PRODUCT PAYS PROCESS COSTS

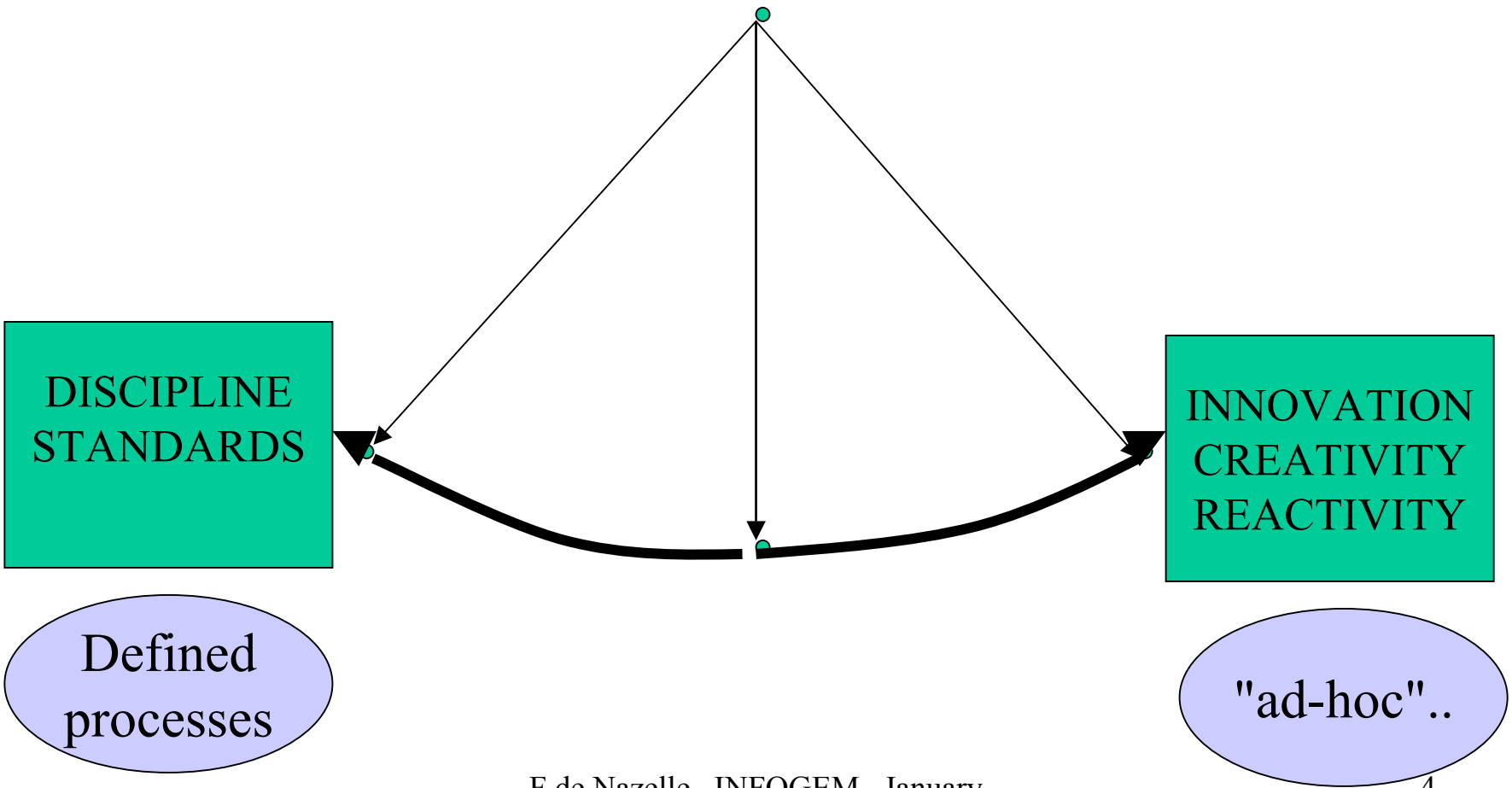
Product/Process

- **A customer pays to get, on time, an expected *« value »* , related to:**
  - **Services provided ,**
  - **Product (software) characteristics ,**
  - **Confidence *(assurance)* :**
    - **short term ,**
    - **long term .**
- **Complexity of development /distribution processes has a direct impact on:**
  - **Costs,**
  - **Time to market.**

