



Smlouva o dodávce software

uzavřená mezi

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|-------------|---|
| Společností | Advanced Engineering s.r.o. |
| sídlem | Na Ostrohu 16, 160 00 Praha 6 |
| IČ | 274 56 048 |
| DIČ | CZ 274 56 048 |
| číslo účtu | 35-6998590207/0100 |
| jednající | Komerční banka a.s., Dejvická 33, 160 00 Praha 6 Ing. Hynek Purš, jednatel |

Společnost je zapsaná v obchodním rejstříku vedeném Městským soudem v Praze, oddíl C., vložka 113952

(dále jen „**Dodavatel**“)

a

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| Organizací | Vysoká škola báňská – Technická univerzita Ostrava, Centrum informačních služeb (dále také CIS) |
| sídlem | 17. listopadu 2172/15, 708 00 Ostrava-Poruba |
| IČ | 619 89 100 |
| jednající | Ing. Michal Sláma, ředitel CIS |

Organizace je veřejnou vysokou školou podle zákona č. 111/1998 Sb.

(dále jen „**Objednatel**“)

(společně též „**smluvní strany**“)

I.

Úvodní ustanovení

1. Objednatel má zájem nabýt od Dodavatele licenci k software Altair HyperWorks (dále jen „software“) od firmy Altair Engineering Inc., a to v rámci projektu spolufinancováno z Operačního programu Jan Amos Komenský, projekt: Materiály a technologie pro udržitelný rozvoj, reg. č. CZ.02.01.01/002/22_008/0004631
2. Dodavatel je právnickou osobou, která je smluvně zmocněna výrobcem software – firmou Altair Engineering Inc. (jako Channel Partner) k distribuci, k administraci licence, k zajišťování maintenance, servisu a technické podpory a je oprávněn uzavřít tuto smlouvu, včetně všech smluv a dokumentů s ní souvisejících.
3. Další podmínky užívání software jsou uvedeny v tzv. Licenční smlouvě („Altair Engineering, Inc. - Software License Agreement“), která je přílohou k této smlouvě.

II.

Předmět smlouvy

1. Dodavatel se zavazuje dodat Objednateli software dle specifikace uvedené v příloze č. 2, tj. zajistit Objednateli udělení práva instalovat a užívat tento software, a to za podmínek uvedených dále v čl. III. této smlouvy a v Licenční smlouvě („Altair Engineering, Inc. - Software License Agreement“).
2. Objednatel se zavazuje software převzít a uhradit Dodavateli cenu ve výši a za podmínek sjednaných v čl. IV této smlouvy.
3. Objednatel se dále zavazuje poskytnout Dodavateli veškerou potřebnou součinnost nutnou ke splnění povinností vyplývajících z této smlouvy, kterou si Dodavatel vyžádá.

III.

Dodávka software

1. Dodávka Software

- 1.1. Dodavatel je povinen dodat Objednateli software do 30 dnů od podpisu této smlouvy. Místem plnění je pracoviště Hornicko-geologické fakulty na adrese sídla zadavatele.
- 1.2. V případě nedodržení lhůty plnění ze strany Dodavatele, má Objednatel nárok vůči Dodavateli na smluvní pokutu ve výši 0,05% z dlužné částky za každý den prodlení.
- 1.2. Objednatel bere na vědomí, že software je možné instalovat a užívat pouze v souladu s licenčními podmínkami uvedenými v Licenční smlouvě („Altair Engineering, Inc. - Software License Agreement“).

2. Licence

- 2.1. Jestliže Objednatel řádně uhradí licenční poplatky, poskytne Dodavatel Objednateli licenci, tj. oprávnění k výkonu práva užívat software, a to za podmínek uvedených v Licenční smlouvě („Altair Engineering, Inc. - Software License Agreement“).

IV.

Cena a platební podmínky

1. Licenční poplatky

- 1.1. Smluvní strany se dohodly, že Objednatel je povinen dle této smlouvy a ve smyslu Licenční smlouvy („Altair Engineering, Inc. - Software License Agreement“) a jejích dodatků hradit za dodání software následující licenční poplatky:

Licenční poplatky za dílčí licence (položky specifikace), v rozsahu a cenách uvedených ve specifikaci software / Nabídce č. 24.073/TC, která je přílohou č. 2 této smlouvy.

2. Platební podmínky

- 2.1. Licenční poplatek za 46-měsíční EDU / Open Research licenci uhradí objednatel jednorázově na základě daňového dokladu (faktury), vystaveného Dodavatelem a doručeného Objednateli po podpisu této smlouvy. Datem uskutečnění zdanitelného plnění (dále také jen DUZP) se rozumí datum vstupu licence v platnost.
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- 2.3. Poplatky budou účtovány na základě daňových dokladů vystavených Dodavatelem a doručených Objednateli, a to výši která odpovídá cenám uvedeným ve Specifikaci software, která je přílohou č. 2 smlouvy.
- 2.4. Fakturovaný poplatek bude na daňovém dokladu uveden v měně CZK.
- 2.5. Licenční poplatek bude Objednatelem uhrazen v měně CZK.
- 2.6. Všechny daňové doklady definované touto smlouvou budou mít splatnost 30 dnů ode dne vystavení.
- 2.7. Cena bude hrazena vždy bezhotovostně převodem ve prospěch bankovního účtu Dodavatele uvedeného v záhlaví této smlouvy, resp. na daňovém dokladu.
- 2.8. V případě nedodržení platebních podmínek této smlouvy ze strany Objednatele, má Dodavatel nárok vůči Objednateli na smluvní pokutu ve výši 0,05% z dlužné částky za každý den prodlení.
- 2.9. V případě, že v době platnosti této smlouvy dojde ke změně právních předpisů upravujících daňové povinnosti a správní poplatky vztahující se k předmětu smlouvy, je Dodavatel bez dalšího oprávněn v souladu s touto smlouvou upravit jednostranně výši fakturovaných plateb. V takovém případě je Dodavatel povinen neprodleně o této skutečnosti písemně informovat Objednatele.

