

## **NMS IP Recorder**

NMS NVR X-2U/72/R - PRODUKT ARCHIWALNY





## FUNCTIONS

















## **KEY FEATURES**

- •Video and audio channels: 110
- •Recording speed up to 3300 fps at 1280 x 720
- •Supports resolution up to 4000 x 3000 •Recorded stream size: 250 Mb/s in total from all cameras
- •Supports up to 2 monitors simultaneously •Built-in HDDs: 12 x 6 TB server-dedicated
- SAS for 24/7 recording
  •RAID controller protects recordings
- External arrays support
   Operating system: Microsoft Windows 10 lo
   Compatible with all NOVUS IP cameras
   Redundant PSUs: 2
   Integration with:recorders AHD NOVUS,

- systems of SSWiN DSC, systems of NMS ANPR, systems POS (Posnet, Upos i inne)
- •A platform supporting the reading of license plates from 1 camera video and recording the analyzed image

## DIMENSIONS





se	Recorded Data Search
	Backup
	Backup Methods
	Backup File Format
	Storage
	Internal Storage
	Internal storage for system
	RAID Redundancy
	Alarm
	Camera Alarm Input/Output
	Motion Detection
	System Reaction to Alarm Events
	Network
	Network Interface
	Network Protocols Support
	PC/MAC Software
	Bandwidth
	PTZ
	PTZ Functions
	Auxiliary Interfaces
	USB Ports
	Operating system
	Operating System
	Operation Mode
	OSD
	Control
	System Diagnostic
	Security
	Integration
	Integration