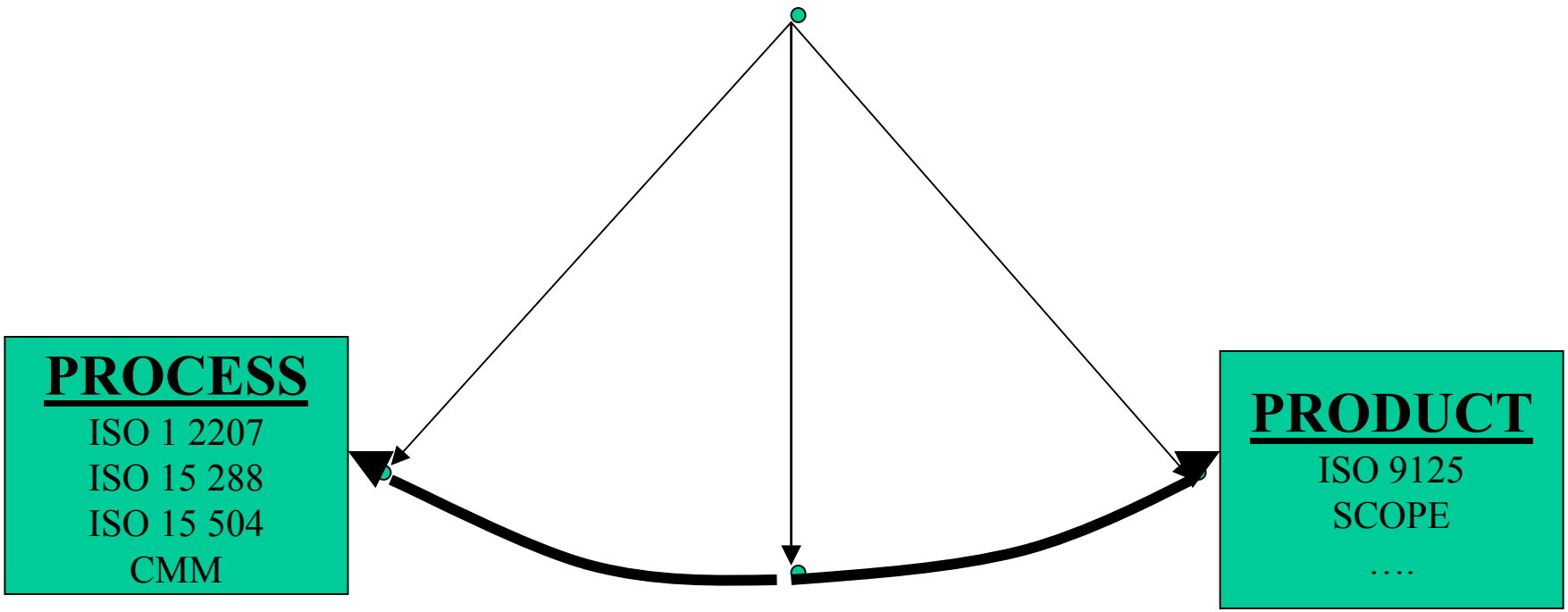
Question

- **What processes are the best suited to give the expected "*value for money*":**
  - **Well defined and detailed processes?**
  - **Minimum defined processes?**
- **How much is enough?**

