
Ada and SPARK Evolution

— AdaCore Perspective —

The Genesis of Language Design Circle at AdaCore

Lack of coordination on Ada evolution among stakeholders:

- language experts
- product leads (compiler and other tools)
- sales

Need to consider Ada and SPARK evolution together

Need to solve conflict on directions taken for Ada 202X

→ creation of Language Design Circle in April 2019

Current Status

Bi-weekly teleconf initially, weekly teleconf since September

Reviewed all Ada Issues in conflict

Proposals to ARG to:

- remove some AI (AI-214 on case expressions)
- simplify some AI (AI-208 on bigint/bigreal, AI-79 on Global)

No convergence on some AI (AI-189 loop-body, AI-262 Map-Reduce)

Adequate model for parallelism (and binding to OpenMP) still discussed

Current Status - Global Aspect

Various problems identified with current proposal: too complex, not compatible with SPARK, all-or-nothing solution, yet still incomplete

Claire and Tuck developed a simpler proposal:

- Global only on subprograms/tasks/entries
- Global can be “null”, “Unspecified”, “Synchronized”, or moded sets of variables/constants/package-name/“all”
- Simpler checking rules that fit in a dozen lines

View of Global as completing the parameter list

- **not** the same as identifying all effects (and no accounting of alias/access)

Current Status - Parallelism

- Doubts expressed by AdaCore stakeholders not part of the ARG about the usefulness of the general proposal for our customers
 - As well as the implementability of it for people that would need it
 - No perceived value from the majority of our customer base
- Need to see a mapping to existing runtime (OpenMP)/a prototype before committing to it.
- Work ongoing on that front, led by Tucker.
- Significant desire for simplified proposals
 - Led to a new simplified proposal for the Globals aspect

Envisioned Way Forward

- Use ada-spark-rfcs GitHub project for initial public discussion of new features
 - Possible convergence with Ada-Comment at some stage?
- LD assesses interest of evolutions independently
- LD informs ARG of AdaCore priorities and conclusions
 - through AdaCore members of the ARG
 - to inform the discussions at ARG

Envisioned Way Forward

- AdaCore plans more involvement in language evolution in the future
- Emphasis on usefulness of new features wrt. business interest, in conformance with [ISO/IEC JTC1 guidelines](#).

JTC 1's mission is to develop, maintain, promote and facilitate ICT standards required by global markets to meet business and user requirements.

*JTC 1 standards development will be conducted with full attention to a strong business-like approach (e.g., **cost effective, short development times, market-oriented results**).*