V.

Ukončení smlouvy

1. Objednatel je oprávněn odstoupit od smlouvy v případě, že je Dodavatel v prodlení s dodávkou software po dobu delší než 30 dnů.
2. Dodavatel je oprávněn odstoupit od smlouvy v případě neposkytnutí sjednané součinnosti ze strany Objednatele, pokud toto znemožňuje splnění jeho povinností dle této Smlouvy a pokud na to Objednatele písemně upozornil a poskytnul mu přiměřenou lhůtu k nápravě.
3. Dodavatel je dále oprávněn odstoupit od smlouvy v případě prodlení s úhradou faktury delším 45 dnů.

4. Ostatní způsoby ukončení smlouvy a vztahu jsou upraveny Licenční smlouvou („Altair Engineering, Inc. - Software License Agreement“) a jejími dodatky.

VI.

Závěrečná ustanovení

1. Smluvní strany si dohodly, že vztah vzniklý z této smlouvy se řídí zejména Licenční smlouvou („Altair Engineering, Inc. - Software License Agreement“), písemnou specifikací software, ustanoveními zákona č. 513/1991 Sb., obchodního zákoníku a zákona č. 121/2000 Sb., autorského zákona, vše v platném znění. Tato smlouva má přednost před Licenční smlouvou koncového uživatele („Altair Engineering, Inc. - Software License Agreement“), pokud v této smlouvě není stanoveno výslovně jinak.
2. Nedílnou součástí této smlouvy je
 - Příloha č. 1 - Licenční smlouva („Altair Engineering, Inc. - Software License Agreement“)
 - Příloha č. 2 – Nabídka č. 24.073/TC / Specifikace software.
3. Tato smlouva je vyhotovená ve 2 vyhotoveních, obou s platností originálu, z nichž každá strana obdrží jeden exemplář.
4. V případě, že by některé ustanovení této smlouvy bylo nebo se v budoucnu stalo z jakýchkoliv důvodů neplatné, nezpůsobuje neplatnost ostatních částí smlouvy. Smluvní strany se zavazují bezodkladně nahradit po vzájemné dohodě toto ustanovení jiným, odpovídajícím svým obsahem účelu zrušeného ustanovení.
5. Všechny spory týkající se této smlouvy nebo v souvislosti s ní se zúčastněné strany budou snažit spor vyřešit smírnou cestou. Jestliže se takovým způsobem spor nepodaří vyřešit, bude předložen k projednání a rozhodnutí příslušnému soudu v České republice. Smluvní strany se v souladu s § 89a zákona č. 99/1963 Sb., občanský soudní řád, ve znění pozdějších předpisů, dohodly na místní příslušnosti soudu příslušného dle místa sídla Dodavatele.
6. Smlouva nabývá platnosti a účinnosti dnem podpisu poslední ze smluvních stran.
7. Smluvní strany prohlašují, že si tuto smlouvu před jejím podpisem přečetly, že byla uzavřena po vzájemném projednání podle jejich pravé a svobodné vůle, určitě, vážně a srozumitelně.

Ve Praze dne 5.9.2024

V dne 2024

Ing. Hynek
Purš, Ph.D.

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Ing. Hynek Purš, Ph.D.
Za Dodavatele

Ing. Michal Sláma
Za Objednatele

Příloha č. 1 - Licenční smlouva

„Altair Engineering, Inc. - Software License Agreement“



Altair Engineering, Inc. - Software License Agreement

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This section applies to all acquisitions of the Products by or for the United States government. By accepting delivery of the Products except as provided below, the government or the party procuring the Products under government funding, hereby agrees that the Products qualify as "commercial" computer software as that term is used in the acquisition regulations applicable to this procurement and that the government's use and disclosure of the Products is controlled by the terms and conditions of this Agreement to the maximum extent possible. This Agreement supersedes any contrary terms or conditions in any statement of work, contract, or other document that are not required by statute or regulation. If any provision of this Agreement is unacceptable to the government, Vendor may be contacted at Altair Engineering, Inc., 1820 E. Big Beaver Road, Troy, MI 48083-2031; telephone (248) 614-2400. If any provision of this Agreement violates applicable federal law or does not meet the government's actual, minimum needs, the government agrees to return the Products for a full refund.

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10. **CHOICE OF LAW AND VENUE.** This Agreement shall be governed by and construed under the laws of the state of Michigan, without regard to that state's conflict of laws principles except if the state of Michigan adopts the Uniform Computer Information Transactions Act drafted by the National Conference of Commissioners of Uniform State Laws as revised or amended as of June 30, 2002 ("UCITA") which is specifically excluded. This Agreement shall not be governed by the United Nations Convention on Contracts for the International Sale of Goods, the application of which is expressly excluded. Each Party waives its right to a jury trial in the event of any dispute arising under or relating to this Agreement. Each party agrees that money damages may not be an adequate remedy for breach of the provisions of this Agreement, and in the event of such breach, the aggrieved party shall be entitled to seek specific performance and/or injunctive relief (without posting a bond or other security) in order to enforce or prevent any violation of this Agreement.