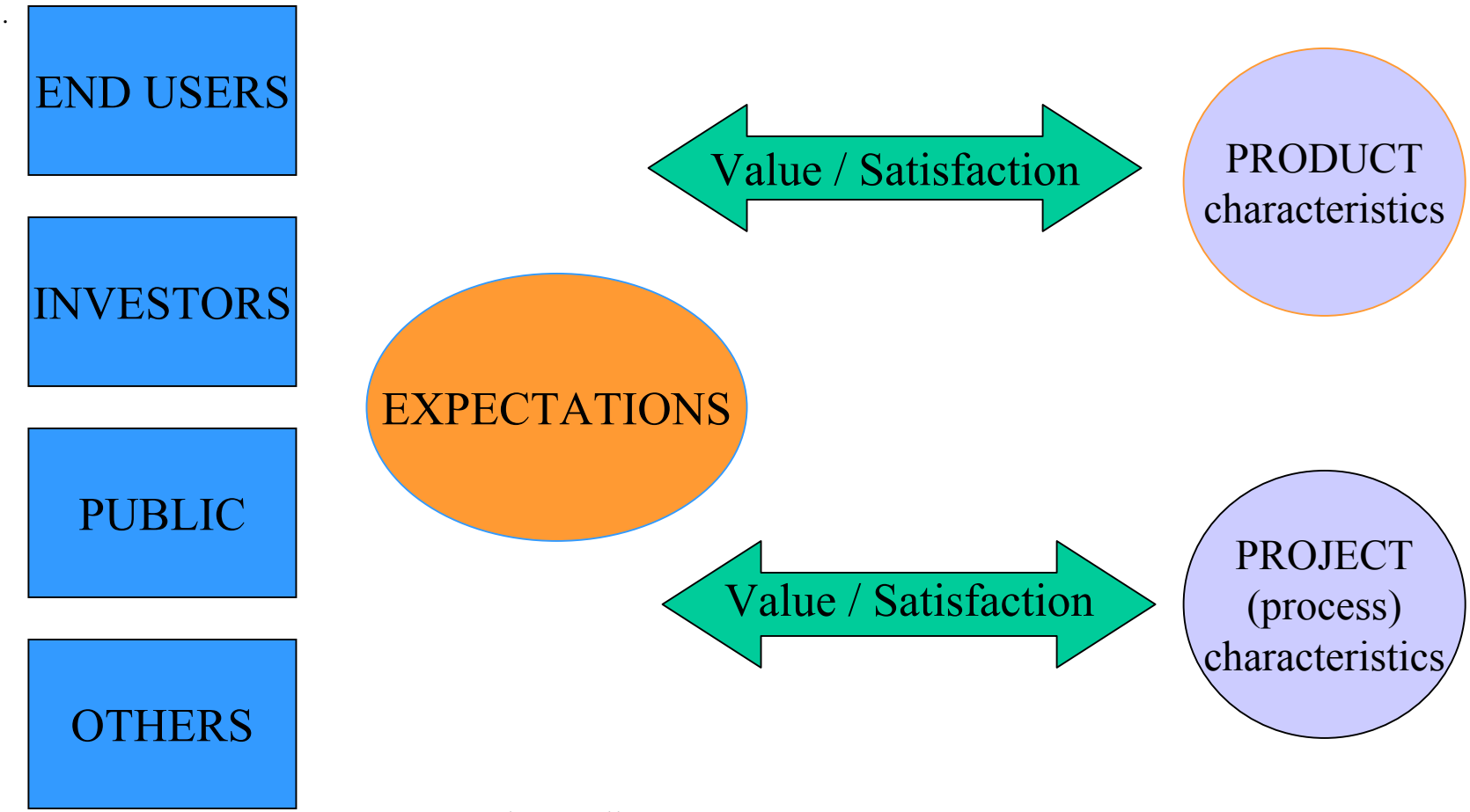
How to manage developments?



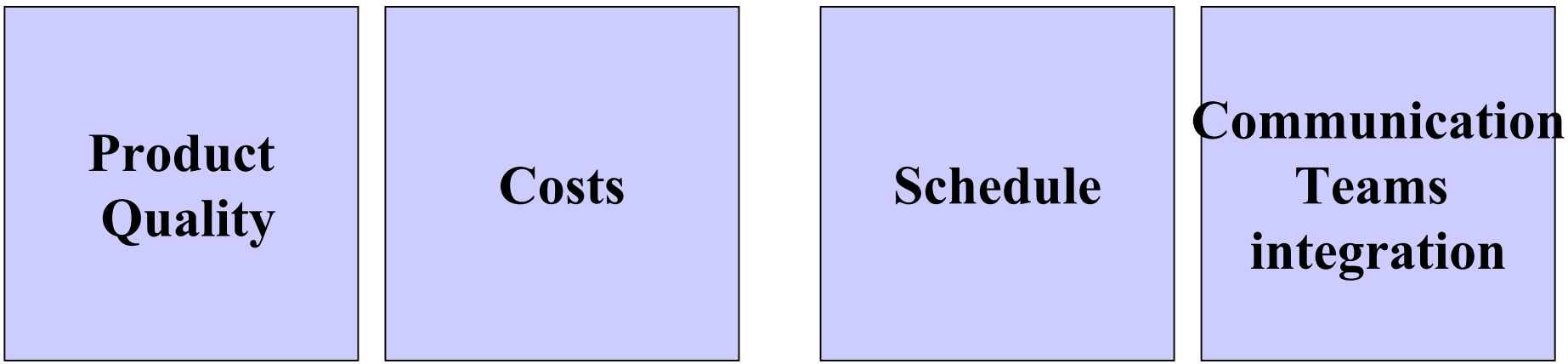
What Focus?


