

**International Framework for
Nuclear Energy Cooperation
Supply Chain and Localization
07/08.Nov.2017**

NPP Market Survey

Oscar Agostino MIGNONE

07.Nov.2017

NPP Market Survey

Index of Contents

- **References**
- **Background**
- **Italian Participation**
- **Development**
- **Methodology**
- **Results**

NPP Market Survey

References

NPP Market Survey

References

International Atomic Energy Agency



NG-G-3.1 Milestones in the Development of a National Infrastructure for Nuclear Power 2015
NG-T-3.4 Industrial Involvement to Support a National Nuclear Programme 2016

Nuclear Energy Agency

International Energy Agency



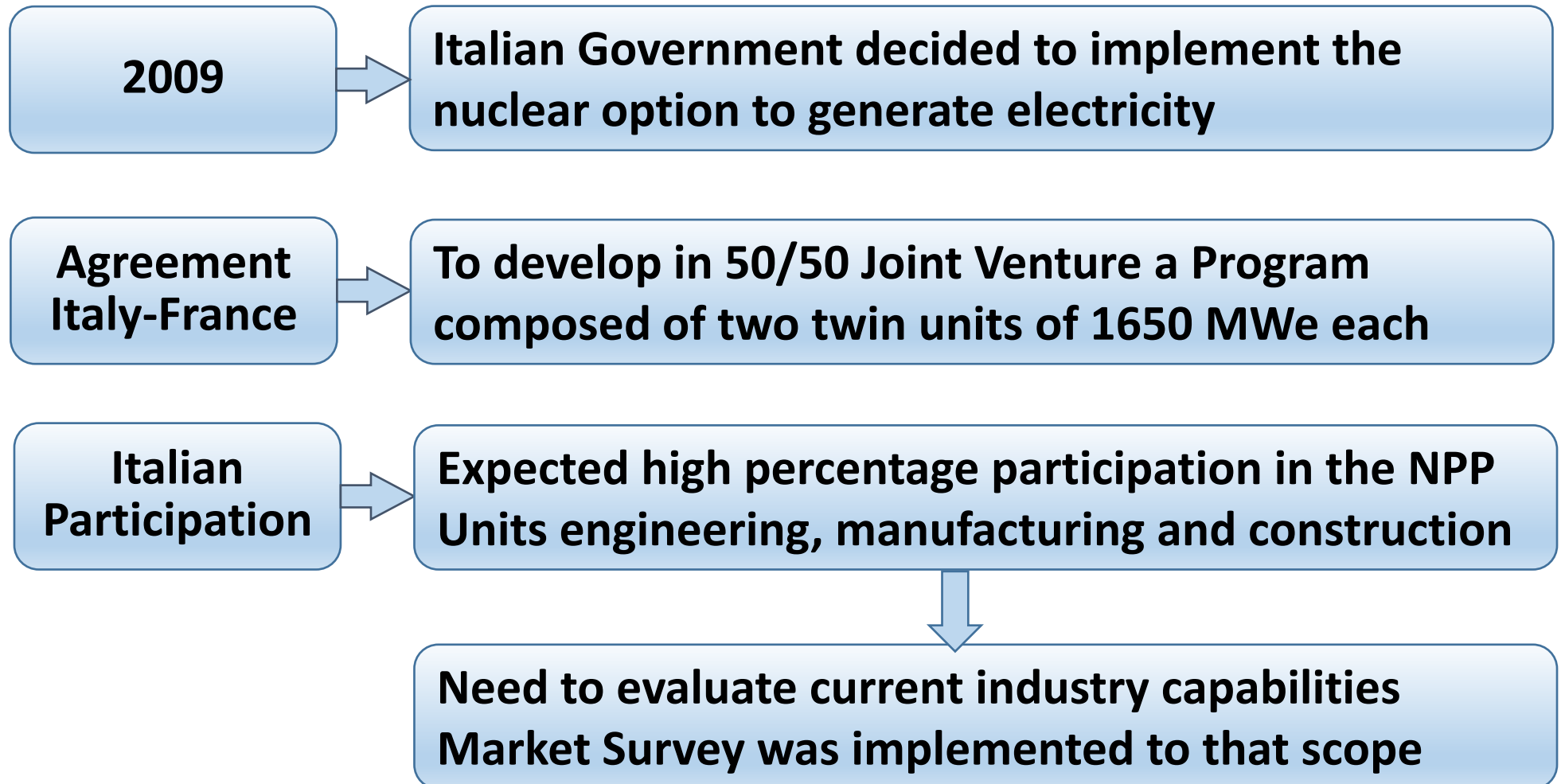
Technology Roadmap Nuclear Energy - 2015
Case Study 16.
Preparing for a new build programme in an industrial country: supply chain survey