Water   Supported Contents Reported (contents Reported Contents		
Marian Segorated Camera Resolution	Video	
Market Colleged	Supported Cameras/Protocols	NOVUS, ONVIF, RTSP*****
Mozéro Codute  Autor	Maximum Supported Camera Resolution	4000 x 3000
Description   Processing Support   Processing Sup	Compression	H.264, MJPEG, H.264+, H.265
Auto   Part	Monitor Output	main (split screen, full screen, sequence): 1 x DVI, 1 x Display Port (up to 2 monitors simultaneously)
Page   1	Dualstreaming Support	yes
Recording Speed	Audio	
Recording Speed	Audio Input/Output	- / 1 x line-out (Jack 3.5 mm), 1 x S/PDIF (optical)
2006   10		
Recording placed	•	3300 fps (110 v 30 fps fpr 1280 v 720)
Recording Mode	Recording Speed	2400 fps (80 x 30 fps for 1920 x 1080), 1200 fps (80 x 15 fps for 2048 x 1536).
Schools	Stream Size	250 Mb/s in total from all cameras
Pealant   Peal	Recording Mode	
Digitary		
1880 pts 18 y 30 pts where recording 1810 channels at 1280 x 72011, 1910 pts 1910	Prealarm/Postalarm	up to 30 s/up to 600 s
150   pt	Display	
Highlack Speed	Display Speed	1080 fps (36 x 30 fps when recording 110 channels at 1280 x 720)**, 1350 fps (45 x 30 fps when recording 80 channels at 1920 x 1080)**, 900 fps (60 x 15 fps when recording 80 channels at 2048 x 1536)**, 720 fps (60 x 12 fps when recording 80 channels at 2592 x 1944)**
Payback Speed   270 fp fb x 3 fb fb fe 1200 x 1980 ft jill 200 x 198	Playback	
Backup Methods Backup Methods Backup File Format    PG, BMP, AM, IMS   Storage	Playback Speed	270 fps (9 x 30 fps for 1920 x 1080), 135 fps (9 x 15 fps for 2048 x 1536),
Backup Methods         USB port (HIDD or Flash memory), network           Backup File Format         JPG, BMP, AM, NMS           Storage         Internal Storage           Internal Storage         built-in: 12 x HDD 3.5" 6 TB SAS 24/7 server grade for recording           Internal Storage         built-in: 12 x HDD 3.5" 6 TB SAS 24/7 server grade for recording           Alarm         Alarm Inqui/Dutput           Alarm Inqui/Dutput         supports Camera's alarm inqui/output ***           Molton Detection         supports Camera's motion detection***           System Reaction to Alarm Events         built-in: 12 x HDD 3.5" 6 TB SAS 24/7 server grade for recording           Metwork Interface         supports Camera's alarm input/output ***           Metwork Interface         supports Camera's alarm input/output ***           Metwork Interface         2 x Ethernet - R)4 5 interface, 10/10/10/100 Mbbits           Network Interface         2 x Ethernet - R)4 5 interface, 10/10/10/100 Mbbits           Network Interface         2 x Ethernet - R)4 5 interface, 10/10/10/100 Mbbits           Network Interface         2 x Ethernet - R)4 5 interface, 10/10/10/100 Mbbits           Network Interface         2 x Ethernet - R)4 5 interface, 10/10/10/100 Mbbits           Network Interface         <	Recorded Data Search	by date/time, events, "Text-in"
Backup File Format         JPG, BMP, AVI, NMS           Storage           Internal Storage         built-in: 12 x HDD 3.5° 6 TB SAS 247 server grade for recording           Internal Storage for system         built-in: 12 x HDD 3.5° 6 TB SAS 247 server grade for recording           AlaD Redundancy         AND 0, AND 1, RAID 5, RAID 6           Alar Comment of Storage (Alarm Input/Output         SAID 0, AND 1, RAID 5, RAID 6           Alarm         Second detection           Camera Alarm Input/Output         supports a remera's and/on detection ***           Motion Detection         supports camera's and/on detection ***           System Reaction to Alarm Events         buzzer, e-mail, SMS, screen message, recording activation, PTZ           Network Protocols Support         HTTT, TCPIP, IPAH, GLUP, TP, DHCP, DIS, NTP, RTSP, UPAP, SMTP           Network Protocols Support         HTTT, TCPIP, IPAH, GLUP, LDIS, NTP, RTSP, UPAP, SMTP           PCMAC Software         Day Interface           PTZ         PTR, DETECTION         PTR, DETECTION SMS in total on I client workstations           PTZ         PTR, DETECTION         PTR, DETECTION SMS in total on I client workstations           PCP         PTR, DETECTION SMS in total on I client workstations         PTR           PCP TERM Comment System         Security System Comments, patterns, touris, auto-scans***         PTR           Opera	Backup	
Backup File Format         JPG, BMP, AVI, NMS           Storage           Internal Storage         built-in: 12 x HDD 3.5° 6 TB SAS 247 server grade for recording           Internal Storage for system         built-in: 12 x HDD 3.5° 6 TB SAS 247 server grade for recording           AlaD Redundancy         AND 0, AND 1, RAID 5, RAID 6           Alar Comment of Storage (Alarm Input/Output         SAID 0, AND 1, RAID 5, RAID 6           Alarm         Second detection           Camera Alarm Input/Output         supports a remera's and/on detection ***           Motion Detection         supports camera's and/on detection ***           System Reaction to Alarm Events         buzzer, e-mail, SMS, screen message, recording activation, PTZ           Network Protocols Support         HTTT, TCPIP, IPAH, GLUP, TP, DHCP, DIS, NTP, RTSP, UPAP, SMTP           Network Protocols Support         HTTT, TCPIP, IPAH, GLUP, LDIS, NTP, RTSP, UPAP, SMTP           PCMAC Software         Day Interface           PTZ         PTR, DETECTION         PTR, DETECTION SMS in total on I client workstations           PTZ         PTR, DETECTION         PTR, DETECTION SMS in total on I client workstations           PCP         PTR, DETECTION SMS in total on I client workstations         PTR           PCP TERM Comment System         Security System Comments, patterns, touris, auto-scans***         PTR           Opera	Backup Methods	USB port (HDD or Flash memory), network
