

A close-up photograph of a circular honeycomb filter, likely from a motorcycle exhaust system. The filter is dark grey with a repeating hexagonal pattern. It is surrounded by a metallic frame with a blue and orange color scheme. The Akrapovič logo, consisting of a red stylized 'A' and the brand name in white, is centered on the filter.

**AKRAPOVIČ**

# ***About the company***



*Distributing our products in over 80 countries*



ESTABLISHED IN:  
COMPANY'S HEADQUARTERS, R&D, Foundry, Toolshop:  
MANUFACTURING:  
EMPLOYEES:

**1991**  
**Ivančna Gorica – 13.000 m<sup>2</sup>**  
**Črnomelj - 25.000 m<sup>2</sup>**  
**900+ employees**



- Manufacturing is united under one roof
- Start of production summer 2015
- The heart of our car, moto and carbon production



- More than 20.000 new sq m of modern, high-end facility
- Manufacturing hall with over half a km of main transport lanes
- 600 employees

# ***Our story***



**The tracks and 25 years of dedication to excellence – two key ingredients in our success story.**



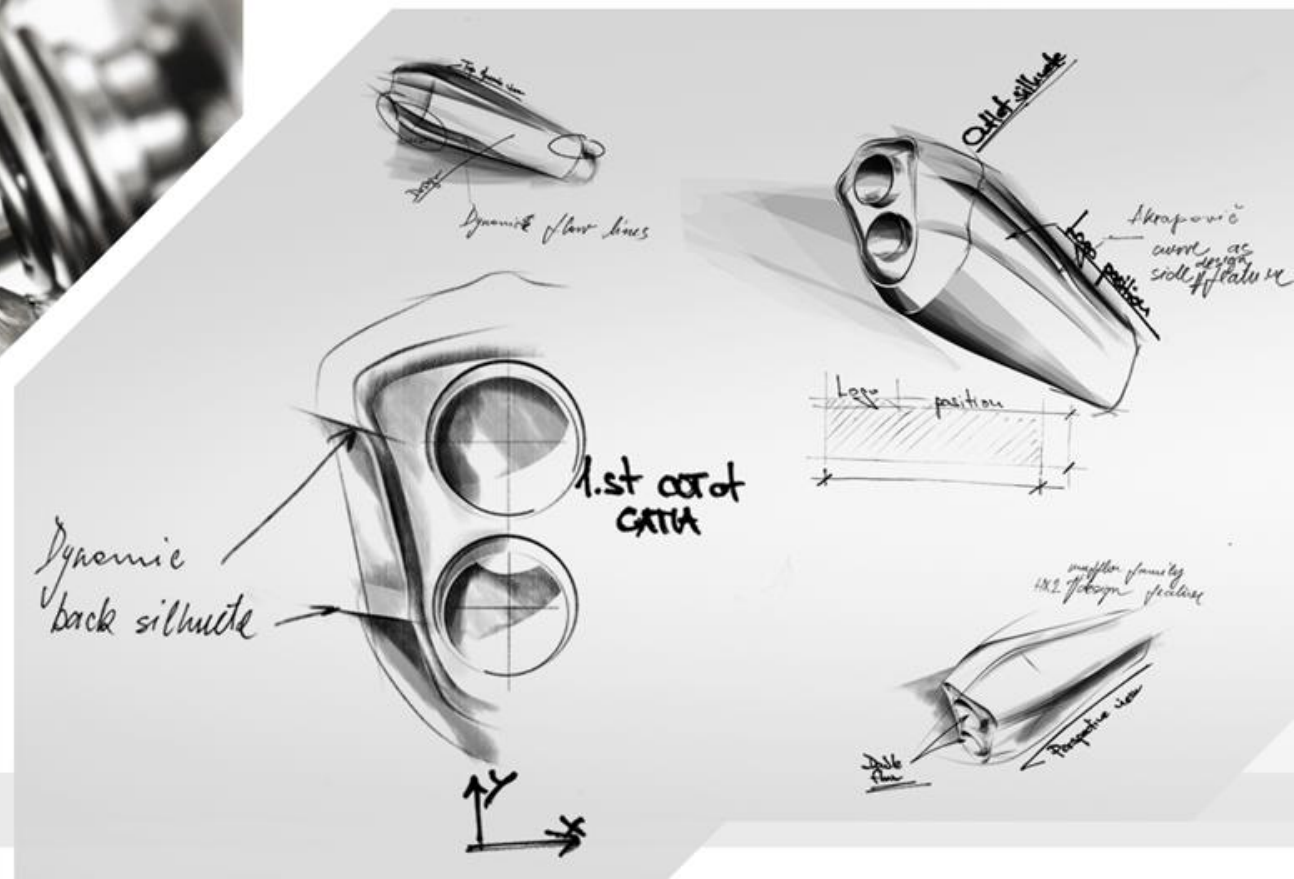


**2014**  
Introduction of the new  
motorcycle muffler generation.

**2015**  
Akrapovič Launches Its New  
Standard in Ultra-light Exhaust Systems.

**2015**  
Introduction of the new innovative  
ultra light car exhaust system.





Ultra light exhausts systems, exhaust innovation solutions, further TI materials

# ***Product portfolio***

Motorcycle exhaust systems



Car exhaust system

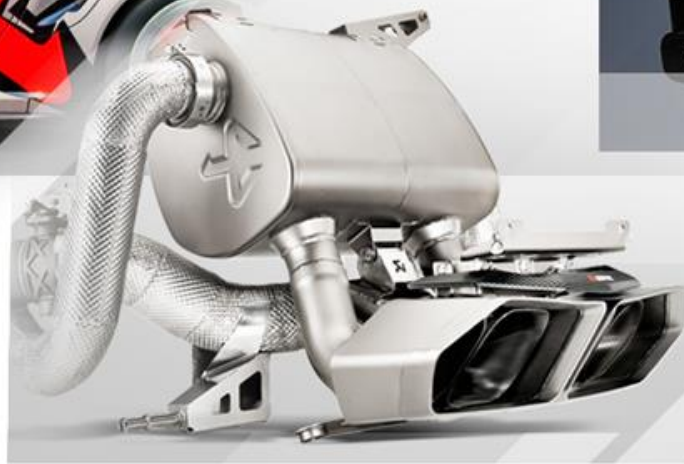


Titanium and inconel casted parts



Composites as parts of exhaust systems





# 100 World Champions

AKRAPOVIČ



**Ryan Dungey** - 101<sup>st</sup> World Champion

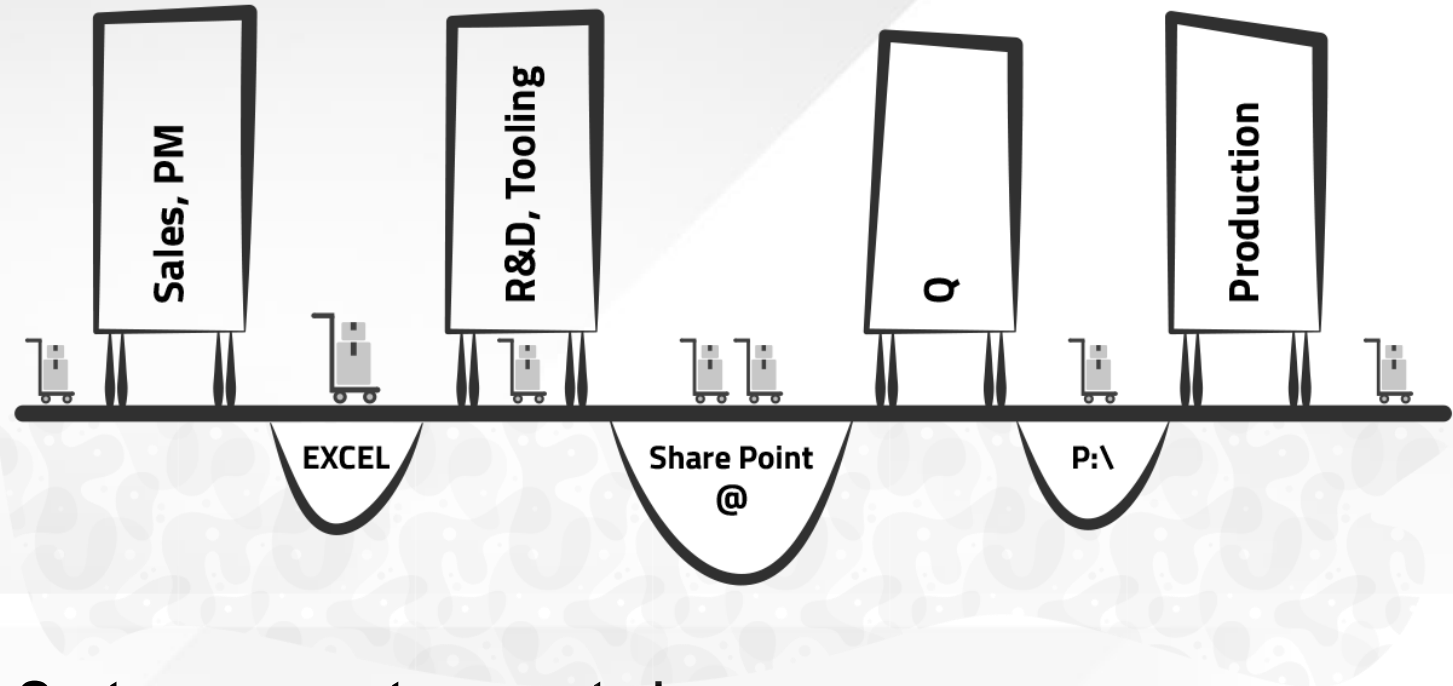


**Colin Edwards** - 1<sup>st</sup> World Champion

# **Akrapovič**

## **IT Architecture**

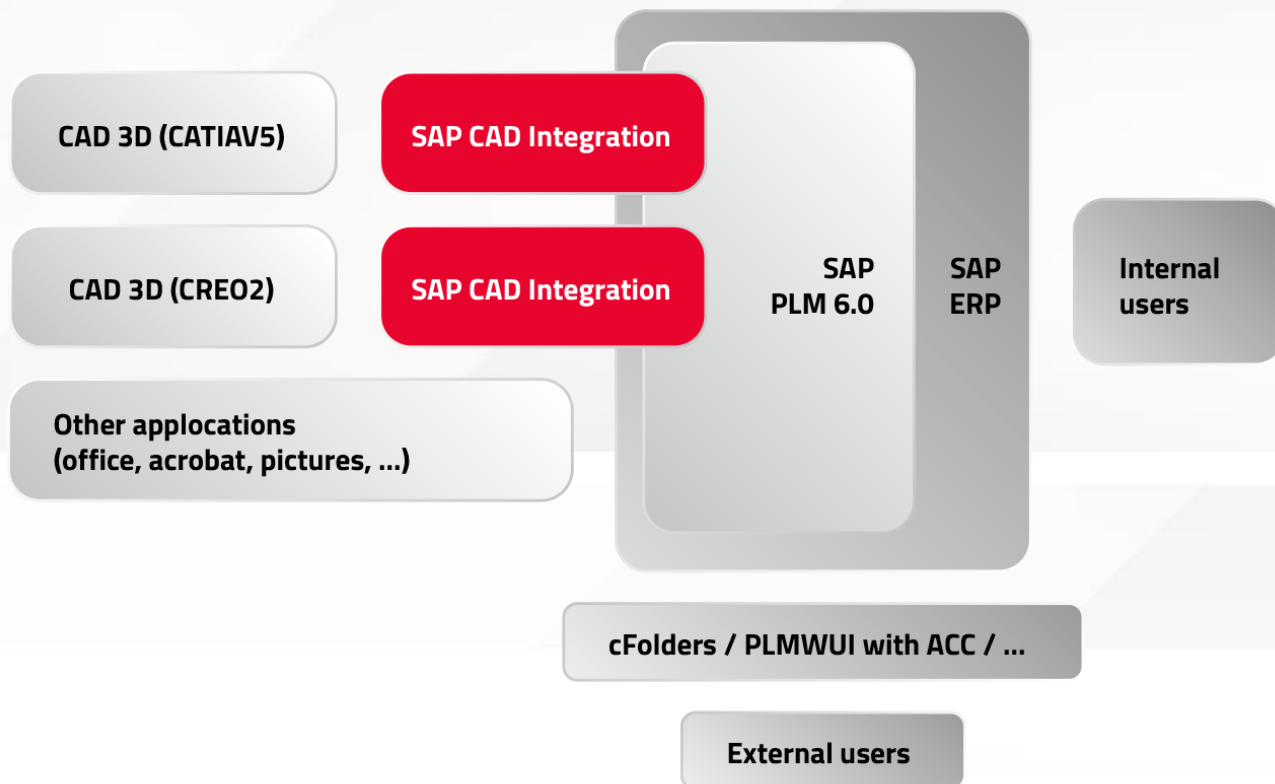
- SAP ERP is our core system for finance, sales and distribution, logistics, production planning, EDI
- CREO, CATIA
- WindChill
- Excel plays major role
- Microsoft Project
- Microsoft Dynamics CRM
- SharePoint lists
- Shared Folders
- HR system
- B2B custom development



**Systems are not connected**  
**Difficult maintenance, diversity of different technologies**  
**License cost**

What we need is manageable and well connected IT system

First idea was to use SAP for everything. CAD integration, Project Management, Document management system, Different workflows



Proof of concept was needed, so we decided for investment into SAP CAD integration pilot services

As alternative we have downloaded free Aras Innovator 10.0 and with the help of documentation, Forum and Just Ask Innovator started to build our initial test environment

Already during pilot test phase we started to realize negative effect to be depended on external resources

With excellent flexibility combined with full feature list and lower TCO Aras was on the end clear winner.



