SpecC Reference Compiler (SCRC) Project Proposal

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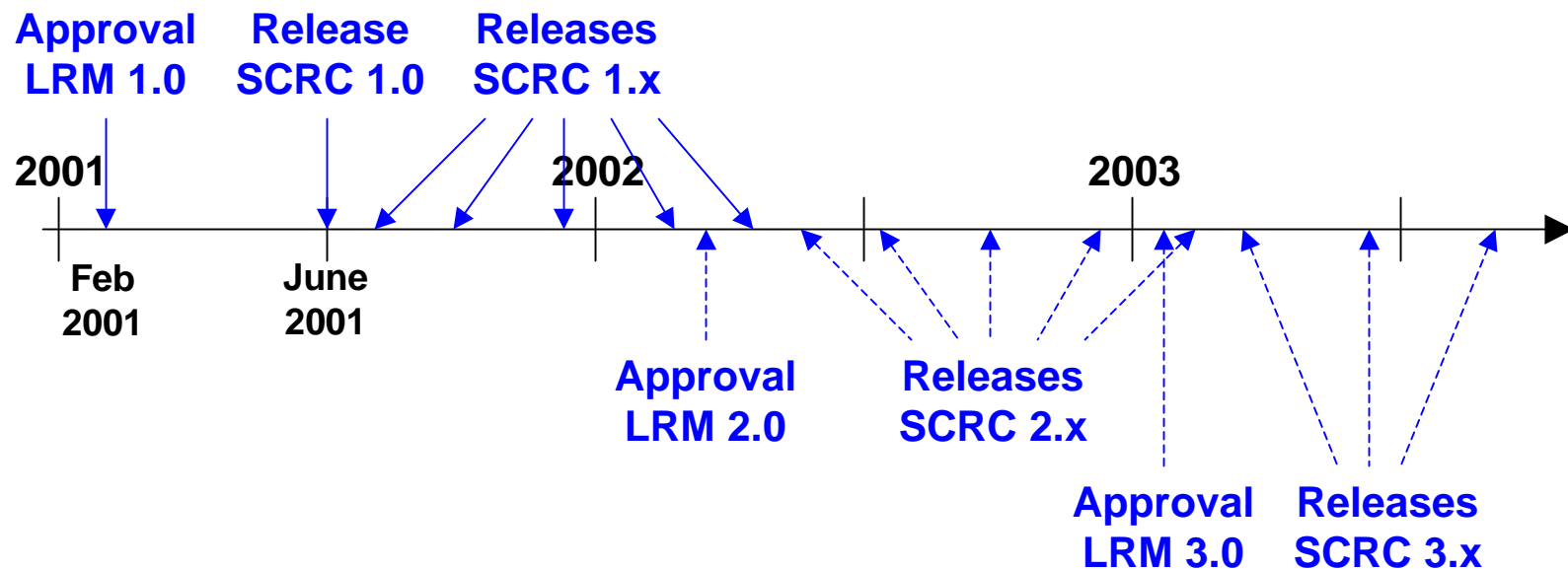**University of California, Irvine**

SCRC Overview

- **Goals**
- **Roadmap**
- **Organization**
- **Deliverables**
- **Support**

SCRC Goals

- **Promote SpecC Standardization**
- **Provide a Reference Implementation**
    - Compliant with Language Reference Manual (LRM)
    - Open Source (BSD license)
- **Reference Compiler Components**
    - SpecC Compiler
    - SpecC Simulation Engine
    - Test suite
- **Provide Basis for SpecC Tool Development**

SCRC Roadmap

- **SpecC LRM compliant Reference Implementation**
  - V1.0 available June 2001
- **Maintenance releases (bug fixes)**
  - monthly / on demand

Approval
LRM 1.0

Release
SCRC 1.0

Releases
SCRC 1.x

2001

2002

2003

Feb
2001

June
2001

Approval
LRM 2.0

Releases
SCRC 2.x

Approval
LRM 3.0

Releases
SCRC 3.x

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SCRC Organization (1)

- **STOC**
    - promotes SpecC Language, Methodology and Reference Tools
    - approves SpecC LRM
        - SpecC LRM V1.0 is donated to STOC
        - SpecC LRM V2.0+ will be created by LS-WG
    - promotes and approves SCRC project
    - authorizes UCI to develop SCRC
    - invites industry to fund activities
- **STOC LS-WG**
    - discusses, improves and proposes SpecC LRM future versions
    - co-develops LRM compliance test suite with SCRC Group
- **Industry members of STOC**
    - can use SCRC for own products
    - fund SCRC project through donation or contract with UCI