Internal Storage Internal storage for system Internal storage for system Internal storage for system Internal storage for system ARID Redundancy ARID Redundan	Backup File Format	
Internal Storage Internal storage for system Internal storage for system Internal storage for system Internal storage for system ARID Redundancy ARID Redundan	Storage	
Internal storage for system		huilt-in- 12 v HDD 3.5" 6.TR SAS 24/7 senior grade for recording
RAID Redundancy  Alarm		
Alarm Input/Output Alam Input/Output Supports Pleamer's alarm Input/output *** Camera Alam Input/Output Alam Input Alarm Alam Input/Output Alam Input Alarm Alarm Alarm Alam Input Alarm Alam Input Alam Alam Input Alarm Alam Input Alarm Alam Input Alarm Alam Input Alam In		
Camera Alarm Input/Output         supports P. camera's alarm Input/output ***           Motion Detection         supports Camera's motion detection***           System Reaction to Alarm Events         buzer, e-mail, SMS, screen message, recording activation, PTZ           Network Interface         2 x Ethernet - Ryl-45 interface, 10/100/1000 Mbit/s           Network Protocols Support         HTTP, TCP/IP, IPVAVIG, UDP, FTP, DHCP, DNS, NTP, RTSP, UPPP, SMTP           PCMAC Software         MMS, Internet Explored.           Bandwidth         20 Mbis in total to all client workstations           PTZ           Valuations           Bandwidth System           Assistance Techniques           Bandwidth System           Assistance Techniques           Assistance Techniques           Maxillary Interfaces           USB Ports           System System           Operation Mode           Operation Mode           Operation Mode           Octrol         PC mouse and keyboard (in-set included), network, CDC keyboard           System Diagnostic           Security           Dimensions (mm)         437 (W) x B9 (H) x 648 (D)		
Motion Detection         supports camera's motion detection***           System Reaction to Alarm Events         buzzer, e-mail, SMS, screen message, recording activation, PTZ           Network         Network Interface         2 x Ethernet - R]-45 interface, 10/100/1000 Mbit/s           Network Interface         2 x Ethernet - R]-45 interface, 10/100/1000 Mbit/s           Network Protocols Support         HTTP, TCPIP, IPAVAG, LDP, FTP, DHCP, DNS, NTP, RTSP, UPAP, SMTP           PC/MAC Software         MMS. Internet Explorer/-           Bandwidth         2 by Mbis in total to all client workstations           PTZ           VER Total Colors           Auxiliary Interfaces           USB Ports           Operation System           Operation System           Operation Mode         Microsoft Windows 10 IoT           Operation Mode         Microsoft Windows 10 IoT           Control         pentages: Polish, English, Russian, others           Control         PC mouse and keyboard (in-set included), network, DCZ keyboard         Set curby           Operation Solity         PRIME PRI		In the state of th
System Reaction to Alarm Events buzzer, e-mail, SMS, screen message, recording activation, PTZ  Network  Network Interface Network Protocols Support PC/MAC Software Bandwidth PTZ CPI/P, IPV4N6, UDP, FTP, DHCP, DNS, NTP, RTSP, UPnP, SMTP PC/MAC Software Bandwidth PTZ PTZ Functions PMS, Internet Explorer/- Bandwidth PTZ PTZ Functions Porating System PTZ PTZ Functions Porating System Operating System Operating System Operating System Operation Mode Operation Mode Oscillatory Operation Signature Operation		
Network Interface 2 x Ethernet - RJ-45 interface, 10/100/1000 Mbit/s Network Interface 2 x Ethernet - RJ-45 interface, 10/100/1000 Mbit/s Network Protocols Support Protocols Support Protocols Support Marker Protocols Support Sup		
Network Interface         2 x Ethernet - RJ-45 interface, 10/100/1000 Mbit/s           Network Protocols Support         HTTP, TCP/IP, IPv4/v6, UDP, FTP, DHCP, DNS, NTP, RTSP, UPnP, SMTP           PC/MAC Software         NMS, Internet Explorer/-           Bandwidth         250 Mb/s in total to all client workstations           PTZ Functions           PTZ Functions           Auxiliary Interfaces           USB Ports         6 x USB 3.0           Coperating System           Operating System         Microsoft Windows 10 IoT           Operation Mode         pentaplex           OSD         languages Polish, English, Russian, others           Control         PC mouse and keyboard (in-set included), network, DCZ keyboard           System Diagnostic         automatic control of: HDDs, network, camera connection loss           Security         password protection, IP filtering, limiting the number of connections           Integration         integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems           Integration         integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems           Power Supply/Power Consumption         437 (W) x 89 (H) x 648 (D)           Weight         24 kg           Power Consumption and heatprint.         power consumption 560V, heatprint 450W.		buzzer, e-mail, 5m3, screen message, recording activation, 112
Network Protocols Support  PC/MAC Software  Annothit  PC/MAC Software  Annothit  PC/MAC Software  Annothit  PC/MAC Software  Annothit  PC/MAC Software  PTZ Functions  Annothit  Annothit  PTZ Functions  Annothit  Anno		2. February BLAF interfers 100001000 Mbible