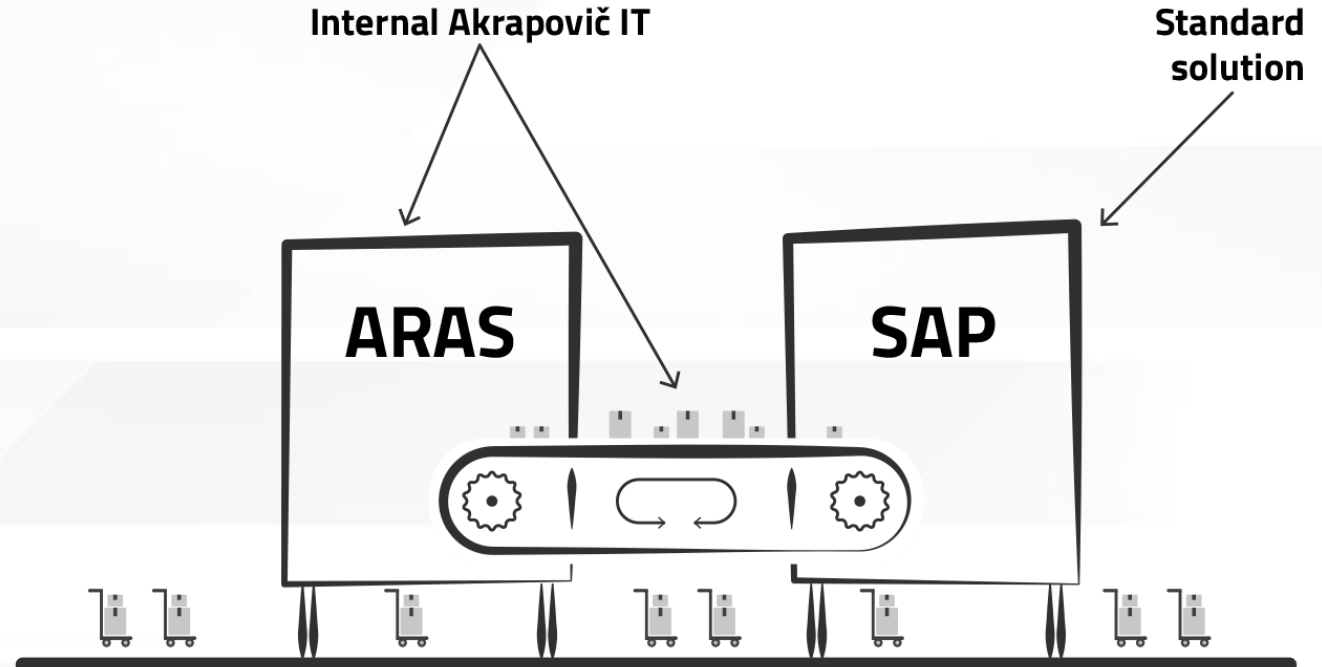
Our new IT system has to be well connected into single enterprise IT solution regardless of different building blocks we might use. There is no single solution which could optimally serve all our needs. Flexibility and cost effectiveness is something we are always looking for, it is imperative.

Final solution is based on Aras and SAP which are well connected into single IT landscape

Internal customization knowledge is needed for ultimate flexibility.

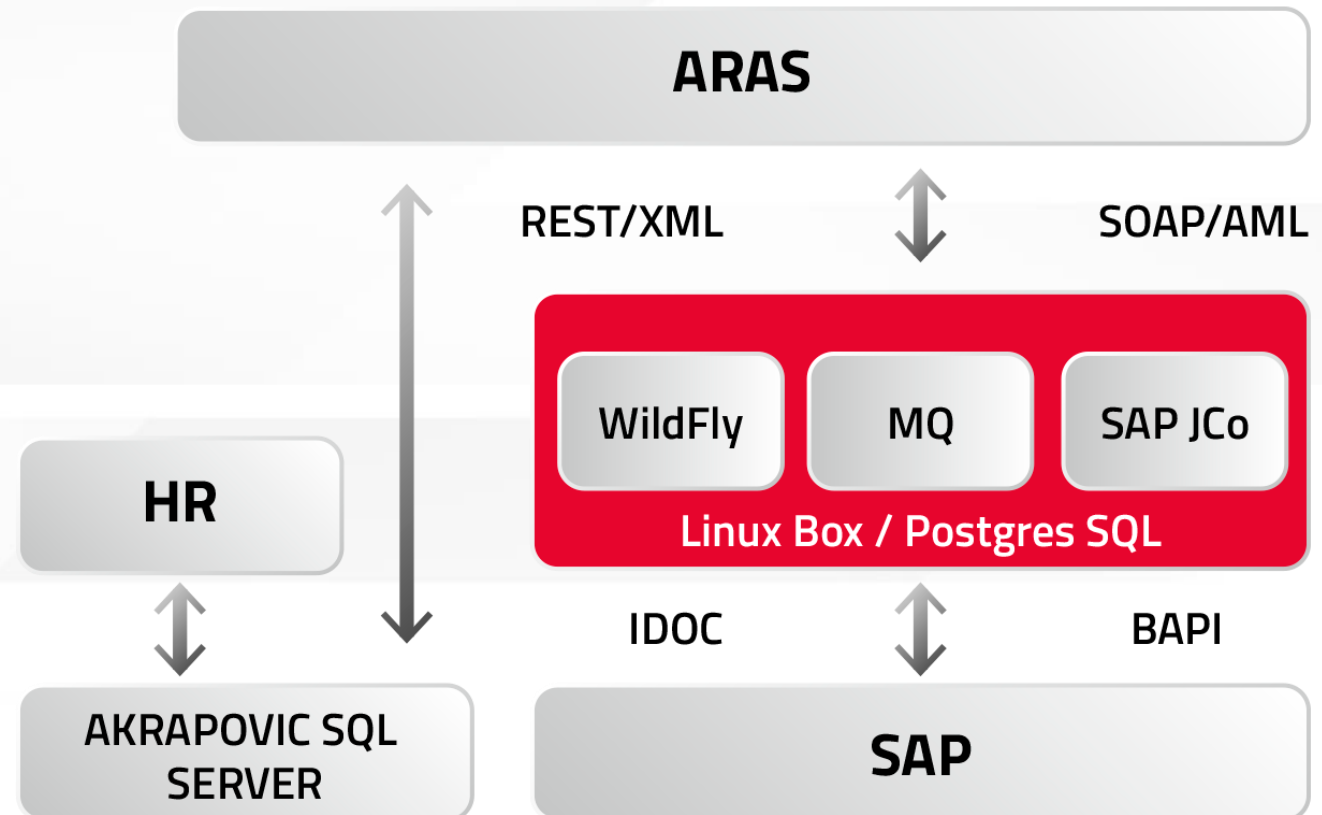
Aras is based on standard IT technologies such as C#, JavaScript, Dojo, XML, T-SQL.