11. **TERM.** For annual licenses, or Support provided for perpetual licenses, renewal shall be automatic for each successive year ("Renewal Term"), upon mutual written execution of a new Order Form. All charges and fees for each Renewal Term shall be set forth in the Order Form executed for each Renewal Term. All Software licenses procured by Licensee may be made coterminous at the written request of Licensee and the consent of Altair.

12. **TERMINATION.** Either party may terminate this Agreement upon thirty (30) days prior written notice upon the occurrence of a default or material breach by the other party of its obligations under this Agreement (except for a breach by Altair of the warranty set forth in Section 6 for which a remedy is provided under Section 8; or a breach by Licensee of Section 3 or Section 4 for which no cure period is provided and Altair may terminate this Agreement immediately) if such default or breach continues for more than thirty (30) days after receipt of such notice. Upon


termination of this Agreement, Licensee must cease using the Software and, at Altair's option, return all copies to Altair, or certify it has destroyed all such copies of the Software and Documentation.

12. GENERAL PROVISIONS. Export Controls. Licensee acknowledges that the Products may be subject to the export control laws and regulations of the United States and other countries, and any amendments thereof. Licensee agrees that Licensee will not directly or indirectly export the Products into any country or use the Products in any manner except in compliance with all applicable U.S. and other countries export laws and regulations. **Notice.** All notices given by one party to the other under this Agreement shall be sent by certified mail, return receipt requested, or by overnight courier, to the respective addresses set forth in this Agreement or to such other address either party has specified in writing to the other. All notices shall be deemed given upon actual receipt. **Assignment.** Neither party shall assign this Agreement without the prior written consent of other party, which shall not be unreasonably withheld. All terms and conditions of this Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns. **Waiver.** The failure of a party to enforce at any time any of the provisions of this Agreement shall not be construed to be a waiver of the right of the party thereafter to enforce any such provisions. **Severability.** If any provision of this Agreement is found void and unenforceable, such provision shall be interpreted so as to best accomplish the intent of the parties within the limits of applicable law, and all remaining provisions shall continue to be valid and enforceable. **Headings.** The section

headings contained in this Agreement are for convenience only and shall not be of any effect in constructing the meanings of the Sections. **Modification.** No change or modification of this Agreement will be valid unless it is in writing and is signed by a duly authorized representative of each party. **Conflict.** In the event of any conflict between the terms of this Agreement and any terms and conditions on a Licensee Purchase Order or comparable document, the terms of this Agreement shall prevail. Moreover, each party agrees any additional terms on any Purchase Order or comparable document other than the transaction items of (a) item(s) ordered; (b) pricing; (c) quantity; (d) delivery instructions and (e) invoicing directions, are not binding on the parties. In the event of a conflict between the terms of this Agreement, and the Additional Terms, the Agreement shall take precedence. **Entire Agreement.** This Agreement, the Additional Terms, and the Order Form(s) attached hereto constitute the entire understanding between the parties related to the subject matter hereto, and supersedes all proposals or prior agreements, whether written or oral, and all other communications between the parties with respect to such subject matter. This Agreement may be executed in one or more counterparts, all of which together shall constitute one and the same instrument. **Execution.** Copies of this Agreement executed via original signatures, facsimile or email shall be deemed binding on the parties. **Translation.** Any translation of this License is done for local requirements and in the event of a dispute between the English and any non-English versions, the English version of this License shall govern, to the extent not prohibited by local law in Licensee's jurisdiction.

IN WITNESS WHEREOF, the parties have duly executed this Software License Agreement as of the Effective Date.

ALTAIR ENGINEERING, INC. acting through its authorized
Reseller, ALTAIR ENGINEERING GMBH

Signature: 

Print Name: _____

Title: _____

Date: _____

Ing. Hynek
Purš, Ph.D.

Digitálně podepsal Ing.
Hynek Purš, Ph.D.
Datum: 2024.09.30 15:34:28
+02'00'

Vysoká škola báňská – Technická univerzita Ostrava, CIS
("Licensee")

Signature: Ing. Digitálně

Print Name: Michal podepsal Ing.
Michal Sláma

Title: Sláma Datum: 2024.09.20
08:16:57 +02'00'

Date: _____

Příloha č. 2: Specifikace software

Nabídka č. 24.073/TC – Příloha ke Smlouvě o dodávce software





ADVANCED ENGINEERING s.r.o.



Advanced Engineering s.r.o., Na Ostrohu 16, 160 00 Praha 6

Kontakt: [REDACTED]

W: www.advanced-eng.cz

Číslo nabídky: 24.073/TC

Datum: 4. září 2024

VŠB-TU Ostrava, Centrum informačních služeb (dále také CIS)

17. listopadu 15, 708 33, Ostrava – Poruba

Czech Republic

Ing. Michal Sláma

Ředitel CIS

Prof. Ing. Jan Nečas, Ph.D.