NPP Market Survey

Background

NPP Market Survey

Background



NPP Market Survey

Italian Participation

NPP Market Survey

Italian Participation

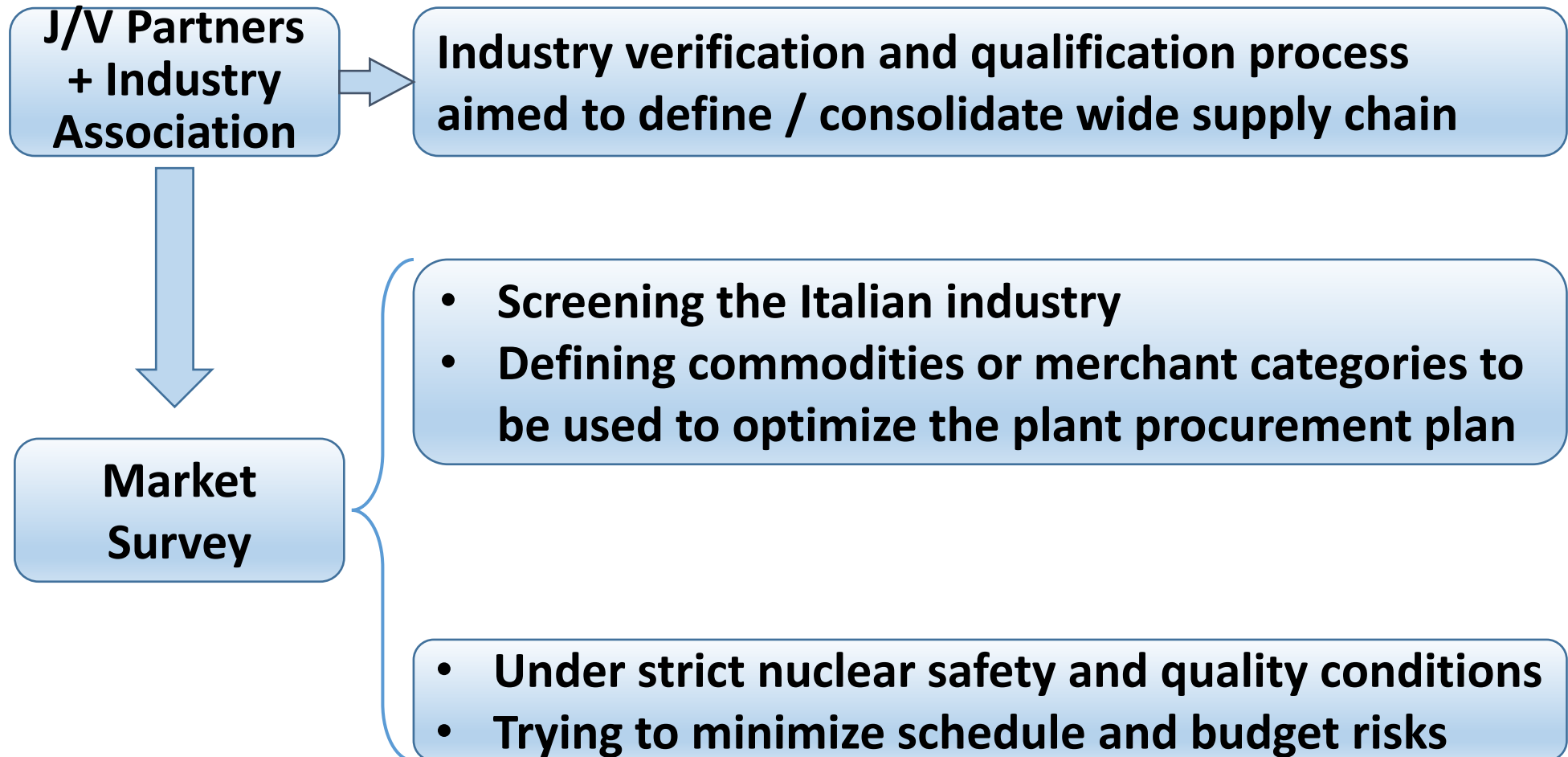


NPP Market Survey

Development

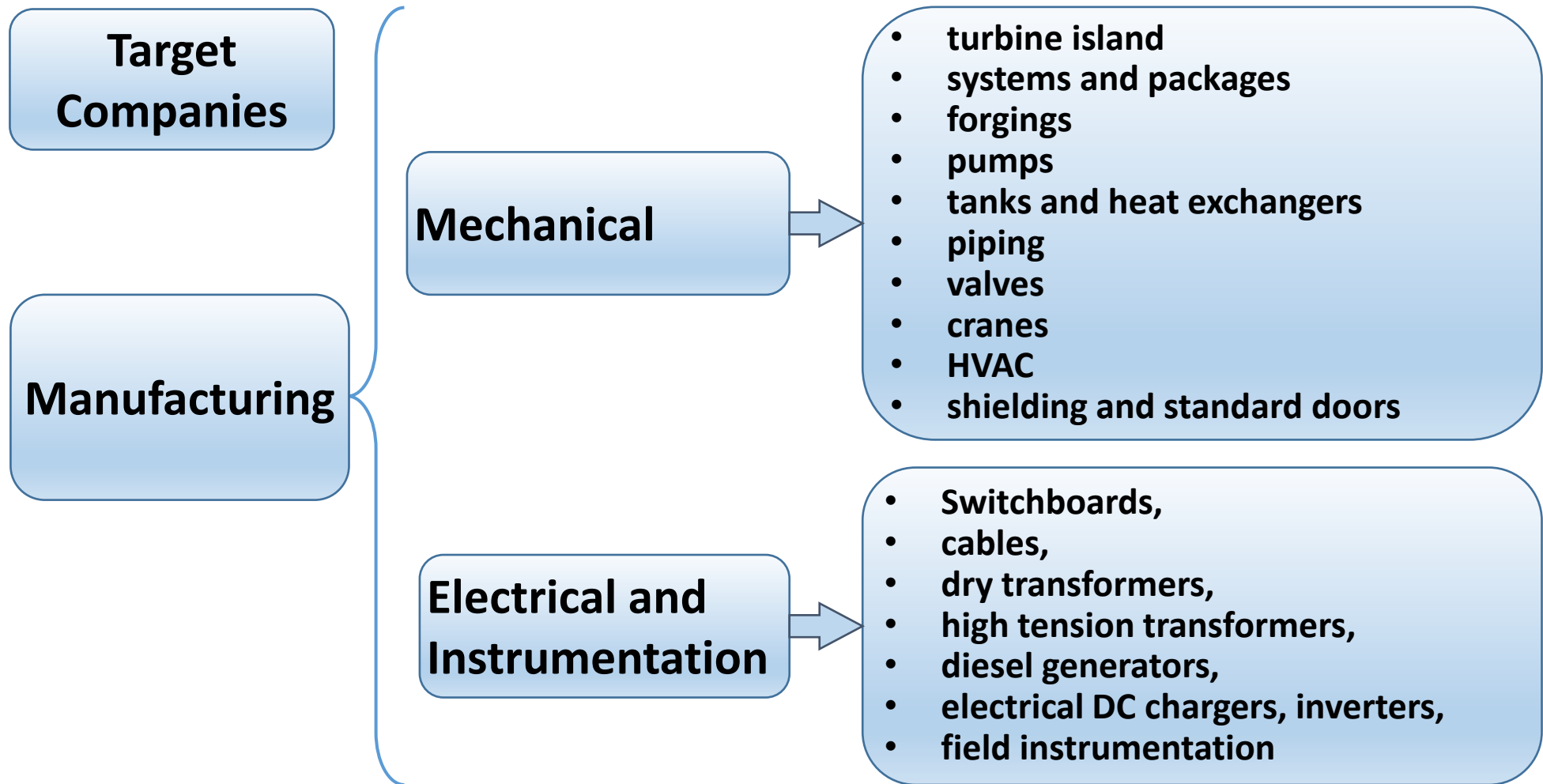
NPP Market Survey

Market Survey Development



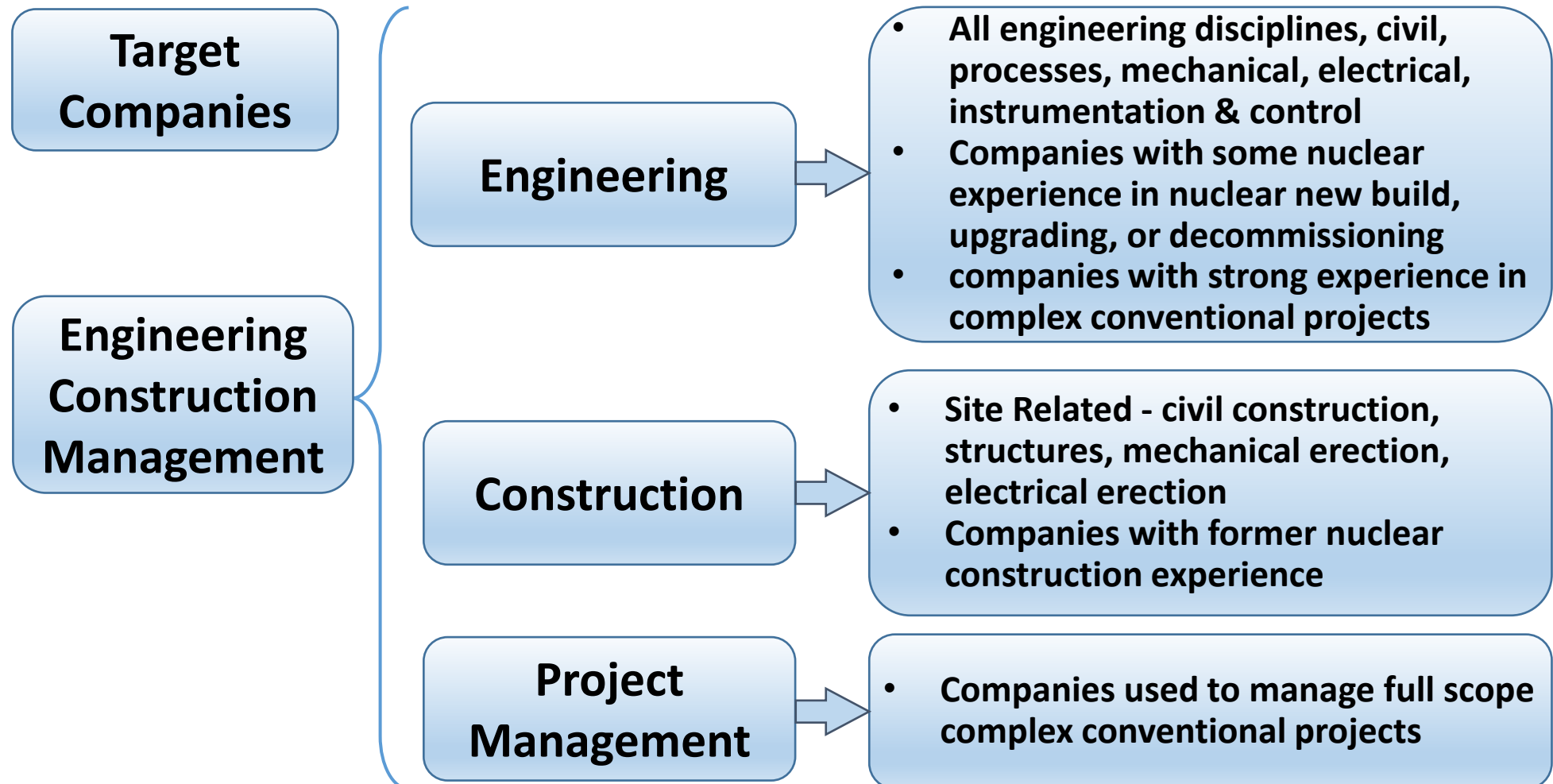