To customize SAP you need specific knowledge, ABAP, and a lot of expertise.



Our first task was internal development of integration layer and after this was done, we had implemented real time integration for different SAP objects.

- Open source technology, no license cost
- Core SAP without expensive NetWeaver
- Highly flexible and universal design which requires minimum integration effort regardless of integration needed



Communication principle between Aras and SAP is very natural for both sides. Payload is XML via REST call. Aras can directly call SAP Functions and receive response back in real time.

Function Builder: Display **BAPI\_MATERIAL\_AVAILABILITY**

Function module: BAPI\_MATERIAL\_AVAILABILITY Active

Attributes Import Export Changing Tables Exceptions Source code

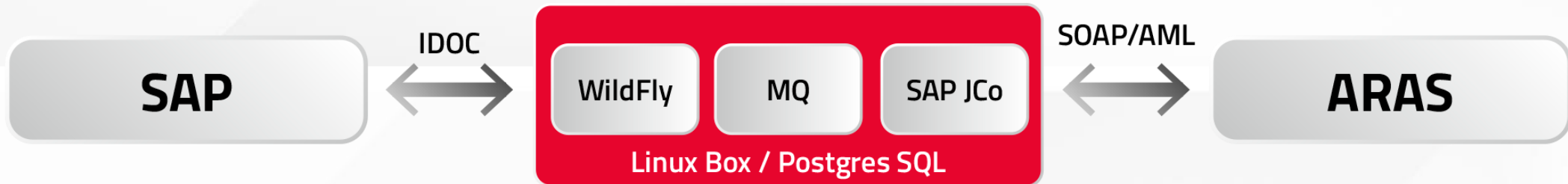
Parameter Name	Typing	Associated Type	Default value	Opt.	Pas.	Short text	Lon...
PLANT	LIKE	BAPIMA1VP-WERKS		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Werk	
MATERIAL	LIKE	BAPIMA1VP-MATNR		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Materialnummer	
UNIT	LIKE	BAPIADM-UNIT		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mengeneinheit für Anzeige	
CHECK_RULE	LIKE	BAPIT441V-PRREG		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Prüfregel	
STGE_LOC	LIKE	BAPICM61V-LGORT		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Lagerort	
BATCH	LIKE	BAPICM61V-CHARG		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Charge	
CUSTOMER	LIKE	BAPIKNVVKY-CUS...		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Kundennummer	
DOC_NUMBER	LIKE	BAPISDHEAD-DOC...		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Belegnummer	
ITM_NUMBER	LIKE	BAPISDITM-ITM...		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Positionsnummer	
WBS_ELEM	LIKE	BAPISDITM-WBS...		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PSP-Element	
STOCK_IND	LIKE	BAPICM61V-SOBKZ		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sonderbestandskennzeichen	
DEC_FOR_ROUNDING	LIKE	BAPICM61M-ANDEC		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Anzahl Dezimalstellen, auf die gerund...	
DEC_FOR_ROUNDING_X	TYPE	BAPIUPDATE		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Änderungsinformation zum zugehörig...	
READ_ATP_LOCK	LIKE	BAPICM61V-VFPST		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Steuerungskennzeichen für Verfügbar...	

```

<BAPI
name="BAPI_MATERIAL_AVAILABILITY">
  <IMPORT>
    <MATERIAL>242308</MATERIAL>
    <PLANT>7000</PLANT>
    <UNIT>PC</UNIT>
  </IMPORT>
</BAPI>
    
```

Standard SAP functionality ALE is used to synchronize Master data between SAP and ARAS.  
In case of change of master data, SAP triggers communication.

