MDEP Codes and Standards Working Group

CSWG's Initiative to Harmonize Nuclear Pressure-Boundary Codes and Standards

MDEP Codes and Standards Working Group's (CSWG's) Goal

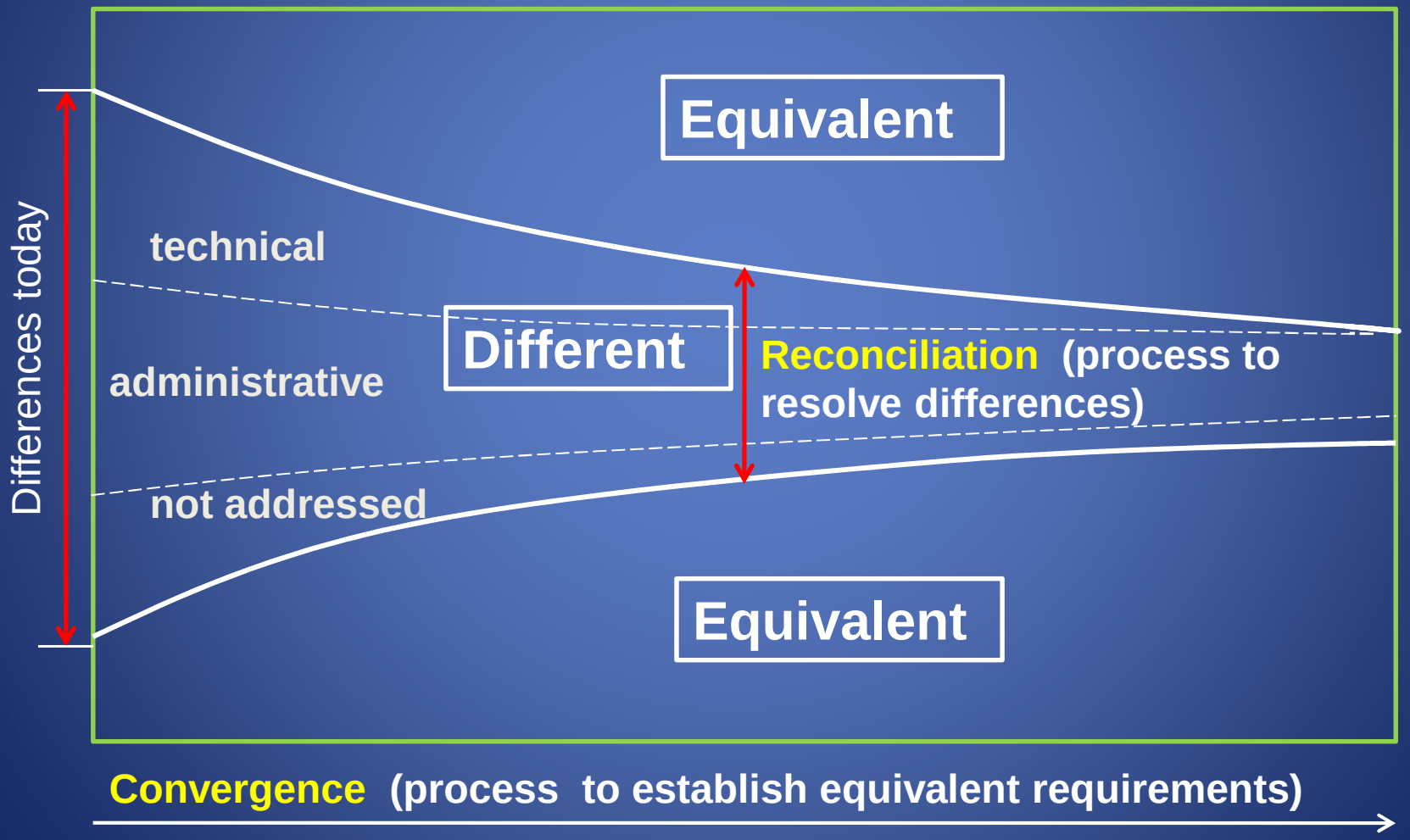
Achieve harmonization of code requirements for the design and construction of pressure-retaining components in order to:

- improve the effectiveness and efficiency of regulatory design reviews,
- increase the quality of safety assessments,
- strengthen each regulator's ability to make safety decisions

Why Do We Need Harmonization?