Proděkan pro rozvoj a spolupráci s průmyslem

Nabídka software pro multi-fyzikální a DEM simulace

Vážení pánové,

děkujeme Vám za Vaši poptávku. Na základě poptávky – zadávací dokumentace výběrového řízení – **SW pro provoz CAE technologií – Informační systémy, EES, software 3. kategorie s evidenčním číslem ve Věstníku veřejných zakázek Z2023-019225** – Vám předkládáme nabídku zajištění softwarových licencí pro provoz CAE technologií Altair HyperWorks vč. nástroje pro DEM simulace Altair EDEM.

SHRNUTÍ

Předmětem nabídky je poptávaný software, využívající metodu diskretních prvků (DEM). Klíčový nástroj *Altair EDEM* umožňuje simulovat chování hornin, zemin, šterku, zrn, tablet a prášků a jejich interakci se zařízením při různých provozních a procesních podmínkách. Součástí nabídky je celý balík simulačních nástrojů (platforma *Altair HyperWorks*), který pomocí nástrojů *HyperMesh*, *OptiStruct*, *MotionSolve*, *Radioss*, *AcuSolve* a dalších umožňuje kooperace s dalšími výpočetními metodami jako Smooth Particle Hydrodynamics (SPH), computational fluid dynamics (CFD), Multiple-Body Dynamics (MBD) a Finite Element Analysis (FEA).

Toto řešení vyhovuje poptávanému účelu užití, tedy výzkumu, navrhování a optimalizacím dopravních, skladovacích a procesních zařízení a operací v rámci projektu reg. č. CZ.02.01.01/002/22_008/0004631.

Licence na DEM software i další nástroje je dimenzována pro dostatečný výpočetní výkon, jak na klasických procesorech CPU (central processing unit), tak na grafických procesorech GPU (graphics processing unit) jednotek.

NÁVRH ŘEŠENÍ

Altair EDEM je součástí CAE platformy *Altair HyperWorks* nabízející širokou paletu softwarových řešení pro CAE simulace, které lze využívat velmi flexibilně. Obsahuje produkty pro modelování, analýzu, optimalizaci, vizualizaci a automatizaci procesů v oblastech strukturální mechaniky, multi-body simulací, proudění tekutin, mechaniky sybkých hmot, elektromagnetismu, elektronických systémů nebo simulací výrobních procesů.

Tato nabídka představuje cenově efektivní řešení, které Vám zajistí pracovat s nejaktuálnější verzí *Altair EDEM* a využít k simulacím výpočet i na GPU (výpočet na 1 GPU nebo 16 CPU-cores vyžaduje **60 licenčních jednotek Altair Units**). Dalším benefitem je možnost realizovat multi-fyzikální co-simulace a optimalizace. Můžete tak řešit interakci sybkých materiálů se strukturami nebo s kapalinami. Zde se spotřeba licenčních jednotek nekumuluje, ale určuje licenčně nejnáročnějším nástrojem (v tomto případě *EDEM*).

Tato nabídka představuje kombinaci licence typu *Education* určenou pro *Open Reserach*, tedy nekomerční výzkum, vzdělávání, rozvoj know-how, vývoj výpočetních postupů, nekomerční projekty apod. Tato licence je doplněna krátkodobými standardními/komerčními licencemi, které umožní realizovat výpočty v rámci spolupráce s průmyslem a v rámci jiného komerčního užití (externí financování).

Nabízená licence představuje licenční jednotky v nejvyšším balíku *Multiphysics / Mechatronics Engineer (MME)*. Tato licence umožní práci se všemi CAE nástroji od Altair. Obecně, pro užití většiny solverů (*OptiStruct FEA*, *Radioss*, *MotionSolve*, *AcuSolve*, *Flux*, *FEKO* apod.), je spotřeba 30 HWU pro výpočet na 4 procesorových jádrech. Pro *EDEM* potřebujete 50 AU pro výpočet na 4 CPU-cores, 60 AU pro výpočet na 16 CPU-cores či 1 GPU. Podrobný popis naleznete v sekci *The Altair HyperWorks Licensing Concept* a *HyperWorks Solvers Unit Chart*. Licenční jednotky jsou plovoucí a platí zde tzv. „leveling“, nikoli „stacking“. To znamená, že můžete na jednom počítači využívat nástroje až do výše licenční náročnosti toho s nejvyšší spotřebou. Tedy při 21 AU provozujete najednou nejen *HyperMesh*, ale i *HyperView* a další nástroje s konzumací jednotek do 21 AU. Při 30 AU zase můžete například kromě pre- a post-processorů spouštět více solverů najednou (multi-physics analysis). Při nabízeném objemu 60 AU můžete spouštět rovněž více solverů, ale i licenčně náročnější *Altair EDEM*.

S licenčním konceptem firmy Altair získáte největší možnou flexibilitu při využívání tohoto softwaru – (viz. příloha *The Altair HyperWorks Licensing Concept*).

Více informací k licenčnímu systému naleznete na webových stránkách Altair (www.altair.com/altair-units) a v dokumentaci na portálu Altair One (www.altairone.com), v dokumentu *Altair Units 2024 – Licensing Guide*.

Výše uvedený sSoftware je k dispozici pro platformy Windows 10/11 a alternativně Linux – vizte podrobné požadavky pro instalaci na portálu *Altair One* (www.altairone.com).

CENOVÁ NABÍDKA SOFTWARE

Tato nabídka představuje poskytnutí *Educational / Open Research* licence na období od 1.9.2024 do 30.6.2028 pro účely nekomerčního výzkumu a vývoje. Standardní rozsah 50 AU jsme pro Vás, z důvodu využívání *Altair EDEM* navýšili na 60 AU, což zajistí možnost výpočtů až na 16 CPU-cores nebo 1 GPU.