PROCESS
ISO 1 2207
ISO 15 288
ISO 15 504
CMM
PRODUCT
ISO 9125
SCOPE
….

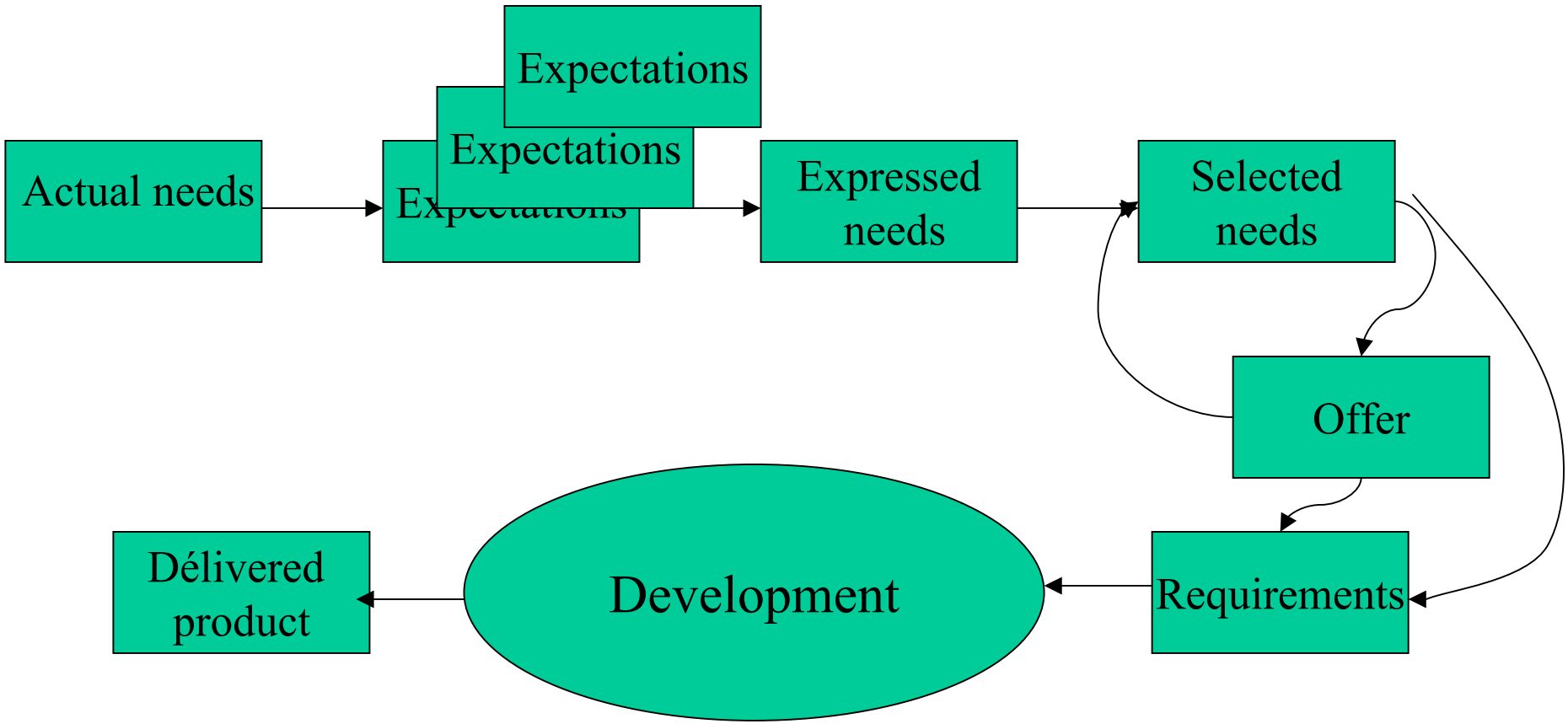
What is QUALITY?