- Construction of NPP components has become a global venture
- Many questions arose in the use of codes and standards
  - Is it practical and safe to construct pressure-boundary components for a nuclear power plant using codes and standards from different countries?
  - Is there a way to harmonize the rules of different countries' codes and standards?
  - How different are each country's codes and standards?

Model for Harmonization of Code Requirements



What are the Benefits of Harmonization?

- Ensure more consistent regulatory positions worldwide when performing safety reviews of new-reactor designs
- Enable more efficient design reviews and decision-making by regulators
- Enhanced communications amongst regulators

Consistency in worldwide safety and reliability of NPPs

Example of Harmonization in Regulatory Reviews

- EPR (Finland) undocumented weld repairs of main coolant loop piping
- Regulators from Finland, France, United Kingdom, and United States discussed and compared each country's regulatory practices and construction code requirements for documenting weld repairs
- Collaboration helped Finnish regulator reach a safety decision consistent with the significance of deviations and other countries' regulatory practices

How Can We Achieve Harmonization?

- Regulators play a minor role in harmonization of pressure boundary code requirements
- Need technical support of standards developing organizations (SDOs) and vendors (CORDEL)*

* World Nuclear Association's Working Group on **Co**operation in **R**eactor **D**esign **E**valuation and **L**icensing

Plan for Achieving Harmonization

1. Identify similarities and differences of code requirements* (SDOs)
2. Select major code differences for convergence (CORDEL)
3. Converge on major code differences (CORDEL and SDOs)
4. Minimize further divergence of code rules (SDOs)

* Code comparison (ASME Report STP-NU-051-1) for Class 1 vessels, piping, pumps and valves is available at:

http://stllc.asme.org/News_Announcements.cfm

Step 1: Identify Code Differences

- Standards Developing Organizations (SDOs) from Canada, France, Japan, Korea, the Russian Federation, and U.S. initiated a code comparison
- SDOs compared code rules for Class 1 vessels, piping, pumps and valves
- Code comparison found varying degrees of similarities and differences amongst codes
- Results are documented in ASME Report STP-NU-051-1 available at no charge for downloading: http://stllc.asme.org/News_Announcements.cfm

Step 2: Select Code Differences

- World Nuclear Association's Working Group on Cooperation in Reactor Design Evaluation and Licensing (CORDEL) established a Codes and Standards Task Force (CSTF)
- CORDEL/CSTF sent a survey to nuclear industry stakeholders and selected topics for harmonization
- SDOs are also considering possible topics for harmonization

Step 3: Converge Code Differences

- CORDEL/CSTF is pursuing convergence of several technical topics including:
  - NDE personnel certification
  - Non-linear analysis methods
- CORDEL/CSTF is planning to work with the SDOs to develop consistent code rules in their respective codes

Step 4: Minimize Further Divergence

- SDOs established a Convergence Board in August 2012
- Meets 3-4 times/year in conjunction with the ASME Boiler Code meetings
- SDO Convergence Board's charter is to:

1) Limit divergence on individual requirements
2) Achieve convergence on individual requirements, where realistic and practical

Conclusions

- Achieving harmonization of pressure-boundary codes is a long and difficult process, in part, because these codes are “living documents”
- Even with their differences, each country’s pressure-boundary code results in acceptably safe components when used with that country’s standard industry practice and regulations
- Caution should be exercised when mixing code requirements from different countries
- Successful harmonization is strongly dependent on global cooperation and voluntary technical support by SDOs and vendors (CORDEL)