Tato licence je doplněna standardními / komerčními krátkodobými licencemi pro zajištění realizace výpočtů v rámci komerčního využití (spolupráce s průmyslem apod.). Jejich časový rozsah je celkem na čtyři měsíční období v průběhu let 2026 až 2028. Jednotlivá licenční období (aktivace těchto licencí od určitého data) bude upřesněna dle aktuálních potřeb projektu objednatele.

| Poz./Pos. | Množ./Qty | Popis/Description | Cena/Price |
|--------------------------|-----------|--|---------------|
| 001 | | Altair Units: AU-MME-EDU-AN Altair Units annual license, Multi-physics/Mechatronics Engineer bundle Educational license, Open Research bundle Období/Duration: 46 měsíců (1.9.2024-30.6.2028 - bude upřesněno) | |
| 002 | | Altair Units: AU-MME-STD-AN - monthly Altair Units monthly license - TSSM, Multi-physics/Mechatronics Engineer bundle License for commercial use Období/Duration: 1.10.2026-31.10.2026 (bude upřesněno) | |
| 003 | | Altair Units: AU-MME-STD-AN - monthly Altair Units monthly license - TSSM, Multi-physics/Mechatronics Engineer bundle License for commercial use Období/Duration: 1.3.2027-31.3.2027 (bude upřesněno) | |
| 004 | | Altair Units: AU-MME-STD-AN - monthly Altair Units monthly license - TSSM, Multi-physics/Mechatronics Engineer bundle License for commercial use Období/Duration: 1.10.2027-31.10.2027 (bude upřesněno) | |
| 005 | | Altair Units: AU-MME-STD-AN - monthly Altair Units monthly license - TSSM, Multi-physics/Mechatronics Engineer bundle License for commercial use Období/Duration: 1.3.2028-31.3.2028 (bude upřesněno) | |
| Celkem: | | | 915 000,00 Kč |
| Cenové zvýhodnění (45%): | | | 411 750,00 Kč |
| Celkem (bez DPH): | | | 503 250,00 Kč |
| DPH (21%): | | | 105 682,50 Kč |
| Celkem (s DPH): | | | 608 932,50 Kč |

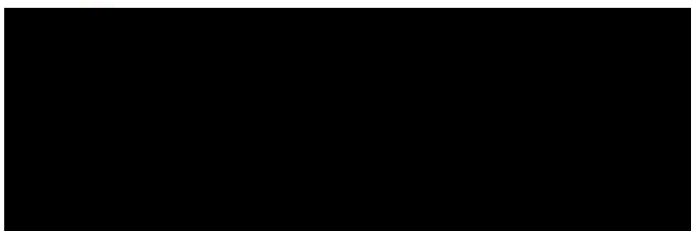
Cena softwaru zahrnuje podporu při instalaci, kompletní dokumentaci, telefonickou a on-line podporu, a bezplatný update během licenční doby.

Platební podmínky:
Splatnost faktury 30 dní.

Další podmínky:
Tato cenová nabídka je platná do 30. září 2024.

Rádi Vám, v případě potřeby, poskytneme další doplňující informace.

S přátelským pozdravem,



KONTAKTNÍ OSOBY

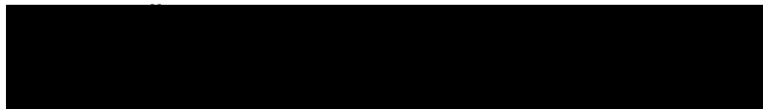
Zástupce dodavatele pro smluvní záležitosti



Ing. Hynek
Purš, Ph.D.

Digitálně podepsal
Ing. Hynek Purš, Ph.D.
Datum: 2024.09.26
14:33:44 +02'00'

Kontakt pro komunikaci a realizaci dodávky



The Altair Licensing Concept

More flexibility with Altair Units

With Altair's flexible unit-based licensing system organizations can pool and centralize their global software investment maximizing utilization and availability throughout the global enterprise delivering far greater value than traditional licensing systems. Instead of licensing individual Altair products for each user, the Altair licensing model allows companies purchase a pool of Altair Units (AU) for both individual users as well as for engineering departments. When a user launches a software application, the required number of units to run the application is automatically checked out from the local or departmental pool of AU. These AU are automatically returned to the pool when the application is closed. This licensing model also allows users to run multiple applications simultaneously without checking out more AU. With the exception of stacked applications and an application which requires more AU than any active application, no additional AU will be drawn from the pool. This is a key differentiator to most token based licensing models.

On the following pages you will find some more details on the Altair Alliance Enabled Partner Applications, on our solvers OptiStruct, RADIOSS and AcuSolve, and a short product overview. The required number of AU for the most common HyperWorks products is listed below.

| Altair Units (AU) | | |
|---------------------------|-------------|----------|
| HyperViewPlayer | 0 | |
| PBS Professional | 0.03 | per CPU- |
| HyperGraph 2D/3D | 6 | |
| Evolve | 10 | |
| AcuConsole | 21 | |
| HyperMesh | 21 | |
| HyperCrash | 21 | |
| HyperView | 21 | |
| AcuFieldView | 21 | |
| MotionView | 21 | |
| Manufacturing Solutions | 30 | |
| Inspire | 15 | |
| SimLab | 21 | |
| AcuSolve | 30 | |
| OptiStruct (Analysis) | 30 | |
| RADIOSS | 30 | |
| HyperForm | 30 | |
| MotionSolve | 30 | |
| HyperStudy | 25 | |
| HyperXtrude | 50 | |
| OptiStruct (Optimization) | 50 | |
| Compose | 10 | |
| Activate | 15 | |
| Feko | 30 | |
| Flux | 30 | |
| SimSolid | 30 | |
| Multiscale Designer | 25 | |
| Tailored Solutions | 35+ | |
| Virtual Wind Tunnel | 21 | |
| Partner programs | 45+ see p.4 | |

^(*) depending on CPU-cores per Run (see Solvers Unit Chart)
^(**) solver stacking rules apply

AU Usage Examples:

Example A: There are 50 AU on your server.