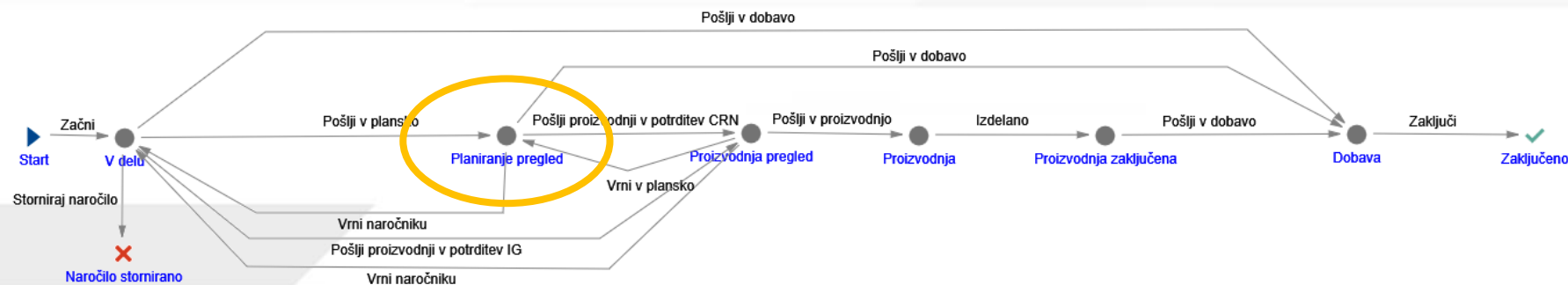
IDOC is translated into XML  
XML is translated into AML  
Aras SOAP call with AML payload



SAP Material	Customers	Internal Orders	HR Organization
SAP Material BOM	Vendors	B2B Orders	ASN, Invoices, Banks

The screenshot displays the 'Interno naročilo' (Internal Order) interface. The main window shows order details such as 'Nadrejeno Naročilo' (Parent Order), 'Vrsta Naročila' (Order Type), and 'Številka Projekta' (Project Number). A 'Dodaj postavke iz SAP' (Add settings from SAP) button is visible. Overlaid on this is a 'Izberi material' (Select material) dialog box. This dialog contains a table of materials with columns for Part Number, Revi..., State, Sequence, Quantity, Lock..., Name, and Reference Desi... The 'SAP Zaloga' (SAP Stock) field is highlighted with a green circle, showing a value of 0.000. A 'Daj v naročilo' (Add to order) button is also highlighted with a green circle. A 'Message from webpage' dialog box is open over the table, displaying a warning icon and the text 'Zaloga 224022 v SAP: 27.000' (Stock 224022 in SAP: 27.000), with an 'OK' button below it.

- We use standard Aras BOM selector to select Parts to shopping basket.
- Parts and BOM are synchronized with SAP in real time - mBOM
- Real time Part quantity check in SAP stock



Dynamic workflow routing which is based on real time SAP stock quantity for every part in shopping basket



- Dynamic DOJO charts for better user experience.
- Clicking the chart directly opens related Item In a same way as with Grid

Projekt - PR-4100001 - Internet Explorer

Projekt

Delovni Nalog: 4100001, Ime Projekta: Informatika test, Kratko Ime Projekta: [empty], Znamka: BMW, Leto: 2015, Model: [empty], Prioriteta: Normalna (3)

Številka Projekta: PR-4100001, Opis: [empty], Program: Supersport, Razred: AA4, Segment: Moto, Distribucija: [empty]

Podnovni Primer: 1009810, Projektna Mapa P: [empty], Opredeitev: 5002478

Projektjni Vodja: Tamaž Pihlar, 29.12.2015

Projektjni Tehnolog: Gregor Červak, SAP Tehnolog: Gregor Červak, B15, Inženir Kakovosti: Gregor Červak, B15

Odgovoren Za Prodajo: Gregor Červak, B15, Inženir Inženir: Logistični Inženir

Planiran Čas: [empty], Časovna Omejitev: [empty]

Uvožen Čas: 5, Časovna Poročanja: 83,50, Skupen Čas: 88,50

Offer: 100, Confly: 100, CAD: 60, Tools: [empty], Preseries: 0 Series: 0

G0: [empty], G1: 21.10.2015, CF: [empty], G2: 4.11.2015, TF: 20.11.2015, G3: [empty], G4: [empty], SOS: [empty]

Base G0: [empty], Base G1: [empty], Base CF: [empty], Base G2: [empty], Base TF: [empty], Base G3: [empty], Base G4: [empty], Base SOS: [empty]

Datoteke, Produkti, Deli, Orodja, Dokumenti, Beleženje ur, Projektna skupina, Interna naročila, Pregledi, Stroški, Controlling, Potrditve

