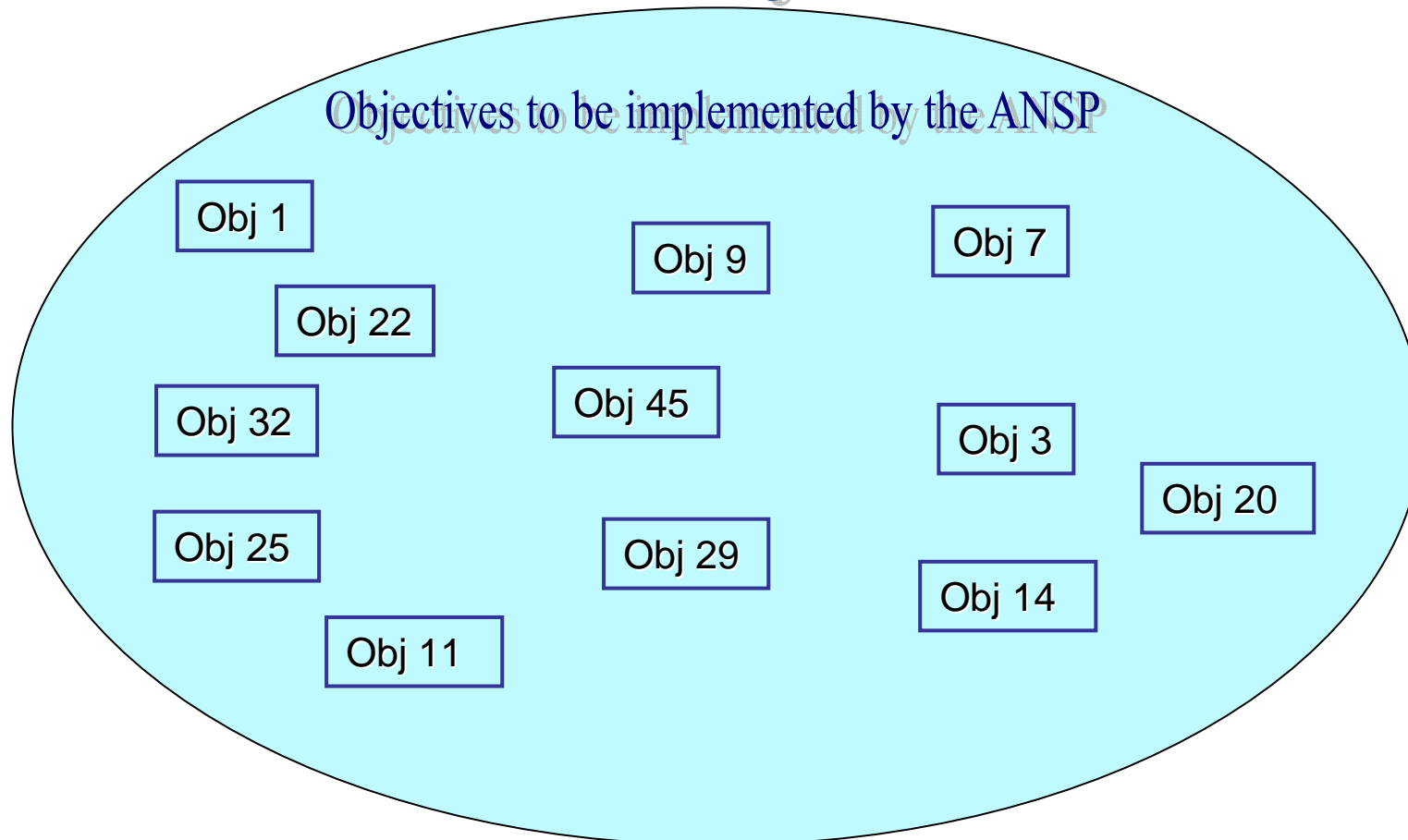
Maintenance in modern Standards

- No difference between Development & Maintenance
 - Example
 - CMMI always speak about “development and maintenance activities”
- Maintenance = set of small Developments
- Update adequate part **Safety Case** to demonstrate that Software remains **acceptably Safe**.

Software Maintenance Case 1: Contractor maintain the Software ED-153 Objectives



Software Maintenance Case 2: ANSP maintains the Software ED-153 Objectives





Keep in mind

- No matter the Software is contracted or not, the **ANSP** is **responsible** to demonstrate the Software is **acceptably safe**.
- That applies to software maintenance too.
- Software is and remains acceptably safe during its lifetime.
This must be demonstrated via the Safety Case.



Summary

- There are certain deliverables which can be expected from a supplier (And others which cannot)
- It is important to get the right customer-supplier relationship
- It is likely that the ANSP will be left to make safety assurance argument
- There is no real different between development and maintenance:

You must demonstrate the software is and stays acceptably safe!

Questions