NPP Market Survey

Market Survey Development



NPP Market Survey

Market Survey Development



NPP Market Survey

Methodology

NPP Market Survey

Market Survey Methodology

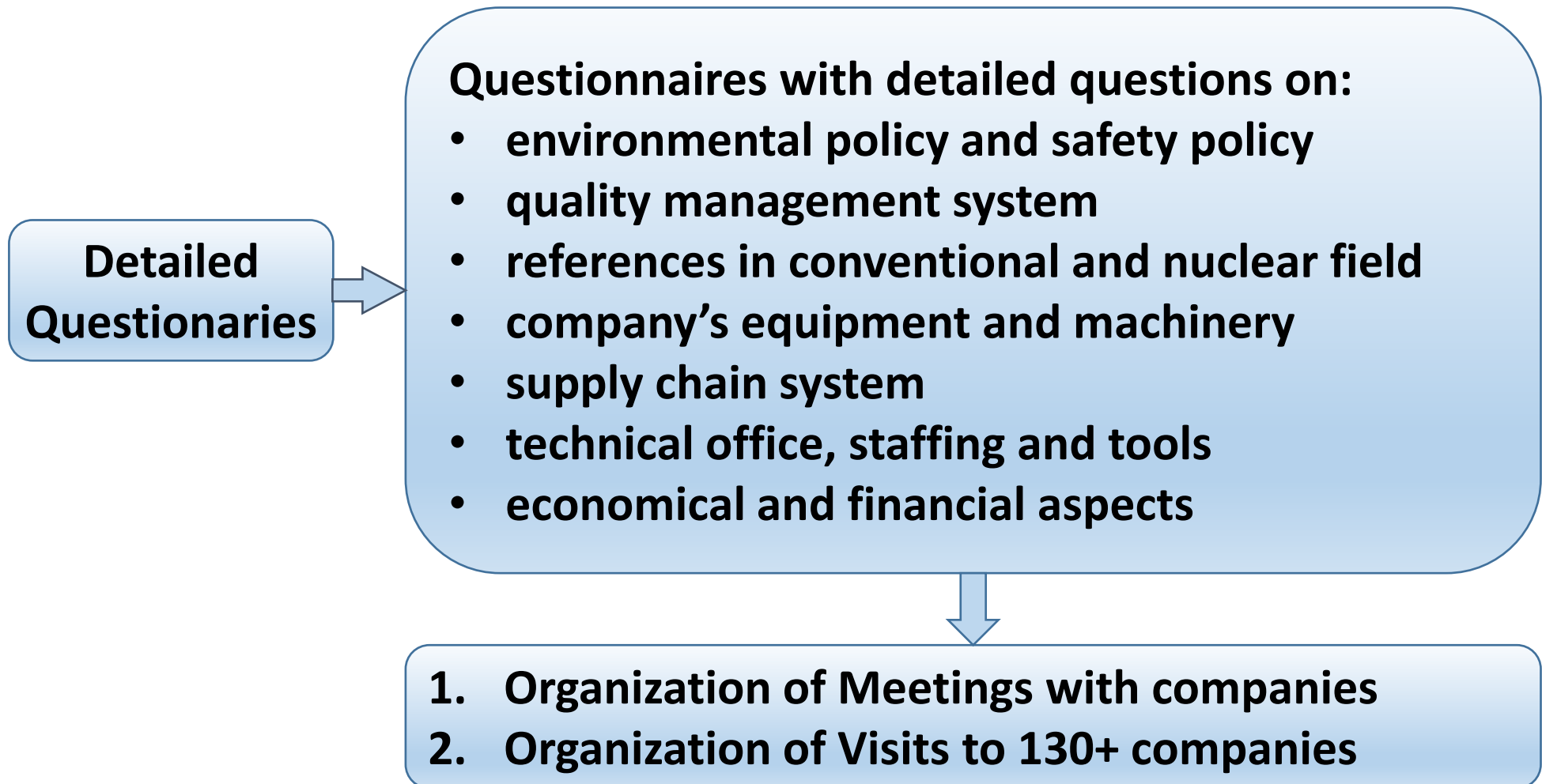
Main Steps



- 1. Established Web Portal with Expression of Interest for Evaluation**
- 2. 400+ Companies inscribed to Web Portal**