One user opens HyperMesh (21 AU). Those are drawn from the server - there are 29 AU left. The same user also opens HyperGraph (6 AU) at the same time. There are still 29 AU available on the server - only the highest AU drawing application draws AU (in this case HyperMesh). The user closes both applications. There are again 50 AU on the server.

Example B: There are 60 AU on your server.

During the day, two users simultaneously use HyperMesh to build FE-models ($2 \times 21 = 42$ AU), perform analyses with OptiStruct ($2 \times 30 = 60$ AU), post-process the results with HyperView ($2 \times 21 = 42$ AU). At the end of the day, users close the open HyperWorks applications and there are again 60 AU left on the server. One of the users can now run a topology optimization overnight using OptiStruct (50 AU).

Example C: There are 60 AU on your server.

One user opens MotionView (21 AU) to build a MBD model. Starting MotionSolve (30 AU) on the same machine draws only additional $30 - 21 = 9$ AU from the server. Starting HyperMesh (21 AU) on the same machine and running a topology optimization using OptiStruct (50 AU) draws only additional $60 - 30 = 30$ AU from the server. 50 AU are in use.

Adapt HyperWorks to your needs

All Altair software products can be adapted to your specific needs and integrated in your business processes. Through customization of HyperWorks you can achieve even more efficiency in your engineering projects. Our support and develop. projects guarantee the best possible benefit in the development of your solutions.

Discover our products and customizing solutions

The best way to discover and learn how to use our products efficiently is to attend one of our many product training courses. Regular courses are available for both the novice and experienced user and are taught by our product specialists. Training dates and course descriptions can be found by visiting www.altairhyperworks.de/trainings. In addition, we can provide custom training courses onsite your location or at our offices.

HyperWorks Solvers Unit Draw Chart

In-App Licensing

For multiple CPU-core jobs, the number of base AUs drawn by RADIOSS, AcuSolve and OptiStruct depends on the number of machine CPU-cores used per run as described in the following table. This base number may be altered depending on how many simultaneous copies of these solvers are running. See below regarding the Decay Function.

| HyperWorks Solvers | AU OptiStruct FEA, RADIOSS, MotionSolve, AcuSolve, Flux, FEKO | AU OptiStruct Optimization, EDEM Solver |
|--|---|---|
| <i>Number of CPU-cores per Run</i> | | |
| 1 - 4 | 30 | 50 |
| 5 - 8 | 35 | 55 |
| 9 - 16 | 40 | 60 |
| 17 - 32 | 50 | 70 |
| 33 - 64 | 60 | 80 |
| 65 - 128 | 70 | 90 |
| 129 - 256 | 80 | 100 |
| 257 - 512 | 90 | 110 |
| 513 - 1024 | 100 | 120 |
| Each duplication | +10 | +10 |

A decay function is applied across all Radioss, AcuSolve and OptiStruct licenses running simultaneously off the same license server. The decay function is a multiplier on the unit amount drawn for a job. Once a job has finished, the next job will backfill into the vacated slot. Hence, once a job has started, the checked-out unit amount for that job will not change.

| Job Number | Decay Factor |
|------------|--------------|
| 1 | 1.0 |
| 2 - 10 | 0.9 |
| 11 - 20 | 0.8 |
| 21 - 30 | 0.7 |
| 31 - 40 | 0.6 |
| 41 - 50 | 0.5 |
| 50+ | 0.4 |

Solvers level or stack AUs according to the following rules:

- At the first invoke of a Solver application, the AUs will level against HyperWorks applications already running on the same machine.
- Similarly, at the first invoke of a different Solver application, the AUs still level.
- The AUs stack when starting the second and so forth invoke of the same batch application.
- When the leveled job finishes, the next invoke levels again.

Example: If the user launches HyperMesh first (21 AU), and then launches RADIOSS (30 AU), 30 AU will be drawn. If the same user on the same machine adds an OptiStruct job (50 AU), the total units drawn is 50 AU. If the user now adds a second OptiStruct job, the total units drawn will be increased to 95 AU (50+0.9x50 AU).

Solver HPC Licensing

The Solver HPC license draws units on a per-CPU core basis. The unit draw is determined by the total number of cores for a solver according to a lookup table.

HPC Licensing applies in all situations where a solver is not started from inside an Altair GUI application and a SolverHPC license feature is present.

The following table applies to the license features: AcuSolve, AltairManufacturingSolver, EDEMSolver, FekoSolver (including WinPropSolver), FluxSolver, MotionSolve, OptiStructFEA, and Radioss. If OptiStruct runs an optimization (OptiStruct license feature), the draw per core is multiplied by 1.5 for a given job. Each license feature follows its own core count. This unit draw stacks.