PCMAC Software Bandwidth B		
Bandwidth 25 Mb/s in total to all client workstations  PTZ FURCHORION PRESET COMMAND SPARTERS, TOURS, auto-scans***  PTZ FURCHORION PRESET COMMAND SPARTERS, TOURS, auto-scans***  AUXILIARY INTERFACES  USB POTAS  Operating System Operating System Operating System Operating Mode Operating Mod		
PTZ Functions parkity Interfaces  LUSB Ports 6 x USB 3.0  Operating System Operating System Operating Mode OSD Operating System Operating Mode OSD Operating Mode OSD Operating System Operating Mode Operating Mode Operating System Operating Mode Operating Mode Operating System Operating Mode Operating System Operating System Operating System Operating Mode Operating System Operating Mode Operating System Operating Syst		
PTZ Functions pantityzoom, preset commands, patterns, tours, auto-scans***  Auxiliary Interfaces  USB Ports 6 x USB 3.0  Operating system  Operating System Operating Mode pentaplex OSD languages: Polish, English, Russian, others Control PC mouse and keyboard (in-set included), network, DCZ keyboard System Diagnostic automatic control of: HDDs, network, CDZ keyboard System Diagnostic automatic control of: HDDs, network, CDZ keyboard System Diagnostic automatic control of: HDDs, network, camera connection loss Security assword protection, IP filtering, limiting the number of connections  Integration integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems  Integration 437 (W) x 89 (H) x 648 (D) Weight 96wer Consumption builti-in 2 redundant PSUS 230 VAC/920 W (Platinum Level (94%+)) Power consumption and heatprint. Operating Temperature 10°C ~ 35°C  Auxiliary 4 valiable with dual streaming mode.		230 MD/S III total to all client workstations
Auxiliary Interfaces  USB Ports 6 x USB 3.0  Operating System  Operating System  Operating Mode pentaplex  OSD Interfaces  Control PC mouse and keyboard (in-set included), network, DCZ keyboard System Diagnostic automatic control of: HDDs, network, Camera connection loss  Security password protection, IP filtering, limiting the number of connections  Integration integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems  Integration 437 (W) x 89 (H) x 648 (D)  Weight Power Consumption and heatprint.  Power consumption and heatprint.  Operating Temperature  #ACK Mount 19"  **Available with dual streaming mode.	· · ·	
Departing system Operating System Operating System Operating System Operating System Operating System Operating System Operation Mode Operati		pan/tilt/zoom, preset commands, patterns, tours, auto-scans***
Operating system         Microsoft Windows 10 IoT           Operating System         Microsoft Windows 10 IoT           Operating System         pentaplex           Operating Mode         languages: Polish, English, Russian, others           Control         PC mouse and keyboard (in-set included), network, DCZ keyboard           System Diagnostic         automatic control of: HDDs, network, camera connection loss           Security         password protection, IP filtering, limiting the number of connections           Integration         integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems           Installation parameters         Integration           Weight         437 (W) x 89 (H) x 648 (D)           Weight         24 kg           Power Supply/Power Consumption         builk-in 2 redundant PSUS 230 VAC/920 W (Platinum Level (94%+))           Power consumption and heatprint.         power consumption 560W, heatprint 450W.           Operating Temperature         10°C ~ 35°C           RCK Mount 19°         2U		
Operating System Microsoft Windows 10 loT Operating Mode pentaplex OSD Ianguages Polish, English, Russian, others Control PC mouse and keyboard (in-set included), network, DCZ keyboard System Diagnostic automatic control of: MDDs, network, Camera connection loss Security password protection, IP filtering, limiting the number of connections Integration Integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration 24 kg (W) x 89 (H) x 648 (D) Weight 24 kg Newer Supply/Power Consumption Power Consumption and heatprint. Power consumption and heatprint are perature 10°C – 35°C ACK Mount 19° **Available with dual streaming mode.	USB Ports	6 x USB 3.0
Operation Mode     pertraplex       OSD     languages: Polish, English, Russian, others       Control     PC mouse and keyboard (in-set included), network, DCZ keyboard       System Diagnostic     automatic control of: MDDs, network, camera connection loss       Security     password protection, IP filtering, limiting the number of connections       Integration       Integration       Installation parameters       Dimensions (mm)     437 (W) x 99 (H) x 648 (D)       Weight     24 kg       Power Supply/Power Consumption     built-in 2 redundant PSUs 230 VAC/920 W (Platinum Level (94%+))       Power consumption and heatprint.     Power consumption 560W, heatprint 450W.       Operating Temperature     10°C ~ 35°C       RCK Mount 19"     20	Operating system	