- 3. 300+ Companies interested in the Italian Nuclear Program filled up Evaluation Forms**
- 4. Evaluation Forms were reviewed**
 - Identification of Interesting Companies**
- 5. 2nd set of Forms were sent to Companies that complied technical-economic requisites**
 - Detailed Questionnaires**

NPP Market Survey

Market Survey Methodology



NPP Market Survey

Market Survey Methodology

Key Aspects



```
graph LR; KA[Key Aspects] --> MainList; R[Risks !!] --> MainList; subgraph MainList [Key Aspects]; direction TB; A1[Technological needs: due to high technology contents of some components]; A2[Market availability: to expand the suppliers base for all technology components]; A3[Lead times: high technology components nuclear qualified imply complex supply chains with long lead times]; A4[Purchasing / Procurement Strategy: as key decisional element for the Nuclear New Build]; A5[Costs: high technology components under nuclear qualifications have costs higher than conventional items]; end
```

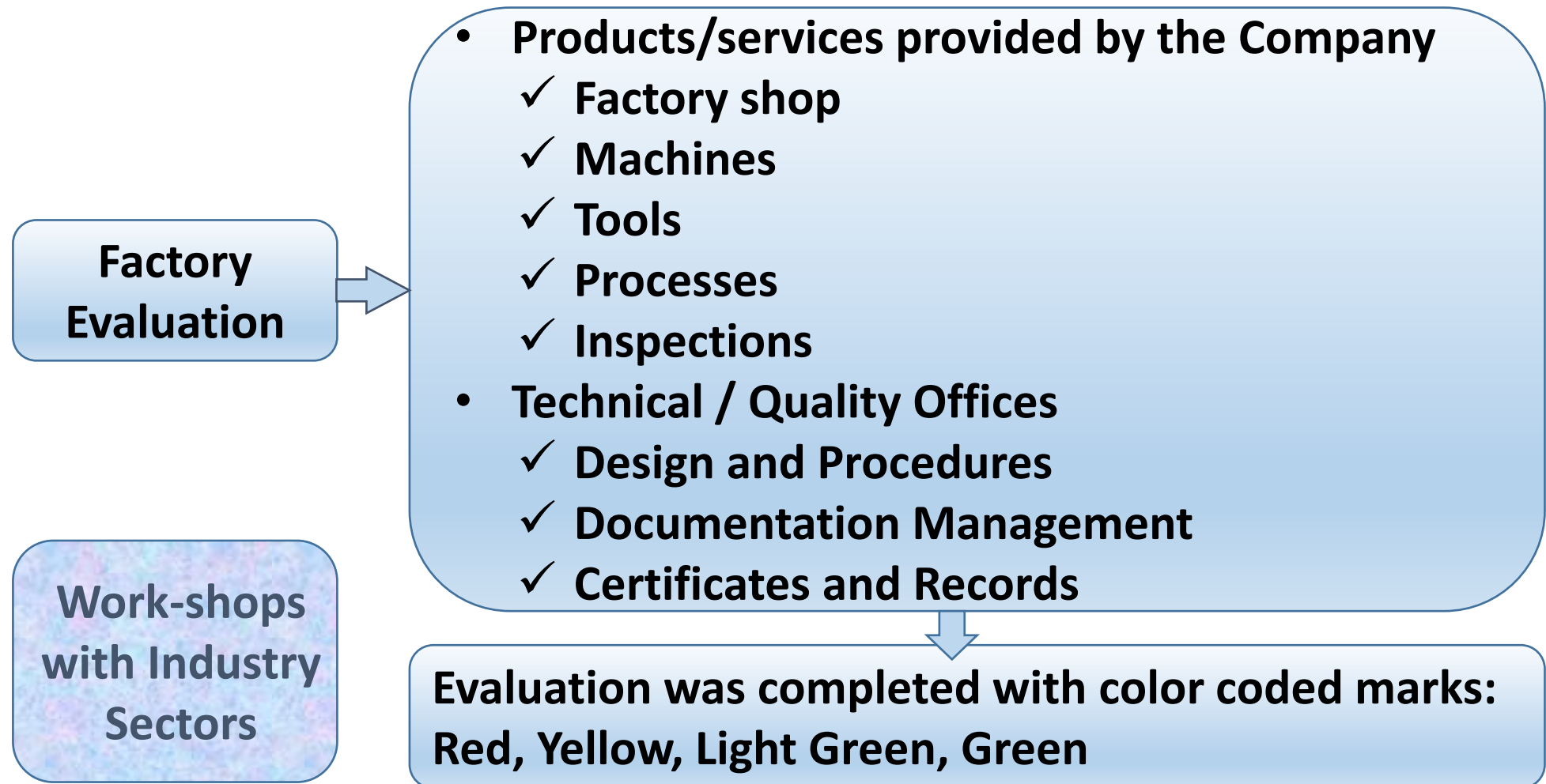
Risks !!

