

# "Sugar" - a New Industry Standard

Presented to Dan Kurtzer, US Ambassador to Israel 

Verification Technologies

IBM Haifa Labs

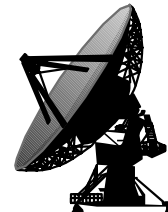
Yaron Wolfsthal

July 22, 2002



## The Engineering Challenge: Does it Work?

- Engineers build complex systems, using sophisticated **computer chips**, e.g. microprocessors



- **Verification**, which is an inherent part of the system design, is the process of ensuring that a system works as expected
  - Normally, verification is applied to the **model of the system** - before the system is actually built, i.e. the "**drawing on the designer's desk**"

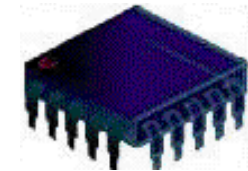


# The Fundamental Role of Specifications

- In order to verify anything, we need **specification(s)**
- **Examples**

## Microprocessor

- Every **arithmetic calculation** is "correct"



## Network switch (router)

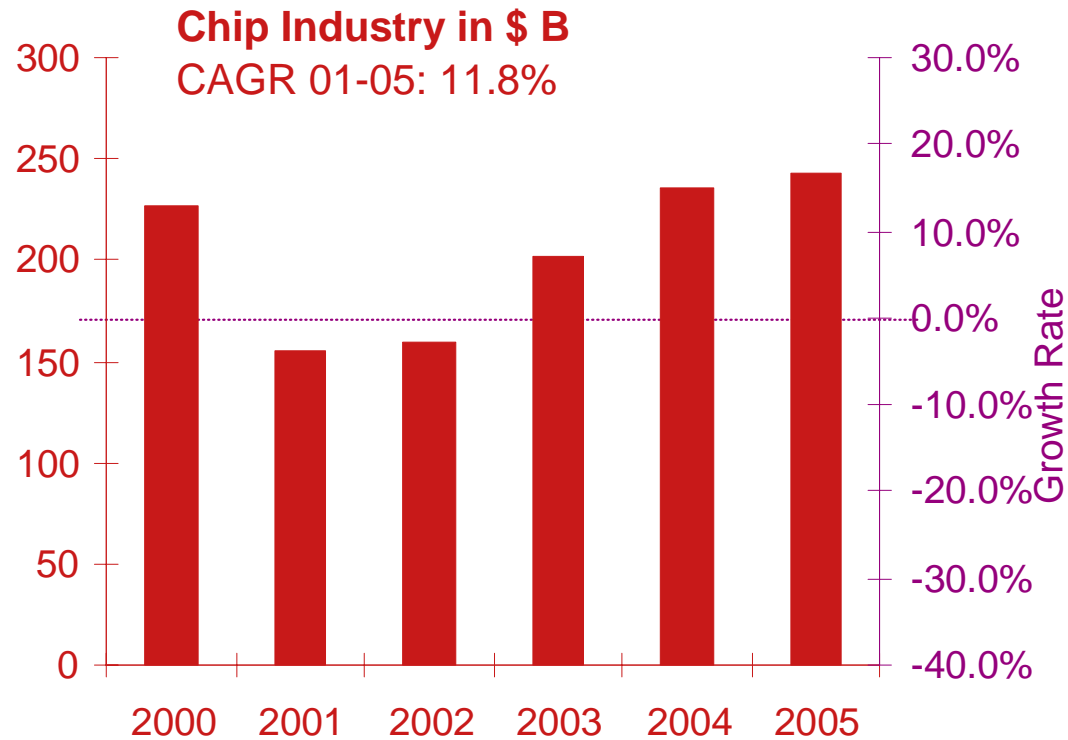
No **communication packet** is ever lost

Every **communication packet** eventually reaches its destination





## The Chip Design Industry is Huge



- **Verification** consumes the majority of development resources
  - ... and **effective specifications**, as the basis for verification, carry a lot of weight



## Effective Specification

- Verification requires
  - **Specification** of the correctness requirements of the system - using a unambiguous notation called a **Specification Language**
- The **Specification Language**, ideally, should be **standard**
- With a **Standard Specification Language**, chip development can be done effectively through
  - collaboration between engineers
  - sharing between companies
  - application of design tools



## IBM Haifa Labs Contribution to the Industry: The Sugar Standard Specification Language

- Intel, Motorola, IBM and Verisity contributed proposals to the Accellera standardization committee
- After 18 months, selection was made on April 22, 2002:
  - ✦ IBM Sugar language selected by Accellera as basis for IEEE standard
- Immediate buy-in from industry leaders
  - Strong endorsement in international Design Automation Conference (New Orleans, 6/02)





# Selection of Sugar as Basis for IEEE Standard

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**May 1, 2002**

**News**

## Accellera picks IBM's formal property language as standard

By [Richard Goering](#)  
[EE Times](#)  
April 25, 2002 (12:35 p.m. EST)

SAN JOSE, Calif. □ The Accellera organization has selected Sugar, IBM's formal specification language, as a standard that it says will drive assertion-based verification.

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