SCRC Organization (2)

- **UCI, Center of Embedded Computer Systems (CECS)**
    - owns SCRC copyright
    - freely licenses SCRC under BSD license
    - performs research and consults in SpecC issues
    - takes active part in STOC LS-WG
    - hosts SCRC Group in University environment
        - independent
        - non-commercial
        - fair
- **SCRC Group (part of CECS, leader Rainer Dömer)**
    - develops SCRC compliant to SpecC LRM
    - makes SCRC freely available (Internet)
    - maintains SCRC (bug fixes, extensions, etc.)
    - supports users of SCRC
    - extends reference tool set (e.g. SpecC debugger)

SCRC Deliverables (1)

- **SpecC Reference Compiler Components:**
  - Compiler
    - SpecC Parser
    - Internal Representation (minimal)
    - Semantic Checker
    - C++ Code Generator
  - Simulation Engine
    - Run-time libraries
  - Test suite
    - SpecC LRM compliance test cases
- **Open Source Implementation**
  - Source code freely available under BSD license
- **Pre-compiled Binaries**
  - Linux
  - Solaris
  - Windows (future)

SCRC Deliverables (2)

- **Technical Report (for contracts)**
  - "Architecture and Implementation of the SpecC Reference Compiler"
- **Ongoing Support for SCRC**
  - Maintenance
  - Bug fixes
  - Support for STOC members
- **SCRC extension for compliance with future LRM**

BSD License

- **Berkeley Software Distribution (BSD) License**
- **BSD license is Open Source**
- **BSD license is *not* GNU license**
  - copyright is *not* transferred to Free Software Foundation (FSF)
    - UCI owns copyright on SCRC
  - BSD license allows full commercial use
    - code changes are owned by their author
    - code changes don't have to be made public
    - derived code can be sold

SCRC Project Support

- **Estimated total cost: $100K+ per year**
  - 1 professional position, full-time
- **Support mechanisms: Donation or Contract**
  - Donation: min. $10K   (5% UC overhead)
  - Contract: min. $25K   (50% UC overhead)
- **Cost calculation**

Donation:		Contract:	
Company cost:	**$15.2K**	**Company cost:**	**$16.5K**
Japan tax (45%):	**- $ 4.7K**	**Japan tax (10%):**	**- $ 1.5K**
	$10.5K		**$15.0K**
UC ovrhd. (5%):	**- $ 0.5K**	**UC ovrhd.(50%):**	**- $ 5.0K**
Effective:	**$10.0K**	**Effective:**	**$10.0K**

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CECS

Donation Letter

<Date>

Professor Daniel Gajski
Center for Embedded Computer Systems
444 Computer Science Bldg.
University of California, Irvine
Irvine, CA 92697-3425

Dear Professor Gajski,

Enclosed please find a check in the amount of $<XXXXXX> from <Company Name>. This is an unrestricted gift in support of your SpecC language and technology research.

If you have any questions please feel free to contact me at <Phone Number> or <Email address>.

Sincerely,

<Name>
<Title/Rank>
<Company Name>

Note: Please make check payable to UCI Foundation

Contract

RESEARCH AGREEMENT NO. _____

his agreement ("Agreement") is entered into this _____ day of _____, by and betw
HE REGENTS OF THE UNIVERSITY OF CALIFORNIA, on behalf of its Irvine campus ("University")
_____, a _____ corporation, with offices
_____ ("Sponsor"). University and Sponsor shall be collectively referred to as
rties and agree as follows:

COPE OF WORK. Professor Daniel Gajski is the University's Principal Investigator for this project and
responsible for the direction of all effort hereunder in accordance with applicable University policies.
niversity's Center for Embedded Computer Systems will develop a SpecC Reference Compiler ("SCRC")
ll translate SpecC language into C++ language for simulation and synthesis ("Research Project"). The SC
ll be based on the Language Reference Manual approved by the SpecC Technology Open Consor
STOC") and will include SpecC parser, C++ writer, run time library and test suite. The SCRC will be n
blicly available under the Berkeley Software Distribution ("BSD") license by posting it on an open web
ersion 1.0 of the SCRC will be available by June 2001. The University will maintain the SCRC and pro
grades as requested by the STOC as long as sufficient funding is available.