GPU acceleration is implemented for AcuSolve, EDEM, Feko, and OptiStruct. For AcuSolve, Feko, and OptiStruct, one GPU card is counted as four additional CPU-cores; for EDEM one GPU card is counted as 16 CPU cores.

| Number of Cores | Draw per Core | Cumulative Draw Range* |
|-----------------|---------------|------------------------|
| 1-4 | | 30,00 |
| 5-36 | 1,60 | 31,60 - 81,20 |
| 37-70 | 0,80 | 82,00 - 108,40 |
| 71-200 | 0,60 | 109,00 - 186,40 |
| 201-400 | 0,40 | 186,80 - 266,40 |
| 401-800 | 0,30 | 266,70 - 384,40 |
| 801-1600 | 0,20 | 386,60 - 546,40 |
| 1601-3200 | 0,15 | 546,55 - 786,40 |
| 3201-6400 | 0,10 | 786,50 - 1106,40 |
| 6401-10000 | 0,05 | 1106,45 - 1286,40 |
| >10000 (20000) | 0,04 | >1286,40 (1686,40) |

*There may be slight variations due to numerical round-off.

For example, if three simultaneous Radioss jobs are running requiring a total of 48 CPU cores, the total unit draw will be 90.8 (= 30 + 32x1.6 + 12x0.8).

In addition to the unit draw of solvers during runtime, AcuPrep, Feko, OptiStruct, and Radioss Starter check for the existence of a license during initial check and preparation runs. These license checks do not draw any units.

Leveling of interactive applications is not affected. For example, a user on a workstation uses HyperMesh, HyperView (21 AUs leveled) plus two 4-core OptiStructFEA (36 AUs), a (maximum) total of 57 AUs is drawn.

Licensing of GPU-based CFD Solvers

The CFD solvers nanoFluidX and ultraFluidX are a direct GPU implementation and draw Altair Units per job based on the number of GPUs.

| GPU | nanoFluidX | ultraFluidX |
|------------------|------------|-------------|
| 1 | 25 | 50 |
| 2 | 50 | 100 |
| 3-4 | 100 | 150 |
| 5-8 | 150 | 200 |
| 9-16 | 200 | 250 |
| Each duplication | +50 | +50 |

Altair HyperWorks product overview

The Platform for Innovation™

Finite Element Meshing and Modeling

HyperMesh

High-performance finite element pre-processor to prepare largest models for an analysis run for various disciplines.

HyperCrash

Finite element pre-processor for automotive crash and safety analysis.

BatchMesher

Geometry cleanup and auto-meshing in batch mode for given CAD files.

AcuConsole

Powerful, yet easy to use GUI-Based Computational Fluid Dynamics (CFD) pre-processor for AcuSolve.

SimLab

Process oriented, feature based finite element modeling environment to capture and automate simulation processes.

Multi-body Dynamics Modeling

MotionView

Multi-body dynamics pre- and post-processor.

Solvers, Study and Optimization

OptiStruct

Structural analysis and design optimization software using finite elements and multi-body dynamics for linear and non-linear structural problems

RADIOSS

Finite element solver (explicit) for linear and non-linear problems under dynamic loadings like crash, impact, blast and stamping simulation.

SimSolid

CAE solution for linear and non-linear problems which eliminates geometry simplification and meshing – enabling the analysis of fully-featured CAD assemblies in minutes.

AcuSolve

General, all-purpose finite element computational fluid dynamics (CFD) solver.

nanoFluidX

Simulation tool for fluid flow analysis based on particle hydrodynamics (SPH) method, which predicts fluid flow within complex geometry of mechanical structure and under the influence of moving parts. A typical example is the transmission oil lubrication simulation.

ultraFluidX

Simulation tool for ultra-fast prediction of aerodynamic properties of cars and trucks as well as evaluation of buildings from the perspective of wind load. Tool for analysis of external aerodynamics based on Lattice Boltzmann method.

EDEM

Simulation software for bulk and granular material simulation. Powered by industry-proven discrete element modeling (DEM) technology, EDEM quickly and accurately simulates and analyzes the behavior of coal, mined ores, soils, fibers, grains, tablets, and powders.

MotionSolve

Multi-body dynamics solver.

HyperStudy

Integrated optimization, DOE, and robustness engine.

HyperForm

A unique finite element based sheet metal forming simulation software solution.

HyperXtrude

An hp-adaptive finite element program that enables engineers to analyse material flow and heat transfer problems in extrusion and rolling applications.

Flux

Flux predicts low-frequency electromagnetic phenomena and optimizes the performance of any electromechanical device in Flux 3D, Skew, PEEC GUI.

Feko

Feko is a leading electromagnetic simulation software that uses multiple frequency and time domain techniques with true hybridization to analyze and solve a broad spectrum of electromagnetic problems.

Post-processing, Data Analysis, and Math Scripting**HyperView**

High performance finite element and mechanical system post-processor, engineering plotter, and data analysis tool.

HyperGraph

Engineering plotter and data analysis tool.

HyperGraph 3D

Engineering 3-D plotter and data analysis tool.

HyperView Player

Viewer for visualizing 3-D CAE results via the Internet or desktop.

AcuFieldView

CFD post-processor with the ability to manage large and complex CFD data visualization requirements.

HyperMath

Mathematical scripting language for numerical computation.

Templex

General purpose text and numeric processor.