- Quality
- Schedule
- Costs

- **Technological needs:** due to high technology contents of some components
- **Market availability:** to expand the suppliers base for all technology components
- **Lead times:** high technology components nuclear qualified imply complex supply chains with long lead times
- **Purchasing / Procurement Strategy:** as key decisional element for the Nuclear New Build
- **Costs:** high technology components under nuclear qualifications have costs higher than conventional items

NPP Market Survey

Market Survey Methodology



NPP Market Survey

Results

NPP Market Survey

Results

Overall View



- **More than 150 companies keenly interested in the Italian Nuclear Program, for**
 - ✓ **Engineering and Design**
 - ✓ **Manufacturing**
 - ✓ **Civil Construction and Structures**
 - ✓ **Electromechanical Installation**
- **30 companies active in nuclear manufacturing for projects abroad**
- **60 companies participated in past nuclear manufacturing, now with dormant skills**

NPP Market Survey

Results

High Quality Outcomes

Nuclear plant conventional island, including

- civil works,
- turbine - generator,
- large water cooling pumps,
- valves
- non-nuclear qualified electrical systems,
- high voltage transformers

Strengths

- strong industrial know-how,
- long experience with Quality Management system (ISO 9001:2008),
- leadership in high end technology sector
- strong manufacturing skills

NPP Market Survey

Results

**Areas of
Development**



```
graph LR; A[Areas of Development] --> B[Development Areas]; C[Usual areas for nuclear new build] --> B;
```

**Usual areas
for nuclear
new build**

- **Intensify management self-assessment**
- **Organization for nuclear safety and quality**
- **Integrated document management, configuration management, document control**
- **Material certification traceability**
- **Manufacturing innovative processes**
- **Qualification of special processes to nuclear standards**
- **Utilization of experience feedback and Lessons Learned systems**

NPP Market Survey

Results

IAEA Compliance



```
graph LR; A[IAEA Compliance] --> B["• Application of IAEA GS-R-3 'The Management System for Facilities and Activities' and associated standards  
• Focus on IAEA Stakeholder Satisfaction along with ISO Customer Satisfaction"]; style A fill:#add8e6,stroke:#000,stroke-width:1px; style B fill:#add8e6,stroke:#000,stroke-width:1px;
```

- **Application of IAEA GS-R-3 “The Management System for Facilities and Activities” and associated standards**
- **Focus on IAEA Stakeholder Satisfaction along with ISO Customer Satisfaction**

Supporting Conclusions



```
graph LR; C[Supporting Conclusions] --> D["• Need of Government incentive programs  
• Partnership with qualified nuclear international suppliers  
• Agreement with national Universities, Technology centers, Industrial Experts"]; style C fill:#add8e6,stroke:#000,stroke-width:1px; style D fill:#add8e6,stroke:#000,stroke-width:1px;
```

- **Need of Government incentive programs**
- **Partnership with qualified nuclear international suppliers**
- **Agreement with national Universities, Technology centers, Industrial Experts**

NPP Market Survey

Thanks For Your Attention !!