ERIOD OF PERFORMANCE. The work under this Agreement shall be performed during the pe
ginning January 1, 2001, and ending December 31, 2001, unless extended by mutual written agreement.

AYMENT. Sponsor will pay a fixed price of $_____. University will invoice Sponsor for the total am
on receipt of a fully executed Agreement. Sponsor will make payment within thirty (30) days of receipt of
voice from University by electronic fund transfer or by check. Electronic fund transfer should be made to
llowing account:

ame of Bank: Bank of America
ranch: 1850 Gateway Boulevard
Concord, California 94520
ccount Name: The Regents of the University of California
ccount Number: 14990-50106 Routing #121000358

he transfer form should indicate that the funds are for this Agreement number, Professor Daniel Gajski, Princ
vestigator.

by check, it should be made payable to "The Regents of the University of California" and reference
greement number. Checks should be sent to: Contracts and Grants Accounting Office, 2650 Berkeley Pl
niversity of California, Irvine, California, 92697-1050.

IGHTS IN DATA AND REPORTS.

1 University shall provide Sponsor with a comprehensive report "SCRC Software Architecture
mplementation" by September 1, 2001, and any new reports with software upgrades.

2 University shall own the data and information developed under this Agreement and shall have the rigl
opyright and use, in whole or in part, any data and information received, collected, or developed under
greement.

3 Sponsor shall have the right to use any technical reports, data and information delivered hereunde
niversity for internal use.

4 Sponsor agrees that it will not use the names of University or its employees in any advertisement, p
lease or publicity with reference to this Agreement without the prior written approval of University. Unive
all have the right to acknowledge Sponsor's support of the research performed under this Agreemen
ientific publications and other scientific communications.

INDEMNIFICATION. Sponsor agrees to defend, indemnify and hold University, its officers, employees and ag
rmless from and against any and all liability, loss, expense, attorneys' fees, or claims for injury or damages arising o
e performance of this Agreement but only in proportion to and to the extent such liability, loss, expense, attorneys'
claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of Sponso
ficers, agents, or employees. University agrees to defend, indemnify and hold Sponsor, its officers, employees
ents, harmless from and against any and all liability, loss, expense, attorneys' fees, or claims for injury or dam
ising out of the performance of this Agreement but only in proportion to and to the extent such liability, loss, expe
orneys' fees, or claims for injury or damages are caused by or result from the negligent or intentional acts or omission
niversity, its officers, agents, or employees.

OTICE. Whenever any notice is to be given hereunder, it shall be in writing and shall be deemed received, if deliv
courier on a business day, on the day delivered, or on the second business day following mailing, if sent by first-c
rtified or registered mail, postage prepaid, to the following addresses:

niversity: The Regents of the University of California   Sponsor: _____
Sponsored Projects Administration   _____
Office of Research Administration   _____
University of California, Irvine   _____
160 Administration Building   _____
Irvine, California 92697-1875   _____
ttention: Doug Bickham   Attention: _____

ERMINATION. This Agreement may be terminated by University or Sponsor upon the giving of ninety (90) days
ritten notice to the other if either party determines, in its discretion, that Research Project is no longer academic
chnically, or commercially feasible. Upon receipt of such notice of termination, University shall exert its best effor
nit or terminate any outstanding financial commitments for which Sponsor is to be liable. University shall refun
ponsor any remaining funds provided for the Research Project beyond University's costs incurred through the dat
rmination, including without limitation, all uncancelable obligations.

PPLICABLE LAW. This Agreement shall be governed by the laws of the State of California.

NTIRE AGREEMENT. This Agreement represents the entire understanding of the Parties with respect to the sul
atter. No change, modification, extension, termination or waiver of this Agreement, or any of the provisions he
ntained, shall be valid unless made in writing and signed by duly authorized representatives of the Parties hereto.

IN WITNESS WHEREOF duly authorized representatives of the Parties have entered into this Research Agreen
of the date first written above.

HE REGENTS OF THE UNIVERSITY   SPONSOR
F CALIFORNIA

y _____   By _____
(signature)   (signature)

y _____   By _____
(name)   (name)

tle _____   Title _____
(title)   (title)

ate _____   Date _____