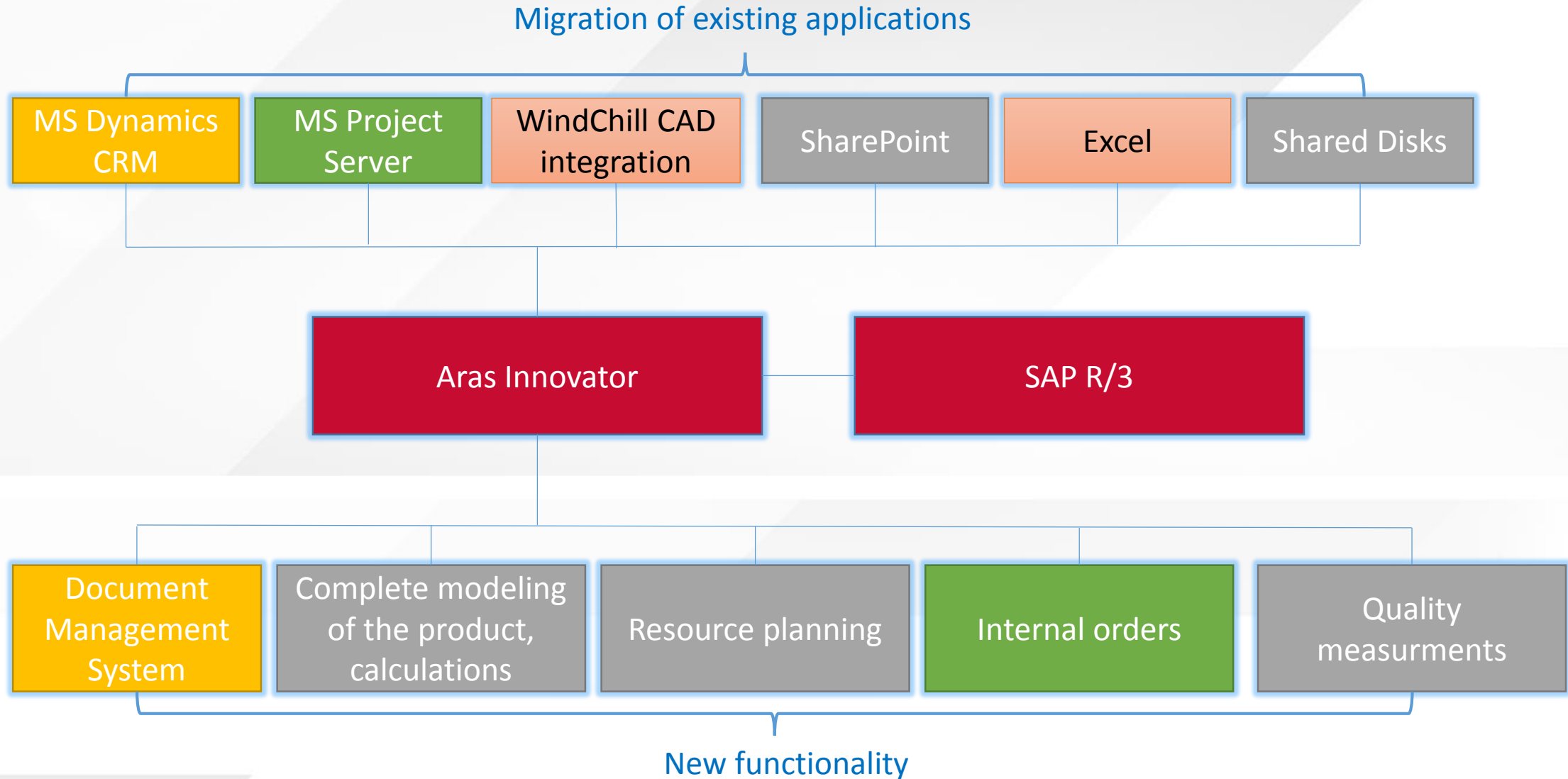
Čaka potrditev	Potrjeno	Zavrnjeno	Preneseno v SAP	SAP Napaka
64,00	8,50	0	2,00	13,00

Vloga v projektu

Vloga v projektu	Ure
Design Engineer	39,00
Logistic Engineer	5,00
Mechanic	4,00
Project Leader	1,00
Project Leader	9,50
Project Technologist	10,50
Quality Engineer	1,50
Simulation Engineer	9,00
SAP Technologist	2,50
Testing Engineer	5,50

Ready Item 1-1 of 1, Page 1 of 1 Aras Innovator

Forms enriched with different DOJO components for better user experience.