Operation Mode         pentaplex           OSD         languages* Poilsh, English, Russian, others           Control         PC mouse and keyboard (in-set included), network, DCZ keyboard           System Diagnostic         automatic control of: HDDs, network, camera connection loss           Security         password protection, IP filtering, limiting the number of connections           Integration         Integration with: AHD NOVUs recorders, DSC systems, NMS ANPR systems, POS systems           Integration         437 (W) x 89 (H) x 648 (D)           Weight         24 kg           Power Suphy/Power Consumption         built-in 2 redundant PSUs 230 VAC/920 W (Platinum Level (94%+))           Power consumption and heatprint.         power consumption 560W, heatprint 450W.           Operating Temperature         10°C ~ 35°C           RACK Mount 19°         2U	Operating System	Microsoft Windows 10 IoT
Control Promose and keyboard (in-set included), network, DCZ keyboard System Diagnostic automatic control of: HDDS, network, camera connection loss Security assword protection, IP filtering, limiting the number of connections Integration integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems Integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems,		pentaplex
System Diagnostic automatic control of: HDDs, network, camera connection loss  Security password protection, IP filtering, limiting the number of connections  Integration  Integration integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems  Integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems  Integration parameters  Dimensions (mm) 437 (W) x 89 (H) x 648 (D)  Weight 24 kg  Power Supply/Power Consumption  Power Consumption and heatprint.  Power consumption and heatprint.  Power consumption and heatprint.  Power consumption and heatprint.  Power consumption selow, heatprint 450W.  Power consumption and heatprint.  Power consumption greperature  ACK (Mount 19" 20" 20" 20" 20" 20" 20" 20" 20" 20" 20	OSD	languages: Polish, English, Russian, others
Security password protection, IP filtering, limiting the number of connections  Integration integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems  Installation parameters  Dimensions (mm) 437 (W) x 89 (H) x 648 (D)  Weight 24 kg  Power SupplyPower Consumption Power Consumption Deversions (Mile in 2 redundant PSUs 230 VAC/920 W (Platinum Level (94%+))  Power consumption and heatprint. Power consumption 560W, heatprint 450W.  Operating Temperature 10° ~ 35° C  ACK Mount 19°  ** Available with dual streaming mode.	Control	PC mouse and keyboard (in-set included), network, DCZ keyboard
Integration integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems  Installation parameters  Dimensions (mm) 437 (W) x 89 (H) x 648 (D)  Weight 24 kg  Power Supply/Power Consumption Power Consumption and heatprint. Power consumption and heatprint. Power consumption and heatprint. Power consumption 560W, heatprint 450W. Power consumption 50W y a system of the system o	System Diagnostic	automatic control of: HDDs, network, camera connection loss
Integration integration integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems  Installation parameters  Dimensions (mm)	Security	password protection, IP filtering, limiting the number of connections
Installation parameters           Dimensions (mm)         437 (W) x 89 (H) x 648 (D)           Weight         24 kg           Power Supply/Power Consumption         billikin 2 redundant PSUS 230 VAC/920 W (Platinum Level (94%+))           Power consumption and heatprint.         Power consumption 560W, heatprint 450W.           Operating Temperature         10°C ~ 35°C           RCK Mount 19°         2           ** Available with dual streaming mode.         ***	Integration	
Installation parameters           Dimensions (mm)         437 (W) x 89 (H) x 648 (D)           Weight         24 kg           Power Supply/Power Consumption         billikin 2 redundant PSUS 230 VAC/920 W (Platinum Level (94%+))           Power consumption and heatprint.         Power consumption 560W, heatprint 450W.           Operating Temperature         10°C ~ 35°C           RCK Mount 19°         2           ** Available with dual streaming mode.         ***		integration with: AHD NOVUS recorders, DSC systems, NMS ANPR systems, POS systems
Dimensions (mm)     437 (W) x 89 (H) x 648 (D)       Weight     24 kg       Power Supply/Power Consumption     built-in 2 redundant PSUS 230 VAC/920 W (Platinum Level (94%+))       Power consumption and heatprint.     Power consumption 560W, heatprint 450W.       Operating Temperature     10° C ~ 35° C       RACK Mount 19"     2U		
Weight 24 kg Power Supply/Power Consumption built-in 2 redundant PSUs 230 VAC/920 W (Platinum Level (94%+)) Power consumption and heatprint. Power consumption 560W, heatprint 450W. Operating Temperature 10° C ~ 35° C ARCK Mount 19" 2U  ** Available with dual streaming mode.		437 (M) x 89 (H) x 648 (D)
Power Supply/Power Consumption bullt-in 2 redundant PSUs 230 VAC/920 W (Platinum Level (94%+))  Power consumption and heatprint. Power consumption 560W, heatprint 450W.  Operating Temperature 10° C ~ 35° C  **Available with dual streaming mode.		
Power consumption and heatprint.         Power consumption 560W, heatprint 450W.           Operating Temperature         10°C ~ 35°C           RCK Mount 19°         20           ** Available with dual streaming mode.         *** Available with dual streaming mode.		•
Operating Temperature 10°C ~ 35°C  RACK Mount 19°  ** Available with dual streaming mode.		
RACK Mount 19" 2U  ** Available with dual streaming mode.		
** Available with dual streaming mode.		
ASSEST To connect more than 1 DTCD stream and 1 ONL/E stream you will need special lisense key	** Available with dual streaming mode. *** Function capability depends on used devices and communication protocols.	