Project Quality



Development process



Impact of processes on project quality

- **A project is an integrated process calling a coherent set of sub-processes:**
  - **Management,**
  - **Engineering,**
  - **Support.**
- **CMM I is an useful model, but needs to be tailored.**

Management

- **Project planning,**
- **Project monitoring and control,**
- **Management of the network of actors of the project *("Integrated project management", "integrated teaming")***
- **Supplier management,**
- **Risk management,**

Engineering

- **Requirement development,**
- **Requirement management,**
- **Technical solution,**
- **(Test)**
- **Integration ,**
- **Verification,**
- **Validation**

Support

- **Configuration management,**
- **Documentation management,**
- **Quality assurance,**
- **(Performance management),**
- **Decision analysis and resolution,**
- **Causal analysis and resolution.**
- **Logistic *("Organisational environment for integration")***

Implementation

- **Keep it light,**
- **Think before using any model,**
- **Use risk analysis (or value analysis) in order to focus on the *"vital fews"* base practices.**
- **Use classes of projects.**

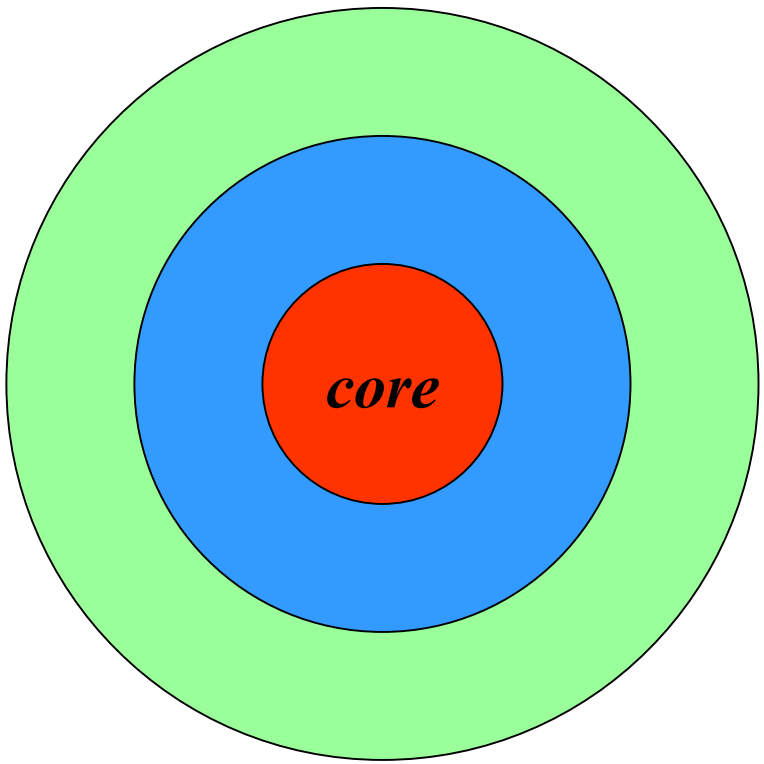
Complex systems

- **Buyers of complex systems put more and more emphasis on processes:**
  - **Contractor's capability to cope with changes:**
    - **operational needs**
    - **technology offer (use of Cots)**
  - **Specific capability models (ex: VCA CMM) are now used.**

Use of COTS

- **COTS become widely used, with a significant impact on project processes:**
  - **Requirement définition,**
  - **Technical solution ,**
  - **Project management,**
  - **Risk management,**

Systems Architecture



-Reduction of adherences
-Structuration
-Layers of software
-Interfaces

Product quality

Product Quality

Value for Users	Value for Investors	Value for Public
Services provided Functionalities Performances Usability Innovation Error-free Fault tolerance Security	**Total life cycle cost of a system** Maintainability Evolutivity Interoperability Expendability Ease of change Management of obsolescence	**Certification** Safety, Security Environment ...

Pure product Approach

Good for COTS acquisition,
Not valid for complex systems ,
Requirements and technology offer may change many times during a project lifespan.

Satisfaction of user

- **Engineering**
  - **Requirement definition**
    - **Understand customer needs and expectations,**
    - **Develop requirements,**
  - **Requirement management,**
  - **Integration**
  - **Validation/Test,**
- **Support**
  - **Documentation management,**
  - **Configuration management,**
  - **Quality assurance**

Satisfaction of investor

- **Engineering**
  - **Technical solution**
    - **Architecture**
    - **Interfaces**
    - **Standards**
    - **Technologies**
    - **COTS strategy**
  - **Verification /Validation/Test**

Satisfaction of public

- **Implementation of defined processes becomes mandatory.**
- **All the certification standards (DO 178 , CEI 880, …) put requirements on development processes.**

Some trends

- **Even for new innovative products , quality assurance becomes a must.**
- **Quality assurance rely on defined processes.**

Conclusion

- **It seems difficult to focus only on product: a certain level of defined processes seems mandatory.**
- **Existing process models are suited for complex projects and need to be tailored for more simple projects.**
- **A risk driven approach is suitable.**