# ***Strategic vision***



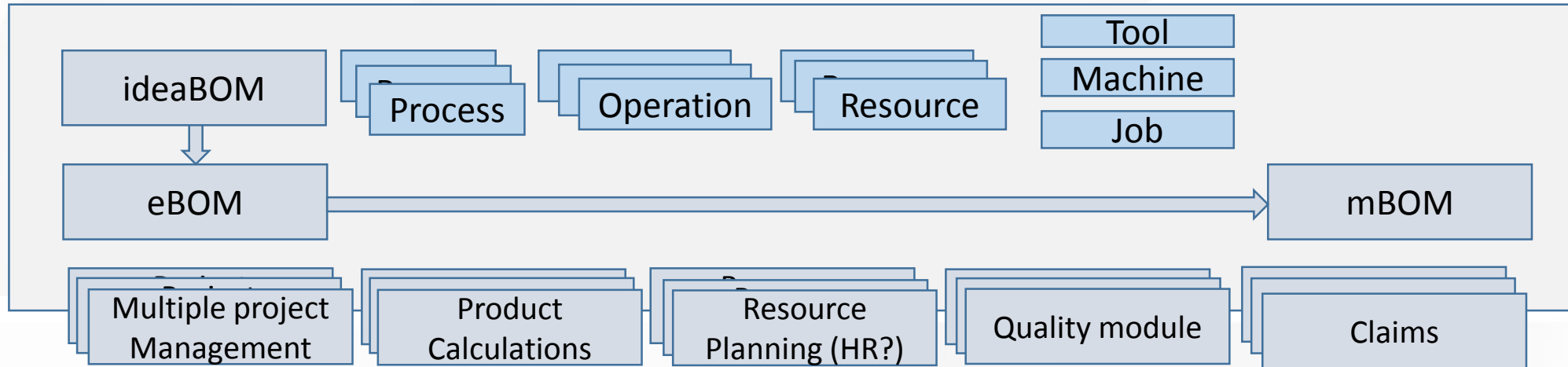


CAD Integration

Office Connector

Technical documentation

CRM



Finance

Sales & Distribution

Production Planning

SCM

Controlling

# Strategic vision – Variety of non PLM functions



- Platform we are able to customize by ourselves means better TTM, TCO and agility of the company on the long term.
- Aras support represent excellent value in the whole Aras license package

**Merilna naprava**

Sifra Merila: MD-100006  
 Meroslovna Številka: 34r er 34 134 3q4f 34 3  
 Naziv: test 1  
 Orodjarska Številka: Stara Številka Merila: Inventarna Številka  
 Klasifikacija: navojni trn  
 Proizvajalec: Model: w23r23 r 2r 23  
 Razvrstitev: SAP Koda Izdelka: Točnost Merila  
 Pomožna merila

**Lokacija Uporabe**

Projekt Uporabe Merila: PR-5004324  
 Uporabnik Merila: Boštjan Zamida.428  
 Oddelek Uporabe Merila: 10805000 Razvoj orodj  
 Vodja Oddelka: Tomaž Ilovar.613  
 Lokacija Uporabe Merila

**Podatki Kalibra**

Dolžina Kalibra [MM]: 1000  
 OK Mera [MM]: 1222,011  
 OK Obrabna Toleranca [MM]: 1111,000  
 NOK Mera [MM]:  
 NOK Obrabna Toleranca [MM]:

**Podatki Nadzora**

Interna Kalibracija:  
 Zunanja Kalibracija: 3441 \*3GO.GOSTINSKA.DEJAVNOST.DEJAN.CIGA

**Perioda Kontrole**

Leta	Kosov
2	1000

Zadnja Kontrola: 10.2.2016  
 Naslednja Kontrola: 22.2.2018  
 Ohranjenost: 5 - Odlično

Datum meritve...	1	2	3	4	5	6	7	8	9
3.2.2016	-40,12 mm	fi 120,00 mm							

**Material**

Created By: Gregor Čevrek  
 Created On: 12.11.2015  
 Modified By: Gregor Čevrek  
 Modified On: 4.12.2015  
 Locked By: Gregor Čevrek  
 Major Rev: A  
 Generation: 1  
 State:

**Fizikalne Lastnosti**

Gošota: Magnetnost: Ostalo:  
 Termični Raztezek: Toplota Prevodnost

**Tipične Mehanske Lastnosti**

E Modul: L-vzdolžno: T-prečno: D-diagonalno  
 Natezna Trdnost: Meja Elastičnosti: Raztezek Pri Pretргу: Trdnost: Ericksen

**Tipična Kemijska Sestava [Mas%]**

Al	Nb	V
Cr	Ni <td>C</td>	C
Cu	Pd <td>O</td>	O
Fe	Si <td>N</td>	N
Mn	Sn <td>H</td>	H
Mo	Zr <td>Ti</td>	Ti

**Tehnološke Lastnosti**

Oksidacijska Odpornost: Varljivost: Varilna Žica:  
 Korozijske Lastnosti: Preoblikovalnost: Toplota Obdelava

**Stress-Strain Graphs:**

Graph 1: Tensile stress (MPa) vs Tensile strain (Strain 1) [%]. Shows a yield strength of approximately 500 MPa and a tensile strength of approximately 600 MPa.

Graph 2: Tensile stress (MPa) vs Tensile strain (Strain 1) [%]. Shows a yield strength of approximately 500 MPa and a tensile strength of approximately 600 MPa.



- "The Unmistakable Sound of Akrapovič" (Exhaust system is art for us)
- Aras Innovator together with well connected SAP ERP means manageable, well connected and future proof IT system.
- Because of flexibility and single seat cost difference we tend to use more Aras and less SAP.
- Greater flexibility because of Aras unique business model.

**The best product, the biggest smile**

The AKRAPOVIČ logo, consisting of a red stylized 'A' symbol and the brand name 'AKRAPOVIČ' in a bold, italicized, black sans-serif font.