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
THE LD CIRCLE
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).*