Industrial & Conceptual Design, Manufacturing Solutions**Altair Inspire Studio**

Industrial design software that combines NURBS curve, surface, solid, polygonal and point cloud modeling tools alongside a photorealistic rendering engine.

Altair Inspire

Inspire allows designers, product engineers and architects to generate and investigate structurally efficient concepts quickly and easily. Inspire embeds Altair's OptiStruct, SimSolid and MotionView algorithms bringing topology optimization, multi-body-dynamics and SimSolid performance to a broader audience.

Inspire platform also brings solutions for manufacturing feasibility and processes simulation: Inspire Print3D, Cast, Form, Extrude Polymer and Extrude Metal.

Data Management, Process Automation and Engineering Intelligence

Collaboration Tools

A solution that organizes, manages, and stores CAE and test data throughout the simulation life cycle.

Process Manager

Process automation tool for HyperWorks and third party software.
Processes can be created with the help of Process Studio.

ScriptView

HyperWorks IDE (Integrated Development Environment) for developing and debugging TCL and HyperMath Language (HML) scripts.

Workload- & License-Management (AU-enabled, not part of HyperWorks installation)

PBS Professional

Simplifies and automates the process of scheduling and managing compute workload across clusters, SMP and hybrid configurations. Enables implementation and optimization of site-specific scheduling policies.

Compute Manager

Web-based job submission and management portal to run, monitor and manage workloads and results on distributed resources.

Display Manager

Web-based application for remote visualization of CAE models and results through graphic nodes without data latency.

PBS Analytics

Web-based portal for visualizing HPC usage data (like job runtimes, wait times, queue loads) as well as application license usage.

Altair SAO (Software Asset Optimization)

Web-based application for Management, IT and Engineering to monitor and analyze usage of CAE/CAD software licenses.

More information about complete Altair product portfolio: <https://www.altair.com/product-showcase#filter=.product-altair-products> and <https://altairhyperworks.com/>

Altair Partner Alliance

With the *Altair Partner Alliance*, Altair is expanding the HyperWorks suite for lease licenses by including third-party products. The customers who participate in the alliance can use their existing pool of AU for both HyperWorks and participating partner applications at no or little incremental costs. Each partner application draws a different quantity of HyperWorks Units while running (Partner applications will always stack).

The alliance (<https://www.altair.com/altair-partner-alliance/>) grows continuously and includes the following applications:

| | |
|-------------------------|--|
| Fatigue Analysis | DesignLife by <i>nCode</i> (starts from 50 AU) DigitalClone by <i>Sentient Science</i> (5 AU) FEMFAT by <i>ECS (MAGNA PowerTrain)</i> (starts from 40 AU) |
| Crash & Impact Analysis | Crash Cad Calculate von <i>Crash Cad Calculate</i> (50 AU) MADYMO by <i>TASS-safe</i> (starts from 40.01 AU for coupled version) |
| CFD Analysis | AcuNexus von <i>Novus Nexus</i> (21 AU) SC/Tetra, STREAM by <i>Software Cradle</i> (starts from 50 AU) |
| MBD Analysis | CarSim, BikeSim, TruckSim by <i>Mechanical Simulation</i> (starts from 60 AU) ChassisSim by <i>ChassisSim</i> (starts from 20 AU) FTire by <i>cosin scientific software</i> (25 AU) |
| Stress Analysis | StressCheck by <i>ESRD</i> (starts from 50 AU) |
| Thermal Management | ElectroFlo, ThermoFlo, TESuite by <i>TES International</i> (starts from AU) RadTherm by <i>ThermoAnalytics</i> (starts from 50 AU) |
| Composite Modeling | Digimat by <i>e-Xstream</i> (starts from 50 AU) ESAComp by <i>Componeering</i> (starts from 40 AU) GENOA, MCQ-Composites by <i>AlphaSTAR</i> (starts from 30 AU) LAP, CoDA by <i>Anaglyph</i> (starts from 30 AU) MultiMech Suite by <i>MultiMech R&D</i> (starts from 40 AU) Multiscale Design System by <i>MDS, LLC</i> (starts from 15 AU) SwiftComp Micromechanics by <i>AnalySwift</i> (40 AU) |
| Manufacturing | CONVERSE by <i>PART Engineering</i> (50 AU) NovaFlow & Solid CV by <i>NovaCast Systems</i> (starts from 40 AU) |
| NVH Analysis | AlphaCell by <i>MATELYS</i> (35 AU) Coustyx by <i>ANSOL</i> (starts from 50 AU) EFEA by <i>Michigan Engineering Services</i> (50 AU) SEAM by <i>Cambridge Collaborative</i> (55 AU) VMAP by <i>TechPassion</i> (starts from 21 AU) |
| Material Library | KEY to METALS, KTM Premium Ed. by <i>Key to Metals</i> (starts from 40 AU) Materiality Database Pro by <i>Materiality</i> (35 AU) |
| Mathematics & Analytics | Maple, MapleSim by <i>Maplesoft</i> (starts from 25 AU) |

In addition, Altair Partner Alliance offers solutions for 1D System Simulation (**DSHplus**), Tolerance Analysis (**3DCS Analyst**), Project management (**PTB**), Complexity Management (**DesignProfit, OntoNet**), Rendering (**LinceoVR**) and Electromagnetics Analysis (**JMAG**).

More information about currently available APA products: <https://www.altair.com/product-showcase#filter=.product-apa>